A. Letter of Transmittal from Dean

B. Chair's Letter of Transmittal

C. Curriculum Vitae

Ankur R Desai

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Education

- Ph.D. Meteorology, The Pennsylvania State University, University Park, PA
  - Jan. 2002-May 2006, (advisor: Kenneth J. Davis)
- M.A. Geography, University of Minnesota-Twin Cities, Minneapolis, MN
  - Sep. 1998-May 2000, (advisor: Howard Veregin)
- B.A. Environmental Studies & Computer Science, Oberlin College, Oberlin, OH
  - Aug. 1993-May 1997 (advisors: Bruce Simonson (ES) / Richard Salter (CS))

Academic and Other Relevant Positions

- University of Wisconsin, Dept. of Atmospheric & Oceanic Sciences, Madison, WI
  - *Assistant Professor*, Aug. 2007-
  - *Faculty affiliate*, Center for Climatic Research (CCR), Nelson Institute for Environmental Studies, Jan. 2008-
  - *Faculty affiliate*, Center for Sustainability and Global Environment (SAGE), Nelson Institute for Environmental Studies, Dec. 2009-
  - *Faculty affiliate*, Limnology and Marine Sciences Program, College of Engineering, Dec. 2009-
- National Center for Atmospheric Research, Advanced Study Program, Boulder, CO
  - *Postdoctoral Fellow*, The Institute for Integrative and Multidisciplinary Studies (TIIMES), Aug. 2006-Aug. 2007 (mentor: David S. Schimel)
- Pennsylvania State University, Dept. of Meteorology, University Park, PA
  - *Graduate Research Assistant*, Jan. 2002-May 2006
- University of Minnesota, Dept. of Forest Resources, St. Paul, MN
  - *Research Fellow*, Nov. 2000-Nov. 2001
- University of Minnesota, Dept. of Soil, Water, Climate St. Paul, MN
  - *Graduate Research Assistant*, Jun. 1999-Jun. 2000
- University of Minnesota, Dept. of Geography, Minneapolis, MN
  - *MacArthur Foundation Interdisciplinary Center for the Study of Global Change Scholar*, Sep. 1998-Sep. 1999
  - *Cartographic Assistant*, U. Minnesota Cartography Lab, Sep. 1999-Apr. 2000
- Environmental Careers Organization, Boston, MA
  - *Intern*, based at Environmental Protection Agency Office of Pesticide Programs, International Services Branch, Arlington, VA, Dec. 1997-Dec. 1999
- U.S. Forest Service, Toiyabe National Forest Carson City, NV
  - *Naturalist/Interpreter*, Jun. 1997-Sep. 1997

Awards and Honors

- Associate Editor, Journal of Geophysical Research-G, Jan 2011-
- UW Atmospheric and Oceanic Sciences Graduate Student Association Teaching Award 2010
- NSF CAREER (Faculty Early Career Development) Award 2009-2014
- University Corporation for Atmospheric Research, NCAR Advanced Study Program Postdoctoral Fellowship, 2006-2008 (declined year 2)
- Pennsylvania Space Grant Consortium, NASA Space Grant Fellowship, 2005-2006
- Pennsylvania State University, College of Earth and Mineral Sciences, Arnulf I Muan Graduate Fellowship, 2004-2005
- Pennsylvania State University, College of Earth and Mineral Sciences, Centennial Research Award, 2004-2005
- Pennsylvania State University, Department of Meteorology, Chi Epsilon Pi - meteorology honor society, inducted Jan. 2002
- University of Minnesota Interdisciplinary Center for the Study of Global Change, ICGC Scholars Fellowship, sponsored by John D. and Catherine T. MacArthur Foundation, 1998-2000
- Oberlin College, Phi Beta Kappa, Zeta chapter of Ohio, fall 1996

Professional Development / Workshops

- AMS Short Course: Wind Energy Applications, Supported by Atmospheric Boundary Layer Theory, Observations, and Modeling, participant, Keystone, CO, 1 Aug 2010
- NSF RCN FORECAST Workshop 1: Data Assimilation and Ecological Forecasting, invited participant, NEON Headquarters, Boulder, CO, Jul 13-15, 2010
- NSF, Data Assimilation in Ecological Models, invited participant, Norman, OK, Oct. 2007
- NCAR/IMAGe, Summer Graduate Workshop on Data Assimilation for the Carbon Cycle, selected participant, Boulder, CO, Jul. 2007
- NCAR/ECSA, Strategies for Planning Effective Workshops, participant, Apr. 2007
- NCAR/ACD, Biogenic Hydrocarbons, participant, Boulder, CO, Oct. 2006
- NCAR/MMM, Turbulence and Scalar Transport in Roughness Sublayers, participant, Boulder, CO, Sep. 2006
- Digital Library for Earth System Education, On the Cutting Edge: Preparing for an Academic Career in the Geosciences Workshop, selected participant, University Park, PA, Jul. 21-24,
- NASA, MODIS Vegetation Workshop II, participant, Missoula, MT, Aug. 16-20, 2004
- American Meteorological Society, 4th Annual Science Policy Colloquium, selected participant, Washington, DC, Jun. 6-15, 2004

Society memberships

- American Meteorological Society (2002-), American Geophysical Union (2002-), American Association of Geographers (1998-2009)

D. Balance of Responsibilities

E. Teaching Ability and Experience

E.1 Teaching Statement

"There are three things you should get out of a bachelor's degree: to be able to know stuff, think critically, and communicate well." This is a line I often use in my undergraduate, writing-intensive AOS/IES 171: Global Change course, where I then go on to focus on the latter as students compare popular media reports and political blogs on climate change with official statements from scientific bodies. Communication as a scientist is fundamental to what we do, and yet is often neglected, much to the detriment of advances in our field and for improving general appreciation for what climate science is all about. Consequently, many of my teaching innovations at UW, from survey level (AOS/IES 171), undergraduate major (AOS 401,405), graduate lecture (AOS 520,773), graduate seminar (AOS 601,900), to student mentoring (AOS 691-2,999,990) have focused on communication and understanding the scientific process in our field. Briefly, I describe three themes that have arisen throughout much of my teaching and the innovations developed, techniques applied, and lessons learned by addressing these themes.

Communication in the sciences

The sciences, like most academic endeavors, are driven by communication, whether by grant proposal, conference presentations, peer review, manuscript, teaching, media interviews, or public talks. Improving student communication and interpretation is thus essential for success in the sciences.

At the undergraduate level, my outcome is for students to better understand why this communication process is so fundamental and to become better discerners of science-related writing that students encounter in their everyday lives. For example, in the previously described AOS/IES 171, I focused on understanding the role of climate science in media, policy, and the daily lives of students through writing assignment prompts that address the climate change e-mail scandal, carbon footprints calculation, and current congressional legislation. To help students improve writing, I use the services of the undergraduate writing fellows from the UW Writing Center. I also test for general understanding and promote discussion through feedback provided by student response systems (clickers). Online pre- and post-test quizzes, based on a standardized assessment, were used in three years, and showed significant gain (~10%) in general content mastery of climate change issues through these activities.

At more advanced levels, I have implemented mock versions of the peer review process (AOS405) and proposal panel review process (AOS520). In the discussion based AOS 601, I relied heavily on student-led presentations of each chapter and implemented a peer teaching model. For the final exam in AOS 773, I required students to pitch their own field experiment (including a budget, hypotheses, and experimental design) to address unanswered questions in the discipline using knowledge they gained through the course and to describe these on "fake" cocktail napkins, much as they likely will do in a future conference. Students in my lab are required to attend and present at conferences as early in their career as possible.

Observations as the bedrock of science

As one of few experimentalists in my department, I feel the need to strongly infuse classroom discussions on concepts, theories, and models with real-world observations, often from my own research. I have brought instruments in class to measure radiation (AOS601) and carbon dioxide (AOS171), which were used to refine understanding of concepts. Fields trips (AOS601, AOS401) can also provide an on-the-ground appreciation. One of the more successful innovations has been the use of real, high-rate, noisy large datasets collected from my field instruments into computational problem sets in my graduate classes (AOS520 and 773). While daunting and time consuming for many students, it is often one of the more memorable exercises. For example in AOS520, I assigned small group project teams that included students from complementary fields, who had to work together using freely available climate and ecological data to study an interesting problem in bioclimatology. Students enjoyed working across disciplines and often got very involved in their research, which added beneficially to the in-class presentations. I also rely heavily on student-led in-class journal reviews of current and classical literature, especially those that focus on experimental research. In a required Ph.D. seminar (AOS900), I initiated more general discussions on the production of knowledge in sciences and the role of observations in paradigm shifts through classic readings on science philosophy.

Demystifying scientific process and teaching pedagogy

In the process of focusing on communication and observations, I have found myself frequently relying on my own personal experience in these processes (a great moment for self-deprecating humor!) and have found that using situations from my own lab as teachable moments can be enlightening for students. During the previously mentioned AOS405 peer-reviews, I discussed my own experience with publishing the sciences and shared copies of my own reviews. The purpose of these and similar exercises is to place a human context on the nature of the scientific discovery process. Similarly, I find that being explicit in my teaching goals, outcomes, and techniques in my syllabus, during lectures, and in mid-term evaluations helps students see where a class is headed and appreciate better the challenges of teaching.

Future plans

Teaching is rewarding, but also humbling! I plan to continue to improve my teaching of science communication, especially in AOS/IES 171 – where I am toying with a more hybrid online lecture/in-class discussion model. All the courses I teach tend to draw a multi-disciplinary audience and to address a diverse audience is a challenge I plan to continue to address. I also seek to pursue more experiential approaches with field-based courses like AOS 401. I feel that I am becoming a better research mentor and advisor with time, and the main certainty I have learned so far is that every student requires a different approach. Discussion of plans to expand my informal teaching can be found in section G. In terms of curriculum innovations, the funding I acquired for development of wind energy meteorology (AOS 601) is leading to further development of a campus wind engineering certificate program. Recently, I co-organized and co-hosted our 2010 AOS faculty retreat, where I was influential in helping combine graduate student interests with faculty interests as we redesign our graduate core curriculum. Finally, I hope to do a better job staying current on the literature in science pedagogy and engage in more professional development through campus programs.

E.2 Summary of Teaching Activities

Fall 2007

AOS 171 (3 cr), 40 students (38 completed)

Grades: A 66% AB 13% B 8% BC 13% C 0% D 0% F 0%

Spring 2008

AOS/IES 773 (3 cr), 5 students

Grades: A 100%, AB 0%, B 0%, BC 0%, C 0%, D 0%, F 0%

Fall 2008

AOS/IES 171 (3 cr), 40 students (35 completed)

Grades: A 53%, AB 9%, B 32%, BC 0%, C 0%, D 0%, F 6%

AOS 900 (1 cr), 6 students

Grades: A 100%, AB 0%, B 0%, BC 0%, C 0%, D 0%, F 0%

Spring 2009

AOS/IES 520 (3 cr), 20 students

Grades: A 55%, AB 15%, B 15%, BC 10%, C 0%, D 0%, F 5%

AOS 405 (1 cr), 20 students

Grades: A 70%, AB 25%, B 0%, BC 5%, C 0%, D 0%, F 0%

AOS 699 (3 cr), Independent study, 1 student

Grade: A 100%

Fall 2009

AOS/IES 171 (3 cr), 28 students

Grades: A 53%, AB 29%, B 18%, BC 0%, C 0%, D 0%, F 0%

AOS 691 (2 cr), Senior thesis, 1 student

Grade: A 100%, AB 0%, B 0%, BC 0%, C 0%, D 0%, F 0%

Spring 2010

AOS 692 (2 cr), Senior thesis, 1 student

Grade: A 100%, AB 0%, B 0%, BC 0%, C 0%, D 0%, F 0%

AOS 773 (3 cr), 13 students

Grades: A 77%, AB 8%, B 0%, BC 15%, C 0%, D 0%, F 0%

AOS 999 (1-2 cr) “Boundary layer meteorology” 2 students

Grades: A 100%, AB 0%, B 0%, BC 0%, C 0%, D 0%, F 0%

Fall 2010

AOS 171 (3 cr), 38 students + 2 auditors

Grades: A 45%, AB 29%, B 13%, BC 3%, C 3%, D 3%, F 5%

AOS 601 (2 cr), 8 students + 3 auditors

Grades: A 100%, AB 0%, B 0%, BC 0%, C 0%, D 0%, F 0%

Spring 2011

AOS 520 (3 cr), 11 students

AOS 401 (2 cr), 7 students

Course descriptions and goals

** = developed course*
*** = significant revision of existing course*
+ = co-taught course

****AOS 171 - Global Change: Atmospheric Issues (3cr)** is a popular introductory-level survey course on global change. I adapted and significantly revised this course after taking over the Fall section. The content of this course focuses on elements of basic earth system science relevant to the climate system, human impacts to the atmosphere (stratospheric ozone loss, tropospheric pollution, global climate change), and discussion of science communication, climate policy, and environmental ethics. The course also meets the Communications Part B writing across the curriculum requirement and qualifies for Physical Science credit for undergraduates. Consequently, enrollment is capped at 40 and each student writes 5 major papers, presents one in-class oral assignment (debates), and takes 2 content knowledge exams.

AOS 401 – Topics in Meteorology: Orographic Storms Laboratory is a course I am currently teaching and one that I will be teaching in alternation with another faculty member into the future. Undergraduate AOS majors and select graduate students in this course gain hands-on experience in observation of atmospheric phenomena related to orography (mountain meteorology). The hands-on experience occurs at the Storm Peak Laboratory (SPL) in Steamboat Springs, CO over Spring Break. During the semester, students gain practical experience in preparing a project proposal, understanding mountain meteorology and observational tools, conducting research in the field, and reporting on results.

+AOS 405 – Senior Capstone Seminar (1 cr) is a required course for our undergraduate majors and is designed to introduce students to the breadth of research occurring in the atmospheric sciences. I co-taught this course with Matthew Hitchman in Spring 2009 and we jointly worked on developing course goals and shared lectures. In addition to learning about research in our field, students develop and present their own research or literature review in the form of an extended conference abstract and conference-style talk.

****AOS 520 – Bioclimatology (3 cr)** is a graduate-level course I developed and teach every other year. I adapted this course from a version taught before my arrival, but had not been taught since. The goal of this course is to understand the intersection of living organisms (ecosystem ecology) and the atmosphere (physical climatology). As such, students who enroll come from natural resource/environmental science fields or atmospheric science fields, and a challenge in this course is to adequately cover topics in both fields.

***AOS 601 – Topics in Meteorology: Wind and Weather for Scientists and Engineers (2 cr)** is a graduate-level course I initiated and developed in response to funding I and others received last year from the Dept of Energy to improve wind energy curriculum on campus. The goal of this course was to provide a graduate-level overview of atmospheric science to engineers and new graduate students in our field at an advanced pace and also cover aspects of meteorology

relevant to renewable energy. Weekly class lectures included a weather briefing that connected to course lecture material, student-led presentation and discussion of a chapter from a standard atmospheric science textbook, and in-class exercises, paper reviews, guest presentations, or discussions around renewable energy, with a focus on wind. We also conducted field trips to local wind farms.

****AOS 773 – Boundary-Layer Meteorology (3 cr)** is an advanced graduate level course that covers micrometeorology, atmospheric turbulence, and lower atmospheric physics and dynamics. I adapted this course from a version taught in the past. Boundary-layer meteorology is a field that introduces most of our students to the topic of fluid turbulence for the first time, and so I spend a significant amount of time on the theory of turbulence. The field is also heavily dependent on field experiments and empirical relationships.

+AOS 900 – Current and Classical Problems in Meteorology (1 cr) is a required course for Ph.D. students in our program. The purpose of this class is to review and highlight the development of ideas in our discipline, how those ideas have evolved through time, and where those ideas are headed. I co-taught this course with Dan Vimont and we jointly worked on development of course goals and shared lecturing. Students each develop and present the history of an idea within their subdiscipline and this often involves archival library research.

AOS 691, 692, 999, 990 are undergraduate thesis credits (691/692), independent readings (999), or research credits for graduate advisees (990).

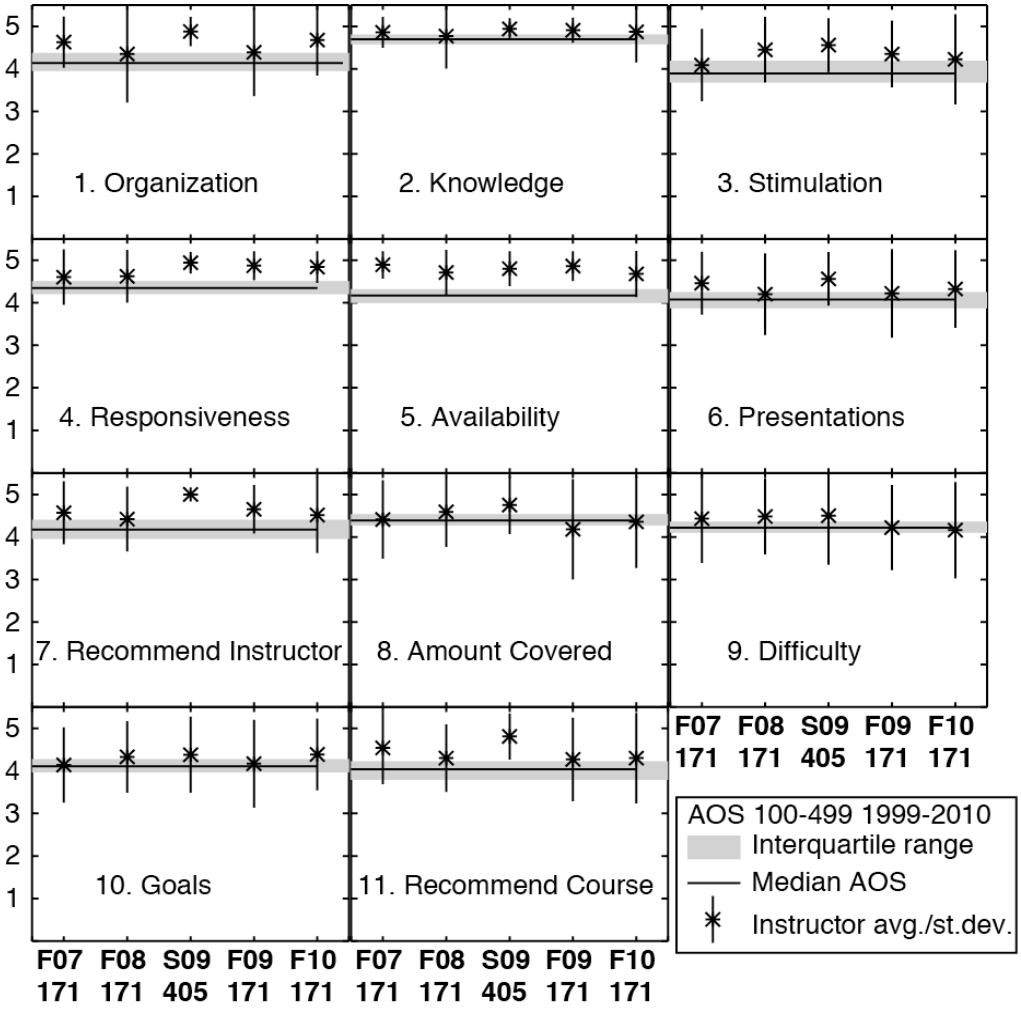
E.3 Peer Review of Candidate's Teaching

Please find in Appendix 4, letters of peer review of teaching from:

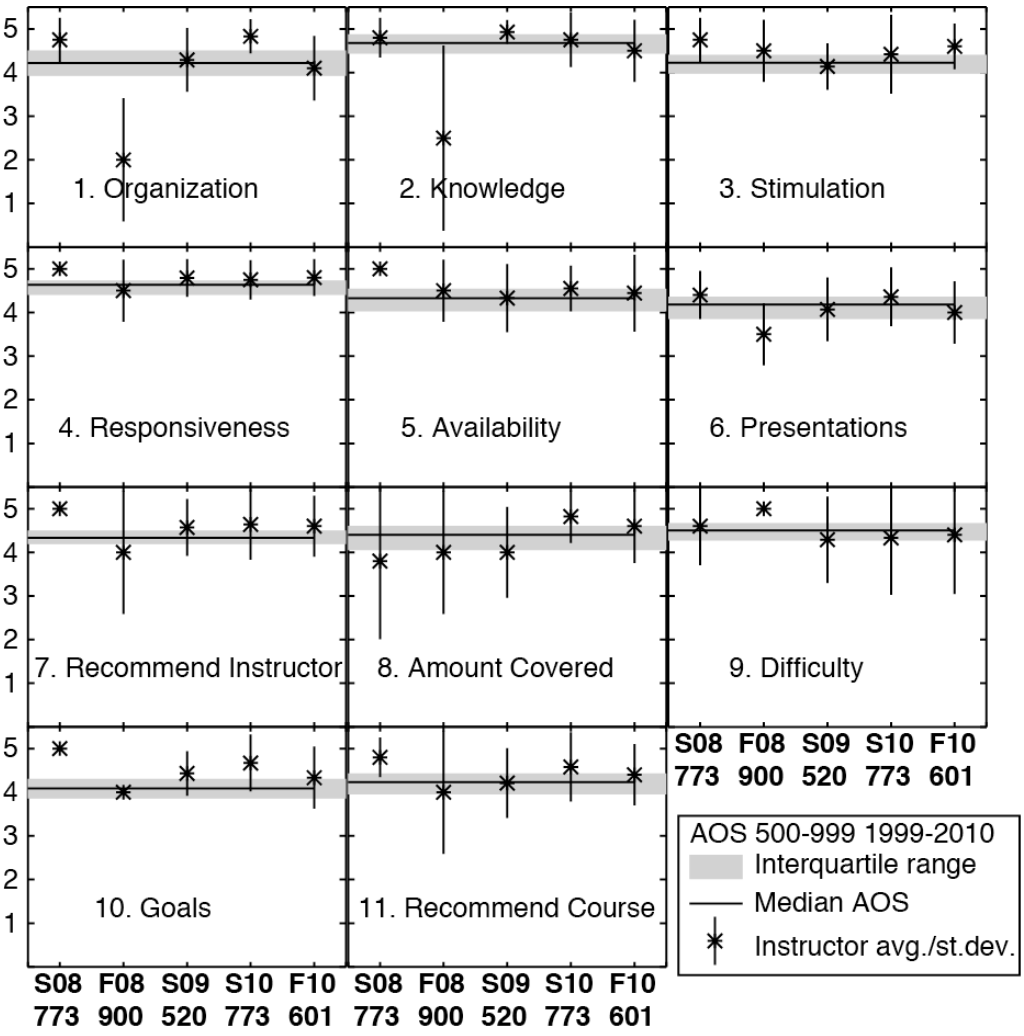
Matthew Hitchman, AOS 405 Spring 2009
Grant Petty, AOS 171 Fall 2010
Grant Petty, AOS 601 Fall 2010

E.4 Student Evaluation of Candidate's Teaching

Below, I have organized summary teaching evaluation scores for undergraduate and graduate level courses I have taught since at UW. In each figure, I include the mean and standard deviation of the score (scale 1-5) for each question asked on our evaluation form. The courses are organized in chronological order. For comparison, I include the median department aggregated score for undergraduate level or graduate level courses and the interquartile range of that aggregate score over the past ten years. The evaluation form can be found in appendix 5.



My undergraduate teaching consists primarily of AOS 171. My scores for all questions in all years are consistently above the department median for undergraduate courses. Improvements with time are seen for intellectual stimulation, reflecting, I believe, my better connection of assignments to current events. I am rated highly for my responsiveness and availability, as I try hard to work with students outside of class. Feedback on the written portion and also during mid-semester or in-class evaluation have in the past noted my need to improve on board handwriting and where I stand, and I have been working on those.



At the graduate level, I have taught a range of courses. With the exception of AOS 900, I am above median for most evaluation questions. A few areas show clear sign of improvement with time including amount covered. Initially, I tried to cover too much material and have now learned to better focus on relevant material. With respect to AOS 900, this score is a bit of an anomaly as there were only two responses (due to late surveying) with two opposing scores and very little written comment. I do agree that the initial organization of the course started off poorly, but that it came together nicely after the first couple of weeks. AOS 601 was a new course I developed and I am pleased to see positive response from the students.

E.5 Supplementary Evidence

- UW Atmospheric and Oceanic Sciences Graduate Student Association Inaugural Graduate Teaching award (2010), co-awardee with Galen McKinley

Nomination letter:
"Ankur Desai is a very effective teacher for boundary layer meteorology. His teaching style is relaxed but to the point. He creates easy-to-read power point presentations and shows figures

of his current research that pertain to our lessons. This allows us to understand and visualize concepts that are being applied to current work. He has different students each week present either the answer to a homework problem or lead a discussion about a journal article. This fosters a lot of class discussion and participation, which is helpful and fun. The material is organized in a logical way and we always know what the next class topic will be. He also provides context for the material such as, what person discovered a finding, what instruments are used to take certain measurements, and how these measurements are taken. The level of detail he provides when explaining how observations are made and how it relates to the data is very helpful to understanding the overall concepts. The atmosphere of the class is refreshing and engaging. This is probably the best taught class I have had in the department."

- University Writing Center Undergraduate Writing Fellows, 3-4 writing tutors per year in Fall AOS171 Global Change class (2007-2010) + contribution to Sourcebook

For AOS/IES 171, I mentored three undergraduate UW Writing Center Writing Fellows each year. The fellows read two draft papers form each student, commented on them, and met with students over the course of the semester. Generally, this process significantly improved student writing quality. In my mentoring of the fellows, I made sure the fellows were involved in the process from development of the prompt to assessment of feedback, a process that opened their eyes to the teaching process and the management of student expectations. Because of my involvement in this process, one of my writing prompts is now featured in the *UW Writing Center Sourcebook for Innovative Approaches to Teaching With Writing For Instructors Across The Disciplines*.

- Integration of wind energy systems into power engineering education programs at UW-Madison, grant from the Dept of Energy (co-PI)

I am co-PI with colleagues in the College of Engineering on a grant to develop a curriculum and potential graduate certificate in wind energy systems. Through this grant, I developed the AOS 601 Wind and Weather for Scientists and Engineers course and have been entrained into the renewable energy community and engineering education at UW.

E.6 Departmental Justification of Tenure Without Teaching Experience

N/A

F. Research

F.1 Research Statement

The complexity of the climate systems rests on the nature of the interconnections among its many parts, including the atmosphere, biosphere, lithosphere, hydrosphere, oceans, cryosphere, and human influences. My scholarship (research, teaching, and outreach) aims to advance our observation, simulation/prediction, and theoretical understanding of relationships between the biosphere and atmosphere, as modulated by hydrologic and anthropogenic process. Results from my research over the past decade have been influential in improving predictions of future atmospheric carbon cycle, the fate of ecosystems in a changing climate, and the regulation and feedbacks to the atmospheric boundary layer by regional ecosystems.

The fundamental question my research addresses is: *How can novel ecosystem and atmospheric approaches be used to transform understanding of the mechanisms that drive biophysical (energy and momentum exchange) and biogeochemical (water-carbon-nitrogen cycling) interactions between ecosystems and the atmosphere, and what are its implications for climatic processes and change?* The challenge in answering this question lie in the scale-mismatch between biosphere process, which generally involve small-scale biological and ecological process that scale information upward (from leaf to biome), and atmospheric processes, which generally involve large-scale climatic process that process information downward (from planetary waves to turbulence). Consequently, I have placed a strong focus on using experiments at the regional scale (landscape to continental) to improve models of these interactions, using micrometeorological, ecological, and biogeochemical approaches, which reveal insights on ecosystem climate sensitivity, potential feedbacks, and human impacts.

Much of my research involves developing novel methodology for regional-scale observation (e.g., Desai *et al.*, 2010; Desai *et al.*, submitted). These approaches are cross-disciplinary and involve significant collaboration with many international partners, as you can see on my author lists (e.g., Desai *et al.*, 2008a,b). Generally, my contributions have been in advancing techniques for usage of eddy covariance flux towers in regional networks (several of which I have built and have advanced instrumentation methodology), extracting information from ecological field data and atmospheric observations for ecosystem-atmosphere models with flux partitioning (Desai *et al.,* 2005), Bayesian data assimilation (Zobitz *et al.,* submitted) and inverse modeling (Brooks *et al.,* submitted; Vasys *et al.,* submitted), and synthesizing results to form new understanding of boundary layer, climatic and ecosystem processes in forests, wetlands, and lakes, particularly with respect to the carbon and water cycle. Below, I highlight some of the major findings across three primary themes from my time at UW.

Regional scale biogeochemistry

I am a recognized leader in the advancement of regional scale biogeochemistry and scaling heterogeneous ecosystem processes to understand climatic processes, primarily through work in two major field projects, one in Wisconsin, the other Colorado. I developed an upscaling

technique (Desai *et al.*, 2008) for flux-tower based observations, and have compared this to ecological models, boundary-layer tracer budgets, and atmospheric inversions (Desai *et al.,* 2010). With my student Will Ahue, we developed a novel technique for assessing regional surface fluxes from airborne observations in complex terrain (Desai *et al.,* submitted). The results highlighted many complex interactions between mountain meteorology and ecological processes, a process I am further exploring with my student Ruben Behnke.

Role of humans in biosphere-atmosphere interactions

Virtually every portion of the terrestrial biosphere is altered by human interactions. I have previously shown how carbon sinks in the upper Midwest are strongly sensitive to assumptions about land management, which had a stronger impact on modeled carbon assimilation than changes in climate or CO_2 over the past century (Desai *et al*., 2007), an idea being carried forward by my Ph.D. student Ben Sulman, where we have now developed simple metrics for incorporating land use change into ecosystem models. Similarly, my Ph.D. student Justin Bagley and I have developed a novel global 1-D boundary layer-ecosystem model that is being used to assess indirect land use change on agricultural yield and precipitation (Bagley *et al.,* submitted).

Climate forcing by landscape processes

Many advances have been made in understanding the role of feedbacks between regional scale ecological processes and lower atmospheric forcing. These investigation have identified forcing mechanisms from coherent phenological processes (Desai, 2010), leaf nitrogen-albedo feedbacks (Hollinger *et al.,* 2010), insect disturbance to forests (Amiro *et al.,* 2010; Cook *et al.,* 2008; Hicke *et al.,* submitted), soil moisture spatial heterogeneity (Desai *et al.,* 2006; Reen *et al.*, 2006), water table and ground water connectivity (Buffam *et al.,* in press), and ice-albedo-wind speed feedbacks in stable boundary layers over large lakes (Desai *et al.,* 2009). I have made a number of advances for understanding the role of wetlands in the carbon cycle, which are necessary for future improvements of carbon cycle prediction, given the large pools of carbon in wetlands and the high uncertainty in modeling these processes. We have observed that carbon uptake by northern peatlands appears to be insensitive interannual water table fluctuations (Sulman *et al.,* 2009, 2010), due to the effects of higher productivity being counterbalanced by increased aerobic decomposition. This ecohydrological control on carbon cycling contrasts that with the northern forests, whose interannual variability tends to be strongly controlled by phenological processes, as revealed by multiple ecosystem flux tower data assimilation (Desai, 2010).

Future work

I continue to be entranced by the myriad of ways the biosphere interacts with the atmosphere, water, and humans. Recently, I instrumented the first tall tower for regional methane flux observation with my Ph.D. student Kristine Jimenez. A new M.S. student Matt Rydzik is looking at biosphere-snow cover-storm feedbacks. Collaborations in atmospheric chemistry have led me to ask new questions about ways to measure surface fluxes of reactive compounds and what these tell us about biosphere-aerosol interactions. Managed landscapes are of particular interest, and planned manipulative experiments will be useful in revealing new insights there. All of these are refining theories about biotic regulation of climatic and weather processes.

F.2 List of Research Publications

Given my multi-disciplinary research, I publish in journals in both atmospheric science and environmental science/ecology fields to maximize the impact of my research to both fields. Impact factors and subject ranks of journals where I have published or have papers in review are listed below, based on the 2009 Journal Citation Report (ISI Thomson Reuters). See appendix 6 for list of top journals by each category listed in the table below.

Journal Name	Impact Factor	Rank	Category
Science	29.747	2	Multidis Sci.
Nature-Geosci	8.108	1	Geosciences-Multidis.
Bull. Am. Met. Soc.	6.123	1	Meteorology and Atmos Sci
Global Change Biol.	5.561	5 8	Envi. Sci. Ecology
Atmos Chem Phys	4.881	2	Meteorology and Atmos Sci
Global Biogeo. Cycles	4.294	3 5 10	Meteorology and Atmos Sci, Geosciences-Multidis., Envi. Sci.
Remote Sens. Evn.	3.612	1	Remote Sensing
Ecosystems	3.586	27	Ecology
Limnology and Oceanography	3.545	1	Limnology
Biogeosciences	3.426	14 32	Geosciences-Multidis. Ecology
Envi. Res. Lett.	3.342	10	Meteorology and Atmos Sci
Geophys. Res. Lett.	3.204	15	Geosciences-Multidis.
Agric. For. Meteorol.	3.197	1 11	Forestry Meteorology and Atmos Sci
Oecologia	3.129	37	Ecology
J Geophy Res	3.082	18	Geosciences-Multidis.
IEEE Transactions Geosci.	2.234	4	Remote Sensing
Boundary-Layer Meteorl.	2.127	23	Meteorology and Atmos Sci
Earth Interactions	1.444	63	Geosciences-Multidis.

General Publication Statistics

- Total published or accepted publications (2004-2010): 31
    - 10 first or student lead author
    - 22 published since joining UW
- Total submitted publications: 12 (4 first or student lead author)
- Total citations (2004-2010) ISI Web of Science + 2011 CiteAlerts: 443
- Average citations per paper: 14.3
- Average papers published per year: 4.1
- H-index: 10

F.2.a Papers published or accepted by refereed journals

Authorship is denoted as follows:
Bold = A.R. Desai (candidate)
Underline = Student or Post-doc of candidate
Italic = K.J. Davis, Ph.D. advisor to candidate
* = 3 representative publications

Accepted (see appendix 2 for letters of acceptance)

- Atilla, N., McKinley, G., Bennington, V., Baehr, M., Urban, N., DeGrandpre , M., **Desai**, A.R., and Wu, C., 2010. Observed variability of Lake Superior pCO2. *Limnology and Oceanography*, accepted.
    - Conception 0%, Implementation 10%, Analysis 10%, Writing 10%
    - Times Cited: 0

In Press (accessible online)

- Buffam, I., Turner, M.G., **Desai**, A.R., Hanson, P., Rusak, J., Lottig, N.R., Stanley, E.H., and Carpenter, S.R., 2010. Integrating aquatic and terrestrial components to construct a complete carbon budget for a north temperate lake district. *Global Change Biology*, doi:10.1111/j.1365-2486.2010.02313.x, in press.
    - Conception 50%, Implementation 40%, Analysis 30%, Writing 30%
    - Times Cited: 0

2010

- Amiro, B., Barr, A.G., Barr, J.G., Black, T.A., Bracho, R., Brown, M., Chen, J., Clark, K.L., *Davis*, K.J., **Desai**, A.R., Dore, S., Engel, V., Fuentes, J.D., Goldstein, A.H., Goulden, M.L., Kolb, T.E., Lavigne, M.B., Law, B.E., Margolis, H.A., Martin, T., McCaughey , J.H., Misson, L., Montes-Helu, M., Noormets, A., Randerson, J.T., Starr, G., and Xiao, J., 2010. Ecosystem carbon dioxide fluxes after disturbance in forests of North America. *Journal of Geophysical Research-Biogeosciences*, 115: G00K02 , doi:10.1029/2010JG001390.
    - Conception 2%, Implementation 2%, Analysis 2%, Writing 5%
    - Times Cited: 2
- ***Desai**, A.R., 2010. Climatic and phenological controls on coherent regional interannual variability of carbon dioxide flux in a heterogeneous landscape. *Journal of Geophysical Research-Biogeosciences*, 115: G00J02 , doi:10.1029/2010JG001423.
    - Conception 100%, Implementation 100%, Analysis 100%, Writing 100%
    - Times Cited: 0
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2009

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2008

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    - Times Cited: 21
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    - Times Cited: 12

2007

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    - Times Cited: 8
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2006

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    - Times Cited: 7
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2005

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2004

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  - Conception 20%, Implementation 25%, Analysis 25%, Writing 25%
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  - Conception 10%, Implementation 10%, Analysis 5%, Writing 5%
  - Times Cited: 7

F.2.b Papers submitted to refereed journals

- Bagley, J., **Desai**, A.R., West, P.C., and Foley, J.A., 2011. A simple, minimal parameter model for predicting the influence of changing land cover on the land-atmosphere system. *Earth Interactions*.
  - Conception 100%, Implementation 100%, Analysis 90%, Writing 95%
  - Date submitted: Dec 8, 2010
- Blonquist, J.M., Montzka, S.A., Yakir, D., **Desai**, A.R., Dragoni, D., Griffis, T.J.,Monson, R.K., Munger, J.W., Scott, R.L., and Bowling, D.R. The potential of carbonyl sulfide as a tracer for gross primary productivity at flux tower sites. *Global Change Biology*.
  - Conception 0%, Implementation 4%, Analysis 0%, Writing 5%
  - Date submitted: Feb 14, 2011

- Brooks, B.J., **Desai**, A.R., Stephens, B.B., and Bowling, D. Assessment of sampling error reduction from discrete time filters of mountaintop CO2 observations. *Atmos. Chem Phys.*
    - Conception 100%, Implementation 80%, Analysis 90%, Writing 90%
    - Date submitted: Feb 28, 2011

  Desai, A.R., Moore, D.J.P., Ahue, W., Wilkes, P.T.V., De Wekker, S., Brooks, B.G., Campos, T., Stephens, B.B., Monson, R.K., Burns, S., Quaife, T., Aulenbach, S., and Schimel, D.S. Seasonal pattern of regional carbon balance in the Central Rocky Mountains from the Airborne Carbon in the Mountains Experiment 2007. *Journal of Geophysical Research-Biogeosciences*, #2011JG001655.
    - Conception 80%, Implementation 90%, Analysis 90%, Writing 90%
    - Date submitted: Jan 14, 2011
- Hicke, J.A., Allen, C.D., **Desai**, A.R., Dietze, M., Hall, R., Hogg, E.T., Kashian, D., Moore, D., Raffa, K., Sturrock, R., and Vogelmann, J. The effects of biotic disturbances on carbon budgets of North American forests. *Journal of Geophysical Research-Biogeosciences*, #2010JG001565.
    - Conception 0%, Implementation 0%, Analysis 0%, Writing 0%
    - Date submitted: Sep 30, 2010
- Niu, S., Y. Luo, S. Fei, W. Yuan,, Z. Zhang, D. Schimel, B. Amiro, C. Ammann, M. Altaf Arain, A. Arneth, M. Aubinet, A. Barr, J. Beringer, C. Bernhofer, A.T. Black, N. Buchmann, A. Cescatti, J. Chen, K.J. *Davis*, E. Dellwik, A.R. **Desai**, H. Dolman, B.G. Drake, S. Etzold, L. Francois, D. Gianelle, A. Goldstein, L. Gu, N. Hanan, C. Helfter, T. Hirano, D.Y. Hollinger, A. Lindroth, I. Janssens, M. Jones, G. Kiely, T.E Kolb, W.L. Kutsch, P. Lafleur, B.E. Law, M. Litvak, D. Loustau, M. Lund, M. Marek, G. Matteucci, T.A. Martin, L. Montagnani,, E. Moors, J.W. Munger, A. Noormets, W. Oechel, J. Olejnik, K.T. Paw U, K. Pilegaard, S. Rambal, A. Raschi, S. Saleska, R.L. Scott, G. Seufert, D. Spano, P. Stoy, M.A. Sutton, A. Varlagin, T. Vesala, G. Wohlfahrt, D. Yakir, and B. Yang. Thermal optimality of net ecosystem exchange of carbon dioxide. *Science*, #1199992.
    - Conception 0%, Implementation 0%, Analysis 1%, Writing 2%
    - Date submitted: Nov 4, 2010
- Novick, K.A., Schmid, H.P., Katul, G.G., and **Desai**, A.R. A characterization of the variability in ecosystem-scale model parameters using Bayesian inversion of eddy covariance data. *Global Change Biology*.
    - Conception 0%, Implementation 2%, Analysis 2%, Writing 4%
    - Date submitted: Feb 14, 2011
- Sprintsin, M., Chen, J.M., **Desai**, A.R., and Gough, C.M. Evaluation of leaf-to-canopy upscaling methodologies against carbon flux data in North America. *Journal of Geophysical Research-Biogeosciences*, #2010JG001407.
    - Conception 0%, Implementation 10%, Analysis 10%, Writing 20%
    - Date submitted: May 1, 2010 (Revision sent Jan 20, 2011)
- Vasys, V.N., **Desai**, A.R., McKinley, G.A., Bennington, V., Michalak, A.M., and Andrews, A.E. Implications of neglecting large lake carbon cycling for regional tracer transport inversions. *Environmental Research Letters*.

    - Conception 80%, Implementation 80%, Analysis 70%, Writing 90%
    - Date submitted: Feb 7, 2011

  Yuan, W., Luo, Y., Liang, S., Yu, G., Niu, S., Stoy, P., Chen, J., **Desai, A.R.**, Lindroth, A., Gough, C., Ceulemans, R., Arain, A., Bernhofer, C., Cook, B.D., Cook, D.R., Dragoni, D., Gielen, B., Janssens, I., Longdoz, B., Liu, H., Lund, M., Matteucci, G., Moors, E., Scott, R.L., Seufert, G., and Varner, R., 2011. Thermal adaptation of terrestrial ecosystems on net ecosystem exchange. *Biogeosciences Discussions*, 8, 1109-1136, submitted, doi:10.5194/bgd-8-1109-2011.
    - Conception 0%, Implementation 5%, Analysis 5%, Writing 5%
    - Date submitted: Dec 21, 2010 (discussion paper accepted Jan 25, 2010)
- Yuan, W., Luo, Y., Liu, S., Yu, G., Zhou, T., Bahn, M., Black, A., Richardson, A.D., **Desai**, A.R., Cescatti, A., Marcolla, B., Jacobs, C., Chen, J., Aurela, M., Berhnofer, C., Bielen, B., Bohrer, G., Cook, D.R., Dragoni, D., Dunn, A.L., Gianelle, D., Grünwald, T., Ibrom, A., Leclerc, M.Y., Lindroth, A., Liu, H., Marchesini, L.B., Montagnani, L., Pita, G., Rodeghiero, M. Rodrigues, A., Starr, G., and Stoy, P.C. Global estimation of basal ecosystem respiration rate. *Global Biogeochemical Cycles*.
    - Conception 0%, Implementation 2%, Analysis 2%, Writing 2%
    - Date submitted: Apr 17, 2010
- Zobitz, J., Moore, D.J.P., and **Desai**, A.R. A hitchhiker's guide to data assimilation with ecological models. *Oecologia*.
    - Conception 30%, Implementation 30%, Analysis 30%, Writing 30%
    - Date submitted: Jan 11, 2011

F.2.c Monographs or jointly authored books

N/A

F.2.d Books or conference proceedings edited

N/A

F.2.e Invited book chapters

- Noormets, A., Chen, J., Gu, L., and **Desai**, A.R., 2009. The phenology of gross ecosystem productivity and ecosystem respiration in temperate hardwood and conifer chronosequences, in Noormets, A. (Ed.), *Phenology of Ecosystem Processes: Applications in Global Change Research*, Springer, New York, ISBN: 978-1441900258, 299 pp, pp. 59-85.
    - Conception 10%, Implementation 10%, Analysis 20%, Writing 30%
- Reichstein, M., Stoy, P., **Desai, A.R.**, Lasslop, G. and Richardson, A., 2011. Partitioning net ecosystem carbon exchange into canopy assimilation and ecosystem respiration: basic concepts and future directions, in Aubinet, M., Vesala, T., Papale, D., eds., *Eddy Covariance: A Practical Guide to Measurement and Data Analysis*. Berlin, Germany: Springer Verlag, in review.
    - Conception 10%, Implementation 20%, Analysis 20%, Writing 20%
    - Date submitted: Nov 1, 2010

F.2.f Items at conferences

For all conference items, first-author is presenter unless noted. Also noted is whether published in whole or abstract, referred or non-refereed, contributed or invited, and presentation type.

2011

- Amiro, B.D., A. Barr, J. Barr, A. Black, R. Bracho, M. Brown, J. Chen, K. Clark, K. *Davis*, A.R. **Desai**, S. Dore, V. Engel, J. Fuentes, A. Goldstein, M. Goulden, T. Kolb, M. Lavigne, B.E. Law, H. Margolis, T. Martin, H. McCaughey , M. Montes-Helu, A. Noormets, J. Randerson, G, Starr, and J. Xiao, 2011: What have we learned from forest tower flux data following disturbance?, 3rd North American Carbon Program (NACP) All-Investigators Meeting, New Orleans, LA, Jan. 31- Feb 4, 2011.
    - Abstract, non-refereed, contributed, presentation type: talk
- Bennington, V., G.A. McKinley , V. Vasys, A.R. **Desai**, and N.R. Urban, 2011: Lake Superior within the Regional Carbon Budget, ASLO Aquatic Sciences Meeting: Limnology and Oceanography in a Changing World, San Juan, Puerto Rico, Feb. 13-18 2011.
    - Abstract, non-refereed, contributed, presentation type: talk
- Blonquist, J., S.A. Montzka, D. Yakir, A.R. **Desai**, D. Dragoni, T.J. Griffis, R.K. Monson, J.W. Munger, R.L. Scott, and D.R. Bowling, 2011: The Potential of Carbonyl Sulfide as a Tracer for Gross Primary Productivity at Flux Tower Sites, 3rd North American Carbon Program (NACP) All-Investigators Meeting, New Orleans, LA, Jan. 31- Feb 4, 2011.
    - Abstract, non-refereed, contributed, presentation type: poster
- Brooks, B., A.R. **Desai**, B.B. Stephens, and NACP regional-continental synthesis participants, 2011: Multi-model regional comparison of carbon dioxide uptake between forward and inverse models over the U.S. Mountain West, 3rd North American Carbon Program (NACP) All-Investigators Meeting, New Orleans, LA, Jan. 31- Feb 4, 2011.
    - Abstract, non-refereed, contributed, presentation type: poster
- **Desai**, A.R., R. Henson, E. Gruntfest, and R.D. Turner, 2011: Communicating with Each Other: The Challenges and Rewards of Expanding Atmospheric Science's Professional Partners, Paper JPD2.1, 9th History Symposium, 91st American Meteorological Society Annual Meeting Seattle, WA, Jan. 25, 2011.
    - Abstract, non-refereed, invited, presentation type: panel discussion
- **Desai**, A.R., J.C Welch, B. Brooks, K. Jimenez, G. Keppel-Aleks, D. Wunch, P.O Wennberg, B.D Cook, P. Wesihampel, and J. King 2011: Novel approaches to estimating regional CH4 fluxes from a very tall tower, Ameriflux Science Meeting and 3rd North American Carbon Program (NACP) All-Investigators Meeting, New Orleans, LA, Jan. 31- Feb 4, 2011.
    - Abstract, non-refereed, contributed, presentation type: poster
- Hicke, J.A., C.D. Allen, A.R. **Desai**, M.C. Dietze, R.J. Hall, E.T. Hogg, D.M. Kashian, D.J. Moore, K. Raffa, R. Sturrock, and J. Vogelmann, 2011: The impacts of biotic disturbances on carbon budgets of North American forests, Ameriflux Science Meeting and 3rd North American Carbon Program (NACP) All-Investigators Meeting, New Orleans, LA, Jan. 31- Feb 4, 2011.
    - Abstract, non-refereed, contributed, presentation type: talk

- Hollinger, D.Y., C.-T. Lai, W.J. Massman, K.L. Clark, K. Bible, J. Vose, A.R. **Desai**, R. Kolka, A.D. Richardson, J.L. Hom, and R. Evans, 2011: Forest Service Climate Tower Network, 3rd North American Carbon Program (NACP) All-Investigators Meeting, New Orleans, LA, Jan. 31- Feb 4, 2011.
    - Abstract, non-refereed, contributed, presentation type: poster
- McKinley , G.A., A.R. **Desai**, V. Bennington, V. Vasys, A.E. Andrews, and A.M. Michalak, 2011: Lake Superior's influence on regional carbon budget, Ameriflux Science Meeting and 3rd North American Carbon Program (NACP) All-Investigators Meeting, New Orleans, LA, Jan. 31- Feb 4, 2011.
    - Abstract, non-refereed, contributed, presentation type: poster
- Schwalm, C.R., C.A Williams, K. Schaefer, R. Anderson, M.A. Arain, I. Baker, A. Barr, T.A. Black, G. Chen, J.M. Chen, P. Ciais, K.J. *Davis*, A.R. **Desai**, M. Dietze, D. Dragoni, M.L. Fischer, L.B. Flanagan, R. Grant, L. Gu, D.Y. Hollinger, R.C. Izaurralde, C. Kucharik, P. Lafleur, B.E. Law, L. Li, Z. Li, S. Liu, E.Y Lokupitiya, Y. Luo, S. Ma, H.A. Margolis, R. Matamala, H.J. McCaughey , R.K. Monson, W.C. Oechel, C. Peng, B. Poulter, D.T. Price, D.M. Ricciuto, W.J Riley, A.K. Sahoo, M. Sprintsin, J. Sun, H. Tian, C. Tonitto, H. Verbeeck, and S.B. Verma, 2011: Evaluating Terrestrial Biosphere Models: Comparing Simulated and Observed Net Ecosystem Exchange, Ameriflux Science Meeting and 3rd North American Carbon Program (NACP) All-Investigators Meeting, New Orleans, LA, Jan. 31- Feb 4, 2011.
    - Abstract, non-refereed, contributed, presentation type: poster
- Sulman, B.N., A.R. **Desai**, N.Z. Saliendra, P. Lafleur, L. Flanagan, O. Sonnentag, D.S. Mackay, A. Barr, L.N. Murphy, and W.J Rile, 2011: How much model complexity is necessary to accurately predict peatland CO2 fluxes? Ameriflux Science Meeting and 3rd North American Carbon Program (NACP) All-Investigators Meeting, New Orleans, LA, Jan. 31- Feb 4, 2011.
    - Abstract, non-refereed, contributed, presentation type: plenary talk
- Xiao, J. K.J. *Davis*, J. Chen, M. Reichstein, D.D. Baldocchi, C. Beer, L. Chasmer, J.M. Chen, A.R. **Desai**, K. Ichii, A. Ito, R. John, M. Jung, T. Kato, W. Knorr, B.E. Law, S. Liu, Y. Luo, <. Mirco, Q. Mu, L. Naithani, D. Papale, S.W. Running, Y. Ryu, K.M. Schaefer, C.R. Schwalm, G. Sun, H. Tian, E. Tomelleri, C.A. Williams, B. Wylie, W. Yuan, L. Zhang, 2011: Advances in Upscaling of Carbon and Water Fluxes from Towers to Regional, Continental and Global Scale, Ameriflux Science Meeting and 3rd North American Carbon Program (NACP) All-Investigators Meeting, New Orleans, LA, Jan. 31- Feb 4, 2011.
    - Abstract, non-refereed, contributed, presentation type: plenary talk

2010

- Bagley, J.E., A.R. **Desai**, J.A. Foley, 2010: A simple approach to simulating land use impacts on regional climate. 29th Conference on Agricultural and Forest Metorology, American Meteorological Society, Abstract 1A.2, Keystone, CO, Aug 2-6, 2010
    - Abstract, non-refereed, contributed, presentation type: talk

- Bennington, V., G.A. McKinley , C. Wu, A.R. **Desai**, N. Urban, and N. Kimura, 2010: Lake Superior Circulation 1979-2006: a Modeling Study. International Assoc. of Great Lakes Research (IAGLR) 2010, Toronto, ON, May 17-21, 2010.
    - Abstract, non-refereed, contributed, presentation type: talk
- Bennington, V., G.A. McKinley , C.H. Wu, N.R. Urban, and A.R. **Desai**, 2010: Mean circulation patterns and mechanisms of Lake Superior. EOS Trans. AGU, Ocean Sciences Meeting, Abstract CO53A -05, Portland, OR, Feb 22-26, 2010.
    - Abstract, non-refereed, contributed, presentation type: talk
- Blonquist, J., S.A. Montzka, D. Yakir, A.R. **Desai**, D. Dragoni, T.J. Griffis, R.K. Monson, J.W. Munger, R.L. Scott, and D.R. Bowling, 2010: The Potential of Carbonyl Sulfide as a Tracer for Gross Primary Productivity at Flux Tower Sites, American Geophysical Union Fall Meeting, Abstract B21G -07, San Francisco, CA, Dec 13-17, 2010.
    - Abstract, non-refereed, contributed, presentation type: talk
- Brooks, B., A.R. **Desai**, and B.B. Stephens, 2010: Comparison of carbon dioxide uptake between inverse and bottom-up models over the Mountain West, American Geophysical Union Fall Meeting, Abstract B31E -0352, San Francisco, CA, Dec 13-17, 2010.
    - Abstract, non-refereed, contributed, presentation type: poster
- Brooks, B.J., A.R. **Desai**, B. Stephens, 2010: A new data set of filtered Rocky Mountain atmospheric carbon dioxide measurements for improved flux retrievals. 19th Symposium on Boundary Layers and Turbulence, American Meteorological Society, Abstract J9.5, Keystone, CO, Aug 2-6, 2010.
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., 2010: Climate change and regional carbon fluxes in heterogeneous landscapes, 2nd Science in the Northwoods Workshop, UW CFL, Boulder Junction, WI, Sep. 30, 2010
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., 2010: Regional carbon fluxes in heterogenous landscapes: Challenges and opportunities. 29th Conference on Agricultural and Forest Meteorology, American Meteorological Society, Abstract 6.4, Keystone, CO, Aug 2-6, 2010.
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., 2010: Climate change and regional carbon fluxes in heterogeneous landscapes. 2nd Science in the Northwoods workshop, U Wisconsin Center for Limnology, Boulder Junction, WI, Sep 29-Oct 1,2010.
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., W.K. Ahue, B. Brooks, D.J. Moore, T. Quiafe, R.K. Monson, S. De Wekker, T.L. Campos, B.B. Stephens, P. Wilkes, and D. Schimel, 2010: Climatic controls on carbon exchange in the US mountain west at multiple scales, American Geophysical Union Fall Meeting, Abstract B31E -0351, San Francisco, CA, Dec 13-17, 2010.
    - Abstract, non-refereed, contributed, presentation type: poster
- Helliker, B.R., D.D. Baldocchi, A.R. **Desai**, M.L. Goulden, K.J. *Davis*, S.C. Wofsy, and J.W. Munger, 2010: Independent support for leaf homeothermy during carbon uptake and

the implications for the interpretation of tree-ring oxygen isotopes, American Geophysical Union Fall Meeting, Abstract GC24B -01, San Francisco, CA, Dec 13-17, 2010.
    - Abstract, non-refereed, contributed, presentation type: talk
- Hicke, J.A., C.D. Allen, A.R. **Desai**, M.C. Dietze, R.J. Hall, E.T. Hogg, D.M. Kashian, D.J. Moore, K. Raffa, R. Sturrock, and J. Vogelmann, 2010: A Review of Carbon Cycle Impacts of Biotic Disturbances in North American Forests, American Geophysical Union Fall Meeting, Abstract B42B -02, San Francisco, CA, Dec 13-17, 2010.
    - Abstract, non-refereed, contributed, presentation type: talk
- Keppel-Aleks, G., R.A. Washenfelder, G.C. Toon, A.R. **Desai**, K.J. *Davis*, and P.O. Wennberg, 2010: Net ecosystem exchange inferred from eddy covariance flux and total column measurements. NASA Terrestrial Ecology Science Team Meeting, Abstract 89, La Jolla, CA, Mar 15-17, 2010.
    - Abstract, non-refereed, contributed, presentation type: poster
- Mackay, D.C., A.R. **Desai**, B.N. Sulman, S. Samanta, and B.E. Ewers, 2010: Bayesian Synthesis of Multiple Data Sources to Test Specific Structural Hypotheses Within an Integrated Model of Water and Carbon Flow, American Geophysical Union Fall Meeting, Abstract H31L -06, San Francisco, CA, Dec 13-17, 2010.
    - Abstract, non-refereed, contributed, presentation type: talk
- McKinley , G.A., V. Bennington, N.R. Urban, C.P. McDonald , N. Atllia, A.R. **Desai**, D. Pilcher, and V. Vasys, 2010: The carbon cycle of Lake Superior and its influence on regional carbon budgeting, American Geophysical Union Fall Meeting, Abstract B13A -0455, San Francisco, CA, Dec 13-17, 2010.
    - Abstract, non-refereed, contributed, presentation type: poster
- McKinley , G.A., V. Bennington, N. Atilla, A.R. **Desai**, C. Mouw, N. Urban, V. Vasys, and C. Wu, 2010: Carbon Cycle Variability in Lake Superior: Physical Drivers and Impacts on the Regional Carbon Budget. International Assoc. of Great Lakes Research (IAGLR) 2010, Toronto, ON, May 17-21, 2010.
    - Abstract, non-refereed, contributed, presentation type: poster
- Pressel, K.G., W.D. Collins, A.R. **Desai**, 2010: Variance scaling in water vapor measurements from a tall tower. 13th Conference on Cloud Physics, American Meteorological Society, Abstract P1.77, Portland, OR, June 28-July 2, 2010.
    - Abstract, non-refereed, contributed, presentation type: poster
- Schroeder, N., A.R. **Desai**, B.N. Sulman, 2010: Wetland carbon dioxide flux residuals: An impact of hydrology? Undergraduate Symposium 2010, Madison, WI, April 15, 2010.
    - Abstract, non-refereed, contributed, presentation type: talk
- Sulman, B.N., A.R. **Desai**, and R.M Scheller, 2010: Sensitivity of regional forest carbon budgets to continuous and stochastic climate change pressures, American Geophysical Union Fall Meeting, Abstract B42B -06, San Francisco, CA, Dec 13-17, 2010.
    - Abstract, non-refereed, contributed, presentation type: talk
- Sulman, B.N., A.R. **Desai**, R.M. Scheller, C.M. Gough, P.S. Curtis, C.S. Vogel, 2010: Assessing the effects of past disturbance and future climate change and land use decisions on northern Great Lakes forest carbon cycling. 29th Conference on

Agricultural and Forest Meteorology, American Meteorological Society, Abstract P1.4, Keystone, CO, Aug 2-6, 20110.
    - Abstract, non-refereed, contributed, presentation type: poster
- Vasys, V., A.R. **Desai**, G.A. McKinley , A. Michalak, 2010: Lake Superior's John Hancock: Unique atmospheric signature in tall tower CO2. UW-Madison Undergraduate Symposium 2010, Madison, WI, April 15, 2010, #66.
    - Abstract, non-refereed, contributed, presentation type: poster
- Xiao, J., K.J *Davis*, K.J Naithani, N. Urban, K. Keller, A.R. **Desai**, J. Chen, A. Noormets, K. Cherrey, B.D. Cook, P. Bolstad, D. Hua, R. Anderson, S. Running, N. Saliendra, R. Kolka, P. Weishampel, 2010: Probabilistic Carbon Flux Upscaling Across a Northern Forest Ecoregion, NASA Terrestrial Ecology Science Team Meeting, Abstract 100, La Jolla, CA, Mar 15-17, 2010.
    - Abstract, non-refereed, contributed, presentation type: poster
- Zobitz, J., D.J.P. Moore, A.R. **Desai**, 2010: A hitchhiker's guide to data assimilation in the ecological sciences. MathFest 2010, Mathematical Association of America, Pittsburgh, PA, Aug 5-7, 2010.
    - Abstract, non-refereed, contributed, presentation type: talk

2009

- Ahue, W.K., A.R. **Desai**, S. De Wekker, D.J. Moore, T.L. Campos, B.B. Stephens, R.K. Monson, D. Schimel, 2009: Uncertainty of Regional Carbon Fluxes and Boundary Layer Heights in Complex Terrain: The Airborne Carbon in the Mountains Experiment 2007. EOS Trans. AGU, 90(52), Fall Meet. Suppl., Abstract B53F -08, San Francisco, CA, Dec 14-18, 2009.
    - Abstract, non-refereed, contributed, presentation type: talk
- Amiro, B.D., A. G. Barr, T. A. Black, M. Brown, J. Chen, K.J. *Davis*, A.R. **Desai**, M. L. Goulden, B. Law, H. A. Margolis, T. Martin, J.H. McCaughey , J.T. Randerson, J. Xiao, 2009: Disturbances and Carbon Sequestration: Tower Flux Data from North American Forests. EOS Trans. AGU, 90(52), Fall Meet. Suppl., Abstract B51H -07, San Francisco, CA, Dec 14-18, 2009.
    - Abstract, non-refereed, contributed, presentation type: talk
- Atilla, N., G.A. McKinley, V. Bennington, N. Urban, N. Kimura, C. Wu, A.R. **Desai**, 2009: Is Lake Superior a net carbon source or sink? 2nd North American Carbon Program (NACP) All-Investigators Meeting, San Diego, CA, Feb. 17-20, 2009, #178.
    - Abstract, non-refereed, contributed, presentation type: poster
- Atilla, N., G.A. McKinley, V. Bennington, N. Urban, C. Wu, A.R. **Desai**, 2009: Observed dynamics of surface pCO2 in Lake Superior. 52nd Conference of the International Association for Great Lakes Research, Toledo, OH, May 18-22, 2009.
    - Abstract, non-refereed, contributed, presentation type: talk
- Andrews, A., J. Kofler, J. Williams, M. Trudeau, P. Bakwin, C. Zhao, K. Masari, P. Tans, K. *Davis*, B. Cook, A.R. **Desai**, R. Teclaw, D. Baumann, D. Hollinger, S. Wofsy, J. Munger, J.T. Lee, R. Muttiah, J. Sanabria, O. Okello, D. Wolfe, M. Fischer, M. Parker, S. de Wekker, W. Peters, A.R. Jacobson, G. Petron, A. Hirsch, A. Michalak, J. Eluzkiewicz, T. Nehrkorn, K.

Gurney, C.S. Tanier, 2009: Results from the NOAA collaborative tall tower network for monitoring carbon dioxide and related gases. 8th Interanational Carbon Dioxide Conference (ICDC8), Jena, Germany, Sept. 13-19, 2009.
    - Abstract, non-refereed, contributed, presentation type: talk
- Bagley, J.E., A.R. **Desai**, J.A. Foley, C. Barford, W. Sacks, 2009: A Novel Approach to Simul,ating Land Use Impacts on Regional Climate and Ecosystem Services. EOS Trans. AGU, 90(52), Fall Meet. Suppl., Abstract GC13A -0696, San Francisco, CA, Dec 14-18, 2009.
    - Abstract, non-refereed, contributed, presentation type: poster
- Buffam, I., A.R. **Desai**, S.R. Carpenter, M.G. Turner, P.C. Hanson, 2009: Synchrony in surface-atmosphere CO2 exchange among forests, wetlands and lakes. Gordon Research Conference, Catchment Science: Interactions Of Hydrology, Biology & Geochemistry, Andover, NH, Jul 12-17, 2009.
    - Abstract, non-refereed, contributed, presentation type: poster
- Buffam, I., M.G. Turner, A.R. **Desai**, P.C. Hanson, M.C. Van de Bogert, J. Rusak, N.R. Lottig, E.H. Stanley, T.R. Kratz, S.R. Carpenter, 2009: Constructing a complete carbon budget for a north temperate lake district. Ecological Society of America Annual Meeting 2009, Albuquerque, NM, Aug 2-7, 2009.
    - Abstract, non-refereed, contributed, presentation type: poster
- *Davis*, K.J., J. Xiao, R. Anderson, P.V. Bolstad, K. Cherrey, B.D. Cook, A.R. **Desai**, R. Kolka, S. Running, N. Saliendra, B. Sulman, P. Weishampel, 2009: Probabilistic upscaling of eddy flux measurements in the upper Great Lakes: Working towards the next generation MODIS GPP algorithm. 2nd North American Carbon Program (NACP) All-Investigators Meeting, San Diego, CA, Feb. 17-20, 2009, #9
    - Abstract, non-refereed, contributed, presentation type: poster
- **Desai**, A.R., 2009: Atmospheric tracers and the Great Lakes, Lake Superior Biogeochemistry Workshop, Kemp Natural Resources Station, Woodruff, WI, Aug. 19, 2009
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., D.S. Mackay, B.R. Helliker, P.R. Moorcroft, 2009: Impacts of leaf phenology and water table on interannual variability of region carbon fluxes in mixed landscape. 2nd North American Carbon Program (NACP) All-Investigators Meeting, San Diego, CA, Feb. 17-20, 2009, #163
    - Abstract, non-refereed, contributed, presentation type: poster
- Hicke, J.A., R. J. Hall, K. Raffa, A.R. **Desai**, D. Kashian, 2009: The Effects of Insect Outbreak Disturbances on the North American Carbon Cycle: A Review. EOS Trans. AGU, 90(52), Fall Meet. Suppl., Abstract B51H -02, San Francisco, CA, Dec 14-18, 2009.
    - Abstract, non-refereed, contributed, presentation type: talk
- Mackay, D.S., A.R. **Desai**, S. Samanta, M.M. Loranty, B.E. Ewers, 2009: Quantifying Complexity and Data Needs for Coupled Models of Hydrological and Carbon Flux Processes. EOS Trans. AGU, 90(52), Fall Meet. Suppl., Abstract H23L -02, San Francisco, CA, Dec 14-18, 2009.
    - Abstract, non-refereed, contributed, presentation type: talk

- Mackay, D.S., A.R. **Desai**, B.N. Sulman, D.E. Roberts, 2009: Quantifying the role of water table dynamics on net ecosystem exchange of CO2 in a northern temperate shrub wetland. EOS Trans. AGU, 90(22) Jt. Assem. Suppl., Abstract H72B -02, Toronto, Ontario, May 24-27, 2009.
    - Abstract, non-refereed, contributed, presentation type: talk
- Mckinley, G.A., V. Bennington, N. Atilla, M. Baehr, N. Urban, A.R. **Desai**, C. Mouw, N. Kimura, C. Wi, 2009: Understanding the carbon budget of Lake Superior. Abtract T23, Ocean Carbon and Biogeochemistry Workshop, Woods Hole, MA, July 20-23, 2009.
    - Abstract, non-refereed, contributed, presentation type: poster
- McKinley, G.A., V. Bennington, N. Atilla, N. Urban, C. Wu, A.R. **Desai**, N. Kimura, 2009: The magnitude and mechanisms of the CO2 flux from Lake Superior. 52nd Conference of the International Association for Great Lakes Research, Toledo, OH, May 18-22, 2009.
    - Abstract, non-refereed, contributed, presentation type: talk
- Myklebust, M.C., G. Wohlfahrt, L. Misson, R. Huc, N. Delpierre, L.E. Hipps, R.J. Ryel, M.A. Arain, M. Bahn, C. Bernhofer, B. Chojnicki, P. Curtis, S. Frokling, P. Lafleur, B. Longdoz, E. van Gorsel M. Aurela, M. Cavaleri, A.R. **Desai**, A. Ito, H.W. Loescher, S. Oberbauer, J. Pumpanen, M.G. Ryan, N. Saigusa, T. Vesala, C. Yi, 2009: The effect of LAI on the representativeness of eddy covariance estimates of ecosystem respiration during turbulent conditions at night across a range of sites. European Geophysical Union General Assmebly 2009, Vienna, Austria, April 19-24, 2009, Geophysical Research Abstracts, v. 11, EGU2009-81.
    - Abstract, non-refereed, contributed, presentation type: poster
- Ricciuto, D.M., K.J. *Davis*, A.R. **Desai**, M.Fox, M.C. Dietze, S. Liu, Y.Q. Luo, A.D. Richardson, K. Schaefer, M. Williams, 2009: Improving carbon flux predictions in North America from the bottom up: The current state of eddy covariance based model-data fusion. 2nd North American Carbon Program (NACP) All-Investigators Meeting, San Diego, CA, Feb. 17-20, 2009, #133.
    - Abstract, non-refereed, contributed, presentation type: poster
- Ricciuto, D.M., P.E. Thornton, K. Schaefer, R.B. Cook, K.J. *Davis*, NACP Site Synthesis Participants, 2009: How uncertainty in gap-filled meteorological input forcing at eddy covariance sites impacts modeled carbon and energy flux. EOS Trans. AGU, 90(52), Fall Meet. Suppl., Abstract B54A -03, San Francisco, CA, Dec 14-18, 2009.
    - Abstract, non-refereed, contributed, presentation type: talk
- Stephens, B., S. Heck, D. Moore, A.R. **Desai**, 2009: Atmospheric CO2 measurements in mountainous terrain to monitor regional fluxes and local disturbance. Second Integrated Land Ecosystem-Atmosphere Study (iLEAPS) Science Conference, Melbourne, Australia, August 24-28, 2009.
    - Abstract, non-refereed, contributed, presentation type: poster
- Sulman, B.N., A.R. **Desai**, B.D. Cook, N. Saliendra, and D. S. Mackay, 2009: The impact of a declining water table on observed carbon fluxes at a northern temperate wetland. Society of Wetland Scientists Joint International Conference, Madison, WI, Jun 21-26, 2009.
    - Abstract, non-refereed, contributed, presentation type: talk

- Sulman, B.N., A.R. **Desai**, D.S. Mackay, R.M. Scheller, P.S> Curtis, C.S. Vogel, M. Balliett, T. Kratz, and I. Buffam, 2009: Forests, wetlands, and lakes: comparing drivers of carbon cycling in heterogeneous northern landscapes. Ameriflux Principal Investigator Workshop, Washington, DC, Sept 21-23, 2009.
    - Abstract, non-refereed, contributed, presentation type: poster
- Sulman, B.N., N.M. Schroeder, A.R. **Desai**, L.B. Flanagan, P.M. Lafleur, E.R. Humphreys, NACP Model-Data Synthesis Participants, 2009: How well do we model wetlands: What can we learn from comparing ecosystem model performance? NACP Interim Synthesis Workshop, Oak Ridge, TN Nov 9-11, 2009.
    - Abstract, non-refereed, contributed, presentation type: poster
- Urban, N.R., J.A. Perlinger, J. Mwangi, C.P. McDonald , G.A. McKinley, A.R. **Desai**, N. Atilla, V. Bennington, 2009: Field measurements of CO2 in and above the Great Lakes: The case for net emission of CO2. 52nd Conference of the International Association for Great Lakes Research, Toledo, OH, May 18-22, 2009
    - Abstract, non-refereed, contributed, presentation type: talk
- Xiao, J., K.J. *Davis*, X. Zhou, T. Zhou, Y. Luo, C. Beer, B. Bond-Lamberty, A.R. **Desai**, M. Jung, B.E. Law, L. Liu, W.M. Post, M. Reichstein, D. Ricciuto, E. Tomelleri, D. Turner, S.C. Wofsy, B.K. Wylie, X. Xiao, F. Yang, L. Zhang, M. Zhao, 2009: Regional to continental upscaling of AmeriFlux data for carbon cycle studies: Progress, challenges, and new directions. 2nd North American Carbon Program (NACP) All-Investigators Meeting, San Diego, CA, Feb. 18, 2009.
    - Abstract, non-refereed, contributed, presentation type: talk

2008

- Atilla, N., G.A. McKinley, N.R. Urban, N. Kimura, V. Bennington, A.R. **Desai**, C. Wu, 2008: Carbon cycling in Lake Superior: Observations, models, and impacts on the regional carbon balance. ASLO Ocean Sciences Meeting 2008, Orlando, FL, Mar. 6, 2008, session 108.
    - Abstract, non-refereed, contributed, presentation type: talk
- Atilla N, V. Bennington, N. Kimura, G.A. McKinley, N.R. Urban, C. Wu, A.R. **Desai**, 2008: The carbon budget of Lake Superior: First results from the CyCLeS project, 51st Conference of the International Association for Great Lakes Research, Peterborough, ONT, May 2008
    - Abstract, non-refereed, contributed, presentation type: talk
- Atilla, N., G.A. McKinley, N.Urban, N. Kimura, V. Bennington, A.R. **Desai**., C. Wu, 2008: Carbon cycling in Lake Superior: Observations, models and impacts on regional carbon budget. Ocean Carbon and Biogeochemistry Summer Workshop, Woods Hole, MA, July 2008.
    - Abstract, non-refereed, contributed, presentation type: poster
- Atilla, N., G.A. McKinley, Bennington, V., N. Kimura, C. Wu, N. Urban, A.R. **Desai**, 2008: Carbon cycling in Lake Superior: preliminary results from a modeling study, CyCLeS workshop, Madison, WI, August 2008.
    - Abstract, non-refereed, contributed, presentation type: talk

- Atilla, N., G.A. McKinley, V. Bennington, N. Kimura, N. Urban, C. Wu, A.R. **Desai**, 2008: Role of Lake Superior in regional carbon budget. 11th Chequamegon Ecosystem Atmosphere Study (ChEAS) meeting, University of Notre Dame Environmental Research Center , Gogebic County, MI August 2008.
    - Abstract, non-refereed, contributed, presentation type: talk
- Bennington, V., G.A. McKinley, N. Kimura, N. Atilla, C. Wu, N. Urban, A.R. **Desai**, 2008: Climate impacts on the circulation and thermal structure of Lake Superior, 51st Conference of the International Association for Great Lakes Research, Peterborough, ONT, May 2008
    - Abstract, non-refereed, contributed, presentation type: talk
- Bennington, V., G.A. McKinley, N. Kimura, N. Atilla, C. Wu, N. Urban, A.R. **Desai**, 2008: Circulation patterns of Lake Superior, Ocean Carbon and Biogeochemistry Summer Workshop, Woods Hole, MA, July 2008.
    - Abstract, non-refereed, contributed, presentation type: poster
- Bennington, V., G.A. McKinley, N. Kimura, N. Atilla, C. Wu, N. Urban, A.R. **Desai**, 2008: Climate impacts on the circulation and thermal structure of Lake Superior, CyCLeS workshop, Madison, WI, August 2008.
    - Abstract, non-refereed, contributed, presentation type: talk
- Bennington, V., G.A. McKinley, N. Atilla, N. Kimura, N. Urban, C. Wu, A.R. **Desai**, 2008. Does Terrestrial Carbon Explain Lake Superior Model-Data pCO2 Discrepancy? Eos Trans. AGU, 89(53), Fall Meet. Suppl., Abstract OS53C -1324.
    - Abstract, non-refereed, contributed, presentation type: poster
- Cook, B.D., A.R. **Desai**, P. Weishampel, J.Y. King, P.V. Bolstad, K.J. *Davis*, R.K. Kolka, N. Saliendra, R.M. Teclaw, D.D. Baumann, 2008. Methane Emissions and Warming Potentials of Wetlands of the Great Lakes Region, Eos Trans. AGU, 89(53), Fall Meet. Suppl., Abstract B33B -0422.
    - Abstract, non-refereed, contributed, presentation type: poster
- *Davis*, K.J., P.V. Bolstad, R. Anderson, B.D. Cook, F.A.Heinsch, S.W. Running, N.S. Saliendra, K. Cherrey, A.R. **Desai**, R. Kolka, P. Weishampel, 2008: Probabilistic carbon flux upscaling in a complex northern forest ecoregion. NASA Carbon Cycle and Ecosystems Joint Science Workshop 2008, Adelphi, MD, Apr. 28-May 2, 2008.
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., Interannual variability of CO2 in the ChEAS mesonet, 2008: Chequamegon Ecosystem Atmosphere Study (ChEAS) Meeting XI, UNDERC-East, Land O Lakes, WI, Aug. 12, 2008
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., 2008: Lake Superior region carbon cycle: Viewed from the air, Lake Superior Biogeochemistry Workshop, University of Wisconsin-Madison, Madison, WI, Aug. 5, 2008
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., B.N. Sulman, D.S. Mackay, 2008: Impacts of leaf phenology and water table on interannual variability of carbon fluxes in subboreal uplands and wetlands:

Implications for regional fluxes in the upper Midwest USA. Ameriflux Meeting 2008, Boulder, CO, Oct. 15,2008.
    - Abstract, non-refereed, invited, presentation type: talk
- **Desai**, A.R., B.B. Stephens, D.S. Schimel, D.J. Moore, S. de Wekker, T. Campos, R.K. Monson, W.K. Ahue, R.J. Behnke, S.M. Aulenbach, T. Quaife., 2008. Constraining regional carbon fluxes in complex terrain: The Airborne Carbon in the Mountains Experiment, Eos Trans. AGU 89(53), Fall Meet. Suppl., Abstract B51A -0363.
    - Abstract, non-refereed, contributed, presentation type: poster
- Myklebust, M. L. Hipps, R. Huc, L. Misson, R. Ryel, G. Wohlfahrte, B. Chojnicki, P. Curtis, N. Delpierre, S. Frolking, A. Granier, P. Lafleur, M. Aurela, P. Bolstad, M. Cavaleri, J. Chambers, A.R. **Desai**, E. vanGorsel, A. Iton, H. Loescher, S. Oberhauer, J. Pumpanen, M. Ryan, N. Saigusa, T. Vesala, 2008: Is the underestimate of ecosystem respiration by eddy covariance related to LAI? ADVEX Advection Workshop, Gembloux, Belgium, Jun. 30-Jul. 1, 2008.
    - Abstract, non-refereed, contributed, presentation type: poster
- Sulman, B.N., A.R. **Desai**, D.S. Mackay, S. Samanta, B.D. Cook, N. Saliendra, 2008: Interactions of carbon and water cycles in north temperate wetlands: Modeling and observing the impact of a declining water table trend on regional biogeochemistry. 18th Conference of Atmospheric Biogeosciences, American Meteorological Society, Orlando, FL, Apr. 29, 2008, session 1.2.
    - Abstract, non-refereed, contributed, presentation type: talk
- Sulman, B.N., A.R. **Desai**, B.D. Cook, N. Saliendra, D.S. Mackay, 2008: Observed carbon-water interactions in three north-temperate wetlands. Ameriflux Meeting 2008, Boulder, CO, Oct. 15-17, 2008.
    - Abstract, non-refereed, contributed, presentation type: poster
- Urban, N.R., G.A. McKinley, C.P. McDonald , N. Atilla, A.R. **Desai**, C. Wu, 2008: Contributions to the CO2 efflux from the Laurentian Great Lakes. ASLO Ocean Sciences Meeting 2008, Orlando, FL, Mar. 6, 2008, session 108.
    - Abstract, non-refereed, contributed, presentation type: talk
- Xiao, J., K.J. *Davis*, B.D. Cook, P.V. Bolstad, A.R. **Desai**, N. Saliendra, K. Cherry, R. Kolka, P. Weishampel., 2008. Upscaling of Eddy Flux Measurements in the Upper Great Lakes Region Using MODIS Data and Modeling Approaches, Eos Trans. AGU, 89(53), Fall Meet. Suppl., Abstract B51A -0367.
    - Abstract, non-refereed, contributed, presentation type: talk

2007

- **Desai**, A.R., G.A. McKinley, N.R. Urban, C. Wu, 2007: Carbon cycling in Lake Superior: Impact on upper Midwest regional carbon balance. EOS Transactions, American Geophysical Union, 88(52), Fall Meeting Supplement, Abstract B41F -03, San Francisco, CA, Dec. 13, 2007.
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., D.S. Schimel, K.J. *Davis*, W.J. Sacks, 2007: Regional carbon fluxes by simultaneous assimilation of multiple flux towers in a simple ecosystem model. U.S.

North American Carbon Program (NACP) Investigators Meeting, Colorado Springs, CO, Jan. 22-24, 2007, H.5.
    - Abstract, non-refereed, contributed, presentation type: poster
- Moffat, A.M., D. Papale, M. Reichstein, D.Y. Hollinger, A.D. Richardson, A.G. Barr, C. Beckstein, B.H. Braswell, G. Churkina, A.R. **Desai**, E. Falge, J.H. Gove, M. Heimann, D. Hui, A.J. Jarvis, J. Kattge, A. Noormets, V.J. Stauch, 2007: Comprehensive comparison of gap filling techniques for eddy covariance net carbon fluxes. EOS Transactions, American Geophysical Union, 88(52), Fall Meeting Supplement, Abstract B33E -1666, San Francisco, CA, Dec. 2007.
    - Abstract, non-refereed, contributed, presentation type: poster
- Ricciuto, D.M., K. Keller, K.J. *Davis*, A.R. **Desai**, A.S. Denning, 2007: Carbon cycle data assimilation to improve terrestrial carbon flux diagnosis and prediction, U.S. North American Carbon Program (NACP) Investigators Meeting, Colorado Springs, CO, Jan. 22-24, 2007, K.9.
    - Abstract, non-refereed, contributed, presentation type: talk
- Saliendra, N., M. Kubiske, R. Teclaw, R. Kolka, K. *Davis*, K. Cherrey, A.R. **Desai**, D. Ricciuto, P. Bolstad, B. Cook, R. Anderson, F. Heinsch, 2007: Upscaling carbon fluxes from stand-level towers to the footprint of a very tall tower in a heterogeneous landscape, EOS Transactions, American Geophysical Union, 88(52), Fall Meeting Supplement, Abstract B53B -1189, San Francisco, CA, Dec. 2007.
    - Abstract, non-refereed, contributed, presentation type: poster

2006

- *Davis*, K.J., B.D. Cook, A.R. **Desai**, D.M. Ricciuto, W. Wang, 2006. The importance of advective flows on regional upscaling in a heterogeneous landscape using a regional cluster of towers. Flux Measurements in Difficult Conditions, Specialist Post-Conference Workshop, Integrated Land Ecosystem-Atmosphere Process Study (iLEAPS), Boulder, CO, Jan 2006.
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., 2006: Regional Carbon Fluxes in WI: Moving Towards Synthesis, Chequamegon Ecosystem-Atmosphere Study Meeting, Woodruff, WI, Jun. 2, 2006
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., K.J. *Davis*, P.V. Bolstad, B. Helliker, 2006: Constraining regional CO2 flux with multiple top-down and bottom-up approaches. Ameriflux Science Meeting, October 16-18, 2006.
    - Abstract, non-refereed, contributed, presentation type: poster
- **Desai**, A.R., P.R. Moorcroft, P.V. Bolstad and K.J. *Davis*. Observing and modeling the impact of forestry and CO2 fertilization on the carbon cycle in the Upper Midwest, USA. EOS Transactions, American Geophysical Union 87(36), Joint Assembly Supplement, Abstract B43A -30, Baltimore, MD, May 2006.
    - Abstract, non-refereed, contributed, presentation type: poster
- Saliendra, N., M. Kubiske, R. Teclaw, R. Kolka, K.J. *Davis*, K. Cherrey, A.R. **Desai**, D.M. Ricciuto, P.V. Bolstad, B.D. Cook, F.A. Heinsch. Testing the flux tower upscaling

hypothesis in a complex landscape in northern Wisconsin. Ameriflux Annual Meeting, Boulder, CO, Oct 2006.
    - Abstract, non-refereed, contributed, presentation type: poster
- Washenfelder, R.A., G.C. Toon, Z. Yang, G.K. Aleks, P.O. Wennberg, A.R. **Desai**, D.M. Ricciuto, A.E. Andrews, 2006: Surface exchange of CO2 observed by column measurements. ESO Transactions, American Geophysical Union, 87(52), Fall Meeting Supplement, Abstract B43A -0265, San Francisco, CA, Dec 2006.
    - Abstract, non-refereed, contributed, presentation type: poster

2005

- Bolstad, P.V., A.R. **Desai**, B.D. Cook and K.J. *Davis*. Bias and variability in biometric estimates of forest woody carbon gain at landscape scales: An empirical test in North Central Wisconsin. EOS Transactions, American Geophysical Union 86(52), Fall Meeting Supplement, Abstract B44B -08, San Francisco, CA, Dec. 2005.
    - Abstract, non-refereed, contributed, presentation type: talk
- *Davis*, K.J., A.E. Andrews, J. Berry, P.V. Bolstad, J. Chen, B.D. Cook, A.S. Denning, A.R. **Desai**, F.A. Heinsch, B. Helliker, N. Miles, A. Noormets, D.M. Ricciuto, S. Richardson, M. Uliasz, W. Wang. Regional forest-atmosphere carbon exchange via atmospheric inversions and flux-tower upscaling. EOS Transactions, American Geophysical Union 86(52), Fall Meeting Supplement, Abstract B44B -06, San Francisco, CA, Dec. 2005.
    - Abstract, non-refereed, contributed, presentation type: talk
- *Davis*, K.J., A. Andrews, J.A. Berry, P.V. Bolstad, J. Chen, B.D. Cook, A.S. Denning, A.R. **Desai**, B.R. Helliker, N. Miles, A. Noormets, D.M. Ricciuto, S.J. Richardson, M. Uliasz and W. Wang. Regional ecosystem-atmosphere carbon exchange observed simultaneously via atmospheric inversions and flux-tower upscaling. Proceedings of the Seventh International Carbon Dioxide Conference, Broomfield, CO, Sep. 2005.
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., 2005: Multi-Tower Synthesis Scaling of Regional Carbon Dioxide Flux: Another Fine Mess of Observed Data, Remote Sensing and Ecosystem Model Parameterization, Chequamegon Ecosystem-Atmosphere Study Meeting, Woodruff, WI, Jun. 1, 2005
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., P.V. Bolstad, P.R. Moorcroft, K.J. *Davis*. Influence of land cover heterogeneity, land-use change and management on the regional carbon cycle in the Upper Midwest USA as evaluated by high-density observations and a dynamic ecosystem model. EOS Transactions, American Geophysical Union 86(52), Fall Meeting Supplement, Abstract B44B -05, San Francisco, CA, Dec. 2005.
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., W. Wang, D.M. Ricciuto, B.D. Cook, F.A. Heinsch, K.J. *Davis*, A. Noormets, J. Chen, P.V. Bolstad, S.J. Richardson, N. Miles, M. Uliasz and P.R. Moorcroft, Synthesis of top-down and bottom-up scaling of regional terrestrial carbon dioxide fluxes: Implications for global terrestrial CO2 flux. Proceedings of the Seventh International Carbon Dioxide Conference, Broomfield, CO, Sep. 2005.

- Abstract, non-refereed, contributed, presentation type: poster

2004

- *Davis*, K.J., M.P. Butler, A.R. **Desai**, N.L. Miles, D.M. Ricciuto, S.J. Richardson, W. Wang, A.S. Denning, M. Uliasz, B.B. Stephens, A.E. Andrews, C. Yi and P.S. Bakwin, 2004. The role of flux towers in the emerging continental observing network. NOAA CMDL Modeling and Data Analysis Workshop. National Oceanic and Atmospheric Administration, Boulder, CO, Sep. 2004.
  - Abstract, non-refereed, contributed, presentation type: talk
- *Davis*, K.J., K.J. Craig, A.R. **Desai**, S. Kang, B.P. Reen and D.R. Stauffer, 2004. Observations and simulations of ABL and land surface heterogeneity during IHOP. 2nd International H2O Project Science Meeting, National Center for Atmospheric Research, Toulouse, France, Jun. 2004.
  - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., A. Noormets, P.V. Bolstad, J. Chen, B.D. Cook, P.S. Curtis, K.J. *Davis*, E. Euskirchen, C. Gough, J. Martin, D.M. Ricciuto, H.P. Schmid, J. Tang, H.B. Su, C. Vogel and W. Wang. Impact of vegetation cover and stand age on scaling carbon fluxes in the upper Midwest: A multiple eddy flux site study. EOS Transactions, American Geohpysical Union 85(47), Fall Meeting Supplement, Abstract B51A -0925, San Francisco, CA, Dec. 2004.
  - Abstract, non-refereed, contributed, presentation type: poster
- Tang, J., P.V. Bolstad, A.R. **Desai**, J.G. Martin, B.D. Cook and K.J. *Davis*. Ecosystem respiration and its components in an old-growth and mature northern forest. EOS Transactions, American Geophysical Union 85(47), Fall Meeting Supplement, Abstract B51A -0938, San Francisco, CA, Dec. 2004.
  - Abstract, non-refereed, contributed, presentation type: poster

2003

- Carey, E.V., P.V. Bolstad, K.J. *Davis* and A.R. **Desai**. Carbon storage as a function of successional stage in forests of the Upper Midwest, USA. North American Carbon Program Joint PI Meeting, Arlington, VA, May 2003.
  - Abstract, non-refereed, contributed, presentation type: poster
- *Davis*, K.J., K.J. Craig, A.R. **Desai**, S. Kang, N.L. Seaman, D.R. Stauffer, B.P. Reen and S.J. Richardson, Mesoscale variability in convective boundary layer structure observed during IHOP: Causes and implications for convective initiation. Proceedings of the 83rd Annual Meeting of the American Meteorological Society, Long Beach, CA, Feb. 2003.
  - Abstract, non-refereed, contributed, presentation type: talk
- *Davis*, K.J., D.R. Ricciuto, B.D. Cook, M.P. Butler, A.R. **Desai**, W. Wang, C. Yi, P.S. Bakwin, P.V. Bolstad, J. Martin, E. Carey, D.S. Mackay, B.E. Ewers. J. Chen, A. Normeets, F.A. Heinsch, A.S. Denning and R. Teclaw. A challenge to the flux-tower upscaling hypothesis? A multi-tower comparison from the Chequamegon Ecosystem-Atmosphere Study. EOS Transactions, American Geophysical Union 84(46), Fall Meeting Supplement, Abstract B42D -07, San Francisco, CA, Dec. 2003.

    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., B.D. Cook, K.J. *Davis*, P.V. Bolstad, E.V. Carey, J. Martin, L.J. Kreller and W. Wang. Old and Not-So-Old: Examining changes in forest ecosystem carbon exchange with stand age in the upper Midwest U.S. EOS Transactions, American Geophysical Union 84(46), Fall Meeting Supplement, Abstract B52D -04, San Francisco, CA, Dec. 2003.
    - Abstract, non-refereed, contributed, presentation type: talk
- **Desai**, A.R., K.J. *Davis*, P.V. Bolstad, E.V. Carey, B.D. Cook, L.J. Kreller, R. Teclaw and D. Baumann. Sylvania Wilderness - 2 Years of Carbon Uptake in an Old-Growth Forest. Ameriflux Annual Meeting, Boulder, CO, Oct 2003.
    - Abstract, non-refereed, contributed, presentation type: poster

2002

- Carey, E.V., P.V. Bolstad, M. Davis, L.J. Kreller, J. Gerlach, K. J. *Davis*, A.R. **Desai**, J. Isebrands and R.M. Teclaw. Sylvania, Michigan - New Flux Measurement at an Old Growth Site. Ameriflux Annual Meeting, Boulder, CO, Oct. 2002.
    - Abstract, non-refereed, contributed, presentation type: poster
- **Desai**, A.R., 2002: Old-Growth Carbon Sequestration in the Sylvania Wilderness, Chequamegon Ecosystem-Atmosphere Study Workshop''', Woodruff, WI, Aug. 19, 2002
    - Abstract, non-refereed, contributed, presentation type: talk

2001

- **Desai**, A.R., K.J. *Davis*, D.R. Stauffer, B.P. Reen, R.J. Dobosy and S. Ismail. Mesoscale variability in boundary layer development over the southern Great Plains. 9th Conference on Mesoscale Processes, American Meteorological Society, Ft. Lauderdale, Florida, Jul. 2001, 4 pp.
    - Abstract, non-refereed, contributed, presentation type: talk
- Reen, B.P., D.R. Stauffer, K.J. *Davis* and A.R. **Desai**. On the added value of high-resolution remotely sensed soil moisture data in a mesoscale model.14th Conference on Numerical Weather Prediction, American Meteorological Society, Ft. Lauderdale, Florida, Jul. 2001, 5pp.
    - Abstract, non-refereed, contributed, presentation type: talk

F.2.g Nonrefereed publications not included above

- **Desai**, A.R., 2010. Help put the flux back in tall towers. Fluxletter: The Newletter of FLUXNET, Vol. 3, No. 2, August 2010.
    - http://www.fluxnet.ornl.gov/fluxnet/FluxLetter_Vol3_No2.pdf
- **Desai**, A.R., 2008. What can dense Ameriflux site clusters say about spatial and temporal heterogeneity in carbon and water cycling? Fluxletter: The Newletter of FLUXNET, Vol. 1, No. 2, May 2008.
    - http://www.fluxnet.ornl.gov/fluxnet/FluxLetter_Vol1_No2.pdf
- **Desai**, A.R., 2007. Chasing Carbon Dioxide: The New Sport of the 21st Century. NCAR Advanced Study Program (APS) Spotlight.
    - http://www.asp.ucar.edu/spotlight/ankur_desai.php

F.2.h Unpublished technical reports not in section b

N/A

F.2.i Publications by candidate's postdocs and students that do not include candidate as co-author

N/A

F.3 Representative Publications

Representative publication (found in appendix 8)

- **Desai**, A.R., 2010. Climatic and phenological controls on coherent regional interannual variability of carbon dioxide flux in a heterogeneous landscape. Journal of Geophysical Research-Biogeosciences, 115: G00J02 , doi:10.1029/2010JG001423.

This sole author publication is one of few published papers that provides observational and model-based evidence for the importance of plant life cycle (phenology) for climate processes at regional scales. Observations from a set of eddy covariance flux towers (including 1 I built and 3 of which I am the PI) were analyzed in a novel Bayesian model framework to extract information about the sensitivity of carbon-cycle feedbacks to this process. I found that despite a diverse range of ecosystems (hardwood forest, wetland, pine forest), simple mechanisms link climate forcing to phenology, which then feed back onto carbon cycle forcing, and drives coherence in interannual variability of carbon fluxes that has previously been difficult to simulate in ecosystem-atmosphere models.

Two other publications (found in appendix 9)

- **Desai**, A.R., Richardson, A.D., Moffat, A.M., Kattge, J., Hollinger, D.Y., Barr, A., Falge, E., Noormets, A., Papale, D., Reichstein, M., and Stauch, V.J., 2008. Cross site evaluation of eddy covariance GPP and RE decomposition techniques. *Agricultural and Forest Meteorology*, 148(6-7): 821-838, doi:10.1016/j.agrformet.2007.11.012.

Eddy covariance flux towers use micrometeorological techniques to turn observations of atmospheric turbulence and trace gases into information about carbon, water, and energy exchange between the surface and atmosphere. However, carbon flux information needs to be further partitioned into processes that represent photosynthesis (carbon uptake) by vegetation and respiration/decomposition of carbon pools. This now widely cited paper is the first to fully evaluate statistical and mechanistic techniques across a wide range multiple sites, include one popular method that I developed in Desai *et al.* (2005). Methods applied to a common flux tower dataset were submitted by this international group of scholars to me during a workshop in Germany. My analysis found good agreement among the methods at most sites and lends confidence to our community's ability to provide automated estimates of photosynthesis and decomposition across the entire flux tower network, though some biases were also identified.

This paper is now the standard-bearer for citation when discussing these models and is a companion to Moffat *et al* (2007), which focused on the role of gaps in these datasets.

- **Desai**, A.R., Austin, J.A., Bennington, V., and McKinley, G.A., 2009. Stronger winds over a large lake in response to a weakening air to lake temperature gradient. Nature-Geoscience, 2: 855-858, doi:10.1038/NGEO693.

This publication, which generated significant media attention, is representative of my work in the role of surface forcing on atmospheric boundary layer responses. Here, through my contribution as co-PI on an NSF funded study to better constrain large lake carbon cycling, I analyzed the response of near-surface winds to trends in surface temperature forcing over large lakes, in particular Lake Superior. Wind speed trends identified over the lake from buoys and satellite remote sensing were confirmed in this paper and compared to previously published temperature trends, which were re-analyzed here. These data were then used to assess a simple non-linear stable marine boundary layer model of atmospheric forcing that I used to identify a destabilization mechanism from surface temperature forcing as the cause of the wind speed trends. Further, we linked this forcing to the annual lake heat budget driven by atmospheric winter temperature trends that shorten the lake ice season. Finally, this manuscript assessed the impact of these trends on a 3D model of lake physical mixing and biogeochemistry, which hinted at changes in mixed layer depths and lake-atmosphere exchange rates. These findings provide under-recognized evidence for the role of large lakes in the climate system and the subtlety of climate change impacts on these systems.

F.4 Students Advised

Post-doctoral Scholars and Research Associates

- Bjorn Brooks (2009-), post-doctoral scholar
- Jonathan Thom (2008-), assistant researcher

Graduate Advisees

- Ben Sulman (AOS M.S. 2008, current AOS Ph.D. candidate ABD – expected to graduate Spring 2012)
    - M.S. Thesis Title: “A comparison of carbon dioxide, water, and energy fluxes at a drying shrub wetland in northern Wisconsin, USA with nearby wetland and forest sites”
    - Ph.D. Dissertation Title: “Modeling the future of forest-atmosphere carbon fluxes in the northern Great Lakes region”
    - Publications: Sulman *et al.*, 2009 Biogeosciences; Sulman *et al.,* 2010 Geophys. Res. Lett.
    - Awards: UW AOS Best First-Year Graduate Student; University of Michigan Biological Station, Biosphere-Atmosphere Research Traineeship (BART), NSF IGERT, Constraining and testing treatment of disturbance, succession, and biogeochemistry in a forest landscape model and understanding their effects on regional climate, Two-year Ph.D. fellowship, 06/01/09-05/30/11

- Will Ahue (AOS M.S. 2010)
    - M.S. Thesie Title: "Regional Carbon Fluxes and Boundary Layer Heights from the Airborne Carbon in the Mountains Experiment 2007"
    - Awards: Department of Defense, Science, Mathematics, and Research for Transformation (SMART) fellowship, two year M.S. fellowship, 09/01/08-08/31/10
    - Current Employment: Research Physical Scientist, US Army Corps of Engineers (USACE), Engineer Research and Development Center (ERDC), Geotechnical and Structures Laboratory (GSL), Geotechincal Engineering and Geosciences Branch (GEGB), Vickburg, MS USA
- Justin Bagley (current AOS Ph.D. candidate ABS – expected to graduate Fall 2011)
    - Ph.D. Dissertation Title: "A Complementary Approach to Modeling Land Use Impacts on Regional Climate and Ecosystem Services: Model Development, Verification, and Application"
    - Publications: Bagley et al., submitted
- Ruben Behnke (current AOS M.S. – expected to graduate Spring 2011)
    - M.S. Thesis Title: "A spatial and temporal analysis of temperature trends across the western United States from 1941-2000"
- Matt Rydzik (current AOS M.S. – expected to graduate Spring 2012)
    - M.S. Thesis Title (tentative): "Observational analysis of snow cover-boundary layer forcing of mid-latitude storm tracks"
- Kristine Jimenez (current Environment and Resources Ph.D. – expected to graduate Spring 2015)
    - Ph.D. Dissertation Title (tentative): "Contrasting environmental controls on CO2 and CH4 biogeochemistry"
    - Awards: UW L&S Community of Graduate Research Scholars, Advanced Opportunity Fellowship, 2-year Ph.D. fellowship awarded to Kristine Jimenez, 09/01/10-08/31/11

Ph.D. Committees

- Val Bennington (AOS) 2007-2010, Brent Maddux (AOS) 2007-, Bill Sacks (Env. and Resources) 2007-2010, Tim Wagner (AOS) 2008-, Shawn Serbin (Forest and Wildlife Ecology) 2008-, Dima Smirnov (AOS) 2009-, Erin Wagner (AOS) 2009-2010, Erica Bickford (Env. and Resources) 2009-, Katie Holman (AOS) 2010-, Jordan Read (Limnology and Marine Science) 2011-

M.S. Readers

- Erica Bickford (AOS) 2008, Kelly Logan (Env. and Resources) 2010, Kathryn Mozer (AOS) 2010, Amanda Fay (AOS) 2010

Undergraduate Mentoring

- Michael Balliett, UW Trout Lake Station Juday Fellow, Summer 2009, Victoria Vasys, NSF REU, 2009-2010, Nicole Schroeder, senior thesis student AOS, 2009-2010, Jennifer

Welch, research intern, summer 2010, Ihor Sehinovych, UW Undergraduate Research Scholar, 2010-2011

F.5 Invited Research Presentations

2011

- *Missing the "sink": What observations and models tell us about the future of land carbon dioxide uptake and why it matters for future climate change*, University of Virginia, Dept of Environmental Sciences seminar series, Charlottesville, VA, Apr 14, 2011 (invited)
- *Ethics of Global Climate Change*, Dept of Philosophy, Phil 441: Environmental Ethics, University of Wisconsin, Madison, WI, Mar 4, 2011 (invited)
- *Missing the "sink": What observations and models tell us about the future of land carbon dioxide uptake and why it matters for future climate change*, Zoology 955: Limnology Seminar, University of Wisconsin, Madison, WI, Mar 1, 2011 (invited)
- *Indirect and direct effects of climate change on forest carbon cycling*, Dept of Forest and Wildlife Ecology, University of Wisconsin, Madison, WI, Feb 23, 2011 (invited)
- *How to Talk to An Ecologist*, Joint Panel Discussion: *Communicating with Each Other: The Challenges and Rewards of Expanding Atmospheric Science's Professional Partners*, 9th History Symposium, 91st American Meteorological Society Annual Meeting, Seattle, WA, Jan. 25, 2011 (invited)

2010

- *When is a wetland a wetland? Carbon and water cycles in north temperate fens and bogs*, Program in Ecology, Evolution, and Conservation Biology, University of Illinois, Urbana, IL, Oct. 27, 2010 (invited)
- *Spatial processes and land-atmosphere flux: Constraining regional ecosystem models with flux tower data assimilation*, Flux Measurements and Advanced Modeling, NSF/CU Summer Course, CU Mountain Research Station, Nederland, CO, July 29, 2010 (invited)
- *Surprises in sensitivity of regional terrestrial carbon cycling to climate change: Implications for climate modeling and land management*, Cornell University, Cornell Center for Sustainable Future special seminar, Apr. 22, 2010 (invited)
- *Why has wind speed increased over Lake Superior?,* University of Wisconsin, Atmospheric & Oceanic Sciences Dept., Senior Capstone Seminar (405), Madison, WI, Mar 24, 2010 (invited)
- *Is atmospheric CO_2 an environmental toxicant?,* Colloquium in Environmental Toxicology (MET 606), UW-Madison, Madion, WI, Mar 16, 2010 (invited)
- *Biogeochemical surprises in a changing climate: Learning from large lakes, northern forests, and mountains*, University of Minnesota, Dept of Soil, Water, Climate, seminar series (invited)
- *The carbon conundrum*, Sustainability Principles, Practices, and Paradoxes Seminar (CEE 698), UW-Madison, Madison, WI, Feb 9, 2010 (invited)

2009

- *Spatial processes and land-atmosphere flux: Constraining regional ecosystem models with flux tower data assimilation*, Flux Measurements and Advanced Modeling, NSF/CU Summer Course, CU Mountain Research Station, Nederland, CO, July 23, 2009 (invited)
- *It's always rainy in Wisconsin, unless you're a plant?,* University of Wisconsin, Nelson Institute for Environmental Studies, Center for Sustainability and the Global Environment (SAGE), Seminar Series, Madison, WI, April 16, 2009 (invited)
- *Carbon cycling in a warmer, greener world*, University of Wisconsin, Nelson Institute for Environmental Studies, UW Center for Climatic Research, Climate People and Environment Seminar Series, March 31, 2009 (invited).
- *Phenological responses of NEE in the subboreal, OR, How not to give a talk*, UW Atmospheric and Oceanic Sciences, Department Seminar, March 4, 2009. (invited)

2008

- *Impacts of leaf phenology and water table on interannual variability of carbon fluxes in subboreal uplands and wetlands*, Ameriflux Meeting 2008, Boulder, CO, Oct. 15, 2008 (invited)
- *Spatial processes and land-atmosphere flux: Constraining ecosystem models with regional flux tower data assimilation*, Flux Measurements and Advanced Modeling, NSF/CU Summer Course, CU Mountain Research Station, Nederland, CO, July 22, 2008 (invited)
- *Wet carbon/dry carbon: Surface-atmosphere carbon exchange in subboreal uplands, lowlands, and water bodies*, University of Wisconsin, Nelson Institute for Environmental Studies, Center for Sustainability and the Global Environment (SAGE), Noon Seminar Series, Madison, WI, May 7, 2008 (invited)
- *From eddies to the breath of the planet: Flux towers, data assimilation, and the global carbon cycle*, University of Wisconsin, Atmospheric & Oceanic Sciences Dept., Department Seminar, Madison, WI, Feb. 20, 2008 (invited)
- *Carbon Dioxide, Friend or Foe? The terrestrial carbon cycle and a climate for life on Earth*, University of Wisconsin, Atmospheric & Oceanic Sciences Dept., Senior Capstone Seminar (405), Madison, WI, Feb. 6, 2008 (invited)

2007

- *Ecological Data Assimilation: The Flux Tower Story*, Ameriflux Meeting, Boulder, CO, Oct. 18, 2007 (invited)

2006

- *Towards a Robust, Generalizable Non-Linear Regression Gap Filling Algorithm (NLR_EM)*, Gap Filling Comparison Workshop, Max-Planck Institute for Biogeochemistry, Jena, Germany, Sep. 18, 2006 (invited)

2005

- *What Can a Regional Observation Network Tell Us About Land-Atmosphere Exchange of Carbon Dioxide: Tall Towers and Tall Tales in Wisconsin's Northwoods*, University of

Wisconsin, Dept. of Atmospheric and Oceanic Sciences, Special Seminar, Madison, WI, Dec. 15, 2005 (invited)

F.6 Summary of Grants and Contracts

I have been funded by a number of federal, non-profit, and internal funding sources, as PI and co-PI. The most notable of these was my NSF CAREER award.

Funding Statistics

- Total current and completed (10, 8 as lead or sole PI): $2,661,348
- Total pending (3): $2,954,410
- Total declined (15): $4,887,489
- Personal funding rate (10/25): 40%

Sample Funding Rates

- NSF Division of Environmental Biology (DEB) 16% (FY10)
- NSF Division of Atmospheric and Geospace Sciences (AGS) 43% (FY10)
- DOE National Inst. Climate Change Res. 14% (FY08 and FY09 average)
- NASA ROSES Carbon Cycle and Ecosystems 24% (FY10)
- NOAA Climate Program Office 20% (FY11 expected rate)

Complete, current and declined proposals listed below include grant title, funding source, program manager, list of PIs if more than one, amount, and dates. If more than one PI is listed, the contribution of A.R. Desai is listed after the name. The first name in all PI lists is the lead/senior PI. Declined proposals are shown to show funding rates and breadth of sources.

Completed

Project:	Estimating land-atmosphere carbon exchange in complex terrain: A data assimilation system for the Airborne Carbon in the Mountains Experiment (ACME07) (sole PI)	
Source:	University of Wisconsin Graduate School	Steve Schwoegler
Total Award:	$41,433	Period: 07/01/2008-06/30/2009

Current

Project:	Collaborative research: The carbon balance of Lake Superior: Modeling lake processes and understanding impacts on the regional carbon budget (co-PI)	
PIs:	G.A. McKinley (UW), C. Wu (UW), A.R. **Desai** (UW) 20%, N. Urban (Mich Tech)	
Source:	NSF BIO/DEB Carbon-Water	Donald Rice
Total Award:	$894,964	Period: 10/01/2006-7/31/2011

Project:	Improving prediction of climate change impacts on wetland-rich landscapes: Testing model mechanisms with flux-data assimilation at multiple sites (PI)	
PIs:	A.R. **Desai** (UW) 80%, D.S. Mackay (SUNY-Buffalo)	
Source:	DOE-NICCR / Michigan Tech University	Andrew Burton
Total Award:	$280,917	Period: 9/01/2007-6/30/2011

Project: Carbon cycle research at Willow Creek (sole PI)

Source:	USDA Forest Service Northern Research Station	Dave Garrison
Total Award:	$27,850	Period: 07/27/2009-6/30/2011

Project:	CAREER: Contrasting environmental controls on regional CO2 and CH4 biogeochemistry-Research and education for placing global change in a regional, local context (sole PI)	
Source:	NSF BIO/DEB	Matthew Kane
Total Award:	$693,869	Period: 8/01/2009-7/31/2014

Project:	A Regional Atmospheric Continuous CO_2 Network in the Rocky Mountains: Understanding Drivers of Flux Variability and Optimizing Regional Observations (PI)	
PIs:	A.R. **Desai** (UW) 75%, B.B. Stephens (NCAR)	
Source:	NOAA OAR CPO	Ken Mooney
Total Award:	$158,764 (UW portion)	Period: 9/01/2009-8/31/2012

Project:	Integration of wind energy systems into power engineering education programs at UW-Madison (co-PI)	
PIs:	G. Venkataramanan (UW), B. Lesieutre (UW), T. Jahns (UW), A.R. **Desai** (UW) 25%	
Source:	DOE-Golden Field Office	
Total Award:	$399,931	Period: 01/01/2010-12/31/2011

Project:	Observing carbon fluxes and potential climate change impacts from forest land management (sole PI)	
Source:	Wisconsin Focus on Energy	Ingrid Kelley
Total Award:	$93,108	Period: 6/01/2010-5/31/2013
Project:	What does temporal coherence in surface-atmosphere carbon/water fluxes from lakes, wetlands, and uplands imply for biome-scale climate sensitivity? (sole PI)	
Source:	University of Wisconsin Graduate School	Steve Schwoegler
Total Award:	$30,360	Period: 7/01/2010-6/30/2011

Project:	Forecasting climatic and biological thresholds for rapid change in distribution and sustainability of lodgepole pine forests in Western North America (sole PI)	
Source:	University of Wisconsin Graduate School	Steve Schwoegler
Total Award:	$40,152	Period: 7/01/2011-6/30/2012

Pending

Project:	Differing climate sensitivity of uneven and even aged forest carbon cycles: Implications for late succession forest transition in a changing climate (PI)	
PIs:	A.R. **Desai** (UW) 40%, E. Marin-Spiotta (UW), R. Scheller (Portland State), K. Macfarlane (DOE LLNL)	
Source:	Dept. of Energy, Terrestrial Carbon Processes	Mike Kupperberg
Total Award:	$1,081,583 ($734,426 UW portion)	Period: 1/01/2011-12/31/2013

Project:	Collaborative Proposal: ABI Innovation: Model-data synthesis and forecasting across the upper Midwest: Partitioning uncertainty and environmental heterogeneity in ecosystem carbon exchange (co-PI)	
PIs:	M. Dietze (UIUC), A.R. **Desai** (UW) 10%	
Source:	NSF Advances in Biological Informatics	Reed Beaman
Total Award:	$103,922 (UW portion)	Period: 5/16/2011-5/15/2014

Project:	Forecasting climatic and biological thresholds for rapid change in distribution and sustainability of lodgepole pine forests in Western North America (PI)	
PIs:	A.R. **Desai** (UW) 40%, M. Dietze (UIUC), P. Stoy (Montana State), R. Monson (CU-Boulder)	
Source:	NASA ROSES 2010 A.30	Woody Turner
Total Award:	$1,768,905 ($1,178,156 UW portion)	Period: 6/01/2011-5/31/2015

Declined

Project:	An AmeriFlux cluster for regional carbon flux measurement, modeling and diagnoses at seasonal to decadal time scales (co-I)	
Source:	DOE Terrestrial Carbon Cycle	
Total Award:	$277,500	Period: 8/01/2006-7/31/2009

Project:	Collaborative Research: Diagnosis and modeling of coupled carbon and water cycles in wetland-rich landscapes (co-I)	
Source:	NSF Ecosystems	
Total Award:	$545,433	Period: 09/01/2006-08/31/2011

Project:	Land-water linkages: Coupling of Lake Superior carbon cycling, watershed inputs, and regional carbon emissions (co-PI)	
Source:	NASA Carbon Cycle	
Total Award:	$883,662	Period: 1/01/2007-12/31/2009

Project:	Probabilistic carbon flux upscaling across a northern forest ecoregion (co-PI)	
Source:	NASA ROSES Carbon Cycle	Diane Wickland
Total Award:	$203,255	Period: 9/01/2007-8/31/2010

Project:	A Regional Atmospheric Continuous CO_2 Observing Network in the Rocky Mountains (Rocky RACCOON): Operation and Synthesis with Remote Sensing Products to Produce Regional Carbon Flux Estimates (co-PI)	
Source:	NASA ROSES Carbon Cycle	Diane Wickland
Total Award:	$208,238	Period: 1/01/2008-1/31/2010

Project:	An LTREB Study of the Interactions Among Climate, Water Balance, Disturbance, and Carbon Cycles in Northern Ecosystems (co-PI)	
Source:	NSF DEB/LTREB	Saran Twombly
Total Award:	$449,332	Period: 1/01/2008-12/31/2012

Project:	Collaborative Research: A study of terrain-induced advective flows and its effect on advective corrections to flux measurements (co-PI)	
Source:	NSF ATM	Stephan P. Nelson
Total Award:	$436,413	Period: 1/01/2008-12/31/2010

Project:	Regional land-atmosphere emission of methane: Fusing remote sensing with flux tower analysis and raising public awareness (sole PI)	
Source:	NASA ROSES New Investigator	Ming-Ying Wei

Total Award:	$415,176	Period: 3/01/2008-2/28/2011
Project:	Quantifying and mitigating Wisconsin's natural methane emissions (sole PI)	
Source:	Wisconsin Focus on Energy, Inc.	Ingrid Kelley
Total Award:	$140,631	Period: 9/1/2008-8/31/2010
Project:	Collaborative Research: How do micro-topography and low-level jets influence nocturnal advection of tracers across upland-wetland gradients and what are the impacts on flux towers (PI)	
Source:	NSF ATM/PDM	Stephan P. Nelson
Total Award:	$481,031	Period: 1/01/2009-12/31/2011
Project:	Historic and future climate-induced trends in evapotranspiration as a driver of Great Lake water level fluctuations (co-PI)	
Source:	Wisconsin Sea Grant	
Total Award:	$239,570	Period: 2/01/2010-1/31/2012
Project:	Impact of climate change on phenological lifecycles, nutrient cycling, and water use of Wisconsin ecosystems (co-PI)	
Source:	UW Intercampus Research Incentive	Brian Thompson
Total Award:	$50,000	Period: 7/01/2010-6/30/2011
Project:	How will changing climate and hydrology affect future carbon storage and emission in U.S. wetlands? (PI)	
Source:	DOE-NICCR / Michigan Tech University	Andrew Burton
Total Award:	$69,601	Period: 9/01/2010-8/31/2011
Project:	What does temporal coherence in surface-atmosphere carbon/water fluxes from lakes, wetlands, and uplands imply for biome-scale climate sensitivity? (PI)	
Source:	DOE-NICCR / Michigan Tech University	Andrew Burton
Total Award:	$99,554	Period: 9/01/2010-8/31/2011
Project:	Re-imagining CarbonTracker as a Novel Diagnostic Tool for Terrestrial Carbon Cycle Model Evaluation and Future Atmospheric Carbon Dioxide Concentration Prediction (sole PI)	
Source:	NOAA OAR CPO	Ken Mooney
Total Award:	$388,093	Period: 5/01/2011-4/31/2014

G. Outreach/Extension

G.1 Outreach Statement

My outreach revolves around extending my research expertise in climate science and ecosystem impacts to the general public, media, school groups, and decision makers. I like to use a variety of techniques beyond public lectures, such as art installations, field trips, and lab demonstrations, to engage all of us into thinking more critically and with more nuance about how the climate system operates and what it means for their own backyard. I also highly value the Wisconsin Idea and benefited greatly from participation in the WI Idea field seminar. With research sites in Northern Wisconsin, it is natural for me to expand the boundaries of the University to those who live in the Northwoods and to those who manage natural resources in this state.

I categorize the outreach activities I have done to date in three broad categories:

Educating stakeholders and decision makers about climate change impacts

- Member, Chequamegon-Nicolet National Forest Climate Change Science Roundtable, Jun 2010-
- Wisconsin Public Utility Institute, Climate Change Impacts: Decision Making and Risk Management in Wisconsin's Utility Industry, Roundtable Discussion, Madison, WI 22 Sep 2010
- U.S. Forest Service, Region 9 EMS Planning, Appeals, and Litigation Meeting, Willow Creek Ameriflux tower tour and discussion, Park Falls, WI, 19 May 2010
- Society for Environmental Journalists (SEJ) Post-Conference Field trip, Institute for Journalism and Natural Resources, "Tall towers and carbon", field station bus tour for 15 journalists, Parks Falls, WI, Oct. 2009

Through my activities in operating climate and ecosystem field stations in northern Wisconsin, I have become in touch with a number of decision-makers at the state and federal level. I have provided expertise to panels on wind energy and climate science. I also have arranged field trips to forest planners to discuss carbon-based forest management and for a journalist group to discuss the atmospheric carbon cycle at the 447-m WLEF tall tower that I helped instrument.

Engaging current and future global change scientists

- For-CLIMATE: Forest and Climate Leaders In Menominee And The Ecosystem, lead organizer, summer global change field course for community college students at the College of the Menominee Nation tribal college, planned for July 2011-2014
- NSF, Summer Graduate Course on Flux Measurements and Advanced Modeling, invited lecturer, Niwot Ridge LTER, Nederland, CO, July 2008, 2009, 2010
- Training for natural resource careers in a changing climate, National Teach-In Day, UW-Madison Dept of Forest Ecology, panel member, Madison, WI, 22 Oct 2009

- Carbon Cycle and Climate Modeling Teacher's Workshop, U. Wisconsin Center for Climatic Research, "Wisconsin and Carbon: Perfect Together", high school science teacher activity, Madison, WI, July 2009
- NCAR/ASP, Regional Biogeochemistry: Needs and Methodologies, lead organizer/speaker, Boulder, CO, Jun. 2007
- National judging committee member, GLOBE Learning Expedition high school group experiment report, Boulder, CO, 2007
- NASA Academies undergraduate proposal judge, University Park, PA, 2006

I believe that summer workshops, professional development panels, and research awards for undergraduate and graduate students interested in global change science can have a transformative impact for these students. For the past several years, I have been an invited lecturer and part organizer of a two-week graduate student workshop on flux tower measurements and modeling. I also designed, lead and organized a two week 50 student workshop on Regional Biogeochemistry in 2007 that has now generated a number of top early career scientists in our field and created many new collaborations. Finally, as part of my NSF CAREER award, I have begun a new chapter in summer workshops for me, focusing on undergraduate community college students at a tribal college, many of whom come from disadvantaged backgrounds, are first generation students, and as Native Americans, are underrepresented in the sciences. The goal of this course, the inaugural version to be held summer 2011, is to expose students with aptitude for science or forestry to global change science and encourage some to consider 4 year degrees in the sciences and possibly graduate degrees.

Elevating public discourse about climate change

As noted in section G.6, I have given a number of public lectures at age levels from pre-school to K-12 teachers to adult learner in a variety of settings. Beyond lectures, I have also had the opportunity to communicate via non-traditional methods such as an art installation at the Seattle Convention Center during the American Meteorological Society annual meeting. The topic of the piece was climate change impacts to western forests and was organized through an innovative scientist-artist collaboration. I also enjoy traveling lab demonstrations at the elementary and pre-school levels to expose early learners to the fact that anyone who is a careful observer and interpreter of nature is also a scientist.

Because of my significant outreach activities, I was recently recognized and selected to join as a Research Ambassador Fellow, a faculty fellowship supported by NSF and run by N. Nadkarni of Evergreen State College, Olympia, WA. This summer, I will receive training on how to improve and increase the public engagement with my work, especially to non-traditional audiences, such as inmates at a medium security prison, where I will speak this summer.

G.2 Significant Outreach Programs

I participated as an invited lecturer at the NSF-funded graduate student workshop "Flux measurements and modeling," in July 2008, 2009, and 2010. The workshop was organized by R. Monson of CU-Boulder and D. Moore of King's College-London. I was involved primarily in the modeling section of this course and contributed to the development of a popular computer lab tutorial with D. Moore, J. Zobitz (Augsburg College), and B. Sacks (NEON, Inc.), described below.

Problem and clientele

The clientele were graduate students in a variety of natural resources and atmospheric science disciplines from the U.S. and internationally. While the students all have strong disciplinary training, most lack strong fundamentals on the nature of ecosystem modeling and data assimilation. The concept of data assimilation is growing of major importance in the field of ecological modeling and graduate students need experience with its basic components so that they can apply it to their own research.

Objectives

The objective of the tutorial was to provide exposure to a real ecological data assimilation and understand how to develop research questions that take advantage of data assimilation in biosphere-atmosphere modeling as data availability and computational speed increase.

Details on methods of instruction

On day 1, we invited lecturers who are well known for their expertise in ecological data assimilation and who also are considered excellent teachers. These lectures provided a foundational overview of the topic and examples from each lecturer's own research. On the second day, we moved to a computer lab where we had developed a tutorial using an ecosystem model (SipNET) with a particular form of data assimilation (MCMC). Students worked in teams of 2-3 and first went through the tutorial to understand how to compile and run the model to estimate parameters. After the sample exercise, each group devised a proposed research mini-project using the data set and model provided. We worked with each group to help them refine ideas and focus on those that could be realistically explored in a day. Students worked on this over the course of the day, and for many groups, into the night, as most were highly engaged in their examples. On day 3, we ran a student conference, where each group presented their results and the day 1 lecturers and other groups were audience members who provided critique.

Implications and relevance

The level of engagement and post-course evaluations suggested that most students found this exercise to be one of the most useful portions of the course. Students were allowed to take the model and data assimilation code with them and several of these students now collaborate actively on this particular model. We have also submitted a paper for publication aimed at similar students who are interested in learning the basics of data assimilation. I suspect over time that this publication and the continued training through the course will aid next generation scientists as they encounter a data-rich era in ecological and atmospheric sciences.

G.3 Contributions to specialized and interdisciplinary programs

N/A

G.4 Outreach Publications

N/A

G.5 Representative Outreach Publications

N/A

G.6 Public Lectures

Talks for the public

- Why does climate care about parts per million?, University of Wisconsin Communications, 5-Minute Lecture, iTunes U, Apr. 17, 2010 (invited)
- Biogeochemical surprises in a changing climate, Wednesday Nite @ the Lab, Wisconsin Alumni Association, UW-Madison, Madison, WI, Mar 3, 2010 (invited)
- Carbon, Water, Land Use, Climate: Understanding interannual variability in surface-atmosphere greenhouse gas exchange, Wisconsin Ecology Group 2008 Fall Symposium, Madison, WI, Oct. 17, 2008 (invited)

School group demonstrations and discussions

- Ozone Fighters EcoChallenge website/youtube videos, St. James School (grade 8), interviewee, Madison, WI, Nov 29, 2011, http://www.wix.com/ozonefighters/ozonefighters
- Super Science Saturday, Franklin-Randall School, Madison Metropolitan School District, "Professor CO2", K-5 educational demonstration, Madison, WI, March 2009
- University Avenue Day Care, "Hurray for Spring!", public science demonstration for preschool, Madison, WI, March 2008
- Penn State University, Space Day, exhibitor, University Park, PA, 2005
- One Sky Many Voice, Kids as Global Scientists - Online mentoring for middle-school science students, 1999-2001

Art installations

- American Meteorological Society / Eco-Arts, Forecast: Communicating Weather and Climate, Art installation with Deanna Pindell, AMS Annual Meeting, Seattle, WA, Jan 2011

Media interviews

- Barncard, C., 2009. Warmer means windier on world's biggest lake. UW Communications/Wisconsin Week, Nov 16, 2009. Also featured in NY Times Science Times Observatory, Ashland Daily Press, Discovery News, Wisconsin Public Radio, Nature Geoscience News and others

- Tran, T., 2008. UN: Clouds of pollution threaten glaciers, health. The Associated Press, Thu. Nov 13, 2008.
- Black, H., 2008. Some scientists fear CO2-spewing bacteria will speed global warming. Milwaukee Journal Sentinel, March 17, 2008.

G.7 Colleague Evaluation of Outreach

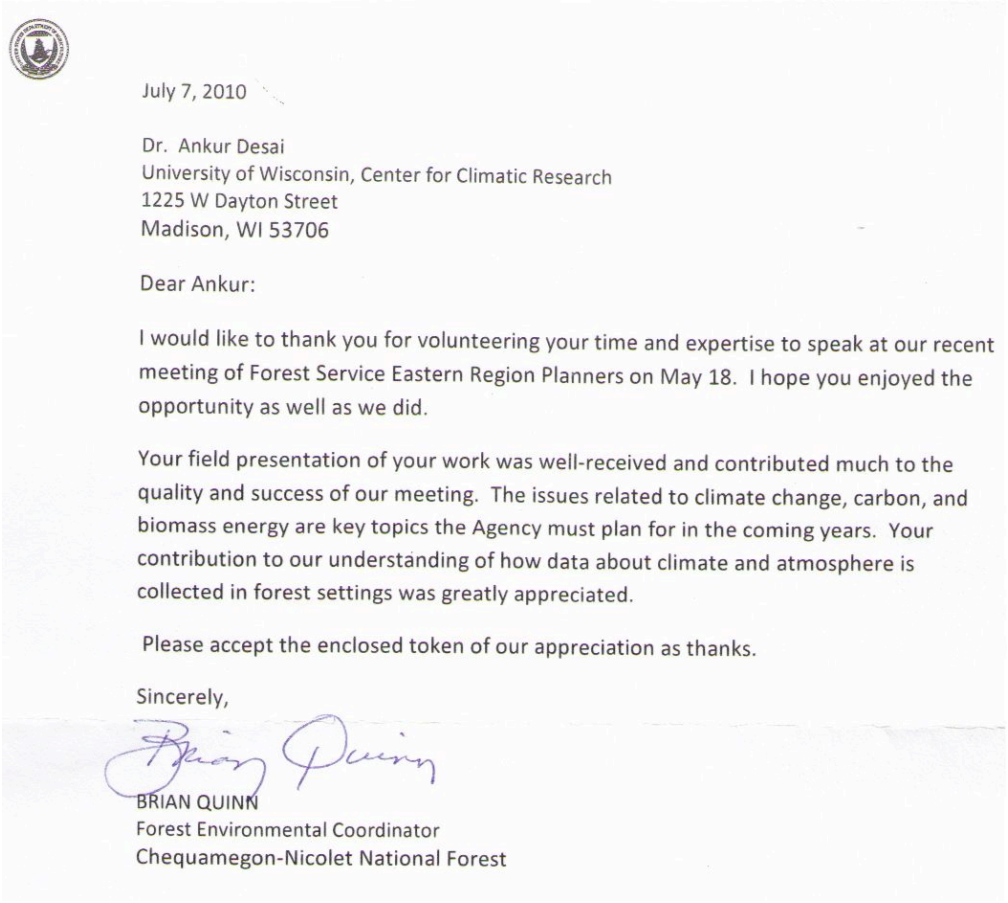
N/A

G.8 Supplementary Evidence

Awards

- Research Ambassador Fellowship, National Science Foundation/Evergreen State College, selected for community science outreach training, Olympia, WA, June 14-16, 2011
- UW Women in Science and Engineering Leadership Institute (WISELI), Celebrating Women in Science and Engineering, Women in Climate Science AOS speaker series, $2,000, 2010-2011 (co-awardee with graduate student Amanda Fay)
- Wisconsin Idea Seminar, selected participant, Madison, WI, May 19-23 2008

Letter for Brian Quinn, U.S. Forest Service:



July 7, 2010

Dr. Ankur Desai
University of Wisconsin, Center for Climatic Research
1225 W Dayton Street
Madison, WI 53706

Dear Ankur:

I would like to thank you for volunteering your time and expertise to speak at our recent meeting of Forest Service Eastern Region Planners on May 18. I hope you enjoyed the opportunity as well as we did.

Your field presentation of your work was well-received and contributed much to the quality and success of our meeting. The issues related to climate change, carbon, and biomass energy are key topics the Agency must plan for in the coming years. Your contribution to our understanding of how data about climate and atmosphere is collected in forest settings was greatly appreciated.

Please accept the enclosed token of our appreciation as thanks.

Sincerely,

BRIAN QUINN
Forest Environmental Coordinator
Chequamegon-Nicolet National Forest

H. Professional Service

National/International Committees

- Committee chair, American Meteorological Society (AMS), Agricultural and Forest Meteorology Science and Technical Advisory Committee (STAC), 2010-2013
- Chair, Advisory working group, Fundamental Instrument Unit (FIU), National Ecological Observatory Networok, Inc., 2009-
- Member, North American Carbon Program (NACP) Science Steering Group (SSG), 2010-2013
- Member, Biogeochemistry Working Group, FORECAST NSF Research Coordination Network, Jul 2010
- Committee member, American Meteorological Society (AMS), Board on Atmospheric Biogeosciences, 2008-2011, renewed to 2014
- Site selection consultant, National Ecological Observatory Network (NEON, Inc.), Great Lakes Core Site, July 15, 2008
- Graduate student rep., American Geophysical Union, Biogeosciences section, 2005-2006

Panels and Workshops

- USFS-Chequamegon-Nicolet National Forest, Climate Change Science Mitigation and Adaptation Needs Workshop, participant, Madison, WI, Apr. 27-28, 2010
- WIDNR, Charting the Path Forward, participant in air quality monitoring workshop, Madison, WI, Nov 11, 2009
- NCAR/ASP, Preparing for the Postdoc, invited panel participant, Apr. 2007

Conference Sessions Organized

- Co-convener, American Geophysical Union Fall Meeting, Session U12/B47: Regional Biosphere-Atmosphere Interactions in Complex Terrain: Processes and Feedbacks Among Nutrients, Water, and Climate, 2010
- Session chair, Session 8: Quantifying the Impacts of Disturbance, 29th Conference on Agricultural and Forest Meteorology, American Meteorological Society, Aug 5, 2010.
- Session chair, Session 6: Local Responses to Regional and Global Climate Change II, 29th Conference on Agricultural and Forest Meteorology, American Meteorological Society, Aug 5, 2010.
- Session co-chair, Poster Session 1, 29th Conference on Agricultural and Forest Meteorology, American Meteorological Society, Aug 2, 2010.
- Breakout session organizer and chair, Carbon exchange in mountainous regions, 2nd North American Carbon Program All-Investigators Meeting, February 18-19, 2009
- Session organizer, Ecosystem isotopes and trace gas fluxes, Ameriflux Science Meeting, Oct 15, 2008
- UW, Carbon in the Northwoods research planning workshop, participant, Northern Lakes LTER, Boulder Junction, CO, Feb. 2009
- Co-convener, American Geophysical Union Fall Meeting, Session B31: Observing, Modeling and Predicting Regional Carbon Exchange, 2007

Journal Editorial Service

- Associate Editor, Journal of Geophysical Research-Biogeosciences, Jan 2011-
- Editorial Board, Agricultural and Forest Meteorology, Sept 2010-

Proposal and Journal Reviews (> 50)

- 2011: Agricultural and Forest Meteorology, DOE SBIR, UW College of Ag. McIntire-Stennis, J Climate
- 2010: Agricultural and Forest Meteorology (3), Oecologia, Ecological Applications, DOE SBIR, NSF/CRDF, JGR-G (3), GRL, Biogeosciences (2), Global Change Biology, U. MN Ag Experiment Station External Reviewer
    - NSF Ecosystem Science Cluster Panel Reviewer, Arlington, VA, Nov 16-18, 2010
- 2009: Agricultural and Forest Meteorology (3), Boundary Layer Meteorology (3), JGR-G (Biogeosciences) (3), NSF/ATM, NSF/DEB, DOE SBIR, DOE NICCR (Coastal), NOAA CPO, USDA NRS
- 2008: Agricultural and Forest Meteorology, DOE SBIR, DOE NICCR (Coastal), Ecoscience, Global Change Biology (2), JGR-D (Atmospheres) (2), JGR-G (Biogeosciences), NASA Terrestrial Ecology, UW College of Agriculture McIntire-Stennis Grant
- 2007: Agricultural and Forest Meteorology, DOE NICCR Coastal, DOE NICCR Midwest
- 2006: JGR-G (Biogeosciences), Agricultural and Forest Meteorology, DOE SBIR (2)
- 2005: Journal of Applied Meteorology

University Service

- AOS Website committee, 2010-2011
- AOS Recruitment committee, 2010-2011
- Faculty advisor, AOS graduate curriculum student advisory committee (GCSAC) for faculty retreat, 2010
- WISPIRG Fellow/Intern mentor, Katie Framstad, Spring 2009
- Secretary to the Atmospheric & Oceanic Sciences Faculty, 2007-2009
- Faculty mentor, Khorana Program for Scientific Exchange, 2008-
- Faculty affiliate, Wisconsin Ecology, 2008-
    - Wisconsin Ecology, Executive committee member (elected), 2009-2010
- AOS Qualifying Exam Committee, 2009
- AOS Colloquium Committee (chair), 2009-
- AOS Graduate Student Association Graduate-Faculty Liaison, 2009-
- AOS Graduate Admissions Committee, spring 2009
- Nelson Institute for Environmental Studies, Environmental Monitoring Program Committee, 2009-2010
- Center for Climatic Research, IT hiring committee, April-July 2009
- AOS ad-hoc Grad-Faculty Summit planning committee, Summer 2009
- Delta Program Graduate Teaching Certificate Reviewer, Scott Spak, Aug 2008

I. Letters of Evaluation

J. Effect of This Appointment on Overall Department Balance and Future Plans

K. Urgency