

# GCEP

GLOBAL CHANGE EDUCATION PROGRAM

1998-2013 / Final Report

ORAU  
University of Arkansas at Little Rock



U.S. DEPARTMENT OF  
**ENERGY**

Office of  
Science

Office of Biological and Environmental Research  
Climate and Environmental Sciences Division



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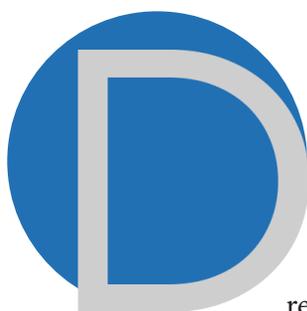
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# GLOBAL CHANGE EDUCATION PROGRAM (GCEP) EXECUTIVE SUMMARY



During the mid-to-late 1990s, the Department of Energy (DOE)'s Climate Change Research Division of the Office of Biological and Environmental Research (BER) recognized, through its interaction with the climate research community, that there was a need to increase the number of highly qualified scientists in the workforce of climate researchers. Thus, DOE program managers and Argonne National Laboratory (ANL) scientists involved with climate research programs and facilities met to develop a plan to address this need. As a consequence of the meeting and subsequent discussions within DOE, the Global Change Education Program (GCEP) was created, with the goal to respond to a higher demand for climate science professionals that were needed by both the DOE National Laboratories and the global change research community. Unlike previous education programs supported by BER that focused on postdoc and early career scientists, GCEP emphasized support to upperclass undergraduate and graduate studies in global change research. GCEP gave particular focus to scientific subjects that generally paralleled the DOE climate research priorities, e.g., atmospheric sciences, terrestrial processes, and climate modeling.

Students who were selected for support under the GCEP received funds to cover tuition and travel expenses. In addition, GCEP also provided mentoring services to students by experienced climate researchers who were funded by DOE's climate research programs at DOE national laboratories, universities, and companies. A unique aspect of GCEP was that it also provided a nurturing environment, through the workshops, for undergraduates by communicating and receiving encouragement from the graduate students, as well as incorporating mentoring coordinators and program officials throughout the program. Workshops designed to nurture communications between undergraduate and graduate students alleviated undergraduate student concerns in transitioning from the Summer Undergraduate Research Experience (SURE) to the Graduate Research Environmental Fellowship (GREF), both of which were subprograms under GCEP. Each year, on the basis of mentors' recommendations, GCEP recognized students who made the best use of their mentor and institution resources. This recognition was awarded in the memory of the late Dr.



Marvin L. Wesely, who was a senior scientist at ANL and was an outstanding researcher, Chief Scientist for the former Atmospheric Chemistry Program, and mentor.

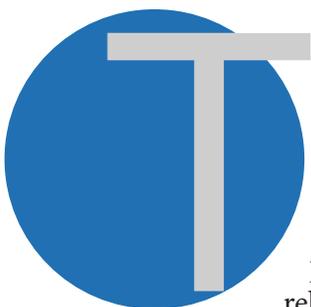
This GCEP final report reviews the program’s goals, duration and accomplishments. Its appendices capture the annual workshops and awards sponsored by the program. The outstanding research publications represent the exceptional relationships between students and their respective assigned mentors. The authors of the final report, Drs. Jeff Gaffney and Nancy Marley, made an exemplary effort in tracking and maintaining contact with students who successfully completed the program. The students’ career paths illustrate that GCEP not only met its goal of replenishing the DOE workforce in climate research areas, but also met the needs of other public and private sectors engaged with climate-related research and activities.

GCEP is indebted to the many conscientious and dedicated individuals recognized in the “Acknowledgments” section for their selfless dedication, especially Nancy and Jeff, for their tireless effort as mentoring coordinators.

Dr. Gerald (Gary) Geernaert  
Climate and Environmental Division Director

Mr. Rickey Petty  
GCEP Program Director

# INTRODUCTION



The U.S. Department of Energy (DOE), Office of Science (SC), Biological and Environmental Research (BER) Climate and Environmental Sciences Division (CESD) funded the Global Change Education Program (GCEP) from October 1998 to July 2013 in an effort to promote and support the quality of emerging scientists in disciplines related to global change research. The CESD supports global change research through its Atmospheric Systems Research (ASR) program (formerly the Atmospheric Science Program or ASP), Atmospheric Radiation Measurement (ARM) program, and the Terrestrial Ecosystems Science (TES) program. The GCEP activities supported students involved in global change research including areas ranging from the atmospheric sciences, ecology, global carbon cycles, earth systems and climate modeling, and terrestrial processes to integrated assessments, predictions, and policy issues.

Mr. Peter Lunn served as the program manager for GCEP from 1998 to 2005, when he retired from federal service. Mr. Rickey Petty served as the program manager from 2005 to 2013. Jeffrey S. Gaffney and Nancy Marley of the University of Arkansas at Little Rock (formerly of Argonne National Laboratory) served as mentoring coordinator and assistant mentoring coordinator, respectively. Milton J. Constantin served as the ORAU program manager until his retirement in 2010. He was succeeded by Michael Hubbard from 2010 to 2012, and Leslie Fox during the program's final year (2013). They, along with the members of the various review panels, provided programmatic, technical, and operational guidance for GCEP.



# PROGRAM ORGANIZATION



CEP supported U.S. citizens who were currently enrolled in undergraduate or graduate studies in the global change areas with GPAs of 3.0 or higher. The Program was made up of two parts: the Summer Undergraduate Research Experience (SURE) and the Graduate Research Environmental Fellowships (GREF). In its first year, GCEP also provided support to one student at Argonne National Laboratory in the Significant Opportunities in Atmospheric Research and Science Program (SOARS). The SOARS program is an undergraduate-to-graduate bridge program designed to broaden participation in the atmospheric and related sciences. That student transferred to the SURE program and is included in that data.

The SURE component supported undergraduates during the summer in BER-supported climate change research beginning in their sophomore or junior year. The SURE fellows were selected for their academic abilities and their research interests as evaluated from their transcripts, reference letters, and a self-written statement of goals that included their specific climate change areas of interest. A panel review process was used for the selection of students interested in a broad range of climate change areas including atmospheric science (physics and chemistry), terrestrial ecology (biology), soil science and ecosystem research (microbiology as well as chemistry and physics), and climate modeling (mathematics and computation). This required an interdisciplinary team of reviewers from the various areas of climate change research supported by the DOE's Climate Change Research programs.

After the SURE students were selected, they were instructed to contact the mentoring coordinator to initiate the mentor selection process. The mentoring coordinator's role was to suggest potential mentors currently involved in climate change research for the DOE that would be compatible with the student's capabilities and interests. Potential mentors included scientists at universities, national laboratories, or small businesses conducting Small Business Innovative Research (SBIR) projects in development of instruments relevant to climate change studies. Once the student and mentoring coordinator agreed on a potential research mentor, the SURE student was then encouraged to contact the DOE mentor directly to discuss possible research projects and also to arrange for housing at their research sites for the 9-week summer research portion of SURE. This approach differs from most undergraduate research programs, which pair students with mentors either by assignment or by allowing mentors to



select students from a batch of applicants. By guiding the SURE fellows through negotiations with mentors directly, the students gained experience in interacting with senior researchers to define a research project and also in handling housing and other issues necessary to setting up their SURE experiences. This process teaches the SURE fellows how to select a graduate or thesis advisor, an important skill in applying for graduate school and in succeeding in graduate education.

The SURE fellows were encouraged to continue their participation in the program during subsequent years to foster their interest in graduate studies in climate change research areas following their graduation. In keeping with this goal, SURE fellows interested in continuing their education in climate change were also supported during the summer after completion of their undergraduate degree. This aspect of the SURE program set it apart from similar undergraduate research programs and provided the students with a seamless transition into their graduate studies. At the end of each summer period, mentors and their SURE fellows were asked to evaluate one another. This allowed for an assessment of the student and mentor interactions and provided very useful feedback for the mentoring coordinator in future assignments for continuing SURE fellows as well as for mentor assignments with future SURE fellows.

The GREF component of GCEP supported doctoral graduate fellows that had completed their freshman year of graduate school (and therefore had completed the majority of the required coursework), had selected a university thesis advisor, and were ready to begin graduate research. The GREF fellows were selected for their academic achievements and their proposed research projects as evaluated from their transcripts, reference letters, and from a written research proposal outlining their thesis research. Successful candidates were selected by panel review conducted by an interdisciplinary team of reviewers from the various areas of climate change research supported by the DOE's Climate Change Research programs. Successful SURE fellows were also highly encouraged to consider "bridging" into the GREF program for continuation into graduate school. These students received a small number of bonus points added to their GREF application review scores and were examined closely for possible GREF fellowships. The goal was the development of a strong scientific workforce across the various disciplines related to global change research.

Each GREF fellow was required to identify a DOE BER-supported mentor who would guide the student's research activities along with the university thesis advisor. The DOE mentor was selected with the guidance of the mentoring coordinator prior to submission of the student's GREF application, which included a detailed description of the mentor's participation in the research as well as a support letter from the selected DOE mentor. The DOE mentors for GREF projects were also required to not be at the same institution as the student, if possible. This ensured that the students would expand their scientific interactions outside of their immediate graduate institution and also served to encourage interactions between the university faculty and the DOE researchers working in similar climate change areas. The DOE mentors enhanced the graduate students' climate change research either by direct interaction and collaboration or by providing access to DOE facilities, sites, and unique capabilities. These included access to the instrumentation available at the Environmental



Molecular Sciences Laboratory (EMSL), the Center for Accelerator Mass Spectrometry (CAMS), the various advanced light sources, or high-end computer centers and the associated large and comprehensive regional and global scale models, as well as access to DOE study sites such as Atmospheric Radiation Measurement (ARM) sites or the Free-Air Carbon Exchange (FACE) or Carbon Flux sites. These interactions enriched the student's education and preparation for future employment in climate change research areas, and also benefited the funded CESD projects through addition of the GREF fellow's research activities. Thus, GREF support directly connected student research to the DOE climate change research efforts; the students' climate change research not only furthered their doctoral graduate degrees, but also increased the knowledge base and fundamental understanding critical to improving climate change modeling and prediction and identifying potential areas for mitigation and carbon storage.

As part of the effort to encourage use of the DOE facilities, sites, and computational capabilities as well as collaboration with the DOE mentor, the Marvin L. Wesely Graduate Research Environmental Fellowship Award was instituted in 2003. Dr. Wesely was a senior scientist at Argonne National Laboratory and was an outstanding GCEP mentor and leader in the DOE Atmospheric Chemistry Program (ACP). He passed in January 2003 from a rare form of heart cancer. In his memory, this annual award was established to honor a current GREF fellow who had made the best use of his/her DOE mentor and facilities in improving the quality of his/her research efforts. The Marvin L. Wesely GREF awardees are listed below with short descriptions of their research accomplishments and interactions with DOE that led to their receiving the award.

An orientation was held in June from 1999 to 2010 for incoming SURE and GREF fellows to introduce them to the various areas of research conducted by the DOE Climate Change Research Programs. Agendas for the yearly orientations are provided in Appendix I along with links to selected presentations. Scientific overview presentations were organized in each of the major climate change research areas and presented by DOE scientists directly involved in each area of research. In addition, GREF students with mature research projects were asked to present their latest results in the appropriate sessions, which developed the students' appreciation of how their work contributed to the ongoing DOE climate research programs. These presentations by GREF fellows also encouraged direct interactions between undergraduate and graduate students interested in each area of climate change research and further increased undergraduate awareness of graduate education opportunities at the various universities that participated in GCEP.

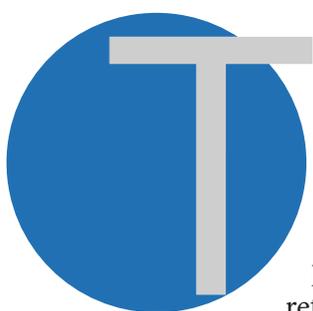
A major goal of GCEP was development of the organizational and written skills needed to successfully publish scientific work and submit independent research proposals. Toward this end, the summer orientations included special lectures and mentor-led discussions covering topics such as publishing and the peer review process, successful proposal writing, selecting graduate schools and thesis advisors, and resumes versus curriculum vitas. These topics were included to cultivate the students' awareness of all that is required to be a successful graduate student and scientist beyond the normal course work and thesis research. The students found the seminars very enlightening and, in many cases, it was their first exposure to these



important aspects of becoming a successful research scientist.

A three-day final workshop was held in August from 1999 to 2010 for SURE fellows to present results of their 9-week research experience. Also, GREF fellows who did not present research updates during the June orientation were asked to present their latest research results during the final workshop. Agendas for the end-of-summer workshops are provided in Appendix II along with links to the presentations given by SURE and GREF fellows. These workshops afforded additional opportunities for direct interactions between undergraduate and graduate students working in similar climate change research areas and gave them an appreciation of how their work fit into the larger picture of interdisciplinary climate change research.

# THE SUMMER UNDERGRADUATE RESEARCH EXPERIENCE



The GCEP SURE program supported a total of 136 undergraduate students with a total of 208 fellowships from 1999 to 2010. The number of fellowships includes the students returning to the program for more than one year. Each year, 12 to 26 fellows were supported by the program with an average of 17 fellows per year including both new and returning students (see Table 1). The total number supported each year was determined by the number of qualified students applying and the funds available for the SURE part of the GCEP program. The SURE fellows are listed in Appendix III along with their DOE mentors and the institutions where they conducted their summer

**Table 1. Number of Summer Undergraduate Research Experience fellows supported by GCEP by year.**

Year	Total	New	Returning
1999	17	17	NA
2000	26	19	7
2001	21	10	11
2002	15	6	9
2003	16	9	7
2004	17	11	6
2005	18	10	8
2006	17	10	7
2007	15	12	3
2008	19	13	6
2009	15	12	3
2010	12	7	5
<b>1999-2010</b>	<b>208</b>	<b>136</b>	<b>72</b>

**Table 2. Colleges and universities participating in the Summer Undergraduate Research Experience and the number of SURE fellows from each during 1999–2010.\***

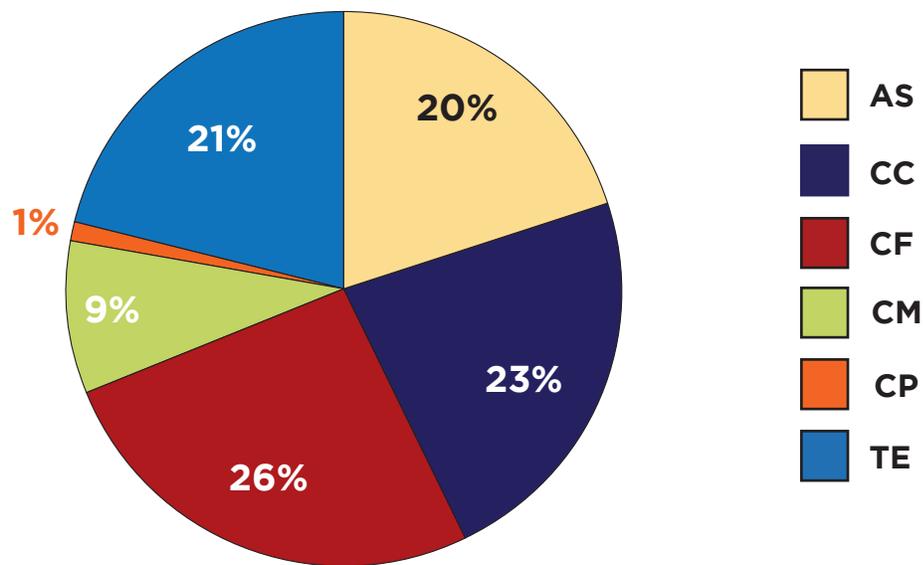
School	Fellows	School	Fellows
Albion College	1	Southern University	1
Alfred University	1	Stanford University	1
Ball State University	1	St. Cloud State University	2
Bemidji State University	1	St. John's College	1
Berea College	1	Swarthmore College	5
Binghamton University (SUNY)	1	Texas A&M University	1
Brown University	2	Tulane University	2
Bucknell University	1	Union College	1
Cabrini College	1	University of Arkansas	1
College of Charleston	1	University of Arkansas at Little Rock	2
Cornell University	8	University of Arizona	1
Dartmouth College	1	University of California, Berkeley	2
Denison University	1	University of California, Davis	1
Eastern Washington University	1	University of California, Riverside	1
Evergreen State College	1	University of Chicago	4
Furman University	1	University of Colorado, Boulder	1
Hamilton University	1	University of Florida	1
Harvard University	2	University of Illinois at Urbana-Champaign	2
Hendrix College	1	University of Louisiana at Monroe	1
Humboldt State University	1	University of Maryland	1
Hunter College	1	University of Miami	2
Kenyon College	1	University of Michigan	2
Loyola Marymount University	1	University of Minnesota Institute of Technology	1
Loyola University	1	University of Minnesota, Morris	1
Marist College	1	University of Notre Dame	1
Marquette University	1	University of Oklahoma	1
Massachusetts Institute of Technology	2	University of Portland	1
McGill University	1	University of Puerto Rico, Mayaguez	4
Michigan Technological University	1	University of Puerto Rico, Rio Piedras	5
Middlebury College	1	University of South Carolina	1
Midland Lutheran College	1	University of South Carolina, Beaufort	1
Mills College	1	University of Tampa	1
Montana Technical University	1	University of Texas at Arlington	1
Muhlenberg College	1	University of Toledo	1
New Jersey City University	1	University of Utah	1
New Mexico Tech	1	University of Wisconsin-Madison	2
North Carolina State University	4	Utah State University	1
Northern Illinois University	3	Valparaiso University	2
Oral Roberts University	1	Wake Forest University	1
Oregon State University	1	Washington State University	1
Oswego State University	1	Washington University	3
Pennsylvania State University	5	Waynesburg University	1
Pomona College	1	Western Carolina University	1
Princeton University	1	Western Washington University	2
Rensselaer Polytechnic Institute	2	Willamette University	1
Rowan University	1		

\*One SURE Fellow (participated more than one year) attended two different schools.



research. Among the fellows, 65% (88) were female and 35% (48) were male. They included 12 Hispanic Americans, 8 Asian Americans, 4 African Americans, and 1 Native American. The SURE fellows were recruited from the 91 participating colleges and universities listed in Table 2 (opposite), which include both large and small schools from every area of the country. The students involved in the SURE program thus reflect significant geographical distribution.

In selecting students for participation in the SURE program, an effort was made to include students interested in each of the major areas of climate change research supported by the DOE CESD: physics and chemistry of the atmosphere (atmospheric science); optical properties of the atmosphere and radiative balance (climate forcing); the response of biology and ecosystems to climate change (terrestrial ecology); the uptake or release of carbon by soil, microbiology, and plants (carbon cycling); numerical and computational prediction of climate change (climate modeling); and the effects of climate change on society and possible mitigation strategies (climate policy). The distribution of SURE fellows working in each of these areas of climate change research from 1999 to 2010 is shown in Figure 1. The majority of students focused their studies on atmospheric science (20%), carbon cycling (23%), climate forcing (26%), and terrestrial ecology (21%). Only 1% of the students studied climate policy, which reflects a shortage of mentors in this area as well as a lack of interest from qualified students. Although the climate modeling area was of particular interest to the DOE CESD, fewer students (9%) pursued research in this area at the undergraduate level primarily because most students did not have the mathematical and computational skills required for this rigorous area of study.



**Figure 1. The distribution of SURE fellows involved in the various areas of climate change research from 1999 to 2010. AS = atmospheric science, CC = carbon cycling, CF = climate forcing, CM = climate modeling, CP = climate policy, TE = terrestrial ecology.**



The SURE fellows conducted their studies at the home research institutions of their chosen mentors. These institutions, listed in Table 3, included 11 DOE research facilities and national laboratories and 29 universities with DOE-supported climate change research activities. One hundred forty-eight (71%) of the SURE fellows chose mentors associated with the DOE research facilities, while sixty (29%) worked with mentors located at a university. The most popular research facilities were the national laboratories starting with Oak Ridge National Laboratory (16 participating mentors), hosting 34 SURE fellows in its Climate Change Science Institute, which includes earth systems modeling, terrestrial ecosystem and carbon cycle science, and climate impacts, adaptation, and vulnerability science. Argonne National Laboratory (8 participating mentors) hosted 33 SURE fellows working in the Environmental Research Division in carbon cycling and soil science, atmospheric chemistry and physics, and aerosol climate effects. Lawrence Berkeley National Laboratory (8 participating mentors) hosted 23 SURE fellows between their Environmental Energy Technologies Division and Earth Sciences Division studying aerosol climate effects and carbon cycling. Brookhaven National Laboratory (8 participating mentors) hosted 14 SURE fellows in their Environmental Sciences Department working on aerosol science and radiative balance, radiative transfer modeling, and plant and ecosystem response to climate change. Pacific Northwest National Laboratory and their Environmental Molecular Science Laboratory together (6 participating mentors) hosted 13 SURE fellows working in atmospheric physics and meteorology and aerosol climate effects. The most popular universities were Oregon State University, which hosted 6 SURE fellows working with Professor Barbara Bond in her Forest Science Laboratory, followed by the University of California-Berkeley, University of Arkansas at Little Rock, and the University of Washington hosting 5 SURE fellows each in atmospheric chemistry of aerosols and trace gases.

The SURE fellows were encouraged to continue their participation in the program during subsequent years. Of the 136 fellows supported from 1999 to 2010, 72 (53%) chose to return to the program for additional years, with 49 of the 60 returning for two years and 11 returning for the full 3 years. As undergraduates are often not fully committed to a specific area of study, SURE fellows were encouraged to make use of the extensive network of mentors in the GCEP program to discover the area of research that most excited them. It is interesting to note that of the 72 returning fellows, 37 made use of this opportunity to investigate other mentors and research areas after their first summer's experience.

The research efforts of the SURE fellows from 1999 to 2010 resulted in a total of 58 scientific publications and 201 oral and poster presentations. Details of the publications and presentations coauthored by SURE fellows can be found in Appendix IV. In summary, 34 of the publications appeared as peer reviewed journal articles and book chapters, with the remaining 24 issued as technical reports and extended abstracts for national scientific meetings. The presentations listed in Appendix IV include 44 oral and poster presentations at national, international, and regional scientific meetings.

A concerted effort was made by the GCEP mentoring coordinators to follow the career paths of the SURE fellows after leaving the program and to continue to offer career guidance and encouragement. The mentoring coordinators offered support to successful SURE fellows



**Table 3. Research institutions participating in the Summer Undergraduate Research Experience and the number of SURE fellows conducting research at each institution during the years 1999–2010.**

Research Facilities	Fellows
Aerodyne Research	5
Argonne National Laboratory	33
Brookhaven National Laboratory	14
Center for Accelerator Mass Spectrometry	6
Environmental Molecular Sciences Laboratory	2
Los Alamos National Laboratory	9
Lawrence Berkeley National Laboratory	23
Lawrence Livermore National Laboratory	2
National Center for Atmospheric Research	3
Oak Ridge National Laboratory	34
Pacific Northwest National Laboratory	11
Woods Hole Oceanographic Institution	6
<b>Total number of fellows at research facilities</b>	<b>148</b>

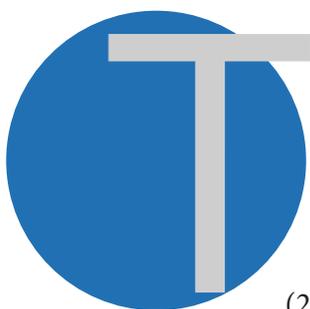
Universities	Fellows
Arizona State University	1
Duke University	1
Harvard University	3
Louisiana State University	1
Michigan Tech	1
North Carolina State University	2
Ohio State University	1
Oregon State University	6
Penn State University	2
South Dakota State University	3
Stanford University	1
SUNY - Old Westbury	1
University of Arkansas at Little Rock	5
University of California, Berkeley	5
University of California, Davis	2
University of California, Irvine	1
University of California, Los Angeles	1
University of California, Riverside	2
University of Illinois at Chicago	1
University of Illinois at Urbana-Champaign	3
University of Iowa	1
University of Miami	2
University of Nebraska	1
University of Notre Dame	2
University of Utah	3
University of Tennessee-Knoxville	1
University of Washington	5
University of Wisconsin-Madison	1
University of Wisconsin-Stevens Point	1
<b>Total number of fellows at universities</b>	<b>60</b>

pursuing graduate school education by writing letters of recommendation describing the students' research efforts in the program. In some cases, the mentoring coordinators also worked with the SURE students and their campuses to obtain academic credit for their SURE fellowship activities. Short summaries of the histories and current status of the SURE fellows since their internships can be found in Appendix V. Of the 136 undergraduate students that were supported by the GCEP-SURE program from 1999 to 2010, 96 continued on into graduate studies with 55 in doctoral programs, 37 in master's programs, 2 in medical school, and 2 in law school. Of those seeking doctoral degrees, 52 entered programs in climate change or a closely related environmental program, with 19 under funding through the GCEP



Graduate Research Environmental Fellowship. Among those SURE fellows seeking master's degrees, 30 entered programs in climate change or closely related environmental fields. These numbers attest to the success of the SURE program in attaining the goal of increasing the number of qualified graduate students in the areas of climate change.

# THE GRADUATE RESEARCH ENVIRONMENTAL FELLOWSHIPS



The GCEP GREF program supported a total of 94 doctoral students from 1999 to 2013. During the active years of the program (1999–2010), a total of 10 to 36 fellows were supported by the program each year with an average of 29 fellows per year including both new and returning students (see Table 4). This excludes the final years of the program (2011–2013) when no new students were accepted and a total of 19

**Table 4. Number of Graduate Research Environmental Fellows supported by GCEP by year including total, new and returning students.**

Year	Total	New	Returning
1999	10	10	NA
2000	18	8	10
2001	25	7	18
2002	29	6	23
2003	32	5	27
2004	30	8	22
2005	31	11	20
2006	35	8	27
2007	33	9	24
2008	36	10	26
2009	34	6	28
2010	34	6	28
2011	19	0	19
2012	12	0	12
2013	4	0	4
<b>1999–2013</b>	<b>382</b>	<b>94</b>	<b>288</b>

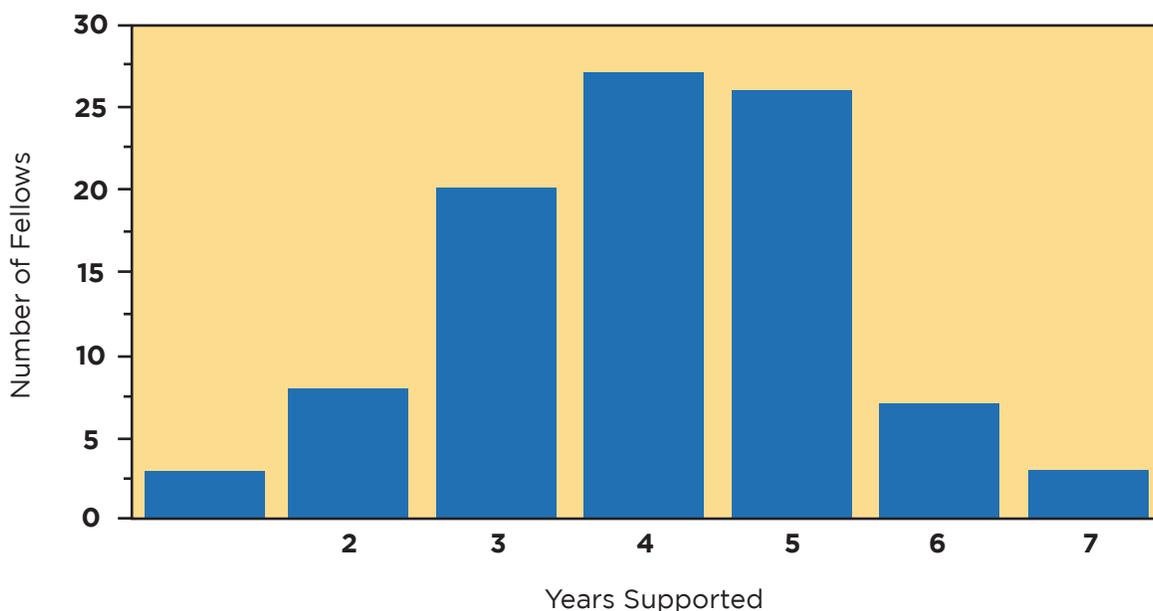


students remained in the program to complete their dissertations. From 5 to 11 new students were accepted into the program each year during the active years from 1999 to 2010, with an average of 8 new fellows entering the program annually. As the number of applicants to GCEP-GREF per year ranged from 50 to 60, the total number of fellows supported was determined primarily by the funds available for the GREF part of the GCEP program.

The GREF fellows are listed in Appendix VI along with the years they received support from the program, the degree awarded, the year the degree was awarded, and their DOE mentors. Of the 94 GREF fellows, 68% (64) were female and 32% (30) were male. They included 7 Hispanic Americans, 4 Asian Americans, 1 African American, and 1 Native American. Most students were supported from 4 to 5 years on the GCEP GREF program after being accepted into the program at the beginning of their second year in graduate school (see Figure 2). Occasionally students with special issues were allowed to continue under GCEP GREF funding for as much as 6–7 years with approval of the mentoring coordinators and the review committee.

The GREF fellows were recruited from the 40 participating doctoral granting institutions listed in Table 5. The schools with the most GREF fellows were the University of California-Berkeley (12), Stanford (9), the University of Illinois at Urbana-Champaign (7), and the University of Wisconsin-Madison (6). The remaining 36 universities ranged from 1 to 3 fellows each. The GREF fellows conducted thesis research in one of the six major areas of climate change research of interest to the DOE CESD: physics and chemistry of the atmosphere (atmospheric science); optical properties of the atmosphere and radiative balance (climate forcing); the response of biology and ecosystems to climate change (terrestrial

**Figure 2. Number of years students were supported by the GCEP Graduate Research Environmental Fellowship program from 1999 to 2013.**





**Table 5. Doctoral granting institutions participating in the Graduate Research Environmental Fellowships and the number of GREF fellows from each during the years 1999–2013.**

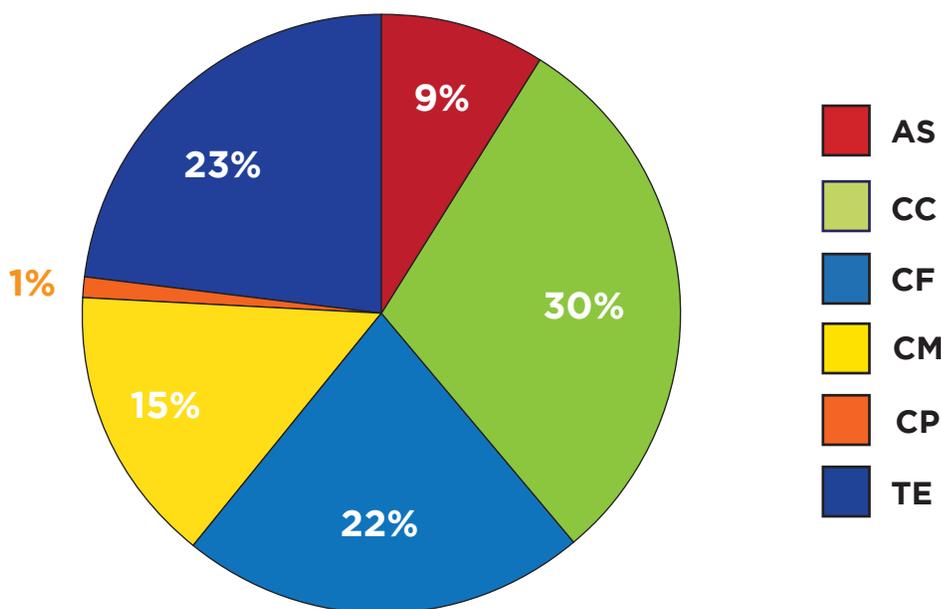
School	Fellows	School	Fellows
Brown University	1	University of California, Irvine	2
Colorado State University	3	University of California, San Diego	1
Columbia University	2	University of California, Santa Barbara	1
Duke University	3	University of Chicago	1
Georgia Institute of Technology	2	University of Colorado, Boulder	2
Harvard University	1	University of Florida	1
Howard University	1	University of Houston	1
New Mexico Tech	1	University of Illinois at Chicago	1
Oregon State University	1	University of Illinois at Urbana-Champaign	7
Pennsylvania State University	3	University of Iowa	1
Princeton University	2	University of Michigan	2
Purdue University	3	University of Minnesota, Twin Cities	2
Rutgers University	1	University of Notre Dame	1
Stanford University	9	University of Tennessee, Knoxville	2
State University of New York at Stony Brook	1	University of Texas at Austin	2
Texas A&M University	3	University of Utah	2
University of Alaska, Fairbanks	1	University of Virginia	1
University of Arizona	4	University of Washington	3
University of California, Berkeley	12	University of Wisconsin-Madison	6
University of California, Davis	1	Yale University	1

ecology); the uptake or release of carbon by soil, microbiology, and plants (carbon cycling); numerical and computational prediction of climate change (climate modeling); and the effects of climate change on society and possible mitigation strategies (climate policy). The distribution of the GREF thesis projects among these major areas of climate change research is shown in Figure 3. A comparison of Figures 1 and 3 shows a decrease in projects in the area of atmospheric science and an increase in carbon cycling and modeling projects over those in the SURE undergraduate program. This reflects the higher levels of preparation for the more rigorous research areas in the graduate level students.

Each GREF fellow conducted his/her research in collaboration with a DOE mentor from one of the research institutions listed in Table 6. These included 12 DOE research facilities and national laboratories and 13 universities with DOE-supported climate change research activities. A total of 88% of the GREF fellows chose to work with mentors associated with the DOE research facilities, while 15% worked with mentors located at a university (some GREF fellows participated at more than one institution). The top selected research facilities were the national laboratories starting with Oak Ridge National Laboratory, with 16 GREF fellows collaborating closely with 11 participating mentors in terrestrial ecosystem and carbon cycle



**Figure 3. The distribution of GREF fellows thesis research projects among the various areas of climate change research. AS = atmospheric science, CC = carbon cycling, CF = climate forcing, CM = climate modeling, CP = climate policy, TE = terrestrial ecology.**



science, earth systems modeling, and climate impacts. Argonne National Laboratory assisted 14 GREF fellows with 8 participating mentors in atmospheric science, climate forcing, and climate modeling. Pacific Northwest National Laboratory and their Environmental Molecular Sciences Laboratory together collaborated with 14 GREF fellows (9 participating mentors), and Lawrence Berkeley National Laboratory mentored 13 GREF fellows with 10 participating mentors in climate forcing, and terrestrial ecology and carbon cycling. Eight GREF fellows collaborated with 3 participating mentors at Brookhaven National Laboratory in carbon cycling and aerosol climate effects. The GREF fellows that selected mentors at universities were evenly distributed among the 13 participating universities.

The GCEP GREF program resulted in 87 doctoral degrees (with 8 expected to complete in 2013 and 3 expected to complete in 2014) and 8 master's degrees in climate-change-related areas. The titles of the theses and dissertations authored by GCEP GREF fellows are listed in Appendix VII. The GREF fellows' thesis research was featured in 810 publications and 665 oral or poster presentations. Of the 810 publications, 503 appeared in peer reviewed journals and book chapters; among the presentations, 453 were given at national and international scientific meetings. A complete list of the publications and presentations from the thesis work of GREF fellows can be found in Appendix VIII. It is interesting to note that many publications and presentations were coauthored by the DOE mentors. This is an indication of the close and highly productive collaborations established between the GREF fellows and their DOE mentors.



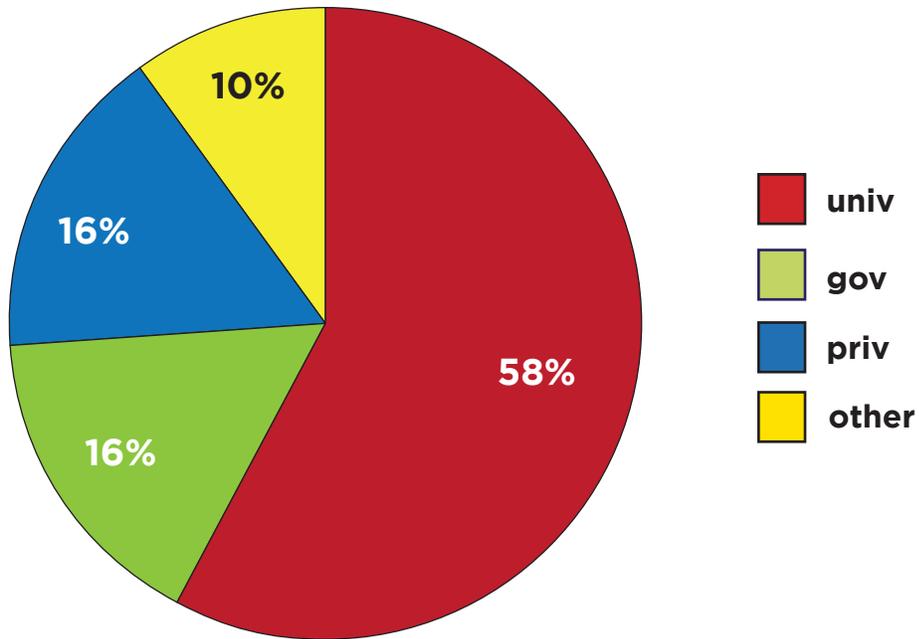
**Table 6. Research institutions participating in the Graduate Research Environmental Fellowship Program and the number of GREF fellows conducting collaborative research with each institution during the years 1999–2013.**

Research Facilities	Fellows	Universities	Fellows
Aerodyne Research	3	Duke University	1
Argonne National Laboratory	14	Harvard University	1
Brookhaven National Laboratory	8	Michigan Tech	1
Center for Accelerator Mass Spectrometry	4	Notre Dame University	1
Environmental Molecular Sciences Laboratory	8	Northern Arizona University	1
Los Alamos National Laboratory	5	University of Arkansas at Little Rock	2
Lawrence Berkeley National Laboratory	13	University of California, Berkeley	1
Lawrence Livermore National Laboratory	2	University of California, Davis	1
National Center for Atmospheric Research	1	University of California, Irvine	1
Oak Ridge National Laboratory	16	University of Iowa	1
Pacific Northwest National Laboratory	6	University of Michigan	1
Woods Hole Oceanographic Institution	3	University of Minnesota	1
<b>Total number of fellows at research facilities</b>	<b>83</b>	University of Utah	1
		<b>Total number of fellows at universities</b>	<b>14</b>

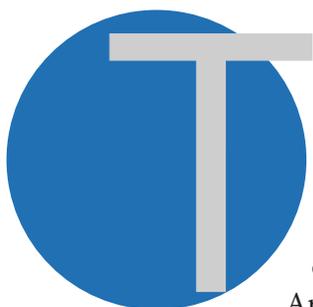
The mentoring coordinators maintained close contact with all GREF fellows as they progressed through the program, received their degrees, and continued on to seek employment in their chosen fields. This allowed the mentoring coordinators to act effectively as references, as well as advisors, to the GREF fellows throughout their career development. Mentoring coordinators wrote strong letters of recommendation for successful GREF students in their search for suitable employment after graduation, further ensuring student success. Short summaries of the histories and current status of the GREF fellows can be found in Appendix IX. Of all the GREF fellows receiving their degrees prior to 2013, only 2 have no record of their professional status after graduation. A distribution of the types of positions currently held by former GREF fellows is shown in Figure 4. By far the greatest numbers of fellows (58%) hold university positions, with 28% in faculty positions, 23% in postdoctoral or research associate positions, and 7% in university staff positions. The fellows holding government-funded positions are distributed among the national laboratories (9%) and the various government agencies (7%) involved in climate change activities. Positions held in the private sector consist of consulting (9%), private research institutes (3%), and scientific organizations (4%). Only 10% of the former GREF fellows are no longer employed in climate change activities. However, some of these are involved in other environmentally related positions.



**Figure 4. The distribution of the types of positions currently held by former GREF fellows. univ = university (faculty, staff, and postdoctoral), gov = government (national laboratory and government agencies), priv = private sector (research institutions, scientific organizations, and consulting), other = not employed in climate change activities.**



# THE MARVIN L. WESELY GRADUATE RESEARCH ENVIRONMENTAL FELLOWSHIP AWARD



The Marvin L. Wesely distinguished Graduate Research Environmental Fellowship Award was established in honor of the late Dr. Marvin L. Wesely, Argonne National Laboratory Senior Meteorologist and Chief Scientist of the DOE Atmospheric Chemistry Program. Dr. Wesely mentored a number of SURE and GREF fellows and was a strong supporter of the DOE Global Change Program. In his memory, the Marvin L. Wesely Fellowship was awarded for one-year periods to current Graduate Research Environmental Fellows (GREFs) who had made the best use of their DOE mentors and facilities in improving the quality of their thesis research efforts. The Marvin L. Wesely GREF awardees are listed below with short descriptions of their research accomplishments and interactions with DOE that led to their receiving the award.

**Heather U. Price** was awarded the first **Marvin L. Wesely Graduate Research Environmental Fellowship** in 2003 for her collaborative research in atmospheric chemistry. Heather was mentored by Dr. Daniel Jaffe at the University of Washington, Seattle, and Dr. Paul Doskey at Argonne National Laboratory. Her research focused on the examination of volatile



**Dr. Marvin L. Wesely,  
May 5, 1944 - January  
20, 2003 - Senior  
Meteorologist, Argonne  
National Laboratory  
Chief Scientist, DOE  
Atmospheric Chemistry  
Program**



**Heather U. Price, University of Washington, Seattle**

organic carbon levels in the troposphere and made use of the state-of-the-art volatile organic carbon analytical chemistry laboratory set up at Argonne National Laboratory by Dr. Doskey. This research made use of ultraclean stainless evacuated canisters supplied by Dr. Doskey to collect samples in the field followed by analysis at the Argonne facility by high resolution gas chromatography. She also took an active role in the Texas 2000 and Phoenix 2001 field studies organized by the DOE Atmospheric Science Program where she collected and analyzed samples for nonmethane hydrocarbons. Heather coauthored 15 publications and 12 presentations based on her thesis work. Of these, 4 papers and 7 presentations included both her mentors, Paul Doskey and Daniel Jaffe, as coauthors.

Dr. Heather Price was a GREF fellow from 2000 to 2004. Following completion of her PhD in chemistry in the spring of 2004 from the University of Washington, she pursued further postdoctoral research as a Research Associate in Atmospheric Sciences at the University of Washington from 2004 to 2006. She then served as an instructor of chemistry at North Seattle Community College from 2006 to 2008. She is currently a chemistry faculty member at Highline Community College in Des Moines, Washington, where she conducts science seminars on the effects of climate change and is active in the local section of Women in Science and Engineering.



**Steven D. Allison** was awarded the second Marvin L. Wesely Graduate Research Environmental Fellowship in 2004. Steven Allison was a fellow in the GCEP Graduate Research Environmental Fellowship program from 2002 to 2005. His graduate research involved the study of microbes in soils, which were found to release enzymes that affected soil carbon and nutrient turnover rates. He was mentored in his studies by his thesis advisor at Stanford University, Professor Peter Vitousek, and his DOE mentor, Dr. Julie Jastrow, a leading soil ecologist at Argonne National Laboratory. As part of his research, Steven developed methods for enzyme assays and conducted collaborative work at the prairie restoration site at Fermi National Laboratory with Dr. Jastrow and Dr. R. Michael Miller on the microbial enzyme effects on grassland soil aggregates. The GREF-supported efforts of Steven Allison yielded new insights into the stabilities of carbon in soils that should aid in possible carbon sequestration strategies in the near future. Steven's thesis research resulted in 16 publications, 2 of which were coauthored by both Dr. Vitousek and Dr. Jastrow.



**Steven D. Allison, Stanford University**

After receiving his PhD in 2005, Dr. Steven Allison continued his research in this area of interdisciplinary science as a postdoctoral scholar in Ecology and Evolutionary Biology and Earth System Science at the University of California, Irvine from 2005 to 2007. Presently he is an assistant professor with joint appointments in Ecology and Evolutionary Biology as well as Earth System Science at the University of California, Irvine. His work at Irvine uses molecular, biochemical, and theoretical approaches to understand how microbes regulate ecosystem processes. A major focus of this work is modeling and empirically testing the factors that drive extracellular enzyme production by microbes. Another goal is to incorporate microbial communities and processes into large-scale biogeochemical models to predict ecosystem response to global change.

**Erika Marin-Spiotta** was selected to receive the third Marvin L. Wesely Graduate Research Environmental Fellowship in 2005. Erika was a fellow in the GCEP Graduate Research Environmental Fellowship program from 2002 to 2006 and received her PhD in 2006. Her graduate research involved the study of how past land-use activities lead to differences in carbon sequestration in soils as the systems return to their original ecosystems after agricultural and/or pasture usage. Her studies involved work in tropical ecosystems that were selected for study in Puerto Rico. Erika was mentored by her thesis advisor, Professor Whendee L. Silver, in the Ecosystems Sciences Division in the Department of Environmental Science, Policy and Management at the University of California-Berkeley, and by Dr. Margaret Torn of Lawrence Berkeley National Laboratory. As part of her research, Erika applied



isotopic methods for determining carbon turnover rates using both stable carbon isotopes and radiocarbon measurements and made excellent use of the DOE facilities at Lawrence Berkeley National Laboratory and at the Center for Accelerator Mass Spectroscopy at Lawrence Livermore National Laboratory for  $^{14}\text{C}$  determinations. Erika also made use of the  $^{13}\text{C}$  NMR facilities at the Environmental Molecular Science Laboratory at Pacific Northwest National Laboratory to examine weathered tropical soils under land use change. Her thesis research resulted in 8 publications, of which 2 were coauthored by both Dr. Silver and Dr. Torn. The GREF-supported efforts of Erika Marin-Spiotta yielded new insights into the soils of tropical ecosystems as a function of land-use history that are now aiding in the development of improved carbon sequestration strategies and land management in the tropics.



**Erika Marin-Spiotta, University of California-Berkeley**

Dr. Marin-Spiotta is an assistant professor of geography at the University of Wisconsin, Madison, and is continuing her research in land-use practices and their impacts on biogeochemistry and climate. Dr. Marin-Spiotta's current research integrates field and laboratory experimental work across different scales, from landscape-level effects of changes in land use on species composition and carbon pools, to molecular changes in organic matter chemistry. She seeks a better understanding of the underlying mechanisms controlling stabilization and losses of organic matter and elements within and across ecosystems. She still uses stable and radioisotope techniques to quantify process rates, accessing the DOE facilities at Lawrence Livermore National Laboratory through a former GREF fellow, Dr. Jennifer Pett-Ridge, Staff Scientist in the Chemical Sciences Division, Lawrence Livermore National Laboratory.

The Marvin L. Wesely Graduate Research Environmental Fellow for 2006 was **Cynthia A. Randles** of Princeton University. Cynthia was a fellow in the Summer Undergraduate Research Experience (SURE) program from 1999 to 2000 and a fellow of the Graduate Research Environmental Fellowship program from 2002 to 2007. Dr. V. Ramaswamy of Princeton University and the Geophysical and Fluid Dynamics Laboratory of NOAA was her thesis advisor, and Dr. Stephen E. Schwartz, Chief Scientist for the DOE Atmospheric Science Program, acted as her DOE mentor. Her research focused on the role of aerosols in climate forcing with particular emphasis on carbonaceous aerosols. Cynthia's research involved the modification and application of global and regional models to examine the sensitivity of aerosol absorption to black carbon levels under a variety of scenarios. Her numerical modeling studies examined the role of aerosols impacting Asia.



**Cynthia A. Randles, Princeton University**

She completed her PhD in atmospheric and oceanic sciences in the Department of Geosciences at Princeton University in 2007. In 2008, Dr. Randles received a Goddard Visiting Fellowship from the Goddard Earth Sciences and Technology Center at the University of Maryland, Baltimore County, to work with Dr. Peter Colarco in the NASA Goddard Atmospheric Chemistry and Dynamics Branch. During her time as a fellow, Dr. Randles worked to implement and examine the semidirect aerosol effect in the NASA GEOS-5 general circulation model. In 2009, she was awarded a NASA postdoctoral fellowship to continue her work examining aerosol-climate interactions in GEOS-5. Dr. Randles joined Goddard Earth Sciences Technology and Research in 2011 as an assistant research scientist. She is currently working to improve

the representation of aerosol optical properties in GEOS-5 while continuing to investigate aerosol-climate interactions.

The Marvin L. Wesely Graduate Research Environmental Fellow for 2007 was **Colleen M. Iverson** of the University of Tennessee. Colleen was a fellow of the Graduate Research Environmental Fellowship program from 2005 to 2008. She completed her PhD in ecology and evolutionary biology in 2008. Colleen's research examined the importance of carbon storage in forests and discovered that excess carbon uptake was not allocated to the wood of the tree, but actually was involved in forming fine roots. Colleen's thesis adviser was Professor Aimee Classen of the University of Tennessee, Knoxville, and her DOE mentor was Dr. Richard Norby of Oak Ridge National Laboratory. Her studies made use of the Free-Air CO<sub>2</sub> Enrichment (FACE) experiment at Oak Ridge National Laboratory's forested sweet gum plantation



**Colleen M. Iverson, University of Tennessee, Knoxville**



research site. She also worked in collaboration with Dr. Julie Jastrow and Dr. R. Michael Miller of Argonne National Laboratory, who extended this work to examine the relationship between decomposing roots and the soil structure including soil micro- and macro-aggregates. Colleen's thesis research resulted in 11 publications, 7 of which were coauthored by Dr. Norby. This research was part of the overall work on carbon sequestration by natural terrestrial ecosystems that could help mitigate the overall impacts of increased carbon dioxide levels in the atmosphere from fossil fuel combustion. Colleen's findings point to the need to determine how this carbon pool behaves as soil nutrients become limited and how this pool may change in the future as CO<sub>2</sub> levels increase and climate changes.

The close collaboration with Dr. Norby during her thesis research led to Dr. Iverson obtaining a postdoctoral research associate position in the Environmental Sciences Division at Oak Ridge National Laboratory in 2008 where she conducted research in climate impacts on ecosystems. Dr. Iverson is currently a staff scientist in the Environmental Sciences Division at Oak Ridge National Laboratory and is continuing her studies of the root-soil interface to investigate how atmospheric and climatic change alters belowground carbon and nutrient cycling in order to understand and predict how ecosystems are shaped by climatic change.



**Sarah L. O'Brien, University of Illinois at Chicago**

The Marvin L. Wesely Graduate Research Environmental Fellow for 2008 was **Sarah L. O'Brien** of the University of Illinois at Chicago. Sarah was a fellow of the Graduate Research Environmental Fellowship program from 2005 to 2010. She was mentored by her thesis adviser, Dr. Miguel Gonzalez-Meler of the University of Illinois at Chicago, and by Dr. Julie Jastrow of Argonne National Laboratory. Sarah's research examined the relationships between land-use change and recovery for farm land to tall-grass prairies. Her studies of the various land-use changes made use of the tall-grass restoration project at the Fermi National Laboratory. This site enabled the study of the effects of converting prairie land to farm land and then back to tall-grass prairie on the carbon soil levels. She measured organic matter distributions in soil aggregates of the various time

sequenced restored prairies at the Fermi site that included soil samples taken since 1985 archived at the soil science laboratory at Argonne National Laboratory. The examination of soil carbon as a function of time for the various land types and their response to change from farm to prairie clearly indicated that more carbon could be stored in prairies, leading to continued examination of land use as a potential means of carbon sequestration and reduction of fossil carbon dioxide impacts through increased terrestrial uptake. This work



focused on the input of carbon primarily via roots and root decomposition to soil, which was studied as a potentially important carbon sequestration process. Sarah's thesis research resulted in 10 publications, 8 of which were coauthored by Dr. Jastrow.

Sarah received her PhD in biological sciences at the University of Illinois at Chicago in 2010. The close collaboration with Dr. Jastrow led to Dr. O'Brien obtaining a postdoctoral research associate position in the Biosciences Division at Argonne National Laboratory in 2010 where she conducts research in microbial control of soil carbon cycling.

The Marvin L. Wesely Graduate Research Environmental Fellow for 2009 was **Emily V. Fischer**. Emily was a fellow in the GCEP Graduate Research Environmental Fellowship program from 2007 to 2010. Emily's thesis adviser was Dr. Daniel Jaffe of the University of Washington, Seattle, and her DOE mentors were Dr. Jeffrey S. Gaffney and Dr. Nancy A. Marley of the University of Arkansas at Little Rock. Her research involved the study of long-range transport of aerosols and trace gases from Asia to the continental United States. Measurements of aerosol optical properties were made at Mount Bachelor in central Oregon, a site located 9,000 feet above sea level, and aerosol chemical composition was determined by x-ray fluorescence in collaboration with the University of Arkansas at



**Emily V. Fischer, University of Washington, Seattle**

Little Rock. These results were used in conjunction with meteorological modeling to determine the long-range back trajectories and thus assess the sources of the aerosols. Emily also examined the transport of associated photochemical oxidants such as peroxyacetyl nitrate (PAN) as a means of demonstrating the "age" of the air mass. Emily's thesis work revealed that aerosols from both deserts and forest fires are transported from Asia to the U.S. western coast. These results suggest the use of longer lifetimes for aerosols in climate models to better determine climate impacts of aerosols, and also suggest the need for global control of carbonaceous soots that can be transported thousands of miles.

Since receiving her PhD in 2010, Dr. Fischer completed an NOAA climate and global change postdoctoral fellowship at Harvard University where she investigated the processes



that redistribute anthropogenic reactive nitrogen to remote regions. She is currently an assistant professor of atmospheric science at Colorado State University. Her research uses both field-based and applied modeling approaches to investigate the sources of atmospheric trace gases in remote environments. An underlying goal of her work is to improve our understanding of the role of climate in determining the atmosphere's self-cleansing capacity.

**Adam P. Bateman** was selected to receive the Marvin L. Wesely Graduate Research Environmental Fellowship in 2010. Adam was a fellow in the GCEP Graduate Research Environmental Fellowship program from 2008 to 2011 and received his PhD in chemistry in 2011. Adam's thesis adviser was Dr. Sergey Nizkorodov of the University of California-Irvine, and his DOE mentors were Drs. Alex and Julia Laskin of Pacific Northwest National Laboratory. His thesis research addressed the chemical composition of secondary organic aerosols, a focus area of the DOE Atmospheric Science Program. While natural emissions from biota, including forests, and volatile organic emissions from fossil fuel combustion were well known to produce haze, the detailed chemical composition of these light

scattering and absorbing aerosols were not well understood. Adam's research involved the photochemical generation of secondary organic aerosols in a laboratory reaction chamber and the detailed determination of their chemical composition with state-of-the-art mass spectroscopic methods available at Pacific Northwest National Laboratory's Environmental Molecular Science Laboratory. This work resulted in 10 publications coauthored with Drs. Alex and Julia Laskin. Identification of the chemical functional groups and specific molecules in the complex mixtures of secondary organic aerosols allowed for better estimation of their potential sinks (photochemical and wet removal) and thus their atmospheric lifetimes. These results will be used in climate models to better determine the potential regional and global effects of secondary organic aerosols on climate.

Dr. Bateman is currently a postdoctoral research fellow in environmental science and engineering at Harvard University working with Dr. Scot Martin who is supported by the DOE Atmospheric Systems Research program. His research examines formation of particles from biological emissions in the Amazon Basin and the ability of those particles to influence cloud formation.



**Adam P. Bateman, University of California-Irvine**



**Melissa A. Cregger, University of Tennessee, Knoxville**

**Melissa A. Cregger** was selected as the 2011 Marvin L. Wesely Graduate Research Fellow for her work in terrestrial ecology. Melissa was a fellow in the GCEP Graduate Research Environmental Fellowship program from 2009 to 2012 and received her PhD in ecology and evolutionary biology in 2012. Her thesis mentor was Dr. Aimee Classen of the University of Tennessee at Knoxville, and her DOE mentor was Dr. Nathan McDowell of Los Alamos National Laboratory. Melissa's research involved the examination of the effects of drought on microbial soil communities in semiarid systems in the southwestern United States. Her research also explored how climate change could

impact litter biomass and nutrient recycling in these ecosystems. These studies addressed

an important region of the United States that was not well understood in terms of microbial communities and the impacts of changing climate on their role in the overall ecosystem structure and function. Melissa made use of the pinion-juniper woodlands at Harvard Forest to conduct a warming experiment examining how warming altered potential extracellular enzymatic activity in the soil and the rate of decomposition. The results showed that, while warming altered microbial community structure, the observed changes did not scale up to alter the rates of decomposition. This work took advantage of the advances in metagenomic techniques, which evolved from the DOE Genome Program in climate change research.

Dr. Melissa Cregger is currently a postdoctoral research associate at the Institute for Genomic Biology at the University of Illinois at Urbana-Champaign. Her research focuses on understanding how microbial community composition influences ecosystem function, and what role microbial diversity plays in ecosystem functioning. This work continues to make use of metagenomic techniques to evaluate microbial communities and to identify variation in microbial community composition in response to abiotic and biotic drivers.



# FINAL COMMENTS AND LESSONS LEARNED



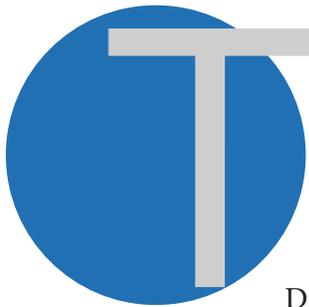
major lesson learned over the 14 years in GCEP is that a successful climate change education program needs to have good communication between the students and mentors. This is a necessary element at both undergraduate and graduate levels, and student success can be directly related to the strength of the mentor – student relationship. In addition, having mentoring coordinators who are active members of the climate change research community and knowledgeable in all areas of climate science covered by the program yields significant advantages for the overall program. These advantages include the ability to counsel students in choosing the appropriate mentor to guide their scientific efforts and enrich their overall experience in the program, as well as the ability to recruit expert lecturers in each area for student orientations, which sets a high-level, professional atmosphere for the students at the beginning of their experience. Also, mentoring coordinators need to be dedicated to the program and willing to talk to students, answer email questions, and return phone calls in a timely manner and continue to act as an advisor for the students during and after their tenure in the program. This includes writing letters of recommendation for graduate schools, jobs, postdoctoral positions, advanced training, and other opportunities for the students. Having mentoring coordinators who are established as researchers in climate change is also an advantage for the GCEP fellows, as their reference letters have a stronger impact on prospective employers than letters from non-climate-change managers. Commitment from senior scientists in the climate change arena yields significant benefits for the students and helps establish an atmosphere of high level achievement. This leads to undergraduates striving to enter graduate school, graduate students pursuing careers in climate change, and ultimately junior and senior scientists taking the time to mentor new students at both undergraduate and graduate levels. This cycle ensures a future workforce in climate science that will continue to enhance our capabilities in understanding the earth system and advance the development of environmentally sound energy strategies for the future.

The GCEP program was successful in adding significant numbers of productive scientists into the workforce in the areas of climate change and environmental science. While working closely with their DOE mentors, the SURE and GREF participants contributed significantly to our understanding in a number of climate change research areas as demonstrated by the very large number of publications on which they are either primary authors or coauthors. The



program also increased interactions between the DOE national laboratories and potential university researchers through these students and increased the university community's awareness of DOE facilities and capabilities. Indeed, the GCEP program educated not only the students but also their university mentors with regard to the availability and usefulness of the various DOE user facilities (e.g., Center for Accelerator Mass Spectrometry and EMSL). Future workforce development programs, particularly fellowships from the DOE, should strongly consider having the students link to DOE programs and scientists in a similar fashion as GCEP to effectively use these resources for education and training while obtaining information that is directly related to the mission of the various workforce development programs. By encouraging graduate students to make use of DOE mentors as well as their university mentors and DOE facilities, these future programs will better serve the students, mentors, and DOE. An indication of the effectiveness of GCEP is the fact that a number of the past GREF fellows are now leading the science efforts in a number of the CESD research areas.

# ACKNOWLEDGEMENTS



The mentoring coordinators (Dr. Gaffney and Dr. Marley) wish to thank all of the past student participants for their assistance and willingness to share information with the program, as well as the program officers. These officers included DOE program managers, Mr. Peter Lunn (retired from DOE) and Mr. Rickey Petty (DOE); and ORAU program managers, Dr. Milton Constantin (retired from ORAU), Mr. Michael Hubbard, and Ms. Leslie Fox. Ms. Rose Etta Cox (retired from ORAU), Ms. Barbara Dunkin, Ms. Pai Moua (ORAU), Ms. Pat Shoulders (retired from Argonne National Laboratory), and Ms. M. Estelle Gilbreth also deserve special recognition for their assistance with GCEP over the years with agendas, orientations, and final workshop operation. This final report also notes the efforts of the late Ms. Mary Kinney (retired from ORAU) for her tireless efforts assisting Dr. Milton Constantin of ORAU and the mentoring coordinators in setting up and managing GCEP in its early years, and Ms. Donna Holdridge of Argonne National Laboratory and Mr. Albert Everett (UALR) for their assistance with the GCEP webpage. The support of the DOE Office of Science, Office of Biological and Environmental Research, Climate and Environmental Science Division is gratefully acknowledged.



# APPENDIX I.

AGENDAS FOR THE GLOBAL CHANGE EDUCATION PROGRAM  
STUDENT ORIENTATIONS HELD EACH JUNE FROM  
1999 TO 2010, WITH LINKS TO SELECTED PRESENTATIONS.



# GLOBAL CHANGE EDUCATION PROGRAM ORIENTATION AND SHORT COURSES WORKSHOP

JUNE 20 – JULY 2, 1999  
THE UNIVERSITY OF CALIFORNIA AT DAVIS, DAVIS, CA

## AGENDA

### Sunday June 20

8:00-4:00 REGISTRATION - West Room

### Monday June 21

Hoagland Hall

7:30-8:15 BREAKFAST

8:30-9:30 Welcome and Overview of Orientation  
*Milton Constantin, ORAU*  
*Peter Lunn, U.S. Department of Energy*  
*Ruth Reck, National Institute for Global Environmental Change*  
*Roger Shaw, University of California at Davis*  
*Jeffrey Gaffney, Argonne National Laboratory*

9:30-10:30 “Is the global climate changing and what should we do about it?”  
*Michael McElroy, Harvard University*

10:30-11:00 BREAK

11:00-12:00 “Does the biosphere control atmospheric composition?”  
*Allen Goldstein, University of California-Berkeley*



12:00-1:30	LUNCH
1:30-2:30	“Severe weather events.” <i>Douglas Sisterson, Argonne National Laboratory</i>
2:30-3:30	“Shuttle views of some dynamic earth systems.” <i>Justin Wilkinson, Johnson Space Center</i>
3:30-4:30	BREAK
4:00-5:00	“Ecosystems in a changing environment.” <i>Fakhri Bazzaz, Harvard University</i>
5:00	ADJOURN

## **Tuesday June 22**

Hoagland Hall

7:30-8:30	BREAKFAST
9:00-10:00	“Overview of the Atmospheric Radiation Measurements (ARM) Program: Objectives, goals, and approach.” <i>Douglas Sisterson, Argonne National Laboratory</i>
10:00-10:30	BREAK
10:30-11:30	“The Southern Great Plains CART site.” <i>Douglas Sisterson, Argonne National Laboratory</i>
11:30-12:00	DISCUSSION
12:00-1:30	LUNCH
1:30-2:30	“The North Slope, Alaska CART site.” <i>Bernie Zak, Sandia National Laboratory</i>
2:30-3:00	BREAK
3:00-4:00	“The Tropical South Pacific CART site.” <i>Fairley Barnes, Los Alamos National Laboratory</i>



4:00-4:30 DISCUSSION

4:30 ADJOURN

### Wednesday June 23

Hoagland Hall

7:30-8:30 BREAKFAST

9:00-10:00 “Overview of the Atmospheric Science Programs.”  
*Marvin Weseley, Argonne National Laboratory*

10:00-10:30 BREAK

10:30-11:30 “Overview of the Atmospheric Chemistry Program (ACP).”  
*Jeffrey Gaffney, Argonne National Laboratory*

11:30-12:00 DISCUSSION

12:00-1:30 LUNCH

1:30-2:30 “The atmospheric boundary layer experiment.”  
*Richard Coulter, Argonne National Laboratory*

2:30-3:00 BREAK

3:00-4:00 “The ACP facilities: The G-1 aircraft and the Environmental  
Molecular Sciences Laboratory.”  
*Richard Barchet, Pacific Northwest National Laboratory*

4:00-4:30 DISCUSSION

4:30 ADJOURN

### Thursday June 24

Hoagland Hall

7:30-8:30 BREAKFAST



9:00-10:00	“Overview of the Terrestrial Ecology Programs.” <i>Jeffrey Amthor, Oak Ridge National Laboratory</i>
10:00-10:30	BREAK
10:30-11:30	“Below ground ecology studies.” <i>Michael Miller, Argonne National Laboratory</i>
11:30-12:00	DISCUSSION
12:00-1:30	LUNCH
1:30-2:30	“The free air CO <sub>2</sub> enrichment experiments.” <i>Richard Norby, Oak Ridge National Laboratory</i>
2:30-3:00	BREAK
3:00-4:00	“Overview of carbon sequestration studies and panel discussion.” <i>Jeffrey Amthor, Oak Ridge National Laboratory</i> <i>Michael Miller, Argonne National Laboratory</i> <i>Richard Norby, Oak Ridge National Laboratory</i>
4:00-4:30	DISCUSSION
4:30	ADJOURN

### **Friday June 25**

Hoagland Hall

7:30-8:30	BREAKFAST
9:00-10:00	“Overview of the NIGEC Program.” <i>Ruth Reck, National Institute for Global Environmental Change</i>
10:00-10:30	BREAK
10:30-11:30	“AmeriFlux” <i>Kyaw Tha Pau U, University of California-Davis</i>
11:30-12:00	DISCUSSION



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12:00-1:30	LUNCH
1:30-2:30	Ecology Discussion
2:30-3:00	BREAK
3:00-4:00	“The effects of climate change on landscape ecology.” <i>Ruth Reck, National Institute for Global Environmental Change</i>
4:00-4:30	DISCUSSION
4:30	ADJOURN

### **Saturday June 26**

Hoagland Hall

7:30-8:30	BREAKFAST
9:00	Field Trip - Sacramento National Weather Service Facility
1:00	LUNCH - Old Sacramento
4:00	Return to University of California-Davis Campus

### **Monday June 28**

Short Course Tutorials with Discussion Sessions - Memorial Union

7:30-8:30	BREAKFAST
9:00-10:00	Ecology <i>Jeffrey Amthor, Oak Ridge National Laboratory</i>
10:00-10:30	BREAK
10:30-11:30	Carbon Storage <i>Julie Jastrow, Argonne National Laboratory</i>
11:30-1:30	LUNCH
1:30-2:30	Atmospheric Science–Chemistry and Aerosols <i>Jeffrey Gaffney, Argonne National Laboratory</i>



2:30-3:00	BREAK
3:00-4:00	Meteorology <i>Jerome Fast, Pacific Northwest National Laboratory</i>
4:00	ADJOURN

## **Tuesday June 29**

Short Course Tutorials with Discussion Sessions - Memorial Union

7:30-8:30	BREAKFAST
9:00-10:00	Climatology and Modeling <i>Cyndi Atherton, Lawrence Livermore National Laboratory</i>
10:00-10:30	BREAK
10:30-11:30	Climate Modeling <i>Rangshai Halthore, Brookhaven National Laboratory</i>
11:30-1:30	LUNCH
1:30-2:30	Atmospheric Chemistry and Climate Modeling <i>Rao Kotamarthi, Argonne National Laboratory</i>
2:30-3:00	BREAK
3:00-4:00	DISCUSSION
4:00	ADJOURN

## **Wednesday June 30**

Memorial Union

7:30-8:30	BREAKFAST
9:00-11:30	Writing Workshop <i>Karen Haugen, Argonne National Laboratory</i> <i>Jeffrey Gaffney, Argonne National Laboratory</i>



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11:30-1:30	LUNCH
1:30-2:30	“Land use change and the U.S. National Assessment.” <i>Dennis Ojima, Colorado State University</i>
2:30-3:00	DISCUSSION
3:00-4:30	Writing an Abstract On your own
4:30	ADJOURN

**Thursday July 1**

Memorial Union

7:30-8:30	BREAKFAST
9:00-11:30	“Preparing a poster for the end-of-summer workshop.” <i>Jeffrey Gaffney, Argonne National Laboratory</i>
11:30-1:30	LUNCH
1:30-2:30	“Aerosols: How important are they?” <i>Jeffrey Gaffney, Argonne National Laboratory</i>
2:30-3:00	DISCUSSION
3:00-4:00	Picture Taking for Chat Room
6:00-8:30	Final Working Session - West Room, Tercero Dining Commons  Keynote Address: “The road to Gaia” <i>Jeff Gaffney, Argonne National Laboratory</i>
8:30	ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM ORIENTATION AND SHORT COURSES WORKSHOP

JUNE 11 - JUNE 18, 2000  
TULANE UNIVERSITY, NEW ORLEANS, LA

## AGENDA

### Sunday June 11

- 8:00-4:00 REGISTRATION - Tulane University, Butler Hall Lobby
- 6:00-9:00 Initial Working Session - Diboll Conference Services
- Introductions  
*Milton Constantin, ORAU*
- Welcome  
*David Sailor, National Institute for Global Environmental Change*
- Goals and Objectives for Summer 2000  
*Jeffrey Gaffney, Argonne National Laboratory*

### Monday June 12

Linda Boggs Center, Room 239

- 7:30-8:15 BREAKFAST - University Student Union
- 8:30-9:20 Welcome and Overview of Orientation  
*Milton Constantin, ORAU*  
*Peter Lunn, U.S. Department of Energy*  
*Nick Altiero, Dean, Tulane University*  
*Jeffrey Gaffney, Argonne National Laboratory*
- 9:20-10:20 “Nitrogen deposition and carbon balance capacity in temperate forests.”  
*Fakhri Bazzaz, Harvard University*



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10:30-11:00	BREAK
11:00-12:00	“Climbing ever higher to understand changes in forestry productivity as trees grow older and larger.” <i>Barbara Bond, Oregon State University</i>
12:00-1:30	LUNCH
1:30-2:30	“Solar ultraviolet radiation: Links to the biosphere and atmospheric chemistry.” <i>John E. Frederick, The University of Chicago</i>
2:30-3:30	“Shuttle photos: Aerosols and fish speciation.” <i>Justin Wilkinson, Johnson Space Center</i>
3:30-4:00	BREAK
4:00-5:00	“Things you need to know about the global carbon cycle.” <i>Jeff Amthor, Oak Ridge National Laboratory</i>
5:00	ADJOURN

### **Tuesday June 13**

Linda Boggs Center, Room 239

7:00-8:30	BREAKFAST - University Student Union
9:00-10:00	“The Atmospheric Radiative Measurements (ARM) Program overview: Objectives, goals, and approach.” <i>Douglas Sisterson, Argonne National Laboratory</i>
10:00-10:30	BREAK
10:30-11:30	“The Tropical South Pacific CART Site.” <i>Fairley Barnes, Los Alamos National Laboratory</i>
11:30-12:00	DISCUSSION
12:00-1:30	LUNCH



1:30-2:30	Discussion and Problem Session <i>Fairley Barnes, Los Alamos National Laboratory</i> <i>Douglas Sisterson, Argonne National Laboratory</i>
2:30-3:00	BREAK
3:00-4:30	Mini-Workshop on Global Change Education <i>Fairley Barnes, Los Alamos National Laboratory</i>
4:30	ADJOURN

### **Wednesday June 14**

7:00-8:30	BREAKFAST - University Student Union
9:00-12:00	Field Trip to Aquarium, Rain Forest, IMAX <i>Jeffrey Gaffney, Argonne National Laboratory</i> <i>Nancy Marley, Argonne National Laboratory</i>
12:00-1:30	LUNCH
1:30-4:30	FREE

### **Thursday June 15**

Linda Boggs Center, Room 239

7:00-8:30	BREAKFAST - University Student Union
9:00-10:00	“Red, blue, and green carbon atoms in atmospheric CO <sub>2</sub> : Deciphering their origins in the global carbon cycle.” <i>W.M. “Mac” Post, Oak Ridge National Laboratory</i>
10:00-10:30	BREAK
10:30-11:30	“Overview of Terrestrial Carbon and Ecology Programs.” <i>Jeffrey Amthor, Oak Ridge National Laboratory</i>
11:30-12:00	DISCUSSION
12:00-1:30	LUNCH



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1:30-2:30	“Overview of carbon sequestration studies.” <i>Jeffrey Amthor, Oak Ridge National Laboratory</i> <i>W.M. “Mac” Post, Oak Ridge National Laboratory</i>
2:30-3:00	BREAK
3:00-4:30	Panel Discussion - Problem Session <i>Jeffrey Amthor, Oak Ridge National Laboratory</i> <i>W.M. “Mac” Post, Oak Ridge National Laboratory</i>
4:30	ADJOURN

### Friday June 16

Linda Boggs Center, Room 239

7:00-8:30	BREAKFAST - University Student Union
9:00-10:00	“Overview of the Atmospheric Chemistry Program (ACP).” <i>Jeffrey Gaffney, Argonne National Laboratory</i>
10:00-10:30	BREAK
10:30-11:30	“Overview of the Environmental Meteorology Program (EMP).” <i>Dave Whiteman, Pacific Northwest National Laboratory</i>
11:30-12:00	DISCUSSION
12:00-1:30	LUNCH
1:30-2:30	Atmospheric Science Problems and Discussions <i>Jeffrey Gaffney, Argonne National Laboratory</i> <i>Dave Whiteman, Pacific Northwest National Laboratory</i>
2:30-2:45	BREAK
2:45-3:00	“An introduction to the publication process for scientific papers.” <i>Dave Whiteman, Pacific Northwest National Laboratory</i>
3:00-5:00	Writing Workshop - Preparation of an Abstract <i>Karen Haugen, Argonne National Laboratory</i>
5:00	ADJOURN



## Saturday June 17

Linda Boggs Center, Room 239

7:15-8:15	BREAKFAST - University Student Union
8:30-9:30	“Regional climate change issues and the role of NIGEC.” <i>David Sailor, National Institute for Global Environmental Change</i>
9:30-10:30	“The greenhouse effect and the role of the non-CO <sub>2</sub> gases.” <i>M. Aslam Khalil, Portland State University</i>
10:30-10:45	BREAK
10:45-11:45	“Climate change and effects on mosquito-borne diseases.” <i>Dawn Wesson, Tulane University</i>
11:45-12:15	DISCUSSION
12:15-1:30	LUNCH
1:30-2:30	“The effect of climate change on hypoxia and coastal fisheries.” <i>Gene Turner, Louisiana State University</i>
2:30-3:00	BREAK
3:00-4:00	DISCUSSION: Ecological Interactions with Increasing Carbon <i>David Sailor, National Institute for Global Environmental Change</i> <i>Jeffrey Amthor, Oak Ridge National Laboratory</i> <i>Jeffrey Gaffney, Argonne National Laboratory</i>
4:00-5:00	“Preparing a poster for the end-of-summer workshop.” <i>Jeffrey Gaffney, Argonne National Laboratory</i> <i>Karen Haugen, Argonne National Laboratory</i>
6:30-9:00	Final Working Session - Diboll Conference Services  Keynote Address: “Looking past the obvious: The need for interdisciplinary research on global change issues.” <i>Jeff Gaffney, Argonne National Laboratory</i>
9:00	ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM ORIENTATION AND SHORT COURSES WORKSHOP

JUNE 10 – JUNE 17, 2001  
INDIANA UNIVERSITY, BLOOMINGTON, IN

## AGENDA

### Sunday June 10

- 8:00-4:00 REGISTRATION - Eigenmann Hall Lobby
- 6:00-9:00 Initial Working Session - State Room West
- Introductions  
*Milton Constantin, ORAU*
- Welcome  
*J.C. Randolph, National Institute for Global Environmental Change*
- Goals and Objectives for Summer 2001  
*Jeffrey Gaffney, Argonne National Laboratory*

### Monday June 11

Woodburn Hall, Room 101

- 7:30-8:15 BREAKFAST - Wright Quadrangle
- 8:30-9:20 Welcome and Overview of Orientation  
*Milton Constantin, ORAU*  
*Peter Lunn, U.S. Department of Energy*  
*J.C. Randolph, National Institute for Global Environmental Change*  
*Jeffrey Gaffney, Argonne National Laboratory*



9:20-10:20	“Urban atmospheric chemistry and solar ultraviolet radiation.” <i>John Frederick, The University of Chicago</i>
10:30-11:00	BREAK
11:00-12:00	“The role of land surface processes in the continental water cycle.” <i>Marvin Wesely, Argonne National Laboratory</i>
12:00-1:30	LUNCH
1:30-2:30	“Shuttle photos of the planet: Aerosols, climate change and models of fish speciation.” <i>Justin Wilkinson, Johnson Space Center</i>
2:30-3:30	“Impacts of climate change on the U.S.” <i>Ruth Reck, National Institute for Global Environmental Change</i>
3:30-4:00	BREAK
4:00-5:00	DISCUSSION
5:00	ADJOURN

## **Tuesday June 12**

Woodburn Hall, Room 101

7:30-8:15	BREAKFAST - Wright Quadrangle
9:00-10:00	“The Atmospheric Radiative Measurements (ARM) Program overview: Objectives, goals, and approach.” <i>Douglas Sisterson, Argonne National Laboratory</i>
10:00-10:30	BREAK
10:30-11:30	“The Tropical South Pacific CART Site.” <i>Fairley Barnes, Los Alamos National Laboratory</i>
11:30-12:00	DISCUSSION



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12:00-1:30	LUNCH
1:30-2:30	Discussion and Problem Session <i>Fairley Barnes, Los Alamos National Laboratory</i> <i>Douglas Sisterson, Argonne National Laboratory</i>
2:30-3:00	BREAK
3:00-4:30	<i>Mini-Workshop on Global Change Education</i> <i>Fairley Barnes, Los Alamos National Laboratory</i>
4:30	ADJOURN

### **Wednesday June 13**

Woodburn Hall, Room 101

7:00-8:30	BREAKFAST - Wright Quadrangle
9:00-12:00	Field Trip to AmeriFlux Field Site <i>Jeffrey Gaffney, Argonne National Laboratory</i>
12:00-1:30	LUNCH
1:30-4:30	FREE

### **Thursday June 14**

Woodburn Hall, Room 101

7:00-8:30	BREAKFAST - Wright Quadrangle
9:00-10:00	“Environmental change and the temperate forest.” <i>Carla Gunderson, Oak Ridge National Laboratory</i>
10:00-10:30	BREAK
10:30-11:30	“Carbon sequestration.” <i>Jeffrey Gaffney, Argonne National Laboratory</i>
11:30-12:00	DISCUSSION



12:00-1:30	LUNCH
1:30-2:30	“Global change research in the Alaskan and Russian Arctic, California chaparral, and deserts of Baja California Sur” <i>Walter Oechel, San Diego State University</i>
2:30-3:00	BREAK
3:00-4:30	Panel Discussion - Problem Session
4:30	ADJOURN

### **Friday June 15**

Woodburn Hall, Room 101

7:00-8:30	BREAKFAST - Wright Quadrangle
9:00-10:00	“Carbon dynamics of a temperate second growth deciduous forest.” <i>J.C. Randolph, National Institute for Global Environmental Change</i>
10:00-10:30	BREAK
10:30-11:30	“The global distribution of organochlorine pesticides” <i>Ron Hites, Indiana University</i>
11:30-12:00	DISCUSSION
12:00-1:30	LUNCH
1:30-2:30	“Carbon uptake and storage of northern temperate forests and their likely response to global climate change.” <i>Peter Curtis, Ohio State University</i>
2:30-3:00	BREAK
3:00-4:00	“What does a scientist do when science is uncertain?” <i>Otto Doering, Purdue University</i>
4:00-4:30	DISCUSSION



4:30 ADJOURN

**Saturday June 16**

Woodburn Hall, Room 101

7:30-8:30 BREAKFAST - Wright Quadrangle

9:00-10:00 “Overview of the Atmospheric Chemistry Program (ACP).”  
*Jeffrey Gaffney, Argonne National Laboratory*

10:00-10:30 BREAK

10:30-11:30 “Overview of the Environmental Meteorology Program (EMP).”  
*David Whiteman, Pacific Northwest National Laboratory*

12:00-1:30 LUNCH

1:30-2:30 “Writing a scientific paper: What is involved?”  
*David Whiteman, Pacific Northwest National Laboratory*

2:30-3:00 BREAK

3:00-4:30 “Preparing a poster for the end-of-summer workshop.”  
*Jeffrey Gaffney, Argonne National Laboratory*

6:30-9:00 Final Working Session - Indiana Memorial Union  
Keynote Address: “Where do we go from here? Balancing energy  
and environment.”  
*Jeff Gaffney, Argonne National Laboratory*

9:00 ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM ORIENTATION AND SHORT COURSES WORKSHOP

JUNE 9 - JUNE 16, 2002  
UNIVERSITY OF FLORIDA, GAINESVILLE, FL

## AGENDA

### Sunday June 9

- 10:00-4:00 REGISTRATION - Holiday Inn Mezzanine
- 6:00-9:00 Initial Working Session - Gator Room
- Introductions  
*Milton Constantin, ORAU*
- Welcome  
*Wayne H. Smith, School of Forest Resources and Conservation*
- [Goals and Objectives for Summer 2002](#)  
*Jeffrey Gaffney, Argonne National Laboratory*

### Monday June 10

University Room

- 7:30-8:15 BREAKFAST
- 8:30-9:30 Welcome and Overview of Orientation  
*Milton Constantin, ORAU*  
*Jeffrey Gaffney, Argonne National Laboratory*
- 9:30-10:30 “Forest-atmosphere interactions: Long-term measurements of carbon budget and nitrogen deposition at the Harvard Forest.”  
*J. William Munger, Harvard University*



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10:30-11:00	BREAK
11:00-12:00	“Volcanic carbon dioxide and trace metal emissions from Mt. Erebus, Antarctica and their contributions to global atmospheric budgets.” <i>Lois Jean Wardell, GCEP-GREF Fellow, New Mexico Tech</i>
12:00-1:30	LUNCH
1:30-2:30	<a href="#"><u>“Terra incognita: Some space shuttle views of Earth’s land and air.”</u></a> <i>Justin Wilkinson, Johnson Space Center</i>
2:30-3:00	BREAK
3:00-4:00	“Dynamics of climate and ecosystem coupling: Abrupt changes and multiple equilibria.” <i>Paul A. Higgins, GCEP-GREF Fellow, Stanford University</i>
4:00-5:00	“Observations of NMHCs, CO, ozone, and aerosol scatter from a small aircraft in the Northeast Pacific during PHOBEA-II.” <i>Heather U. Price, GCEP-GREF Fellow, University of Washington</i>
5:00	ADJOURN

**Tuesday June 11**

University Room

7:30-8:30	BREAKFAST
9:00-9:30	“Overview of the Atmospheric Radiative Measurements (ARM) Program.” <i>Robert Ellingson, Florida State University</i>
9:30-10:30	“The measurement, calculation and analysis of atmospheric radiation quantities.” <i>Robert Ellingson, Florida State University</i>
10:30-11:00	BREAK



11:00-12:00	<p><u><a href="#">“Water, water everywhere but not a drop to drink: The global impacts of fresh water.”</a></u> <i>Jeffrey Gaffney, Argonne National Laboratory</i></p>
12:00-1:30	LUNCH
1:30-2:30	<p><u><a href="#">“Integrated assessment of climate change and climate variability.”</a></u> <i>Michael D. Mastrandrea, GCEP-GREF Fellow, Stanford University</i></p>
2:30-3:00	BREAK
3:00-4:00	<p><u><a href="#">“Overview of the Environmental Molecular Sciences Laboratory (EMSL) and G1 aircraft facilities.”</a></u> <i>Jeffrey Gaffney, Argonne National Laboratory</i> <i>Nancy Marley, Argonne National Laboratory</i></p>
4:00	ADJOURN

### **Wednesday June 12**

7:00-8:30	BREAKFAST
9:00-12:00	<p>Field Trip to Alachua County AmeriFlux Site <i>Timothy A. Martin, University of Florida</i></p>
12:00-1:30	LUNCH - Austin Cary Memorial Forest Conference Center
1:30-4:30	Tour of Payne’s Prairie, University of Florida Campus Research Sites

### **Thursday June 13**

University Room

7:30-8:30	BREAKFAST
8:30-9:15	<p><u><a href="#">“Recent U.S. research in global environmental change”</a></u> <i>Ruth Reck, National Institute for Global Environmental Change</i></p>
9:15-10:00	<p>“Large eddy simulation of canopy-atmosphere exchange of CO<sub>2</sub>: Toward development of a numerical laboratory.” <i>John Albertson, Duke University</i></p>



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10:00-10:30	BREAK
10:30-11:15	“Canopy conductance constrained CO <sub>2</sub> assimilation and carbon allocation in pine forests under ambient and elevated CO <sub>2</sub> .” <i>Ram Oren, Duke University</i>
11:15-12:00	<a href="#"><u>“Impacts of environmental stress on carbon and water exchange of flatwood pine forests in Florida.”</u></a> <i>Timothy A. Martin, University of Florida</i>
12:00-1:30	LUNCH
1:30-2:15	“The effects of elevated CO <sub>2</sub> on plant herbivore interactions.” <i>Peter Stiling, University of South Florida</i>
2:15-3:00	“Transport mechanisms of trace gases over a managed pine plantation.” <i>Monique Leclerc, University of Georgia</i>
3:00-3:30	BREAK
3:30-4:15	“The secret life of below ground carbon.” <i>Michael A. Davis, University of Southern Mississippi</i>
4:15-5:00	DISCUSSION
5:00	ADJOURN

### Friday June 14

University Room

7:30-8:30	BREAKFAST
9:00-9:30	“Overview of terrestrial carbon research at DOE.” <i>David Karnosky, Michigan Technological University</i>
9:30-10:30	“Impacts of elevated CO <sub>2</sub> and O <sub>3</sub> on forest trees: Results from the Aspen FACE experiment.” <i>David Karnosky, Michigan Technological University</i>



10:30-11:00	BREAK
11:00-12:00	“Soil carbon storage in tropical secondary forests.” <i>Erika Marin-Spiotta, GCEP-GREF Fellow, University of California-Berkeley</i>
12:00-1:30	LUNCH
1:30-2:30	“Climate response of range margin trees: Implications for species distributions and carbon uptake.” <i>Neil A. Pederson, GCEP-GREF Fellow, Lamont-Doherty Earth Observatory</i>
2:30-3:30	<a href="#"><u>“Photoelectron emission microscopy studies of carbon overturn in organic lake sediments from the Alaskan coastal plain.”</u></a> <i>Heidi M. Bialk, GCEP-GREF Fellow, University of Wisconsin at Madison</i>
3:30-4:00	BREAK
4:00-5:00	“Redox and the nitrogen cycle: How oxic/anoxic variability affects nitrous oxide production and nitrogen cycling in a wet tropical soil.” <i>Jennifer Pett-Ridge, GCEP-GREF Fellow, University of California-Berkeley</i>
5:00	ADJOURN

### **Saturday June 15**

University Room

7:30-8:30	BREAKFAST
8:30-9:30	<a href="#"><u>“Overview of the Atmospheric Chemistry Program (ACP) and the Environmental Meteorology Program (EMP).”</u></a> <i>Jeffrey Gaffney, Argonne National Laboratory</i>
9:30-10:30	“Alkyl nitrates and earth system science: The big picture.” <i>Elizabeth E. Dahl, GCEP-GREF Fellow, University of California-Irvine</i>



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10:30-11:00	BREAK
11:00-12:00	“VOC measurements at a coastal site in northern California.” <i>Dylan B. Millet, GCEP-GREF Fellow, University of California-Berkeley</i>
12:00-1:30	LUNCH
1:30-5:00	<a href="#"><u>Workshop: How to prepare resumes, abstracts, scientific papers, and proposals</u></a> <i>Jeffrey Gaffney, Argonne National Laboratory</i> <i>Nancy Marley, Argonne National Laboratory</i>
6:30-9:00	Final Working Session - Gator Room Keynote Address: “Global change after September 11, 2001.” <i>Jeff Gaffney, Argonne National Laboratory</i>
9:00	ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM ORIENTATION AND SHORT COURSES WORKSHOP

JUNE 8 – JUNE 15, 2003  
PORTLAND, OR

## AGENDA

### Sunday June 8

- 10:00-4:00 REGISTRATION - Hotel Lobby
- 6:00-9:00 Initial Working Session - Clackamas Room
- Introductions  
*Milton Constantin, ORAU*
- [Goals and Objectives for Summer 2003](#)  
*Jeffrey Gaffney, Argonne National Laboratory*

### Monday June 9

- 7:30-8:15 BREAKFAST
- 8:30-9:30 Welcome and Overview of Orientation  
*Milton Constantin, ORAU*  
*Jeffrey Gaffney, Argonne National Laboratory*
- 9:30-10:30 “How do we handle uncertainties in global change analysis: Policy implications.”  
*Stephen Schneider, Stanford University*
- 10:30-11:00 BREAK
- 11:00-12:00 [“Climate change, hydrology and the intercomparison of ecological models.”](#)  
*Wendy S. Gordon, GCEP-GREF Fellow, University of Texas at Austin*



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12:00-1:30	LUNCH
1:30-2:30	<a href="#"><u>“The DOE research aircraft facility.”</u></a> <i>W.R. Barchett, Pacific Northwest National Laboratory</i>
2:30-3:00	BREAK
3:00-4:00	<a href="#"><u>“Technological change in agriculture in the Yucatan Peninsula: Implications for deforestation and global climate change policy.”</u></a> <i>Christopher B. Busch, GCEP-GREF Fellow, University of California-Berkeley</i>
4:00	ADJOURN

## Tuesday June 10

7:30-8:30	BREAKFAST
9:00-9:30	“Overview of the Atmospheric Radiative Measurements (ARM) Program.” <i>William Porch, Los Alamos National Laboratory</i>
9:30-10:30	<a href="#"><u>“ARM Tropical Western Pacific infrastructure and science.”</u></a> <i>William Porch, Los Alamos National Laboratory</i>
10:30-11:00	BREAK
11:00-12:00	“Atmospheric aerosols and their potential importance in radiative balance.” <i>Jeffrey Gaffney, Argonne National Laboratory</i>
12:00-1:30	LUNCH
1:30-2:30	“Fluorescent detection of formaldehyde in the troposphere.” <i>Anne T. Case, GCEP-GREF Fellow, Georgia Institute of Technology</i>
2:30-3:00	BREAK



3:00-4:00 “Hygroscopic growth of atmospheric aerosols and their optical properties.”  
*Cynthia A. Randles, GCEP-GREF Fellow, Princeton University*

4:00-5:00 “The Klamath Basin water crisis.”  
*Nancy Marley, Argonne National Laboratory*

5:00 ADJOURN

### Wednesday June 11

7:30-8:30 BREAKFAST

9:00-9:30 “Overview of the Ecology and Carbon Sequestration Programs at DOE.”  
*Jeffrey Gaffney, Argonne National Laboratory*

9:30-10:30 “Construction and interpretation of the ice core record of nitrate at Greenland using stable isotopes of nitrogen and oxygen”  
*Meredith G. Hastings, GCEP-GREF Fellow, Princeton University*

10:30-11:00 BREAK

11:00-12:00 [“Spatial and temporal heterogeneity of redox fluxation and microbial communities in a tropical soil.”](#)  
*Jennifer Pett-Ridge, GCEP-GREF Fellow, University of California-Berkeley*

12:00-1:30 LUNCH

1:30-2:30 [“Mechanisms of soil carbon stabilization with reforestation of tropical pastures.”](#)  
*Erika Marin-Spiotta, GCEP-GREF Fellow, University of California-Berkeley*

2:30-3:30 [“Impacts of elevated CO<sub>2</sub> and O<sub>3</sub> on forest ecosystems: Results from the Aspen FACE Project.”](#)  
*David Karnosky, Michigan Technological University*

3:30-4:00 BREAK

3:00-4:00 “What does a scientist do when science is uncertain?”  
*Otto Doering, Purdue University*



- 4:00-5:00 [“Chemical microscopy studies of peat from the Arctic coastal plane.”](#)  
*Heidi Bialk, GCEP-GREF Fellow, University of Wisconsin, Madison*
- 5:00 ADJOURN

### Thursday June 12

- 7:30-8:30 BREAKFAST
- 8:30-9:15 “Overview of the National Institute for Global Environmental Change.”  
*Ruth Reck, National Institute for Global Environmental Change*
- 9:15-10:00 “Below ground carbon flux and dynamics in Douglas Fir forests.”  
*Jeff Klopatek, Arizona State University*
- 10:00-10:30 BREAK
- 10:30-11:15 [“Bridging science and policy: Climate change research and outreach in the Pacific northwest.”](#)  
*Amy Snover, University of Washington*
- 11:15-12:00 DISCUSSION
- 12:00-1:30 LUNCH
- 1:30-2:30 “Patterns and controls for ecosystem carbon flux across 50 degrees of latitude.”  
*Walter C. Oechel, San Diego State University*
- 2:30-3:30 “Overview of the Wind River Canopy Crane Research Facility.”  
*Jerry Franklin, University of Washington*
- 3:30-4:00 BREAK
- 4:00-5:00 “Aging in Pacific northwest forests.”  
*Barbara Bond, Oregon State University*
- 5:00 ADJOURN



## Friday June 13

7:30-9:00	BREAKFAST
9:30-12:00	Tour of the Wind River Canopy Crane Research Facility <i>David Shaw, University of Washington</i>
12:00-1:30	LUNCH

## Saturday June 14

7:30-8:30	BREAKFAST
8:30-9:30	“The Atmospheric Science Program: Where chemistry and meteorology hit the road.” <i>Jeffrey Gaffney, Argonne National Laboratory</i>
9:30-10:30	“Solar irradiance in the UV-B region as influenced by ozone and particulate abundances in an urban atmosphere.” <i>Shelby E. Winiiecki, GCEP-GEF Fellow, The University of Chicago</i>
10:30-11:00	BREAK
11:00-12:00	“Volcanoes and Antarctica.” <i>Lois Jean Wardell, Former GCEP-GREF Fellow, McGill University</i>
12:00-1:30	LUNCH
1:30-5:00	<a href="#"><u>Workshop: “How to write and successfully publish scientific papers or abstracts.”</u></a> <i>Jeffrey Gaffney, Argonne National Laboratory</i> <i>Nancy Marley, Argonne National Laboratory</i>
6:30-9:00	Final Working Session Keynote Address: <a href="#"><u>“Megacities and their impacts: From the urban to the global scale.”</u></a> <i>Jeff Gaffney, Argonne National Laboratory</i>
9:00	ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM ORIENTATION AND SHORT COURSES WORKSHOP

JUNE 6 – JUNE 13, 2004  
ARGONNE NATIONAL LABORATORY, ARGONNE, IL

## AGENDA

### Sunday June 6

- 1:00-5:00 REGISTRATION - Guest House Lobby
- 6:00-9:00 Initial Working Session - Guest House Dining Room
- Introductions  
*Milton Constantin, ORAU*  
*Barry Lesht, Argonne National Laboratory*
- [Goals and Objectives for Summer 2004](#)  
*Jeffrey Gaffney, Argonne National Laboratory*

### Monday June 7

Conference Room A

- 7:30-8:30 BREAKFAST
- 8:30-9:00 Welcome and [Overview of Orientation](#)  
*Milton Constantin, ORAU*  
*Jeffrey Gaffney, Argonne National Laboratory*
- 9:00-10:00 “A global perspective from space: Megafans and aerosols.”  
*Justin Wilkinson, Lockheed Martin Space Operations, NASA*
- 10:00-10:30 BREAK



10:30-11:30	“Urban microclimates: Physical mechanisms and significance.” <i>John Frederick, The University of Chicago</i>
11:30-12:00	DISCUSSION
12:00-1:00	LUNCH
1:00-2:00	“Carbon dioxide cycling in the oceans.” <i>David Archer, The University of Chicago</i>
2:00-2:30	<u>“Gulf of Mexico corals as monitors of environmental change.”</u> <i>Amy Bratcher Wagner, GCEP-GREF Fellow, Texas A&amp;M University</i>
2:30-3:00	BREAK
3:00-4:00	“Geoarchaeology: Using remote sensing to understand human interactions in earth dynamics.” <i>Douglas MacAyeal, The University of Chicago</i>
4:00-4:30	DISCUSSION
4:30	ADJOURN

## **Tuesday June 8**

Conference Room A

7:30-8:30	BREAKFAST
9:00-10:00	<u>“DOE Carbon Sequestration in Terrestrial Ecosystems (CSITE) Research.”</u> <i>Julie Jastrow, Argonne National Laboratory</i>
10:00-10:30	<u>“Tracking carbon sequestration with isotopes.”</u> <i>Roser Matamala, Argonne National Laboratory</i>
10:30-11:00	BREAK
11:00-12:00	<u>“Using the Advanced Photon Source (APS) in environmental studies.”</u> <i>Kenneth Kemner, Argonne National Laboratory</i>
12:00-1:30	LUNCH



- 1:30-2:00 “DNA micro-array analysis of soybean growth under elevated ozone and CO<sub>2</sub>,”  
*Anthony Watson, GCEP-GREF Fellow, University of Illinois*
- 2:00-2:30 “Land use and land cover changes in temperate savannas.”  
*Emily Hollister, GCEP-GREF Fellow, Texas A&M University*
- 2:30-3:00 [“Impacts of climate patterns on the vegetation dynamics of grasslands in the southwest United States.”](#)  
*Allison Drake, GCEP-GREF Fellow, University of Arizona*
- 3:00-3:30 BREAK
- 3:30-4:00 “Multiple interacting global changes and plant mediated feedbacks via decomposition.”  
*Elsa E. Cleland, GCEP-GREF Fellow, Stanford University*
- 4:00-5:00 [“The use of the restoration chronosequence at Fermilab to address below ground processes.”](#)  
*R. Michael Miller, Argonne National Laboratory*
- 5:00 ADJOURN

### Wednesday June 9

- 7:30-8:30 BREAKFAST
- 9:00-12:00 Tour of Fermilab Prairie Restoration Site  
*R. Michael Miller, Argonne National Laboratory*  
*Julie Jastrow, Argonne National Laboratory*
- 12:00-1:00 LUNCH
- 1:30-3:00 Tour of the Advanced Photon Source  
*Kenneth Kemner, Argonne National Laboratory*
- 3:00-4:30 Tour of Environmental Research Laboratory Facilities  
*Jeffrey Gaffney, Argonne National Laboratory*  
*Nancy Marley, Argonne National Laboratory*  
*Roser Matamala, Argonne National Laboratory*



## **Thursday June 10**

Conference Room A

7:30-8:30	BREAKFAST
8:30-10:30	“Overview of the Atmospheric Radiative Measurements (ARM) Program.” <i>Douglas Sisterson, Argonne National Laboratory</i>
10:00-10:30	BREAK
10:30-11:30	“The ARM Mobile Facility and UAV Program.” <i>Jeffrey Gaffney, Argonne National Laboratory</i>
11:30-1:00	LUNCH
1:00-2:30	“ARM sites and instrumentation.” <i>Douglas Sisterson, Argonne National Laboratory</i> <i>James Liljegren, Argonne National Laboratory</i>
2:30-3:00	“The chemistry of mercury deposition in the Arctic.” <i>Laura Alvarez-Aviles, GCEP-GREF Fellow, University of Alaska, Fairbanks</i>
3:00-3:30	BREAK
3:30-5:00	“How do scientists do what they do?” <i>Douglas Sisterson, Argonne National Laboratory</i>
5:00	ADJOURN

## **Friday June 11**

Conference Room A

7:30-8:30	BREAKFAST
9:00-10:00	<u>“Overview of the National Institute for Global Environmental Change.”</u> <i>Jeffrey Gaffney, Argonne National Laboratory</i>
10:00-10:30	BREAK



- 10:30-11:00 “Solar irradiance in the UV-B region as influenced by ozone and particulate abundances in an urban atmosphere.”  
*Shelby Winiecki, GCEP-GREF Fellow, The University of Chicago*
- 11:00-11:30 [“Soil carbon storage in reforested tropical pastures.”](#)  
*Erika Marin-Spiotta, GCEP-GREF Fellow, University of California, Berkeley*
- 11:30-1:00 LUNCH
- 1:00-2:00 [“Climate change and the Great Lakes: Predicted long term changes and severe weather effects.”](#)  
*Nancy Marley, Argonne National Laboratory*
- 2:00 ADJOURN

## Saturday June 12

Conference Room A

- 7:30-8:30 BREAKFAST
- 8:30-9:30 [“Overview of the Atmospheric Science Program.”](#)  
*Jeffrey Gaffney, Argonne National Laboratory*  
*Nancy Marley, Argonne National Laboratory*
- 9:30-10:30 [“Megacities: Mexico City and Houston.”](#)  
*Jeffrey Gaffney, Argonne National Laboratory*
- 10:30-11:00 BREAK
- 11:00-12:00 “Atmospheric aerosol composition as a function of hygroscopicity, volatility and density.”  
*Dabrina D. Dutcher, GCEP-GREF Fellow, University of Minnesota*
- 12:00-1:30 LUNCH
- 1:30-5:00 [Workshop: “How to write and successfully publish scientific papers or abstracts.”](#)  
*Jeffrey Gaffney, Argonne National Laboratory*  
*Nancy Marley, Argonne National Laboratory*



6:30-9:00

Final Working Session - Guest House Dining Room

Keynote Address: ["A hydrogen economy: Is it a panacea?"](#)

*Jeff Gaffney, Argonne National Laboratory*

9:00

ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM ORIENTATION AND SHORT COURSES WORKSHOP

JUNE 12 - JUNE 19, 2005  
TULANE UNIVERSITY, NEW ORLEANS, LA

## AGENDA

### Sunday June 12

- 1:00-5:00 REGISTRATION - Willow Hall Lobby
- 6:00-9:00 Initial Working Session  
*Bruff Commons*
- Introductions  
*Milton Constantin, ORAU*  
*Efstathios "Stathis" Michaelides, Tulane University*
- [Goals and Objectives for Summer 2005](#)  
*Jeffrey Gaffney, Argonne National Laboratory*

### Monday June 13

Lindy Boggs Center, Room 122

- 7:30-8:30 BREAKFAST
- 8:30-9:00 Welcome and [Overview of Orientation](#)  
*Milton Constantin, ORAU*  
*Jeffrey Gaffney, Argonne National Laboratory*
- 9:00-10:00 "Hand held imagery and new science."  
*Justin Wilkinson, Johnson Space Center*



10:00-10:30	BREAK
10:30-11:30	<u><a href="#">“Climate, nutrients and hypoxia: Predicting water quality trends in the next 100 years.”</a></u> <i>Dubravko Justic, Louisiana State University</i>
11:30-12:00	DISCUSSION
12:00-1:30	LUNCH
1:30-2:30	“Determinants of land use and deforestation in the southern Yucatan with implications for climate change policy.” <i>Christopher Busch, GCEP-GREF Fellow, University of California-Berkeley</i>
2:30-3:00	BREAK
3:00-4:00	<u><a href="#">“Global climate change: Atmospheric aerosols and their linkages.”</a></u> <i>Jeffrey Gaffney, Argonne National Laboratory</i>
4:00-4:30	DISCUSSION
4:30	ADJOURN

## **Tuesday June 14**

Lindy Boggs Center, Room 122

7:30-8:30	BREAKFAST
9:00-10:00	<u><a href="#">“Overview of the Atmospheric Radiative Measurements (ARM) Program.”</a></u> <i>Jeffrey Gaffney, Argonne National Laboratory</i>
10:00-10:30	<u><a href="#">“The ARM Mobile Facility and UAV Program.”</a></u> <i>Jeffrey Gaffney, Argonne National Laboratory</i>
10:30-11:00	BREAK
11:00-12:00	“The atmospheric chemistry of terpenes: Canopy scale emissions and gas-phase oxidation products.” <i>Anita Lee, GCEP-GREF Fellow, University of California-Berkeley</i>



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12:00-1:30	LUNCH
1:30-2:00	“Solar penetration in a coupled atmosphere-ocean model.” <i>Erin Hokanson, GCEP-GREF Fellow, University of Wisconsin-Madison</i>
2:00-2:30	“Snow pack chemistry in Alaska.” <i>Laura Alvarez-Aviles, GCEP-GREF Fellow, University of Alaska, Fairbanks</i>
2:30-3:00	“Soot chemistry.” <i>Rose M. Ravelo, GCEP-GREF Fellow, Purdue University</i>
3:00-3:30	BREAK
3:30-4:30	<u>“Urban aerosols and their impacts: Lessons learned from the World Trade Center tragedy.”</u> <i>Jeffrey Gaffney, Argonne National Laboratory</i> <i>Nancy Marley, Argonne National Laboratory</i>
4:30	ADJOURN

### Wednesday June 15

Lindy Boggs Center, Room 122

7:30-8:30	BREAKFAST
9:00-10:00	<u>“Ecology and carbon sequestration research.”</u> <i>Jeffrey Gaffney, Argonne National Laboratory</i>
10:00-10:30	BREAK
10:30-11:30	“Climate change, coastal system science, and ecological engineering: Challenges to restoring coastal Louisiana.” <i>Robert Twilley, Louisiana State University</i>
11:30-1:00	LUNCH
1:00-2:00	“The cost of sugarcane burning and alternatives to sugarcane burning.” <i>Ramarj Boopathy, Nicholls State University</i>



**GLOBAL CHANGE EDUCATION PROGRAM**  
APPENDIX I - AGENDAS

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2:00-3:00	“Everything Audubon.” <i>Nancy Marley, Argonne National Laboratory</i>
3:00-3:30	BREAK
3:30-5:00	“From molecules to ecosystems: The nexus of regional and global research at the center for bioenvironmental research.” <i>Douglas Meffert, Tulane University/ Xavier University</i>
5:00	ADJOURN

**Thursday June 16**

Lindy Boggs Center, Room 122

7:30-8:30	BREAKFAST
9:00-12:00	Tour of Audubon Zoo <i>Jeffrey Gaffney, Argonne National Laboratory</i> <i>Nancy Marley, Argonne National Laboratory</i>
12:00-1:30	LUNCH
1:30-3:30	Tour of the Aquarium of the Americas <i>Jeffrey Gaffney, Argonne National Laboratory</i> <i>Nancy Marley, Argonne National Laboratory</i>
3:00-4:30	IMAX Theater

**Friday June 17**

Conference Room A

7:30-8:30	BREAKFAST
9:00-10:00	<a href="#"><u>“Overview of the National Institute for Global Environmental Change.”</u></a> <i>Jeffrey Gaffney, Argonne National Laboratory</i>
10:00-10:30	BREAK
10:30-11:30	“Measuring fine root contributions to the carbon cycle in forested wetlands: Addressing needs and challenges” <i>Julie Whitbeck, New Orleans University</i>
11:30-1:00	LUNCH



- 1:00-2:00 “Climate change vulnerabilities in New Orleans.”  
*Nancy Marley, Argonne National Laboratory*
- 2:00-2:30 “Narrow-line solid state Ti:sapphire laser: Instrumentation and atmospheric applications.”  
*Anne Case, GCEP-GREF Fellow, Georgia Institute of Technology*
- 2:30 ADJOURN

### Saturday June 18

Lindy Boggs Center, Room 122

- 7:30-8:30 BREAKFAST
- 8:30-9:30 [“Overview of the Atmospheric Science Program.”](#)  
*Jeffrey Gaffney, Argonne National Laboratory*  
*Nancy Marley, Argonne National Laboratory*
- 9:30-10:30 [“Megacity aerosol experiments: Mexico City \(MaxMex\) 2006.”](#)  
*Jeffrey Gaffney, Argonne National Laboratory*
- 10:30-11:00 BREAK
- 11:00-12:00 DISCUSSION
- 12:00-1:30 LUNCH
- 1:30-3:00 [Workshop: “How to write and successfully publish scientific papers or abstracts.”](#)  
*Jeffrey Gaffney, Argonne National Laboratory*  
*Nancy Marley, Argonne National Laboratory*
- 3:00-3:30 BREAK
- 3:30-5:00 DISCUSSION
- 6:30-9:00 Final Working Session - Bruff Commons Dining Room  
Keynote Address: [“The global change conflict: Short term goals vs long term impacts.”](#)  
*Jeff Gaffney, Argonne National Laboratory*
- 9:00 ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM ORIENTATION AND SHORT COURSES WORKSHOP

JUNE 11 – JUNE 18, 2006  
PORTLAND, OR

## AGENDA

### Sunday June 11

- 10:00-4:00 REGISTRATION - Hotel Lobby
- 6:00-9:00 Initial Working Session - Clackamas Room
- Introductions  
*Milton Constantin, ORAU*
- Goals and Objectives for Summer 2006  
*Jeffrey Gaffney, Argonne National Laboratory*

### Monday June 12

Clackamas Room

- 7:30-8:30 BREAKFAST
- 8:30-9:00 Welcome and Overview of Orientation  
*Milton Constantin, ORAU*  
*Jeffrey Gaffney, Argonne National Laboratory*
- 9:00-10:00 “Using isotopes to understand our changing atmosphere.”  
*Andrew Rice, Portland State University*
- 10:00-10:30 BREAK



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10:30-11:30	“Climate change, air quality, regional scale modeling and flux measurements in Mexico City.” <i>Brian Lamb, Washington State University</i>
11:30-12:00	DISCUSSION
12:00-1:30	LUNCH
1:30-2:30	“Recent developments in the methane budget.” <i>Aslam Khalil, Portland State University</i>
2:30-3:00	BREAK
3:00-4:00	“Unexpected science results from astronaut handheld imagery” <i>Justin Wilkinson, Lockheed Martin Space Operations</i>
4:00-5:00	DISCUSSION
5:00	ADJOURN

## Tuesday June 13

Clackamas Room

7:30-8:00	BREAKFAST
9:00-9:30	<a href="#"><u>“Overview of the Atmospheric Radiative Measurements (ARM) Program.”</u></a> <i>Jeffrey Gaffney, Argonne National Laboratory</i>
9:30-10:30	“The development of unmanned aerial systems for support of atmospheric sciences.” <i>Lois Jean Wardell, Former GCEP-GREF Fellow, UAS Sensor Technologies Advanced Ceramic Research</i>
10:30-11:00	BREAK
11:00-12:00	“Dynamic meteorology in air pollution and climate change modeling products.” <i>Lucas M. Harris, Former GCEP-SURE Fellow, University of Washington, Seattle</i>



12:00-1:30	LUNCH
1:30-2:30	“The effects of ocean solar penetration in the fast ocean atmosphere model.” <i>Erin Hokanson Wagner, GCEP-GREF Fellow, University of Wisconsin</i>
2:30-3:00	BREAK
3:00-4:00	“A stable isotope dendrochronology approach to reconstructing interannual and interdecadal tropical climate variability.” <i>Amy J. Wagner, GCEP-GREF Fellow, Texas A&amp;M University</i>
4:00-5:00	“Overview of the Wind River Canopy Crane Research Facility.” <i>Jeffrey Gaffney, Argonne National Laboratory</i>
5:00	ADJOURN

### **Wednesday June 14**

Clackamas Room

6:30-7:15	BREAKFAST
9:00-12:00	Tour of the Wind River Canopy Crane Research Facility <i>Matt Schroede, University of Washington</i>
12:00-1:30	LUNCH
1:30-3:30	Tour of Bonneville Dam <i>Patrick Berry, Ranger Staff</i>

### **Thursday June 15**

Clackamas Room

7:30-8:30	BREAKFAST
8:30-9:30	“Ecology and carbon sequestration research.” <i>Jeffrey Gaffney, Argonne National Laboratory</i>



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9:30-10:00	“Soil microbial community structure and biogeochemical function in temperate South America.” <i>Sean T. Berthrong, GCEP-GREF Fellow, Duke University</i>
10:00-10:30	BREAK
10:30-11:30	“Fate of $^{13}\text{C}$ -labeled plant material into soil microbial communities.” <i>David Myrold, Oregon State University</i>
11:30-12:00	DISCUSSION
12:00-1:30	LUNCH
1:30-2:30	“High resolution atmospheric monitoring of urban carbon dioxide sources.” <i>John M. Zobitz, GCEP-GREF Fellow, University of Utah</i>
2:30-3:30	“Effects of $\text{CO}_2$ enrichment on fine root characteristics: Implications for root decomposition rates.” <i>Colleen M. Iversen, CCEP-GREF Fellow, University of Tennessee-Knoxville</i>
3:30-4:00	BREAK
4:00-5:00	“Alkyl atmospheric chemistry.” <i>Rose M. Ravelo, GCEP-GREF Fellow, Purdue University</i>
5:00	ADJOURN

### Friday June 16

Clackamas Room

7:30-8:30	BREAKFAST
8:30-9:30	“Overview of the Atmospheric Science Program.” <i>Jeffrey Gaffney, Argonne National Laboratory</i>
9:30-10:30	“Building a better dieselometer using cavity ring down spectroscopy.” <i>Dean Atkinson, Portland State University</i>



10:30-11:00	BREAK
11:00-12:00	“MILAGRO: Megacity Initiative - Local and Global Research Observations.” <i>Jeffrey Gaffney, Argonne National Laboratory</i> <i>Nancy Marley, Argonne National Laboratory</i>
12:00-1:30	LUNCH
1:30-2:30	“The Klamath Basin water crisis revisited.” <i>Nancy Marley, Argonne National Laboratory</i>
2:30-3:00	DISCUSSION
3:00-3:30	BREAK
3:30-4:00	“Overview of the Environmental Molecular Sciences Laboratory.” <i>Alexander Laskin, Pacific Northwest National Laboratory</i>
4:00-5:00	“Aerosol measurement methods and advanced techniques.” <i>Alexander Laskin, Pacific Northwest National Laboratory</i>
5:00	ADJOURN

**Saturday June 17**  
Clackamas Room

7:30-8:30	BREAKFAST
8:30-12:00	WORKSHOP: Publishing Without Perishing! Looking for a Graduate School! What Not to Do When Job Hunting! <i>Jeffrey Gaffney, Argonne National Laboratory</i> <i>Nancy Marley, Argonne National Laboratory</i>
12:00-1:30	LUNCH
6:30-9:00	Final Working Session - Clackamas Room Keynote Address: “Climate and energy issues for the next generations: I’m dreaming of an alternative energy economy” <i>Jeff Gaffney, Argonne National Laboratory</i>
9:00	ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM ORIENTATION AND SHORT COURSES WORKSHOP

JUNE 3 - JUNE 10, 2007  
LITTLE ROCK, AR

## AGENDA

### Sunday June 3

10:00-4:00

REGISTRATION - Hotel Lobby

6:00-8:30

Initial Working Session - Meeting Room A

Introductions

*Milton Constantin, ORAU*

[Goals and Objectives for Summer 2007](#)

*Jeffrey Gaffney, University of Arkansas at Little Rock*

### Monday June 4

Meeting Room A

7:30-8:30

BREAKFAST

8:30-9:30

Welcome and [Overview of Orientation](#)

*Milton Constantin, ORAU*

*Jeffrey Gaffney, University of Arkansas at Little Rock*

9:30-10:30

["Arctic evidence for global change."](#)

*Mike Ledbetter, University of Arkansas Little Rock*

10:30-11:00

BREAK



- 11:00-12:00                    “The role of GIS in the aftermath of hurricane Katrina.”  
*Beth McMillan, University of Arkansas at Little Rock*
- 12:00-1:30                    LUNCH
- 1:30-2:00                    “So what is the IPCC, TAR, and AR4?”  
*Nancy Marley, University of Arkansas at Little Rock*
- 2:00-2:30                    “Why ‘climate change’.....and not ‘global warming’?”  
*Jeffrey Gaffney, University of Arkansas at Little Rock*
- 2:30-3:30                    “The view from the space shuttle: Dust, megafans, and more.”  
*Justin Wilkinson, Lockheed Martin Space Operations*
- 3:30-4:00                    BREAK
- 4:00-5:00                    “The influence of tree species composition on carbon cycling in forest soils.”  
*Kevin E. Mueller, GCEP-GREF Fellow, Pennsylvania State University*
- 4:00-5:00                    DISCUSSION
- 5:00                            ADJOURN

**Tuesday June 5**

Meeting Room A

- 7:30-8:30                    BREAKFAST
- 9:00-10:30                    “Nuclear energy and associated issues.”  
*Mary Good, University of Arkansas at Little Rock*
- 10:30-11:00                    BREAK
- 11:00-12:00                    “Understanding the consequences of climate change for coastal forests.”  
*Julie Whitbeck, University of New Orleans*
- 12:00-1:30                    LUNCH



- 1:30-2:00 [“Overview of the Carbon Sequestration and Ecological Research Programs.”](#)  
*Jeffrey Gaffney, University of Arkansas at Little Rock*
- 2:00-3:00 [“Soil organic matter accrual and protection by aggregates in a restored tall-grass prairie chronosequence.”](#)  
*Sarah L.O'Brien, GCEP-GREF Fellow, University of Illinois at Chicago*
- 3:00-3:30 BREAK
- 3:30-4:30 [“An interdisciplinary approach to understanding and assessing land use and land cover change in Nicaragua.”](#)  
*Esther B. Zeledon, GCEP-GREF Fellow, University of California-Berkeley*
- 4:30 ADJOURN

### Wednesday June 6

Meeting Room A

- 6:30-7:15 BREAKFAST
- 8:30-12:00 Tour of Hot Springs National Park  
*Stephen Rudd, National Park Service*
- 12:00-2:00 LUNCH  
Tour of Lake Hamilton - Belle of Hot Springs Riverboat

### Thursday June 7

Meeting Room A

- 7:30-8:30 BREAKFAST
- 9:00-10:00 [“Atmospheric chemistry of alkyl compounds.”](#)  
*Rose M. Ravelo, GCEP-GREF Fellow, Purdue University*
- 10:00-10:30 BREAK
- 10:30-11:30 “The impacts of Katrina in New Orleans.”  
*Robert Twilley, Louisiana State University*



11:30-12:00	DISCUSSION
12:00-1:30	LUNCH
1:30-2:30	<u><a href="#">“Climate warming: Hot air and cold facts.”</a></u> <i>T.J. Blasing, Oak Ridge National Laboratory</i>
2:30-3:30	<u><a href="#">“Overview of the Atmospheric Radiation Measurement (ARM) Program.”</a></u> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i>
3:30-4:00	BREAK
4:00-5:00	“The effects of climate change in Arkansas.” <i>Nancy Marley, University of Arkansas at Little Rock</i>
5:00	ADJOURN

**Friday June 8**  
Meeting Room A

7:30-8:30	BREAKFAST
9:00-9:30	<u><a href="#">“Overview of the Atmospheric Science Program.”</a></u> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i> <i>Nancy Marley, University of Arkansas at Little Rock</i>
9:30-10:30	<u><a href="#">“The MILAGRO and MaxMex Field projects in Mexico City.”</a></u> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i> <i>Nancy Marley, University of Arkansas at Little Rock</i>
10:30-11:00	BREAK
11:00-12:00	<u><a href="#">“Climate, decision making and behavior.”</a></u> <i>Amy Wolfe, Oak Ridge National Laboratory</i>
12:00-2:00	LUNCH



- 2:00-3:00                    [“Sustainability and biofuels: Some issues and things to think about.”](#)  
*Jeffrey Gaffney, University of Arkansas at Little Rock*  
*Nancy Marley, University of Arkansas at Little Rock*
- 3:00-3:30                    BREAK
- 3:30-4:30                    [“A study of the atmospheric implications of the proposed replacements for chlorofluorocarbons.”](#)  
*Monica Martinez-Aviles, GCEP-GREF Fellow, Purdue University*
- 4:30                            ADJOURN

**Saturday June 9**

Meeting Room A

- 7:30-8:30                    BREAKFAST
- 9:00-10:00                  [“Graduate school: Positives and negatives and what to consider when applying.”](#)  
*Jeffrey Gaffney, University of Arkansas at Little Rock*  
*Nancy Marley, University of Arkansas at Little Rock*
- 10:00-10:30                BREAK
- 10:30-11:30                [“Writing successful scientific papers and proposals.”](#)  
*Jeffrey Gaffney, University of Arkansas at Little Rock*  
*Nancy Marley, University of Arkansas at Little Rock*
- 11:30-1:30                  LUNCH
- 6:00-8:00                    Final Working Session - Hotel Dining Room  
Keynote Address: [“Stratospheric ozone depletion, regional ozone, aerosols: Connections to climate change.”](#)  
*Jeffrey Gaffney, University of Arkansas at Little Rock*
- 8:00                            ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM ORIENTATION AND SHORT COURSES WORKSHOP

JUNE 8 - JUNE 15, 2008  
KNOXVILLE, TN

## AGENDA

### Sunday June 8

- 1:00-6:00 REGISTRATION - Hotel Lobby
- 6:00-8:30 Initial Working Session - Salon C
- Introductions  
*Milton Constantin, ORAU*
- [Goals and Objectives for Summer 2008](#)  
*Jeffrey Gaffney, University of Arkansas at Little Rock*

### Monday June 9

- Salon C
- 7:30-8:30 BREAKFAST
- 8:30-9:00 Welcome and [Overview of Orientation](#)  
*Milton Constantin, ORAU*  
*Jeffrey Gaffney, University of Arkansas at Little Rock*
- 9:00-10:00 “Views from the space shuttle: Earth from a different perspective.”  
Justin Wilkinson, Lockheed Martin Space Operations
- 10:00-10:30 BREAK



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10:30-11:30	<p><a href="#"><u>“Global climate simulation including the detailed impacts of chemical and biological systems.”</u></a> <i>David Erickson, Oak Ridge National Laboratory</i></p>
11:30-12:00	DISCUSSION
12:00-1:30	LUNCH
1:30-2:00	<p><a href="#"><u>“Review of the IPCC Fourth Assessment Report.”</u></a> <i>Nancy Marley, University of Arkansas at Little Rock</i></p>
2:00-2:30	<p><a href="#"><u>“Future Projections.”</u></a> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i></p>
2:30-3:00	DISCUSSION
3:00-3:30	BREAK
3:30-4:30	<p>Marvin L. Wesely Award Address: <a href="#"><u>“The role of soil aggregates in the recovery of soil carbon and nitrogen in a restored tall-grass prairie.”</u></a> <i>Sarah L. O’Brien, 2008 Marvin L. Wesely GREF Fellow, University of Illinois at Chicago</i></p>
4:30	ADJOURN

## **Tuesday June 10**

Salon C

7:30-9:00	BREAKFAST
9:00-10:00	<p><a href="#"><u>“Drought crisis in the southeastern U.S.”</u></a> <i>Nancy Marley, University of Arkansas at Little Rock</i></p>
10:00-10:30	DISCUSSION
10:30-11:00	BREAK
11:00-12:00	<p><a href="#"><u>“Overview of the Carbon Sequestration Programs.”</u></a> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i></p>



12:00-1:30	LUNCH
1:30-2:30	<a href="#"><u>“Carbon dioxide fertilization and the global carbon cycle.”</u></a> <i>Rich Norby, Oak Ridge National Laboratory</i>
2:30-3:30	<a href="#"><u>“The causes and consequences of increased fine root production in a CO<sub>2</sub> enriched sweetgum plantation.”</u></a> <i>Colleen M. Iverson, GCEP-GREF Fellow, University of Tennessee, Knoxville</i>
3:30-4:00	BREAK
4:00-4:30	<a href="#"><u>“Overview of Oak Ridge National Laboratory: Ecology field sites, neutron spallation source, and super computer/virtualization room.”</u></a> <i>Rich Norby, Oak Ridge National Laboratory</i>
4:30	ADJOURN

### **Wednesday June 11**

6:30-7:30	BREAKFAST
8:30-5:00	Tour of Oak Ridge National Laboratory Facilities <i>Rich Norby, Oak Ridge National Laboratory</i>

### **Thursday June 12**

Salon C

7:30-8:30	BREAKFAST
8:30-9:00	<a href="#"><u>“Aerosol optical properties in the free troposphere over the Pacific northwest.”</u></a> <i>Emily V. Fischer, GCEP-GREF Fellow, University of Washington</i>
9:00-10:00	“Overview of the Atmospheric Radiation Measurement (ARM) Program.” <i>Douglas Sisterson, Argonne National Laboratory</i>



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10:00-10:30	BREAK
10:30-11:30	“Climate change: The real deal or just a good story?” <i>Douglas Sisterson, Argonne National Laboratory</i> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i> <i>Nancy Marley, University of Arkansas at Little Rock</i>
11:30-12:00	DISCUSSION
12:00-1:30	LUNCH
1:30-2:30	“Biotic and abiotic controls on ecosystem structure and function in a changing world.” <i>Aimee Classen, Oak Ridge National Laboratory</i>
2:30-3:00	<a href="#"><u>“Improving models of forest carbon and water cycling: Revisiting assumptions and incorporating variability.”</u></a> <i>Eric J. Ward, GCEP-GREF Fellow, Duke University</i>
3:00-3:30	BREAK
4:00-5:00	<a href="#"><u>“Impacts of elevated CO<sub>2</sub> and ozone on the growth and productivity of trees.”</u></a> <i>Victoria Wittig, GCEP-GREF Fellow, University of Illinois at Urbana-Champaign</i>
5:00	ADJOURN

### Friday June 13

Salon C

7:30-9:00	BREAKFAST
9:00-9:30	<a href="#"><u>“Overview of the Atmospheric Science Program.”</u></a> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i> <i>Nancy Marley, University of Arkansas at Little Rock</i>
9:30-10:30	<a href="#"><u>“Aerosol radiative forcing from biomass burning.”</u></a> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i> <i>Nancy Marley, University of Arkansas at Little Rock</i>
10:30-11:00	BREAK



- 11:00-12:00                    “Investigation of aerosol-cloud interactions for Arctic stratiform clouds in a large eddy simulation.”  
*Erika L. Roesler, GCEP-GREF Fellow, University of Michigan*
- 12:00-1:30                    LUNCH
- 1:30-2:30                    [“Renewables and sustainability.”](#)  
*Jeffrey Gaffney, University of Arkansas at Little Rock*
- 2:30-3:30                    [“Delivering power in a carbon constrained world.”](#)  
*John W. Meyers, Tennessee Valley Authority*
- 3:30-4:00                    BREAK
- 4:00-4:30                    “Measuring boundary layer turbulence with Raman lidar: Implications for climate models.”  
*Erin Hokanson Wagner, GCEP-GREF Fellow, University of Wisconsin, Madison*
- 4:30                            ADJOURN

### **Saturday June 14**

Salon C

- 7:30-9:00                    BREAKFAST
- 9:00-10:00                    [“Graduate schools: How to be successful in the application process.”](#)  
*Jeffrey Gaffney, University of Arkansas at Little Rock*  
*Nancy Marley, University of Arkansas at Little Rock*
- 10:00-10:30                    BREAK
- 10:30-11:30                    [“Writing successful scientific papers, posters and proposals.”](#)  
*Jeffrey Gaffney, University of Arkansas at Little Rock*  
*Nancy Marley, University of Arkansas at Little Rock*
- 11:30-1:30                    LUNCH



- 6:00-8:00                      Final Working Session - Hotel Dining Room  
Keynote Address: [“Renewable energy sources: The need for infrastructure investment.”](#)  
*Jeffrey Gaffney, University of Arkansas at Little Rock*
- 8:00                                ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM ORIENTATION AND SHORT COURSES WORKSHOP

JUNE 7 – JUNE 11, 2009  
KENNEWICK, WA

## AGENDA

### Sunday June 7

- 1:00-6:00 REGISTRATION - Hotel Lobby
- 6:00-8:30 Initial Working Session - Columbia Club
- Introductions  
*Milton Constantin, ORAU*
- [Goals and Objectives for Summer 2009](#)  
*Jeffrey Gaffney, University of Arkansas at Little Rock*

### Monday June 8

Columbia Club

- 7:30-8:30 BREAKFAST
- 8:30-9:00 Welcome and Overview of Orientation  
*Milton Constantin, ORAU*  
*Jeffrey Gaffney, University of Arkansas at Little Rock*
- 9:00-10:00 [“Overview of the Atmospheric Radiation Measurement \(ARM\) Program.”](#)  
*Larry Berg, Pacific Northwest National Laboratory*
- 10:00-10:30 BREAK



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10:30-11:30	<p><a href="#"><u>“Overview of the Atmospheric Science Program.”</u></a> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i> <i>Nancy Marley, University of Arkansas at Little Rock</i></p>
11:30-12:00	DISCUSSION
12:00-1:30	LUNCH
1:30-2:30	<p><a href="#"><u>“The challenges and needs of atmospheric chemistry in global climate studies.”</u></a> <i>Michael S. Long, GCEP-GREF Fellow, University of Virginia</i></p>
2:30-3:30	<p><a href="#"><u>“Detecting boundary layer turbulence structure using Raman lidar.”</u></a> <i>Erin Hokanson Wagner, GCEP-GREF Fellow, University of Wisconsin, Madison</i></p>
3:30-4:00	BREAK
4:00-5:00	<p>Marvin L. Wesely Award Address: <a href="#"><u>“Aerosol optical properties in the free troposphere over the Pacific northwest.”</u></a> <i>Emily V. Fischer, 2009 Marvin L. Wesely GREF Fellow, University of Washington</i></p>
5:00	ADJOURN

**Tuesday June 9**

Columbia Club

7:30-9:00	BREAKFAST
9:00-10:00	<p><a href="#"><u>“Applications of complimentary analytical techniques to study chemical composition and properties of atmospheric particles.”</u></a> <i>Alex Laskin, Pacific Northwest National Laboratory</i></p>
10:00-10:30	DISCUSSION
10:30-11:00	BREAK



11:00-12:00	“New mass spectrometry tool for atmospheric sciences.” <i>Juila Laskin, Pacific Northwest National Laboratory</i>
12:00-1:30	LUNCH
1:30-2:30	<u>“The art and science of climate modeling.”</u> <i>Steven Ghan, Pacific Northwest National Laboratory</i>
2:30-3:30	“Simulations of Arctic aerosol-cloud interactions.” <i>Erika L. Roesler, GCEP-GREF Fellow, University of Michigan</i>
3:30-4:00	BREAK
4:00-4:30	<u>“Climate change and energy needs.”</u> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i>
4:30	ADJOURN

### **Wednesday June 10**

Columbia Club

7:30-9:00	BREAKFAST
9:00-10:00	<u>“An overview of ecology research in the Department of Energy.”</u> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i>
10:00-10:30	BREAK
10:30-11:30	<u>“Renewables and sustainability.”</u> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i>
11:30-12:00	DISCUSSION
12:00-1:30	LUNCH
1:30-3:00	<u>“Looking toward graduate school: How to be successful.”</u> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i> <i>Nancy Marley, University of Arkansas at Little Rock</i>



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3:00-3:30	BREAK
3:30-4:30	<u>“Writing successful scientific papers, posters and proposals.”</u> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i> <i>Nancy Marley, University of Arkansas at Little Rock</i>
6:00-8:00	Final Working Session - Hotel Dining Room Keynote Address: <u>“Slowing climate change: Options?”</u> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i>
8:00	ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM ORIENTATION AND SHORT COURSES WORKSHOP

JUNE 6 – JUNE 10, 2010  
KNOXVILLE, TN

## AGENDA

### Sunday June 6

- 1:00-6:00 REGISTRATION - Hotel Lobby
- 6:00-8:30 Initial Working Session - Salon A
- Introductions  
*Milton Constantin, ORAU*
- Goals and Objectives for Summer 2010  
*Jeffrey Gaffney, University of Arkansas at Little Rock*

### Monday June 7

- Salon C
- 7:30-8:30 BREAKFAST
- 8:30-9:00 Welcome and Overview of Orientation  
*Milton Constantin, ORAU*  
*Jeffrey Gaffney, University of Arkansas at Little Rock*
- 9:00-10:00 “Overview of the atmospheric systems research facilities.”  
*Jeffrey Gaffney, University of Arkansas at Little Rock*
- 10:00-10:30 BREAK



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10:30-11:30	“Atmospheric systems field studies: CARES and GVAX.” <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i> <i>Nancy Marley, University of Arkansas at Little Rock</i>
11:30-12:00	DISCUSSION
12:00-1:30	LUNCH
1:30-2:30	“Response of nitrogen processes and microbial transcripts to soil wet-up.” <i>Sarah Placella, GCEP-GREF Fellow, University of California, Berkeley</i>
2:30-3:30	“Root-soil interactions under rising atmospheric carbon dioxide.” <i>Colleen M. Iversen, Oak Ridge National Laboratory, Former GCEP-GREF Fellow</i>
3:30-4:00	BREAK
4:00-5:00	“Moisture sources and sinks derived from water isotopic measurements.” <i>Derek P. Brown, GCEP- GREF Fellow, University of Colorado, Boulder</i>
5:00	ADJOURN

## **Tuesday June 8**

Salon C

7:30-9:00	BREAKFAST
9:00-10:00	“Overview of the Environmental Molecular Science Laboratory and other DOE facilities.” <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i>
10:00-10:30	DISCUSSION
10:30-11:00	BREAK



11:00-12:00	“Global and regional climate modeling at the peta-scale.” <i>David Erickson, Oak Ridge National Laboratory</i>
12:00-1:30	LUNCH
1:30-2:30	“The effect of war and its aftermath on land use and land cover change in Jinotega, Nicaragua.” <i>Esther B. Zeledon, GCEP-GREF Fellow, University of California, Berkeley</i>
2:30-3:30	“The other greenhouse gases and aerosols: Links to stratospheric chemistry.” <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i> <i>Nancy Marley, University of Arkansas at Little Rock</i>
3:30-4:00	BREAK
4:00-5:00	<a href="#"><u>“Climate change and energy needs.”</u></a> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i>
4:30	ADJOURN

## **Wednesday June 9**

Salon C

7:30-9:00	BREAKFAST
9:00-10:00	<a href="#"><u>“An overview of ecology research in the Department of Energy.”</u></a> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i>
10:00-10:30	BREAK
10:30-11:30	“Elevated CO <sub>2</sub> does not ameliorate drought stress in soybeans.” <i>Sharon Gray, GCEP-GREF Fellow, University of Illinois, Urbana-Champaign</i>
11:30-12:00	<a href="#"><u>“Renewables and sustainability.”</u></a> <i>Jeffrey Gaffney, University of Arkansas at Little Rock</i>
12:00-1:30	LUNCH



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- 1:30-3:00                    “Looking toward graduate school: How to be successful.”  
*Jeffrey Gaffney, University of Arkansas at Little Rock*  
*Nancy Marley, University of Arkansas at Little Rock*
- 3:00-3:30                    BREAK
- 3:30-4:30                    “Writing successful scientific papers, posters and proposals.”  
*Jeffrey Gaffney, University of Arkansas at Little Rock*  
*Nancy Marley, University of Arkansas at Little Rock*
- 6:00-8:00                    Final Working Session - Salon A  
Keynote Address: “Professional societies and what they are all  
about.”  
*Jeffrey Gaffney, University of Arkansas at Little Rock*
- 8:00                            ADJOURN



# APPENDIX II.

AGENDAS FOR THE GLOBAL CHANGE EDUCATION PROGRAM  
END-OF-SUMMER WORKSHOPS HELD EACH AUGUST FROM 1999 TO  
2010, WITH LINKS TO SELECTED PRESENTATIONS



# GLOBAL CHANGE EDUCATION PROGRAM END-OF-SUMMER WORKSHOP

AUGUST 25 - 27, 1999  
ARGONNE NATIONAL LABORATORY ADVANCED PHOTON SOURCE,  
ARGONNE, IL

## AGENDA

### Wednesday August 25

6:30-8:30 pm                      REGISTRATION - Marriott Guest House

### Thursday August 26

7:30-9:00                          BREAKFAST - Building 402 Conference Room

9:00-9:10                          Welcome to Argonne National Laboratory  
*Chris Reilly, Argonne National Laboratory*

9:10-9:20                          GCEP Student Welcome  
*Milt Constantin, ORAU*

9:20-9:30                          Overview of the GCEP 1999 Final Workshop  
*Jeff Gaffney, Argonne National Laboratory*

9:30-10:15                        “Estimating natural hydrocarbon emissions.”  
*Yiwen Xu, Argonne National Laboratory*

10:15-10:45                        BREAK

10:45-11:15                        “Soil structure and carbon sequestration.”  
*Julie Jastrow, Argonne National Laboratory*



- 11:15-12:00                    “The Advanced Photon Source: An overview of environmental research opportunities.”  
*Jeff Gaffney, Argonne National Laboratory*
- 12:00-1:00                    LUNCH
- 1:00-1:45                    Poster Set-up - Conference Center, Lower Level
- 1:45-2:30                    Tour of the Advanced Photon Source Facilities
- 2:30-5:00                    POSTER SESSION
- [“Using chemiluminescence and other basic properties to detect peroxyacyl nitrates in the troposphere.”](#)  
*J. Christopher Baird, GCEP-SURE Fellow, The University of Chicago*
- [“A collection method for nonmethane organic compounds.”](#)  
*Heidi M. Bialk, GCEP-SURE Fellow, Bemidji State University*
- [“MTBE mixing ratios at a remote site in the Sierra-Nevada mountains, California.”](#)  
*Gabrielle B. Dreyfus, GCEP-SURE Fellow, Harvard University*
- [“Factors affecting carbon exudate levels for \*andropogon gerardii\* in the presence and absence of mycorrhizal fungus.”](#)  
*Pauline A. Fujita, GCEP-SURE Fellow*
- [“Biomass regression for \*liquidambar styraciflua\*.”](#)  
*Jason C. Fults, GCEP-SURE Fellow, Berea College*
- [“Detection of peracids using an HPLC chemiluminescent method.”](#)  
*Heather L. Hart, GCEP-SURE Fellow, Willamette University*
- [“Stem and branch respiration of trees in elevated CO<sub>2</sub> environments.”](#)  
*Marisa Jenkins, GCEP-SURE Fellow, Waynesburg University*
- [“The chemistry of carbonaceous soot aerosols with nitric acid.”](#)  
*Jennifer Leisch, GCEP-SURE Fellow, New Mexico Tech*
- [“Visualization of an atmospheric dataset.”](#)  
*Adria H. Liszka, GCEP-SURE Fellow, Pennsylvania State University*



[“Analysis of factors influencing soil response to no-till agriculture.”](#)

*Jesse Miller, GCEP-SURE Fellow, Cornell University*

[“Projections of sea level rise by 2100 and its impact on Long Island.”](#)

*Anthony Nguyen, GCEP-SURE Fellow, University of Oklahoma*

[“Automatic estimation of mixed layer height.”](#)

*Cynthia A. Randles, GCEP-SURE Fellow, Massachusetts Institute of Technology*

[“Enhancement of a global soil pedon database.”](#)

*Jillian Salvatore, GCEP-SURE Fellow, Pennsylvania State University*

“The impact of global warming on the Pacific Northwest.”

*Jaclyn M. Secora, GCEP-SURE Fellow, Oswego State University*

[“Data quality improvement studies at ARM TWP.”](#)

*Shelby E. Winiacki, GCEP-SURE Fellow, Marquette University*

6:00-8:30

DINNER - Marriott Guest House

Invited Plenary Lecture: “Ultraviolet sunlight and the biosphere: From Antarctica to urban centers”

*Professor John Frederick, The University of Chicago*

## Friday August 27

7:30-9:00

BREAKFAST - Building 402 Conference Room

9:00-9:15

Global Change Education Program: Overview

*Peter Lunn, U.S. Department of Energy*

9:15-9:45

“Atmospheric chemistry of hydrocarbons in Mexico City.”

*Paul Doskey, Argonne National Laboratory*

9:45-10:15

“Tropospheric aerosols: Optical properties and age dating.”

*Nancy Marley, Argonne National Laboratory*



10:15-10:30	BREAK
10:30-11:00	“Oxygenated fuels: Some problems.” <i>Jeff Gaffney, Argonne National Laboratory</i>
11:00-11:30	FINAL REMARKS <i>Jeff Gaffney, Peter Lunn, Milt Constantin</i>
11:30	ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM END-OF-SUMMER WORKSHOP

AUGUST 22 - 25, 2000  
GARDEN PLAZA HOTEL, OAK RIDGE, TN

## AGENDA

### Tuesday August 22

12:00-6:00

REGISTRATION - Hotel Lobby

6:30-9:00

INITIAL WORKING SESSION - Conference Room B

Welcome and Introductions

*Milton Constantin, ORAU*

Welcome

*Ron Townsend, ORAU*

Status of the DOE Global Change Research Programs

*Peter Lunn, Department of Energy*

Workshop Objectives

*Jeffrey Gaffney, Argonne National Laboratory*

Keynote Address: "Wanted: scientists to attack complex problems  
in the 21<sup>st</sup> century"

*Frank Harris, Oak Ridge National Laboratory*

### Wednesday August 23

7:00-8:30

BREAKFAST - Conference Room A



- 8:30-9:30 “Application of satellite imagery to the study of glacier change on decadal to millennial time scales: Examples from the Andes and Himalayas.”  
*Andrew G. Klein, Texas A&M University*
- 9:30-10:30 “Rhythms of change: An integrated assessment of climate impacts at the regional scale.”  
*Amy K. Snover, University of Washington at Seattle*
- 10:30-11:00 BREAK
- 11:00-11:30 “The science-policy interface: Comparing the stratospheric ozone and global climate change problem contexts.”  
*Matthew R. Auer, Indiana University*
- 12:00-1:30 WORKING LUNCHEON - Conference Room B  
“All the greenhouse gases: Where do they all come from?”  
*Robert M. Cushman, Oak Ridge National Laboratory*
- 1:30-2:30 “The mathematical aspects of climate change.”  
*John B. Drake, Oak Ridge National Laboratory*
- 2:30-3:30 “Responding to global climate change in the context of the sustainability transition.”  
*Thomas J. Wilbanks, Oak Ridge National Laboratory*
- 3:30-4:00 BREAK
- 4:00-4:20 “The evolution of cold air pools in mountain basins.”  
*Craig B. Clements, GCEP-GREF Fellow, University of Utah*
- 4:20-4:40 [“Abrupt and variable climate change: Interactions between ocean circulation and anthropogenic change.”](#)  
*Paul A. Higgins, GCEP-GREF Fellow, Stanford University*
- 4:40-5:00 [“Predicting the effect of climate change on a marine snail.”](#)  
*Sarah E. Gilman, GCEP-GREF Fellow, University of California at Davis*
- 5:00 ADJOURN



5:00-6:00 Poster Set-up

### Thursday August 24

7:00-8:30 BREAKFAST - Conference Room B and C

8:30-10:30 POSTER SESSION

[“Detection of formaldehyde in the Central California Ozone Study, July 2000.”](#)

*Anne T. Case, GCEP-SURE Fellow, University of Toledo*

[“A study of non-methane hydrocarbons in the atmosphere.”](#)

*Heidi M. Bialk, GCEP-SURE Fellow, Bemidji State University*

[“Investigating the contribution of isoprene oxidation to ozone production.”](#)

*Gabrielle B. Dreyfus, GCEP-SURE Fellow, Harvard University*

[“Quantification of arbuscular mycorrhizal fungal biomass in a changing global environment.”](#)

*Heather L. Hart, GCEP-SURE Fellow, Willamette University*

[“Calibration of an air pollution measurement system.”](#)

*Neiza M. Hernandez-Cordero, GCEP-SURE Fellow,  
University of Puerto Rico, Mayaguez*

[“The role of coarse woody debris respiration in a northern hardwood forest.”](#)

*Kim Hunter, GCEP-SURE Fellow, University of Texas at Arlington*

[“The photolysis of O<sub>2</sub>: Key to chemistry of middle atmosphere.”](#)

*John P. Iorio, GCEP-SURE Fellow, Bucknell University*

[“Embolism and repair in douglas fir: Effects of age and season.”](#)

*Claire K. Lunch, GCEP-SURE Fellow, University of Chicago*

[“Detection of stratospheric-tropospheric mixing by beryllium-7 counting.”](#)

*Monica Martinez-Aviles, GCEP-SURE Fellow, University of Puerto Rico, Rio Piedras*



“Micrometeorological measurements for carbon dioxide flux above a grassland site.”

*Michael Mosher, GCEP-SURE Fellow, University of Minnesota Institute of Technology*

“Analysis of solar hydrogen systems for use with fuel cell vehicles.”

*Anthony Nguyen, GCEP-SURE Fellow, University of Oklahoma*

“The aerosol mass spectrometer (AMS).”

*Cynthia A. Randles, GCEP-SURE Fellow, Massachusetts Institute of Technology*

“Determining spectral measurements of solar irradiance using a multifilter rotating shadowband radiometer (MRSR).”

*Rose M. Ravelo, GCEP-SURE Fellow, Binghamton University (SUNY)*

“Determining cloud structure using wind profiler 499 MHz data.”

*Tiffany M. Steadham, GCEP-SURE Fellow, Oral Roberts University*

“Albedo of an old-growth coniferous forest.”

*Jessica Wade-Murphey, GCEP-SURE Fellow, The University of Chicago*

“Nauru Island cloud trails.”

*Shelby E. Winiecki, GCEP-SURE Fellow, Marquette University*

“Where’s the root: A study of root distribution in douglas fir.”

*Catherine L. Wooten, GCEP-SURE Fellow, Cornell University*

“Development of a parallel river transport algorithm: Applications to climate studies.”

*Marcia L. Branstetter, GCEP-GREF Fellow, University of Texas at Austin*

“Aqueous phase production of low molecular weight alkyl nitrates.”

*Elizabeth E. Dahl, GCEP-GREF Fellow, University California-Irvine*

“Terrestrial ecosystem model validation using streamflow data: Preliminary analyses of VEMAP Phase 2 model experiments.”

*Wendy S. Gordon, GCEP-GREF Fellow, University of Texas at Austin*

“Chemical record of climate change from east African coral records.”

*Nancy S. Grumet, GCEP-GREF Fellow, Stanford University*



“Soil carbon dynamics along a forest type and elevation gradient in the Rocky Mountains: Ecological feedbacks to climate change.”

*Lara M. Kueppers, GCEP-GREF Fellow, University of California, Berkeley*

“Kinetic isotope effects, VOCs, and atmospheric chemistry.”

*Dylan B. Millet, GCEP-GREF Fellow, University of California, Berkeley*

“The Texas Air Quality Study.”

*Heather U. Price, GCEP-GREF Fellow, University of Washington*

“The effects of fire interval on initial patterns of succession in Yellowstone National Park.”

*Tania Schoennagel, GCEP-GREF Fellow, University of Wisconsin-Madison*

“Temporal variability in methane fluxes from a northern forest ecosystem.”

*Cynthia A. Werner, GCEP-GREF Fellow, Pennsylvania State University*

10:30-11:00	BREAK
11:00-11:30	Pick up Box Lunch
11:30-4:30	Tour of Oak Ridge National Laboratory: Environmental Sciences Division Walker Branch Watershed Aquatic Center CO <sub>2</sub> Enrichment Forest
5:00-8:30	DINNER - Calhoun's by the River
8:30	ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM END-OF-SUMMER WORKSHOP

AUGUST 18 - 21, 2001  
ENVIRONMENTAL AND MOLECULAR SCIENCES LABORATORY  
(EMSL)  
USER HOUSING FACILITY, RICHLAND, WA

## AGENDA

### Saturday August 18

- 12:00-6:00 REGISTRATION - EMSL User Housing Facility
- 7:00-7:30 Initial Working Session - EMSL User Housing Facility
- Greetings and Introductions  
*Milton Constantin, ORAU*  
*Jeffrey Gaffney, Argonne National Laboratory*  
*Teresa Zinn, Pacific Northwest National Laboratory*
- 7:30-8:30 DINNER - Columbia Mall

### Sunday August 19

- 7:00-8:00 CONTINENTAL BREAKFAST - Room 1075
- 8:00-10:00 Poster Set-up - Lobby, Hallway, and Room 1075
- 10:30-11:00 Introduction of SURE Poster Presentations - Room 1077  
SURE Fellows
- 11:00-1:00 SURE POSTER SESSION - Lobby, Hallway and Room 1075  
Box Lunch Provided



“Comparison of black carbon determination by evolved gas analysis and optical attenuation methods.”

*Laura Alvarez-Aviles, GCEP-SURE Fellow, University of Puerto Rico, Rio Piedras*

“Influence of the amount and form of nitrogen on the decomposition of red spruce needles at the Howland Forest, Howland, ME.”

*David A. Dunston, GCEP-SURE Fellow, University of Maryland*

“Renting carbon emission credits.”

*Kristy Fruit, GCEP-SURE Fellow, Pennsylvania State University*

“The evaluation of allometric equations for estimating above-ground tree biomass and stand-level carbon accumulation.”

*Jason C. Fults, GCEP-SURE Fellow, Berea College*

“Results from soil root exudate bags at the Oak Ridge National Laboratory Free air CO<sub>2</sub> exposure (FACE) experiment.”

*Erin M. Hanlon, GCEP-SURE Fellow, St. John's College*

“Analysis of ambient hydroperoxides in Pellston, Michigan, July 2001.”

*Neiza M. Hernandez-Cordero, GCEP-SURE Fellow, University of Puerto Rico, Mayaguez*

“Controlling factors of <sup>18</sup>O/<sup>16</sup>O isotope ratios of CO<sub>2</sub> respired from four forests on the Oregon Transect.”

*Claire K. Lunch, GCEP-SURE Fellow, University of Chicago*

“Relative rate studies of the reaction of chlorine atoms with crotonaldehyde and methyl vinyl ketone.”

*Monica Martinez-Aviles, GCEP-SURE Fellow, University of Puerto Rico, Rio Piedras*

“Measuring the contribution of deadwood respiration to total ecosystem carbon exchange at the Howland Research Forest, Howland, ME.”

*Heidi Ochsner GCEP-SURE Fellow, Eastern Washington University*

“The analysis of atmospheric hydrocarbons in Puerto Rico, 2001.”

*Javier Ramirez, GCEP-SURE Fellow, University of Puerto Rico, Mayaguez*



“The single-particle laser ablation time-of-flight mass spectrometer (SPLAT-MS).”

*Cynthia A. Randles, GCEP-SURE Fellow, Massachusetts Institute of Technology*

“Using pressure-volume analysis to determine the effect of the hydrostatic gradient on cell turgidity.”

*Sarah E. Reed, GCEP-SURE Fellow, St. Cloud State University*

“Measurements of black carbon in the Chicago urban area.”

*Victor M. Rodriguez, GCEP-SURE Fellow, University of Puerto Rico, Rio Piedras*

“Formulating a hydrologic cycle model for the Arkansas-Red Basin River by monitoring precipitation trends.”

*Tiffany M. Steadham, GCEP-SURE Fellow, Oral Roberts University*

1:00-1:30

Introduction of GREF Poster Presentations - Room 1077  
GREF Fellows

1:30-3:30

GREF Poster Presentations - Lobby, Hallway and Room 1075  
GREF Fellows

“Leaf photosynthesis and carbohydrate levels of perennial ryegrass exposed to elevated [CO<sub>2</sub>] and two nitrogen fertilization treatments.”

*Elizabeth A. Ainsworth, GCEP-GREF Fellow, University of Illinois at Urbana-Champaign*

“Validation of the VEMAP Phase 2 model experiments using hydrologic data.”

*Wendy S. Gordon, GCEP-GREF Fellow, University of Texas at Austin*

“Speciated monoterpene emissions and their contribution to the formation of secondary organic aerosols: A preliminary study.”

*Anita Lee, GCEP-GREF Fellow, University of California, Berkeley*

“Airborne measurements of CO, O<sub>3</sub>, NMHCs and aerosol scattering in the northeast Pacific during PHOBEA-II.”

*Heather U. Price, GCEP-GREF Fellow, University of Washington*



- [“Temporal and spatial effects of fire on initial pathways of succession across the Yellowstone landscape.”](#)  
*Tania Schoennagel, GCEP-GREF Fellow, University of Wisconsin-Madison*
- 3:30-4:00 BREAK
- 4:00-4:15 “Modeling past and forecasting future deforestation in the southern Yucatan region of Mexico: Advancing methods for estimation of the greenhouse gas benefits of land use projects.”  
*Christopher Busch, GCEP-GREF Fellow, University of California-Berkeley*
- 4:15-4:30 “Using tree-rings to study historical growth and climate relationships: Insights for the future.”  
*Neil Pederson, GCEP-GREF Fellow, Lamont-Doherty Earth Observatory*
- 4:30-4:45 [“Tropospheric ozone production as influenced by solar irradiance.”](#)  
*Shelby Winecki, GCEP-GREF Fellow, The University of Chicago*
- 4:45-5:00 [“Predicting the effect of climate change on a marine snail.”](#)  
*Sarah Gilman, GCEP-GREF Fellow, University of California – Davis*
- 5:00-5:15 “Quantifying natural climate change: Reconstructing Holocene thermocline variation in the tropical Atlantic.”  
*Christina Farmer, GCEP-GREF Fellow, Lamont-Doherty Earth Observatory*
- 5:15-5:30 “Aqueous phase production of ethyl nitrate.”  
*Elizabeth Dahl, GCEP-GREF Fellow, University of California – Irvine*
- 5:30 ADJOURN

## Monday August 20

- 7:30-8:15 BREAKFAST - PNNL Cafeteria
- 8:30-9:00 Welcome to Pacific Northwest National Laboratory - EMSL Room 1077  
*Bill Rogers, Pacific Northwest National Laboratory*



9:00-9:30	Comments and Introductions <i>Milton Constantin, ORAU</i> <i>Jeff Gaffney, Argonne National Laboratory</i>
9:30-10:00	“Time-resolved observation of heterogeneous chemistry in individual atmospheric particles.” <i>Alexander Laskin, Pacific Northwest National Laboratory</i>
10:00-10:30	“Modeling the global aerosol distribution and its impact on the planetary energy balance.” <i>Steven Ghan, Pacific Northwest National Laboratory</i>
10:30-11:00	BREAK
11:00-12:00	“Urban to regional scale air quality modeling.” <i>Jerome Fast, Pacific Northwest National Laboratory</i>
12:00-12:30	“Ozone production efficiency in the Nashville urban plume.” <i>Carl Berkowitz, Pacific Northwest National Laboratory</i>
12:30-1:30	LUNCH - PNNL Cafeteria
1:30-2:45	Tour of EMSL Laboratory <i>Steven Colson, Pacific Northwest National Laboratory</i>
2:45-3:15	“Evolution of the nocturnal atmospheric boundary layer over a Columbia basin vineyard.” <i>David Whiteman, Pacific Northwest National Laboratory</i>
3:15-3:30	<a href="#"><u>“Ecosystem change and climate feedbacks under greenhouse gas increases and thermohaline circulation collapse.”</u></a> <i>Paul Higgins, GCEP-GREF Fellow, Stanford University</i>
3:30-4:00	BREAK
4:00-4:15	“The response of soil carbon efflux to climate and forest type along an elevational gradient in the Rocky Mountains.” <i>Lara Kueppers, GCEP-GREF Fellow, University of California – Berkeley</i>



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- 4:15-4:30      [“Surface radiocarbon variability off the coast of Kenya during the last 50 years.”](#)  
*Nancy Grumet, GCEP-GREF Fellow, Stanford University*
- 4:30-4:45      “Integrated assessment of abrupt climate changes.”  
*Michael Mastrandrea, GCEP-GREF Fellow, Stanford University*
- 4:45              ADJOURN
- 6:00-9:00      FINAL WORKING SESSION - EMSL Room 1075  
Keynote Address: “Air quality and global change: Are we winning the battle?”  
*Jeffrey S. Gaffney, Argonne National Laboratory*
- Closing Comments  
*Milton Constantin, ORAU*

# GLOBAL CHANGE EDUCATION PROGRAM END-OF-SUMMER WORKSHOP

AUGUST 18 - 21, 2002  
ARGONNE NATIONAL LABORATORY, ARGONNE, IL

## AGENDA

### Saturday August 18

- 12:00-6:00 REGISTRATION - Argonne Guest House
- 7:00-9:00 INITIAL WORKING SESSION - Argonne Guest House Restaurant
- 7:00-7:30 Greetings, Introductions and Objectives  
*Milton Constantin, ORAU*  
*Jeffrey S. Gaffney, Argonne National Laboratory*
- 7:30-8:30 DINNER BUFFET
- 8:30-9:00 Keynote Address: "The Advanced Photon Source (APS):  
An overview."  
*Jeffrey S. Gaffney, Argonne National Laboratory*
- 9:00 ADJOURN

### Monday August 19

- 7:00-8:00 CONTINENTAL BREAKFAST - Conference Room A
- 8:00-8:30 Welcome to Argonne National Laboratory  
*Jeffrey S. Gaffney, Argonne National Laboratory*  
*Milton Constantin, ORAU*



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- 8:30-9:00      [“Technological change in agriculture in southeastern Mexico: Implications for land use, deforestation, and climate change policy.”](#)  
*Christopher Busch, GCEP-GREF Fellow, University of California – Berkeley*
- 9:00-10:00      “Radiation, air chemistry, and human health.”  
*John Frederick, The University of Chicago*
- 10:00-10:30      BREAK
- 10:30-11:30      “Carbon cycling and sequestration belowground.”  
*Roser Matamala, Argonne National Laboratory*
- 11:30-12:00      [“The response of photosynthesis to 10 years of free air CO<sub>2</sub>–enrichment \(FACE\) in \*lolium perenne\*.”](#)  
*Elizabeth Ainsworth, GCEP-GREF Fellow, University of Illinois, Urbana-Champaign*
- 12:00-1:00      LUNCH
- 1:00-1:30      [“Stable boundary layers and pollution transport in mountain terrain.”](#)  
*Craig Clements, GCEP-GREF Fellow, University of British Columbia*
- 1:30-2:00      [“Holocene variability of the Benguela upwelling.”](#)  
*Christina Farmer, GCEP-GREF Fellow, Columbia University*
- 2:00-2:30      “Validation of simulated runoff from six terrestrial ecosystem models using observed streamflow: Results from the VEMAP phase 2 model intercomparison.”  
*Wendy Gordon, GCEP-GREF Fellow, University of Texas, Austin*
- 2:00-2:30      “Climate, carbon and dead wood: A radiocarbon approach to measuring decomposition.”  
*Lara Kueppers, GCEP-GREF Fellow, University of California - Berkeley*
- 3:00-3:30      BREAK
- 3:30-4:00      [“Monoterpene and sesquiterpene emissions from ponderosa pine: Implications for secondary organic aerosol formation.”](#)  
*Anita Lee, GCEP-GREF Fellow, University of California - Berkeley*
- 4:00-4:30      [“Soil carbon storage and dynamics in a subtropical savanna ecosystem.”](#)  
*Julia D. Liao, GCEP-GREF Fellow, Texas A&M University*
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4:30-5:00 “Organic aerosols, hygroscopic growth, and optical properties.”  
*Cynthia Randles, GCEP-GREF Fellow, Princeton University*

## Tuesday August 20

7:30-8:15 CONTINENTAL BREAKFAST - ANL Cafeteria

8:30-9:00 “Unlocking the secrets of climate change through coral reef studies.”  
*Nancy Grumet, GCEP-GREF Fellow, Stanford University*

9:00-9:30 “The effects of climatically altered fire regimes on successional patterns and carbon dynamics in Yellowstone National Park.”  
*Tania Schoennagel, GCEP-GREF Fellow, University of Wisconsin, Madison*

9:30-10:00 “Solving the continuity equation for tropospheric ozone in Chicago.”  
*Shelby Winiecki, GCEP-GREF Fellow, The University of Chicago*

10:00-10:30 BREAK

10:30-11:30 “Tracking Titanic icebergs of the Antarctic ice sheet: Lessons about field science.”  
*Doug MacAyeal, The University of Chicago*

11:30-1:00 Poster Set-up and Box Lunch - Conference Room  
SURE Fellows

1:00-3:00 SURE Poster Summary Overviews

3:00-3:30 BREAK

3:30-5:00 POSTER SESSION - Conference Room B  
SURE Fellows

6:30-9:00 FINAL WORKING SESSION - Argonne Guest House Restaurant  
Keynote Address: “Smoke gets in your eyes: Some recent studies Chicago.”  
*Jeffrey S. Gaffney, Argonne National Laboratory*

Closing Comments  
*Milt Constantin, ORAU*  
*Jeffrey S. Gaffney, Argonne National Laboratory*

# GLOBAL CHANGE EDUCATION PROGRAM END-OF-SUMMER WORKSHOP

AUGUST 17 - 20, 2003  
THE MELROSE HOTEL  
2430 PENNSYLVANIA AVE. NW, WASHINGTON, DC

## AGENDA

### Monday August 18

- 8:00-9:00 CONTINENTAL BREAKFAST
- 9:00-10:00 [Welcome and GCEP Update](#)  
*Peter Lunn, U.S. Department of Energy*  
*Rickey Petty, U.S. Department of Energy*  
*Peter Faletra, U.S. Department of Energy*  
*Jeffrey S. Gaffney, Argonne National Laboratory*  
*Milton Constantin, ORAU*
- 10:00-10:30 BREAK
- 10:30-11:00 [“Impacts of past land use on spatial heterogeneity of soil nutrients in southern Appalachian forests.”](#)  
*Jennifer Fraterrigo, GCEP-GREF Fellow, University of Wisconsin-Madison*
- 11:00-11:30 [“Climate science as a policymaking tool: predicting ENSO-Related agricultural impacts in Indonesia and Vietnam.”](#)  
*Michael Mastrandrea, GCEP-GREF Fellow, Stanford University*
- 11:30-12:00 [“Microbial enzyme activity and carbon cycling in grassland soil aggregates.”](#)  
*Steven Allison, GCEP-GREF Fellow, Stanford University*



12:00-1:30	LUNCH
1:30-2:30	“Ultraviolet sunlight at the Earth’s surface: Variability and global mean conditions.” <i>John Frederick, The University of Chicago</i>
2:30-3:00	<a href="#"><u>“Big (and old) trees: Fire hoses for a smoldering climate.”</u></a> <i>Neil Pederson, GCEP-GREF Fellow, Lamont-Doherty Earth Observatory</i>
3:00-3:30	BREAK
3:30-4:00	<a href="#"><u>“Climate and species controls on forest carbon dynamics in the Rocky Mountains.”</u></a> <i>Laura Kueppers, GCEP-GREF Fellow, University of California – Berkeley</i>
4:00-4:30	<a href="#"><u>“Improving forest ecosystem models to simulate responses to global change.”</u></a> <i>Victoria Wittig, GCEP-GREF Fellow, University of Illinois at Urbana-Champaign</i>
4:30-5:00	<a href="#"><u>“Can microbes limit plant growth under elevated CO<sub>2</sub>?”</u></a> <i>Elsa Cleland, GCEP-GREF Fellow, Stanford University</i>
5:00-5:15	“Deadwood: The silent source of carbon dioxide.” <i>Alexandra Morel, GCEP-SURE Fellow, Washington University</i>
5:00	ADJOURN

## Tuesday August 19

8:00-9:00	CONTINENTAL BREAKFAST
9:00-9:15	<a href="#"><u>“Mycorrhizal quantification for a prairie chronosequence.”</u></a> <i>Nicole Aragon, GCEP-SURE Fellow, Washington State University</i>
9:15-9:30	<a href="#"><u>“Chemical processing of a lake-land breeze effect: Study of non-methane hydrocarbons in Chicago.”</u></a> <i>Anna Beck, GCEP-SURE Fellow, Denison University</i>



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- 9:30-9:45      [“Nitrogen dioxide \(NO<sub>2</sub>\), peroxyacetyl nitrates \(PAN\), and black carbon \(BC\) measurements in Chicago.”](#)  
*Luis Cuadra-Rodriguez, GCEP-SURE Fellow, University of Puerto Rico, Rio Piedras*
- 9:45-10:00      [“Elevated CO<sub>2</sub> effects on soil carbon dynamics in a \*liquidambar styraciflua\* plantation.”](#)  
*Erin Hanlon, GCEP-SURE Fellow, St. John’s College*
- 10:00-10:30      BREAK
- 10:30-10:45      [“The Chicago lake breeze. Its structure and effect on air quality”](#)  
*Lucas Harris, GCEP-SURE Fellow, Northern Illinois University*
- 10:45-11:00      [“The Kansas nocturnal and minimum temperatures.”](#)  
*Erin Hokanson, GCEP-SURE Fellow, Valparaiso University*
- 11:00-11:15      [“The use of filter bases light transmission techniques to measure aerosol light absorption properties.”](#)  
*Daniel Hooper, GCEP-SURE Fellow, Tulane University*
- 11:15-11:30      [“The fate of agricultural lime: Implications for carbon accounting.”](#)  
*Allen McBride, GCEP-SURE Fellow, Swarthmore College*
- 11:30-11:45      [“Increasing atmospheric temperature: Effects on soil respiration and acclimation adjacent to four deciduous tree species.”](#)  
*Nicole Miller, GCEP-SURE Fellow, Loyola University*
- 11:45-12:00      [“Preliminary observations of the atmospheric boundary layer above Oklahoma City during the Joint Urban 2003 Field Program.”](#)  
*Kori Moore, GCEP-SURE Fellow, Utah State University*
- 12:00-1:30      LUNCH
- 1:30-1:45      [“Effects of moisture and temperature on VOC emissions from evergreen forest and oak savannah soils.”](#)  
*Stephanie Wheeler, GCEP-SURE Fellow, College of Charleston*
- 1:45-2:00      [“Survey of the uncertainties in regional climate simulations of California and environments.”](#)  
*Ester Zeledon, GCEP-SURE Fellow, Swarthmore College*



- 2:00-2:15                    “Acclimation of stem respiration to increased temperatures:  
Implications of warming on tree survivability.”  
*Adam Roddy, GCEP-SURE Fellow, Swarthmore College*
- 2:15-2:45                    [“Holocene tropical Atlantic climate change.”](#)  
*Cristina Farmer, GCEP-GREF Fellow, Columbia University*
- 2:45-3:15                    [“Impacts of wildfire and climate patterns on vegetation dynamics  
in the grasslands of the Southwest.”](#)  
*Allison Drake, GCEP-GREF Fellow, University of Arizona*
- 3:15-3:45                    BREAK
- 3:45-5:15                    Discussion and Final Comments  
*Jeffrey S. Gaffney, Argonne National Laboratory*  
*Milton Constantin, ORAU*
- 6:30-9:00                    FINAL WORKING SESSION - S.S. Potomac Club Room  
Keynote Address: [“Global change future issues: Linkages and  
feedbacks.”](#)  
*Jeffrey S. Gaffney, Argonne National Laboratory*
- 9:00                            ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM END-OF-SUMMER WORKSHOP

AUGUST 15 - 17, 2004  
THE MELROSE HOTEL  
2430 PENNSYLVANIA AVE. NW, WASHINGTON, DC

## AGENDA

### Sunday August 15

- 12:00-5:30 REGISTRATION - Melrose Hotel Lobby
- 6:30-9:00 INITIAL WORKING GROUP - William Penn Room  
Keynote Address: [“The politics of global change.”](#)  
*Jeffrey S. Gaffney, Argonne National Laboratory*
- 9:00 ADJOURN

### Monday August 16

- 7:00-8:00 CONTINENTAL BREAKFAST - Hotel Dining Room
- 8:00-8:30 [Welcome and GCEP update](#) - Potomac III  
*Ricky Petty, U.S. Department of Energy*  
*Peter Lunn, U.S. Department of Energy*  
*Jeffrey S. Gaffney, Argonne National Laboratory*  
*Milton Constantin, ORAU*
- 8:30-9:00 [“Storage and turnover of carbon in soil physical fractions following woody plant invasion of grassland.”](#)  
*Julia Liao, GCEP-GREF Fellow, Texas A&M University*



- 9:00-9:30                      Marvin L. Wesely Award Address: [“Microbial enzyme activity and carbon cycling in grassland soil fractions.”](#)  
*Steven Allison, 2004 Marvin L. Wesely GREF Fellow, Stanford University*
- 9:30-10:00                    [“Herbaceous species productivity in an historically altered landscape.”](#)  
*Jennifer Fratterrigo, GCEP-GREF Fellow, University of Wisconsin – Madison*
- 10:00-10:30                   BREAK
- 10:30-11:00                   [“A stable isotope dendrochronology approach to reconstructing interannual and interdecadal tropical climate variability.”](#)  
*Kevin Anchukatis, GCEP-GREF Fellow, University of Arizona*
- 11:00-11:30                   [“Vigorous ancient oaks: Life lessons from old trees.”](#)  
*Neil Pederson, GCEP-GREF Fellow, Lamont-Doherty Earth Observatory*
- 11:30-12:00                   [“Accounting for the uncounted: Above canopy monoterpene fluxes and oxidation products from terpene + ozone reactions.”](#)  
*Anita Lee, GCEP-GREF Fellow, University of California, Berkeley*
- 12:00-1:30                    LUNCH
- 1:30-1:45                      [“Initiation and longation of maize primary roots under water stress.”](#)  
*Adam Roddy, GCEP-SURE Fellow, Swarthmore College*
- 1:45-2:00                      [“The role of ocean water in vadose hydrology of coastal dunes.”](#)  
*Esther Zeledon, GCEP-SURE Fellow, Swarthmore College*
- 2:00-2:15                      [“The impacts of albedo change on carbon sequestration strategies.”](#)  
*Maithilee Kunda, GCEP-SURE Fellow, Massachusetts Institute of Technology*
- 2:15-2:30                      [“Carbon dioxide respiration from post harvest slash piles in Howland, Maine.”](#)  
*Amy Gagne, GCEP-SURE Fellow, Rensselaer Polytechnic Institute*



- 2:30-3:00 [“Reconstructing tropical Atlantic paleoclimate from Mg/Ca and oxygen isotopes of planktonic foraminifera.”](#)  
*Christa Farmer, GCEP-GREF Fellow, Columbia University*
- 3:00-3:30 BREAK
- 3:30-3:45 [“Aerosol loading and optical properties during the May 2003 Southern Great Plains ARM Aerosol IOP”](#)  
*Melissa Melvin, GCEP-SURE Fellow, Northern Illinois University*
- 3:45-4:00 [“The impact of sediment and freshwater runoff on the growth of porites corals.”](#)  
*Anna Goertzen, GCEP-SURE Fellow, Midland Lutheran College*
- 4:00-4:30 [“Gross primary production is stimulated for \*Populus\* species grown under free air carbon dioxide enrichment.”](#)  
*Victoria Wittig, GCEP-GREF Fellow, University of Illinois at Urbana-Champaign*
- 4:30-5:00 [“Ecosystem responses to warming: Induced shifts in plant community composition and nitrogen availability.”](#)  
*Molly Smith Cross, GCEP-GREF Fellow, University of California, Berkeley*
- 5:00 ADJOURN

## Tuesday August 17

- 7:00-8:30 CONTINENTAL BREAKFAST - Hotel Dining Room
- 8:30-9:00 [“Probabilistic integrated assessment of ‘dangerous’ climate change.”](#)  
*Michael Mastrandrea, GCEP-GREF Fellow, Stanford University*
- 9:00-9:30 “Studies of reactive nitrogen in the atmosphere using global modeling and stable isotope measurements.”  
*Meredith Hastings, GCEP-GREF Fellow, Princeton University*
- 9:30-10:00 [“Photochemistry and dilution of Asian air pollution episodes transported to the northwest United States.”](#)  
*Heather Price, Former GCEP-GREF Fellow, University of Washington*



10:00-10:30	BREAK
10:30-10:45	<a href="#"><u>“Hydrocarbon air-surface exchange from grasslands.”</u></a> <i>Anna Beck, GCEP-SURE Fellow, Denison University</i>
10:45-11:00	<a href="#"><u>“Analyzing aerosol-cloud interactions using MODIS data.”</u></a> <i>Nicholas Chmura, GCEP-SURE Fellow, Cornell University</i>
11:00-11:15	<a href="#"><u>“Spatial characterizations of methane greenhouse gas emissions from landfills and livestock in California.”</u></a> <i>Joshua Hatch, GCEP-SURE Fellow, Cornell University</i>
11:15-11:30	<a href="#"><u>“On-road measurements of gasoline and diesel vehicle emissions in the Caldecott Tunnel.”</u></a> <i>Dan Hooper, GCEP-SURE Fellow, Tulane University</i>
11:30-11:45	<a href="#"><u>“Temporal and spatial forecasting of chemical phenomena for data collection and sampling by airplane.”</u></a> <i>Benjamin Jelley, GCEP-SURE Fellow, Texas A&amp;M University</i>
11:45-12:00	“Design and construction of an ozone chemiluminescent olefin monitor.” <i>Robert Judd, GCEP-SURE Fellow, Tulane University</i>
12:00-1:30	LUNCH
1:30-2:00	<a href="#"><u>“Hygroscopic growth of aerosols and their optical properties.”</u></a> <i>Cynthia Randles, GCEP-GREF Fellow, Princeton University</i>
2:00-2:30	<a href="#"><u>“Studies of oceanic alkyl nitrates.”</u></a> <i>Elizabeth Dahl, GCEP-GREF Fellow, University of California – Irvine</i>
2:30-3:00	“Remotely sensed biophysical data and fully coupled general circulation models.” <i>Erin Hokinson, GCEP-GREF Fellow, University of Wisconsin – Madison</i>
3:00-3:30	BREAK
3:30-3:45	<a href="#"><u>“Nauru: Aerosol optical depth properties and trends.”</u></a> <i>Edan Lindaman, GCEP-SURE Fellow, Loyola Marymount University</i>



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- 3:45-4:00      [“Folier pathogen growth response to elevated CO<sub>2</sub>”](#)  
*Elizabeth Hart, GCEP-SURE Fellow, Willamette University*
- 4:00-4:15      [“Stabe carbon isotopes: A tool for understanding carbon uptake  
of a semi-arid forest and a tropical rainforest.”](#)  
*Gretchen Miles, GCEP-SURE Fellow, Alfred University*
- 4:15-4:30      [“Size dependent transmission of aerosols in an ARI aerosol mass  
spectrometer.”](#)  
*Kori Moore, GCEP-SURE Fellow, Utah State University*
- 4:30              ADJOURN
- 6:30-9:00      FINAL WORKING SESSION - William Penn Room Keynote  
Address: [“The role of science in a changing world.”](#)  
*Paul Higgins, Former GCEP-GREF Fellow, University of  
California – Berkeley*
- 9:00              ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM END-OF-SUMMER WORKSHOP

AUGUST 21 – 24, 2005  
THE MELROSE HOTEL  
2430 PENNSYLVANIA AVE. NW, WASHINGTON, DC

## AGENDA

### Sunday August 21

12:00-6:30 REGISTRATION - Hotel Lobby

### Monday August 22

7:00-8:00 CONTINENTAL BREAKFAST - Stateroom

8:00-8:30 Welcome and GCEP Update  
*Rickey Petty, U.S. Department of Energy*  
*Jeffrey S. Gaffney, Argonne National Laboratory*  
*Milton Constantin, ORAU*

8:30-9:00 Marvin L. Wesely Award Address: “Mechanisms of soil carbon stabilization with reforestation of tropical pastures.”  
*Erika Marin-Spiotta, 2005 Marvin L. Wesely GREF Fellow University of California – Berkeley*

9:00-9:30 “High resolution stable isotope endroclimatology in the Monteverde Cloud Forest, Costa Rica.”  
*Kevin Anchukaitis, GCEP-GREF Fellow, University of Arizona*

9:30-10:00 “Land use and land cover changes in temperate savannas: Impact of fire on biodiversity and ecosystem carbon storage.”  
*Emily Hollister, GCEP-GREF Fellow, Texas A&M University*

10:00-10:30 BREAK



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- 10:30-11:00 “Climate change predictions and demographic shifts in southeastern deciduous forests.”  
*Allen McBride, GCEP-GREF Fellow, Duke University*
- 11:00-11:30 “Comparison and assessment of methods to partition net ecosystem exchange of CO<sub>2</sub> in heterogeneous environments.”  
*John Zobitz, GCEP-GREF Fellow, University of Utah*
- 11:30-12:00 “Hydrologic and vegetative controls on soil carbon accumulation in restored grasslands.”  
*Sarah O’Brien, GCEP-GREF Fellow, University of Illinois at Chicago*
- 12:00-1:30 LUNCH
- 1:30-1:45 “Soil carbon dynamics of elevated CO<sub>2</sub> in a sweetgum Free Air Carbon Dioxide Enrichment (FACE) site.”  
*Kate Flick, GCEP-SURE Fellow, University of Wisconsin at Madison*
- 1:45-2:00 “Cryptobiotic crust in alpine and sub-alpine regions.”  
*Elizabeth Hart, GCEP-SURE Fellow, Willamette University*
- 2:00-2:15 “The impact of albedo change on carbon sequestration strategies.”  
*Maithilee Kunda, GCEP-SURE Fellow, Massachusetts Institute of Technology*
- 2:15-2:30 “The effects of nitrogen fertilization on the competitiveness of invasive species.”  
*Zara Berg, GCEP-SURE Fellow, Montana Technical University*
- 2:30-2:45 “Growth biomechanics of water stressed and impeded maize roots: Rates, mechanical properties, and morphological patterns.”  
*Adam Roddy, GCEP-SURE Fellow, Swarthmore College*
- 2:30-2:45 “Wasting away: Food, feces, and flatulence in the U.S. carbon budget.”  
*Adam Roddy, GCEP-SURE Fellow, Swarthmore College*
- 3:00-3:30 BREAK
- 3:30-3:45 “Nitrogen mineralization in intensive maize based cropping systems.”  
*Anna Goertzen, GCEP-SURE Fellow, Midland Lutheran College*



- 3:45-4:00 “Highlights of the canopy nitrogen deposition experiment at the Howland Forest.”  
*Gretchen Miles, GCEP-SURE Fellow, Alfred University*
- 4:00-4:30 “Latitudinal shifts in the southern hemisphere westerlies.”  
*Christopher Moy, GCEP-GREF Fellow, Stanford University*
- 4:30-5:00 “Improving projections of atmosphere-ecosystem carbon and water exchange for midwest croplands in response to rising tropospheric carbon dioxide and ozone.”  
*Joseph Castro, GCEP-GREF Fellow, University of Illinois at Urbana-Champaign*
- 5:00 ADJOURN

## **Tuesday August 23**

- 7:00-8:30 CONTINENTAL BREAKFAST - Stateroom
- 8:30-9:00 “Gulf of Mexico corals as monitors of environmental change.”  
*Amy Wagoner, GCEP-GREF Fellow, Texas A&M University*
- 9:00-9:30 “CO<sub>2</sub> mediated effects on nitrogen availability: Potential nitrogen limitation on forest productivity and long-term carbon storage.”  
*Colleen Iverson, GCEP-GREF Fellow, University of Tennessee at Knoxville*
- 9:30-10:00 “Carbonaceous aerosol impacts on visibility: Smoke and other natural sources.”  
*Gavin McMeeking, GCEP-GREF Fellow, Colorado State University*
- 10:00-10:30 BREAK
- 10:30-11:00 “Addressing major uncertainties in rates of tropical deforestation and associated carbon emissions.”  
*Holly Gibbs, GCEP-GREF Fellow, University of Wisconsin at Madison*
- 11:00-11:30 “A new experiment for the measurement of oxidation of organic aerosols.”  
*Luis Cuadra-Rodriguez, GCEP-GREF Fellow, University of Colorado at Boulder*



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- 11:30-12:00 “Aerosol composition as a function of hygroscopicity, volatility, and density.”  
*Dabrina Dutcher, GCEP-GREF Fellow, University of Minnesota at Minneapolis*
- 12:00-1:30 LUNCH
- 1:30-1:45 “Using carbon-14 analysis, emission databases, and modeling to itemize California’s carbon budget.”  
*Joshua Hatch, GCEP-SURE Fellow, Cornell University*
- 1:45-2:00 “Simulation of precipitating convection during the RICO field project.”  
*Edan Lindaman, GCEP-SURE Fellow, Loyola Marymount University*
- 2:00-2:15 “Climate change applications of stable carbon isotope dendrochronology in the Jemez Mountains of New Mexico.”  
*Laura Marshall, GCEP-SURE Fellow, University of Arizona*
- 2:15-2:30 “Effects of a wetland on carbon exchange in the Harvard Forest.”  
*Jennifer McInnis, GCEP-SURE Fellow, Cornell University*
- 2:30-2:45 “Using electromagnetic mapping along with point sensors to determine changes in soil water content over a large spatial grid.”  
*Jessica Mandrick, GCEP-SURE Fellow, Swarthmore College*
- 2:45-3:15 BREAK
- 3:15-3:30 “The growth of aerosol particles.”  
*Tri Tran, GCEP-SURE Fellow, University of California – Riverside*
- 3:30-3:45 “An empirical model of land use in the southern Yucatan used to explain past and forecasting future deforestation in the region.”  
*Christopher Busch, GCEP-GREF Fellow, University of California – Berkeley*
- 3:45-4:00 “A study of the kinetics and mechanisms of the atmospheric degradation of bromopropane and its by-products.”  
*Monica Martinez-Aviles, GCEP-GREF Fellow, Purdue University*



4:00

ADJOURN

6:30-9:00

FINAL WORKING SESSION - Congressional Room

Keynote Address: "Global change science from basic research to the federal policy process."

*Paul Higgins, Former GCEP-GREF Fellow, AMS/UCAR  
Congressional Fellow*

9:00

ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM END-OF-SUMMER WORKSHOP

AUGUST 20 - 23, 2006  
THE MELROSE HOTEL  
2430 PENNSYLVANIA AVE. NW, WASHINGTON, DC

## AGENDA

### Sunday August 20

- 12:00-6:30 REGISTRATION - Hotel Lobby
- 7:00-8:30 INITIAL WORKING SESSION - Terrace Ballroom  
[Welcome, Introductions](#), and Open Discussion  
*Jeffrey Gaffney, University of Arkansas at Little Rock*
- 8:30 ADJOURN

### Monday August 22

- 7:00-8:00 CONTINENTAL BREAKFAST - Stateroom
- 8:00-8:30 [Welcome and GCEP Update](#)  
*Rickey Petty, U.S. Department of Energy*  
*Jeffrey Gaffney, University of Arkansas at Little Rock*  
*Milton Constantin, ORAU*
- 8:30-9:00 Marvin L. Wesely Award Address: [“Aerosol absorption: A sensitivity study over Asia.”](#)  
*Cynthia Randles, 2006 Marvin L. Wesely GREF Fellow, Princeton University*



- 9:00-9:30                    [“CO<sub>2</sub> effects on mercury cycling in two temperate forests.”](#)  
Susan Natili, GCEP-GREF Fellow, State University of New York –  
Stony Brook
- 9:30-10:00                [“Global change in the Great Plains: Biodiversity, fire and ecosystem  
carbon storage.”](#)  
*Emily Hollister, GCEP-GREF Fellow, Texas A&M University*
- 10:00 – 10:30            BREAK
- 10:30-11:00             [“The impact of tropospheric ozone on trees: A meta-analytic  
review.”](#)  
*Victoria Whitig, GCEP-GREF Fellow, University of Illinois at Urbana-  
Champagne*
- 11:00-11:30             [“Tropical isotope dendroclimatology in montane cloud forests.”](#)  
*Kevin Anchukaitis, GCEP-GREF Fellow, University of Arizona*
- 11:30-12:00             [“Ecological and edaphic controls on soil carbon accumulation in  
a restored tall-grass prairie.”](#)  
*Sarah O’Brien, GCEP-GREF Fellow, University of Illinois at Chicago*
- 12:00-1:30              LUNCH
- 1:30-1:45                “A highly engineered landscape.”  
*Jessica Mandrick, GCEP-SURE Fellow, Swarthmore College*
- 1:45-2:00                [“Fire, water, and nitrogen: Growth constraints in a New Mexico  
pine forest.”](#)  
*Laura Marshall, GCEP-SURE Fellow, University of Arizona*
- 2:00-2:15                [“Environmental decision making: Mining corporations, American  
Indians, and the environment.”](#)  
*Kate Flick, GCEP-SURE Fellow, University of Wisconsin, Madison*
- 2:15-2:30                [“Arctic biocomplexity on the forefront of global change.”](#)  
*Winona Squirrel, GCEP-SURE Fellow, Western Carolina University*
- 2:30-2:45                [“Vertical temperature profile analyses in Meteor Crater and Owens  
Valley.”](#)  
*Jonathan Wofsy, GCEP-SURE Fellow, Harvard University*



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- 2:45-3:00      [“Separating soil respiration into plant, fungal, and bacterial components using molecular targets and assays.”](#)  
*Sharon Gray, GCEP-SURE Fellow, University of Illinois at Urbana-Champaign*
- 3:00-3:30      BREAK
- 3:30-3:45      [“From genes to ecosystems: Linking shifts in the genetic structure of plant populations to ecosystem processes.”](#)  
*Luke Zachmann, GCEP-SURE Fellow, University of Minnesota – Morris*
- 3:45-4:00      [“Measuring the kinetics of reactions between aldehydes and peroxides.”](#)  
*Tri Tran, GCEP-SURE Fellow, University of California – Riverside*
- 4:00-4:30      “Late Holocene lacustrine records of climate and vegetation change from southern Patagonia, Chile.”  
*Christopher Moy, GCEP-GREF Fellow, Stanford University*
- 4:30-5:00      [“Halogenated hydrocarbons and halomethanediols: A study of the atmospheric implications of proposed replacements for chlorofluorocarbons.”](#)  
*Monica Martinez-Aviles, GCEP-GREF Fellow, Purdue University*
- 5:00              ADJOURN

## **Tuesday August 22**

- 7:00-8:30      CONTINENTAL BREAKFAST - Stateroom
- 8:30-9:00      [“Defining atmospheric aerosol sources using thermal desorption aerosol GC/MS-FID \(TAG\).”](#)  
*Brent Williams, GCEP-GREF Fellow, University of California – Berkeley*
- 9:00-9:30      [“The chemical characterization of particle emissions from biomass burning stoves.”](#)  
*Dabrina Deutcher, GCEP-GREF Fellow, University of Minnesota*



- 9:30-10:00      [“Indirect effects of climate change: The importance of plant species loss and increased nitrogen availability.”](#)  
*Molly Smith Cross, GCEP-GREF Fellow, University of California – Berkeley*
- 10:00-10:30      BREAK
- 10:30-11:00      [“Exploring the link between mineral dust aerosol chemistry and climate.”](#)  
*Elizabeth Gibson, GCEP-GREF Fellow, University of Iowa*
- 11:00-11:30      [“Controls on above and below ground carbon storage during tropical reforestation.”](#)  
*Erika Marin-Spiotta, GCEP-GREF Fellow, University of California – Berkeley*
- 11:30-12:00      [“Optical and physical properties of aerosols from biomass combustion.”](#)  
*Gavin McMeeking, GCEP-GREF Fellow, Colorado State University*
- 12:00-1:30      LUNCH
- 1:30-1:45      [“Using HOBOS to study the vertical structure of cold pool events in the Salt Lake Valley.”](#)  
*Nicole Schiffer, GCEP-SURE Fellow, University of Wisconsin-Madison*
- 1:45-2:00      [“The collection efficiency of ammonia in a real time fluorometric analyzer.”](#)  
*Maritere Berberena-Alonso, GCEP-SURE Fellow, University of Puerto Rico - Rio Piedras*
- 2:00-2:15      [“Quantifying aerosols: The characterization of the transmission and collection of an Aerodyne aerosol mass spectrometer.”](#)  
*Jennifer McInnis, GCEP-SURE Fellow, Cornell University*
- 2:15-2:45      “Elevated CO<sub>2</sub>, but not ozone, significantly delays, the development of soybean under free air carbon dioxide enrichment (FACE).”  
*Joseph Castro, GCEP-GREF Fellow, University of Illinois at Urbana-Champaign*



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- 2:45-3:15 BREAK
- 3:15-3:30 [“The role and diversity of crusts in an alpine and sub-alpine ecosystem.”](#)  
*Cynthia Schafer, GCEP-SURE Fellow, Michigan Technological University*
- 3:30-3:45 [“Anthropogenic methane emissions across California.”](#)  
*Aaron Rose, GCEP-SURE Fellow, North Carolina State University*
- 3:45-4:15 [“Observations of chemical composition in frost flower growth processes: Implications for aerosol production and bromide activation chemistry.”](#)  
*Laura Alvarez-Aviles, GCEP-GREF Fellow, University of Alaska - Fairbanks*
- 4:15-4:45 [“Land use and land cover change in Nicaragua.”](#)  
*Esther Zelodon, GCEP-GREF Fellow, University of California - Berkeley*
- 4:45-5:00 “Statistical analysis of the North Atlantic hurricanes.”  
*Tara Clancy, GCEP-SURE Fellow, Rensselaer Polytechnic Institute*
- 5:00-5:15 [“Submarine groundwater discharge in the surf zone at Sinston Beach, California.”](#)  
*Eric Foote, GCEP-SURE Fellow, Cornell University*
- 5:15 ADJOURN
- 6:30-9:00 FINAL WORKING SESSION - Director’s Room  
Keynote Address: [“The long hot summer: Records broken in 2006.”](#)  
*Jeffrey Gaffney, University of Arkansas at Little Rock*
- 9:00 ADJOURN

# GLOBAL CHANGE EDUCATION PROGRAM END-OF-SUMMER WORKSHOP

AUGUST 12 - 14, 2007  
DOUBLETREE HOTEL  
1515 RHODE ISLAND AVENUE NW, WASHINGTON, DC

## AGENDA

### Sunday August 12

- 12:00-4:00 REGISTRATION - Hotel Lobby
- 6:00-8:00 INITIAL WORKING SESSION - Stateroom
- [“Overview of the Department of Energy”](#)  
*Rickey Petty, U.S. Department of Energy*
- 8:00 ADJOURN

### Monday August 13

- 7:00-8:00 CONTINENTAL BREAKFAST - Stateroom
- 8:00-8:15 Welcome  
*Rickey Petty, U.S. Department of Energy*  
*Jeffrey S. Gaffney, University of Arkansas at Little Rock*  
*Milton Constantin, ORAU*
- 8:15-8:30 [Presentation of the Marvin L. Wesely Award](#)  
*Rickey Petty, U.S. Department of Energy*  
*Jeffrey S. Gaffney, University of Arkansas at Little Rock*
- 8:30-9:00 Marvin L. Wesely Award Address: [“At the root of the response:  
Carbon and nitrogen cycling in a CO<sub>2</sub> enriched deciduous forest.”](#)  
*Colleen M. Iverson, 2007 Marvin L. Wesely GREF Fellow, University  
of Tennessee*



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- 9:00- 9:30                    [“Impacts of tropospheric ozone on photosynthesis and stomatal conductance of trees: A meta analysis.”](#)  
*Victoria Whittig, GCEP-GREF Fellow, University of Illinois at Urbana-Champaign*
- 9:30-10:00                    [“Biofuels: An aerosol perspective.”](#)  
*Dabrina Dutcher, GCEP-GREF Fellow, University of Minnesota*
- 10:00-10:30                    BREAK
- 10:30-11:00                    [“The impact of primary marine aerosol on atmospheric chemistry, radiation and Climate.”](#)  
*Michael Long, GCEP-GREF Fellow, University of Virginia*
- 11:00-11:30                    [“Linking above ground and below ground responses to chronic soil warming.”](#)  
*Seeta Sista, GCEP-GREF Fellow, Brown University*
- 11:30-12:00                    [“Soil biogeochemistry and microbial ecology of afforestation in temperate South American grasslands.”](#)  
*Sean Berthrong, GCEP-GREF Fellow, Duke University*
- 12:00-1:30                    LUNCH
- 1:30-2:00                    [“Partitioning net ecosystem exchange of carbon dioxide.”](#)  
*John Zobitz, GCEP-GREF Fellow, University of Utah*
- 2:00-2:30                    “Climate change effects on nitrogen cycling in an annual grassland.”  
*Sarah Placella, GCEP-GREF Fellow, University of California – Berkeley*
- 2:30-3:00                    [“Climate change Part II: Soybeans fight back.”](#)  
*Kelly Gillespie, GCEP-GREF Fellow, University of Illinois at Urbana-Champaign*
- 3:00-3:30                    BREAK
- 3:30-3:45                    [“A climatology of the decade leading to the Cloud and Land Surface Interaction Campaign \(CLASIC\).”](#)  
*Lara Pagano, GCEP-SURE Fellow, North Carolina State University*



- 3:45-4:00      [“Energy, carbon, and climate: Projections to 2025.”](#)  
*Alison Erlenbach, GCEP-SURE Fellow, University of Florida*
- 4:00-4:15      [“Elevated atmospheric CO<sub>2</sub> concentrations and the effects on net nitrogen mineralization rates in a CO<sub>2</sub> enriched sweetgum forest.”](#)  
*Caitlin Guthrie, GCEP-SURE Fellow, Pomona College*
- 4:15-4:30      [“The effects of climate change treatments on soil microbial community composition.”](#)  
*Sharon Gray, GCEP-SURE Fellow, University of Illinois at Urbana-Champaign*
- 4:30-4:45      [“Mycorrhizal colonization of four varieties of switchgrass.”](#)  
*Marlene Tyner, GCEP-SURE Fellow, University of Michigan*
- 4:45-5:00      [“Effects of elevated CO<sub>2</sub> on Populous metabolites.”](#)  
*John Bevans, GCEP-SURE Fellow, University of Tampa*
- 5:00              ADJOURN

## Tuesday August 14

- 7:00-8:00      CONTENTAL BREAKFAST - Stateroom
- 8:00-8:30      [“Comparison of atmospheric hydrology over convective continental regions using isotope measurements from space.”](#)  
*Derek Brown, GCEP-GREF Fellow, University of Colorado, Boulder*
- 8:30-9:00      [“A new method for measuring N<sub>2</sub> emissions from denitrification in soils.”](#)  
*Wendy Yang, GCEP-GREF Fellow, University of California – Berkeley*
- 9:00-9:30      [“Carbon dioxide, nitrogen, and molybdenum effects on nitrate assimilation.”](#)  
*Sue Natali, GCEP-GREF Fellow, State University of New York at Stony Brook*
- 9:30-10:00    [“Land use and land cover changes in temperate savannas: Impacts of woody encroachment and prescribed burning on soil carbon pools and flux rates.”](#)  
*Emily Hollister, GCEP-GREF Fellow, Texas A&M University*



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10:00-10:30	BREAK
10:30-11:00	<p><a href="#"><u>“Photosynthesis in the oceans: Coping with oligotrophy in an extreme light environment.”</u></a> <i>Katherine Mackey, GCEP-GREF Fellow, Stanford University</i></p>
11:00-11:15	<p>“Studying energy and water interactions on local and regional scales.” <i>Erin Burns, GCEP-SURE Fellow, Notre Dame University</i></p>
11:15-11:30	<p><a href="#"><u>“Properties of fair weather cumuli at the ACRF Darwin site.”</u></a> <i>David Mills, GCEP-SURE Fellow, University of South Carolina</i></p>
11:30-11:45	<p><a href="#"><u>“Isotope geochemistry of air and water.”</u></a> <i>Kavity Hardy, GCEP-SURE Fellow, Swarthmore College</i></p>
11:45-12:00	<p><a href="#"><u>“Applying carbon-14 AMS in the characterization of soil carbon dynamics within dolomitic utisol fractions at varying depths.”</u></a> <i>Michael Tackett, GCEP-SURE Fellow, University of Arkansas at Little Rock</i></p>
12:00-12:15	<p><a href="#"><u>“Wavelength dependence of UV-Vis absorption of fine aerosol samples from Mexico City.”</u></a> <i>Angie Marchany-Rivera, GCEP-SURE Fellow, University of Puerto Rico, Mayaguez</i></p>
12:15-1:30	LUNCH
1:30-2:00	<p><a href="#"><u>“Optical and physical properties of biomass burning emissions.”</u></a> <i>Gavin McMeeking, GCEP-GREF Fellow, Colorado State University</i></p>
2:00-2:30	<p><a href="#"><u>“Direct measurement of neutral molecular clusters by chemical ionization mass spectrometry: Elucidating the mechanisms of new particle formation in the atmosphere.”</u></a> <i>Mari Titcombe, GCEP-GREF Fellow, University of Minnesota</i></p>
2:30-3:00	<p><a href="#"><u>“Hygroscopic tandem DMA measurements of inorganic nanoparticles.”</u></a> <i>Mackenzie Smith, GCEP-GREF Fellow, Harvard University</i></p>
3:00-3:30	BREAK



- 3:30-4:00                    [“The effects of soluble surfactants on density, shape, and water uptake of common hygroscopic particles.”](#)  
*Luis Cuadra-Rodriguez, GCEP-GREF Fellow, University of Colorado, Boulder*
- 4:00-4:15                    [“FLAME-2: An analysis of aerosol emissions from biomass burning.”](#)  
*Jennifer McInnis, GCEP-SURE Fellow, Cornell University*
- 4:15-4:30                    [“GRASS Geographic Information Systems and climate modeling in the southwestern United States.”](#)  
*Aaron Goldner, GCEP-SURE Fellow, Oregon State University*
- 4:30-4:45                    [“Mid-level convective clouds observed during the ARM Mobile Facility deployment in Niamey, Niger, Africa.”](#)  
*Christopher Rummer, GCEP-SURE Fellow, Pennsylvania State University*
- 4:45-5:15                    [“Surface radiocarbon in the Gulf of Mexico and Caribbean as recorded in corals.”](#)  
*Amy Wagner, GCEP-GREF Fellow, Texas A&M University*
- 5:15-5:30                    [“Carbon dioxide and Lake Superior.”](#)  
*Cindy Schafer, GCEP-SURE Fellow, Michigan Technological University*
- 5:30-6:30                    BREAK
- 6:30-8:00                    FINAL WORKING SESSION - Stateroom  
Keynote Address: [“Climate policy issues.”](#)  
*Paul Higgins, Former GCEP-GREF Fellow, Senior Policy Fellow-Climate Policy, American Meteorological Society*

# GLOBAL CHANGE EDUCATION PROGRAM END-OF-SUMMER WORKSHOP

AUGUST 17 - 19, 2008  
PALOMAR HOTEL  
2121 P STREET, WASHINGTON, DC

## AGENDA

### Sunday August 17

- 12:00-4:00 REGISTRATION - Hotel Lobby
- 6:00-9:00 INITIAL WORKING SESSION - Corcoran Room
- [“Overview of the Department of Energy”](#)  
*Rickey Petty, U.S. Department of Energy*
- 9:00 ADJOURN

### Monday August 18

- 7:00-8:00 CONTINENTAL BREAKFAST - Corcoran Room
- 8:00-8:30 [Welcome](#)  
*Rickey Petty, U.S. Department of Energy*  
*Jeffrey S. Gaffney, University of Arkansas at Little Rock*  
*Milton Constantin, ORAU*
- 8:30-9:00 “Crystalization of externally mixed ammonium sulfate nanoparticles.”  
*MacKenzie Smith, GCEP-GREF Fellow, Harvard University*



- 9:00-9:30 “Regional aerosol radiative and hydrological effects in the Mid-Atlantic corridor.”  
*Torreon Creekmore, GCEP-GREF Fellow, Howard University*
- 9:30-10:00 [“A concise perspective on wind, ocean waves, wave breaking, and marine aerosols.”](#)  
*Michael Long, GCEP-GREF Fellow, University of Virginia*
- 10:00-10:30 BREAK
- 10:30-11:00 “Isotopic evidence for Holocene variations in the Southern Hemisphere westerlies: Tropical linkages and impact on the global carbon cycle.”  
*Christopher Moy, GCEP-GREF Fellow, Stanford University*
- 11:00-11:30 [“A global meta-analysis of soil exchangeable cations, pH, carbon, and nitrogen with afforestation.”](#)  
*Sean Berthrong, GCEP-GREF Fellow, Duke University*
- 11:30-11:45 [“Climate change and storm track change.”](#)  
*Lara Pagano, GCEP-SURE Fellow, North Carolina State University*
- 11:45-12:00 [“Digital inversion and initial analysis of nephelometer data from the CHAPS campaign.”](#)  
*Adele Lichtenberger, GCEP-SURE Fellow, North Carolina State University*
- 12:00-1:30 LUNCH
- 1:30-2:00 [“Influence of rainforest architectural and biological diversity on carbon assimilation along an elevation gradient in Hawaii.”](#)  
*Eben Broadbent, GCEP-GREF Fellow, Stanford University*
- 2:00-2:30 [“Soil microbial diversity in a mesquite savannah: Response of bacterial and fungal communities to vegetation change.”](#)  
*Emily Hollister, Former GCEP-GREF Fellow, Postdoctoral Research Associate, Texas A&M University*
- 2:30-3:00 [“Predicting the impact of climate change on animal distributions: A test of range shift capacity in two butterfly species.”](#)  
*Shannon Pellini, GCEP-GREF Fellow, Notre Dame University*



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3:00-3:30	BREAK
3:30-4:00	“Exploring the impacts of warming on Arctic soils.” <i>Seeta Sistla, GCEP-GREF Fellow, University of California – Santa Barbara</i>
4:00-4:15	<a href="#"><u>“The diversity of plant communities mediates mycorrhizal fungal diversity.”</u></a> <i>Marlene Tyner, GCEP-SURE Fellow, University of Michigan</i>
4:15-4:30	<a href="#"><u>“Solar forcing effects of shallow cumuli at the ACRF Southern Great Plains site.”</u></a> <i>David Mills, GCEP-SURE Fellow, University of South Carolina</i>
4:30-5:00	<a href="#"><u>“Improving estimates of high global warming potential gas emissions for California.”</u></a> <i>Michael DeFlorio, GCEP-SURE Fellow, Cornell University</i> <i>Angela Wong, GCEP-SURE Fellow, Hunter College</i>
5:00	ADJOURN

## Tuesday August 19

7:00-8:00	CONTINENTAL BREAKLFAST - Corcoran Room
8:00-8:30	<a href="#"><u>“Inferring CCN properties of Arctic Haze layers during the 2008 ARCPAC field campaign.”</u></a> <i>Richard Moore, GCEP-GREF Fellow, Georgia Institute of Technology</i>
8:30-9:00	<a href="#"><u>“Quantification of mass dependent response factors in a novel chemical ionization mass spectrometer.”</u></a> <i>Mari Titcombe, GCEP-GREF Fellow, University of Minnesota</i>
9:00-9:30	“A new experiment for the study of organic aqueous aerosols.” <i>Luis Cuadra-Rodriguez, GCEP-GREF Fellow, University of Colorado, Boulder</i>
9:30-10:00	“Atmospheric oxidation of 1,2-dibromoethane.” <i>Carrie Jensen Christiansen, GCEP-GREF Fellow, Purdue University</i>



- 10:00-10:30 BREAK
- 10:30-11:00 “Using measurements of the isotopic composition of water vapor to model regional moisture exchange.”  
*Derek Brown, GCEP-GREF Fellow, University of Colorado, Boulder*
- 11:00-11:30 [“The effect of elevated atmospheric CO<sub>2</sub> on soybean production, growth, and development.”](#)  
*Joseph Castro, GCEP-GREF Fellow, University of Illinois at Urbana-Champaign*
- 11:30-12:00 [“Variability in leaf carbon isotopes and implications for paleoclimate.”](#)  
*Kevin Mueller, GCEP-GREF Fellow, Pennsylvania State University*
- 12:00-1:30 LUNCH
- 1:30-1:45 [“Differential expression of a heat shock protein in a skipper butterfly.”](#)  
*Christopher Lambert, GCEP-SURE Fellow, University of Portland*
- 1:45-2:00 [“Optical characterization of atmospheric aerosols on quartz filters using reflectance based spectroscopy.”](#)  
*Michael Tackett, GCEP-SURE Fellow, University of Arkansas at Little Rock*
- 2:00-2:15 [“Determination of radon adsorption to atmospheric aerosols by disequilibria of its progeny.”](#)  
*Jonathan Eller, GCEP-SURE Fellow, University of Arkansas at Little Rock*
- 2:15-2:30 [“Using an aethalometer to determine optical absorption features from different black carbon sources.”](#)  
*Shallena Menefield, GCEP-SURE Fellow, New Jersey City University*
- 2:30-2:45 [“Accounting for variability in soil respiration: Temperature versus phenology.”](#)  
*Shane Easter, GCEP-SURE Fellow, Brown University*
- 2:45-3:00 [“The impact of climate change on soil microbial communities and their feedback to the environment.”](#)  
*Catherine Fontana, GCEP-SURE Fellow, Albion College*



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- 3:00-3:30 BREAK
- 3:30-3:45 [“The behavior and sensitivity of aerosol dynamics in the NASA GISS ModelE climate model.”](#)  
*Geeta Persad, GCEP-SURE Fellow, Stanford University*
- 3:45-4:00 [“The dependence of butterfly flight on temperature.”](#)  
*Megan Statura, GCEP-SURE Fellow, University of Miami*
- 4:00-4:15 [“Multi-factor climate change effects on woody seedlings in an old field ecosystem.”](#)  
*John Bevans, GCEP-SURE Fellow, University of Tampa*
- 4:15-4:30 [“Effects of grazing land fire on root biomass and decomposition rates.”](#)  
*Rebecca Callahan, GCEP-SURE Fellow, Hendrix College*
- 4:30-4:45 [“Creation of a mathematical visceral leishmaniasis model.”](#)  
*Katrina Hill, GCEP-SURE Fellow, Cabrini College*
- 4:45-5:00 [“Modeling secondary organic aerosol formation from photooxidation of isoprene in California.”](#)  
*Kavita Hardy, GCEP-SURE Fellow, Swarthmore College*
- 5:00-6:00 BREAK
- 6:00-9:00 FINAL WORKING SESSION - Freer Room  
Keynote Address: “Environmental health and sustainability at Sikorsky Aircraft Corporation.”  
*Heidi Bialk, Former GCEP-GREF Fellow, Sikorsky Aircraft, Stratford, Connecticut*

# GLOBAL CHANGE EDUCATION PROGRAM END-OF-SUMMER WORKSHOP

AUGUST 15 - 17, 2010  
CROWNE PLAZA HOTEL  
401 W. SUMMIT HILL DRIVE, KNOXVILLE, TN

## AGENDA

### Sunday August 17

12:00-4:00 REGISTRATION - Hotel Lobby

6:00-8:00 INITIAL WORKING SESSION - Salon A

Welcome and Overview  
*Rickey Petty, U.S. Department of Energy*  
*Jeffrey S. Gaffney, University of Arkansas at Little Rock*  
*Milton Constantin, ORAU*

### Monday August 16

8:00-9:00 CONTINENTAL BREAKFAST - Concord Room

9:00-9:15 WELCOME  
*Rickey Petty, U.S. Department of Energy*  
*Jeffrey S. Gaffney, University of Arkansas at Little Rock*  
*Milton Constantin, ORAU*

9:15-9:30 [Presentation of the Marvin L. Wesely Award](#)  
*Rickey Petty, U.S. Department of Energy*  
*Jeffrey S. Gaffney, University of Arkansas at Little Rock*

9:30-10:00 Marvin L. Wesely Award Address: [“Chemical composition of limonene secondary organic aerosol using high-resolution electrospray ionization mass spectrometry.”](#)  
*Adam Bateman, 2010 Marvin L. Wesely GREF Fellow, University of California - Irvine*



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10:00-10:30	<p><a href="#"><u>“Using measurements of CCN activity to characterize mixing state, chemical composition, and droplet growth kinetics of atmospheric aerosols.”</u></a> <i>Richard Moore, GCEP-GREF Fellow, Georgia Institute of Technology</i></p>
10:30-11:00	BREAK
11:00-11:30	<p>“Integration of field measurements of the chemical and physical properties of single-particles into a particle resolved aerosol model.” <i>Andrew Ault, GCEP-GREF Fellow, University of California-San Diego</i></p>
11:30-12:00	<p><a href="#"><u>“Analysis of fresh and aged biomass burning aerosols using high-resolution mass spectrometry.”</u></a> <i>Amanda Holden, GCEP-GREF Fellow, Colorado State University</i></p>
12:00-1:30	LUNCH
1:30-2:00	<p><a href="#"><u>“Data-model intercomparison of ecosystem carbon and water surface fluxes across Amazonia.”</u></a> <i>Bradley Christofferson, GCEP-GREF Fellow, University of Arizona</i></p>
2:00-2:30	<p><a href="#"><u>“Exploring how two decades of warming have impacted Arctic soils: A phenological perspective.”</u></a> <i>Seeta Sistla, GCEP-GREF Fellow, University of California - Santa Barbara</i></p>
2:30-3:00	<p><a href="#"><u>“The effect of atmospheric deposition the distribution and abundance of marine phytoplankton.”</u></a> <i>Katherine Mackey, GCEP-GREF Fellow, Stanford University</i></p>
3:00-3:30	BREAK
3:30-3:45	<p><a href="#"><u>“Are there genes essential for the stimulation of respiration and growth when plants are exposed to elevated carbon dioxide concentrations?”</u></a> <i>Ryan Boyd, GCEP-SURE Fellow, University of Illinois at Urbana-Champaign</i></p>
3:45-4:00	<p>“Carbon storage in the Alaskan Arctic tundra: <a href="#"><u>An eddy covariance perspective.</u></a>” <i>Timothy Hubbard, GCEP-SURE Fellow, Valparaiso University</i></p>
4:00	ADJOURN

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## Tuesday August 17

- 8:00-9:00 CONTINENTAL BREAKFAST - Concord Room
- 9:00-9:30 [“The effects of secondary organic material on the hygroscopic properties of ammonium sulfate seed particles.”](#)  
*Mackenzie Smith, GCEP-GREF Fellow, Harvard University*
- 9:30-10:00 [“Atmospheric chemistry mechanism reduction in the 3-D NCAR Community Atmospheric Model.”](#)  
*Michael Long, GCEP-GREF Fellow, University of Virginia*
- 10:00-10:30 [“The effect of permafrost thaw on tundra carbon balance over space and time.”](#)  
*Fay Belshe, GCEP-GREF Fellow, University of Florida*
- 10:30-11:00 BREAK
- 11:00-11:30 [“The effect of organic surfactants on particle properties.”](#)  
*Luis Cuadra-Rodriguez, GCEP-GREF Fellow, University of Colorado, Boulder*
- 11:30-12:00 [“The chemical nucleation of sulfuric acid and amines: Reaction chamber studies and atmospheric observations.”](#)  
*Mari Titcombe, GCEP-GREF Fellow, University of Minnesota*
- 12:00-1:30 LUNCH
- 1:30-1:45 [“Black carbon: Optical analysis of particle deposits and evaluation of daily personal exposure.”](#)  
*Kelley Doyle, GCEP-SURE Fellow, University of California – Berkeley*
- 1:45-2:00 [“Effects of endophytic bacteria on leaf level photosynthetic performance in poplar grown for biofuel.”](#)  
*Kelly McDonald, GCEP-SURE Fellow, Marist College*
- 2:00-2:15 [“Soybean agroecosystem responses to future heatwaves.”](#)  
*Lorena Rios-Acosta, GCEP-SURE Fellow, University Puerto Rico-Mayaguez*
- 2:15-2:30 [“Does climate change impact supercell tornadogenesis?”](#)  
*Alex Hoffman, GCEP-SURE Fellow, Washington University*



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- 2:30-2:45      [“Methods of improving methane emission estimates in California using mesoscale and particle dispersion modeling.”](#)  
*Alexander Turner, GCEP-SURE Fellow, University of Colorado, Boulder*
- 2:45-3:00      [“Using Okubo-Weiss parameterization to analyze Arctic Ocean eddies.”](#)  
*Neesha Schnepf, GCEP-SURE Fellow, Cornell University*
- 3:00-3:30      BREAK
- 3:30-3:45      [“Preliminary analysis of the mixed layer depth during the Carbonaceous Aerosol and Radiative Effects Study \(CARES\).”](#)  
*Brody Bourque, GCEP-SURE Fellow, University of Louisiana at Monroe*
- 3:45-4:00      “Quantifying greenhouse gas measurement errors for inverse model estimates.”  
*Luke Armbruster, GCEP-SURE Fellow, Humbolt State University*
- 4:00-4:30      [“Evaluating uncertainty in forest water and carbon flux estimates.”](#)  
*Eric Ward, GCEP-GREF Fellow, Duke University*
- 4:30-6:30      BREAK
- 6:30-8:30      FINAL WORKING SESSION
- Keynote Address: [“Overview of GCEP and opportunities for future DOE Office of Science supported scholarships.”](#)  
*Jeffrey S. Gaffney, University of Arkansas at Little Rock*
- 8:30              ADJOURN



# APPENDIX III.

SUMMER UNDERGRADUATE RESEARCH  
EXPERIENCE FELLOWS AND THEIR DOE  
RESEARCH MENTORS, 1999-2010.





<b>SURE Fellow</b>	<b>Year</b>	<b>Mentor</b>	<b>Institution</b>
Alvarez-Aviles, Laura	2001 2002	Tica Novakov Jeffrey Gaffney	LBNL ANL
Aragon, Nicole A.	2003	R. Michael Miller	ANL
Armbruster, Luke	2009 2010	Marc L. Fischer Marc L. Fischer	LBNL LBNL
Baird, J Christopher	1999	Nancy A. Marley	ANL
Beck, Anna R.	2003 2004	Paul V. Doskey Paul V. Doskey	ANL ANL
Berberena-Alonso, Maritere	2006	Judy Weinstein-Lloyd	BNL
Berg, Zara K.	2005	Richard J. Norby	ORNL
Bevans, John R.	2007 2008	Alistair Rogers Amiee T. Classen	BNL ORNL
Bialk, Heidi M.	1999 2000	Paul V. Doskey Paul V. Doskey	ANL ANL
Bisaria, Anjali	2010	U.C Kalluri S.D. Wullschleger	ORNL
Blazer-Higgins, Cherelle	1999	Jeffrey S. Gaffney	ANL
Bookter, Andy	2000	Tica Novakov	LBNL
Boone, Aaron	2005	Thomas W. Kirchstetter	LBNL
Bourque, Brody P.	2009 2010	Larry Berg Larry Berg	PNNL PNNL
Boyd, Ryan A.	2009 2010	Andrew Leakey Andrew Leakey Champagne	Univ. IL-Urbana, Champagne Univ. IL-Urbana, Champagne



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<b>SURE Fellow</b>	<b>Year</b>	<b>Mentor</b>	<b>Institution</b>
Burger, Nell	2002	Eric Davidson	Woods Hole
Burns, Erin	2007	Amy K. Wolfe	ORNL
Byrd, Christopher	2000	Jeffrey M. Klopatek	AZ State
Callahan, Rebecca	2008	Margaret S. Torn	LBNL
Case, Anne T.	2000	Yin Nan Lee	BNL
Chmura, Nicholas T.	2004	Surabi Menon	LBNL
Clancy, Tara M.	2006	Warren M. Washington	NCAR
Cuadra-Rodriguez, Luis A.	2003	Jeffrey S. Gaffney	ANL
DeFlorio, Michael J.	2008	Marc L. Fischer	LBNL
Doyle, Kelley	2010	Thomas W. Kirchstetter	LBNL
Drake, Allison	2000	William Shaw	PNNL
Dreyfus, Gabrielle B.	1999 2000 2001	Alan H. Goldstein Alan H. Goldstein Allan H. Goldstein	UC-Berkeley UC-Berkeley UC-Berkeley
Duncan, Benet	2005	Marc L. Fischer	LBNL
Dunston, David A.	2001 2002	Eric Davidson Eric Singaas	Woods Hole Univ. WI- Stevens Point
Dydak, Katherine P.	2008 2009	Tom Guilderson Leonel Sternberg	LLNL/CAMS Univ. Miami
Easter, Shane	2008	Barbara J. Bond	OR State
Eller, Jonathan R.	2008	Jeffrey S. Gaffney	UALR
Erlanger, Erica D.	2006	Tom Guilderson	LLNL/CAMS



<b>SURE Fellow</b>	<b>Year</b>	<b>Mentor</b>	<b>Institution</b>
Erlenbach, Alison	2007	T.J. Blasing	ORNL
Flachs, E. Heather	2005	Nancy A. Marley	ANL
Flick, Kate	2005 2006	Wilfred M. Post Jonathan A. Foley	ORNL Univ. WI- Madison
Fontana, Catherine G.	2008	Eoin L. Brodie	LBNL
Foote, Eric M.	2005 2006	Ronald C. Cohen Alexandria B. Boehm	UC-Berkeley Stanford
Fruit, Kristy	2000 2001	Gregg Marland Gregg Marland	ORNL ORNL
Fujita, Pauline A.	1999	Julie D. Jastrow, R. Michael Miller	ANL
Fults, Jason C.	1999 2001	Richard J. Norby Paul J. Hanson	ORNL ORNL
Gagne, Amy Y.	2004	Eric Davidson	Woods Hole
Goertzen, Anna	2004 2005	Tom Guilderson Kenneth Cassman	LLNL/CAMS Univ. NE
Goldner, Aaron P.	2007	Todd Ringler	LANL
Gray, Sharon B.	2006 2007	Amiee T. Classen R. Michael Miller	ORNL ANL
Guthrie, Caitlin R.	2007	Amiee T. Classen	ORNL
Hanlon, Erin M.	2001 2002 2003	Wilfred M. Post Wilfred M. Post Charles T. Garten	ORNL ORNL ORNL
Hardy, Kavita D.	2007 2008	Neil C. Sturchio Ronald C. Cohen	Univ. IL- Chicago LBNL



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<b>SURE Fellow</b>	<b>Year</b>	<b>Mentor</b>	<b>Institution</b>
Harris, Lucas M.	2003	V. Rao Kotamarthi	ANL
Hart, Elizabeth	2004 2005	Robert B. Jackson Thomas M. Hinckley	Duke Univ. Univ. WA
Hart, Heather L.	1999 2000	Jeffrey S. Gaffney R. Michael Miller	ANL ANL
Hatch, Joshua G.	2004 2005	Marc L. Fischer Marc L. Fischer	LBNL LBNL
Hawley, Scott M.	2009	Christopher W. Schadt	ORNL
Hernandez-Cordero, Nieza M.	2000 2001	Nancy A. Marley Judy Weinstein-Lloyd	ANL SUNY-Old Westbury
Hill, Katrina M.	2008	Jessica J. Hellman	Notre Dame
Hoffman, Alexis	2010	Gary M. Lackmann	NC State
Hokanson, Erin P.	2002 2003	Richard L. Coulter Richard L. Coulter	ANL ANL
Hooper, Daniel S.	2003 2004	Thomas W. Kirchstetter Thomas W. Kirchstetter	LBNL LBNL
Hubbard, Timothy	2010	Walter C. Oechel	SD State
Hunter, Kimberly	2000	Peter S. Curtis	OH State
Ilami, Fara S.	2001	Kenneth J. Davis	Penn. State
Iorio, John P.	2000 2001 2002	Sasha Madronich Tom Guilderson Phillip B. Duffy	NCAR LLNL/CAMS LLNL
Jelley, Benjamin	2004	Gregory R. Carmichael	Univ. IA
Jenkins, Marisa	1999 2000	Nelson T. Edwards Nelson T. Edwards	ORNL ORNL



<b>SURE Fellow</b>	<b>Year</b>	<b>Mentor</b>	<b>Institution</b>
Joseph, Kendra	2009	Yin Nan Lee	BNL
Judd, Robert	2004	Nancy A. Marley	ANL
Kunda, Maithilee	2004 2005 2006	Gregg Marland Gregg Marland, T.O. West Tristram O. West	ORNL ORNL ORNL
Lambert, Christopher	2008 2009	Jessica J. Hellman Eoin L. Brodie	ORNL LBNL
Leisch, Jennifer E.	1999	Rob S. Disselkamp	PNNL/EMSL
LeRoy, Sverre L.	2009	Tom Guilderson	LLNL/CAMS
Lichtenberger, Adele	2008	William Shaw	PNNL
Lindaman, Edan	2004 2005	William M. Porch Bjorn Stevens	LANL UCLA
Liszka, Adria H.	1999	Carmen M. Benkovits	BNL
Loehlin, David W.	2001 2002	Walter C. Oechel R. Michael Miller	SD State ANL
Lunch, Claire K.	2000 2001	Barbara J. Bond Barbara J. Bond	OR State OR State
Mandruck, Jessica	2005 2006	Barbara J. Bond Robert R. Twilley	OR State LSU
Marchany-Rivera, Angie	2007 2009	Jeffrey S. Gaffney Jeffrey S. Gaffney	UALR UALR
Marshall, Laura	2005 2006	Nathan G. McDowell Nathan G. McDowell	LANL LANL
Martinez-Aviles, Monica	2000 2001 2002	Nancy A. Marley Barbara J. Finlayson-Pitts Nancy A. Marley	ANL UC-Irvine ANL



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<b>SURE Fellow</b>	<b>Year</b>	<b>Mentor</b>	<b>Institution</b>
McBride, Allen C.	2002	Michael Huston	ORNL
	2003	Tristram O West	ORNL
	2004	Patrick J. Mulholland	ORNL
McCormick, Gail L.	2009	Nathan J. Sanders	Univ. TN- Knoxville
McDonald, Kelly	2009	Alistair Rogers	BNL
	2010	Alistair Rogers	BNL
McIlmoil, Rory	2000	Thomas M. Hinckley	Univ. WA
McInnis, Jennifer	2005	Julian L. Hadley	Harvard
	2006	Leah R. Williams	Aerodyne
	2007	Leah R., Williams	Aerodyne
McMeeking, Gavin R.	2001	C. David Whiteman	PNNL
	2002	C. David Whiteman	PNNL
Melvin, Melissa	2004	V. Rao Kotamarthi	ANL
Menefield, Shallena	2008	Jeffrey S. Gaffney	UALR
Miles, Gretchen R.	2004	Nathan G. McDowell	LANL
	2005	Eric Davidson	Woods Hole
Miller, Jesse	1999	Wilfred M. Post	ORNL
Miller, Nicole E.	2002	Nelson T. Edwards	ORNL
	2003	Richard J. Norby	ORNL
Mills, David L.	2007	Larry Berg	PNNL
	2008	Larry Berg	PNNL
Moore, Kori D.	2003	William Shaw	PNNL
	2004	Douglas R. Worsnop	Aerodyne
	2005	Douglas R. Worsnop	Aerodyne
Morel, Alexandria	2003	Eric Davidson	Woods Hole
Mosher, Mike	2000	Marvin L. Wesely	ANL



<b>SURE Fellow</b>	<b>Year</b>	<b>Mentor</b>	<b>Institution</b>
Nguyen, Anthony	1999 2000	Rangasayi N. Halthore Rangasayi N. Halthore	BNL BNL
Ochsner, Heidi	2001 2002	Eric Davidson Jeffrey S. Gaffney	Woods Hole ANL
Pagano, Lara E.	2007 2008	Mark A. Miller Gary M. Lackmann	BNL NC State
Persad, Geeta G.	2008	Surabi Menon	LBNL
Peters, Matthew	2000	Anthony W. King	ORNL
Ramirez, Javier	2000 2001	William M. Porch Paul V. Doskey	LANL ANL
Randles, Cynthia A.	1999 2000 2001	Richard L. Coulter Douglas R. Worsnop Alla Zelenyuk	ANL Aerodyne PNNL/EMSL
Ravelo, Rose M.	2000 2001	Jeffrey S. Gaffney Jeffrey S. Gaffney	ANL ANL
Reed, Sarah E.	2001 2002 2003	Barbara J. Bond Barbara J. Bond James R. Ehleringer	OR State OR State Univ. UT
Rios-Acosta, Lorena	2010	Andrew Leakey	Univ. IL- Urbana, Champagne
Roddy, Adam B.	2003 2004 2005	Gregg Marland Stan Wullschleger Stan Wullschleger, Tristram West	ORNL ORNL ORNL
Rodriguez, Victor M.	2001	Nancy A. Marley	ANL
Rose, Aaron	2006	Marc L. Fischer	LBNL
Rumer, Christopher	2007	Michael P. Jensen	BNL



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<b>SURE Fellow</b>	<b>Year</b>	<b>Mentor</b>	<b>Institution</b>
Salvatore, Jillian	1999	Wilfred M. Post	ORNL
Sanchez, Lauren	2009 2010	Steven C. Wofsy Steven C. Wofsy	Harvard Harvard
Schafer, Cynthia A.	2006 2007	Thomas M. Hinckley Judith A. Perlinger	Univ. WA Mich. Tech
Schiffer, Nicole J.	2006	C. David Whiteman	Univ. UT
Schnepf, Neesha R.	2010	Beth A. Wingate	LANL
Secora, Jaclyn M.	1999	Steven J. Ghan	PNNL
Squirrel, Winona	2006	Walter C. Oechel	SD State
Stachura, Megan M.	2008	Jessica J. Hellman	Notre Dame
Steadham, Tiffany M.	2000 2001	Mark A. Miller Mark A. Miller	BNL BNL
Stewart, Jebb Q.	2000	C. David Whiteman	PNNL
Tackett, Michael J.	2007 2008	Tom Guilderson Jeffrey S. Gaffney	LLNL/CAMS UALR
Tran, Tri M.	2005 2006	Jain Wang Paul J. Ziemann	BNL UC-Riverside
Tubbesing, Carmen	2009	Thomas M. Hinckley	Univ. WA
Turner, Alexander J.	2010	Marc L. Fischer	LBNL
Tyner, Marlene	2007 2008	R. Michael Miller R. Michael Miller	ANL ANL
Valko, Phil	2002 2003	Susan L. Ustin Melissa M. Lunden	UC-Davis LBNL
Varner, Eliza	2009	Thomas W. Kirchstetter	LBNL



<b>SURE Fellow</b>	<b>Year</b>	<b>Mentor</b>	<b>Institution</b>
Wade-Murphy, Jessica	2000	Kyaw Tha Paw U	UC-Davis
Wheeler, Stephanie B.	2002 2003	Janet Arey Allen H. Goldstein	UC-Berkeley UC-Berkeley
Wilks, Diana E.	1999	R. Michael Miller	ANL
Williams, Brent	2001	Sasha Madronich	NCAR
Winiecki, Shelby E.	1999 2000	William M. Porch William M. Porch	LANL LANL
Wofsy, Jonathan F.	2006	C. David Whiteman	Univ. UT
Wong, Angela	2008	Marc L. Fischer	LBL
Wooten, Catherine L.	2000	Thomas M. Hinckley	Univ. WA
Wurst, Diane	2009	Kenneth J. Davis	Penn. State
Zachmann, Luke	2006	Amiee T. Classen	ORNL
Zeledon, Ester B.	2003	Phillip B. Duffy	LLNL



# APPENDIX IV.

PUBLICATIONS AND PRESENTATIONS  
COAUTHORED BY SURE STUDENTS.

KEY: **Student Author**; **DOE Mentor(s)**,  
***past GREF Fellows that have become mentors***





**PUBLICATIONS:**

**Berg, L.K., Mills, David L. Jr.,** Kassianov, E.I., Long, C.N. “Three dimensional effects and shortwave cloud radiative forcing associated with shallow cumuli over the central North America.” In *Proc. of the SPIE 7475*, ed. R.H. Picard, K. Schafer, A. Comeron, E.I. Kassianov, and C.J. Mertens; 747504; doi:10.1117/12.832327 (2009).

**Berg, L.K.,** Kassianov, E.I., Long, C.N., **Mills, David L. Jr.** “Surface summertime radiative forcing by shallow cumuli at the Atmospheric Radiation Measurement Southern Great Plains site.” *J. Geophys. Res. Atmos.* 116: D01202 (2011).

Coquard, J., **Duffy, P.B.,** Taylor, K.E., **Iorio, John P.** “Present and future surface climate in the western USA as simulated by 15 global climate models.” *Clim. Dynam.* 23: 455-472 (2004).

**Doskey, P.V., Bialk, Heidi M.,** “Automated sampler for the measurement of non-methane organic compounds.” *Environ. Sci. Technol.* 35: 591-594 (2001).

Drayton, P.J., **Blazer, Cherelle A., Marley, N.A., Gaffney, J.S.** “Improved instrumentation for near real-time measurement of reactive hydrocarbons, NO<sub>2</sub>, and peroxyacyl nitrates (PANs).” *Am. Meteorol. Soc. Glob. Change Preprints* [3.1](#), p. 56-59 (2000).

**Dreyfus, Gabrielle B.,** Schade, G.W., **Goldstein, A.H.** “Investigating the contribution of isoprene oxidation to ozone production.” *Eos Trans. Am. Geophys. Union Fall Meet. Suppl.* 81: A52H-10 (2000).

**Dreyfus, Gabrielle B.,** Schade, G.W., **Goldstein, A.H.,** “Observational constraints on the contribution of isoprene oxidation to ozone production on the western slope of the Sierra Nevada, CA.” *J. Geophys. Res.* 107: D19, 4365 (2002).

**Duffy, P.B.,** Govindasamy, B., **Iorio, John P.,** Milovich, J., Sperber, K.R., Taylor, K.E., Wehner, M.F., Thompson, S.L. “High resolution simulations of global climate, Part 1: Present climate.” *Clim. Dynam.* 21: 371-390 (2003).

**Duffy, P.B.,** Arritt, R.W., Coquard, J., Gutowski, W., Han, J., **Iorio, John P.,** Kim, J., Leung, L., Roads, J., **Zeledon, Esther B.** “Simulations of present and future climates in the western United States with four nested regional climate models.” *J. Climate* 19: 873-894 (2006).

**Fischer, Emily V., Jaffe, D.A., Marley, N.A., Gaffney, J.S., Marchany-Rivera, Angie** “Optical properties of aged Asian aerosols observed over the U.S. Pacific Northwest” *J. Geophys. Res.*, 115: D20209 (2010).



**Gaffney, J.S., Marley, N.A.,** Drayton, P.J., Cunningham, M.M., **Baird, J. Christopher,** Dintaman, J., **Hart, Heather, L.** “Phoenix, Arizona revisited: Indications of aerosol effects on O<sub>3</sub>, NO<sub>2</sub>, UV-B, and NO<sub>3</sub>.” *Am. Meteorol. Soc. Glob. Change Preprints* [2.4](#), p. 43-50 (2000).

**Gaffney, J.S., Marley, N.A., Ravelo, Rose M.** “Puerto Rico – 2002: Field studies to resolve aerosol processes.” *Am. Meteorol. Soc. Glob. Change Preprints* [2.3](#) (2000).

**Gaffney, J.S., Marley, N.A.,** Drayton, P.J., Doskey, P.V., Kotamarthi, V. R., Cunningham, M. M., **Baird, J. Christopher,** Dintaman, J., **Hart, Heather L.** “Field observations of regional and urban impacts on NO<sub>2</sub>, ozone, UV-B, and nitrate radical production rates: Nocturnal urban plumes and regional smoke effects.” *Atmos. Environ.* 36: 825-833 (2002).

**Gaffney, J.S., Marley, N.A., Tackett, Michael J., Sturchio, N.C.,** Heraty, L., Martinez, N., **Hardy, Kavita D., Guilderson, T.P.** “Evidence for biomass burning from <sup>14</sup>C and <sup>13</sup>C/<sup>12</sup>C measurements at T-0 and T-1.” *Eos Trans. Am. Geophys. Union Fall Meet. Suppl.* 88: A43-1420 (2007).

**Gaffney, J.S., Marley, N.A., Tackett, Michael J., Stuchio, N.C.,** Heraty, L., Martinez, N., **Hardy, Kavita D., Guilderson, T.P.** “Biogenic carbon dominance based on <sup>13</sup>C/<sup>12</sup>C and <sup>14</sup>C measurements of total carbon at T-0 and T-1 sites during MILAGRO.” *Am. Meteorol. Soc. Glob. Change Preprints* [J 1.1](#) (2008).

**Goldstein, A.H.,** Schade, G.W., **Dreyfus, Gabrielle B.** “Whole ecosystem measurements of biogenic hydrocarbon emissions.” *Final Report, State of California Air Resources Board*, No. 98-328 (2001).

**Gray, Sharon B., Classen, A.T.,** Kardol, P., Yermakov, Z., **Miller, R.M.** “Multiple climate change factors interact to alter soil microbial community structure in an old field ecosystem.” *J. Soil Sci. Soc. Am.* 75: 2217-2226 (2011).

Harley, R.A., **Hooper, Daniel S.,** Kean, A.J., **Kirchstetter, T.W.,** Hessoj, J.M., Balberan, N.T., Stevenson, E.D., Kendall, G.R. “Effects of reformulated gasoline and motor vehicle fleet turnover on emissions and ambient concentrations of benzene.” *Environ. Sci. Technol.* 40: 5084-5088 (2006).

**Harris, Lucas M., Kotamarthi, V.R.** “The characteristics of the Chicago lake breeze and its effects on trace particle transport: Results from an episodic event simulation.” *J. Appl. Meteorol.* 44: 1637-1654 (2005).

**Huston, M.A., McBride, Alan C.** “Evaluating the relative strengths of biotic versus abiotic controls on ecosystem processes.” In *Biodiversity and Ecosystem Functioning: Synthesis and Perspectives*, ed. M. Loreau, S. Naeem, and P. Inchausti, 47-60. Oxford University Press (2002).



- Iorio, John P., Guilderson, T.P.** “Holocene climate of the mesotropics and comparison of paleodata climate reconstruction with PMIP simulations of climate at 6000 <sup>14</sup>C years ago.” *Eos Trans. Am. Geophys. Union Fall Meet. Suppl.* 83: GS41A-11 (2002).
- Iorio, John P., Duffy, P.B., Govindasamy, B.** “Effects of model resolution and subgrid scale physics on the simulation of precipitation in the continental United States.” *Clim. Dynam.* 23: 243-258 (2004).
- Kirchstetter, T.W., Novakov, T., Haesloop, O., Boone, Aaron, Aguiar, J.** “Evaluation of the aethalometer and the coefficient of haze sampler for measuring black carbon concentration.” *Eos Trans. Am. Geophys. Union Fall Meet. Suppl.* 86: A22B-0895 (2005).
- Kunda, Maithilee, Bird, N.L., Canella, L., Marland, G., Schlamadinger, B.** “Carbon management, earth surface albedo, and biomass fuel.” In *Proceed. Eur. Biomass Conf.* (2005).
- Kunda, Maithilee, West, T.O.** “Tillage and yield study.” *Technical Report, Oak Ridge National Laboratory* (2006).
- LeRoy, Sverre L., Zimmerman, S.R., Hemming, S.R., Stine, S., Guilderson, T.P.** “Radiocarbon constraints on fossil thinolite tufa formation in the Mono Basin, Ca, USA.” *Eos Trans. Am. Geophys. Union Fall Meet. Suppl.* 90: PP13B-1402 (2009).
- Lichtenberger, Adele M., Shaw, W.J., Berg, L.K., Berkowitz, C.M., Ogren, J.A., Andrews, E.** “Digital inversion and initial analysis of nephelometer data from the CHAPS campaign.” *Eos Trans. Am. Geophys. Union Fall Meet. Suppl.* 89: A31-0180 (2008).
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### **PRESENTATIONS:**

**Alvarez-Aviles, Laura**, **Novakov, T.**, Kirchstetter, T.W., Corrigan, C.E. "Comparison of black carbon determination by evolved gas analysis and optical attenuation methods." [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).

**Aragon, Nicole A.**, **Miller, R.M.**, Allison, V. "Mycorrhizal quantification for a prairie chronosequence." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).

**Aragon, Nicole A.**, Gill, R. "Mycorrhizal quantification of prairie chronosequence." Oral presentation at the Washington State University College of Science Undergraduate Research Symposium (2004).

**Armbruster, Luke**, **Fischer, M.L.** "Quantifying greenhouse gas measurement errors for inverse model estimates." Oral presentation at the Global Change Education Program End-of-Summer Workshop (2010).

**Baird, J. Christopher**, **Marely, N.A.**, **Gaffney, J.S.** "Using chemiluminescence and other basic properties to detect peroxyacyl nitrates in the troposphere." [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (1999).



- Beck, Anna R., Doskey, P.V.,** Modey, W., Schmeling, M. “Chemical processing of a lake-land breeze effect: Study of non-methane hydrocarbons in Chicago.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).
- Beck, Anna R., Doskey, P.V.** “Hydrocarbon air-surface exchange from grasslands.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Berberena-Alonso, Maritere, Weinstein-Lloyd, J.B.** “The collection efficiency of ammonia in a real time fluorometric analyzer.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2006).
- Berberena-Alonso, Maritere, Weinstein-Lloyd, J.B.** “The collection efficiency of ammonia gas in a real time fluorometric analyzer.” Oral presentation at the Annual Biomedical Research Conference for Minority Students (2006).
- Berberena-Alonso, Maritere** “The collection efficiency of ammonia in a real time fluorometric analyzer.” Poster presentation at the Summer Student Supplemental Program, Brookhaven National Laboratory (2006).
- Berg, Zara K., Iverson, Colleen M., Norby, R.J.** “The effects of nitrogen fertilization on the competitiveness of invasive species.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Bevans, John R., Rogers, A.,** Heady, L., Milne, C. “Effects of elevated CO<sub>2</sub> on *Populous* metabolites.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Bevans, John R., Classen, A.T.** “Multi-factor climate change effects on woody seedlings in an old field ecosystem.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Bialk, Heidi M., Doskey, P.V.,** Gaffney, J.S. “A collection method for nonmethane organic compounds.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (1999).
- Bialk, Heidi M., Doskey, P.V.,** Gaffney, J.S. “A study of non-methane hydrocarbons in the atmosphere.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).
- Blazer, Cherelle A., Marley, N.A.,** Drayton, P.J., **Gaffney, J.S.** “Real-time olefin monitor based upon ozone chemiluminescent reactions.” Poster presentation at the national meeting of the American Chemical Society (1999).



**Bond, B.J.**, Czarnomski, N., Davis, K., Defrosses, N., George, K., Gehring, N., Licata, J., **Lunch, Claire K.**, McDowell, N.G. Ocheltree, T. Phillips, N. Pypker, T. **Reed, Sarah E.**, Schauer, A., Ryan, M., Williams M. "Growth and photosynthesis at Wind River." Invited oral presentation at the annual meeting of the Wind River Canopy Crane Research Facility (2004).

**Bourque, Brody P., Berg, L.K.**, Gustafson, W. "Preliminary analysis of the mixed layer depth during the Carbonaceous Aerosol and Radiative Effects Study (CARES)." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).

**Bourque, Brody P., Berg, L.K.**, Gustafson, W. "Preliminary analysis of the mixed layer depth during the Carbonaceous Aerosol and Radiative Effects Study (CARES)." Oral presentation at the Louisiana Academy of Sciences (2011).

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**Boyd, Ryan A., Leakey, A.D.B.**, Markelz, C., Strellner, R., Dommer, K. "Are there genes essential for the stimulation of respiration and growth when plants are exposed to elevated carbon dioxide concentrations?" [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).

**Burns, Erin, Wolfe, A.K.** "Studying energy and water interactions on local and regional scales." Oral presentation at the Global Change Education Program End-of-Summer Workshop (2007).

**Callahan, Rebecca, Torn, M.S.** "Effects of grazing land fire on root biomass and decomposition rates." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).

**Case, Anne T., Lee, Y-N.** "Detection of formaldehyde in the Central California Ozone Study (CCOS), July 2000." [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).

**Chmura, Nicholas T., Menon, S.** "Analyzing aerosol-cloud interactions using MODIS data." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).

**Clancy, Tara M., Washington, W.M.** "Statistical analysis of North Atlantic hurricanes." Oral presentation at the Global Change Education Program End-of-Summer Workshop (2006).



- Classen, A.T., Iversen, Collen M., Guthrie, Caitlin R.,** Norby, R.J. "Elevated atmospheric CO<sub>2</sub> concentrations do not alter net nitrogen mineralization rates in a CO<sub>2</sub> enriched sweetgum forest." Oral presentation at the annual meeting of The Ecological Society of America (2008).
- Cuadra-Rodriguez, Luis A., Gaffney, J.S., Marley, N.A.** "Nitrogen dioxide, peroxyacetyl nitrates, and black carbon measurements in Chicago." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).
- DeFlorio, Michael J., Wong, Angela, Fischer, M.L.** "Improving estimates of high global warming potential gas emissions for California." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Doyle, Kelly, Kirchstetter, T.W.,** Hadley, O., Preble, C. "Black carbon: Optical analysis of particle deposits and evaluation of daily personal exposure." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Drayton, P.J., **Blazer, Cherelle A., Marley, N.A., Gaffney, J.S.** "Improved Instrumentation for near real-time measurement of reactive hydrocarbons, NO<sub>2</sub>, and peroxyacetyl nitrates." Oral presentation at the national meeting of the American Meteorological Society (2000).
- Dreyfus, Gabrielle B.,** Schade, G.W., **Goldstein, A.H.** "MTBE mixing ratios at a remote site in the Sierra-Nevada mountains, California: Implications for OH concentration in an urban plume." Poster presentation at the Global Change Education Program End-of-Summer Workshop (1999).
- Dreyfus, Gabrielle B.,** Schade, G.W., **Goldstein, A.H.** "Investigating the contribution of isoprene oxidation to ozone production." Poster presentation at the Global Change Education Program End-of-Summer Workshop (2000).
- Dreyfus, Gabrielle B.,** Schade, G.W., **Goldstein, A.H.** "Investigating the contribution of isoprene oxidation to ozone production." Oral presentation at the fall meeting of the American Geophysical Union (2000).
- Duffy, P.B.,** Coquard, J., Gutowski, W., Han, J., **Iorio, John P,** Kim, J., Leung, L.-R., Roads, J., **Zeledon, Esther B.** "Uncertainties in regional climate: Intercomparison and evaluation of simulations of present and future climate in California." Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Dunston, David A., Davidson, E.A.,** Dail, B. "Influence of the amount and form of nitrogen on the decomposition of red spruce needles at the Howland Forest, Howland, ME." [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).



**Easter, Shane**, Phillips, C., **Bond, B.J.** “Accounting for variability in soil respiration: Temperature versus phenology.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).

**Eller, Jonathan R., Tackett, Michael J., Marley, N.A., Gaffney, J.S.** “Determination of radon adsorption to atmospheric aerosols by disequilibria of its progeny.” Poster presentation at the southwest regional meeting of the American Chemical Society (2008).

**Eller, Jonathan R., Gaffney, J.S., Marley, N.A.** “Determination of radon adsorption to atmospheric aerosols by disequilibria of its progeny.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).

**Erlenbach, Alison, Blasing, T.J.**, Hadley, S. “Energy, carbon, and climate: Projections to 2025.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).

**Flick, Kate, Post, W.M.** “Soil carbon dynamics of elevated CO<sub>2</sub> in a sweetgum free air carbon dioxide enrichment (FACE) site.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).

**Flick, Kate, Foley, J.A.**, Alatout, S. “Environmental decision making: Mining corporations, American Indians, and the environment.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).

**Fontana, Catherine G., Brodie E.L.**, Wu, C., Hazen, T. “The impact of climate change on soil microbial communities and their feedback to the environment.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).

**Foote, Eric M., Boehm, A.B.**, Yamahara, K., de Sieyes, N. “Submarine groundwater discharge in the surf zone at Sinston Beach, California.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).

**Fruit, Kristy, Marland, G.** “Renting carbon emission credits.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).

**Fujita, Pauline A., Miller, R.M., Jastrow, J.D.** “Factors affecting carbon exudate levels for *adropogon gerardii* in the presence and absence of mycorrhizal fungus.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (1999).

**Fults, Jason C., Norby, R.J.**, Todd, D. “Biomass regression for *liquidamber styraciflua*.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (1999).



- Fults, Jason C., Hanson, P.J.,** Todd, D.E. “The evaluation of allometric equations for estimating above-ground tree biomass and stand-level carbon accumulation.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).
- Gaffney, J.S., Marley, N.A.,** Drayton, P.J., Cunningham, M.M., **Baird, J. Christopher,** Dintaman, J., **Hart, Heather, L.** “Phoenix, Arizona, revisited: Indications of aerosol effects on O<sub>3</sub>, NO<sub>2</sub>, UV-B, and NO<sub>3</sub>.” Oral presentation at the annual meeting of the American Meteorology Society (2000).
- Gaffney, J.S., Marley, N.A., Ravelo, Rose, M.** “Puerto Rico 2002: Field studies to resolve aerosol processes.” Oral presentation at the national meeting of the American Meteorological Society (2000).
- Gaffney, J.S., Marley, N.A., Tackett, Michael J., Sturchio, N.C.,** Heraty, L., Martinez, N., **Hardy, Kavita D., Guilderson, T.P.** “Evidence for biomass burning from <sup>14</sup>C and <sup>13</sup>C/<sup>12</sup>C measurements at T-0 and T-1.” Poster presentation at the national meeting of the American Geophysical Union (2007).
- Gaffney, J.S., Marley, N.A., Tackett, Michael J., Sturchio, N.C.,** Heraty, L., Martinez, N., **Hardy, Kavita D., Guilderson, T.P.** “Biogenic carbon dominance vased on <sup>13</sup>C/<sup>12</sup>C and <sup>14</sup>C measurements of total carbon at T-0 and T-1 sites during MILAGRO.” Oral presentation at the national meeting of the American Meteorological Society (2008).
- Gaffney, J.S., Marley, N.A.,** Gunawan, G., **Tackett, Michael J.** “Gamma counting of atmospheric aerosol samples with high carbonaceous aerosol loadings: Observations of radon collection and short-lived daughters.” Oral presentation at the national meeting of the American Chemical Society (2008).
- Gagne, Amy Y., Davidson, E.A.,** Hughes, H. “Carbon dioxide respiration from post-harvest slash piles in Howland, Maine.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Goertzen, Anna,** Fallon, S., **Guilderson, T.P.** “The impact of sediment and freshwater runoff on the growth of *porites* corals.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Goertzen, Anna, Cassman, K.G.** “Nitrogen mineralization in intensive maize based cropping systems.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Goldner, Aaron P., Ringler, T.D.** “GRASS Geographic Information Systems and climate modeling in the southwestern United States.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).



- Gray, Sharon B., Classen, A.T., Norby, R.J., Iverson, Colleen M.** “Separating soil respiration into plant, fungal, and bacterial components using molecular targets and assays.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Gray, Sharon B.**, Dermody, O., DeLucia, E.H. “Remote measurement of canopy reflectance shows changes in canopy phenology when soybeans are grown in elevated CO<sub>2</sub> and ozone in a field setting.” Oral presentation at the annual meeting of The Ecological Society of America (2006).
- Gray, Sharon B., Miller, R.M.**, Classen, A.T., Schadt, C. “The effects of climate change treatments on soil microbial community composition.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Gray Sharon B., Classen, A.T.**, Kardol P., Yermakov Z., **Miller, R.M.** “Water availability mediates the effects of temperature and CO<sub>2</sub> on soil microbial community composition.” Poster presentation at the annual meeting of The Ecological Society of America (2008).
- Guthrie, Caitlin R., Classen, A.T., Norby, R.J., Iverson, Colleen, M.**, Sides, K., Ledford, J. “Elevated atmospheric CO<sub>2</sub> concentrations and the effects on net nitrogen mineralization rates in a CO<sub>2</sub> enriched sweetgum forest.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Hanlon, Erin M., Post, W.M.** “Results from soil root exudate bags at the Oak Ridge National Laboratory free air CO<sub>2</sub> enrichment (FACE) experiment.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).
- Hanlon, Erin M., Post, W.M.** “Elevated CO<sub>2</sub> effects on soil carbon dynamics in a liquidambar styraciflua plantation.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).
- Hardy, Kavita D., Sturchio, N.C.**, Heraty, L., Morrison, C. “Isotope geochemistry of air and water.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Hardy, Kavita D., Cohen, R.C.**, Fry, J., Valin, L. “Modeling secondary organic aerosol formation from photooxidation of isoprene in California.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Harris, Lucas M., Kotamarthi, V.R.**, Schmelling, M. “The Chicago lake breeze. Its structure and effect on air quality.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).



- Hart, Elizabeth, Jackson, R.B.,** McElrone, A., Crocker, T. "Folier pathogen growth response to elevated CO<sub>2</sub>." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Hart, Elizabeth, Hinckley, T.M.,** Jespersen, R.G. "Cryptobiotic crust in alpine and sub-alpine regions." Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Hart, Heather L., Gaffney, J.S.,** Drayton, P.V., **Marley, N.A.** "Detection of atmospheric peracids using an HPLC chemiluminescent method." Poster presentation at the Global Change Education Program End-of-Summer Workshop (1999).
- Hart, Heather L., Miller, R.M.** "Quantification of arbuscular mycorrhizal fungal biomass in a changing global environment." Poster presentation at the Global Change Education Program End-of-Summer Workshop (2000).
- Hatch, Joshua G., Fischer, M.L.** "Spatial characterizations of methane greenhouse gas emissions from landfills and livestock in California." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Hatch, Joshua G., Fischer, M.L.** "Using carbon-14 analysis, emission databases, and modeling to itemize California's carbon budget." Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Hernandez-Cordero, Neiza M., Marley, N.A., Gaffney, J.S.** "Calibration of an air pollution measurement system." Poster presentation at the Global Change Education Program End-of-Summer Workshop (2000).
- Hernandez-Cordero, Neiza M., Weinstein-Lloyd, J.B.** "Analysis of ambient hydroperoxides in Pellston, Michigan, July 2001." [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).
- Hill, Katrina M., Hellmann, J.,** Alber, M.S., McDowell, M.A. "Creation of a mathematical visceral leishmaniasis model." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Hoffman, Alexis, Lackmann, G.** "Does climate change impact supercell tornadogenesis?" [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Hokanson, Erin P., Coulter, R.L.** "The Kansas nocturnal boundary layer and minimum temperatures." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).
- Hooper, Daniel S., Kirchstetter, T.** "The use of filter bases light transmission techniques to measure aerosol light absorption properties." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).



- Hooper, Daniel S., Kirchstetter, T.,** Apte, Z. “On-road measurements of gasoline and diesel vehicle emissions in the Caldecott Tunnel.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Hubbard, Timothy, Oechel, Walter,** and Sturtevant, Cove “Carbon storage in the Alaskan Arctic tundra: An eddy covariance perspective.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Hunter, Kim, Curtis, P.,** Vogel, C., Bovard, B. “The role of coarse woody debris respiration in a Northern Michigan hardwood forest.” Poster presentation at the Global Change Education Program End-of-Summer Workshop (2000).
- Iorio, John P., Madronich, S.,** Marsh, D. “The photolysis of O<sub>2</sub>: Key to chemistry of the middle atmosphere.” Poster presentation at the Global Change Education Program End-of-Summer Workshop (2000).
- Iorio, John P., Guilderson, T.** “Holocene climate of the mesotropics and comparison of paleodata climate reconstruction with PMIP simulations of climate at 6000 <sup>14</sup>C years ago.” Poster presentation at the spring meeting of the American Geophysical Union (2002).
- Jelley, Benjamin, Carmichael, G.R.,** Zhang, R. “Temporal and spatial forecasting of chemical phenomena for data collection and sampling by airplane.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Jenkins, Marisa, Edwards, N.T.** “Stem and branch respiration of trees in elevated CO<sub>2</sub> environments.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (1999).
- Judd, Robert, Marley, N.A., Gaffney, J.S.** “Design and construction of an ozone chemiluminescent olefin monitor.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2004).
- Kirchstetter, T., Hooper, Daniel S.,** Apte, Z., Strawa, A., Hallar, G., Harley, R., Kendall, G., Hesson, J., Stevenson, E., Miguel, A., Eiguren-Fernandez, A. “Characterization of particle and gas phase pollutant emissions from heavy- and light-duty vehicles in a California roadway tunnel.” Poster presentation at the fall meeting of the American Geophysical Union (2004).
- Kirchstetter, T.,** Novakov, T., Haesloop, O., **Boone, Aaron,** Aguiar, J. “Evaluation of the aethalometer and the coefficient of haze sampler for measuring black carbon concentration.” Poster presentation at the fall meeting of the American Geophysical Union (2005).
- Kunda, Maithlee, Marland, G.** “The impacts of albedo change on carbon sequestration strategies.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).



- Kunda, Maithlee**, Bird, N.L., Canella, L., **Marland, G.**, Schlamadinger, B. “Carbon management, earth surface albedo, and biomass fuel.” Poster presentation at the 14<sup>th</sup> European Biomass Conference (2005).
- Kunda, Maithlee, Marland, G.**, Canella, L., Schlamadinger, B., Bird, N. “Impact of albedo change on carbon sequestration strategies.” Oral presentation at the USDA Symposium on Greenhouse Gases and Carbon Sequestration in Agriculture and Forestry (2005).
- Kunda, Maithilee, Marland, G.**, West, T. “The impact of albedo change on carbon sequestration strategies.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Lambert, Christophert**, Pelini, S., Dzurisin, J., Keppel, J., Lobo, N., Marsico, T., **Hellman, J.** “Differential expression of a heat shock protein in a skipper butterfly, *Erynnis Propertius*.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Leisch, Jennifer, Disselkamp, R.S.**, Carpenter, M.A., Cowin, J.P. “The chemistry of carbonaceous soot aerosols with nitric acid.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (1999).
- LeRoy, Sverre L.**, Zimmerman, S.H., Hemming, S.R., Stine, S., **Guilderson, T.P.** “Radiocarbon constraints on fossil thinolite tufa formation in the Mono Basin, Ca, USA.” Poster presentation at the national meeting of the American Geophysical Union (2009).
- Lichtenberger, Adele M., Shaw, W.J.**, Berg, L.K. “Digital inversion and initial analysis of nephelometer data from the CHAPS campaign.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Lichtenberger, Adele M., Shaw, W.J.**, Berg, L.K., Berkowitz, C.M., Ogren, J.A., Andrews, E. “Digital inversion and initial analysis of nephelometer data from the CHAPS campaign.” Poster presentation at the national meeting of the American Geophysical Union (2008).
- Lindaman, Edan, Porph, W.M.** “Nauru: Aerosol optical depth properties and trends.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Lindaman, Edan, Stevens, B.** “Simulation of precipitating convection during the RICO field project.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Liszka, Adria H., Benkovits, C.**, McGuigan, M. “Visualization of an atmospheric dataset.” Poster presentation at the Global Change Education Program End-of-Summer Workshop (1999).



**Lunch, Claire K., Bond, B.,** Schauer, S., McDowell, N. “Embolism and repair in Douglas fir: Effects of age and season.” Poster presentation at the Global Change Education Program End-of-Summer Workshop (2000).

**Lunch, Claire K.,** McDowell, N., Bowling, D., **Bond, B.,** Ehleringer, J. “Controlling factors of  $^{18}\text{O}/^{16}\text{O}$  isotope ratios of  $\text{CO}_2$  respired from four forests on the Oregon Transect.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).

**Mandruck, Jessica,** Barnard, H.R., and **Bond, Barbara** “Using electromagnetic mapping along with point sensors to determine changes in soil water content over a large spatial grid.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).

**Mandruck, Jessica, Twilley, R.R.** “A highly engineered landscape.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2006).

**Marchany-Rivera, Angie, Marley, N.A., Gaffney, J.S.** “Wavelength dependence of UV-Vis absorption of fine aerosol samples from Mexico City.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).

**Marley, N.A., Blazer, Cherelle A.,** Drayton, P.J., **Gaffney, J.S.** “Ozone chemiluminescence detection: A potential sensitive and specific detection system for olefin monitoring.” Invited oral presentation at the annual meeting of the national meeting of the American Chemical Society (1999).

**Marley, N.A., Gaffney, J.S., Baird, J. Christopher, Blazer, Cherelle A.,** Drayton, P. J. “Determination of the complex refractive index of carbonaceous soot for radiative transfer calculations.” Oral presentation at the Seventh International Conference on Carbonaceous Particles in the Atmosphere (2000).

**Marley, N.A., Gaffney, J.S.,** Drayton, P.J., **Ravelo, Rose M.** “Northeast oxidant and particulate study: preliminary results from the Centerton, New Jersey field site.” Oral presentation at the national meeting of the American Meteorological Society (2001).

**Marshall, Laura, McDowell, N.** “Climate change applications of stable carbon isotope dendrochronology in the Jemez Mountains of New Mexico.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).

**Marshall, Laura, McDowell, N.** “Fire, water, and nitrogen: Growth constraints in a New Mexico ponderosa pine forest.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).

**Martinez-Aviles, Monica,** Drayton, Paul J., **Marley, Nancy A.** and **Gaffney, Jeffrey S.** “Detection of stratospheric-tropospheric mixing by beryllium-7 counting.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).



**Martinez-Aviles, Monica, Finlayson-Pitts, B.J.** “Relative rate studies of the reaction of chlorine atoms with crotonaldehyde and methyl vinyl ketone.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).

**McBride, Allen C., West, T.,** Marland, G. “The fate of agricultural lime: Implications for carbon accounting.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).

**McDonald, Kelly,** Muehlenbauer, M., Hoffman, A., Newman, L., Taghavi, S., van der Lelie, N., Koenig, K., **Rogers, A.** “Effects of endophytic bacteria on leaf level photosynthetic performance in poplar grown for biofuel.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).

McDowell, N.G., Bowling, D.G., **Lunch, Claire K.,** Welker, J., Anthoni, P., Law, B., **Bond, B.J.,** Ehleringer, J.R. “Oxygen-18 content of ecosystem respiration across climatic gradient in Oregon.” Poster presentation at the national meeting of the American Geophysical Union (2001).

**McInnis, Jenifer** “Why does the beaver swamp at the Harvard Forest appear to release so much CO<sub>2</sub> into the atmosphere?” Oral presentation at the Harvard Forest Research for Undergraduates Symposium (2005).

**McInnis, Jennifer, Hadley, J.L.** “Effects of a wetland on carbon exchange in the Harvard Forest.” Oral presentation at the *Global Change Education Program End-of-Summer Workshop* (2005).

**McInnis, Jennifer, Williams, L.** “Quantifying aerosols: The characterization of the transmission and collection of an Aerodyne aerosol mass spectrometer.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).

**McInnis, Jennifer, Williams, L.,** Onash, T., Worsnop, D. “FLAME-2: An analysis of aerosol emissions from biomass burning.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).

**McMeeking, Gavin R., Whiteman, C.D.,** Powell, S., Clements, C.B. “Terrain and Ambient wind effects on the warming footprint of a wind machine.” Oral presentation at the national meeting of the American Meteorological Society (2002).

**Melvin, Melissa, Kotamarthi, V.R.** “Aerosol loading and optical properties during the May 2003 Southern Great Plains ARM Aerosol IOP.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).



**Menefield, Shallena, Marley, N.A., Gaffney, J.S.** “Using an aethalometer to determine optical absorption features from different black carbon sources.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).

**Menon, S., Chumura, Nicholas T.** “Aerosol-cloud interactions detected by MODIS.” Oral presentation at the annual AEROCOM -III Workshop (2004).

**Miller, Jesse, Post, W.M.** “Analysis of factors influencing soil response in no-till agriculture.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (1999).

**Miller, Nicole E., Edwards, N.** “Increasing atmospheric temperature: Growth and acclimation of four deciduous tree species.” Poster presentation at the Global Change Education Program End-of-Summer Workshop (2002).

**Miller, Nicole E., Edwards, N.,** Gunderson, C. “Increasing atmospheric temperature: Effects on soil respiration and acclimation adjacent to four deciduous tree species.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).

**Miller, Nicole E.** “Nutritional quality of tree foliage decreased by elevated atmospheric CO<sub>2</sub>: Effects on shredder feces and implications for downstream collectors.” Loyola University Mulcahy Scholarship Symposium (2003).

**Miles, Gretchen R.** “Stable carbon isotopes: A tool for understanding carbon uptake by forests.” Alfred University Environmental Studies Speakers Series (2004).

**Miles, Gretchen R., McDowell, N.,** Hess, M., Crosby, F. “Stable carbon isotopes: A tool for understanding carbon uptake of a semi-arid forest and a tropical rainforest.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).

**Miles, Gretchen R., Davidson, E.A.** “Highlights of the canopy nitrogen deposition experiment at the Howland Forest.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).

**Mills, David L., Berg, L.,** Kassinov, E. “Properties of fair weather cumuli at the ACRF Darwin site.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).

**Mills, David L., Berg, L.K.,** Kassinov, E.I., Long, C.N. “Shortwave forcing by shallow cumuli over the Southern Great Plains.” Poster presentation at the fall meeting of the American Geophysical Union (2008).

**Mills, David L., Berg, L.K.,** Kassinov, E.I., **Shaw, W.** “Solar forcing effects of shallow cumuli at the ACRF Southern Great Plains site.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).



**Moore, Kori D., Shaw, W.** “Preliminary observations of atmospheric boundary layer above Oklahoma City during the Joint Urban 2003 Field Program.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).

**Moore, Kori D., Worsnop, D.** “Size dependent transmission of aerosols in an ARI aerosol mass spectrometer.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).

**Morel, Alexandra, Davidson, E.A.** “Deadwood: The silent source of carbon dioxide.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2003).

**Mosher, Michael, Wesely, M.L.,** Cook, D., Martin, T., Song, J. “Micrometeorological measurements of carbon dioxide flux above a grassland site.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).

Newton, T., **Paw U, K.T.,** Falk, M., **Wade-Murphy, Jessica,** Shaw, R.H., King, T., Hsiao, T.C., Pyles, R.D., Matista, A., Sunquist, A., Park, Y-S., Wabeh, H. “The microclimate of a 65 m tall old growth coniferous forest.” Oral presentation at the American Meteorological Society, Conference on Agriculture and Forest Meteorology (2000).

**Nguyen, Anthony, Halthore, R.N.** “Projections of sea level rise by 2100 and impacts on Long Island.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (1999).

**Nguyen, Anthony, Halthore, R.,** Butcher, T. “Analysis of solar hydrogen systems for use with fuel cell vehicles.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).

**Ochsner, Heidi, Davidson, E.A.,** Hughes, H. “Measuring the contribution of deadwood respiration to total ecosystem carbon exchange at the Howland Research Forest, Howland, ME.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).

**Pagano, Lara E., Miller, M.,** Bartholomew, M.J. “A climatology of the decade leading to the Cloud and Land Surface Interaction Campaign (CLASIC).” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).

**Pagano, Lara E., Lackmann, G.,** Aiyyer, A. “Climate change and storm track change.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).



- Persad, Greeta G., Menon, S.,** Sednev, I. “An assessment of uncertainties in the NASA GISS ModelE GCM due to variations in the representation of aerosol/cloud interactions.” Poster presentation at the fall meeting of the American Geophysical Union (2008).
- Persad, Greeta G., Menon, S.,** Sednev, I. “The behavior and sensitivity of aerosol dynamics in the NASA GISS ModelE climate model.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Porch, W.M., Winiacki, Shelby E.** “Tropical western Pacific island cloud trail studies.” Oral presentation at the 13<sup>th</sup> ARM Science Team Meeting (2003).
- Post, W.M., Hanlon, Erin M.,** Garten, C.T. “Elevated CO<sub>2</sub> effects on soil carbon dynamics in a sweetgum plantation.” Oral presentation at the annual meeting of the Soil Science Society of America (2004).
- Ramirez, Javier, Doskey, P.V.** “The analysis of atmospheric hydrocarbons in Puerto Rico, 2001.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).
- Randels, Cynthia A., Coulter, R.L.** “Automatic estimation of mixed layer height.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (1999).
- Randles, Cynthia A., Worsnop, D.,** Jayne, J., Davidovits, P. “The aerosol mass spectrometer.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).
- Randles, Cynthia A.,** Chieffo, L., **Imre, D., Zelenyuk, A.** “The single-particle laser ablation time-of-flight mass spectrometer (SPLAT-MS).” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).
- Ravelo, Rose M., Gaffney J.S., Marley, N.A.,** Doskey, P.V. “Determining spectral measurements of solar irradiance using a multifilter rotating shadowband radiometer (MFRSR).” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).
- Reed, Sarah E.,** Shaw, D., **Bond, B.** “Using pressure-volume analysis to determine the effect of the hydrostatic gradient on cell turgidity.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).
- Riley, W.J., Randerson, J.T., **Fischer, M.L.,** Hsueh, D., **Hatch Joshua G.** “Relating the  $\Delta^{14}\text{C}$  value of annual grasses to spatially and temporally distributed fossil fuel emissions in California.” Annual climate change meeting of the *California Energy Commission* (2005).



- Rios-Acosta, Lorena, Leakey, A.** “Soybean agroecosystem responses to future heatwaves.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Roddy, Adam B., Wullschleger, S.** “Acclimation of stem respiration to increased temperatures: Implications of warming on tree survivability.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2003).
- Roddy, Adam B., Wullschleger, S.** “Initiation and longation of maize primary roots under water stress.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Roddy, Adam B., Wullschleger, S.** “Growth biomechanics of water stressed and impeded maize roots: Rates, mechanical properties, and morphological patterns.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Roddy, Adam B., West, T., Wullschleger, S.** “Wasting away: Food, feces, and flatulence in the U.S. carbon budget.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Roddy, Adam B., Wullschleger, S.D.** “Effects of low water potentials on the growth and structure of corn roots.” Oral presentation at the mid-Atlantic chapter of The Ecological Society of America (2006).
- Rodriguez, Victor M., Marley, N.A., Gaffney, J.S.** “Measurements of black carbon in the Chicago urban area.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).
- Rodriguez, Victor, Gaffney, J.S., Marley, N.A.** “Black carbon measurements made with an aethalometer in Chicago, Illinois.” Chemical Education, Undergraduate - Environmental Chemistry poster presentation at the national meeting of the American Chemical Society (2002).
- Rose, Aaron, Fischer, M., Tast, C., Menon, S., Singh, R.** “Anthropogenic methane emissions across California.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Rummer, Christopher, Jenson, M., Clothiaux, E., Nese, J., Merritt, J.** “Mid-level convective clouds observed during the ARM Mobile Facility (AMF) deployment in Niamey, Niger, Africa.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Salvatore, Jillian, Post, W.M.** “Enhancement of a global soil pedon database.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (1999).



**Schafer, Cynthia A., Hinkley, T.** “The role and diversity of crusts in an alpine and sub-alpine ecosystem.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).

**Schafer, Cynthia A., Perlinger, J.A.** “Carbon dioxide and Lake Superior.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).

**Schiffer, Nicole J., Whiteman, D.** “Using HOBOS to study the vertical structure of cold pool events in the Salt Lake Valley.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).

**Schnepf, Neesha R., Oestreicher, S., Wingate, B., Hecht, M., Peterson, M.** “Using Okubo-Weiss parameterization to analyze Arctic Ocean eddies.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).

Sebastian A., West, T.O., **Roddy Adam B., Marland, G.,** Bhaduri, B.L. “Lateral flow of carbon from US agricultural lands: Carbon uptake, consumption, and respiration.” Poster presentation at the fall meeting of the American Geophysical Union (2005).

**Secora, Jaclyn M., Gahn, S.,** Bian, X., and Keefe, R. “The impact of global warming on the Pacific Northwest.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (1999).

**Squirrel, Winona, Oechel, W.,** Hastings, S., Sheehan, G., **Alvarez-Aviles, Laura** “Arctic biocomplexity on the forefront of global change.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).

**Statura, Megan M., Hellman, J.,** Pelini, S., Dzurisin, J. “The dependence of butterfly flight on temperature.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).

**Steadham, Tiffany M., Miller, M.A.** “Determining cloud structure using wind profiler 449 MHz data.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).

**Steadham, Tiffany M., Miller, M.A.** “Formulating a hydrologic cycle model for the Arkansas-Red Basin River by monitoring precipitation trends.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).

Stuble, K.L., Rodriguez-Cabal, M.A., **McCormick, Gail L.,** Dunn, R.R., **Sanders, N.J.** “Tradeoffs, competition, and coexistence in eastern deciduous forest and communities.” Poster presentation at the Society for the Study of Social Insects (2010).



- Tackett, Michael J., Guilderson, T.,** Swanston, C. “Applying carbon-14 AMS in the characterization of soil carbon dynamics within dolomitic utisol fractions at varying depths.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Tackett, Michael J., Gaffney, J.S., Marley, N.A.** “Optical characterization of absorbing tropospheric aerosols on quartz filters using reflectance-based spectroscopy.” Poster presentation at the southwest regional meeting of the American Chemical Society (2008).
- Tackett, Michael J., Gaffney, J.S., Marley, N.A., Fischer, Emily V.** “Optical characterization of atmospheric aerosols on quartz filters using reflectance based spectroscopy.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Tackett, Michael J.,** Gunawan, G., **Marley, N.A., Gaffney, J.S.** “Measuring natural radioactivity in aerosols: Lead-210 and beryllium-7 as tracers for aerosol washout.” Poster presentation at the national meeting of the American Chemical Society (2008).
- Tran, Tri M., Ziemann, P.** “Measuring the kinetics of reactions between aldehydes and peroxides.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Turner, Alexander J., Fischer, M.,** Jeong, S., Muriki, K., Zhao, C. “Methods of improving methane emission estimates in California using mesoscale and particle dispersion modeling.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Turner, Alexander J.,** Jeong, S., **Fischer, M.L.** “Methods of improving methane emission estimates in California using mesoscale and particle dispersion modeling.” Oral presentation at the Collaborative for Air Quality Research (2010).
- Tyner, Marlene, Miller, R.M.** “Mycorrhizal colonization of four varieties of switchgrass.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Tyner, Marlene, Miller, R.M.,** Bennett, A. “The diversity of plant communities mediates mycorrhizal fungal diversity.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Wade-Murphey, Jessica, Paw U, K.,** Falk, M. “Albedo of an old growth coniferous forest.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).
- West, T.O., Singh, N., **Marland, G.,** Bhaduri, B.L., **Roddy, Adam B.** “The human carbon budget: Spatial distribution of carbon consumption and release in the United States.” Poster presentation at the NACP Investigators’ Meeting (2007).



**Wheeler, Stephanie B., Goldstein, A.H., Shaw, S.** “Effects of moisture and temperature on VOC emissions from evergreen forest and oak savannah soils.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).

**Wheeler, Stephanie B., Reisen, F., Arey, J.** “Ambient measurements in the south coast air basin of toxic PAHs and NO<sub>2</sub>-PAHs.” Poster presentation at the College of Charleston Science and Math Research Symposium (2003).

**Wheeler, Stephanie B., Reisen, F., Arey, J.** “Ambient measurements in the south coast air basin of toxic PAHs and NO<sub>2</sub>-PAHs.” Oral presentation at the Southern Regional Honors Conference (2003).

**Whiteman, D., McMeeking, Gavin R., Clements, Creg B., Powell, S.** “Evolution of the nocturnal atmospheric boundary layer over a Columbian basin vineyard.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2001).

**Winiecki, Shelby E., Porph, W.M.** “Data quality improvement studies at the ARM Tropical Western Pacific site.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (1999).

**Winiecki, Shelby E., Porph, W.M.** “Naru island cloud trails.” [Poster presentation](#) at the Naru99 Workshop (2000).

**Wofsy, Jonathan F., Whiteman, D.** “Vertical temperature profile analyses in Meteor Crater and Owens Valley.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).

**Wooten, Catherine L., McIlmoil, Rory, Hinckley, T.** “Where’s the root? – A study of root distribution in Douglas fir.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).

**Zachmann, Luke, Classen, A.** “From genes to ecosystems: Linking shifts in the genetic structure of plant populations to ecosystem processes.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).

**Zeledon, Ester B., Duffy, P.B., Iorio, John P.** “Survey of the uncertainties in regional climate simulations of California and environments.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).

**Zeledon, Ester B., Sternberg, L., Greaver, T.** “The role of ocean water in vadose hydrology of coastal dunes.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).





# APPENDIX V.

CURRENT STATUS OF PAST SURE FELLOWS.





**Laura Alvarez-Aviles** – SURE Fellow 2001-2002; BS Chemistry 2003 (cum laude), University of Puerto Rico – Rio Piedras; Bridged to GREF 2004.

**Nicole A. Aragon Ivey** – SURE Fellow 2003; BS Environmental Science 2004 (cum laude), Washington State University; Environmental Education Coordinator 2006, Boy Scouts of America, Camp Thunderbird; Marine Science Instructor 2007, Kenai Fjords Tours; Restoration Ecology Instructor 2007-2008, Stilly Snohomish Fisheries Enhancement Task Force; Child and Family Programs Coordinator 2008-present, Woodland Park Zoo, Seattle, WA.

**Luke Armbruster** – SURE Fellow 2009-2010; BS Civil Engineering 2011, San Francisco State University; BS Environmental Resource Engineering expected 2013, Humboldt State University.

**J. Christopher Baird** – SURE Fellow 1999; AB Environmental Studies 1999, University of Chicago (with honors); MS Environmental Science 2001, Western Washington University; JD 2005, Duke University School of Law (magna cum laude, order of the coif); Associate at Perkins Coie LLP 2005-present, Environment, Energy and Resource Group, Seattle WA.

**Anna R. Beck** – SURE Fellow 2003-2004; BS Chemistry 2004, Denison University; Fulbright Fellowship 2005-2007, Vienna University of Technology; MS 2007 Oceanographic Science, California Institute of Technology; PhD 2012 Oceanographic Science, California Institute of Technology; Postdoctoral Fellow, Applied Physics and Material Science 2007-present, Atwater Research Group, California Institute of Technology.

**Maritere Berberena-Alonso** – SURE Fellow 2006; BS Chemistry and Environmental Science 2007, University of Puerto Rico Rio Piedras; Spanish Teacher 2008-present, Lingoteka School of Foreign Languages, Zagreb, Croatia.

**Zara K. Berg** – SURE Fellow 2005; BS Biology 2007, Montana Technical University; MS Environmental Toxicology 2008, Texas A & M University; Professor of Science, Chemistry and Hazardous Materials 2008-present, Fort Peck Community College, Poplar MT; EPA Tribal EcoAmbassador Research Grant 2012.

**John R. Bevans** – SURE Fellow 2007-2008; BS Biology 2009, University of Tampa; Magnet School Teacher 2009-present, Environmental Science, Goyang, Korea.

**Heidi M. Bialk** – SURE Fellow 1999-2000; BS Chemistry and Environmental Science 2000, Bemidji State University; Bridged to GREF 2001.

**Anjali Bisaria** – SURE Fellow 2010; BS Molecular Biology 2011, Princeton University; PhD Chemical and Systems Biology expected 2016, Stanford University.

**Cherelle Blazer-Higgins** – SURE/SOARS student 1999; BS Forestry Management 1999, Southern University; MS Environmental Science 2004, Yale University; Clean Energy Specialist 2007-2010, Environmental Defense Fund; Director, You can't Live in the Woods; Appointed Member, Dallas Gas Drilling Task Force; Director 2008-present, Environmental Research and Policy Services, Urban Environmental Co.



**Andy Bookter** – SURE Fellow 2000; BS Chemistry 2001, Western Washington University; MS Hydrology 2006, University of Montana; Hydrologic Technician 2006-2009, USFS Forestry Science Laboratory, Anchorage, AK; Geomorphologist and Hydrologist 2009-present, Department of Land Air and Water Resources, University of California-Davis.

**Aaron Boone Matijow** – SURE Fellow 2005; BS Environmental Science and Meteorology 2006 (magna cum laude), North Carolina State University; Air Quality Consultant 2006-2009, Natural Resource Group LLC; Air Quality Specialist 2009-present, Mecklenburg County Air Quality.

**Brody P. Bourque** – SURE Fellow 2009-2010; BS Atmospheric Science 2012, University of Louisiana at Monroe; Undergraduate Research supervised by Anne Case Hanks (GREF student); Research Assistant 2012-present, Department of Atmospheric and Planetary Sciences, Hampton University.

**Ryan A. Boyd** – SURE Fellow 2009-2010; BS Integrative Biology 2010, University of Illinois at Urbana-Champaign; PhD Molecular Plant Sciences expected 2015, Washington State University, research advisor Asaph Cousins.

**Nell Burger Kirst** – SURE Fellow 2002; BS Biochemistry 2004, Kenyon College; MD 2009, University of Michigan Medical School; Faculty Department of Family Medicine 2009-present, University of Michigan Medical School.

**Erin Burns Gill** – SURE Fellow 2007; BA History 2008 (cum laude), University of Notre Dame; Sustainability Coordinator 2008-2010, Knoxville Energy and Sustainability Program, City of Knoxville; MS Environmental Management 2012, Yale University; Associate 2012-present, ICF International, Atlanta, GA.

**Christopher Byrd** – SURE Fellow 2000; BS Environmental Science 2001, Evergreen State College; Professional Certificate 2004, Environmental Policy, Bard College; Enforcement Officer 2005-present, Arizona Department of Environmental Quality.

**Rebecca Callahan** – SURE Fellow 2008; BS Chemistry 2009, Hendrix College; PhD Materials Chemistry expected 2013, Liquid Crystal Materials Research Center, University of Colorado at Boulder, research advisors David Walba and Garry Rumbles.

**Anne T. Case** – SURE Fellow 2000; BS Chemistry 2001 (cum laude), University of Toledo; Bridged to GREF 2002.

**Nicholas T. Chmura** – SURE Fellow 2004; BS Atmospheric Science 2006, Cornell University; IT Associate 2006-2010, Morgan Stanley Investment Management, New York; Engineer 2010-present, Two Sigma Investments.

**Tara M. Clancy** – SURE Fellow 2006; BS Environmental Engineering 2009 (magna cum laude), Rensselaer Polytechnic Institute; MSE Environmental Engineering 2010, University of Michigan; PhD Environmental Engineering expected 2015, University of Michigan, research advisor Lutgrade Raskin.



**Luis A. Cuadra-Rodriguez** – SURE Fellow 2003; BS Environmental Science and Chemistry 2004, University of Puerto Rico – Rio Piedras; Bridged to GREF 2005.

**Michael J. DeFlorio** – SURE Fellow 2008; BS Atmospheric Sciences 2009 (cum laude), Cornell University; PhD Oceanography expected 2014, Scripps Institute of Oceanography, University of California - San Diego, research advisors Daniel Cayan and Arthur Miller.

**Kelley Doyle** – SURE Fellow 2010; BS Environmental Science 2012, University of California – Berkeley; Research Assistant Intern 2012, Blue Earth Consultants LLC; Management Trainee, Hillstone Restaurant Group 2012-present.

**Allison Drake** – SURE student 2000; BS Geology 2002, Hamilton University; Bridged to GREF 2003.

**Gabrielle B. Dreyfus** – SURE Fellow 1999-2001; BA Earth and Planetary Sciences 2001 (cum laude), Harvard University; MS Geosciences 2005, Princeton University; PhD Geosciences 2008, Princeton University (joint with Universite Pierre et Marie Curie, Paris VI); AAAS/AGI Congressional Fellow 2008-2009, Office of Senator Byron Dorgan; AAAS Science and Technology Fellow 2010-2011, Office of the Undersecretary of Commerce, National Oceanic and Atmospheric Administration; Science Policy Analyst 2011-present, Climate Change Policy and Technology Fellow, US Department of Energy.

**Benet Duncan** – SURE Fellow 2005; BS Land, Air, and Water Resources 2005, University of California-Davis; PhD Atmospheric and Oceanic Sciences 2011, University of Colorado-Boulder; Postdoctoral Fellow 2011-present, National Oceanic and Atmospheric Administration, Gulf of the Farallones National Marine Sanctuary.

**David A. Dunston** – SURE Fellow 2001-2002; BS Cell and Molecular Biology 2005, University of Maryland; PhD Molecular Biology expected 2013, University of Maryland, research advisor Weihong Lin.

**Katherine P. Dydak** – SURE Fellow 2008-2009; BS Political Science 2010, Wake Forest University; Fulbright Fellowship 2011, Teaching English in Russia; MS City and Regional Planning expected 2013, University of North Carolina at Chapel Hill.

**Shane Easter** – SURE Fellow 2008; BS Environmental Science 2010, Brown University; Environmental Analyst Intern 2011-2012, Sylvatex; Global Change Ecology Field and Laboratory Technician 2012-present, Carnegie Institute for Science.

**Jonathan R. Eller** – SURE Fellow 2008; BS Chemistry 2010 (magna cum laude), University of Arkansas at Little Rock; PhD Chemistry expected 2015, University of Illinois at Urbana-Champaign, advisor Catherine Murphy.

**Erica D. Erlanger** – SURE Fellow 2006; BS Geology 2008, Union College; MS Geology 2010, Purdue University; Geologist 2010-present, Underground Imaging Technologies.



**Alison Erlenbach** – SURE Fellow 2007; BA Economics 2009, University of Florida; Greenhouse Gas Inventory Quantifier 2010, CSA Standards; Founder and CEO 2009, Campus Climate Solutions; Co-director and Consultant 2010-present, Green Tower Sustainability; Strategic Marketing Consultant 2010-2011, Power My Campus; Business Development Manager 2011-present, CarbonSolve Inc.

**Heather E. Flachs** – SURE Fellow 2005; BS Meteorology 2005, Northern Illinois University.

**Kate Flick** – SURE Fellow 2005-2006; BS Environmental Studies 2006, University of Wisconsin – Madison; MSc Forest Ecology and Management 2008, University of Freiburg; Sustainability Education Coordinator 2009-present, College of Menominee Nation's Sustainable Development Institute.

**Catherine G. Fontana** – SURE Fellow 2008; BS Biology 2008, Albion College; Bridged to GREF 2010.

**Eric M. Foote** – SURE Fellow 2005-2006; BS Chemistry 2005, Cornell University; Teaching Assistant 2005-2006, Cornell Medical College in Qatar; Centers for Disease Control and Prevention, Safe Water and AIDS Project (SWAP) 2010, Western Kenya; Infectious Disease Society of America (IDSA) Fellowship 2011, Health Impact of Improved Cook Stoves on Rural Kenyan Children; MD Infectious Diseases 2012, Emory University School of Medicine.

**Kristy Fruit** – SURE Fellow 2000-2001; BS Geoenvironmental Engineering 2001, Pennsylvania State University; Principal Mastery Charter School 2002-present, Thomas Campus, Philadelphia, PA.

**Pauline A. Fujita** – SURE Fellow 1999; BS Microbiology and Immunology 2000, McGill University; MS Ecology and Evolution 2004, University of Chicago; PhD Ecology and Evolution 2007, University of Chicago; Biological Data Curator 2007-present, Center for Biomolecular Science and Engineering, University of California – Santa Cruz.

**Jason C. Fults** – SURE Fellow 1999, 2001; BS Biology, Sustainability and Environmental Studies 2006 (magna cum laude), Berea College; Thomas J. Watson Fellowship 2007; Fulbright Fellowship 2008, Evolution of Environment and Development Related Conflicts; Volunteer Coordinator of the Community Weatherization Coalition; Chapter Administrator of the U.S. Green Building Council, Heart of Florida Chapter; Electrical Construction Apprenticeship 2012, IBEW-NECA Joint Apprenticeship Training Program.

**Amy Y. Gagne** – SURE Fellow 2004; BS Geology 2005, Rensselaer Polytechnic Institute; MS Geology 2006, Rensselaer Polytechnic Institute; Staff Scientist 2007-2008, Key Environmental Inc.; Staff Geologist 2008-2009, Key Environmental Inc.; Water Resources Hydrologist 2009-present, Monterey County Water Resources Agency.

**Anna Goertzen** – SURE Fellow 2004-2005; BS Natural Science 2006 (magna cum laude), Midland Lutheran College.



**Aaron P. Goldner** – SURE Fellow 2007; BS Environmental Science and Earth Science 2007, Oregon State University; PhD Purdue University expected 2013, Earth and Atmospheric Sciences and Computational Science and Engineering, research advisor Matthew Huber.

**Sharon B. Gray** – SURE Fellow 2006-2007; BS Integrative Biology 2006, University of Illinois at Urbana-Champaign; Bridged to GREF 2008.

**Caitlin R. Guthrie** – SURE Fellow 2007; BA Environmental Science and Ecology 2008, Pomona College; MS Restoration Ecology 2012, University of Washington; Teaching Associate 2012-present, Restoration Ecology Capstone Course, University of Washington.

**Erin M. Hanlon** – SURE Fellow 2001-2003; BS Biology 2004, St Johns College; MS Biology 2006, University of Utah; Project Manager 2006-present, Regulatory [Clean Water Act] Division of the U.S. Army Corps of Engineers, Sacramento District.

**Kavita D. Hardy** – SURE Fellow 2007-2008; BA Chemistry and Economics 2009, Swarthmore College; Environmental History and Policy Intern 2009-2010, Chemical Heritage Foundation; Research Assistant 2010-2011, Environment History and Policy Program, Chemical Heritage Foundation; Environmental Science Teacher 2010-present, The Waste Crisis, Arthur Morgan School.

**Lucas M. Harris** – SURE Fellow 2003; BS Mathematics 2003, Northern Illinois University; MS Applied Mathematics 2007, University of Washington; PhD Atmospheric Science 2010, University of Washington; Physical Scientist 2010-present, National Oceanic and Atmospheric Administration, Geophysical Fluid Dynamics Laboratory.

**Elizabeth Hart** – SURE Fellow 2004-2005; BS Environmental Science 2007, Willamette University. MS Environmental Pollution, Toxicology and Health 2009, University of Valencia; PhD Environmental Pollution Toxicology and Health expected 2014, University of Valencia.

**Heather L. Hart Baird** – SURE Fellow 1999-2000; BS Biochemistry 2001, Western Washington University; MPH Public Health 2003, University of North Carolina at Chapel Hill.

**Joshua G. Hatch** – SURE Fellow 2004-2005; BS Biological and Environmental Engineering 2005, Cornell University; MS Civil and Environmental Engineering-Atmosphere and Energy 2006, Stanford University; Consultant 2006, Sustainability Fellow 2006-2007, Rocky Mountain Institute; Director Sustainability Analytics 2007-present, Brightworks Sustainability Advisors.

**Scott M. Hawley** – SURE Fellow 2009; BS Geological Science and Marine Science (cum laude) 2011, University of Miami; BA Chemistry 2011, University of Miami; PhD Earth Sciences expected 2016, Marie Curie Early Stage Researcher, Durham University.



**Nieza M. Hernandez-Cordero** – SURE Fellow 2000-2001; BS Chemistry 2001 (magna cum laude), University of Puerto Rico at Mayaguez; MS Chemistry 2006, University of Puerto Rico at Mayaguez; Instrumentation Specialist 2006-2007, Materials Characterization Center, San Juan, PR; Product Manager 2007-present, TTC Analytical Services Corp., Caguas, PR.

**Katrina M. Hill Spencer** – SURE Fellow 2008; BS Mathematics and Biology 2009, Cabrini College; PhD Biomedical Engineering expected 2014, Mathematical and Computational Biology, University of California-Irvine, advisor Elliot Hui.

**Alexis Hoffman** – SURE Fellow 2010; BS Earth and Planetary Science 2011, Washington University in St. Louis; PhD Meteorology expected 2016, Pennsylvania State University.

**Erin P. Hokanson Wagner** – SURE Fellow 2002-2003; BS Geography and Meteorology 2003, Valparaiso University; Bridged to GREF 2004.

**Danial S. Hooper** – SURE Fellow 2003-2004; BS Environmental Engineering 2005, Tulane University; MS Environmental Engineering 2006, University of California – Berkeley; Project Manager (Sustainability Practices and Air Compliance) 2006-2008, LFR/Arcadis; Senior Environmental Engineer (Air Quality and Noise Analysis) 2008-2009, Christopher A. Joseph & Associates; Senior Engineer Environmental Services 2009-2011, Brown and Caldwell; MS Energy Policy and Climate 2012, John's Hopkins University.

**Timothy Hubbard** – SURE Fellow 2010; BS Meteorology 2011, Valparaiso University; MS Earth and Atmospheric Sciences expected 2013, University of Nebraska – Lincoln.

**Kimberly Hunter** – SURE Fellow 2000; Biology, Ball State University.

**Fara S. Ilami** – SURE Fellow 2001; BS Biology 2002, University of Texas at Arlington; Hydrological Technician 2003-2004, USGS Everglades National Park; MS Aquatic Environmental Science 2012, Florida State University.

**John P. Iorio** – SURE Fellow 2000-2002; BS Environmental Geology 2002, Bucknell University; MS Computational Mathematics 2005, Stanford University; Manager Marketing Operations 2005-2009, Cisco Systems; Manager Global Database Marketing 2009-present, Cisco Systems.

**Benjamin Jelley** – SURE Fellow 2004; BS Meteorology 2004, Texas A&M University; Research Assistant 2005-2006, SAIC; Meteorologist 2006-present, WorldWinds.

**Marisa Jenkins** – SURE Fellow 1999-2000; Biology, Waynesburg College.

**Kendra Joseph** – SURE Fellow 2009; BA Physical Sciences and Mathematics 2010 (cum laude), Muhlenberg College; BS Chemical Engineering 2012, Columbia University; Manufacturing and Process Engineer 2012-present, Honeywell Corporation.



**Robert Judd** – SURE Fellow 2004; BS Environmental Engineering 2005, Tulane University; Environmental Health and Safety Specialist 2006-2008, Atrium Environmental Health and Safety Services, LLC; Health and Safety Consultant 2007-2012, Congressional Office of Compliance; Occupational Safety and Health Specialist 2012-present, Congressional Office of Compliance.

**Maithilee Kunda** – SURE Fellow 2004-2006; BS Mathematics and Computer Science 2006, Massachusetts Institute of Technology; PhD Computer Science 2012, Georgia Institute of Technology, advisor Ashok Goel. Postdoctoral Research Scientist Georgia Institute of Technology, School of Interactive Computing - 2012-present.

**Christopher Lambert** – SURE Fellow 2008-2009; BS Environmental Science 2009 (magna cum laude), University of Portland.

**Jennifer Leisch** – SURE Fellow 1999; BS Chemistry 2000, New Mexico Tech; PhD Applied Chemistry and Materials Science 2006, Colorado School of Mines; Postdoctoral Research Associate 2006-2007, Stanford Synchrotron Radiation Light Source; Postdoctoral Research Associate 2007-2010, National Renewable Energy Laboratory; Science and Technology Policy Fellow 2010-present, American Association for the Advancement of Science; Climate Change Science Advisor 2010-present, U.S. Agency for International Development.

**Sverre L. LeRoy** – SURE Fellow 2009; BS Environmental Science 2010, Mills College; Lawrence Livermore Atmospheric, Earth and Energy Undergraduate Scholar 2009-2010, Center for Accelerator Mass Spectrometry (CAMS, Tom Guilderson); PhD Earth and Environmental Science expected 2015, Stanford University, research advisor Robert Dunbar.

**Adele Lichtenberger Igel** – SURE Fellow 2008; BS Physics and Meteorology 2010, North Carolina State University; MS Atmospheric Science expected 2013, Colorado State University, research advisor Susan van der Heever.

**Edan Lindaman** – SURE Fellow 2004-2005; BS Environmental Science 2005, Loyola Marymount University; MS Meteorology 2007, University of California – Los Angeles; General Forcaster 2007-present, National Weather Service.

**Adria H. Liszka Reutzel** – Sure Fellow 1999; BS Geography 2000, Pennsylvania State University; MS Computer Science 2002, University of Wisconsin-Madison; Project Manager 2002-2007, Sandia National Laboratory, Albuquerque, NM; Project Manager 2007-2011, Westinghouse Electric Company.

**David W. Loehlin** – SURE Fellow 2001-2002; BA Biology 2003, University of Chicago; PhD Ecology and Evolutionary Biology 2011, University of Rochester; Postdoctoral Fellow University of Wisconsin-Madison 2011-present, advisor Sean Carroll.

**Claire K. Lunch** – SURE Fellow 2000-2001; BS Mathematics 2002, University of Chicago; PhD Biological Sciences 2009, Stanford University; Postdoctoral Fellow 2009-2012, Marine Biological Laboratory, Woods Hole; Staff Scientist 2012-present, National Ecological Observatory Network (NEON).



**Jessica Mandrick** – SURE Fellow 2005-2006; BS Engineering 2007, Swarthmore College; Project Engineer 2007-present, Gilsanz Murray Steficek, New York, NY.

**Angie Marchany-Rivera** – SURE Fellow 2007, 2009; BS Theoretical Physics and Atmospheric Science 2009, University of Puerto Rico-Mayaguez; PhD Applied Science/Chemistry expected 2014, University of Arkansas at Little Rock, research advisor Jeffrey Gaffney.

**Laura Marshall** – SURE Fellow 2005-2006; BS Ecology and Evolutionary Biology 2006, University of Arizona; PhD Natural Resources and the Environment 2012 Laboratory of Tree Ring Research, University of Arizona.

**Monica Martinez-Aviles** – SURE Fellow 2000-2002; BS Chemistry 2002, University of Puerto Rico – Rio Piedras; Bridged to GREF 2003.

**Allen McBride** – SURE Fellow 2002-2004; BA Biology 2004, Swarthmore College; Bridged to GREF 2005.

**Gail McCormick** – SURE Fellow 2009; BS Ecology and Evolutionary Biology 2010 (magna cum laude), University of Michigan; PhD Ecology expected 2016, Penn State University, research advisor Tracy Langkilde.

**Kelly McDonald** – SURE Fellow 2009-2010; BS Biology 2011, Marist College; MS Forestry expected 2013, Virginia Polytechnic Institute.

**Rory McIlmoil** – SURE Fellow 2000; BS Earth and Environmental Science 2002, Furman University; MA Global Environmental Politics 2007, American University; Research Assistant 2008, Wind and Coal Issues, Appalachian Voices; Campaign Coordinator 2009, Coal River Mountain Watch; Program Manager Energy Program 2009-present, Downstream Strategies.

**Jennifer McInnis** – SURE Fellow 2005-2007; BA Chemistry and Chemical Biology 2008, Cornell University; PhD Chemistry expected 2013, Northwestern University, research advisor Tobin Mark.

**Gavin McMeeking** – SURE Fellow 2001-2002; BA Earth and Planetary Science 2002, University of California – Berkeley; Bridged to GREF 2005.

**Melissa Melvin Widhalm** – SURE Fellow 2004; BS Meteorology 2004, Northern Illinois University; MS Natural Resource Sciences, Climate Assessment and Impact 2006, University of Nebraska-Lincoln, National Drought Mitigation Center; Research Assistant 2006-2008, National Drought Mitigation Center, University of Nebraska-Lincoln; Climatologist 2008-2011, National Drought Mitigation Center; Project Manager Usable to Useful (U2U) 2011-present, Purdue University.

**Shallena Menefield** – SURE Fellow 2008; BS Geoscience, New Jersey City University.



**Gretchen R. Miles** – SURE Fellow 2004-2005; BA Environmental Studies 2004, Alfred University; MS Ecology 2007, State University of New York-Syracuse; Staff Scientist 2007-present, Risk Assessment and Ecological Services Division, Arcadis US, Inc.

**Jesse Miller** – SURE Fellow 1999; BS Environmental Systems Technology 2000, Cornell University; MS Atmospheric Science 2005, University of Arizona; Research Associate 2006-2009, Oak Ridge National Laboratory; Research Associate 2009-2011, National Oceanic and Atmospheric Administration, Atmospheric Turbulence and Diffusion Division, Oak Ridge, TN; PhD Plant Biology and Environmental Physiology expected 2016, University of Illinois-Urbana/Champaign.

**Nicole E. Miller** – SURE Fellow 2002-2003; BS Biology 2003 (magna cum laude), Loyola University Chicago; PhD Evolution, Ecology and Population Biology expected 2013, Washington University St. Louis, research advisor Tiffany Knight.

**David L. Mills Jr.** – SURE Fellow 2007-2008; BS Computer Science and Engineering 2009, University of South Carolina; Systems Engineer 2009-present, Vanguard.

**Kori D. Moore** – SURE Fellow 2003-2005; MS/BS Civil and Environmental Engineering 2007, Utah State University; Environmental Engineer 2007-present, Energy Dynamics laboratory, Utah State University Research Foundation; PhD Civil and Environmental Engineering expected 2014, Utah State University, research advisor Randall Martin.

**Alexandria Morel** – SURE Fellow 2003; BA Environmental Studies 2003, Washington University St. Louis; PhD Geography 2007, University of Oxford; PhD Environmental Change 2010, University of Oxford; Postdoctoral Research Fellow 2011-present, Earth Institute, Columbia University.

**Mike Mosher** – SURE Fellow 2000; BE Mechanical Engineering 2002, University of Minnesota Institute of Technology; Science Tutor 2002-2003, Tutor.com; Internet Researcher 2005-2006, Zar Corporation; Owner and Web Designer 2006-present, Wellwood Web Designs.

**Anthony Nguyen** – SURE Fellow 1999-2000; BS Meteorology, University of Oklahoma.

**Heidi Ochsner** – SURE Fellow 2001-2002; BS Environmental Engineering 2002, Eastern Washington University; MS Environmental Engineering Science 2005, Michigan Technological University; Energy Engineer 2005-2009, Senior Energy Consultant 2009-2010, Itron; Prime Movers Award 2008, American Society of Mechanical Engineers; Associate 2010-present, The Cadmus Group.

**Lara E. Pagano** – SURE Fellow 2007-2008; BS Meteorology 2008, North Carolina State University; MS Marine Earth and Environmental Science 2010, North Carolina State University; Meteorologist 2010-present, National Weather Service, Moorehead City, NC.

**Geeta G. Persad** – Sure Fellow 2008; BS Geophysics 2010 (cum laude), Stanford University; PhD Atmospheric and Oceanic Sciences expected 2015, Princeton University, research advisor Yi Ming.



**Matthew Peters** – SURE Fellow 2000; BS Wildlife and Fisheries Science 2000, Pennsylvania State University.

**Javier Ramirez** – SURE Fellow 2000-2001; BS Chemistry, University of Puerto Rico – Mayaguez.

**Cynthia A.Randles** – SURE Fellow 1999-2001; BS Oceans and Atmospheres 2000, Massachusetts Institute of Technology; Bridged to GREF 2001.

**Rose M. Ravelo** – SURE Fellow 2000-2001; BS Chemistry 2001, Binghamton University; Bridged to GREF 2002.

**Sarah Reed** – SURE Fellow 2001-2003; BS Physics and Mathematics 2003, St. Cloud University; Bridged to GREF 2006.

**Lorena Rios-Acosta** – SURE Fellow 2010; BS Industrial Biotechnology 2011, University of Puerto Rico – Mayaguez; PhD Plant Biology expected 2016, University of Illinois at Urbana-Champaign, research advisor Andrew Leaky.

**Adam Roddy** – SURE Fellow 2003-2005; BS Biology 2006, Swarthmore College; PhD Integrative Biology expected 2013, University of California-Berkeley, research advisor Todd Dawson.

**Victor Rodriguez** – SURE Fellow 2001; BS Chemistry 2003, University of Puerto Rico-Rio Piedres; JD 2007, University of Puerto Rico Law School; LLL 2007, University of Barcelona Law School; LLM Health, Insurance, and Intellectual Property Law 2010, Escuela Superior de Administración y Dirección de Empresas (ESADAE) Law School; Compliance Officer 2010-present, Office of Public Health Preparedness and Response, Puerto Rico; Associate 2010-present, Ferraiuoli LLC.

**Aaron Rose** – SURE Fellow 2006; BS Marine Science and Meteorology 2007, North Carolina State University; MS Deaf Education 2010, Washington University-St Louis; President 2010-present, Cued Speech of Colorado; Teacher of Deaf and Hard of Hearing 2010-present, Aurora Public Schools.

**Christopher Rumer** – SURE Fellow 2007; BS Meteorology 2008, Pennsylvania State University; Air Quality Specialist 2008-present, Tetra Tech NUS, Pittsburgh, PA.

**Jillian Salvatore** – SURE Fellow 1999; BS Earth Science, Pennsylvania State University.

**Lauren Sanchez** – SURE Fellow 2009-2010; BA Environmental Studies and Biology 2011, Middlebury College; MS Environmental Science expected 2013, Yale University, research advisor Mark Bradford.



**Cynthia A. Schafer** – Sure Fellow 2006-2007; BS Environmental Engineering 2008, Michigan Technological University; MS Environmental Engineering 2011 (Montgomery-Watson-Harza Consulting Engineers / AEESP Master's Thesis Award), University of South Florida; Permit Engineer 2011-present, Minnesota Pollution Control Agency.

**Nicole Schiffer** – SURE Fellow 2006; BS Atmospheric Science 2007, University of Wisconsin- Madison; Bridged to GREF 2009.

**Neesha R. Schnepf** – SURE Fellow 2010; BS Earth Sciences expected 2013, Cornell University.

**Jaclyn Secora Trzaska** – SURE Fellow 1999; BS Meteorology 2001, Oswego State University; Bridged to GREF 2005.

**Winona Squirrel** – SURE Fellow 2006; BS Environmental Science, Western Carolina University.

**Megan M. Stachura** – SURE Fellow 2008; BS Marine and Atmospheric Science 2010; MS Aquatic and Fishery Sciences expected 2013, University of Washington, research advisors Nate Mantua and Ray Hilborn.

**Tiffany M. Steadham** – SURE Fellow 2000-2001; BS Biomedical Engineering 2002, Oral Roberts University; Account Executive 2004-2007, Yellow Book USA; Owner, Kingdom Connections 2007-2009; Executive Search Consultant Biotech/ Pharmaceuticals 2009-present, Odin Search Group.

**Jebb Q. Stewart** – SURE Fellow 2000; BS Meteorology 2001, University of Utah; MS Computer Science 2008, Colorado State University; Researcher 2001-2003, Demonstration Division, Forecast Systems Laboratory, Boulder, CO; Research Associate 2009-present, CIRA Earth Systems Research Laboratory.

**Michael J. Tackett** – SURE Fellow 2007-2008; BS Chemistry and Earth Sciences 2010, University of Arkansas at Little Rock.

**Tri M. Tran** – SURE Fellow 2005-2006; BS Chemistry 2007, University of California-Riverside.

**Carmen Tubbesing** – SURE Fellow 2009; BS Human Biology and Ecosystems, Evolution and Environment 2012, Brown University; Counselor 2012, Outdoor Living Skills Instructor, Farm and Wilderness; Biological Technician 2012-present, Natures Capital.

**Alexander Turner** – SURE Fellow 2010; BS Mechanical Engineering 2012, University of Colorado, Boulder; PhD Environmental Science and Engineering expected 2017, Harvard University, research advisor Daniel Jacob.



**Marlene Tyner** – SURE Fellow 2007-2008; BS Ecology and Evolutionary Biology 2009, University of Michigan; GIS and Remote Sensing Technician 2009-2010, Michigan Technological University Research Institute; MS Environmental Science and Management expected 2013, University of California-Santa Barbara, research advisor Lee Hannah.

**Phil Valko** – SURE Fellow 2002-2003; BA Biology and Environmental Science 2003, Washington University-St Louis; Researcher 2003-2005, Center for Spatial Technologies and Remote Sensing, University of California-Davis; Data Management Coordinator 2005-2007, Regional Housing and Community Development Alliance; Director of Sustainability 2007-present, Washington University.

**Eliza Varner** – SURE Fellow 2009; BA Chemistry 2010, Dartmouth College; MS Teaching Secondary Science 2012, American University; Environmental Science and Physics Teacher 2012-present, Dr Henry A. Wise Jr. High School.

**Jessica Wade-Murphy** – SURE Fellow 2000; BA Biology and Environmental Studies 2003, University of Chicago; MS Paleocology 2006, Universiteit Utrecht; Consultant 2006-2007, EcoSecurities; Methodologies Manager 2008-2010, EcoSecurities; Carbon Consultant 2010-present, Carbon Finance Unit, World Bank; Carbon Consultant 2011-present, Atmospheric Alternative; Methodologies Panel Member 2012-present, United Nations Framework Convention on Climate (UNFCCC).

**Stephanie B. Wheeler** – SURE Fellow 2002-2003; BS Biology 2003 (magna cum laude), Charleston College; MS Public Health 2007, University of Cape Town, Cape Town, South Africa; PhD Health Policy and Management 2010, University of North Carolina at Chapel Hill; Assistant Professor 2010-present, University of North Carolina at Chapel Hill.

**Diana E. Wilks** – SURE Fellow 1999; BS Anthropology 2000, University of Arkansas; MS Biological Anthropology 2002, University of Arkansas; Staff Archeologist 2002-present, Arkansas Highway and Transportation Department.

**Brent Williams** – SURE Fellow 2001; BS Physics 2002, St. Cloud University; Bridged to GREF 2003.

**Shelby E. Winiecki** – SURE Fellow 1999-2000; BS Mathematics 2000, Marquette University; Bridged to GREF 2000.

**Jonathan F. Wofsy** – SURE Fellow 2006; BA Earth and Planetary Science 2009, Harvard University; Research Assistant 2009-2012, Department of Earth and Planetary Sciences, Harvard University; Data Quality Associate 2012-present, EnerNOC.

**Angela Wong** – SURE Fellow 2008; BA Environmental Science 2011, Barnard College; Research Assistant 2011-present, ICF International.



**Catherine (Catie) L. Wooten** – SURE Fellow 2000; BS Science of Earth Systems 2001, Cornell University; MA 2006, Columbia University Teachers College; Environmental Science Teacher and Science Department Chair 2006-present, Yarmouth High School, Yarmouth, MA.

**Diane Wurst** – SURE Fellow 2009; BE Civil and Environmental Engineering 2011, Rowan University; PhD Structural Engineering expected 2014, University of Delaware, research advisor Jennifer McConnell.

**Luke Zachmann** – SURE Fellow 2006; BS Environmental Science 2008, University of Minnesota, Morris; MS Ecology 2009, Utah State University; Senior Research Specialist, Ecologist and GIS Spatial Analyst 2009-2012, School of Earth Sciences and Environmental Sustainability, Northern Arizona University; Lead Scientist 2012-present, Conservation Science Partners.

**Ester B. Zeledon** - SURE Fellow 2003 – 2004; BA Environmental Science 2004, Swarthmore College; Bridged to GREF 2005.



# APPENDIX VI.

GRADUATE RESEARCH ENVIRONMENTAL  
FELLOWSHIP FELLOWS, DEGREE AND YEAR  
AWARDED, AND THEIR DOE RESEARCH MENTORS,  
1999-2013. (\*DENOTES EXPECTED DEGREE DATE).





GREF Fellow	Years	Degree	Year	DOE Mentors	Institution
Ainsworth, Elizabeth A.	2000-2003	PhD	2003	Alistair Rogers	BNL
Allison, Steven D.	2002-2005	PhD	2005	Julie D. Jastrow	ANL
Alvarez-Aviles, Laura	2004-2008	PhD	2008	Alexander Laskin	PNNL/EMSL
Anchukaitis, Kevin J.	2004-2006	PhD	2007	Todd E. Dawson	UC-Berkeley
Atwood, Alyssa R.	2009-2013	PhD	2014*	Robert Jacob	ANL
Ault, Andrew P.	2009-2010	PhD	2010	Raul A. Zaveri	PNNL
Bateman, Adam P.	2008-2011	PhD	2011	Alexander Laskin	PNNL/EMSL
Belshe, Elizabeth Fay	2010-2013	PhD	2014*	Eric Davidson	Woods Hole
Berthrong, Sean T.	2006-2009	PhD	2009	Christopher W. Schadt	ORNL
Bialk, Heidi M. <sup>1</sup>	2001-2003	PhD	2006	R. Michael Miller	ANL
Branstetter, Marcia L.	1999-2001	PhD	2001	Warren M. Washington	NCAR
Broadbent, Eben N.	2008-2010	PhD	2012	Eric Davidson	Woods Hole
Brown, Derek P.	2006-2010	PhD	2011	Manvendra Dubey	LANL
Busby, Posy E.	2010-2012	PhD	2012	Jessica J. Hellman	Notre Dame
Busch, Christopher B.	2001-2006	PhD	2006	Jayant A. Sathaye	LBNL
Case Hanks, Anne T.	2002-2006	PhD	2008	Nancy A. Marley	ANL
Castro, Joseph C.	2005-2009	PhD	2009	Alistair Rogers	BNL
Christoffersen, Bradley J.	2008-2012	PhD	2013*	Inez Fung	LBNL
Cleland, Elsa E.	2002-2005	PhD	2005	Robert B. Jackson	Duke Univ.
Clements, Craig B	1999-2001	MS	2001	C. David Whiteman	PNNL
	2001-2003	PhD	2007		
Creekmore, Torreon N.	2007-2009	PhD	2009	Charles N. Long	PNNL
Cregger, Melissa A.	2009-2012	PhD	2012	Christopher W. Schadt	ORNL
Cross, Molly Smith	2004-2006	PhD	2006	R. Michael Miller	ANL



**GLOBAL CHANGE EDUCATION PROGRAM**  
APPENDIX VI - FELLOWS AND MENTORS

<b>GREF Fellow</b>	<b>Years</b>	<b>Degree</b>	<b>Year</b>	<b>DOE Mentors</b>	<b>Institution</b>
Cuadra-Rodriguez, Luis A.	2005-2011	PhD	2011	Alla Zelenyuk	PNNL/EMSL
Dahl, Elizabeth E.	1999-2004	PhD	2005	Steven D. Colson	PNNL/EMSL
Drake, Allison	2003-2004	MS	2005	Randy G. Balice	LANL
Dutcher, Dabrina D.	2004-2007	PhD	2011	Alla Zelenyuk	PNNL/EMSL
Ernakovich, Jessica G.	2009-2012	PhD	2013*	Nathan C. VerBerkmoes	ORNL
Farmer, Emma Christina	2000 2001-2003	MA PhD	2000 2005	Tom Guilderson	LLNL/CAMS
Fischer, Emily V.	2007-2010	PhD	2010	Jeffrey S. Gaffney	Univ. AR-LR
Fontana, Catherine G.	2010-2012	PhD	2014*	Eoin L. Brodie	LBNL
Fraterrigo, Jennifer M.	2002-2005	PhD	2005	Wilfred M. Post	ORNL
Gibbs, Holly K.	2005-2008	PhD	2008	Steven D. Brown	ORNL
Gibson, Elizabeth R.	2006-2007	PhD	2007	Alexander Laskin	PNNL/EMSL
Gillespie, Kelly M.	2007-2010	PhD	2010	Alistair Rogers	BNL
Gilman, Sarah E.	1999-2001	PhD	2003	Thomas H. Suchanek	UC-Davis
Gordon, Wendy S.	1999-2003	PhD	2003	Howard P. Hanson	LANL
Gray, Sharon B.	2008-2011	PhD	2013*	Richard J. Norby	ORNL
Grumet, Nancy S.	2000-2004	PhD	2004	Philip B. Duffy Tom Guilderson	LLNL LLNL/CAMS
Habeck, Christopher W.	2008-2010	PhD	2010	Richard J. Norby, Amiee T. Classen	ORNL
Hastings, Meredith G.	2002-2004	PhD	2004	Gregory R. Carmichael	Univ. IA
Higgins, Paul A.T.	1999-2003	PhD	2003	Stephen E. Schwartz	BNL
Hoffman, Rachel C.	2003-2004	PhD	2004	Alexander Laskin	PNNL/EMSL
Holden, Amanda S.	2008 2008-2010	MS PhD	2008 2013*	Alexander Laskin	PNNL/EMSL



<b>GREF Fellow</b>	<b>Years</b>	<b>Degree</b>	<b>Year</b>	<b>DOE Mentors</b>	<b>Institution</b>
Hollister, Emily B.	2004-2006	PhD	2008	Anthony V. Palumbo	ORNL
Hudiburg, Tara W.	2009	PhD	2012	Peter E. Thornton	ORNL
Iversen, Colleen M.	2005-2008	PhD	2008	Richard J. Norby	ORNL
Jensen Christiansen, Carrie	2007-2010	PhD	2010	Jeffrey S. Gaffney	Univ. AR-LR
Kueppers, Lara M.	1999-2003	PhD	2003	Inez Fung	LBNL
Lee, Anita	2001-2006	PhD	2006	Jeffrey S. Gaffney	ANL
Liao, Julia D.	2001-2004	PhD	2004	Julie D. Jastrow	ANL
Long, Michael S.	2007-2010	PhD	2010	David Erickson	ORNL
Macalady, Alison K.	2010-2013	PhD	2013*	Nathan G. McDowell	LANL
Mackey, Katherine R. M.	2006-2010	PhD	2010	James K.B. Bishop	LBNL
Marin-Spiotta, Erika	2001-2006	PhD	2006	Margaret S. Torn	LBNL
Martinez-Aviles, Monica	2003-2007	PhD	2007	David A. Dixon	PNNL
Mastrandrea, Michael D.	2000-2004	PhD	2004	Philip B. Duffy	LLNL
McBride, Allen C.	2005-2006	MA	2006	Patrick J. Mulholland	ORNL
McCormack, M. Luke	2010-2013	PhD	2013*	Roser Matamala	ANL
McMeeking, Gavin R.	2005-2008	PhD	2008	Melissa M. Lunden	LBNL
Millet, Dylan B.	1999-2003	PhD	2003	Douglas R. Warsnop	Aerodyne
Moore, Richard H.	2007-2011	PhD	2011	Douglas R. Warsnop	Aerodyne
Moy, Christopher M.	2005-2009	PhD	2010	Tom Guilderson	LLNL/CAMS
Mueller, Kevin E.	2007-2010	PhD	2011	Susan E. Trumbore	UC-Irvine
Natali, Susan M.	2006-2008	PhD	2008	Bruce A. Hungate	N. AZ Univ.
O'Brien, Sarah L.	2005-2010	PhD	2010	Julie D. Jastrow	ANL
Pederson, Neil A.	2001-2005	PhD	2005	Steven C. Wofsy	Harvard



**GLOBAL CHANGE EDUCATION PROGRAM**  
APPENDIX VI - FELLOWS AND MENTORS

<b>GREF Fellow</b>	<b>Years</b>	<b>Degree</b>	<b>Year</b>	<b>DOE Mentors</b>	<b>Institution</b>
Pelini, Shannon L.	2008-2009	PhD	2009	Amiee T. Classen, Richard J. Norby	ORNL
Pett-Ridge, Jennifer	2000-2003	PhD	2005	James R. Ehleringer	Univ. UT
Placella, Sarah A.	2006-2010	PhD	2011	Gary Anderson, Margaret S.Torn	LBNL
Price, Heather U.	2000-2004	PhD	2004	Paul V. Doskey	ANL
Randles, Cynthia A.	2001-2004 2004-2007	MA PhD	2004 2007	Steven E. Schwartz	BNL
Ravelo, Rose M.	2002-2006	MS	2008	Paul V. Doskey, Jeffrey S. Gaffney	ANL
Reed, Kevin A.	2010-2012	PhD	2012	Michael F. Wehner	LBNL
Reed, Sarah E.	2006-2008	PhD	2013*	R. Michael Miller	ANL
Roesler, Erika L.	2008-2012	PhD	2012	Steven Ghan	PNNL
Schiffer, Nicole J.	2010-2012	PhD	2012	Lai-Yung Leung	PNNL
Schoennagel, Tania	1999-2003	PhD	2003	Virginia H. Dale	ORNL
Secora Trzaska, Jaclyn M. <sup>2</sup>	2005-2007	-	-	James C. Liljegren	ANL
Sistla, Seeta A.	2008-2011	PhD	2013*	Jerry M. Melillo	Woods Hole
Smith, Mackenzie L.	2007-2011	PhD	2012	Robert L. McGraw	BNL
Titcombe, Mari E.	2007-2011	PhD	2012	Robert L. McGraw	BNL
Wagner, Amy J. Bratcher	2004-2006	PhD	2009	Tom Guilderson	LLNL/CAMS
Wagner, Erin P. Hokanson <sup>2</sup>	2004-2006 2006-2010	MS -	2006 -	Robert Jacob	ANL
Ward, Eric J.	2008-2009	PhD	2012	Stan D. Wullschleger	ORNL
Wardell, Lois Jean	1999-2002	PhD	2002	Joyce E. Penner	Univ. MI
Watson, Anthony <sup>2</sup>	2004	-	-	Alistair Rogers	BNL
Werner, Cynthia A.	2000-2002	PhD	2002	Kenneth J. Davis	Univ. MN



<b>GREF Fellow</b>	<b>Years</b>	<b>Degree</b>	<b>Year</b>	<b>DOE Mentors</b>	<b>Institution</b>
Williams, Brent J.	2003-2006	PhD	2008	Doug Warsnop Tica Novakov	Aerodyne LBNL
Winiecki, Shelby E.	2000-2004	PhD	2004	William M. Porch	LANL
Wittig, Victoria E.	2003-2008	PhD	2008	Wilfred M. Post David F. Karnosky	ORNL MI Tech.
Yang, Wendy H. Liu	2006-2007	PhD	2010	Mary K. Firestone	LBNL
Zeledon, Esther B.	2005-2010	PhD	2010	Willy R. Makundi	LBNL
Zobitz, John M.	2005-2007	PhD	2007	Margaret S. Torn	LBNL

<sup>1</sup> PhD in other environmental area. <sup>2</sup> No degree earned.



# APPENDIX VII.

THESES AND DISSERTATIONS  
AUTHORED BY GREF FELLOWS.





- Elizabeth A. Ainsworth, PhD 2003:** “Intra-specific and intra-plant variation in acclimation of photosynthesis to rising atmospheric carbon dioxide concentration.” Advisor – Stephen P. Long, University of California-Irvine.
- Steven D. Allison, PhD 2005:** “Microbial enzyme effects on soil carbon and nutrient turnover.” Advisor – Peter M. Vitousek, Stanford University.
- Laura Alvarez-Aviles, PhD 2008:** “Investigating the ionic composition of snow, aerosols, sea ice, and frost flowers to understand production of reactive halogens and deposition of mercury in the Arctic.” Advisor – William R. Simpson, University of Alaska-Fairbanks.
- Kevin J. Anchukaitis, PhD 2007:** “A stable isotope dendroclimatology approach to reconstructing climate variability from tropical montane cloud forests.” Advisor – Michael N. Evans, University of Arizona.
- Andrew P. Ault, PhD 2010:** “Investigations into the impact of transported particles on air pollution and climate using aerosol time-of-flight mass spectrometry.” Advisor – Kimberly Prather, University of California-San Diego.
- Adam P. Bateman, PhD 2011:** “Chemical composition and photochemical evolution of limonene secondary organic aerosol studied using high resolution electrospray ionization mass spectrometry.” Advisor – Sergey Nizkorodov, University of California-Irvine.
- Sean T. Berthrong, PhD 2009:** “The effect of afforestation on soil microbes and biogeochemistry across multiple scales.” Advisor – Rob Jackson, Duke University.
- Heidi M. Bialk, PhD 2006:** “Covalent cross coupling of sulfonamide antimicrobials with model humic components and humic substances.” Advisor – Joel Pederson, University of Wisconsin-Madison.
- Marcia L. Branstetter, PhD 2001:** “Development of a parallel river transport algorithm and applications to climate studies.” Advisor – James S. Famiglietti, University of Texas-Austin.
- Eben N. Broadbent, PhD 2012:** “Tropical forests across temporal and spatial scales.” Advisors – Gregory Asner and Christopher Field.
- Derek P. Brown, PhD 2011:** “Characteristics of atmospheric humidity derived from reanalysis and stable isotopic analysis from space.” Advisor – David C. Noone, University of Colorado at Boulder.
- Posy E. Busby, PhD 2012:** “Causes and ecological consequences of fungal disease in cottonwoods.” Advisor – Rodolfo Dirzo, Stanford University.



**Christopher B. Busch, PhD 2006:** “Technological changes in southeastern Mexico: Implications for land use, deforestation, and climate change policy.”  
Advisors – Michael Hanemann and David Zilberman.

**Anne T. Case Hanks, PhD 2008:** “Formaldehyde instrument development and boundary layer sulfuric acid: Implications for photochemistry.” Advisor – Greg Huey, Georgia Institute of Technology.

**Joseph C. Castro, PhD 2009:** “The effect of elevated carbon dioxide and ozone on soybean development, leaf anatomy, and productivity.”  
Advisor – Stephen Long.

**Elsa E. Cleland, PhD 2005:** “The influence of multiple interacting global changes on the structure and function of a California annual grassland ecosystem.”  
Advisor – Harold Mooney, Stanford University.

**Craig B. Clements, MS 2001:** “Cold air pool evolution and dynamics in a mountain basin. University of Utah.” Advisor – John Horel, University of Utah.

**Craig B. Clements, PhD 2007:** “Fire-atmosphere interactions during grass fires.”  
Advisor – Shiyuan Zhang, University of Houston.

**Torreon N. Creekmore, PhD 2009:** “The regional aerosol radiative and hydrological effects over the Mid-Atlantic corridor.” Advisor – Everette Joseph, Howard University.

**Melissa A. Cregger, PhD 2012:** “Microbial community structure and ecosystem function in a changing world.” Advisor – Aimee Classen, University of Tennessee.

**Molly S. Cross, PhD 2006:** “Ecosystem responses to climate warming-induced plant species loss in a sub-alpine meadow in the Colorado Rocky Mountains.”  
Advisor – John Harte.

**Luis A. Cuadra-Rodriguez, PhD 2011:** “Design and development of a droplet mass spectrometer.” Advisor – Gayfree B. Ellison.

**Elizabeth E. Dahl, PhD 2005:** “Photochemical production of oceanic alkyl nitrates.”  
Advisor – Eric Saltzman.

**Allison Drake, MS 2005:** “Climate change, invasive grasses, wildfire and the potential for major ecosystem change in southwest North America.” Advisor – Jonathan Overpeck, University of Arizona.

**Dabrina D. Dutcher, PhD 2011:** “Biofuel combustion: A single particle approach including new tandem measurements.” Advisor – Peter McMurry, University of Minnesota.



- Emma Christina Farmer, MA 2000:** “Estimating tropical Atlantic thermocline shape using oxygen isotopes in planktonic foraminifers.” Advisor – Peter B. deMenocal.
- Emma Christina Farmer, PhD 2005:** “Tropical Atlantic climate change from Mg/Ca and oxygen isotopes in planktonic foraminifers.” Advisor – Peter B. deMenocal.
- Emily V. Fischer, PhD 2010:** “Importing O<sub>3</sub> precursors and aerosols to the North American free troposphere: An analysis of peroxyacetyl nitrate and aerosol observations at Mt. Bachelor.” Advisor – Daniel Jaffe, University of Washington.
- Jennifer M. Fraterrigo, PhD 2005:** “Influence of land-use change on the long-term persistence of forest understory herbs in the southern Appalachian highlands.” Advisor – Monica Turner, University of Wisconsin-Madison.
- Holly K. Gibbs, PhD 2008:** “Shifting pathways of tropical land use and their implications for carbon emissions.” Advisor – Jonathan Foley, University of Wisconsin-Madison.
- Elizabeth R. Gibson, PhD 2007:** “Mineral dust aerosol chemistry and climate.” Advisor – Vicki Grassian, University of Iowa.
- Kelly M. Gillespie, PhD 2010:** “Regulation of soybean antioxidant system under expected climate changes in open-field conditions.” Advisor – Elizabeth Ainsworth (former GREF Fellow), University of Illinois at Urbana-Champaign.
- Sarah E. Gilman, PhD 2003:** “Factors controlling the northern geographic range limit of the intertidal limpet, *Collisella Scabra*.” Advisor – Richard Grosberg.
- Wendy S. Gordon, PhD 2003:** “Climate change hydrology and ecological models: Intercomparison and validation.” Advisors – Norma Fowler and James Famiglietti, The University of Texas at Austin.
- Nancy S. Grumet Prouty, PhD 2004:** “Multitracer, multisite record of climate change from the Indian Ocean.” Advisor – Robert Dunbar, Stanford University.
- Christopher W. Habeck, PhD 2010:** “Global environmental change and interactions between mammals and plants.” Advisor – Rick Lindroth, University of Wisconsin-Madison.
- Meredith G. Hastings, PhD 2004:** “Studies of reactive nitrogen in the atmosphere using global modeling and stable isotope measurements.” Advisor – Daniel Sigman, Princeton University.
- Paul A.T. Higgins, PhD 2003:** “Ecosystem responses and feedbacks to abrupt climate change.” Advisor – Steven Schneider, Stanford University.



- Rachel C. Hoffman, PhD 2004:** “Heterogeneous studies of atmospheric pollutants, nitric acid, nitrogen pentoxide, and hydroxide radicals, with sodium chloride, sodium nitrate, and synthetic sea salt using multiple analytical methods.”  
Advisor – Barbara Finlayson-Pitts, University of California-Irvine.
- Amanda S. Holden, MS 2008:** “Estimating contributions of primary biomass combustion to fine particulate matter at sites in the western United States.”  
Advisor – Jeffrey Collett Jr.
- Emily B. Hollister, PhD 2008:** “Land use and land cover change: The effects of woody plant encroachment and prescribed fire on biodiversity and ecosystem carbon dynamics in a southern Great Plains mixed grass savannah.” Advisor – Thomas Boutton, Texas A&M University.
- Tara W. Hudiburg, PhD 2012:** “Analysis of the regional carbon balance of Pacific Northwest Forests under changing climate, disturbance, and management for bioenergy.” Advisor – Beverly Law, Oregon State University.
- Colleen M. Iversen, PhD 2008:** “Forest responses to rising atmospheric CO<sub>2</sub>: Causes and consequences of increased fine-root production in a CO<sub>2</sub>-enriched sweetgum plantation.” Advisor – Aimee Classen, University of Tennessee.
- Carrie Jensen Christiansen, PhD 2010:** “The atmospheric oxidation of short lived halocarbons: Ab initio studies.” Advisor – Joseph Francisco, Purdue University.
- Lara M. Kueppers, PhD 2003:** “Forest carbon cycling along an elevation gradient: The influence of species and climate.” Advisor – John Harte, University of California-Berkeley.
- Anita Lee, PhD 2006:** “Ecosystem scale fluxes of total and speciated monoterpenes: Implications of gas- and particle-phase atmospheric chemistry.” Advisor – Alan Goldstein, University of California-Berkeley.
- Julia D. Liao, PhD 2004:** “Woodland development and soil carbon and nitrogen dynamics and storage in a subtropical savannah ecosystem.” Advisor – Thomas Boutton, University of California-Berkeley.
- Michael S. Long, PhD 2010:** “Atmospheric chemistry mechanism reduction in the 3-D NCAR Community Atmosphere Model.” Advisor – William Keene, University of Virginia.
- Katherine R.M. Mackey, PhD 2010:** “On the response of marine phytoplankton to changing nutrient and light conditions.” Advisor – Adina Payton, Stanford University.
- Erika Marin-Spiotta, PhD 2006:** “Controls on above and below ground carbon storage during reforestation of abandoned tropical pastures: Controls on soil carbon turnover.” Advisor – Wendee Silver, University of California-Berkeley.



- Monica Martinez-Aviles, PhD 2007:** “On the atmospheric degradation of very short lived brominated compounds and their reservoir species.” Advisor – Joseph Francisco, Purdue University.
- Michael D. Mastrandrea, PhD 2004:** “Dangerous climate change: Probabilistic integrated assessment, ecosystem impacts, and abrupt climate change.” Advisor – Stephen Schneider, Stanford University.
- Gavin R. McMeeking, PhD 2008:** “The optical, chemical, and physical properties of aerosols and gases emitted by the laboratory combustion of wildland fuels.” Advisor – Sonia Kreidenweis, Colorado State University.
- Dylan B. Millet, PhD 2003:** “Characterizing emission sources, chemistry, and lifetimes of VOCs and particulates using in-situ measurements.” Advisor – Allen Goldstein, University of California-Berkeley.
- Richard H. Moore, PhD 2011:** “Using measurements of CCN activity to characterize the mixing state, chemical composition, and droplet growth kinetics of atmospheric aerosols to constrain the aerosol indirect effect.” Advisor – Athanasios Nenes, Georgia Institute of Technology.
- Christopher M. Moy, PhD 2010:** “Late quaternary geological records of paleoclimate and paleoenvironmental change from southernmost South America.” Advisor – Robert Dunbar, Stanford University.
- Kevin E. Mueller, PhD 2011:** “The influence of trees on soil biogeochemistry.” Advisors – David Eissenstat and Katherine Freeman, Pennsylvania State University.
- Susan M. Natali, PhD 2008:** “Effects of elevated CO<sub>2</sub> on trace metal cycling in plants and soils.” Advisors – Manuel Lerdau and Sergio Sanudo-Wilhelmy, State University of New York at Stony Brook.
- Sarah L. O’Brien, PhD 2010:** “Controls on soil carbon accrual in restored perennial grasslands.” Advisor – Miguel Gonzolez-Meler, University of Illinois at Chicago.
- Neil A. Pederson, PhD 2005:** “Climatic sensitivity and growth of southern temperate trees in the eastern US: Implications for the carbon cycle.” Advisors – Edward Cook and Gordon Jacoby, Columbia University.
- Shannon L. Pelini, PhD 2009:** “The biogeography of adaptation and its implication for range shifts under climate change.” Advisor – Jessica Hellman, University of Notre Dame.
- Jennifer Pett-Ridge, PhD 2005:** “Rapidly fluctuating redox regimes frame the ecology of microbial communities and their biogeochemical function in a humid tropical soil.” Advisor – Mary Firestone, University of California-Berkeley.



**Sarah A. Placella, PhD 2011:** “Gene expression by microbial communities in response to soil wet-up: Microbial resuscitation strategies, nitrifier response dynamics, and nitrous oxide pulses.” Advisor – Mary Firestone, University of California-Berkeley.

**Heather U. Price, PhD 2004:** “Photochemical processing of long range transported Eurasian pollution in the northeast Pacific troposphere.” Advisor – Daniel Jaffe, University of Washington.

**Cynthia A. Randles, PhD 2007:** “Impacts of carbonaceous aerosols on climate: Examination of the sensitivity of simulated regional climates to absorbing and scattering aerosols.” Advisor – V. Ramaswamy, Princeton University.

**Rose M. Ravelo, MS 2008:** “On the proton affinities of nitrates and nitrites: A computational study on their implications for measuring branching ratios and the R group’s effect on the protonation site.” Advisor – Joseph Francisco, Purdue University.

**Kevin A. Reed, PhD 2012:** “An exploration of tropical cyclone simulations in NCAR’s Community Atmosphere Model.” Advisor – Christiane Jablonowski, University of Michigan.

**Erika L. Roesler Harding, PhD 2012:** “Representing the fate of springtime Arctic clouds.” Advisors – Richard Rood and Derek Posselt, University of Michigan.

**Nicole J. Schiffer, PhD 2012:** “Observational and modeling studies of moisture sources, synoptic variability, and precipitation in the North American monsoon.” Advisor – Steve Nesbit, University of Illinois at Urbana-Champaign.

**Tania Schoennagel, PhD 2003:** “The influence of fire interval and climate on successional patterns in Yellowstone National Park.” Advisors – Monica Turner and Donald Waller, University of Wisconsin-Madison.

**Mackenzie L. Smith, PhD 2012:** “The connection between microphysical morphology and atmospheric particle phase transitions.” Advisor – Scot Martin, Harvard University.

**Mari E. Titcombe Lee, PhD 2012:** “New particle formation: Sulfuric acid and amine chemical nucleation.” Advisor – Peter McMurry, University of Minnesota.

**Amy J. Wagner, PhD 2009:** “Oxygen and carbon isotopes and coral growth in the Gulf of Mexico and Caribbean Sea as environmental and climate indicators.” Advisor – Niall Slowey, Texas A&M University.

**Erin P. Hokanson Wagner, MS 2006:** “The effects of solar penetration on a coupled general circulation model.” Advisor – Zhengyu Liu, University of Wisconsin-Madison.



**Eric J. Ward, PhD 2012:** “Improving models of forest carbon and water cycling: Revisiting assumptions and incorporating variability.” Advisor – Ram Oren, Duke University.

**Lois Jean Wardell, PhD 2002:** “Volcanic carbon dioxide and trace metal emission from Mt. Erebus, Antarctica, and White Island, New Zealand: Contribution and implications to global atmospheric budgets.” Advisor – Philip Kyle, New Mexico Tech.

**Cynthia A. Werner, PhD 2002:** “CO<sub>2</sub> emissions in Yellowstone, USA, and Solfatara Volcano, Italy: Use of eddy covariance and mass flux modeling.” Advisor – Susan Brantley, Pennsylvania State University.

**Brent J. Williams, PhD 2008:** “Speciated organic composition of atmospheric aerosols: Development and application of a thermal desorption aerosol gas chromatograph (TAG).” Advisor – Allen Goldstein, University of California-Berkeley.

**Shelby E. Winiacki, PhD 2004:** “A case study addressing the influence of the urban boundary layer on UVB transmission.” Advisor – John Frederick, University of Chicago.

**Victoria E. Wittig, PhD 2008:** “Impacts of elevated carbon dioxide and tropospheric ozone on the growth and productivity of trees.” Advisor – Stephen Long, University of Illinois at Urbana-Champaign.

**Wendy H. Yang, PhD 2010:** “Quantification of and controls on dinitrogen and nitrous oxide fluxes from terrestrial ecosystems.” Advisor – Whendee Silver, University of California-Berkeley.

**Esther B. Zeledon, PhD 2010:** “The effect of war and its aftermath on land use and cover in Jinotega, Nicaragua.” Advisor – Maggi Kelly, University of California-Berkeley.

**John M. Zobitz, PhD 2007:** “Mathematical approaches to partition net ecosystem exchange of carbon dioxide in a high-elevation subalpine forest.” Advisor – David Bowling, University of Utah.



# APPENDIX VIII.

PUBLICATIONS AND PRESENTATIONS  
COAUTHORED BY GREF STUDENTS.

KEY: Student Author; *University Advisor*; DOE Mentor(s),  
*past GREF fellows that have become mentors*





## PUBLICATIONS:

- Adams, H.D., **Macalady, Alison K.**, Allen, C.D., Stephenson, N.L., Saleska, S.R., Huxman, T.E., **McDowell, N.G.** "Climate induced tree mortality: Earth system consequences." *Eos, Trans., Am. Geophys. Union* 91(17): 153-154 (2010).
- Ainsworth, Elizabeth A.**, Davey, P.D., Hymus, G.J., Drake, B.G., and **Long, S.P.** "Inter- and intra-specific variation in the response of photosynthesis to elevated [CO<sub>2</sub>] in a Florida scrub oak community." *Proc. 12th Int. Congr. Photosynth.* (2001).
- Ainsworth, Elizabeth A.**, Davey, P.A., Bernacchi, C.J., Dermody, O.C., Heaton, E.A., Moore, D.J., Morgan, P.B., Naidu, S.L., Yoo, H., Zhu, X-G., Curtis, P.S., **Long, S.P.** "A meta-analysis of elevated [CO<sub>2</sub>] effects on soybean (*Glycine max*) physiology, growth and yield." *Glob. Change Biol.* 8: 695-709 (2002).
- Ainsworth, Elizabeth A.**, Davey, P.A., Hymus, G.J., Drake, B.G., **Long, S.P.** "Long-term response of photosynthesis to elevated carbon dioxide in a Florida scrub-oak ecosystem." *Ecol. Appl.* 12: 1267-1275 (2002).
- Ainsworth, Elizabeth A.**, Davey, P.D., Hymus, G.J., Osborne, C.P., **Rogers, A.**, Blum, H., Nosberger, J., **Long, S.P.** "Is stimulation of leaf photosynthesis by elevated carbon dioxide concentration maintained in the long term? A test with *Lolium perenne* grown for ten years at two nitrogen levels under free air CO<sub>2</sub> enrichment (FACE)." *Plant, Cell Environ.* 26: 705-714 (2003).
- Ainsworth, Elizabeth A.**, Tranel, P.J., Drake, B.G., **Long, S.P.** "The clonal structure of *Quercus geminata* revealed by conserved microsatellite loci." *Mol. Ecol.* 12: 527-532 (2003).
- Ainsworth, Elizabeth A.**, **Rogers, A.**, Blum, H., Nösberger, J., **Long, S.P.** "Variation in acclimation of photosynthesis in *Trifolium repens* after eight years of exposure to free air CO<sub>2</sub> enrichment (FACE)." *J. Exp. Bot.* 54: 2769-2774 (2003).
- Ainsworth, Elizabeth A.**, **Rogers, A.**, Nelson, R.L., **Long, S.P.** "Testing the 'source-sink' hypothesis of downregulation of photosynthesis in elevated [CO<sub>2</sub>] with single gene substitutions in glycine max." *Agr. Forest Meteorol.* 122: 85-94 (2004).
- Ainsworth, Elizabeth A.**, **Long, S.P.** "What have we learned from fifteen years of free air carbon dioxide enrichment (FACE)? A meta-analytic review of the responses of photosynthesis, canopy properties and plant production to rising CO<sub>2</sub>." *New Phytol.* 165: 351-372 (2005).
- Ainsworth, Elizabeth A.**, **Rogers, A.**, Vodkin, L.O., Walter, A., Schurr, U. "The effects of elevated [CO<sub>2</sub>] on soybean gene expression: An analysis of growing and mature leaves." *Plant Physiol.* 142: 135-147 (2006).
- Ainsworth, Elizabeth A.**, **Rogers, A.** "The response of photosynthesis and stomatal conductance to rising [CO<sub>2</sub>]: Mechanisms and environmental interactions." *Plant, Cell Environ.* 30: 258-270 (2007).
- Ainsworth, Elizabeth A.**, **Rogers, A.**, Leakey, A.D.B., Heady, L.E., Gibon, Y., Stitt, M., Schurr, U. "Does elevated atmospheric [CO<sub>2</sub>] alter diurnal C uptake and the balance of C and N metabolites in growing and fully expanded leaves?" *J. Exp. Bot.* 58: 579-591 (2007).



Ainsworth, Elizabeth A., Gillespie Kelly M. "Estimation of total phenolic content and other oxidation substrates in plant tissues using Folin-Ciocalteu reagent." *Nature Protocols* 2: 875-877 (2007).

Ainsworth, Elizabeth A., Rogers, A., Leakey, A.D.B. "Targets for crop biotechnology in a future high CO<sub>2</sub> and high O<sub>3</sub> world." *Plant Physiol.* 147: 1-7 (2008).

Alexander, H.D., Mack, M.C., Goetz, S., Beck, P.S.A., Belshe, E. Fay. "Implications of increased deciduous cover on stand structure and above ground carbon pools of Alaskan boreal forests." *Ecosphere* 3: 45 (2012).

Allan, J.D., Bower, K.N., Coe, H., Boudries, H., Jayne, J.T., Canagaratna, M.R., Millet, Dylan B., Goldstein, A.H., Quinn, P.K., Weber, R.J., Worsnop, D.R. "Submicron aerosol composition at Trinidad Head, California, during ITCT 2K2: Its relationship with gas phase volatile organic carbon and assessment of instrument performance." *J. Geophys. Res.* 109: D23S24 (2004).

Allen, C.D., Macalady, Alison, K., Chenchouni, H., Bachelet, D., McDowell, N., Vennetier, M., Gonzales, P., Hogg, T., Rigling, A. Breshears, D., Fensham, R., Zhang, Z., Kitzberger, T., Lim, J., Castro, J., Allard, G., Running, S., Semerci, A., Cobb, N. "Climate-induced forest mortality: A global overview of emerging risks." *Forest Ecol. Manag.* 259: 660-684.

Allison, Steven D., Vitousek, P.M. "Soil microbial and enzymatic responses to complex and labile nutrient inputs." *Eos, Trans., Am. Geophys. Union, Fall Meet. Suppl.* 84: B21C-071 (2003).

Allison, Steven D., Vitousek, P.M. "Rapid nutrient cycling in leaf litter from invasive species in Hawai'i." *Oecologia* 141: 612-619 (2004).

Allison, Steven D., Vitousek, P.M. "Extracellular enzyme activities and carbon chemistry as drivers of tropical plant litter decomposition." *Biotropica* 36: 285-296 (2004).

Allison, Steven D., Schultz J. C. "Differential activity of peroxidase isozymes in response to wounding, gypsy moth, and plant hormones in northern red oak (*Quercus rubra* L.)." *J. Chem. Ecol.* 30: 1363-1379 (2004).

Allison, Steven D., Jastrow, J.D. "Microbial enzyme activity and carbon cycling in grassland soil fractions." *Eos, Trans., Am. Geophys. Union, Fall Meet. Suppl.* 85: B52A-05 (2004).

Allison, Steven D., Vitousek, P.M. "Responses of extracellular enzymes to simple and complex nutrient inputs." *Soil Biol. Biochem.* 37:937-944 (2005).

Allison, Steven D. "Cheaters, diffusion, and nutrients constrain decomposition by microbial enzymes in spatially structured environments." *Ecol. Lett.* 8: 626-635 (2005).

Allison, Steven D., Schultz, J.C. "Biochemical responses of chestnut oak to a galling cynipid." *J. Chem. Ecol.* 31: 151-166 (2005).

Allison, Steven D., Jastrow, J.D. "Activities of extracellular enzymes in physically isolated fractions of restored grassland soils." *Soil Biol. Biochem.* 38: 3245-3256 (2006).



- Allison, Steven D.** "Brown ground: A soil carbon analogue for the green world hypothesis?" *Am. Nat.* 167 (2006).
- Allison, Steven D.**, Nielsen, C.B., Hughes, R.F. "Elevated enzyme activities in soils under the invasive nitrogen-fixing tree *Falcataria moluccana*." *Soil Biol. Biochem.* 38: 1537-1544 (2006).
- Allison, Steven D.** "Soil minerals and humic acids alter enzyme stability: implications for ecosystem processes." *Biogeochemistry* 81: 361-373 (2006).
- Allison, Steven D.**, Gartner, T.B., Holland, K., Weintraub, M., Sinsabaugh, R.L. "Soil enzymes: Linking proteomics and ecological process." In *Manual of Environmental Microbiology*, 3rd ed., 704-711. ASM Press (2007).
- Almeyda Zambrano, A.M., **Broadbent, Eben N.**, Schminck, M., Perz, S.G., **Asner, G.P.** "Deforestation drivers in Southwest Amazonia: comparing smallholder farmers in Iñapari, Peru, and Assis, Brazil." *Conserv. Soc.* 8: 157-170 (2010).
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- Zavaleta E.S., Shaw, M.R., Chiariello, N.R., Thomas, B.D., **Cleland, Elsa E.**, Field, C.B., **Mooney H.A.** “Responses of a California annual grassland community to three years of warming, elevated CO<sub>2</sub>, precipitation increase, and N deposition.” *Ecol. Monogr.* 73: 585-604 (2003).
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- Zobitz, John M.,** Burns, S.P., Reichstein, M., **Bowling, D.R.** "Partitioning net ecosystem carbon exchange and the carbon isotopic disequilibrium in a subalpine forest." *Glob. Change Biol.* 14: 1785-1800 (2008).
- Zobitz, John M.,** Moore, D.J.P., Sacks, W.J., Monson, R.K., **Bowling, D.R.,** Schimel, D.S. "Integration of processed based soil respiration models with whole ecosystem CO<sub>2</sub> measurements." *Ecosystems* 11: 250-269 (2008).

### PRESENTATIONS:

- Ainsworth, Elizabeth A.,** Davey, P.D., Hymus, G.J., Drake, B.G., **Long, S.P.** "Inter- and interspecific variation in the response of photosynthesis to elevated [CO<sub>2</sub>] in a Florida scrub oak community." Invited oral presentation at the Annual International Photosynthesis Congress (2001).
- Ainsworth, Elizabeth A.,** Tranel, P.J., Drake, B.G., **Long, S.P.** "Microsatellite determination of the genetic structure of *Quercus geminata* and *Q. myrtifolia*: Assessing within-population variation at the Smithsonian elevated CO<sub>2</sub> research site." Poster presentation at the DOE Terrestrial Science Team Meeting (2001).
- Ainsworth, Elizabeth A., Rogers, A., Long, S.P.** "Leaf photosynthesis and carbohydrate levels of perennial ryegrass exposed to elevated [CO<sub>2</sub>] and two nitrogen fertilization treatments." [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).
- Ainsworth, Elizabeth A.,** Davey, P.D., Hymus, G.J., Osborne, C.P., **Rogers, A.,** Blum, H., Nosberger, J., **Long, S.P.** "The response of photosynthesis to 10 years of free air CO<sub>2</sub> enrichment in *Lolium perenne*." Poster presentation at the annual meeting of the American Society of Plant Biologists (2002).
- Ainsworth, Elizabeth A.,** Davey, P.A., Hymus, G.J., Drake, B.G., **Long, S.P.** "Inter- and intraspecific variation in the response of photosynthesis to elevated CO<sub>2</sub> in a Florida scrub oak community." Poster presentation at Environmental Horizons (2002).



- Ainsworth, Elizabeth A., Rogers, A., Long, S.P.** “The response of photosynthesis to ten years of free air CO<sub>2</sub> enrichment (FACE) in *Lolium perenne*.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2002).
- Ainsworth, Elizabeth A., Rogers, A., Long, S.P., Ort, D.R.** “A meta-analysis of the response of photosynthetic carbon uptake and utilization to FACE.” Oral presentation at the International FACE Workshop (2004).
- Allison, Steven D., Vitousek, P.M.** “Soil microbial and enzymatic responses to complex and labile nutrient inputs.” Poster presentation at the fall meeting of the American Geophysical Union (2003).
- Allison, Steven D., Vitousek, P.M.** “Decomposition and nutrient dynamics in native and exotic Hawaiian understory plant litter.” Oral presentation at the annual meeting of The Ecological Society of America (2003).
- Allison, Steven D., Jastrow, J.D.** “Microbial enzyme activity and carbon cycling in grassland soil aggregates.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).
- Allison, Steven D., Jastrow, J.D.** “Microbial enzyme activity and carbon cycling in grassland soil fractions.” Poster presentation at the fall meeting of the American Geophysical Union (2004).
- Allison, Steven D., Vitousek, P.M.** “Brown ground: A soil carbon analog for the Green World.” Oral presentation at the annual meeting of The Ecological Society of America (2004).
- Allison, Steven D., Jastrow, J.D.** “Microbial enzyme activity and carbon cycling in grassland soil fractions.” Marvin L. Wesely [Award address](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Allison, Steven D.** “Constraints on soil enzymes and microbial biomass: Implications for decomposition.” Oral presentation at the annual meeting of The Ecological Society of America (2005).
- Almeyda Zambrano, A.M., **Broadbent, Eben N., Asner G.P.** “Smallholders in Southwest Amazonia: Development policies, socioeconomic conditions and forest use.” Oral presentation at the International Union of Forest Research Organizations (IUFRO) World Congress (2010).
- Alvarez-Aviles, Laura, Simpson, W.R.** “The chemistry of mercury deposition in the Arctic.” [Oral presentation](#) at the Global Change Education Program Orientation (2004).
- Alvarez-Aviles, Laura, Simpson, W.R., Douglas, T.A., Sturm, M., Domine, F.** “Observations of halogen concentrations in polar snow near Barrow, Alaska indicate that bromide is highly affected by atmospheric chemistry.” Poster presentation at the fall meeting of the American Geophysical Union (2004).
- Alvarez-Aviles, Laura, Simpson, W.R.** “Snow Pack Chemistry in Alaska.” Oral presentation at the Global Change Education Program Orientation (2005).
- Alvarez-Aviles, Laura, Simpson, W.R., Douglas, T.A., Sturm, M., Perovich, D.** “Observations of chemical composition in frost flower growth process and their implication in aerosol production and bromine activation chemistry.” Poster presentation at the fall meeting of the American Geophysical Union (2006).



- Alvarez-Aviles, Laura, Simpson, W.R.,** Sturm, M., Douglas, T.A. "Observations of chemical composition in frost flower growth processes: Implications for aerosol production and bromide activation chemistry." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Alvarez-Aviles, Laura, Simpson, W.R.,** Carlson, D.A., Strum, M., Douglas, T.A., Laskin, A. "A multiphase study of the chemical composition of air, aerosol particles, snow, and ice forms collected near Barrow, Alaska provides information on bromine activation." Poster presentation at the fall meeting of the American Geophysical Union (2007).
- Anchukaitis, Kevin J., Evans, M.N.** "A stable isotope dendrochronology approach to reconstructing interannual and interdecadal tropical climate variability." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Anchukaitis, Kevin J.,** Evans, M.N., Wheelwright, N.T., Schrag, D.P. "Annual proxy records from tropical cloud forest trees in the Monteverde cloud forest, Costa Rica." Oral presentation at the fall meeting of the American Geophysical Union (2005).
- Anchukaitis, Kevin J.,** Evans, M.N., Wheelwright, N.T., Schrag, D.P. "High resolution stable isotope endroclimatology in the Monteverde Cloud Forest, Costa Rica." Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Anchukaitis, Kevin J.,** Evans, M.N., Wheelwright, N.T., Schrag, D.P. "Tropical isotope dendroclimatology in montane cloud forests." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Anchukaitis, Kevin J.,** Evans, M.N., Wheelwright, N.T., Schrag, D.P. "High resolution paleoclimate information from trees without annual rings in tropical montane cloud forests." Climate Change and Tropical Montane Forest Conservation Workshop (2007).
- Anchukaitis, Kevin J., Evans, M.N.** "High resolution isotope dendroclimatology in Sapotaceae from Costa Rica." Oral presentation at the annual meeting of the Association of American Geographers (2007).
- Anchukaitis, Kevin J., Evans, M.N.,** D'Arrigo, R.D., Smerdon, J.E., Hughes, M.K., Kaplan, A., Vaganov, E.A. "Process model simulations of the divergence effect." Invited oral presentation at the fall meeting of the American Geophysical Union (2007).
- Anchukaitis, Kevin J., Evans, M.N.,** Tolwinski, S.E., Franklin, R.S., Hughes, M.K. "Toward the application of forward models of tree-ring proxies to paleoclimatology." Oral presentation at the fall meeting of the American Geophysical Union (2008).
- Anchukaitis, Kevin J., Evans, M.N.** "High resolution tropical isotope dendroclimatology: Prospects and challenges." Invited oral presentation at the Goldschmidt Conference (2008).
- Anchukaitis, Kevin J., Evans, M.N.** "Toward seasonal climate reconstructions using tropical isotope dendroclimatology." Oral presentation at the annual meeting of the Geological Society of America (2009).



- Asa-Awuku, A., **Moore, Richard H.**, Brock, C.A., Bahreini, R., Middlebrook, A.M., Schwartz, J., Spackman, R., Holloway, J.S., Tanner, D.J., Huey, G., **Nenes, A.** “Understanding the evolution of cloud condensation nuclei in urban plumes: Effects of aerosol aging and mixing.” Oral presentation at the annual meeting of the American Institute of Chemical Engineers (2008).
- Ault, Andrew P.**, Gaston, C., Wang, Y., Zauscher, M., Moison, R., **Prather, K.** “Single particle observations of variability within the urban aerosol.” Oral presentation at the annual meeting of the American Association for Aerosol Research (2008).
- Ault, Andrew P.**, Creamean, J.M., **Prather, K.** “Measurements of spatial variability in the urban atmosphere with aerosol time-of-flight mass spectrometry.” Poster presentation at the annual meeting of the American Association for Aerosol Research (2009).
- Ault, Andrew P.**, Creamean, J.M., Williams, C.R., Gaston, C.J., Ralph, F.M., **Prather, K.A.** “Impacts of Asian dust on cloud microphysics and precipitation during an atmospheric river.” Poster presentation at the fall meeting of the American Geophysical Union (2009).
- Ault, Andrew P.**, Zhu, A., Ramanathan, V., **Prather, K.A.** “Investigations into the chemically-resolved optical properties of transported Asian outflow particles at Gosan, Korea.” Poster presentation at the annual meeting of the American Association for the Advancement of Science (2010).
- Ault, Andrew P.**, **Prather, K.A.** “Investigations into the chemically-resolved optical properties of transported Asian outflow particles at Gosan, Korea.” Oral presentation at the spring national meeting of the American Chemical Society (2010).
- Ault, Andrew P.**, Cahill, J.F., Gaston, C.J., Suski, K.J., Cazorla, A., **Zaveri, R.**, **Prather, K.A.** “Measurements of single particle mixing state: Implications for climate.” Oral presentation at the PacifiChem Conference (2010).
- Ault, Andrew P.**, Moffet, R.C., **Prather, K.A.** “Investigations into the chemically-resolved optical properties of transported Asian outflow particles at Gosan, Korea using aerosol time of flight mass spectrometry.” Oral presentation at the PacifiChem Conference (2010).
- Ault, Andrew P.**, **Prather, K.A.** “Integration of field measurements of the chemical and physical properties of single-particles into a particle resolved aerosol model.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2010).
- Ault, Andrew P.**, Williams, C.R., White, A.B., Neiman, P.J., Creamean, J.M., Gaston, C.J., Ralph, F.M., **Prather, K.A.** “Detection of Asian dust in California orographic precipitation.” Poster presentation at the fall meeting of the American Geophysical Union (2011).
- Bateman, Adam P.**, **Nizkorodov, S.A.**, Laskin, J., Laskin, A. “Chemical composition of limonene secondary organic aerosol using high-resolution electrospray ionization mass spectrometry.” Marvin L. Wesely [Award address](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Bauer, S.E., **Prather, K.A.**, **Ault, Andrew P.** “Representation and evaluation of aerosol mixing state in a climate model.” Oral presentation at the fall meeting of the American Geophysical Union (2011).



- Belshe, E. Fay, Schuur, E.A.G.** “The effect of permafrost thaw on tundra carbon balance over space and time.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Belshe, E. Fay, Bolker, B.M., Bracho, R., Schuur, E.A.G.** “Incorporating spatial variation to estimate carbon fluxes in a tundra landscape undergoing permafrost thaw.” Poster presentation at the annual meeting of The Ecological Society of America (2011).
- Berthrong, Sean T., Jackson, R.B.** “Pastures to plantations: afforestation, soil microbes, and biogeochemistry in temperate South America.” Poster presentation at the annual meeting of The Ecological Society of America (2006).
- Berthrong, Sean T., Jackson, R.B.** “Soil microbial community structure and biogeochemical function in temperate South America.” Oral presentation at the Global Change Education Program Orientation (2006).
- Berthrong, Sean T., Jackson, R.B.** “Shifts in soil microbial community composition and function caused by afforestation with exotic tree species in southern South American grasslands.” Poster presentation at the annual meeting of The Ecological Society of America (2007).
- Berthrong, Sean T., Jackson, R.B.** “Soil biogeochemistry and microbial ecology of afforestation in temperate South American grasslands.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Berthrong, Sean T., Schadt, C.W., Jackson, R.B.** “Links between soil microbial metagenomics and biogeochemical functions in afforested grasslands in southern South America.” Oral presentation at the annual meeting of The Ecological Society of America (2008).
- Berthrong, Sean T., Jackson, R.B.** “A global meta-analysis of soil exchangeable cations, pH, carbon, and nitrogen with afforestation.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Berthrong, Sean T., Jackson, R.B.** “Afforestation, microbial metagenomics, and biogeochemistry in southern South American grasslands.” Oral presentation at the International Symposium on Ecosystem Behavior (2009).
- Berthrong, Sean T., Jobbágy, E., Jackson, R.B.** “A global meta-analysis of soil exchangeable cations, pH, and nitrogen with afforestation.” Poster presentation at the annual meeting of The Ecological Society of America (2009).
- Bertram, T.H., Ryder, O., Prather, K.A., Ault, Andrew P.** “Bridging disparate time and length scales in heterogeneous atmospheric chemistry.” Oral presentation at the national meeting of the American Chemical Society (2012).
- Bialk, Heidi M., Blear, W.** “Photoelectron emission microscopy studies of carbon overturn in organic lake sediments from the Alaskan coastal plain.” [Oral presentation](#) at the Global Change Education Program Orientation (2002).
- Bialk, Heidi M., Blear, W.** “Chemical microscopy studies of peat from the Arctic coastal plane.” [Oral presentation](#) at the Global Change Education Program Orientation (2003).
- Blear, W.F., DeStasio, G., Bockhelm, J., Bialk, Heidi M., Dai, X.Y.** “Photoelectron emission microscopy studies of carbon overturn in organic lake sediments from the Alaskan coastal plain.” Oral presentation at the national meeting of the American Chemical Society (2002).



- Bones, D.L., **Bateman, Adam P.**, Nguyen, T.B., **Laskin, J., Laskin, A., Nizkorodov, S.** “Slow aging in secondary organic aerosol observed by liquid chromatography coupled with high resolution mass spectrometry.” Oral presentation at the joint assembly of the American Geophysical Union (2009).
- Boutton, T.W.**, Archer, S.R., **Liao, Julia D.** “Land cover changes and soil carbon dynamics: Insights from natural  $^{13}\text{C}$  and long-term incubations.” Oral presentation at the 9<sup>th</sup> US/Japan Workshop on Global Change (2002).
- Boutton, T.W.**, Bai, E., **Hollister, Emily B.**, Midwood, A.J., Millard, P., Hunt, J., Sommerkorn, M., Whitehead, D. “Short term response of soil respiration to simulated rainfall in a subtropical savanna.” Poster presentation at the fall meeting of the American Geophysical Union (2005).
- Branstetter, Marcia L., Famiglietti, J.S.** “Testing the sensitivity of GCM-simulated runoff to climate model resolution using a parallel river transport algorithm.” Poster presentation at the national meeting of the American Meteorological Society (1999).
- Branstetter, Marcia L., Famiglietti, J.S.** “Using a parallel algorithm to model river transport in climate system models.” Oral presentation at the 5<sup>th</sup> Conference on Mathematical and Computational Issues in Geoscience, Society for Industrial and Applied Mathematics (1999).
- Branstetter Marcia L., Mohr, K.I., Famiglietti, J.S.** “A coupled biosphere-atmosphere climate model study of global land cover change and its impact on regional and global hydrological cycles.” Oral presentation at the American Geophysical Union Conference on Hydrology (1999).
- Branstetter, Marcia L., Famiglietti, J.S., Craig, A.P., Washington, W.M.** “Investigation of the sensitivity of global oceans to continental runoff using the PCM parallel climate model.” Poster presentation at the national meeting of the American Meteorological Society (2000).
- Branstetter, Marcia L., Famiglietti, J.S., Craig, A.P., Washington, W.M.** “Implications of the inclusion of continental runoff in climate models.” Poster presentation at the annual meeting of the American Geophysical Union (2000).
- Branstetter, Marcia L., Famiglietti, J.S.** “Development of a parallel river transport algorithm: Applications to climate studies.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).
- Branstetter, Marcia L., Famiglietti, J.S., Washington, W.M., Craig, A.P.** “Using a 200-year simulation of a fully-coupled climate system model to investigate the role of the continental runoff flux on the global climate system.” Oral presentation at the national meeting of the *American Meteorological Society* (2001).
- Broadbent, Eben N., Asner, G.P.** “Influence of rainforest architectural and biological diversity on carbon assimilation along an elevation gradient in Hawaii.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Brodie, E.L., Bernard, S.M., St Clair, S.B., **Placella, Sarah A.**, Herman, D.J., Salve, D.J., **Torn, M.S., Ackerly, D.D., Firestone, M.K., Anderson, G.L.** “16S rRNA microarray analysis of shifts in microbial community composition in response to altered soil moisture and its implications for changes in nutrient cycling.” Oral presentation at the annual meeting of The Ecological Society of America (2007).



- Brown, Derek P., Noone, D.** “Comparison of atmospheric hydrology over convective continental regions using isotope measurements from space.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Brown, Derek P., Noone, D.** “Using measurements of the isotopic composition of water vapor to model regional moisture exchange.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2008).
- Brown, Derek P., Noone, D.** “Moisture sources and sinks derived from water isotopic measurements.” Oral presentation at the Global Change Education Program Orientation (2010).
- Busby, Posy E., Newcombe, G., Dirzo, R., Whitham, T.G.** “Host plant genotype, environment, and their interaction jointly determine pathogen community structure.” Oral presentation at the annual meeting of The Ecological Society of America (2011).
- Busby, Posy E., Lamit, L.J., Keith, A.R., Newcombe, G., Whitham, T., Dirzo, R.** “Disease initiated trophic cascades are modulated by genetic variation in plant enemy resistance.” Oral presentation at the annual meeting of The Ecological Society of America (2012).
- Busch, Christopher B., Hanemann, W.M.** “Modeling past and forecasting future deforestation in the southern Yucatan region of Mexico: Advancing methods for estimation of the greenhouse gas benefits of land use projects.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2001).
- Busch, Christopher B., Hanemann, W.M.** “Technological change in agriculture in southeastern Mexico; Implications for land use, deforestation, and climate change policy.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2002).
- Busch, Christopher B., Hanemann, W.M.** “Technological change in agriculture in the Yucatan Peninsula: Implications for deforestation and global climate change policy.” [Oral presentation](#) at the Global Change Education Program Orientation (2003).
- Busch, Christopher B., Hanemann, W.M.** “Determinants of land use and deforestation in the southern Yucatan with implications for climate change policy.” Oral presentation at the Global Change Education Program Orientation (2005).
- Busch, Christopher B., Hanemann, W.M.** “An empirical model of land use in the southern Yucatan used to explain past and forecasting future deforestation in the region.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Carlson, D., **Alvarez-Aviles, Laura, Simpson, W.R.** “Salt distributions in the sea-ice snowpack and implications for Arctic halogen activation.” Poster presentation at the fall meeting of the American Geophysical Union (2007).
- Carrico, C.M., Petters, M.D., **Kreidenweis, S.M., S.M., Prenni, A.J., DeMott, P.J., McMeeking, Gavin R., Sullivan, A., Rinehart, L., Collett, J.L., Malm, W., Wold, C., Hao, W.-M.** “Hygroscopic growth and cloud condensation nuclei activity and chemical composition of primary biomass smoke.” Oral presentation at the annual meeting of the American Association for Aerosol Research (2007).



- Carrico, C.M., Petters, M.D., Kreidenweis, S.M., Prenni, A.J., DeMott, P.J., *McMeeking, Gavin R.*, Levin, E., Mack, L., Sullivan, A., *Holden, Amanda S.*, *Collett Jr., J.L.*, Day, D., Hand, J., Malm, W.C., Wold, C., Hao, W.-M. "Physicochemical properties of fresh biomass smoke aerosols." Invited oral presentation at the NOAA Earth System Research Lab (2008).
- Case, Anne T., Hecobian, A., Mastromarino, J., *Tan, D.* "Fluorescent detection of formaldehyde in the troposphere." Oral presentation at the Global Change Education Program Orientation (2003).
- Case, Anne T., Hecobian, A., Mastromarino, J., *Tan, D.* "Measurement of atmospheric formaldehyde by laser induced fluorescence." Poster presentation at the fall meeting of the American Geophysical Union (2004).
- Case, Anne T., Hecobian, A., Mastromarino, J., *Tan, D.* "Measurement of atmospheric formaldehyde by laser induced fluorescence." Poster presentation at the fall meeting of the American Geophysical Union (2005).
- Case, Anne T., *Tan, D.* "Gas-liquid partitioning in formaldehyde solutions from 257K to 273K." Poster presentation at the Gordon Research Conference on Atmospheric Chemistry (2005).
- Case, Anne T., *Tan, D.*, Narrow-line solid state Ti:sapphire laser: Instrumentation and atmospheric applications." Oral presentation at the Global Change Education Program Orientation (2005).
- Case Hanks, Anne T., *Huey, L.G.*, Tanner, D., Vargas, O.L., Sjostedt, S., McMurry, P., Lefer, B., Baumann, K. "Measurement of SO<sub>2</sub>, NO, CO, O<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, OH, and HO<sub>2</sub> + RO<sub>2</sub> during MILAGRO-Mex at T1 ground based site in Mexico City." Poster presentation at the ICARTT MILAGRO meeting (2006).
- Case Hanks, Anne T., *Huey, L.*, Tanner, D., Vargas, O., Sjostedt, S., Olson, J.R., Chen, G., Lefer, B., Blake, D.R. "Photochemical activity in Mexico City during MILAGRO 2006: Results from the T1 site." Oral presentation at the fall meeting of the American Geophysical Union (2007).
- Case Hanks, Anne T. "Boundary layer sulfuric acid during NEAQS 2004." Oral presentation at the annual meeting of the Louisiana Academy of Sciences (2008).
- Case Hanks, Anne T., *Tan, D.* "A 1-D coupled air-snowpack model to investigate boundary layer HONO concentrations during ANTI 2003." Poster presentation at the American Meteorological Society (2012).
- Castro, Joseph C., *Long, S.P.* "Improving projections of atmosphere-ecosystem carbon and water exchange for midwest croplands in response to rising tropospheric carbon dioxide and ozone." Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Castro, Joseph C., *Long, S.P.* "Elevated CO<sub>2</sub>, but not ozone, significantly delays the development of soybean under free air carbon dioxide enrichment (FACE)" Oral presentation at the Global Change Education Program End-of-Summer Workshop (2006).
- Castro, Joseph C., *Long, S.P.* "The effect of elevated atmospheric CO<sub>2</sub> on soybean production, growth, and development." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).



- Chan, J., **Mackey, Katherine R.M., Paytan, A.** “The effects of nutrient and trace metal enrichment on coastal and oceanic strains of *Synechococcus*.” Poster presentation at the fall meeting of the American Geophysical Union (2008).
- Christiansen, Carrie Jensen, Francisco, J.S.** “Atmospheric oxidation of 1,2-dibromoethane.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2008).
- Christoffersen, Bradley J.,** Araujo, A., Baker, I.T., Costa, M.H., Goncalves, L., Imbuziero, H., Kruijt, B., Manzi, A., Poulter, B., von Randow, C., Restrepo-Coupe, N., Da Roccha, H.R., **Saleska, S.R.** “An Amazon basin wide intercomparison of ecosystem land surface models and flux observations: Results from the LBA-MIP.” Poster presentation at the fall meeting of the American Geophysical Union (2009).
- Christoffersen, Bradley J.,** Woodcock, T., Amaral, D., de Oliveira, R.C., **Saleska, S.R.** “Gap phase influences deep soil moisture dynamics in a moist tropical forest.” Oral presentation at the annual meeting of The Ecological Society of America (2010).
- Christoffersen, Bradley J.,** Araujo, A., Baker, I.T., Costa, M.H., Goncalves, L., Imbuziero, H., Kruijt, B., Manzi, A., Poulter, B., von Randow, C., Restrepo-Coupe, N., Da Roccha, H.R., **Saleska, S.R.** “Data-model intercomparison of ecosystem carbon and water surface fluxes across Amazonia.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Christoffersen, Bradley J.,** Levine, N.M., Powell, T., Galbraith, D., Rowland, L., Brando, P., Alemeida, D., da Costa, A., Fisher, R.A., Meir, P., Costa, M.H., Malhi, Y., **Saleska, S.R.,** Moorcroft, P.R. “Plant water availability in dynamic vegetation models applied to Amazonia: The role of root water uptake functions under contemporary and simulated drought conditions.” Poster presentation at the fall meeting of the American Geophysical Union (2011).
- Classen, A.,** Austin, E.A., Brown, V.A., Bryant, J.A.M., Buchan, A., Castro, H., **Cregger, Melissa A.,** de Graaff, M-A., Kardol, P., Sackett, T.E., Souza, L. “Soil microbes as predictors of ecosystem functional responses to global climate change.” Oral presentation at the annual meeting of The Ecological Society of America (2011).
- Cleary, P.A., Day, D.A., Wooldridge, P.I., **Millet, Dylan B.,** McKay, M., **Goldstein, A.H.,** Cohen, R.C. “Relationships between total alkyl nitrates, total peroxy nitrates, biogenic VOCs and O<sub>3</sub> at Granite Bay, CA.” Poster presentation at the fall meeting of the American Geophysical Union (2002).
- Cleary, P.A., Wooldridge, P.I., Day, D.A., **Millet, Dylan B.,** McKay, M., **Goldstein, A.H.,** Cohen, R.C. “Biogenic influences on the partitioning of NO<sub>y</sub> at Granite Bay, CA.” Poster presentation at the Joint Assembly of the EGS-AGU-EGU (2003).
- Cleland, Elsa E., Mooney, H.A.,** Field C.B. “Can microbes limit plant growth under elevated CO<sub>2</sub>?” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).
- Cleland, Elsa E., Mooney, H.A.,** Field C.B. “Multiple interacting global changes and plant mediated feedbacks via decomposition.” Oral presentation at the Global Change Education Program Orientation (2004).
- Clements, Craig B., Whiteman, C.D., Horel, J.D.** “Observations of a cold air pool in a remote mountain basin.” Oral presentation at the annual meeting of the American Meteorological Society (2000).



- Clements, Craig B., Whiteman, C.D., Horel, J.D.** “The evolution of cold air pools in mountain basins.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2001).
- Clements, Craig B., Zhong, S.** “Stable boundary layers and pollution transport in mountain terrain.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2002).
- Clements, Craig B., Zhong, S.** “The role of the topographic amplification factor in the breakup of nocturnal inversions in Yosemite Valley, Sierra Nevada.” Oral presentation at the American Meteorological Society Joint Conference of the APM/AWMA (2004).
- Clements, Craig B., Zhong, S., Burley, J.D.** “Thermally-driven wind systems and high-altitude ozone concentrations in Yosemite National Park.” Poster presentation at the American Meteorological Society Conference on Mountain Meteorology (2004).
- Clements, Craig B., Zhong, S., Kim, S-B., Kim, S., Burley, J.D.** “High-altitude ozone concentrations in Yosemite National Park, Sierra Nevada.” Poster presentation at the American Meteorological Society Conference on Mountain Meteorology (2004).
- Clements, Craig B., Zhong, S.** “Daytime down-canyon winds in the eastern Sierra Nevada, California.” Oral presentation at the International Conference on Alpine Meteorology (2005).
- Clements, Craig B., Potter, B.E., Zhong, S.** “Measurements of water vapor and CO<sub>2</sub> fluxes produced by a prescribed prairie fire using a micrometeorological tower and tethered balloon sounding system.” Oral presentation at the *American Meteorological Society Conference on Fire and Forest Meteorology* (2005).
- Clements, Craig B., Zhong, S., Li, J., Goodrick, S., Bian, X., Heilman, W., Charney, J., Potter, B., Aumann, G.** “Turbulence and dynamics of wildland grass fires: The FireFlux Experiment.” Poster presentation at the fall meeting of the American Geophysical Union (2006).
- Clements, Craig B., Zhong, S., Yao, W., Whiteman, C.D., Horst, T.** “Slope flows observed during METCRAX.” Oral presentation at the International Conference on Alpine Meteorology (2007).
- Clements, Craig B., Zhong, S., Heilman, W.E., Bian, X., Goodrick, S.** “An overview of the FireFlux experiment.” Oral presentation at the American Meteorological Society Conference on Fire and Forest Meteorology (2007).
- Clements, Craig B., Zhong, S., Heilman, W.E., Bian, X., Goodrick, S.** “Turbulent kinetic energy and fire induced winds observed during FireFlux.” Oral presentation at the American Meteorological Society Conference on Fire and Forest Meteorology (2007).
- Clements, Craig B., Zhong, S., Heilman, W.E., Bian, X.** “Thermodynamic structure of a grass fire plume.” Poster presentation at the fall meeting of the American Geophysical Union (2007).
- Clements, Craig B., Rappenglück, B., Perna, R., Day, B., Patel, M., Lefer, B., Morris, G.** “Evolution and structure of the urban boundary layer in Houston.” Oral presentation at the national meeting of the American Meteorological Society (2008).



- Clements, Craig B.**, Haman, C., **Lefer, B.**, Beals, C. "Surface layer temperature structure observed at Summit, Greenland." Poster presentation at the fall meeting of the American Geophysical Union (2008).
- Collins, D.B., Cahill, J.F., Creamean, J.M., **Ault, Andrew P.**, Roberts, G.C., **Prather, K.A.** "Multi-year observations of single particle aerosol chemical composition at a remote site in the Sierra Nevada foothills." Oral presentation at the national meeting of the American Chemical Society (2011).
- Creamean, J.M., **Ault, Andrew P.**, Fitzgerald, E., Collins, D.B., Roberts, G.C., **Prather, K.A.** "Interannual comparison of new particle formation chemistry and cloud condensation nuclei measurements at a remote rural mountain site." Poster presentation at the fall meeting of the American Geophysical Union (2006).
- Creamean, J.M., **Ault, Andrew P.**, Collins, D.B., Cahill, J.F., Fitzgerald, E., White, A.B., Neiman, P.J., Wick, G.A., Fan, J., Leung, L.Y., Ralph, F.M., **Prather, K.A.** "Multiyear evidence from ground based observations and modeling of the impact of dust on snowfall in the Sierra Nevada." Oral presentation at the fall meeting of the American Geophysical Union (2011).
- Creekmore, Torreon N., Joseph E., Long, C.N.** "Estimation of regional aerosol diffuse ratio and direct aerosol effects over the mid-Atlantic corridor." Poster presentation at the 18<sup>th</sup> ARM Science Team Meeting (2008).
- Creekmore, Torreon N., Joseph E., Long, C.N.** "Regional aerosol radiative and hydrological effects in the Mid-Atlantic corridor." Oral presentation at the Global Change Education Program End-of-Summer Workshop (2008).
- Cregger, Melissa A.**, McDowell, N.G., Pockman, W.T., Yopez, E.A., **Classen, A.T.** "Precipitation changes nitrogen cycling in a pinyon-juniper woodland." Oral presentation at the annual meeting of The Ecological Society of America (2009).
- Cregger, Melissa A., McDowell, N.G., Pockman, W., Classen, A.T.** "Indirect effects of precipitation change drive nitrogen cycling in a pinyon-juniper woodland." Oral presentation at the annual meeting of the Association of Southeastern Biologists (2010).
- Cregger, Melissa A., McDowell, N.G., Pockman, W., Classen, A.T.** "Drought induced shifts in plant composition alter nitrogen cycling in a pinyon-juniper woodland." Oral presentation at The Ecological Society of America (2010).
- Cross, Molly Smith, Harte, J.** "Ecosystem responses to warming: Induced shifts in plant community composition and nitrogen availability." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Cross, Molly Smith, Harte, J.** "Indirect effects of climate change: The importance of plant species loss and increased nitrogen availability." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Cuadra-Rodriguez, Luis, Zelenyuk, A., Imre, D., Ellison, B.** "A new experiment for the measurement of oxidation of organic aerosols." Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Cuadra-Rodriguez, Luis, Zelenyuk, A., Imre, D., Ellison, B.** "The effect of organic surfactants on the properties of common hygroscopic particles: Effective densities, reactivity, and water evaporation of surfactant coated particles." Poster presentation at the fall meeting of the American Geophysical Union (2006).



- Cuadra-Rodriguez, Luis, Zelenyuk, A., Ellison, B.** “The effects of soluble surfactants on density, shape, and water uptake of common hygroscopic particles.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Cuadra-Rodriguez, Luis, Zelenyuk, A., Ellison, B.** “A new experiment for the study of organic aqueous aerosols.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2008).
- Cuadra-Rodriguez, Luis, Zelenyuk, A., Ellison, B.** “The effect of organic surfactants on particle properties.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Dahl, Elizabeth E., Saltzman, E.S.** “Aqueous phase production of low molecular weight alkyl nitrates.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).
- Dahl, Elizabeth E., Saltzman, E.S.** “Aqueous phase production of ethyl nitrate.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2001).
- Dahl, Elizabeth E., Saltzman, E.S., DeBruyn, W.J.** “A mechanism for the aqueous phase production of alkyl nitrates.” Oral presentation at the fall meeting of the American Geophysical Union (2002).
- Dahl, Elizabeth E., Saltzman, E.S.** “Alkyl nitrates and earth system science: The big picture.” Oral presentation at the Global Change Education Program Orientation (2002).
- Dahl, Elizabeth E., Saltzman, E.S.** “Atlantic Ocean measurements of low molecular weight alkyl nitrates.” Poster presentation at the fall meeting of the American Geophysical Union (2003).
- Dahl, Elizabeth E., Saltzman, E.S.** “Studies of oceanic alkyl nitrates.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Dahl, Elizabeth E., Yvon-Lewis, S.A., Saltzman, E.S.** “Photochemical production of alkyl nitrates in the tropical Pacific Ocean.” Poster presentation at the fall meeting of the American Geophysical Union (2005).
- Danford, C., Mackey, Katherine R.M., Paytan, A.** “Anthropogenic ocean acidification and its effects on calcifying phytoplankton: The response of eight coccolithophore strains to changing pH.” Poster presentation at the fall meeting of the American Geophysical Union (2008).
- Day, B.M., Clements, C. B., Rappenglueck B.** “Observations of the nocturnal boundary layer and morning transitional periods in Houston, Texas during the TexAQS II Campaign.” Poster presentation at the fall meeting of the American Geophysical Union (2007).
- Day, D., Hand, J., McMeeking, Gavin R., Kreidenweis, S.M., Collett, Jr., J., Wold, C., Hao, W.M., Malm, W.** “Humidification factors for fresh biomass smoke from laboratory controlled burns.” Poster presentation at the annual meeting of the American Association for Aerosol Research (2007).



- DeMott, P.J., Sullivan, R.C., **McMeeking, Gavin R.**, Prenni, A.J., Hill, T.C., Franc, G.D., Sullivan, A.P., Garcia, E., Tobo, Y., Prather, K.A., Suski, K., Cazorla, A., Anderson, J.R., **Kreidenweis, S.M.** "Recent field measurements of ice nuclei concentration relation to aerosol properties." Invited oral presentation at the fall meeting of the American Geophysical Union (2011).
- DeMott, P.J., Prenni, A.J., **McMeeking, Gavin R.**, Tobo, Y., Garcia, E., McCluskey, C., Sullivan, A.P., Kreidenweis, S.M., Sullivan, R.C., Hill, T.C., Franc, G.D., **Prather, K.A.**, Collins, D., **Cuadra-Rodriguez, Luis A.**, Huffman, J.A., Poschl, U., **Ault, Andrew P.**, Grassian, V.H. "Quantifying sources of inorganic and organic atmospheric ice nuclei." Canadian Chemistry Conference and Exhibition (2012).
- Diefendorf, A.D., **Mueller, Kevin E.**, Wing, S.L., **Freeman, K.H.** "<sup>13</sup>C discrimination related to phylogeny and leaf habit in modern woody plant types: Implications for ecological controls on bulk, n-alkane, and terpenoid carbon isotope records preserved in Paleocene-Eocene terrestrial sediments." Oral presentation at the Isocompound Conference (2009).
- Domine, F., Sparapani, R., Ianiello, A., Beine, H.J., **Simpson, W.R.**, **Alvarez-Aviles, Laura**, Douglas, T., Sturm, M., Taillandier, A.S., Houdier, S. "Transfer of halogens from the sea ice to the atmosphere: results from snow analyses near Alert, Ny-Ålesund, and Barrow." Poster presentation at the International Global Atmospheric Chemistry Conference (2004).
- Domine, F., **Simpson, W.R.**, Taillandier, A.S., **Alvarez-Aviles, Laura**, Houdier, S., Douglas, T., Sturm, M., Severin, K. "Physical and chemical changes in snowpacks subjected to different metamorphic conditions. A new feedback for climate change." Poster presentation at the International Global Atmospheric Chemistry Conference (2004).
- Doskey, P.V., Kotamarthi, V.R., **Price, Heather U.**, Dugopolski, R. "NMHC measurements for the Phoenix 2001 field experiment." Oral presentation at the annual meeting of the American Meteorological Society (2003).
- Douglas, T.A., Sturm, M., **Simpson, W.R.**, **Alvarez-Aviles, Laura**, Blum, J.D., Perovich, D.K., Keeler, G.J., Lammers, A., Biswas, A. "Mercury deposition to snow and ice provides a link between the lower atmosphere and the cryosphere in northern Alaska." Oral presentation at the fall meeting of the American Geophysical Union (2005).
- Drake, Allison**, **Overpeck, J.**, Sweetnam, T., **Balice, R.G.** "Impacts of wildfire and climate patterns on vegetation dynamics in the grasslands of the Southwest." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).
- Drake, Allison**, **Overpeck, J.** "Impacts of climate patterns on the vegetation dynamics of grasslands in the southwest United States." [Oral presentation](#) at the Global Change Education Program Orientation (2004).
- Duffy, P.B., Coquard, J., Gutowski, W., Han, J., **Iorio, John P.**, Kim, J., Leung, L.-R., Roads, J., **Zeledon, Esther B.** "Uncertainties in regional climate: Intercomparison and evaluation of simulations of present and future climate in California." Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Dutcher, Dabrina D.**, **McMurry, P.H.** "Atmospheric aerosol composition as a function of hygroscopicity, volatility and density." Oral presentation at the Global Change Education Program Orientation (2004).



- Dutcher, Dabrina D., McMurry, P.H.** “Aerosol composition as a function of hygroscopicity, volatility, and density.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Dutcher, Dabrina D., McMurry, P.H.** “The chemical characterization of particle emissions from biomass burning stoves.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Dutcher, Dabrina D., McMurry, P.H.** “Biofuels: An aerosol perspective.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Ernakovich, Jessica G.,** Berg, S.J., Challenger, A.R., Reardon, K.F., **Wallenstein, M.D.** “A comparison of active-layer and permafrost microbial community responses to freeze-thaw stress: Can microbes adapt to changing climates?” Oral presentation at the annual meeting of The Ecological Society of America (2009).
- Evans, M.N.,** Schrag, D.P., Poussart, P.F., **Anchukaitis, Kevin J.** “Progress in tropical isotope dendroclimatology.” Oral presentation at the fall meeting of the American Geophysical Union (2005).
- Evans, M.N., Anchukaitis, Kevin J.,** White, S.R., Ektvedt, T.M., Penniston, R.C., Rheaume, M.M., Bowman, D.M. “Prospects and challenges in tropical isotope dendroclimatology.” Oral presentation at the fall meeting of the American Geophysical Union (2008).
- Eviner, V., Waldrop, M., Schwartz, E., **Pett-Ridge, Jennifer, Firestone, M.** “Interactions among grassland plant species, microbial communities, and soil processes.” Oral presentation at the fall meeting of the American Geophysical Union (2002).
- Famiglietti, J.S., Branstetter, Marcia L.,** Doney, S., Graham, S., Rosenbloom, N., Schimel, D., **Washington, W.** “Continental runoff feedbacks using fully-coupled climate system models.” Oral presentation at the General Assembly of the European Geophysical Union (2001).
- Famiglietti, J.S.,** Olivera, F., Walker, J.P., Houser, P.R., Rodell, M., **Branstetter, Marcia L.** “A catchment-based global river routing scheme for climate models and assimilation of streamflow and altimetry data.” Oral presentation at the General Assembly of the European Geophysical Union (2001).
- Farmer, E. Christina, deMenocal, P.B.** “Quantifying natural climate change: Reconstructing Holocene thermocline variation in the tropical Atlantic.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2001).
- Farmer, E. Christina, deMenocal, P.B.,** Marchitto, T.M. “Holocene variability in Benguela upwelling: Implications for tropical atmospheric circulation.” Oral presentation at the conference on The Hadley Circulation: Present, Past and Future (2002).
- Farmer, E. Christina, deMenocal, P.B.,** Marchitto, T.M., Lynch-Stieglitz, J., **Guilderson, T.P.** “The Younger Dryas and the 8200-year cold event in the Southern Hemisphere subtropics.” Poster presentation at the fall meeting of the American Geophysical Union (2002).
- Farmer, E. Christina, deMenocal, P.B.,** Marchitto, T.M. “Holocene variability of the Benguela upwelling.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2002).



- Farmer, E. Christina, deMenocal, P.B.**, Lynch-Stieglitz, J., Berry, P.J. “Using paired Mg/Ca and oxygen isotopic measurements of planktonic foraminifera to estimate tropical Atlantic thermocline shape.” Poster presentation at the fall meeting of the American Geophysical Union (2003).
- Farmer, E. Christina, deMenocal, P.B.**, Lynch-Stieglitz, J., Berry, P.J. “Holocene tropical Atlantic climate change.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).
- Farmer, E. Christina, deMenocal, P.B.** “Reconstructing tropical Atlantic paleoclimate from Mg/Ca and oxygen isotopes of planktonic foraminifera.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Filley, T.R., Gamblin, D., Wang, Y., **Liao, Julia D., Button, T., Jastrow, J.** “Dynamics of biopolymer turnover in soil physical fractions following land cover change in a subtropical savanna.” Oral presentation at the fall meeting of the American Geophysical Union (2004).
- Filley, T.R., Gamblin, D., **Button, T., Liao, Julia D., Jastrow, J.** “Changes to lignin phenol and hydroxyl alkanoic acid stable carbon isotope composition and concentration in soil fractions from a grassland/woodland conversion in a subtropical savanna.” Poster presentation at the fall meeting of the American Geophysical Union (2005).
- Filley, T.R., **Jastrow, J.D., O’Brien, Sarah L.**, Boutton, T.W. “Enhanced allocation of root-derived lignin and aliphatic biopolymers to soil organic matter under elevated atmospheric CO<sub>2</sub> in the sweetgum free air CO<sub>2</sub> enrichment (FACE) experiment.” Oral presentation at the Joint International annual meeting of the ASA-CSSA-SSSA (2006).
- Fischer, Emily V.**, Hsu, C., **Jaffe, D.A.**, Jeong, M.J., Gong, S. “Dragon breath in the American west: Inter-annual correlations between dust storms in Asia and PM<sub>10</sub> in the Western U.S. as seen by IMPROVE and MODIS Data.” Oral presentation at the fall meeting of the American Geophysical Union (2007).
- Fischer, Emily V., Jaffe, D.A.** “Aerosol optical properties in the free troposphere over the Pacific northwest.” [Oral presentation](#) at the Global Change Education Program Orientation (2008).
- Fischer, Emily V.**, Reidmiller, D., **Jaffe, D.A.** “Importing ozone precursors to the North American free troposphere: Spring 2008 peroxyacetyl nitrate (PAN) and NO<sub>x</sub> observations from Mount Bachelor.” Oral presentation at the fall meeting of the American Geophysical Union (2008).
- Fischer, Emily V., Jaffe, D.A.** “Aerosol optical properties in the free troposphere over the Pacific northwest.” Marvin L. Wesely [Award address](#) at the Global Change Education Program Orientation (2009).
- Fischer, Emily V., Jaffe, D.A.** “How do the optical properties of Asian aerosols change when they cross the Pacific?” Poster presentation at the fall meeting of the American Geophysical Union (2009).
- Fischer, Emily V.**, Perry, K.D., **Jaffe, D.A.** “Always downwind: The optical and chemical properties of aerosols transported to Mount Bachelor from across the Pacific and from California.” Poster presentation at the fall meeting of the American Geophysical Union (2010).



- Fischer, Emily V., Jaffe, D.A.,** Reidmiller, D. “Measurements and importance of PAN in the free troposphere: Multi-year springtime observations at the Mount Bachelor Observatory.” Oral presentation at the International Symposium on Atmospheric Chemistry and Physics at Mountain Sites (2010).
- Fischer, Emily V., Jaffe, D.A.,** Weatherhead, E.A. “Observing future changes in the photochemical environment over Western North America due to changes in foreign emissions: Lessons from Mt. Bachelor.” Invited oral presentation at the fall meeting of the American Geophysical Union (2011).
- Fontana, Catherine G.,** Strickland, M.S., Keiser, A.D., **Bradford, M.A.** “The climate history of microbial communities influences the optimal temperature and moisture regimes of decomposition.” Poster presentation at the annual meeting of The Ecological Society of America (2010).
- Fraterrigo, Jennifer M., Turner, M.G.,** Pearson, S.M. “Legacies of land use in southern Appalachian soils.” Oral presentation at the annual meeting of the International Association of Landscape Ecology (2002).
- Fraterrigo, Jennifer M., Turner, M.G.,** Pearson, S.M., Dixon, P. “Effects of prior land use on spatial heterogeneity of soil nutrients in southern Appalachian forests.” Oral presentation at the Tenth Cary Conference (2003).
- Fraterrigo, Jennifer M., Turner, M.G.,** Pearson, S.M., Dixon, P. “Impacts of past land use on spatial heterogeneity of soil nutrients in Southern Appalachian forests.” Oral presentation at the annual meeting of The Ecological Society of America (2003).
- Fraterrigo, Jennifer M., Turner, M.G.,** Pearson, S.M. “The effect of prior land use on the spatial distribution of soil chemical properties in southern Appalachian forests.” Oral presentation at the annual meeting of the International Association of Landscape Ecology (2003).
- Fraterrigo, Jennifer M., Turner, M.G.,** Pearson, S.M., Dixon, P. “Impacts of past land use on spatial heterogeneity of soil nutrients in Southern Appalachian forests.” Oral presentation at the Long-Term Ecological Research All-Scientists Meeting (2003).
- Fraterrigo, Jennifer M., Turner, M.G.,** Pearson, S.M., Dixon, P. “Impacts of past land use on spatial heterogeneity of soil nutrients in southern Appalachian forests.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).
- Fraterrigo, Jennifer M., Turner, M.G.,** Pearson, S.M. “Fine-scale heterogeneity of forest herbs: The role of past land use and life-history traits.” Oral presentation at the annual meeting of the International Association of Landscape Ecology (2004).
- Fraterrigo, Jennifer M., Turner, M.G.,** Pearson, S.M. “Herbaceous species productivity in a historically altered landscape.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Galbraith, D., **Christoffersen, Bradley J.,** Imbuzeiro, H.A., Powell, T., Rowland, L., Costa, M.H., Malhi, Y., **Saleska, S.R.,** Meir, P., da Costa, A., Brando, P., Moorcroft, P.R. “Simulating drought impacts on biomass storage in Amazonian rainforests.” Poster presentation at the fall meeting of the American Geophysical Union (2011).
- Gamblin, D., **Boutton, T., Liao, Julia D., Jastrow, J.,** Filley, T. “Woody plant invasion of grassland: Lignin and aliphatic biopolymer chemistry and carbon isotope composition in physical fractions.” Poster presentation at the fall meeting of the American Geophysical Union (2003).



- Gaylord, M.L., Kolb, T.E., **Macalady, Alison K.**, Plaut, J.A., Pockman, W.T., Yopez, E.A., **McDowell, N.G.** “Drought and insect attacks cause decline of pinion-juniper woodlands.” Oral presentation at the annual meeting of The Ecological Society of America (2012).
- Gibbs, Holly K.**, Ramankutty, N., **Foley, J.A.**, DeFries, R.S., Houghton, R.A., Achard, F. “An improved spatial data set of tropical deforestation rates for the 1980s and 1990s.” Poster presentation at the fall meeting of the American Geophysical Union (2005).
- Gibbs, Holly K.**, **Foley, J.A.** “Addressing major uncertainties in rates of tropical deforestation and associated carbon emissions.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Gibbs, Holly K.**, **Foley, J.A.** “Tracking the fate of cleared land across Africa: Critical new inputs for ecosystem service evaluation.” Invited oral presentation at the annual meeting of Conservation International (2006).
- Gibbs, Holly K.** “Carbon payback time for biofuel crop expansion in the tropics.” Oral presentation at the ESA Conference on Ecological Dimensions of Biofuels (2008).
- Gibbs, Holly K.** “Mapping land sources for expanding biofuel croplands across the tropics.” Oral presentation at the annual meeting of the American Association for the Advancement of Science (2009).
- Gibson, Elizabeth R.**, **Grassian, V.H.**, Hudson, P.K., Gierlus, K.M., **Laskin, A.** “Exploring the link between mineral dust aerosol chemistry and climate.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Gielen, B., **Hudiburg, Tara W.**, **Law, B.E.**, Luyssaert, S. “Linking disturbance intensity and carbon cycle in forest ecosystems.” *Eos* poster presentation at the fall meeting of the American Geophysical Union (2011).
- Gillespie, Kelly M.**, Chae, J.M., Leakey, A.D.B., **Ainsworth, Elizabeth A.** “How will future elevated levels of CO<sub>2</sub> and O<sub>3</sub> affect antioxidant metabolism in soybean?” Poster presentation at the Midwest Section of the American Society of Plant Biologists (2006).
- Gillespie, Kelly M.**, Fangxiu, X., **Rogers, A.**, Leakey, A.B.D., Ort, D.R., **Ainsworth, Elizabeth A.** “Integrated analysis of the genomic, biochemical, and physiological responses of a model ecosystem to global change.” Oral presentation at the Joint Meeting of the ESA/SER (2007).
- Gillespie, Kelly M.**, **Ainsworth, Elizabeth A.**, **Rogers, A.**, Leakey, A.B.D. “Climate change Part II: Soybeans fight back.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Gilman, Sarah E.**, **Grosberg, R.K.** “Predicting the effect of climate change on a marine snail.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).
- Gilman, Sarah E.**, **Suchanek, T.H.**, **Grosberg, R.K.** “Predicting the effect of climate change on a marine snail.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).
- Goldstein, A.H.**, **Millet, Dylan B.**, McKay, M. “Measurements at Trinidad Head, California during ITCI 2K2: Were Asian emissions observed?” Oral presentation at the fall meeting of the American Geophysical Union (2002).



- Goldstein, A.H., Millet, Dylan B.,** Schade, G.W. “Ethanol in the atmosphere: Elucidating the balance between natural and anthropogenic sources in a variety of environments.” Oral presentation at the Joint Assembly of the EGS-AGU-EGU (2003).
- Goldstein, A.H.,** Worton, D.R., Zhao, Y., Kreisberg, N.M., Teng, A.P., Hering, S.V., Górecki, T., Ranjan, M., Hennigan, C.J., Lambe, A., Nguyen, N., Donahue, N.M., Robinson, A.L., Jayne, J.T., **Williams, Brent J., Worsnop, D.R.** “Enabling in situ observations of organic aerosol speciated composition: Advances in TAG instrumentation.” Invited oral presentation at the fall meeting of the American Geophysical Union (2009).
- Goldstein, A.H.,** Gentner, D.R., Isaacman, G.A., Worton, D.R., Zhao, Y., Weber, R., Kreisberg, N.M., Hering, S.V., **Williams, Brent J.,** Hohaus, T., Jayne, J., Lambe, A., Williams, L.R., Jimenez, J.L. “In situ observations of speciated organics in gas and particle phases: CalNex2010 Bakersfield and Los Angeles.” Invited oral presentation at the fall meeting of the American Geophysical Union (2010).
- Goncalves, L., **Saleska, S.R.,** Restrepo-Coupe, N., Baker, I.T., **Christoffersen, Bradley J.,** Muza, M.N., Costa, Da Roccha, H.R., Herdies, D.L., Zeng, X., Shuttleworth, W.J., Arkin, P.A. “Results from the LBA data model intercomparison project.” Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Gordon, Wendy S., Famiglietti, J.S.,** Hibbard, K.A., Kittel, T.G. “Terrestrial ecosystem model validation using streamflow data: Preliminary analyses of VEMAP Phase 2 model experiments.” Poster presentation at the fall meeting of the American Geophysical Union (1999).
- Gordon, Wendy S., Famiglietti, J.S.,** Hibbard, K.A., Kittel, T.G. “Terrestrial ecosystem model validation using streamflow data: Preliminary analyses of VEMAP Phase 2 model experiments.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).
- Gordon, Wendy S., Famiglietti, J.S.,** Hibbard, K., Kittel, T. “Analysis of VEMAP II projections of future runoff in the U.S. under climate change.” Poster presentation at the fall meeting of the American Geophysical Union (2001).
- Gordon, Wendy S., Famiglietti, J.S.,** Fowler, N., Hibbard, K., Kittel, T. “Validation of VEMAP Phase 2 model experiments using hydrologic data.” Poster presentation at the annual meeting of The Ecological Society of America (2001).
- Gordon, Wendy S., Famiglietti, J.S.,** Fowler, N., Hibbard, K., Kittel, T. “Validation of the historical period of the VEMAP Phase 2 model experiments using hydrologic data.” Poster presentation at the International Global Change Science Conference (2001).
- Gordon, Wendy S., Famiglietti, J.S.,** Fowler, N., Hibbard, K., Kittel, T. “Validation of the VEMAP Phase 2 model experiments using hydrologic data.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).
- Gordon, Wendy S., Famiglietti, J.S.,** Fowler, N.L. “Analysis of 21<sup>st</sup> century runoff under elevated CO<sub>2</sub> using the VEMAP II data set.” Poster presentation at the annual meeting of The Ecological Society of America (2002).
- Gordon, Wendy S., Famiglietti, J.S.,** Fowler, N.L. “Climate change, hydrology and the intercomparison of ecological models.” [Oral presentation](#) at the Global Change Education Program Orientation (2003).



**Gray Sharon B., Classen, A.T., Kardol, P., Yermakov, Z., Miller, R.M.** “Water availability mediates the effects of temperature and CO<sub>2</sub> concentration on soil microbial community composition.” Poster presentation at the annual meeting of The Ecological Society of America (2008).

**Gray, Sharon B.,** McGrath, J.M., Dermody, O., *Ainsworth, Elizabeth A., Leakey, A.D.B.* “Temperature and precipitation interactions eliminate benefits of free-air CO<sub>2</sub> enrichment to soybean water relations in 2 out of 5 years.” Poster presentation at the annual meeting of the American Society of Plant Biologists (2009).

**Gray, Sharon B.,** Strellner, R.S., Puthuval, K., *Leakey, A.D.B.* “Elevated CO<sub>2</sub> does not ameliorate drought stress in soybeans.” Oral presentation at the Global Change Education Program Orientation (2010).

**Gray, Sharon B.,** Strellner, R.S., Puthuval, K., *Leakey, A.D.B.* “Free-air CO<sub>2</sub> enrichment does not lessen the impact of drought on soybean photosynthesis under field conditions.” Oral presentation at the annual meeting of The Ecological Society of America (2010).

**Gray, Sharon B.,** Strellner, R.S., Puthuval, K.K., *Leakey, A.D.B.* “Elevated CO<sub>2</sub> increases stomatal closure under reduced soil moisture in soybean.” Poster presentation at the annual meeting of the American Society of Plant Biologists (2011).

**Grimmond, C.S.B, Su, H.-B., Offerle, B., Crawford, B., Scott, S., Zhong, S., Clements, Craig B.** “Variability of sensible heat fluxes in a suburban area of Oklahoma City.” Oral presentation at the national meeting of the American Meteorological Society (2004).

**Grumet, Nancy S., Dunbar, R.B.** “Chemical record of climate change from east African coral records.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).

**Grumet Prouty, Nancy S., Dunbar, R.B., Guilderson, T.P.** “Surface radiocarbon variability off the coast of Kenya during the last 50 years.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).

**Grumet, Nancy S., Dunbar, R.B.,** Cole, J.E. “Multisite record of climate change from Indian Ocean corals.” Oral presentation at the International Coral Reef Symposium (2002).

**Grumet, Nancy S.,** Abram, N.J., Beck, J.W., *Dunbar, R.B.,* Gagan, M.K. “Coral radiocarbon record of interannual variability in wind induced upwelling along the coast of Sumatra.” Poster presentation at the fall meeting of the American Geophysical Union (2002).

**Grumet, Nancy S.,** Wickett, M.E., **Duffy, P.B.,** Caldeira, K., *Dunbar, R.B.* “Intrabasin comparison of surface radiocarbon levels in the Indian Ocean between coral records and three dimension global ocean models.” Poster presentation at the fall meeting of the American Geophysical Union (2003).

**Habeck, Christopher W.,** Meehan., T.D. “Mass invariance of population nitrogen flux by terrestrial mammalian herbivores.” Poster presentation at the annual meeting of The Ecological Society of America (2008).

**Habeck, Christopher W., Lindroth., R.L.,** “Nutrient availability and enriched CO<sub>2</sub> indirectly affect mammalian herbivores via changes in plant chemistry.” Oral presentation at the annual meeting of The Ecological Society of America (2009).



- Habeck, Christopher W., Lindroth, R.L.** “Mammalian herbivore response to CO<sub>2</sub> and O<sub>3</sub> mediated changes in plant chemistry.” Oral presentation at the Gordon Research Conference on Plant-Herbivore Interactions (2010).
- Habeck, Christopher .W., Lindroth, R.L.** “Effects of elevated CO<sub>2</sub> and tropospheric O<sub>3</sub> on the behavior and performance of a mammalian herbivore, *microtus ochrogaster*.” Oral presentation at the annual meeting of the American Society of Mammalogists (2011).
- Haman, C., **Lefer, B., Clements, Craig B.**, Beals, C., Huey, G. Tanner, D. Liao, J., Brough, N. “Impact of boundary layer stability on measured halogen levels.” Poster presentation at the fall meeting of the American Geophysical Union (2008).
- Harrison, J.B. Hendricks, J., Muldavin, J.M.H., McMahon, E.,D., **Wardell, Lois J.** “Biological and climate controls on calcium carbonate precipitation in a small first order drainage basin, Sevilleta Long Term Ecological Research Site, New Mexico, USA.” Poster presentation at the INQUA Congress (2003).
- Hastings, Meredith G., Sigman, D.M.**, Lipschultz F. “Isotopic evidence of source changes for nitrate in precipitation at Bermuda.” Poster presentation at the fall meeting of the American Geophysical Union (2002).
- Hastings, Meredith G.**, Steig, E.J., **Sigman, D.M.**, Jarvis, J. “Seasonal atmospheric chemistry at Summit, Greenland based on N and O Isotopes of nitrate.” Oral presentation at the fall meeting of the American Geophysical Union (2003).
- Hastings, Meredith G., Sigman D.M.** “Construction and interpretation of the ice core record of nitrate at Greenland using stable isotopes of nitrogen and oxygen.” Oral presentation at the Global Change Education Program Orientation (2003).
- Hastings, Meredith G.**, Malcolm, E., Kaiser, J., **Sigman D.M.** “Controls on the nitrogen and oxygen isotopic composition ( $\delta^{15}\text{N}$ ,  $\delta^{18}\text{O}$ ,  $\delta^{17}\text{O}$ ) of atmospheric nitrate in Princeton, NJ.” Oral presentation at the fall meeting of the American Geophysical Union (2004).
- Hastings, Meredith G., Sigman, D.M.** “Studies of reactive nitrogen in the atmosphere using global modeling and stable isotope measurements.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Hatch, L.E., Creamean, J.M., **Ault, Andrew P., Prather, K.A.** “Insights into secondary organic aerosol species in an urban environment by single particle mass spectrometry. Poster presentation at the annual meeting of the American Association for Aerosol Research (2010).
- Hatch, L.E., Creamean, J.M., **Ault, Andrew P.**, Surratt, J.D., Chan, M., Seinfeld, J.H., **Prather, K.A.** “Real-time observations of organosulfate species in ambient aerosols by single particle mass spectrometry in Atlanta, GA.” Oral presentation at the annual meeting of the American Association for Aerosol Research (2010).
- Higgins, Paul A.T., Schneider, S.H.** “Ecosystem change in the North Atlantic under greenhouse gas increase and thermohaline circulation collapse.” Oral presentation at the annual meeting of The Ecological Society of America (2001).
- Higgins, Paul A.T.** “Multiple equilibria and irreversibility in the climate system.” Oral presentation at the DOE Workshop on Response Options to Rapid or Severe Climate Change (2001).



- Higgins, Paul A.T., Schneider, S.H. “Abrupt and variable climate change: Interactions between ocean circulation and anthropogenic change.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).
- Higgins, Paul A.T., Schneider, S.H. “Potential ecosystem change in the North Atlantic under greenhouse gas increase and thermohaline circulation collapse.” Oral presentation at the annual meeting of The Ecological Society of America (2001).
- Higgins, Paul A.T., Schneider, S.H. “Ecosystem change and climate feedbacks under greenhouse gas increases and thermohaline circulation collapse.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).
- Higgins, Paul A. “Ecosystem responses and feedbacks to abrupt climate change.” Oral presentation at the fall meeting of the American Geophysical Union (2002).
- Higgins, Paul A.T., Schneider, S.H. “Climate change: Complexity, chaos, and order.” Oral presentation at the *International Workshop on Paradigms of Change* (2002).
- Higgins, Paul A.T., Schneider, S.H. “State transitions in ocean circulation as a potential driver of ecosystem change at a global scale.” Oral presentation at the annual meeting of The Ecological Society of America (2002).
- Higgins, Paul A.T., Schneider, S.H. “Dynamics of climate and ecosystem coupling: Abrupt changes and multiple equilibria.” Oral presentation at the Global Change Education Program Orientation (2002).
- Higgins, Paul A.T., Vellinga, M., Mastrandrea, Michael D., Schneider, S.H. “Response and feedbacks to abrupt climate change: The biosphere’s role in the coupled earth system” Poster presentation at the EGS-AGU-EGU Joint Assembly (2003).
- Higgins, Paul A.T., Schneider, S.H. “A health reduction in oil dependence and carbon emissions.” Poster presentation at the fall meeting of the American Geophysical Union (2003).
- Higgins, Paul A.T., Schneider, S.H. “Potential biological diversity loss due to abrupt climate change.” Oral presentation at the annual meeting of The Ecological Society of America (2003).
- Higgins, Paul A. “Exercised based transportation reduces oil consumption and carbon emissions.” Poster presentation at the fall meeting of the American Geophysical Union (2004).
- Hoffman, Rachael C., Gebel M.E., Fox, B.S., Finlayson-Pitts, B.J. “Knudson cell studies of the uptake and reaction of HNO<sub>3</sub> and N<sub>2</sub>O<sub>5</sub> on sub-layers of NaCl.” Oral presentation at the annual meeting of the American Meteorological Society (2003).
- Hohaus, T., Lambe, A., Williams, Brent J., Williams, L.R., Kimmel, J., Sueper, D., Kreisberg, N.M., Hering, S.V., Isaacman, G.A., Worton, D.R., Goldstein, A.H., Worsnop, D.R., Jayne, J. “In situ ambient aerosol measurement over Los Angeles during CalNex2010 using a newly developed combined thermal desorption aerosol GC (TAG) and Aerodyne aerosol mass spectrometer (AMS) instrument: TAG-AMS.” Poster presentation at the fall meeting of the American Geophysical Union (2010).



- Holden, Amanda S.**, Sullivan, A.P., Patterson, L.A., Schichtel, B., Malm, W., Kreidenweis, S., **Collett Jr., J.L.** “Estimating contributions of primary biomass burning to fine particulates in ambient aerosol in the Western United States.” Poster presentation at the annual meeting of the American Association for Aerosol Research (2008).
- Holden, Amanda S.**, Desyaterik, Y., **Collett Jr., J.L.**, Kreidenweis, S.M., Malm, W. “Analysis of fresh and aged aerosols produced by biomass combustion.” Poster presentation at the annual meeting of the American Association for Aerosol Research (2009).
- Holden, Amanda S.**, Desyaterik, Y., **Laskin, A., Laskin, J.**, Schichtel, B.A., Malm, W.C., Kreidenweis, S.M., **Collett Jr., J.L.** “Analysis of fresh and aged aerosols produced by biomass combustion.” Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Holden, Amanda S.**, Desyaterik, Y., **Laskin, A., Laskin, J.**, Schichtel, B.A., Malm, W.C., Kreidenweis, S.M., **Collett Jr., J.L.** “Analysis of fresh and aged biomass burning aerosols using high-resolution mass spectrometry.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Hollister, Emily B.**, Ansley, R.J., **Boutton, T.W.** “Land use and land cover change in temperate savannas: Microbial activity and soil carbon dynamics.” Oral presentation at the annual meeting of the Soil Science Society of America (2004).
- Hollister, Emily B.**, Ansley, R.J., **Boutton, T.W.** “Land use and land cover changes in temperate savannas.” Oral presentation at the Global Change Education Program Orientation (2004).
- Hollister, Emily B.**, Ansley, R.J., **Boutton, T.W.** “Carbon dynamics of temperate savannas: Effects of prescribed fire on microbial activity and potential carbon mineralization.” Oral presentation at the annual meeting of the Society for Range Management (2005).
- Hollister, Emily B., Boutton, T.W.**, Ansley R.J. “Land use and land cover changes in temperate savannas: Impact of fire on biodiversity and ecosystem carbon storage.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Hollister, Emily B., Boutton, T.W.**, Ansley R.J. “Global change in the Great Plains: Biodiversity, fire, and ecosystem carbon storage.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Hollister, Emily B., Boutton, T.W.**, Ansley R.J. “Land use and land cover changes in temperate savannas: Impact of woody encroachment and prescribed burning on soil carbon pools and flux rates.” Poster presentation at the international annual meeting of the ASA-CSSA-SSSA (2006).
- Hollister, Emily B., Boutton, T.W.**, Ansley R.J. “Land use and land cover changes in temperate savannas: Impacts of woody encroachment and prescribed burning on soil carbon pools and flux rates.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Hollister, Emily B.**, Schadt, C.W., **Palumbo, A.V., Boutton, T.W.** “Soil microbial diversity in a mesquite savanna: Response of bacterial and fungal communities to vegetation change.” Poster presentation at the annual meeting of The Ecological Society of America (2008).



- Holzinger, R., **Lee, Anita**, Schade, G., **Goldstein, A.H.** “Terpenes and their oxidation products in a pine forest: Insights from novel PTR-MS measurements.” Oral presentation at the International Conference on Proton Transfer Mass Spectrometry (2005).
- Hopkins, F.M., **Torn, M.S.**, **Silver, W.L.**, **Marin-Spiotta, Erika** “Human influence on the carbon cycle in secondary tropical forests.” Poster presentation at the fall meeting of the American Geophysical Union (2004).
- Hudiburg, Tara W.**, **Law, B.E.**, Martin, J. “An evaluation of the impact of forest biomass harvest for biofuels on carbon storage in the US west coast states under different management scenarios.” Oral presentation at the fall meeting of the American Geophysical Union (2009).
- Hudiburg, Tara W.**, **Thornton, P.**, **Law, B.E.** “Interactive effects of disturbance, rising CO<sub>2</sub> concentrations, nitrogen deposition and climate on carbon cycle dynamics of US West-Coast forests.” Poster presentation at the annual meeting of the North American Carbon Program (2009).
- Hudiburg, Tara W.**, **Law, B.E.**, Wirth, C., Luyssaert, S., **Thornton, P.** “Short and long term impacts of forest bioenergy production.” Oral presentation at the fall meeting of the American Geophysical Union (2011).
- Hudiburg, Tara W.**, **Law, B.E.**, Wirth, C., Luyssaert, S. “Life-cycle analysis of US West Coast forests following thinning for combined fire prevention and bioenergy production.” Poster presentation at the annual meeting of the North American Carbon Program (2011).
- Imbuzeiro, H.A., Costa, M.H., Galbraith, D., **Christoffersen, Bradley J.**, Powell, Levine, N.M., T., Rowland, L., Moorcroft, P.R., Meir, P., da Costa, A., Brando, P., Malhi, Y., **Saleska, S.R.**, Harper, A.B. “Simulating drought impacts on energy and water dynamics in Amazonian rainforests.” Poster presentation at the fall meeting of the American Geophysical Union (2011).
- Iversen, Colleen M.**, **Norby, R.J.** “CO<sub>2</sub> mediated effects on nitrogen availability: Potential nitrogen limitation on forest productivity and long-term carbon storage.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Iversen, Colleen M.**, **Classen, A.T.**, **Jastrow, J.D.**, **Norby, R.J.** “Effects of CO<sub>2</sub> enrichment on fine root characteristics: Implications for root decomposition rates.” Oral presentation at the Global Change Education Program Orientation (2006).
- Iversen, Colleen M.**, **Classen, A.T.**, **Jastrow, J.D.**, **Norby, R.J.** “At the root of the response: Carbon and nitrogen cycling in a CO<sub>2</sub> enriched deciduous forest.” Marvin L. Wesely [Award address](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Iversen, Colleen M.**, **Classen, A.T.**, **Jastrow, J.D.**, **Norby, R.J.** “The causes and consequences of increased fine root production in a CO<sub>2</sub> enriched sweetgum plantation.” [Oral presentation](#) at the Global Change Education Program Orientation (2008).
- Iversen, Colleen M.**, **Jastrow, J.D.**, **Norby, R.J.** “Carbon and nitrogen inputs from decomposing roots into different soil organic matter fractions.” Oral presentation at the annual meeting of The Ecological Society of America (2009).



- Iversen, Colleen M.**, Keller, J.K., Garten, G.T., **Norby, R.J.** “The consequences of deeper rooting distributions under elevated [CO<sub>2</sub>].” Oral presentation at the annual meeting of The Ecological Society of America 31-8 (2011).
- Jablonowski, C., Reed, Kevin A.** “Idealized tropical cyclone simulations of intermediate complexity: A test case for atmospheric GCMs.” Oral presentation at the fall meeting of the American Geophysical Union (2010).
- Jablonowski, C., Reed, Kevin A.** “Idealized tropical cyclones in atmospheric general circulation models: The impact of the dynamical core.” Oral presentation at the annual meeting of the American Meteorological Society (2010).
- Jaffe, D.A., Price, Heather U.**, Weiss, P., McClintick, A., McKendry, I. “Ozone-aerosol relationships in the northeast Pacific during ACE-Asia.” Poster presentation at the fall meeting of the American Geophysical Union (2001).
- Jaffe, D.A.**, Thornton, J., Wolfe, G., Reidmiller, D., **Fischer, Emily V.**, Jacob, D.J., Zhang, L., Cohen, R., Singh, H., Weinheimer, A., Flocke, F. “Can we detect an Influence over North America from increasing Asian NO<sub>x</sub> emissions?” Oral presentation at the fall meeting of the American Geophysical Union (2007).
- Jaffe, D.**, Finley, B., **Fischer, Emily V.**, Kangas, R., Reidmiller, D., Griffin, D. “Recent discoveries at the Mt. Bachelor Observatory in Oregon.” Oral presentation at the Symposium on Atmospheric Chemistry and Physics at Mountain Sites (2010).
- Jarvis, J.C., Steig, E.J., **Hastings, Meredith G.** “Controls on the isotopic composition of reactive nitrogen species.” Oral presentation at the fall meeting of the American Geophysical Union (2004).
- Jarvis, J.C., **Hastings, Meredith G.**, Steig, E.J. “Isotopes of atmospheric NO<sub>x</sub> and HNO<sub>3</sub>: Implications for ice core records of climate and atmospheric chemistry.” Poster presentation at the fall meeting of the American Geophysical Union (2006).
- Jastrow, J.D., O’Brien, Sarah L.**, Dria, K.J., Filley, T.R., Boutton, T.W. “Nature and dynamics of carbon accrued in a forest soil during five years of atmospheric CO<sub>2</sub> enrichment.” Poster presentation at the biennial meeting of the Soil Ecology Society (2005).
- Jastrow, J.D.**, Six, J., **O’Brien, Sarah L.**, Moran, K.K., Boutton, T.W. “Comparison of density-based versus particle-size fractionations for investigating microaggregate stabilization of soil organic matter.” Poster presentation at the International Conference on Organic Matter in Soils (2005).
- Jastrow, J.D., O’Brien, Sarah L.**, Moran, K.K., Swanston, C., Hanson, P. “Incorporation of radiocarbon from forest litter and roots into microaggregate-protected and unprotected soil carbon pools.” Poster presentation at the Joint International Annual Meeting of the ASA-CSSA-SSSA (2006).
- Jastrow, J.D.**, Six, J., **O’Brien, Sarah L.**, Moran, K.K., Boutton, T.W. “Comparison of density-based versus particle-size fractionations for investigating microaggregate stabilization of soil organic matter.” Poster presentation at the biennial meeting of the Soil Ecology Society (2007).
- Jastrow, J.D.**, Swanston, C.W., **O’Brien, Sarah L.**, Moran, K.K., Porras, R.C., Torn, M.S. “Incorporation of root and surface litter inputs into soil C pools: What do different physical fractionation approaches tell us?” Oral presentation at the fall meeting of the American Geophysical Union (2008).



- Jastrow, J.D.**, Moran, K.K., **O'Brien, Sarah L.**, Boutton, T.W. "Soil carbon and nitrogen dynamics in a deciduous forest exposed to ten years of atmospheric CO<sub>2</sub> enrichment." Poster presentation at the International Symposium on Soil Organic Matter Dynamics (2009).
- Kaiser, J., **Hastings, Meredith G.**, Houlton, B., Roeckmann, T., **Sigman, D.M.** "Online method for oxygen triple isotope analysis of nitrate." Invited oral presentation at the fall meeting of the American Geophysical Union (2004).
- Kardol, P., **Cregger, Melissa A.**, Company, C.E., **Classen, A.T.** "Changes in plant community composition affect multifactor climate change effects on soil ecosystem functioning." Oral presentation at the International Conference of the Soil Ecology Society (2009).
- Keifer, C., **Clements, Craig B.**, Potter, B. "Plume moisture enhancement observed during FireFlux." Oral presentation at the American Meteorological Society Conference on Fire and Forest Meteorology (2007).
- Keppel, J.A., **Pelini, Shannon L.**, **Hellmann, J.J.** "The role of host plant transitions in performance of a locally adapted specialist butterfly." Poster presentation at the annual meeting of The Ecological Society of America (2008).
- Kreidenweis, S.M., **McMeeking, Gavin R.**, Arnott, W.P., Baker, S. Carrico, C.M. Chow, J.C., **Collett Jr., J.L.**, Hao, W.M., Holden, Amanda S., **Kirchstetter, T.W.**, Levin, E.J.T., Lewis, K.A. Mack, L. Malm, W.C., Moosmüller, H., Sullivan, A.P., Wold C.E. "The fire lab at Missoula experiment (FLAME): Measurements of trace gases and aerosols during the open combustion of biomass in the laboratory." Oral presentation at the International Fire Ecology and Management Congress (2009).
- Kreisberg, N.M., **Williams, Brent J.**, **Goldstein, A.H.**, Hering, S.V. "Hourly in situ measurements of organic aerosol speciation by Thermal desorption Aerosol GC/MS-FID (TAG): Advances in calibration procedures." Poster presentation at the fall meeting of the American Geophysical Union (2005).
- Kreisberg, N.M., Hering, S.V., **Williams, Brent J.**, **Goldstein, A.H.** "Quantitation method for hourly organic speciation of atmospheric urban aerosols." Poster presentation at the fall meeting of the American Geophysical Union (2006).
- Kueppers, Lara M.**, **Harte, J.** "Soil carbon dynamics along a forest type and elevation gradient in the Rocky Mountains: Ecological feedbacks to climate change." Poster presentation at the fall meeting of the American Geophysical Union (2000).
- Kueppers, Lara M.**, **Harte, J.** "Soil carbon dynamics along a forest type and elevation gradient in the Rocky Mountains: Ecological feedbacks to climate change." [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).
- Kueppers, Lara M.**, **Harte, J.** "Soil carbon loss along a climate and forest type gradient in the Rocky Mountains." Oral presentation at the annual meeting of The Ecological Society of America (2001).
- Kueppers, Lara M.**, **Harte, J.** "The response of soil carbon efflux to climate and forest type along an elevational gradient in the Rocky Mountains." Oral presentation at the Global Change Education Program End-of-Summer Workshop (2001).



- Kueppers, Lara M.**, Southon, J., **Harte, J.** “Climate and species controls on decomposition of coarse woody debris: radiocarbon dating of decaying logs.” Oral presentation at the annual meeting of The Ecological Society of America (2002).
- Kueppers, Lara M.**, Southon, J., **Harte, J.** “Climate and species controls on forest carbon dynamics in the Rocky Mountains.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).
- Kueppers, Lara M.**, **Harte, J.** “Mountain forest carbon feedbacks to climate change: do species matter?” Oral presentation at the annual meeting of The Ecological Society of America (2004).
- Kunasek, S.A., Alexander, B., Steig, E.J., **Hastings, Meredith G.**, Jarvis, J.C., Yarnes, C.T. “Coupling nitrate  $\delta^{17}\text{O}$ ,  $\delta^{15}\text{N}$ , and  $\delta^{18}\text{O}$  in polar ice: Towards determination of paleoatmospheric oxidant concentrations and post-depositional processes.” Poster presentation at the fall meeting of the American Geophysical Union (2006).
- Kyrk, K.A., **Dunbar, R.B.**, Murray, R.W., Manley, P., Brachfeld, S.A., **Moy, Christopher M.**, Mucciarone, D.A. “Ultra-high resolution geochemical record of Holocene climate change in east Antarctic sediments.” Oral presentation at the fall meeting of the American Geophysical Union (2009).
- Larson, S.A., **Moy, Christopher M.**, **Dunbar, R.B.**, Moreno, P.I. “Lacustrine carbonate records of climate variability in SW Patagonia.” Poster presentation at the fall meeting of the American Geophysical Union (2008).
- Laskin, A.**, **Laskin, J.**, Roach, P.J., Heath, B., **Nizkorodov, S.A.**, Nguyen, T.B., **Bateman, Adam P.**, Levac, N.A., Bones, D.L. “Molecular characterization of organic aerosols using nanospray-DESI high resolution mass spectrometry.” Poster presentation at the annual meeting of the American Association for Aerosol Research (2011).
- Lathem, T.L., **Moore, Richard H.**, **Nenes, A.**, Anderson, B.E., Brock, C.A., Clark, A., Bahreini, R., Cozic, J., Middlebrook, A., Jimenez, J.L., Cubison, M.C., Weber, R., Hecobian, A. “Measurement of cloud condensation nuclei and droplet activation kinetics in pollution influenced arctic air masses during the spring and summer of 2008 (NASA ARCTAS/NOAA ARPAC).” Oral presentation at the national meeting of the American Meteorological Society (1999).
- Law, B.E.**, Turner, D.P., **Hudiburg, Tara W.**, Meigs, G.W., Ritts, D.W., Yang, Z., Kennedy, R. “Carbon consequences of disturbances in the west coast U.S. states.” Oral presentation at the fall meeting of the American Geophysical Union (2009).
- Leakey, A.D.B., Uribeharrea, M., **Ainsworth, Elizabeth A.**, Naidu, S.L., **Rogers, A.**, Ort, D.R., **Long, S.P.** “Photosynthesis, productivity and yield of Zea mays are not affected by fully open-air elevation of  $\text{CO}_2$  concentration, in the absence of drought.” Poster presentation at the Gordon Research Conference on  $\text{CO}_2$  Assimilation in Plants (2005).
- Leakey, A.B.D., Xu, F., **Gillespie, Kelly M.**, **Ainsworth, Elizabeth A.**, Long, S.P., Ort, D.R. “Using microarrays to reveal the mechanism of crop responses to global change under field conditions.” Oral presentation at the International Rice Research Institute Workshop (2007).



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- Leakey, A.B.D., Gillespie, Kelly M., Xu, F., McGrath, J.M., Ainsworth, Elizabeth A., Ort, D.R. "The genomic ecology of plant responses to interacting elements of global change." Oral presentation at the annual meeting of The Ecological Society of America (2009).
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- Lee, Anita, Schade, G., Goldstein, A. "Monoterpene and sesquiterpene emissions from ponderosa pine: Implications for secondary organic aerosol formation." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2002).
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- Lee, Anita, Schade, G., Goldstein, A. "The atmospheric chemistry of terpenes: Canopy scale emissions and gas-phase oxidation products." Oral presentation at the Global Change Education Program Orientation (2005).
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- LeGrande, A.N., Lynch-Stieglitz, J., Matsumoto, K., Farmer, E. Christina "Reconstructing upper ocean circulation using oxygen isotope measurements on *Globorotalia truncatulinoides*." Poster presentation at the fall meeting of the American Geophysical Union (2002).
- Levin, E., McMeeking, Gavin R., Carrico, C., Collett, Jr., J., Kreidenweis, S.M., Malm, W. "Aerosol number and volume concentrations during the Rocky Mountain Nitrate and Sulfate Study (ROMANS)." Poster presentation at the annual meeting of the American Association for Aerosol Research (2007).
- Levine, N.M., Galbraith, D., Restrepo-Coupe, N., Imbuzeiro, H.A., Christoffersen, Bradley J., Goncalves, L., Saleska, S.R., Malhi, Y., Costa, M.H., Moorcroft, P.R. "Understanding the mechanisms behind observed biomass dynamics at 10 Amazonian field sites: A model-data intercomparison." Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Levine, N.M., Galbraith, D., Christoffersen, Bradley J., Imbuzeiro, H.A., Restrepo-Coupe, N., Malhi, Y., Saleska, S.R., Costa, M.H., Phillips, O., Andrade, A., Moorcroft, P.R. "The synergistic use of models and observations: Understanding the mechanisms behind observed biomass dynamics at 14 Amazonian field sites and implications for future biomass change." Poster presentation at the fall meeting of the American Geophysical Union (2011).



- Liao, Julia D., Boutton, T.W., Jastrow, J.D.** “Soil carbon storage and dynamics in a subtropical savanna ecosystem.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2002).
- Liao, Julia D., Boutton, T.W., Jastrow, J.D.** “Soil organic matter dynamics following land cover change in a subtropical savanna: Insights from soil physical fractionation and stable isotopes.” Invited oral presentation at the fall meeting of the American Geophysical Union (2004).
- Liao, Julia D., Boutton, T.W., Jastrow, J.D.** “Storage and turnover of carbon in soil physical fractions following woody plant invasion of grassland.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Loaiza, V., Habeck, Christopher W., Lindroth, R.L.** “Chemical changes in plants grown under enriched CO<sub>2</sub> and O<sub>3</sub> influence prairie vole (*Microtus ochrogaster*) growth.” Poster presentation at the annual meeting of The Ecological Society of America (2008).
- Long, Michael S., Keene, W.C., Erickson, D.J.** “The impact of primary marine aerosol on atmospheric chemistry, radiation and climate.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Long, Michael S., Keene, W.C., Erickson, D.J.** “The challenges and needs of atmospheric chemistry in global climate studies.” [Oral presentation](#) at the Global Change Education Program Orientation (2009).
- Long, Michael S., Keene, W.C., Erickson, D.J.** “A concise perspective on wind, ocean waves, wave breaking, and marine aerosols.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Long, Michael S., Keene, W.C., Kieber, D.J., Erickson, D.J., Maring, H.B.** “Size-resolved parameterization of primary organic carbon in fresh marine aerosols.” Oral presentation at the fall meeting of the American Geophysical Union (2009).
- Long, Michael S., Keene, W.C., Erickson, D.J., Liu, X., Ghan, S.J., Easter, R.C.** “Production and physicochemical evolution of size-resolved marine aerosol in the NCAR Community Atmosphere Model: Implications for oxidation processes, radiative transfer, and climate.” Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Long, Michael S., Keene, W.C., Erickson, D.J.** “Atmospheric chemistry mechanism reduction in the 3-D NCAR Community Atmospheric Model.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Macalady, Alison K., English, N.B., McDowell, N.G., Swetnam, T.W.** “Predisposing trees to die during drought: How physiology and climate history influence mortality in southwestern U.S. piñon pine.” Poster presentation at the fall meeting of the American Geophysical Union (2011).
- Mackey, Katherine R.M., Street, J., Labiosa, R., Paytan, A.** “Effects of phosphorus availability and source on phytoplankton assemblages in the Gulf of Aqaba, Red Sea.” Poster presentation at the annual meeting of the American Society of Limnology and Oceanography, Ocean Sciences (2006).
- Mackey, Katherine R.M., Labiosa, R.G., Calhoun, M., Street, J., Post, A.F., Paytan, A.** “Phosphorus availability, phytoplankton community dynamics, and taxon-specific phosphorus status in the Gulf of Aqaba, Red Sea.” Poster presentation at the fall meeting of the American Geophysical Union (2006).



**Mackey, Katherine R.M.,** Bailey, S., Grossman, A., Paytan, A. “Oxygen reduction in picocyanobacterial photosynthesis: A novel strategy for coping in a high light, low nutrient environment.” Invited oral presentation at the Western Photosynthesis Conference (2007).

**Mackey, Katherine R.M.,** Labiosa, R.G., Calhoun, M., Street, J., Post, A.F., *Paytan, A.* “Phosphorus availability, phytoplankton community dynamics, and taxon-specific phosphorus status in the Gulf of Aqaba, Red Sea.” Oral presentation at the annual meeting of the Society of Limnology and Oceanography, Ocean Sciences (2007).

**Mackey, Katherine R.M.,** *Paytan, A.,* Post, A.F. “Organic nutrient enrichment in the oligotrophic ocean: Impacts on remineralization, carbon sequestration, and community structure.” Poster presentation at the fall meeting of the American Geophysical Union (2007).

**Mackey, Katherine R.M.,** Lomas, M., Casey, J., Post, A.F., *Paytan, A.* “Picophytoplankton growth and toxicity responses to atmospheric metal deposition.” Oral presentation at the annual meeting of the American Society of Limnology and Oceanography (2011).

**Mackey, Katherine R.M.,** *Paytan, A.,* Grossman, A.R. “Bloom or doom: Surviving the transition from mixing to stratification.” Poster presentation at the annual meeting of the Society of Limnology and Oceanography, Ocean Sciences (2008).

**Mackey, Katherine R.M.,** *Paytan, A.,* Grossman, A.R., Bailey, S. “A photosynthetic strategy for coping in a high light, low nutrient environment.” Invited oral presentation at the annual meeting of the American Society for Photobiology (2008).

**Mackey, Katherine R.M.,** *Paytan, A.,* Post, A. “Nitrogen cycling in the oligotrophic ocean: How seasonal physical processes determine biologically mediated nitrogen transformations.” Poster presentation at the fall meeting of the American Geophysical Union (2008).

**Mackey, Katherine R.M.,** van Djiken, G., Mazloom, S., Erhardt, A.M., Arrigo, K., *Paytan, A.* “The influence of atmospheric nutrients on primary productivity in coastal upwelling regions.” Poster presentation at the fall meeting of the American Geophysical Union (2009).

**Mackey, Katherine R.M.,** Arrigo, K., van Djiken, G., Erhardt, A.M., *Paytan, A.* “The effect of atmospheric deposition the distribution and abundance of marine phytoplankton.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).

**Mackey, Katherine R.M.,** Bailey, S., Grossman, A.R., *Paytan, A.* “Photosynthesis in the oceans: Coping with oligotrophy in an extreme light environment.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).

**Mackey, Katherine R.M.,** *Paytan, A.,* Rivlin, T., Grossman, A.R., Post, A.F. “Acclimation strategies during a bloom: Picophytoplankton responses to changing nutrient and light regimes.” Poster presentation at the Western Photosynthesis Conference (2009).

**Mackey, Katherine R.M.,** *Paytan, A.,* The effect of atmospheric deposition of metals on the distribution and abundance of marine phytoplankton.” Poster presentation at the Gordon Research Conference on Environmental Bioinorganic Chemistry (2010).



- Mackey, Katherine R.M.**, Bristow, L., Altabet, M.A., Post, A.F., **Paytan, A.** “Effect of light and substrate availability on the primary nitrite maximum in the Gulf of Aqaba, Red Sea.” Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Mackey, Katherine R.M.**, Lomas, M., Casey, J., Post, A., Paytan, A. “Picophytoplankton growth and toxicity responses to atmospheric metal deposition.” Oral presentation at the annual meeting of the Society of Limnology and Oceanography, Ocean Sciences (2011).
- Mang, S.A., **Bateman, Adam P.**, Dallo, M., Do, T., **Nizkorodov, S.A.**, Pan, X., Underwood, J.S., Walser, M.L. “Photochemistry of model organic aerosol systems.” Oral presentation at the Joint Assembly of the American Geophysical Union (2007).
- Marin-Spiotta, Erika, Silver, W.L.**, Ostertag, R. “Soil carbon storage in tropical secondary forests.” Oral presentation at the Global Change Education Program Orientation (2002).
- Marin-Spiotta, Erika, Silver, W.L.**, Ostertag, R. “Mechanisms of soil carbon stabilization with reforestation of tropical pastures.” [Oral presentation](#) at the Global Change Education Program Orientation (2003).
- Marin-Spiotta, Erika, Silver, W.L.**, Swanston, C.W., Ostertag, R. “Soil carbon gain and loss during eighty years of tropical reforestation.” Oral presentation at the annual meeting of The Ecological Society of America (2004).
- Marin-Spiotta, Erika, Silver, W.L.**, Ostertag, R. “Soil carbon stabilization during tropical reforestation.” Oral presentation at the fall meeting of the American Geophysical Union (2004).
- Marin-Spiotta, Erika, Silver, W.L.**, Ostertag, R. “Soil carbon storage in reforested tropical pastures.” [Oral presentation](#) at the Global Change Education Program Orientation (2004).
- Marin-Spiotta, Erika, Silver, W.L.**, Ostertag, R., Swanston, C., **Torn, M.**, Burton, S. “Mechanisms of soil carbon storage during tropical reforestation.” Oral presentation at the annual meeting of the Society of Limnology and Oceanography, Ocean Sciences (2005).
- Marin-Spiotta, Erika, Silver, W.L.**, Ostertag, R., Swanston, C., **Torn, M.**, Burton, S. “Mechanisms of soil carbon stabilization with reforestation of tropical pastures.” Marvin L. Wesely Award address at the Global Change Education Program End-of-Summer Workshop (2005).
- Marin-Spiotta, Erika, Silver, W.L.**, Swanston, C.W., **Torn, M.S.**, Burton, S.D. “Mineral control of soil carbon storage with reforestation of abandoned pastures.” Poster presentation at the fall meeting of the American Geophysical Union (2006).
- Marin-Spiotta, Erika, Silver, W.L.**, Ostertag, R., **Torn, M.**, Swanston, C., Burton, S. “Controls on above and below ground carbon storage during tropical reforestation.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Marley, N.A., Gaffney, J.S.**, Rajaram, V., **Fischer, Emily V.** “Determining aerosol angstrom absorption coefficients: Comparison of full spectrum integrating sphere reflection spectroscopy with 3 and 7 wavelength filter absorption methods.” Oral presentation at the 88th national meeting of the American Meteorological Society (2010).



- Martinez-Aviles, Monica, Francisco, J.S.** “A study of the kinetics and mechanisms of the atmospheric degradation of bromopropane and its by-products.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Martinez-Aviles, Monica, Francisco, J.S.** “Halogenated hydrocarbons and halomethanediols: A study of the atmospheric implications of proposed replacements for chlorofluorocarbons.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Martinez-Aviles, Monica, Francisco, J.S.** “A study of the atmospheric implications of the proposed replacements for chlorofluorocarbons.” [Oral presentation](#) at the Global Change Education Program Orientation (2007).
- Mashig, E., **Pederson, Neil A.** “Tree-ring analysis of a montane white oak/shagbark hickory stand in the southeastern Adirondacks.” Poster presentation at the annual meeting of the *Adirondack Research Consortium* (2001).
- Mastrandrea, Michael D., Schneider, S.H.** “Integrated assessment of abrupt climate changes.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2001).
- Mastrandrea, Michael D., Schneider, S.H.** “Integrated assessment of abrupt climate changes.” Poster presentation at the annual meeting of the European Geophysical Union (2002).
- Mastrandrea, Michael D., Schneider, S.H.** “Integrated assessment of climate change and climate variability.” [Oral presentation](#) at the Global Change Education Program Orientation (2002).
- Mastrandrea, Michael D., Schneider, S.H.** “Dangerous climate change.” Oral presentation at the fall meeting of the American Geophysical Union (2003).
- Mastrandrea, Michael D., Schneider, S.H.** “Climate science as a policymaking tool: Predicting ENSO-Related agricultural impacts in Indonesia and Vietnam.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).
- Mastrandrea, Michael D., Schneider, S.H.** “Probabilistic integrated assessment of ‘dangerous’ climate change.” Oral presentation at the fall meeting of the American Geophysical Union (2004).
- Mastrandrea, Michael D., Schneider, S.H.** “Probabilistic integrated assessment of ‘dangerous’ climate change.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Mastrandrea, Michael D., Tebaldi, C., Snyder, C., Schneider, S.H.** “Projections of climate extremes in California.” Oral presentation at the fall meeting of the American Geophysical Union (2008).
- Mazloom, S., **Mackey, Katherine R.M., Paytan, A.** “Does atmospheric deposition support phytoplankton productivity in Monterey Bay, CA?” Poster presentation at the fall meeting of the American Geophysical Union (2008).
- McBride, Allen C., West, T.** “Estimating net CO<sub>2</sub> emissions from agricultural lime applied to soils in the U.S.” Poster presentation at the fall meeting of the American Geophysical Union (2005).



- McBride, Allen C., West, T.** “Climate change predictions and demographic shifts in southeastern deciduous forests.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- McCormack, M. Luke, Eissenstat, D.M.,** Smithwick, E.A.H. “Estimating current and future fine root turnover rates at landscape scales.” Poster presentation at the annual meeting of The Ecological Society of America (2010).
- McMeeking, Gavin R., Whiteman, C.D., Powell, S., Clements, Craig B.** “Terrain and ambient wind effects on the warming footprint of a wind machine.” Oral presentation at the American Meteorological Society, For. Ag. Meteorol. (2002).
- McMeeking, Gavin R., Kreidenweis, S.M.** “Carbonaceous aerosol impacts on visibility: Smoke and other natural sources.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- McMeeking, Gavin R., Kreidenweis, S.M., Carrico, C., Lunden, M., Kirchstetter, T.** “Optical and physical properties of aerosols from biomass combustion.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- McMeeking, Gavin R., Carrico, C., Levin, E., Kreidenweis, S.M., Collett Jr., J., Moosmuller, H., Arnott, P., Wold, C., Hao, W.M., Malm, W.** “Measurements of smoke aerosol size distributions and refractive indices during a series of laboratory biomass burning experiments.” Oral presentation at the annual meeting of the American Association for Aerosol Research (2007).
- McMeeking, Gavin R., Sullivan, A., Kreidenweis, S.M., Collett Jr., J., Kirchstetter, T., Lunden, M., Chen, A., Obrist, D., Moosmuller, H.** “A comparison of thermal-optical carbon measurement methods for aerosols emitted by a series of controlled biomass burning experiments.” Poster presentation at the annual meeting of the American Association for Aerosol Research (2007).
- McMeeking, Gavin R., Kreidenweis, S.M., Carrico, C., Lunden, M., Kirchstetter, T.** “Optical and physical properties of biomass burning emissions.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- McMeeking, Gavin R., Kreidenweis, S.M., Carrillo, J., Collett Jr., J., Lunden, M., Day, D., Malm, W.** “Regional scale measurements of smoke impacted haze in California, Oregon, and Washington.” Poster presentation at the annual meeting of the American Association for Aerosol Research (2008).
- McMeeking, Gavin R., Sullivan, A., Kreidenweis, S.M., Collett, J., Kirchstetter, T., Lunden, M., Moosmuller, H., Arnott, P., Lewis, K, Hao, W.M., Malm, W.** “The light attenuation spectral dependence of organic carbon emitted by biomass burning.” Oral presentation of the International Conference on Carbonaceous Particles in the Atmosphere (2008).
- McMeeking, Gavin R., Carrico, K., Petters, M., Parsons, M., Prenni, T., Sullivan, A., DeMott, P., Kreidenweis, S.M., Collett, J., Kirchstetter, T., Lunden, M., Moosmuller, H., Arnott, P., Lewis, K, Baker, S., Wold, C., Hao, W.M., Malm, W.** “Characterization of emissions from the laboratory combustion of wildland plant species.” Oral presentation of the International Conference on Carbonaceous Particles in the Atmosphere (2008).



- McMeeking, Gavin R.**, Taylor, J.W., Sullivan, A.P., Flynn, M.J., Akagi, S.K., Carrico, C.M., Collett, J.L., Fortner, E., Onash, T.B., **Kreidenweis, S.M.**, Yokelson, R.J., Hennigan, C., Robinson, A.L., Coe, H. “Black carbon aerosol properties measured by a single particle soot photometer in emissions from biomass burning in the laboratory and field.” Oral presentation at the fall meeting of the American Geophysical Union (2010).
- Medrano, J.M., Gross, D.S., **Dutcher, Dabrina D.**, Drayton, M., Kittelson, D., **McMurry P.H.** “Chemical composition of aerosol particle emitted by a passenger car engine fueled by ethanol/gasoline mixtures.” Poster presentation at the fall meeting of the American Geophysical Union (2007).
- Meibom, A., Stage, M., Wooden, J.L., Constantz, B.R., **Dunbar, R.B.**, Owen, A., **Grumet, Nancy S.**, Bacon, C.R., Chamberlain C.P. “The coral and the moon: A biological effect possibly affecting the precision of the Sr/Ca paleotemperature proxy.” Poster presentation at the fall meeting of the American Geophysical Union (2003).
- Millet, Dylan B., Goldstein, A.H.** “Kinetic isotope effects, VOC’s, and atmospheric chemistry.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).
- Millet, Dylan B.**, McKay, M., **Goldstein, A.H.** “VOC measurements at Trinidad Head, CA during ITCT 2K2.” Poster presentation at the fall meeting of the American Geophysical Union (2002).
- Millet, Dylan B., Goldstein, A.H.** “VOC measurements at a coastal site in northern California: Results from ITCT 2002.” Oral presentation at the Global Change Education Program Orientation (2002).
- Mohn, C., **Hanemann, M.**, Pendelton, L., **Busch, Christopher B.** “Bias in welfare measures as a result of improved travel cost variable estimates.” Oral presentation at the annual meeting of the American Agricultural Economics Association (2002).
- Moore, Richard H.**, Ingall, E.D., Sorooshian, A., **Nenes, A.** “The impact of surface ocean organics on the surface tension, CCN activity, and droplet growth kinetics of marine aerosol.” Oral presentation at the annual meeting of the American Association for Aerosol Research (2007).
- Moore, Richard H.**, Kok, G., **Nenes, A.** “Scanning flow CCN analysis for fast measurements of CCN spectra.” Oral presentation at the annual meeting of the American Association for Aerosol Research (2008).
- Moore, Richard H.**, Kok, G., **Nenes, A.** “Scanning flow CCN analysis for fast measurements of CCN spectra.” Oral presentation at the annual meeting of the DOE ARM Aerial Vehicle Program (2008).
- Moore, Richard H., Nenes, A.** “Inferring CCN properties of Arctic Haze layers during the 2008 ARCPAC field campaign.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Moore, Richard H., Nenes, A.** “Size-resolved scanning flow CCN analysis: A method for fast measurement of CCN spectra.” Poster presentation at the annual meeting of the American Association for Aerosol Research (2009).



- Moore, Richard H.,** Bahreini, R., Middlebrook, A.M., Cozie, J., Brock, C.A., **Nenes, A.** “CCN activity and droplet growth kinetics of Alaskan Arctic haze aerosol during April 2008.” Poster presentation at the annual meeting of the American Association for Aerosol Research (2009).
- Moore, Richard H., Nenes, A.** “Size-resolved scanning flow CCN analysis: A method for fast measurements of CCN spectra.” Oral presentation at the Annual Conference of the American Institute of Chemical Engineers (2009).
- Moore, Richard H.,** Lathem, T.L., **Nenes, A.,** Bahreini, R., Middlebrook, A.M., Cozie, J., Brock, C.A., Anderson, B., Beyersdorf, A.J., Thornhill, K.L., Winstead, E.L., Cubison, M., Jimenez, J.L., Weber, R., Hecobian, A. “An overview of the CCN activity and droplet growth kinetics of Arctic aerosol during the 2008 NOAA ARCPAC and NASA ARCTAS campaigns.” Poster presentation at the fall meeting of the American Geophysical Union (2009).
- Moore, Richard H., Nenes, A.** “Size-resolved scanning flow CCN analysis (SFCA): A method for fast measurements of CCN spectra.” Poster presentation at the national meeting of the American Meteorological Society (2010).
- Moore, Richard H.,** Padro, L.T., **Nenes, A.,** Zhang, N.R., Shi, W., Zheng, M., Weber, R. “Compositional and mixing state impacts on CCN concentrations in a heterogeneous urban environment.” Oral presentation at the national meeting of the American Meteorological Society (2010).
- Moore, Richard H.,** Lathem, T.L., Cerully, K., Bahreini, R., Brock, C.A., Langridge, J.M., Middlebrook, A.M., **Nenes, A.** “CCN activity, hygroscopicity, and drought activation kinetics of secondary organic aerosol resulting from the 2010 gulf oil spill.” Oral presentation at the fall meeting of the American Geophysical Union (2010).
- Moore, Richard H.,** McLaughlin, M., Nenes, A., Scheckman, J., Jiang, J., Chen, M., McMurry, P., Zhao, J., Smith, J., Eisele F. “Compositional and mixing state impacts, including the effects of new particle formation, on size-resolved CCN concentrations in Atlanta, Georgia during 2009.” Oral presentation at the annual meeting of the American Association for Aerosol Research (2010).
- Moore, Richard H., Nenes, A.** “Using measurements of CCN activity to characterize mixing state, chemical composition, and droplet growth kinetics of atmospheric aerosols.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Moore, Richard H.,** Scheckman, J., Williams, B.J., Jiang, J., McMurry, P.H., Zhao, J., Smith, J.N., **Nenes, A.** “Volatility and hygroscopicity of Atlanta CCN during new particle formation events in summer 2009.” Oral presentation at the fall meeting of the American Geophysical Union (2011).
- Moran, K.K., **Jastrow, J.D., O’Brien, Sarah L.** “Physical fractionation of soil organic matter using sodium hexametaphosphate requires caution.” Poster presentation at the Joint International Annual Meeting of the ASA-CSSA-SSSA (2006).
- Moran, K.K., **Jastrow, J.D., O’Brien, Sarah L.,** Boutton, T.W. “Changing sampling depth captures effects of tree species, elevated carbon dioxide and ozone on soil carbon stock in a forest ecosystem.” Poster presentation at the biennial meeting of the Soil Ecology Society (2007).



- Moy, Christopher M.**, Francois, J., Moreno, P., Villa-Martinez, R., *Dunbar, R.B.* “Late Holocene lacustrine records of climate and vegetation change from southern Patagonia, Chile.” Poster presentation at the fall meeting of the American Geophysical Union (2004).
- Moy, Christopher M.**, Francois, J., Moreno, P., *Dunbar, R.B.*, Villa-Martinez, R., Waldmann, N., Ariztegui, D. “Lacustrine records of Holocene climate change from southernmost South America.” Poster presentation at the fall meeting of the American Geophysical Union (2005).
- Moy, Christopher M.**, *Dunbar, R.B.* “Latitudinal shifts in the southern hemisphere westerlies.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Moy, Christopher M.**, *Dunbar, R.B.*, Francois, J., Moreno, P., Villa-Martinez, R. “Late Holocene Lacustrine records of climate and vegetation change from southernmost South America.” Poster presentation at the fall meeting of the American Geophysical Union (2006).
- Moy, Christopher M.**, Francois, J., Moreno, P., Villa-Martinez, R., *Dunbar, R.B.* “Late Holocene lacustrine records of climate and vegetation change from southern Patagonia, Chile.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2006).
- Moy, Christopher M.**, *Dunbar, R.B.* “Isotopic evidence for Holocene variations in the Southern Hemisphere westerlies: Tropical linkages and impact on the global carbon cycle.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2008).
- Mueller, Kevin E.**, Chorover, J., Hobbie, S.E., Oleksyn, J., Reich, P.B., *Eissenstat, D.M.* “The influence of tree species on soil organic matter formation.” Poster presentation at the Joint International Annual Meeting of the I (2007).
- Mueller, Kevin E.**, Chorover, J., Hobbie, S.E., Oleksyn, J., Reich, P.B., *Eissenstat, D.M.* “The influence of tree species composition on carbon cycling in forest soils.” [Oral presentation](#) at the Global Change Education Program Orientation (2007).
- Mueller, Kevin E.**, Hobbie, S.E., Chorover, J., Oleksyn, J., Reich, P.B., *Eissenstat, D.M.* “Relationships among tree leaf and root traits and their influence on soil biogeochemical properties and biotic communities.” Poster presentation at the annual meeting of The Ecological Society of America (2008).
- Mueller, Kevin E.**, Diefendorf, E., Magill, C., *Freeman, K.H.* “Variability in leaf carbon isotopes and implications for paleoclimate.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Mueller, Kevin E.**, Diefendorf, A.F., Wing, S.L., *Freeman, K.H.* “Global patterns of leaf <sup>13</sup>C discrimination: Implications for leaf gas-exchange.” Poster presentation at the annual meeting of The Ecological Society of America (2009).
- Mueller, Kevin E.**, Chorover, J., Hobbie, S.E., Oleksyn, J., Reich, P.B., *Eissenstat, D.M.* “Tree species drive differences in soil acidity and soil carbon in the A horizon via variation in nutrient stoichiometry of different plant organs.” Oral presentation at the Joint International Annual Meeting of the ASA-CSSA-SSSA (2009).



- Mueller, Kevin E.**, Oleksyn, J., Hobbie, S.E., Reich, P.B., Chorover, J., **Freeman, K.H.**, **Eissenstat, D.M.** “Nutrient stoichiometry of temperate trees and effects on the coupled cycles of carbon, nitrogen, and cations in soil.” Poster presentation at the fall meeting of the American Geophysical Union (2009).
- Mueller, Kevin E.**, Müller, C.W., Oleksyn, J., Chorover, J., Hobbie, S.E., Reich, P.B., **Trumbore, S.E.**, Kögel-Knabner, I., **Freeman, K.H.**, **Eissenstat, D.M.** “The influence of tree species on soil organic matter dynamics.” Oral presentation at the International Conference on Soil Organic Matter (2010).
- Mueller, Kevin E.**, Hobbie, S.E., Reich, P.B. “Covariation of leaf nitrogen concentrations and specific leaf area at different scales along a fire frequency gradient.” Oral presentation at the annual New Phytologist Symposium (2011).
- Mueller, Kevin E.**, **Eissenstat, D.M.**, Oleksyn, J., **Freeman, K.H.** “A statistical and experimental approach for assessing the preservation of plant lipids in soil.” Poster presentation at the fall meeting of the American Geophysical Union (2011).
- Müller, C.W., **Mueller, Kevin E.**, **Freeman, K.H.**, **Eissenstat, D.M.**, Kögel-Knabner, I. “Stability of soil carbon fractions – from molecules to aggregates.” Poster presentation at the fall meeting of the American Geophysical Union (2009).
- Murphy, J.G., Day, D.A., Farmer, D.K., Wooldridge, P.J., Cohen, R.C., **Millet, Dylan B.**, Schade, G.W., McKay, M., **Goldstein, A.H.** “Analysis of the weekend effect in ozone in central California using speciated NO<sub>y</sub> and VOC measurements.” Poster presentation at the fall meeting of the American Geophysical Union (2004).
- Natali, Susan M.**, **Lerdau, M.**, **Sañudo-Wilhelmy, S.A.** “Effects of elevated CO<sub>2</sub> on trace metals in plants.” Poster presentation at the annual meeting of The Ecological Society of America (2006).
- Natali, Susan M.**, **Lerdau, M.**, **Sañudo-Wilhelmy, S.A.** “Elevated CO<sub>2</sub> effects on mercury content of forest soils.” Poster presentation at the fall meeting of the American Geophysical Union (2006).
- Natali, Susan M.**, **Lerdau, M.**, **Sañudo-Wilhelmy, S.A.** “CO<sub>2</sub> effects on mercury cycling in two temperate forests.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Natali, Susan M.**, **Lerdau, M.**, **Sañudo-Wilhelmy, S.A.** “Carbon dioxide, nitrogen, and molybdenum effects on nitrate assimilation.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Natali, Susan M.**, **Lerdau, M.**, **Sañudo-Wilhelmy, S.A.** “Effects of elevated CO<sub>2</sub> and nitrogen fertilization on nitrate reductase activity in *Pinus taeda* and *Liquidambar styraciflua*.” Oral presentation at the annual meeting of The Ecological Society of America (2008).
- Nguyen, T.B., **Bateman, Adam P.**, **Nizkorodov, S.A.**, Laskin, J., Laskin, A. “Chemical composition of secondary organic aerosols generated from the dark ozonolysis of isoprene: A high resolution mass spectrometric analysis.” Oral presentation at the Joint Assembly of the American Geophysical Union (2009).
- Nizkorodov, S.A.**, **Bateman, Adam P.**, Dallo, M., Do, T., Pan, X., Underwood, J.S., Walser, M.L. “Photochemical aging of organic aerosol particles.” Oral presentation at the Joint Assembly of the American Geophysical Union (2007).



- Nizkorodov, S.A.*, Bones, D.L., Henricksen, D.K., Mang, S.A., **Bateman, Adam P.**, Pan, X., Nguyen, T.B., Gonsior, M., Cooper, W., **Laskin, J., Laskin, A.** “Effect of slow aging reactions on optical properties of secondary organic aerosol prepared by oxidation of selected monoterpenes.” Oral presentation at the Joint Assembly of the American Geophysical Union (2009).
- Norby, R.J.**, Weltzin, J.F., Kardol, P., **Iversen, Colleen M.**, Wan, S., Garten, G.T., Classen, A.T. “Carbon dynamics in an old field ecosystem: Was a multi-factor experiment the best approach for revealing responses to atmospheric and climatic change?” Oral presentation at the annual meeting of The Ecological Society of America (2011).
- O’Brien, Sarah L.**, **Jastrow, J.D.**, **Gonzalez-Meler, M.A.** “Vegetative and edaphic controls on soil carbon accumulation in restored grasslands.” Poster presentation at the Biannual Meeting of the Soil Ecology Society (2005).
- O’Brien, Sarah L.**, **Jastrow, J.D.**, **Gonzalez-Meler, M.A.** “Hydrologic and vegetative controls on soil carbon accumulation in restored tallgrass prairie.” Oral presentation at the International Conference on Organic Matter in Soils (2005).
- O’Brien, Sarah L.**, **Jastrow, J.D.**, **Gonzalez-Meler, M.A.** “Hydrologic and vegetative controls on soil carbon accumulation in restored grasslands.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- O’Brien, Sarah L.**, **Jastrow, J.D.**, **Gonzalez-Meler, M.A.** “Effects of topography and contributions of C<sub>3</sub>- and C<sub>4</sub>-sourced carbon to the rate of soil carbon accumulation in restored tallgrass prairie.” Poster presentation at the Joint International Annual Meeting of the ASA-CSSA-SSSA (2006).
- O’Brien, Sarah L.**, **Jastrow, J.D.**, **Gonzalez-Meler, M.A.** “Ecological and edaphic controls on soil carbon accumulation in a restored tall grass prairie.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- O’Brien, Sarah L.**, **Jastrow, J.D.**, **Gonzalez-Meler, M.A.** “Soil organic matter accrual and protection by aggregates in a restored tallgrass prairie chronosequence.” [Oral presentation](#) at the Global Change Education Program Orientation (2007).
- O’Brien, Sarah L.**, **Jastrow, J.D.**, **Gonzalez-Meler, M.A.**, Grimley, D.A. “Hydrologic and vegetative effects on the rate of soil carbon accumulation in restored Midwestern grasslands.” Oral presentation at the fall meeting of the American Geophysical Union (2007).
- O’Brien, Sarah L.**, **Jastrow, J.D.**, **Gonzalez-Meler, M.A.** “Soil organic matter accrual and protection by aggregates in a restored tallgrass prairie chronosequence.” Poster presentation at the annual meeting of The Ecological Society of America (2007).
- O’Brien, Sarah L.**, **Jastrow, J.D.**, **Gonzalez-Meler, M.A.** “Soil organic matter accrual and protection by aggregates in a restored tallgrass prairie chronosequence.” Poster presentation at the biennial meeting of the Soil Ecology Society (2007).
- O’Brien, Sarah L.**, **Jastrow, J.D.**, **Gonzalez-Meler, M.A.** “Hierarchical controls on the accrual of physically protected soil carbon pools following tallgrass prairie restoration.” Oral presentation at the annual meeting of The Ecological Society of America (2008).



- O'Brien, Sarah L., Jastrow, J.D., Gonzalez-Meler, M.A.** "The role of soil aggregates in the recovery of soil carbon and nitrogen in a restored tall grass prairie." Marvin L. Wesely [Award address](#) at the Global Change Education Program Orientation (2008).
- O'Brien, Sarah L., Jastrow, J.D., Grimley DA, Gonzalez-Meler, M.A.** "Drainage and vegetation controls on landscape-scale soil carbon accumulation in restored prairies." Poster presentation at the annual meeting of The Ecological Society of America (2009).
- O'Brien, Sarah L., Jastrow, J.D., Grimley, D.A., Gonzalez-Meler, M.A.** "Moisture and vegetation controls on soil organic carbon and total nitrogen accumulation in restored grasslands." Poster presentation at the International Symposium on Soil Organic Matter Dynamics (2009).
- O'Brien, Sarah L., Jastrow, J.D., Gonzalez-Meler, M.A.** "Hierarchical controls on the accrual of physically protected soil carbon pools following tallgrass prairie restoration." Poster presentation at the International Symposium on Soil Organic Matter Dynamics (2009).
- O'Brien, Sarah L., Owens, S.M., Caporaso, J.G., Hampton-Marcell, J., Jastrow, J.D., Johnston, E.R., Antonopoulos, D.A., Gilbert, J.A., Meyer, F.** "Spatial structure of soil microbial communities from centimeter to ecosystem." Oral presentation at the annual meeting of The Ecological Society of America (2012).
- Olivera, F., **Famiglietti, J.S., Branstetter Marcia L.** "Resolution dependence of cell-to-cell run off routing models." Oral presentation at the American Geophysical Union Conference on Hydrology (1999).
- Ostertag, R., **Marin-Spiotta, Erika, Silver, W.L.** "Leaf litter decomposition and soil carbon storage along a secondary forest chronosequence in Puerto Rico." Oral presentation at the annual meeting of the Society of Limnology and Oceanography, Ocean Sciences (2005).
- Padro, L.T, Moore, R.H., Xhang, Z., Rastogi, N., Creamean, J.M., Hatch, L.E., **Ault, Andrew P., Prather, K.A.,** Weber, R.J., Nenes, A. "Mixing state and compositional effects on CCN activity and droplet growth kinetics of size-resolved CCN in an urban environment." Oral presentation at the annual meeting of the American Association for Aerosol Research (2010).
- Parrish, D.D., Holloway, J.S., **Goldstein, A.H., Millet, Dylan B.,** McKay, M., Jaffe, D.A., Price, H.U., Atlas, E.L., Schauffler, S., Donnelly, S., Stroud, V., Oltmans, S.J. "Decadal ozone trends in the Eastern Pacific." Poster presentation at the fall meeting of the American Geophysical Union (2002).
- Parrish, D.D., Holloway, J.S., **Goldstein, A.H., Millet, Dylan B.,** McKay, M., Jaffe, D.A., Price, H.U., Atlas, E.L., Schauffler, S., Donnelly, S. "Decadal ozone trends in the eastern Pacific." Oral presentation at the Joint Assembly of the EGS-AGU-EGU (2003).
- Patterson, L.A., Schichtel, B.A., Sullivan, A.P., **Collett Jr., J.L., Holden, Amanda S.,** Kreidenweis, S.M., Malm, W.C. "Development of a wildland fire smoke marker emissions map for the contiguous United States." Poster presentation at the fall meeting of the American Geophysical Union (2008).



- Paytan, A., Mackey, Katherine R.M., Young, M.* “Controls on the biologically mediated oxygen isotope exchange between water and phosphate.” Oral presentation at the annual meeting of the American Society of Limnology and Oceanography, Ocean Sciences (2007).
- Paytan, A., Mackey, Katherine R.M., Chen, Y., Lima, I.D., Doney, S.C., Mahowald, N., Labiosa, R., Post, A.F.* “Toxicity of atmospheric aerosols on marine plankton.” Oral presentation at the fall meeting of the American Geophysical Union (2008).
- Paytan, A., Mackey, Katherine R.M., Chen, Y., Lima, I.D., Doney, S.C., Mahowald, N., Post, A.F.* “Atmospheric aerosols’ impacts on marine phytoplankton.” Oral presentation at the Goldschmidt Conference (2009).
- Paytan, A., Mackey, Katherine R.M., Reistetter, E., Buck, C.* “Aerosol impacts on marine phytoplankton.” Oral presentation at the Goldschmidt Conference (2010).
- Paytan, A., Mackey, Katherine R.M., Jiang, Y., Liston, A., Allen, B., Schladow, G.* “Impact of atmospheric deposition on algal growth in Lake Tahoe.” Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Pederson, Neil A., Jacoby, G., Cook, E.R.* “Surf’s up!? Will climate change bring a tsunami of tree species to the Adirondack Region?” Oral presentation at the annual meeting of the Adirondack Research Consortium (2001).
- Pederson, Neil A., Jacoby, G., Cook, E.R., Peteet, D., Griffin, K.* “Dendrochronological investigation of boreal and temperate tree species in the Hudson Valley.” Oral presentation at the annual meeting of the Association of American Geographers (2001).
- Pederson, Neil A., Jacoby, G., Cook, E.R.* “Using tree-rings to study historical growth and climate relationships: Insights for the future.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2001).
- Pederson, Neil A., Cook, E.R., Jacoby, G., Peteet, D., Griffin, K.* “Evidence that southern range margin trees in the Hudson Valley, NY experience heat stress.” Oral presentation at the International Dendrochronological Conference (2002).
- Pederson, Neil A., Cook, E.R., Jacoby, G., Peteet, D., Griffin, K.* “On the potential of future range margin tree growth and carbon uptake in forested wetlands of the Hudson Valley, NY.” Oral presentation at the annual meeting of the Society of Wetland Scientists (2002).
- Pederson, Neil A., Jacoby, G., Cook, E.R., Peteet, D., Griffin, K.* “How stable will the southern temperate boreal forest ecotone be? Ask the trees!” Oral presentation at the Northeast Natural History Conference (2002).
- Pederson, Neil A., Jacoby, G., Cook, E.R.* “Climate response of range margin trees: Implications for species distributions and carbon uptake.” Oral presentation at the Global Change Education Program Orientation (2002).
- Pederson, Neil A., Hammond, P.E., Barker, P.A., Bryant, D., Jacoby, G., Wofsy, S.* “An experimental study of the relation between eddy-flux carbon uptake measurements and tree-ring estimates of growth.” Poster presentation at the annual Harvard Forest Ecology Symposium (2003).
- Pederson, Neil A., Jacoby, G., Cook, E.R.* “Recent growth increases of northern range margin trees: Disturbance, climatic, and site interactions.” Oral presentation at the annual meeting of The Ecological Society of America (2003).



- Pederson, Neil A., Jacoby, G., Cook, E.R.** Peteet, D., Griffin, K. "Sensitivity of northern range margin southern temperature species: How important is temperature?" Oral presentation at the annual meeting of the Association of American Geographers (2003).
- Pederson, Neil A., Jacoby, G., Cook, E.R.** "Big (and old) trees: Fire hoses for a smoldering climate." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).
- Pederson, Neil A., Cook, E.R.,** Hopton, H.M., **Jacoby, G.C.** "Evidence of vigorously growing old trees in eastern U.S. forests." Poster presentation at the fall meeting of the American Geophysical Union (2004).
- Pederson, Neil A., Jacoby, G., Cook, E.R.** "Vigorous ancient oaks: Life lessons from old trees." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Pederson, Neil A., Cook, E.R.** Hopton, H.M., **Jacoby, G.,** Griffin, K. "Evidence of accelerated growth in old trees: A new sink for old carbon?" Oral presentation at the International Dendrochronological Conference (2006).
- Pelini, Shannon L., Hellmann, J.J.** "The role of adaptation and differentiation in geographic range shifts under climate change." Oral presentation at the annual meeting of The Ecological Society of America (2008).
- Pelini, Shannon L., Hellmann, J.J.** "Predicting the impact of climate change on animal distributions: A test of range shift capacity in two butterfly species." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Petters, M.D., **McMeeking, Gavin R.,** Lee, T., **Kreidenweis, S.M.,** Carrico, C.M., Collett Jr., J.L., Ziemann, P.J. "Observations of hygroscopic and optical properties of biogenic secondary organic aerosol generated using a simple continuous flow reaction chamber." Poster presentation at the annual meeting of the American Association for Aerosol Research (2008).
- Pett-Ridge, Jennifer,** Silver, W.L., **Firestone, M.K.** "Redox and the nitrogen cycle: How oxic/anoxic variability affects nitrous oxide production and nitrogen cycling in a wet tropical soil." Oral presentation at the Global Change Education Program Orientation (2002).
- Pett-Ridge, Jennifer,** Silver, W.L., **Firestone, M.K.** "Spatial and temporal heterogeneity of redox fluxation and microbial communities in a tropical soil." [Oral presentation](#) at the Global Change Education Program Orientation (2003).
- Pett-Ridge, Jennifer,** Silver, W.L., **Firestone, M.K.** "Are soil H<sub>2</sub> concentrations a biologically relevant proxy for soil redox status in upland tropical soils?" Poster presentation at the fall meeting of the American Geophysical Union (2004).
- Pett-Ridge, Jennifer,** Templer, P., Dubinsky, E., Silver, W.L., **Firestone, M.K.** "Microbes on the redox ladder: Community and trace gas dynamics (H<sub>2</sub>, O<sub>2</sub>, CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>, CO) in a highly variable wet tropical soil." Oral presentation at the annual meeting of The Ecological Society of America (2007).
- Placella, Sarah A.,** Brodie, E.L., Andersen, G.L., Herman, D.J., **Firestone, M.K.** "Linking nitrification with nitrifier community structure as defined by high density microarray." Poster presentation at the annual meeting of the American Society for Microbiology (2007).



- Placella, Sarah A., Firestone, M.K.** “Climate change effects on nitrogen cycling in an annual grassland.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2007).
- Placella, Sarah A., Firestone, M.K.** “Response of nitrogen processes and microbial transcripts to soil wet-up.” Oral presentation at the Global Change Education Program Orientation (2010).
- Placella, Sarah A., Herman, D.J., Firestone, M.K.** “Using transcripts abundance to identify the origin of nitrous oxide emissions during soil wet-up.” Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Portier, E., Yang, Wendy H., Silver, W.L.** “Pepperweed invasion increases nitrogen cycling rates in a managed grassland.” Poster presentation at the annual meeting of The Ecological Society of America (2011).
- Portier, E., Yang, Wendy H., Silver, W.L.** “Pepperweed invasion increases nitrogen cycling rates in an irrigated grassland.” Oral presentation at the fall meeting of the American Geophysical Union (2011).
- Powell, T., Galbrsith, D., Christoffersen, Bradley J., Harper, A., Imbuziero, H., Rowland, L., Brando, P.M., da Costa, A. Costa, M.H., Levine, N.M., Malhi, Y., Saleska, S.R., Williams, M., Meir, P., Moorcroft, P.P.R.** “Evaluating model predictions of carbon fluxes for Amazonian rainforests under chronic and severe drought.” Oral presentation at the annual meeting of The Ecological Society of America (2012).
- Price, Heather U., Jaffe, D.A., Doskey, P.V.** “The Texas Air Quality Study.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).
- Price, Heather U., Jaffe, D.A., Doskey, P.V.** “Airborne measurements of CO, O<sub>3</sub>, NMHCs and aerosol scattering in the northeast Pacific during PHOBEA-II.” Oral presentation at the northwest regional meeting of the American Chemical Society (2001).
- Price, Heather U., Jaffe, D.A., Doskey, P.V., McKendry, I.** “Airborne measurements of NMHCs, O<sub>3</sub>, CO and aerosol scatter in the northeastern Pacific during the spring of 2001 PHOBEA-II Campaign.” Poster presentation at the fall meeting of the American Geophysical Union (2001).
- Price, Heather U., Jaffe, D.A., Doskey, P.V.** “Airborne measurements of CO, O<sub>3</sub>, NMHCs and aerosol scattering in the northeast Pacific during PHOBEA-II.” Poster presentation at the annual ACE-ASIA Workshop (2001).
- Price, Heather U., Doskey, P.V., Jaffe, D.A.** “Airborne measurements of CO, O<sub>3</sub>, NMHCs and aerosol scattering in the northeast Pacific during PHOBEA-II.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).
- Price, Heather U., Jaffe, D.A., Doskey, P.V., Jaegle, L.** “Determination of OH during trans-Pacific transport of pollutants using NMHC ratios and backward trajectories: Role of heterogeneous chemistry.” Poster presentation at the fall meeting of the American Geophysical Union (2002).
- Price, Heather U., Doskey, P.V., Jaffe, D.A.** “Observations of NMHCs, CO, ozone, and aerosol scatter from a small aircraft in the Northeast Pacific during PHOBEA-II.” Oral presentation at the Global Change Education Program Orientation (2002).
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- Price, Heather U., Jaffe, D.A., Doskey, P.V., Bertschi, I., Snow, J.** “Determination of OH during trans-Pacific transport of pollutants using NMHC ratios and backward trajectories: Role of heterogeneous chemistry.” Oral presentation at the International Conference on Atmospheric Sciences and Applications to Air Quality (2003).
- Price, Heather U., Jaffe, D.A., Doskey, P.V., Bertschi, I., Snow, J.** “Determination of OH during trans-Pacific transport of pollutants using NMHC ratios and backward trajectories: Role of heterogeneous chemistry.” Oral presentation at the annual meeting of the NOAA Intercontinental Transport and Chemical Transformation Working Group (2003).
- Pritchard S.G., Strand, A.E., Taylor, B.N., Cooper, E.R., **McCormack, M. Luke**, Zhang, S. “Effects of CO<sub>2</sub> and nitrogen enrichment on production, standing crop, and survivorship of mycorrhizal root tips in a loblolly pine FACE experiment over 12 years.” Poster presentation at the annual meeting of The Ecological Society of America (2011).
- Pritchard, S.G., Strand, AE, Taylor, B.N., Cooper, E.R., Zhang, S., Breland, S., **McCormack, M. Luke** “Production, standing crop, and survivorship of mycorrhizal root tips in a loblolly pine forest exposed to free air CO<sub>2</sub> enrichment for a decade: Interactive effects of soil N availability.” Poster presentation at the International Meeting on The Ecology of Soil Microorganisms (2011).
- Pszenny, A., Cotter, K., Deegan, B., **Fischer, Emily V.**, Johnson, D. “Diel variability of total and speciated water-soluble inorganic iodine in PM<sub>2.5</sub> aerosol at a southern California coastal site.” Poster presentation at the fall meeting of the American Geophysical Union (2007).
- Randles, Cynthia A.**, Russell, L.M., **Ramaswamy, V.** “Hygroscopic growth of organic-salt aerosol mixtures and effects on their optical properties.” Poster presentation at the Gordon Conference on Solar Radiation (2003).
- Randles, Cynthia A.**, Russell, L.M., **Ramaswamy, V.** “Hygroscopic growth of atmospheric aerosols and their optical properties.” Oral presentation at the Global Change Education Program Orientation (2003).
- Randles, Cynthia A.**, Russell, L.M., **Ramaswamy, V.** “Hygroscopic and optical properties of organic sea salt aerosol and consequences for climate forcing.” Poster presentation at the annual science meeting of the International Global Atmospheric Chemistry (IGAC) Project (2004).
- Randles, Cynthia A.**, Russell, L.M., **Ramaswamy, V.** “Hygroscopic growth of aerosols and their optical properties.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Randles, Cynthia A., Ramaswamy, V.** “Aerosol absorption: A sensitivity study over Asia.” Marvin L. Wesely [Award address](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Randles, Cynthia A., Ramaswamy, V.** “Asian aerosols: A Geophysical Fluid Dynamics Laboratory general circulation model sensitivity study of model response to aerosol optical depth and aerosol absorption.” Oral presentation at the fall meeting of the American Geophysical Union (2007).
- Ravelo, Rose M.** “Soot chemistry.” Oral presentation at the Global Change Education Program Orientation (2005).



- Ravelo, Rose M., Francisco, J.S.** “Alkyl atmospheric chemistry.” Oral presentation at the Global Change Education Program Orientation (2006).
- Ravelo, Rose M., Francisco, J.S.** “Atmospheric chemistry of alkyl compounds.” [Oral presentation](#) at the Global Change Education Program Orientation (2007).
- Reed, Kevin A., Jablonowski, C.** “Assessing the significance of varying AGCM physics packages on idealized tropical cyclone simulations.” Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Reed, Kevin A., Jablonowski, C.** “Idealized tropical cyclones in atmospheric general circulation models: Sensitivity to initial conditions and physical parameterizations.” Oral presentation at the annual meeting of the American Meteorological Society, Conference on Hurricanes and Tropical Meteorology (2010).
- Reed, Kevin A., Jablonowski, C.** “Idealized tropical cyclones in atmospheric general circulation models: Sensitivity to convective parameterizations.” Oral presentation at the 29<sup>th</sup> AMS Conference on Hurricanes and Tropical Meteorology (2010).
- Reed, Kevin A., Jablonowski, C.** “Idealized tropical cyclone simulations of intermediate complexity: A test case for AGCMs.” Poster presentation at the fall meeting of the American Geophysical Union (2011).
- Reed, Kevin A., Jablonowski, C.** “Evaluating the impact of the CAM 4 dynamical core in idealized tropical cyclone simulations.” Oral presentation at the annual meeting of the American Meteorological Society (2011).
- Reed, Kevin A., Jablonowski, C.** “Evaluating the uncertainty of tropical cyclone simulation in general circulation models.” Poster presentation at the annual meeting of the Michigan Geophysical Union (2011).
- Reed, Kevin A., Jablonowski, C., Taylor, M.A.** “Evaluating the potential of CAM 5 HOMME to simulate idealized tropical cyclones.” Poster presentation at the annual meeting of the Community Earth System Model Working Group (2011).
- Reed, Kevin A., Jablonowski, C.** “Assessing the uncertainty of tropical cyclone simulations in GCMs.” Poster presentation at the International Summit on Hurricanes and Climate Change.” (2011).
- Reed, Kevin A., Jablonowski, C.** “Towards the simulation of tropical cyclones in high resolution GCMs.” Invited oral presentation at the International Workshop on Numerical Methods for Scale Interactions (2011).
- Reed, Kevin A., Jablonowski, C.** “High-resolution simulations of tropical cyclones in the NCAR community Atmosphere Model.” Oral presentation at the annual meeting of the American Meteorological Society (2012).
- Reed, Kevin A., Jablonowski, C., Wehner, M.F.** “Tropical cyclone characteristics in the High-Resolution Community Atmosphere Model.” Oral presentation at the annual meeting of the American Meteorological Society (2012).
- Reed, Kevin A., Wehner, M.F., Jablonowski, C.** “Towards the direct simulation of tropical cyclones in the high-resolution Community Atmosphere Model.” Oral presentation at the General Assembly of the European Geophysical Union (2012).



- Reed, Sarah E., Amundson, R.G.** “A new approach to testing the fossorial rodent hypothesis of Mima mound formation using airborne-based LIDAR and a diffusive sediment transport model.” Poster presentation at the fall meeting of the American Geophysical Union (2007).
- Reed, Sarah E., Amundson, R.G.,** Vollmar, J., Heimsath, A. “Using airborne based LIDAR to test a biologic hypothesis of mima mound formation in the Great Central Valley, California.” Oral presentation at the annual meeting of the Geological Society of America (2008).
- Reed, Sarah E., Amundson, R.G.** “Evidence for biologic response to pedogenesis along the Merced River chronosequence, Central Valley, California.” Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Reed, Sarah E., Amundson, R.G.** “Pedologic-biologic feedbacks in seasonal wetlands: Does biologic response to soil weathering lead to biodiversity in Mima mound-vernal pool ecosystems?” Oral presentation at the International Conference on Biodiversity (2011).
- Reidmiller, D.R., **Jaffe, D.A., Fischer, Emily V.,** Finley, B., Kangas, R. “NO<sub>x</sub> observations in the free troposphere at the Mt. Bachelor Observatory.” Poster presentation at the Symposium on Atmospheric Chemistry and Physics at Mountain Sites (2010).
- Restrepo-Coupe, N., **Christoffersen, Bradley J.,** Amaral, D.E., Camargo, P.B., **Saleska, S.R.** “Carbon loss on the other side of drought: Excess wet season precipitation and cloudiness during La Nina suppresses Amazon forest photosynthesis.” Poster presentation at the fall meeting of the American Geophysical Union (2009).
- Rivers, N., **Mueller, Kevin E.,** Mueller, C.W., Oleksyn, J., Hale, C., **Freeman, K.H., Eissenstat, D.** “Impacts of leaves, roots, and earthworms on soil organic matter and distribution in sycamore maple stands.” Poster presentation at the fall meeting of the American Geophysical Union (2009).
- Roesler, Erika L., Posselt, D.J., Rood, R.B.** “Investigation of aerosol-cloud interactions for Arctic stratiform clouds in a large eddy simulation.” Oral presentation at the Global Change Education Program Orientation (2008).
- Roesler, Erika L., Posselt, D.J., Rood, R.B.** “Simulations of Arctic aerosol-cloud interactions.” Oral presentation at the Global Change Education Program Orientation (2009).
- Roesler, Erika L., Posselt, D.J., Rood, R.B.** “Comparison of bin and bulk microphysics in simulations of springtime Arctic mixed phase stratocumulous clouds with a higher order turbulence parameterization.” Poster presentation at the fall meeting of the American Geophysical Union (2011).
- Roesler, Erika L., Posselt, D.J.** “Large eddy simulations of springtime Arctic mixed-phase clouds.” Poster presentation at the annual meeting of the Four Corners Section of the American Physical Society (2012).
- Rogers, A, Ainsworth, Elizabeth A.,** Bernacchi, C.J., Gibon, Y., Stitt, M., **Long, S.P.** “The response of plant carbohydrates to elevated CO<sub>2</sub>: What have we learned from FACE studies?” Oral presentation at the International Congress on Photosynthesis (2005).



- Rose, W.I., Teasdale, R., Bailey, J., Chertkoff, D., Coombs, M., Eisinger, C., Hidayat, D., Riley, C., Rodriguez, L., Sahetapy-Engel, S., **Wardell, Lois Jean**, Witter, J., Young, K. "Southwest Pacific volcano tour, July 2000: Prototype for coordinated, multi-university graduate programs in volcanology." Invited oral presentation at the fall meeting of the American Geophysical Union (2000).
- Ryder, O.S., Fitzgerald, E., **Ault, Andrew P.**, Thornton, J.A., **Prather, K.A.**, Bertram, T.H. "Observation of N<sub>2</sub>O<sub>5</sub> reactivity on ambient aerosol particles: Impact of particle mixing state on heterogeneous reaction kinetics." Poster presentation at the fall meeting of the American Geophysical Union (2011).
- Sachs, J.P.**, Sachse, D., Smittenberg, R., Carre, M., Mugler, I., Nelson, D.B., **Atwood, Alyssa R.**, Ladd, N. "ITCZ shifts during the last millennium from lipids on tropical Pacific islands." Invited oral presentation at the fall meeting of the American Geophysical Union (2009).
- Saleska, S.**, Goncalves, L.G., Baker, I., Costa, M., Poulter, B., **Christoffersen, Bradley J.**, Da Rocha, H.R., Didan, K., Huete, A., Imbuziero, H., Kruijt, B., Manzi, A., von Randow, C., Restrepo-Coupe, N., Silva, R., Tota, J., Denning, S., Gulden, L., Rosero, E., Zeng, X. "Effects of seasonality and land use on carbon and water fluxes across the Amazon basin: Synthesizing results from satellite based remote sensing, towers, and models." Invited oral presentation at the fall meeting of the American Geophysical Union (2008).
- Saleska, S.R.**, Restrepo-Coupe, N., Wiedemann, K.T., da Silva, R., Amaral, D., **Christoffersen, Bradley J.**, Wu, J., Alves, L.F., Camargo, P.B., Oliveira, R.C., Huete, A.R., Didan, K., Solano, R. "Amazon forest vegetation and carbon dynamics under drought and flood." Invited oral presentation at the fall meeting of the American Geophysical Union (2011).
- Saltzman, E.S.**, **Dahl, Elizabeth E.**, Yvon-Lewis, S.A. "Alkyl nitrate saturation anomalies in the tropical Pacific Ocean during PHASE-1." Poster presentation at the fall meeting of the American Geophysical Union (2005).
- Sandholm, S.T., **Case, Anne T.**, **Tan, D.K.** "Development of laser induced fluorescence sensor for measurement of atmospheric HCHO." Poster presentation at the fall meeting of the American Geophysical Union (2002).
- Schaeffer, S., **Sistla, Seeta A.**, Boot, C.M., Roux-Michollet, D., **Schimel, J.P.** "Effect of speed and intensity of freezing on microbial C and N cycling in two Arctic tundra soils." Oral presentation at the fall meeting of the American Geophysical Union (2010).
- Schichtel, B., Malm, W., **Collett Jr., J.**, Sullivan, A., **Holden, Amanda S.**, Patterson, L. "Estimating the contribution of smoke to fine particulate matter using a hybrid-receptor model." Oral presentation at the annual meeting of the Air and Waste Management Association (2008).
- Schiffer, N.J.**, **Nesbitt, S.W.** "How realistic is precipitation over the western U.S. and Mexico in IPCC AR4 GCMs?" Oral presentation at the American Meteorological Society (2011).
- Schiffer, N.J.**, **Nesbitt, S.W.** "Problems with the North American monsoon in CMIP/IPCC GCM precipitation." Poster presentation at the fall meeting of the American Geophysical Union (2012).



- Schmitz, P.G., **Gray, Sharon B.**, Bernacchi, C., **Leakey, A.B.D.**, Kumar, P., Long, S.P. "Altered water extraction and hydraulic redistribution of agricultural crop soybean at daily time scales in open-air elevation of CO<sub>2</sub> under drought." Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Schoennagel, Tania, Turner, M.G.**, Romme, W.H., **Waller, D.M.** "The effects of fire interval on initial patterns of succession in Yellowstone National Park." [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).
- Schoennagel, Tania, Turner, M.G.**, Romme, W.H., **Waller, D.M.** "The effect of fire interval on successional patterns in Yellowstone National Park." Poster presentation at the annual meeting of The Ecological Society of America (2000).
- Schoennagel, Tania, Turner, M.G.**, Romme, W.H., **Waller, D.M.** "Temporal and spatial effects of fire on initial pathways of succession across the Yellowstone landscape." Oral presentation at the annual meeting of The Ecological Society of America (2001).
- Schoennagel, Tania, Turner, M.G.**, Romme, W.H., **Waller, D.M.** "Spatial and temporal influences of fire regimes on initial pathways of succession across the Yellowstone Landscape." Oral presentation at the annual meeting of the U.S. chapter of the International Association of Landscape Ecology (2001).
- Schoennagel, Tania, Turner, M.G.**, Romme, W.H., **Dale, V.H.** "Temporal and spatial effects of fire on initial pathways of succession across the Yellowstone landscape." [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).
- Schoennagel, Tania, Waller, D.M., Turner, M.G.**, Romme, W.H. "The influence of fire interval, elevation and soil fertility on postfire plant communities in Yellowstone National Park." Oral presentation at the annual meeting of the U.S. chapter of the International Association of Landscape Ecology (2002).
- Schoennagel, Tania, Turner, M.G.**, Fall, A., Kashian, D.M. "The influence of climatically altered fire regimes on successional patterns across the Yellowstone landscape." Oral presentation at the annual meeting of The Ecological Society of America (2003).
- Schoennagel, Tania, Turner, M.G.**, Fall, A., Kashian, D.M. "Altered fire regimes and successional patterns across the Yellowstone landscape." Oral presentation at the annual meeting of the U.S. chapter of the International Association of Landscape Ecology (2003).
- Silver, W.L., Yang, Wendy H.**, Weber, K.A. "Feammox: A novel pathway for ammonium oxidation and nitrogen loss from terrestrial ecosystems." Oral presentation at the annual meeting of The Ecological Society of America (2009).
- Silver, W.L.**, Hall, S.J., Liptzin, D., **Yang, Wendy H.** "The iron redox engine drives carbon, nitrogen, and phosphorous cycling in terrestrial ecosystems." Invited oral presentation at the fall meeting of the American Geophysical Union (2011).
- Simpson, W.R.**, Hönninger, G., **Alvarez-Aviles, Laura**, Sturm, M., Douglas, T., Domine, F. "Halogen activation in the Arctic springtime boundary layer: How chemical physics helps us to understand field observations." Invited oral presentation at the Joint Institute for Laboratory Astrophysics (2005).



- Simpson, W.R., Alvarez-Aviles, Laura*, Hoenninger, G., Platt, U., Douglas, T.A., Sturm, M., Domine, F. "Field studies of halogen activation and its relationship to tropospheric ozone depletion and mercury deposition." Poster presentation at the Atmospheric Chemistry Gordon Research Conference (2005).
- Sistla, Seeta A., Schimel, J.P.* "Linking above ground and below ground responses to chronic soil warming." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Sistla, Seeta A., Schimel, J.P.* "Exploring the impacts of warming on Arctic soils." Oral presentation at the Global Change Education Program End-of-Summer Workshop (2008).
- Sistla, Seeta A., Rastetter, E., Schimel J.P.* "The effects of long-term warming on tundra soil enzyme dynamics: Linking empirical data with modeled microbial N-limitation." Oral presentation at the annual New Phytologist Symposium (2011).
- Sistla, Seeta A., Schimel, J.P.* "The effects of long-term warming on tundra soil enzyme dynamics." Oral presentation at the International Conference on Enzymes in the Environment (2011).
- Sistla, Seeta A., Schimel, J.P.* "Exploring the impacts of warming on arctic soils: Increasing shrub dominance and changing below ground processes." Poster presentation at the fall meeting of the American Geophysical Union (2008).
- Sistla, Seeta A., Schimel, J.P.* "Exploring the impacts of experimental warming in the Arctic: A shift to shrub dominance and biogeochemical changes in deeper soils." Oral presentation at the annual meeting of The Ecological Society of America (2009).
- Sistla, Seeta A., Schimel, J.P.* "Exploring how two decades of warming have impacted Arctic soils: A phenological perspective." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Sistla, Seeta A., Schimel, J.P., Rastetter, E.B.* "The effects of long term warming on tundra soil decomposition dynamics: Linking empirical and modeled data." Poster presentation at the fall meeting of the American Geophysical Union (2011).
- Sistla, Seeta A., Schimel, J.P.* "The effects of long term warming on tundra soil enzyme dynamics." Oral presentation at the annual meeting of The Ecological Society of America (2011).
- Sistla, Seeta A., Rastetter, E.B., Schimel, J.P.*, Exploring the consequences of winter versus summer permafrost soil warming using a microbial physiology explicit decomposition model." Oral presentation at the annual meeting of The Ecological Society of America (2012).
- Slowey, N.C., Wagner, Amy J.* "Oxygen isotopes in seawater from the Texas-Louisiana shelf." Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Smith, Mackenzie L., Martin, S.T.* "Hygroscopic tandem DMA measurements of inorganic nanoparticles." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Smith, Mackenzie L., Martin, S.T.* "Crystallization of externally mixed ammonium sulfate nanoparticles." Oral presentation at the Global Change Education Program End-of-Summer Workshop (2008).



- Smith, Mackenzie L., Martin, S.T.** “The effects of secondary organic material on the hygroscopic properties of ammonium sulfate seed particles.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Snow, J.A., **Jaffe, D.A.**, Weiss, P.S., **Price, Heather U.**, Jaegle, L., McClintic, A. “Measurement of polluted air mass from Eurasia at a surface site in the Pacific Northwest: The importance of transport mechanisms on the chemical composition.” Poster presentation at the fall meeting of the American Geophysical Union (2002).
- Steinweg, J.M., **Ernakovich, Jessica G.**, Prucha, J., Conant, R.T., **Wallenstein, M.D.** “Soil microbial temperature acclimation through changes in enzyme activity.” Oral presentation at the annual meeting of The Ecological Society of America (2008).
- Strand, A.E., Pritchard, S.G., Taylor B.N., Cooper, E.R., Zhang, S., Breland, S., **McCormack, M. Luke.** “Influence of rhizomorph presence upon the persistence of temperate forest fine roots: A summary of a 10 year FACE study.” Oral presentation at the International Meeting on the Ecology of Soil Microorganisms (2011).
- Sudderth, E.A., Byrne, K.M., Gherardi, L., Reichmann, L.G., **Placella, Sarah A.**, Herman, D.J., St. Clair, S.B., Adler, P.B., **Firestone, M.K., Torn, M.S.**, Ackerly, D.D., Sala, O.E. “How do linked plant-soil processes affect ecosystem responses to climate change?” Oral presentation at the annual meeting of The Ecological Society of America (2011).
- Sullivan, A.P., **Holden, Amanda S.**, Patterson, L.A., Kreidenweis, S.M., Malm, W.C., Hao, W.M., Wold, C.E., **Collett Jr., J.L.** “A method for smoke marker measurements for determining the contribution of biomass burning to ambient PM<sub>2.5</sub> organic carbon.” Oral presentation at the annual meeting of the Air and Waste Management Association (2008).
- Taillandier, A.S., **Alvarez-Aviles, Laura**, Domine, F., **Simpson, W.R.**, Houdier, S., Douglas, T., Sturm, M., Stolzberg, R. “Coupled physical and chemical study of the subarctic snowpack: Feedback of metamorphic intensity on climate change.” Poster presentation at the fall meeting of the American Geophysical Union (2004).
- Taillandier, A.S., **Alvarez-Aviles, Laura**, Domine, F., **Simpson, W.R.**, Douglas, T., Sturm, M., Severin, K., Houdier, S. “Post depositional physical and chemical changes in snowpacks: The impact of metamorphic intensity.” Oral presentation at the fall meeting of the American Geophysical Union (2004).
- Teh, Y.A., **Yang, Wendy H.**, **Silver, W.L.** “Quantifying gross fluxes of nitrous oxide and dinitrogen gas using a novel isotope pool dilution technique.” Oral presentation at the General Assembly of the European Geophysical Union (2010).
- Thompson, R.S., **Fischer, Emily V.**, **Jaffe, D.A.**, Di Perro, M. “Integrating MISR, MODIS, and CALIPSO satellite data with in-situ measurements at Mount Bachelor to determine aerosol plume characteristics.” Poster presentation at the fall meeting of the American Geophysical Union (2009).
- Titcombe, Mari E.**, Roberts, J., Hanson, D.R., **McMurry, P.H.** “Direct measurement of neutral molecular clusters by chemical ionization mass spectrometry: Elucidating the mechanisms of new particle formation in the atmosphere.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).



- Titcombe, Mari E.**, Zhao, J., Eisele, F., *McMurry, P.H.*, Roberts, J. “Quantification of mass dependent response factors in a novel chemical ionization mass spectrometer.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2008).
- Titcombe, Mari E.**, Chen, M., Zhao, J., Hanson, D.R., *McMurry, P.H.* “Chemical nucleation of sulfuric acid and reduced organic species.” Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Titcombe, Mari E.**, Zhao, J., Hanson, D.R., *McMurry, P.H.* “The chemical nucleation of sulfuric acid and amines: Reaction chamber studies and atmospheric observations.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Tolwinski-Ward, S.E., *Evans, M.N.*, Hughes, M.K., **Anchukaitis, Kevin J.** “Toward process based modeling of tree ring width for Bayesian climate reconstructions.” Oral presentation at the International Meeting of Statistical Climatology (2010).
- Torn, M.S.**, Bernard, S.M., Castanha, C., Fisher, M.L., Hopkins, F.M., **Placella, Sarah A.**, St. Clair, S.B., Salve, R., Sudderth, E., Herman, D., Ackerly, D., *Firestone, M.K.* “Linking the response of annual grasslands to warming and altered rainfall across scales of gene expression, species, and ecosystem.” Oral presentation at the fall meeting of the American Geophysical Union (2007).
- Trzaska, Jaclyn Secora M.**, Francis, J., *Veron, D.E.* “GPS radio occultations of arctic temperature profiles.” Poster presentation at the American Meteorological Society (2007).
- Veron, D.E.*, Foster, M., **Secora, Jaclyn M.** “Evaluating a stochastic shortwave radiation routine using a single column model.” Poster presentation at the American Meteorological Society (2006).
- Viala, D.V., Mordecai, E.A., **Sistla, Seeta A.**, Albertson, L.K., Gosnell, J.S., Jarmillo, A.G. “Competition: Defense tradeoffs and the maintenance of producer diversity.” Oral presentation at the annual meeting of The Ecological Society of America (2009).
- Vizcaino, M.A., *Dunbar, R.B.*, Wahl, D., **Moy, Christopher M.**, Mucciarone, D.A., Anderson, L., Guilderson, T.P. “Holocene paleoclimate characterization in Lago Fagnano (Tierra del Fuego) using sedimentary, physical and geochemical proxies.” Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Wagner, Amy J.**, Guilderson, T.P., *Slowey, N.C.* “Gulf of Mexico corals as monitors of environmental change.” [Oral presentation](#) at the Global Change Education Program Orientation (2004).
- Wagner, Amy J.**, Guilderson, T.P., *Slowey, N.C.*, Cole, J.E. “Radiocarbon in the Gulf of Mexico and Cariaco basin surface waters as recorded in hermatypic corals during the pre- to post-bomb era.” Oral presentation at the International Conference on Accelerator Mass Spectrometry (2005).
- Wagner, Amy J.**, *Slowey, N.C.* “Gulf of Mexico corals as monitors of environmental change.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).



- Wagner, Amy J., Slowey, N.C.**, A stable isotope dendrochronology approach to reconstructing interannual and interdecadal tropical climate variability." Oral presentation at the Global Change Education Program Orientation (2006).
- Wagner, Amy J., Slowey, N.C.** "Corals at the Flower Garden Banks: Monitors of environmental change and North American climate variability." Poster presentation at the fall meeting of the American Geophysical Union (2007).
- Wagner, Amy J., Slowey, N.C.** "Surface radiocarbon in the Gulf of Mexico and Caribbean as recorded in corals." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Wagner, Erin Hokanson** "Solar penetration in a coupled atmosphere-ocean model." Oral presentation at the Global Change Education Program Orientation (2005).
- Wagner, Erin Hokanson** "The effects of ocean solar penetration in the fast ocean atmosphere model." Oral presentation at the Global Change Education Program Orientation (2006).
- Wagner, Erin Hokanson, Turner, D.** "Measuring boundary layer turbulence with Raman lidar: Implications for climate models." Oral presentation at the Global Change Education Program Orientation (2008).
- Wagner, Erin Hokanson, Turner, D.** "Detecting boundary layer turbulence structure using Raman lidar." [Oral presentation](#) at the Global Change Education Program Orientation (2009).
- Ward, Eric J., Oren, R.** "Improving models of forest carbon and water cycling: Revisiting assumptions and incorporating variability." [Oral presentation](#) at the Global Change Education Program Orientation (2008).
- Ward, Eric J., Bell, D.M., Clark, J.S., Kim, H.S., Oren, R.** "Evaluating uncertainty in forest water and carbon flux estimates." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2010).
- Wardell, Lois J., Kyle, P.R., Chaffin, C.** "CO<sub>2</sub> emissions from Mt. Erebus volcano, Antarctica." Oral presentation at the International Symposium on Antarctic Earth Science (1999).
- Wardell, Lois J., Kyle, P.R.** "Carbon dioxide soil gas studies in the Sevilleta." Oral presentation at the spring meeting of the New Mexico Geological Society (1999).
- Wardell, Lois J., Kyle, P.R.** "CO<sub>2</sub> flux measurements of an active volcano." Poster presentation at the Annual Community Meeting of the UNAVCO (1999).
- Wardell, Lois J., Kyle, P.R., Chaffin, C.** "CO<sub>2</sub> emissions from Mt. Erebus volcano, Antarctica." Poster presentation at the International Symposium on Antarctic Earth Science (1999).
- Wardell, Lois J., Kyle, P.R., Dunbar, N., Christenson, B.R.** "Carbon dioxide and sulfur dioxide flux measurements and melt inclusion results from White Island volcano, New Zealand." Poster presentation at the General Assembly of the International Association of Volcanology and Chemistry of the Earth's Interior (2000).
- Wardell, Lois J., Kyle, P.R.** "CO<sub>2</sub> flux measurements from ice tower fumaroles on Mt. Erebus volcano, Antarctica." Oral presentation at the annual meeting of the Geological Society of London (2001).



Wardell, Lois J., Kyle, P.R., Counce, D. “The use of chemical traps to determine metal and halogen flux from Mt. Erebus, Antarctica.” Poster presentation at the fall meeting of the American Geophysical Union (2002).

Wardell, Lois J., Kyle, P.R., Counce, D. “Volatile metal and halogen flux measurements from White Island, New Zealand and Mt. Erebus, Antarctica using chemical traps.” Oral presentation at the Chapman Conference on Volcanoes and the Earth’s Atmosphere (2002).

Wardell, Lois J., Kyle, P.R., Counce, D. “Volcanic carbon dioxide and trace metal emissions from Mt. Erebus, Antarctica and their contributions to global atmospheric budgets.” Oral presentation at the Global Change Education Program Orientation (2002).

Wardell, Lois J., Kyle, P.R., Counce, D. “Trace metal and halogen flux measurements at White Island, New Zealand, based on the chemical trap method.” Oral presentation at the International Association of Volcanology Conference on Volcanic Gases (2003).

Wardell, Lois J., Kyle, P.R. “Volcanic carbon dioxide measurements at Mt. Erebus, Antarctica.” Poster presentation at the annual meeting of the International Union of Geodesy and Geophysics (2003).

Watson, Anthony, Long, S.P. “DNA micro-array analysis of soybean growth under elevated ozone and carbon dioxide.” Oral presentation at the Global Change Education Program Orientation (2004).

Weiss, P.S., Jaffe, D., Prestbo, E., McClintick, A., Price, Heather U. “Spring and summer observations of carbon monoxide, ozone, non-methane hydrocarbons and total gaseous mercury at Cheeka Peak, Washington during the PHOBEA-II campaign.” Oral presentation at the fall meeting of the American Geophysical Union (2001).

Werner, Cynthia A., Davis, K., Chuixaing, Y., Bakwin, P., Hurst, D., Lock, L. “Temporal variability in methane fluxes from a northern forest ecosystem.” [Poster presentation](#) at the Global Change Education Program End-of-Summer Workshop (2000).

Westervelt, D.M., Moore, Richard H., Nenes, A., Adams, P.J. “Effect of organic spray aerosol on global and regional cloud condensation nuclei concentrations.” Poster presentation at the fall meeting of the American Geophysical Union (2009).

Whiteman, C.D., Clements, Craig B., McMeeking, Gavin R., Clements, Craig B., Powell, S. “Evolution of the nocturnal atmospheric boundary layer over a Columbia basin vineyard.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2001).

Whiteman, C.D., Clements, Craig B., Horel, J. D. “Turbulent and radiative flux divergences in cold pools that form within a high elevation basin.” Oral presentation at the American Meteorological Society (2002).

Wolf, A., Anderegg, W., Busby, Posy E., Zimmerman, N., Christensen, J. “Widespread plant movement in response to 20<sup>th</sup> century warming disproportionately affects endemic species.” Poster presentation at the annual meeting of The Ecological Society of America (2012).



- Williams, A.P., Meko, D.M., Woodhouse, C.A., Cook, E., **Swetnam, T.W.**, **Macalady, Alison K.**, Allen, C.D., Rauscher, S.A., Jiang, X., Grissino-Mayer, H., **McDowell, N.G.**, Cai, M. "Forest response to 1,000 years of drought variability in the Southwestern United States." Poster presentation at the fall meeting of the American Geophysical Union (2011).
- Williams, A.P., Allen, C.D., **Macalady, Alison K.**, Griffin, D., Woodhouse, C.A., Meko, D.M., **Swetnam, T.W.**, Rauscher, S.A., Seager, R., Grissino-Mayer, H.D., Dean, J.S., Cook, E.R., Gangodagamage, C., Cai, M., **McDowell, N.G.** "Climate change and the rising cost of living for forests in the southwestern United States and beyond." Poster presentation at the fall meeting of the American Geophysical Union (2012).
- Williams, Brent J.**, **Goldstein, A.H.**, Kreisberg, N.M., Hering, S.V. "Hourly speciated organic aerosol composition in Riverside CA during SOAR 2005." Poster presentation at the fall meeting of the American Geophysical Union (2006).
- Williams, Brent J.**, **Goldstein, A.H.**, **Novakov, T.**, Kreisberg, N.M., Hering, S.V. "Defining atmospheric aerosol sources using thermal desorption aerosol GC/MS-FID (TAG)." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Williams, Brent J.**, **Goldstein, A.H.**, Kreisberg, N.M., Hering, S.V., Prather, K.A., Shields, L., Qin, X., **Worsnop, D.R.**, Ulbrich, I.M., Docherty, K.S., Jimenez, J.L. "Organic aerosol composition as measured by complementary in situ techniques." Oral presentation at the fall meeting of the American Geophysical Union (2008).
- Winiacki, Shelby E.**, **Frederick, J.E.** "Tropospheric ozone production as influenced by solar irradiance." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2001).
- Winiacki, Shelby E.**, **Frederick, J.E.** "Solar ultraviolet radiation received in an urban area." Poster presentation at the fall meeting of the American Geophysical Union (2003).
- Winiacki, Shelby E.**, **Frederick, J.E.** "Solar irradiance in the UV-B region as influenced by ozone and particulate abundances in an urban atmosphere." Oral presentation at the Global Change Education Program Orientation (2003).
- Winiacki, Shelby E.**, **Frederick, J.E.** "Solar irradiance in the UV-B region as influenced by ozone and particulate abundances in an urban atmosphere." Oral presentation at the Global Change Education Program Orientation (2004).
- Wittig, Victoria E.**, **Long, S.P.**, Karnosky, D., Post, M., Bernacchi, C. "Improving forest ecosystem models to simulate responses to global change." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2003).
- Wittig, Victoria E.**, Bernacchi, C., Zhu, X., Ceulemans, R., De Angelis, P., Gielen, B., Miglietta, F., Morgan, P.B., **Long, S.P.** "Gross primary production is stimulated for *Populus* species grown under free air carbon dioxide enrichment." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2004).
- Wittig, Victoria E.**, Naidu, S.L., Karnosky, D.F., **Long, S.P.** "The impact of tropospheric ozone on trees: A meta-analytic review." [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).



- Wittig, Victoria E., Long, S.P., Post, M.** “Impacts of tropospheric ozone on photosynthesis and stomatal conductance of trees: A meta analysis.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Wittig, Victoria E., Long, S.P., Post, M.** “Impacts of elevated CO<sub>2</sub> and tropospheric ozone on the growth and productivity of trees.” [Oral presentation](#) at the Global Change Education Program Orientation (2008).
- Worton, D.R., **Goldstein, A.H., Williams, Brent J.**, Kreisberg, N.M., Hering, S.V., Bench, G., Bouvier-Brown, N.C., Farmer, D., Docherty, K.S., Gilman, J.B., Kuster, W.C., de Gouw, J.A., Glasius, M., Kristensen, K., Surratt, J., Seinfeld, J. “Insights into anthropogenic influences on biogenic secondary aerosol production from measurements of sulfate esters and organic nitrates derived from biogenic precursors.” Poster presentation at the fall meeting of the American Geophysical Union (2010).
- Wright, P., **Cregger, Melissa A.**, Sanders, N.J., **Classen, A.T.** “Interactions among insect herbivory, invasive plants, and soil nutrients alters soil microbial function.” Oral presentation at the annual meeting of the *Association of Southeastern Biologists* (2010).
- Yang, Wendy H., Silver, W.L.** “A new method for measuring N<sub>2</sub> emissions from denitrification in soils.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).
- Yang, Wendy H.**, Ryals, R., Cusack, D., **Silver, W.L.** “Patterns in nitrogen cycling across diverse California soils subjected to nitrogen inputs.” Poster presentation at the fall meeting of the American Geophysical Union (2008).
- Yang, Wendy H.**, Teh, Y.A., **Silver, W.L.** “Denitrification to N<sub>2</sub> and N<sub>2</sub>O in a pasture peatland: A test of the <sup>15</sup>N<sub>2</sub>O pool dilution approach.” Oral presentation at the annual meeting of The Ecological Society of America (2009).
- Yang, Wendy H.**, Teh, Y.A., **Silver, W.L.** “Using <sup>15</sup>N<sub>2</sub>O pool dilution to understand N<sub>2</sub> and N<sub>2</sub>O dynamics in a peatland pasture.” Oral presentation at the fall meeting of the American Geophysical Union (2009).
- Yang, Wendy H.**, Traut, B.H., **Silver, W.L.** “The effects of plant community composition and redox on the fates of nitrate in a coastal wetland.” Oral presentation at the annual meeting of The Ecological Society of America (2010).
- Yang, Wendy H.**, Weber, K.A., **Silver, W.L.** “Nitrogen loss from upland soil via anaerobic ammonium oxidation coupled to iron reduction.” Oral presentation at the annual meeting of The Ecological Society of America (2011).
- Yang, Wendy H.**, Weber, K.A., **Silver, W.L.** “Controls on N<sub>2</sub> production via iron reduction coupled to anaerobic ammonium oxidation.” Poster presentation at the fall meeting of the American Geophysical Union (2011).
- Yang, Wendy H.**, McDowell, A.C., Brooks, P.D., **Silver, W.L.** “High precision <sup>15</sup>N-N<sub>2</sub> analysis using a gas chromatography approach on an isotope ratio mass spectrometer.” Poster presentation at the Advances in Stable Isotope Techniques and Applications Conference (2011).
- Yang, Wendy H.**, Teh, W.H., **Silver, W.L.** “Field-based measurements of gross N<sub>2</sub>O production in soils using a <sup>15</sup>N<sub>2</sub>O pool dilution technique.” Invited oral presentation at the fall meeting of the American Geophysical Union (2011).
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- Zaveri, R.A.,** Easter, R.C., Barnard, J., Reimer, N.S., West, M., **Ault, Andrew P., Prather, K.A.** “Modeling evolution of aerosol mixing state and the associated optical and CCN activation properties.” Invited oral presentation at the fall meeting of the American Geophysical Union (2009).
- Zeledon, Esther, B., Kelly, M.,** Tuxen, K. “Remote sensing of vegetation growth on a restored wetland.” Oral presentation at the annual conference of the ASPRS (2006).
- Zeledon, Esther, B., Kelly, M.** “Land use and land cover change in Nicaragua.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2006).
- Zeledon, Esther, B., Kelly, M.** “An interdisciplinary approach to understanding and assessing land use and land cover change in Nicaragua.” [Oral presentation](#) at the Global Change Education Program Orientation (2007).
- Zeledon, Esther, B., Kelly, M.** “The effect of war and its aftermath on land use and land cover change in Jinotega, Nicaragua.” Oral presentation at the Global Change Education Program Orientation (2010).
- Zelenyuk, A., Imre, D., Cuadra-Rodriguez, L.A.,** Shimpi, S., Warey, A. “Comprehensive characterization of ultrafine particulate emission from 2007 diesel engines: PM size distribution, loading, and individual particle size and composition.” Poster presentation at the fall meeting of the American Geophysical Union (2006).
- Zhong, S., Clements, Craig B.,** Li, J., Bian, X., DeWekker, S. “Washoe Zephyr- a daytime downslope wind in the lee of the Sierra Nevada.” Oral presentation at the American Meteorological Society Conference on Mountain Meteorology (2006).
- Zobitz, John M.,** Ogee, J., Monson, R.K., **Bowling, D.R.** “High resolution stable isotope partitioning of net ecosystem exchange into respiration and photosynthesis.” Oral presentation at the fall meeting of the American Geophysical Union (2005).
- Zobitz, John M.,** Ogee, J., Monson, R.K., **Bowling, D.R.** “Comparison and assessment of methods to partition net ecosystem exchange of CO<sub>2</sub> in heterogeneous environments.” Oral presentation at the Global Change Education Program End-of-Summer Workshop (2005).
- Zobitz, John M.,** Ogee, J., Monson, R.K., **Bowling, D.R.** “High resolution atmospheric monitoring of urban carbon dioxide sources.” Oral presentation at the Global Change Education Program Orientation (2006).
- Zobitz, John M.,** Ogee, J., Monson, R.K., **Bowling, D.R.** “Partitioning net ecosystem exchange of carbon dioxide.” [Oral presentation](#) at the Global Change Education Program End-of-Summer Workshop (2007).



# APPENDIX IX.

CURRENT STATUS OF PAST  
GREF FELLOWS.





**Elizabeth A. Ainsworth** – GREF Fellow 2000-2003; PhD Plant Biology 2003, University of Illinois at Urbana-Champaign; Alexander von Humboldt Postdoctoral Research Fellow 2003-2005, Jülich Research Center, Jülich, Germany; Assistant Professor of Plant Biology 2005-present, University of Illinois at Urbana-Champaign; Plant Molecular Biologist, USDA Agricultural Research Service, Global Change and Photosynthesis Research Unit.

**Steven D. Allison** – GREF Fellow 2002-2005, Marvin L. Wesely Distinguished Graduate Research Fellow 2004; PhD Biological Sciences 2005, Stanford University; Postdoctoral Scholar, Ecology and Evolutionary Biology/Earth System Science 2005-2007, University of California-Irvine; Assistant Professor, Ecology & Evolutionary Biology and Earth System Science 2007-2013; Associate Professor (tenured) Ecology & Evolutionary Systems Science, School of Biological Sciences 2013-present, University of California-Irvine.

**Laura Alvarez-Aviles** – GREF Fellow 2004-2008; PhD Environmental Chemistry 2008, University of Alaska-Fairbanks; Postdoctoral Fellow 2008-present, US Environmental Protection Agency, Research Triangle Park, NC.

**Kevin J. Anchukaitis** - GREF Fellow 2004-2006; PhD Geosciences 2007 completed under NSF IGERT funding, University of Arizona; Lamont-Doherty Postdoctoral Research Fellow 2007-2009, Columbia University; Doherty Associate Research Scientist 2009-2010, Lamont Doherty Earth Observatory, Columbia University; Lamont Assistant Research Professor 2010-2012, Lamont Doherty Earth Observatory, Columbia University; Assistant Scientist 2012-present, Woods Hole Oceanographic Institute; Adjunct Lamont Assistant Research Professor 2012-present, Lamont Doherty Earth Observatory, Columbia University.

**Alyssa R. Atwood** - GREF Fellow 2009-2013; PhD Chemical Oceanography expected 2014 currently funded by NSF, University of Washington.

**Andrew P. Ault** – GREF Fellow 2009-2010; PhD Chemistry 2010, University of California-San Diego; Atmospheric Chemistry Postdoctoral Fellow 2010-present, research advisor Vicki Grassian, University of Iowa.

**Adam P. Bateman** – GREF Fellow 2008-2011, Marvin L. Wesely Distinguished Graduate Research Fellow 2010; PhD Chemistry 2011, University of California-Irvine; Atmospheric Science Postdoctoral Fellow 2011-present, research advisor Scott Martin, Harvard University.

**Elizabeth Fay Belshe** – GREF Fellow 2010-2013; PhD Ecosystem Ecology expected 2013, University of Florida.

**Sean T. Berthrong** – GREF Fellow 2006-2009; PhD Microbial Ecology 2009, Duke University; Postdoctoral Associate Department of Horticulture 2009-present, Cornell University.



**Heidi M. Bialk** – GREF Fellow 2001-2003; PhD Molecular Environmental Toxicology 2006 completed under USDA funding; Postdoctoral Associate 2006-2007, Pat Hatcher, Department of Chemistry, Old Dominion University; University of Wisconsin-Madison; Health and Safety Leadership Associate 2007-2011, United Technologies Corporation, Sikorsky Aircraft Environmental; Principal Scientist 2011-present, PepsiCo.

**Marcia L. Branstetter** – GREF Fellow 1999-2001; PhD Hydrology 2001, University of Texas-Austin; Postdoctoral Research Scientist 2001-2003, Computer Science and Mathematics Division, Oak Ridge National Laboratory; Research Staff Member 2003-present, Computer Science and Mathematics Division, Oak Ridge National Laboratory.

**Eben N. Broadbent** – GREF Fellow 2008-2010; PhD Global Ecology 2012 completed under NSF funding, Stanford University; Sustainability Science Postdoctoral Fellow 2012-present, research advisor Noel M. Holbrook, Harvard University.

**Derek P. Brown** – GREF Fellow 2006-2010; PhD Atmospheric Science 2011 completed under NSF funding, University of Colorado at Boulder; Instructor Atmospheric Science, University of Colorado at Boulder 2011-present.

**Posy E. Busby** – GREF Fellow 2010-2012; PhD Biology 2012, Stanford University; Postdoctoral Research Associate 2012-present, research advisor Joshua Tewksbury, Department of Biology, University of Washington.

**Christopher B. Busch** – GREF Fellow 2001-2006; PhD Environmental and Resource Economics 2006, University of California-Berkeley; Economist, Climate Program 2006-2008, Union of Concerned Scientists; Director of Policy 2008-2010, Center for Resource Solutions; Director of Policy 2010-2011, Blue Green Alliance Foundation; Director of Research 2011-present, Energy Innovation, Policy, and Technology LLC.

**Anne T. Case Hanks** – GREF Fellow 2002-2006; PhD Atmospheric Chemistry 2008 completed under funding from NSF and NOAA, Georgia Institute of Technology; Assistant Professor Atmospheric Science 2008-present, University of Louisiana at Monroe.

**Joseph C. Castro** – GREF Fellow 2005-2009; PhD Plant Biology 2009, University of Illinois-Urbana/Champaign; Postdoctoral Research Scientist 2009-2012, D.K. Lee, Department of Crop Science, University of Illinois-Urbana/Champaign; Instructor 2012-present, UIC College Prep Charter School.

**Bradley J. Christoffersen** – GREF Fellow 2008-2012; PhD Ecology and Evolutionary Biology expected 2013, University of Arizona.

**Elsa E. Cleland** – GREF Fellow 2002-2005; PhD Biology 2005, Stanford; Postdoctoral Research Associate 2005-2009, National Center for Ecological Analysis and Synthesis, Santa Barbara, California; Associate Professor Ecology 2009-present, University of California-San Diego.



**Craig B. Clements** – GREF Fellow 1999-2003; MS Meteorology 2001, University of Utah; PhD Geophysics 2007 completed under NSF funding, University of Houston, research advisor Sharon Zhong; Assistant Professor, Meteorology and Climate Science 2007-present, San Jose State University.

**Torreon N. Creekmore** – GREF Fellow 2007-2009; PhD Atmospheric Science 2009, Howard University; Project Scientist 2009-present, U.S. Department of Defense.

**Melissa A. Cregger** – GREF Fellow 2009-2012, Marvin L. Wesely Distinguished Graduate Research Fellow 2011; PhD Ecology and Evolutionary Biology 2012, University of Tennessee; Postdoctoral Research Associate 2012-present, Institute for Genomic Biology, University of Illinois at Urbana-Champaign.

**Molly Smith Cross** – GREF Fellow 2004-2006; PhD Environmental Science Policy and Management 2006, University of California-Berkeley; Climate Change Ecologist 2007-present, Wildlife Conservation Society.

**Luis A. Cuadra-Rodriguez** – GREF Fellow 2005-2011; PhD Chemistry and Biochemistry 2011, University of Colorado, Boulder; Postdoctoral Research Associate 2011-present, research advisor Kimberly Prather, University of California-San Diego.

**Elizabeth E. Dahl** – GREF Fellow 1999-2004; PhD Earth Systems Science 2005, University of California-Irvine; Research Associate 2005-2007, College of Environmental Science and Forestry, State University of New York, Syracuse; Assistant Professor Chemistry 2007-present, Loyola University Maryland.

**Allison Drake Yanites** – GREF Fellow 2003-2004; MS Geological Sciences 2005, University of Arizona; Mass Spec Technician 2005-present, INSTAAR Stable Isotope Lab, University of Colorado at Boulder.

**Dabrina D. Dutcher** – GREF Fellow 2004-2007; PhD Mechanical Engineering 2011, University of Minnesota; Laboratory Instructor 2011-present, College of Engineering, Bucknell University.

**Jessica G. Ernakovich** – GREF Fellow 2009-2012; PhD Ecology expected 2013, Colorado State University, continuing under NSF funding.

**Emma Christina Farmer** – GREF Fellow 2000-2003; MA Earth and Environmental Science 2000, Columbia University; PhD Earth and Environmental Science 2005 completed under LLNL/UC Institute Collaborative Research Grant with Tom Guilderson, Columbia University; Assistant Professor Geology 2005-present, Hofstra University; Adjunct Associate Research Scientist 2007-present, Lamont-Doherty Earth Observatory, Columbia University.



**Emily V. Fischer** – GREF Fellow 2007-2010, Marvin L. Wesely Distinguished Graduate Research Fellow 2009; PhD Atmospheric Science 2010, University of Washington; Postdoctoral Research Associate 2010-2011, Atmospheric Science, University of Washington; NOAA Climate and Global Change Postdoctoral Fellow 2011-2012, research advisor Dan Jacob, Harvard University; Assistant Professor Atmospheric Science 2013-present, Colorado State University.

**Catherine G. Fontana** – GREF Fellow 2010-2012; PhD Forestry and Environmental Studies expected 2014 currently under NSF funding, Yale University.

**Jennifer M. Fraterrigo** – GREF Fellow 2002-2005; PhD Zoology 2005, University of Wisconsin-Madison; USDA NRI Postdoctoral Fellow 2005-2008, Iowa State University; Assistant Professor 2008-present, Department of Natural Resources and Environmental Sciences, University of Illinois at Urbana-Champaign.

**Holly K. Gibbs** – GREF Fellow 2005-2008; PhD Environment and Resources 2008, University of Wisconsin-Madison; Postdoctoral Research Fellow 2008-2011, research advisors Rosamond Naylor and Chris Fields, Global Ecology, Stanford University; Assistant Professor Geography 2011-present, University of Wisconsin-Madison.

**Elizabeth R. Gibson** – GREF Fellow 2006-2007; PhD Physical Chemistry 2007, University of Iowa; Research Scientist 2007-present, ASL Analytical.

**Kelly M. Gillespie** – GREF Fellow 2007-2010; PhD Physiological and Molecular Plant Biology 2010, University of Illinois at Urbana-Champaign, research advisor Elizabeth Ainsworth (former GREF fellow); Postdoctoral Research Associate 2010-present, Center for Advanced Biofuels Systems, Donald Danforth Plant Science Center.

**Sarah E. Gilman** – GREF Fellow 1999-2001; PhD Population Biology 2003 completed under NSF funding, University of California-Davis; Postdoctoral Research Associate 2003-2005, research advisor Brian Helmuth, University of South Carolina; Postdoctoral Fellow 2005-2007, Friday Harbor Laboratories, University of Washington; Assistant Professor Biology 2007-present, Keck Science Department, The Claremont Colleges.

**Wendy S. Gordon** – GREF Fellow 1999-2003; PhD Botany 2003, University of Texas at Austin; Postdoctoral Research Associate 2003-2004, University of Texas at Austin; Water Planning Coordinator 2004-2005, Texas Parks and Wildlife Department; Senior Scientist 2005-2008, Texas Commission on Environmental Quality; Program Leader 2008-2011, Texas Park and Wildlife Department; Principal Investigator 2011-present, Ecologia Consulting.

**Sharon B. Gray** – GREF Fellow 2008-2011; PhD Plant Biology expected 2013 currently funded by DOE Biofuel Genomics, University of Illinois at Urbana-Champaign.



**Nancy S. Grumet Prouty** – GREF Fellow 2000-2004; PhD Oceanography 2004, Stanford University; Postdoctoral Research Scholar 2004-2007, Cooperative Institute for Climate and Ocean Research, Woods Hole, MA; USGS Mendenhall Postdoctoral Research Fellow 2008-2009; Research Oceanographer 2009-present, USGS Pacific Coastal and Marine Science Center, Santa Cruz, CA; Research Scientist 2009-present, USGS Pacific Coastal and Marine Science Center, Santa Cruz, CA.

**Christopher W. Habeck** – GREF Fellow 2008-2010; PhD Terrestrial Ecology 2010, University of Wisconsin-Madison; Postdoctoral Research Associate 2010-2011, research advisor John Orrock, Washington University St. Louis; Postdoctoral Research Associate 2011-2012, research advisor Lars Brudvig, Michigan State University; Assistant Professor Biology 2012-present, Kutztown University.

**Meredith G. Hastings** – GREF Fellow 2002-2004; PhD Geosciences 2004, Princeton University; Postdoctoral Fellow 2004-2008, University of Washington, Joint Institute for the Study of the Atmosphere and Ocean; Assistant Professor Geological Sciences 2011-present, Brown University, Environmental Change Initiative.

**Paul A.T. Higgins** – GREF Fellow 1999-2003; PhD Climate Change 2003, Stanford University; NSF Postdoctoral Fellow 2003-2005, University of California-Berkeley; Congressional Fellow, Senator Mike DeWine 2005-2006, American Association for the Advancement of Science; Senior Policy Fellow 2006-2010, American Meteorological Society; Associate Director Policy Program 2010-present, American Meteorological Society.

**Rachel C. Hoffman Velthuisen** – GREF Fellow 2003-2004; PhD 2004 Atmospheric Chemistry, University of California-Irvine; Senior Manager and Air Quality Consultant 2004-present, Environ International Corporation.

**Amanda S. Holden** – GREF Fellow 2008-2010; MS Atmospheric Science 2008, Colorado State University; PhD Atmospheric Science expected 2013, Colorado State University.

**Emily B. Hollister** – GREF Fellow 2004-2006; PhD Molecular and Environmental Plant Science 2008 completed under NSF funding, Texas A&M University; Postdoctoral Research Associate 2008-2011, research advisor Terry Gentry, Soil and Crop Sciences, Texas A&M University; Director and Microbial Ecologist, Bioinformatics and Microbial Ecology 2011-present, Texas Children's Microbiome Center.

**Tara W. Hudiburg** – GREF Fellow 2009; PhD Forest Ecology 2012, Oregon State University completed under funding from the DOE Terrestrial Carbon Project; Postdoctoral Research Associate 2012-present, research advisors Evan DeLucia and Steven Long, University of Illinois at Urbana-Champaign.



**Colleen M. Iversen** – GREF Fellow 2005-2008, Marvin L. Wesely Distinguished Graduate Research Fellow 2007; PhD Ecology and Evolutionary Biology 2008, University of Tennessee; Postdoctoral Research Associate 2008-2010, Environmental Science Division, Oak Ridge National Laboratory; Staff Scientist 2010-present, Environmental Science Division, Oak Ridge National Laboratory.

**Carrie Jensen Christiansen** – GREF Fellow 2007-2010; PhD Atmospheric Chemistry 2010, Purdue University; Chemistry Teacher 2010-present, Baldwin School, Philadelphia, PA.

**Lara M. Kueppers** – GREF Fellow 1999-2003; PhD Environmental Science, Policy, and Management 2003, University of California-Berkeley; Postdoctoral Research Associate 2004-2006, research advisor Lisa Sloan, Department of Earth Sciences, University of California-Santa Cruz; Assistant Professor 2006-present, School of Natural Sciences, University of California-Merced.

**Anita Lee** – GREF Fellow 2001-2006; PhD Environmental Science, Policy, and Management 2006, University of California-Berkeley; Environmental Scientist 2006-present, U.S. Environmental Protection Agency, Region 9 Air Division.

**Julia D. Liao** – GREF Fellow 2001-2004; PhD Rangeland Ecology and Management 2004, Texas A&M University; Visiting Postdoctoral Research Associate 2005-present, Isotope Biogeochemistry Group, Rice University.

**Michael S. Long** – GREF Fellow 2007-2010; PhD Environmental Sciences 2010, University of Virginia; Postdoctoral Research Associate 2010-2011, research advisor David Erickson, Oak Ridge National Laboratory; Postdoctoral Research Fellow 2011-present, research advisor Daniel Jacob, Harvard University.

**Alison K. Macalady** – GREF Fellow 2010-2013; PhD Geography expected 2013, University of Arizona.

**Katherine R. M. Mackey** – GREF Fellow 2006-2010; PhD Civil and Environmental Engineering 2010, Stanford University; Postdoctoral Research Associate 2010-present, Carnegie Institute for Science/Institute of Marine Science.

**Erika Marin-Spiotta** – GREF Fellow 2001-2006, Marvin L. Wesely Distinguished Graduate Research Fellow 2005; PhD Environmental Science 2006, Policy and Management, University of California-Berkeley; Postdoctoral Research Fellow 2006-2009, Geography, University of California, Santa Barbara; Assistant Professor 2009-present, Geography, University of Wisconsin-Madison.

**Monica Martinez-Aviles** – GREF Fellow 2003-2007; PhD Chemistry 2007, Purdue University; Postdoctoral Research Fellow 2008-2010, National Institute of Water and Atmospheric Research, Lauder, New Zealand; Senior Laboratory Technician 2011-present, Watercare Laboratory Services.



**Michael D. Mastrandrea** – GREF Fellow 2000-2004; PhD Environment and Resources 2004; Postdoctoral Scholar 2004-2006, Center for Environmental Science and Policy, Stanford University; Research Associate 2006-2009, Center for Environmental Science and Policy, Stanford University; Assistant Consulting Professor 2009-present, Woods Institute for the Environment, Stanford University; Intergovernmental Panel on Climate Change (IPCC) Working Group II, Technical Support Unit 2009-present.

**Allen C. McBride** – GREF Fellow 2005-2006; MA Ecology 2006, Duke University; Research Associate 2010-present, Environmental Science Division, Oak Ridge National Laboratory.

**M. Luke McCormack** – GREF Fellow 2010-2013; PhD Ecology and Biogeochemistry expected 2013, Pennsylvania State University.

**Gavin R. McMeeking** – GREF Fellow 2005-2008; PhD Atmospheric Science 2008, Colorado State University; Postdoctoral Research Associate 2008-2011, Center for Atmospheric Science, University of Manchester; Research Scientist 2011-present, research advisor Sonia Kreidenweis, Atmospheric Science, Colorado State University.

**Dylan B. Millet** – GREF Fellow 1999-2003; PhD Ecosystem Sciences 2003, University of California-Berkeley; Postdoctoral Fellow 2004-2005, University of California-Berkeley; Postdoctoral Fellow 2005-2007, research advisor Daniel Jacob, Harvard University; Assistant Professor 2008-2012, University of Minnesota; Associate Professor 2012-present, University of Minnesota.

**Richard H. Moore** – GREF Fellow 2007-2011; PhD Chemical and Biomolecular Engineering 2011, Georgia Institute of Technology; Postdoctoral Fellow 2011-present, NASA Langley Research Center.

**Christopher M. Moy** – GREF Fellow 2005-2009; PhD Geological and Environmental Sciences 2010, Stanford University; USGS Mendenhall Postdoctoral Research Fellow 2010-2012, Woods Hole, MA; Faculty, Department of Geology 2012-present, University of Otago, New Zealand.

**Kevin E. Mueller** – GREF Fellow 2007-2010; PhD Ecology and Biogeochemistry 2011, Pennsylvania State University; Postdoctoral Research Associate 2011-present, research advisors Sarah Hobbie and Peter Reich, University of Minnesota.

**Susan M. Natali** – GREF Fellow 2006-2008; PhD Ecology and Evolution 2008, State University of New York at Stony Brook; Postdoctoral Research Associate 2008-present, research advisor Ted Schuur, University of Florida.

**Sarah L. O'Brien** – GREF Fellow 2005-2010, Marvin L. Wesely Distinguished Graduate Research Fellow 2004; PhD Ecology and Evolution 2010, University of Illinois at Chicago; Postdoctoral Research Associate 2010-present, research advisor Dionysios Antonopoulos, Biosciences Division, Argonne National Laboratory.



**Neil A. Pederson** – GREF Fellow 2001-2005; PhD Forest Ecology and Climate Change 2005, Columbia University; Assistant Professor Biological Sciences 2005-2010, Eastern Kentucky University; Lamont Assistant Research Professor 2010-present, Tree Ring Laboratory, Columbia University.

**Shannon L. Pelini** – GREF Fellow 2008-2009; PhD Biological Sciences 2009, University of Notre Dame; Postdoctoral Research Associate 2009-2012, Harvard Forest, Harvard University; Assistant Professor Biology 2012-present, Bowling Green State University.

**Jennifer Pett-Ridge** – GREF Fellow 2000-2003; PhD Soil Microbial Ecology 2005 completed under funding from NSF, University of California-Berkeley; Staff Scientist 2005-present, Chemical Sciences Division, Lawrence Livermore National Laboratory.

**Sarah A. Placella** – GREF Fellow 2006-2010; PhD Environmental Science, Policy and Management 2011 completed under funding from the DOE Terrestrial Ecosystem Sciences Program, University of California-Berkeley; Postdoctoral Research Associate 2011-present, Kellogg Biological Station, Michigan State University.

**Heather U. Price** – GREF Fellow 2000-2004, Marvin L. Wesely Distinguished Graduate Research Fellow 2003; PhD Chemistry 2004, University of Washington; Postdoctoral Research Associate 2004-2006, Atmospheric Sciences, University of Washington; Instructor 2006-2008, North Seattle Community College; Chemistry Faculty 2008-present, Highline Community College.

**Cynthia A. Randles** – GREF Fellow 2001-2007, Marvin L. Wesely Distinguished Graduate Research Fellow 2006; MA Atmospheric and Oceanic Science 2004, Princeton University; PhD Atmospheric and Oceanic Science 2007, Princeton University; Goddard Visiting Fellowship 2007-2009, Goddard Earth Sciences and Technology Center, University of Maryland; Assistant Research Scientist 2011-present, Goddard Earth Sciences Technology and Research, Columbia, MD.

**Rose M. Ravelo** – GREF Fellow 2002-2006; MS Chemistry 2008, Purdue University; Dance Instructor 2008-present, Fred Astaire Dance Academy, Indianapolis, IN.

**Kevin A. Reed** – GREF Fellow 2010-2012; PhD Atmospheric and Space Science 2012, University of Michigan; Postdoctoral Fellow 2012, Atmospheric Oceanic and Space Science, University of Michigan; Congressional Science Fellow 2012-present, American Geophysical Union, Washington, DC.

**Sarah E. Reed** – GREF Fellow 2006-2008; PhD Environmental Science, Policy, and Management expected 2013 currently under NSF funding, University of California-Berkeley.

**Erika L. Roesler Harding** – GREF Fellow 2008-2012; PhD Atmospheric, Oceanic, and Space Sciences 2012, University of Michigan.



**Nicole J. Schiffer** – GREF Fellow 2010-2012; PhD Atmospheric Science 2012, University of Illinois at Urbana-Champaign; Public Affairs Intern 2012-present, National Center for Supercomputing Applications.

**Tania Schoennagel** – GREF Fellow 1999-2003; PhD Botany and Zoology 2003, University of Wisconsin-Madison; NSF Postdoctoral Fellow 2003-2005, University of Colorado-Boulder; Research Associate Geography 2005-2006, University of Colorado-Boulder; Research Scientist 2009-present, Institute of Arctic and Alpine Research (INSTAAR).

**Jaclyn M. Secora Trzaska** – GREF Fellow 2005-2007; BS Meteorology, Oswego State University; Research Project Coordinator 2007-present, Center for Energy, Economic and Environmental Policy, Rutgers.

**Seeta A. Sistla** – GREF Fellow 2008-2011; PhD Ecology, Evolution, and Marine Biology expected 2013, University of California-Santa Barbara, completed under funding from NSF.

**Mackenzie L. Smith** – GREF Fellow 2007-2011; PhD Environmental Chemistry 2012, Harvard University; Postdoctoral Research Associate 2012-present, research advisor Scot Martin, Harvard University.

**Mari E. Titcombe Lee** – GREF Fellow 2007-2011; PhD Chemistry 2012, University of Minnesota; Visiting Associate Professor, Environmental Program, Colorado College.

**Amy J. Bratcher Wagner** – GREF Fellow 2004-2006; PhD Oceanography 2009, Texas A&M University, completed under funding from NOAA; Postdoctoral Research Scientist 2009-2011, Cooperative Institute for Research in Environmental Science (CIRES), University of Colorado at Boulder; Visiting Research Assistant Professor 2011-present, Paleoenvironmental Change Research Group, University of North Carolina Wilmington.

**Erin P. Hokanson Wagner** – GREF Fellow 2004-2010; MS Atmospheric and Oceanic Sciences 2006, University of Wisconsin-Madison.

**Eric J. Ward** – GREF Fellow 2008-2009; PhD Ecology 2012, Duke University; Postdoctoral Research Associate 2012-present, Department of Forestry and Environmental Resources, North Carolina State University.

**Lois Jean Wardell** – GREF Fellow 1999-2002; PhD Geochemistry 2002; Postdoctoral Research Associate 2003-2005, Department of Earth and Planetary Science, McGill University; Chief Scientist 2005-2007, Advanced Ceramics Research; Principle Scientist 2007-2009, Latitude; Founder and Earth Scientist 2008-present, Arapaho SciTech.

**Anthony Watson** – GREF Fellow 2004; Science Teacher, Junior High School.



**Cynthia A. Werner** - GREF Fellow 2000-2002; PhD Geosciences 2002, Pennsylvania State University; Volcanic Geochemist 2002-2006, GNS Science, Wairakei, NZ; Research Geologist 2006-present, U.S. Geological Survey Volcano Emissions Project, Alaska Volcano Observatory.

**Brent J. Williams** - GREF Fellow 2003-2006; PhD Environmental Science, Policy, and Management 2008, University of California-Berkeley, completed under funding from NOAA and DOE/SBIR Phase II; Postdoctoral Scientist 2008-2010, Aerodyne Research, Center for Aerosol and Cloud Chemistry; Assistant Professor Energy, Environment, and Chemical Engineering 2010-present, Washington University.

**Shelby Winiecki McQuay** - GREF Fellow 2000-2004; PhD Geophysical Sciences, MA Public Policy 2004, University of Chicago; Legislative Analyst 2005-present, Minnesota Senate.

**Victoria E. Wittig** - GREF Fellow 2003-2008; PhD Plant Biology 2008, University of Illinois at Urbana-Champaign; Postdoctoral Research Associate Atmospheric Science 2008-2010, University of Illinois at Urbana-Champaign; Science and Technology Fellow 2010, National Academies; Program Officer 2011-present, Food and Agriculture Organization of the United Nations (FAO), Malé, Maldives.

**Wendy H. Liu Yang** - GREF Fellow 2006-2007; PhD Environmental Science, Policy, and Management 2010, University of California-Berkeley, completed under funding from NSF; Postdoctoral Scholar Ecosystem Ecology and Biogeochemistry 2010-present, University of California-Berkeley.

**Esther B. Zeledon** - GREF Fellow 2005-2010; PhD Environmental Science, Policy, and Management 2010, University of California-Berkeley; Science and Technology Policy Fellow 2011-present, USAID/AAAS.

**John M. Zobitz** - GREF Fellow 2005-2007; PhD Applied Mathematics 2007, University of Utah; Assistant Professor Mathematics 2007-present, Augsburg College.