Dissertations Initiative for the Advancement of Climate Change Research (DISCCRS)

DISCCRS IV
Symposium Report
November 2 – 9, 2008

Report prepared by:
C. Susan Weiler, Ronald B. Mitchell, and Jennifer Marlon

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U.S. National Science Foundation
EAR-0435728 to Whitman College, C.S. Weiler PI
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Sponsoring Societies
AAG Association of American Geographers; AGU American Geophysical Union;
AERE Association of Environmental and Resource Economics;
AMS American Meteorological Society; ASLO American Society of Limnology &
Oceanography; ESA Ecological Society of America; ESS-ISA Environmental
Studies Section of the International Studies Association; and
USSEE U.S. Society for Ecological Economics

See Appendix I for Ph.D. dissertation citations and
Interest areas of the 34 Symposium Scholars
Introduction

[DISCCRS] helped me personally see how my research fits into (potentially) others’ work – that’s not necessarily immediately evident to me at this stage.

Interdisciplinary research is emerging as a critical tool for addressing some of the most intractable parts of today’s most complex global environmental problems, such as those at the science-policy interface of global climate change, human population increases, land use and biodiversity loss. Climate-change concerns in particular have led to a proliferation of interdisciplinary programs, institutes and centers to tackle the systemic problems involving integrated social and physical dynamics. The holistic approach allowed by interdisciplinary efforts fills a critical research gap that more conventional disciplinary strategies are poorly designed to address. But recruiting top-tier researchers who can and want to succeed in an interdisciplinary environment is challenging when the dominant institutional structures and reward systems have not yet evolved to provide the rigorous training and development necessary for productive interdisciplinary research.

The Dissertation Initiative for the Advancement of Climate Change Research, or DISCCRS (pronounced discourse), is aimed specifically at early career Ph.D.-level researchers, with a goal of catalyzing the formation of collegial interdisciplinary interactions. The program includes intensive week-long symposia, a public webpage with climate-change information, professional-development resources and a searchable online dissertation abstract registry to which all climate-change scientists are encouraged to contribute, as well as a weekly electronic newsletter with time-sensitive information on climate news, resources and interdisciplinary job announcements. The annual symposia bring together a group of early career researchers selected through a competitive application process. The symposia catalyze the process of developing a community of early career interdisciplinary climate change scholars who are interested in crossing the natural/social science divide and working both within and beyond the ivory towers. In addition to establishing a peer network, the symposium connects early career scholars with highly respected interdisciplinary mentors and introduces scholars to a variety of examples of cutting-edge research. It also provides training essential to effective interdisciplinary work, including sessions addressing communication, interpersonal and team development skills, through keynote presentations, experiential learning, small-group exercises and informal interactions.

DISCCRS symposia provide a unique opportunity to recent Ph.D.s because the competitive selection process ensures a small group of highly qualified participants from a wide diversity of backgrounds and disciplines. The meetings foster networking and intellectual exchange. In addition to developing a strong peer network, a select number of climate-change experts invited to serve as mentors and role models are on hand to provide perspectives on scientific, societal and professional issues. Activities enable these new scientists to forge an interdisciplinary path while working in a field-specific, academic-tenure driven world. This paper reports on the DISCCRS IV Symposium held November 2-9, 2008 held at the Saguaro Lake Ranch near Phoenix, AZ.

Symposium

DISCCRS IV Symposium Application Process

I will certainly think about research, scholarship, and leadership differently because of my experience at DISCCRS

Applications were invited from researchers working in the area of climate change or its impacts and completing a Ph.D. between April 1, 2006 – March 31, 2008.

The application process is fairly rigorous, requiring submission of:
  • Ph.D. dissertation abstract;
  • professional résume;
  • two essays describing current research and future career goals; and
  • two letters of recommendation.

Applications were reviewed by a 6-member committee of established climate-change scientists and former DISCCRS symposium participants. Candidates were competitively selected based on the quality of their research and potential to become well-respected experts in their field in the context of collaborative, interdisciplinary research on climate
change and its impacts with a goal of linking their science research to societal needs. Publication records were important and most of those accepted had multiple peer-reviewed publications.

The 108 applicants to the DISCCRS IV Symposium completed their Ph.D. degrees in 18 countries, including 73 (68%) completed in the United States. Other countries where PhD.s were completed were: Argentina (1); Australia (7); Canada (2); China (2); Egypt (1); Finland (1); France (3); Germany (2); India (2); Israel (1); Japan (2); Netherlands (1); South Korea (1); Spain (1); Sweden (2); Switzerland (1); and the United Kingdom (5). Thirty-eight scholars were invited for the 34 slots at the symposium. Four could not attend and, were replaced with candidates from the same general area of interest where possible.

The overall acceptance rate for the symposium was 35%, and the acceptance rate for graduates completing a Ph.D. in the U.S. was 41%. The thirty-four symposium scholars were citizens of ten different countries: United States (23); Argentina (1); Canada (2); China (1); Germany (1); Japan (1); Mexico (2); Nepal (1); Netherlands (1); and Taiwan (1).

Based on their self-stated primary field of interest and keywords, applicants were divided into three broad research categories based on NSF program categories for tracking (Table I).

<table>
<thead>
<tr>
<th>Category</th>
<th>Applied</th>
<th>Invited Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
</tr>
<tr>
<td>Total</td>
<td>108</td>
<td>34</td>
</tr>
<tr>
<td>Biological Sciences</td>
<td>24</td>
<td>22%</td>
</tr>
<tr>
<td>Geosciences</td>
<td>46</td>
<td>43%</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>38</td>
<td>35%</td>
</tr>
</tbody>
</table>

Symposium Scholars

I greatly appreciated the opportunity to interact with and develop relationships with scientists with such diverse backgrounds and expertise.

The dissertation citations and areas of interest of the attending symposium scholars (Appendix I) provides a more solid representation of the breadth of expertise and interest than does Table I. Specializations included anthropology, biogeochemistry, chemistry, ecology, economics, engineering, geography, geology, geophysics, modeling, paleoecology, physics, and political science. Selected candidates had attained both a depth of expertise in a particular field and a breadth of interest evidenced by collaborative work with specialists from other disciplines.

Each scholar presented their research in both oral and poster format. Presenters were directed to gear their talks to a non-specialist audience limited to 7 minutes. One scholar and one mentor were each assigned to one of the presenters to provide feedback on their oral and poster presentations. This provided each with experience both as a giver and receiver of feedback. The focus was on suitability of the presentation to a non-specialist audience.

Symposium Mentors

A group of highly respected scholars accepted invitations to participate in the symposium as Mentors. These individuals were selected for their research and other professional accomplishments, and for their reputations as mentors and advisors for the new generation of research scientists. Senior Mentors (John J. Bates, Robert B. Cialdini, Dale Jamieson, Ann P. Kinzig, Robert E. O’Connor, Charles Perrings and Bud Ward) provided critical background information on cutting-edge climate science and keen insights into the IPCC and ongoing climate-related scientific, political, and economic activities. The senior mentors, and mid-career mentors (Kristina Dahl, Brent Sohngen and Christopher J. Still) provided advice on early career development including the development of collaborative research projects and proposals, the tenure process, and balancing personal and professional life. They also advised scholars individually, participated in small-group and plenary discussion panels, and engaged in numerous informal discussions over meals and poster sessions. Keynote presentations and presenters are summarized below in the order that they spoke.
Dale Jamieson  New York University
http://steinhardt.nyu.edu/faculty_bios/view/Dale_Jamieson
Jamieson is Director of Environmental Studies at New York University, where he is also Professor of Environmental Studies and Philosophy, and Affiliated Professor of Law. Jamieson’s expertise is on the ethical and philosophical dimensions of the human-environment relationship. He presented a keynote on the Moral and Political Challenges of Climate Change.

Dr. Bates is a research scientist with the National Oceanic and Atmospheric Administration’s Remote Sensing and Applications Division in Asheville, North Carolina. Dr. Bates brought a wealth of information about governmental and agency efforts to address climate change to the symposium discussions. He also presented a keynote on Progress in Observing and Understanding the Global water Cycle in a Changing Climate.

Ann P. Kinzig  Arizona State University  http://www.public.asu.edu/~akinzig/
Dr. Kinzig is an Associate Professor in the School of Life Sciences & School of Sustainability at Arizona State University. Ann Kinzig's research focuses on urban ecology, the resilience of human-environment interactions across long time scales, and science policy. Dr. Kinzig presented a keynote on Assessing Climate Mitigation from an Ecosystem Services Perspective: The Dangers of a Fixation on Carbon.

Charles Perrings  Arizona State University  http://www.public.asu.edu/~cperring/
Charles Perrings is a Professor of environmental economics at Arizona State University, where he is engaged in a range of activities to build an international science of biodiversity and ecosystem change, including both the development of an International Mechanism for Scientific Expertise on Biodiversity (IMOSEB) and an Intergovernmental Panel on Biodiversity and Ecosystem Services (IPBES). Perrings provided a keynote on the Issues Surrounding the Economics of Climate Change.

Robert B. Cialdini, Arizona State University
https://sec.was.asu.edu/directory/person/10913
Robert B. Cialdini is currently Regents’ Professor of Psychology and Marketing at Arizona State University, where he has also been named Distinguished Graduate Research Professor. Cialdini provided an overview of his research and how the principals of persuasion can be used to motivate individuals to modify behavior with a goal of reducing carbon dioxide emissions or taking other effective action to reduce negative human impacts. Some of the material from Cialdini’s keynote, The Power of Social vs. Financial Factors in Environmental Action, came from his most recent book, Yes! 50 Scientifically Proven Ways to be Persuasive, co-authored with Noah Goldstein and Steve J. Martin.

Training Sessions

[There was a] good balance of content (research) and leadership training exercises – We don’t get that anywhere else!

Team Building and Facilitation Skills  Before the symposium, each scholar was encouraged to identify their personality type using a test based on Jung and Myers-Briggs typology. During the symposium, trainer Christine Olex (The Point, Inc.) summarized the development and meaning of the different personality types, and their importance in the context of group dynamics. Such information is useful in the context of departmental interactions, lab management, and small meetings, but it is particularly important in the context of collaborative relationships. The information gained was practiced during the week in the context of panel discussions and small-group interactions. This exercise generated a common experience for informal discussion as well, helping catalyze development of the DISCCRS peer network. Olex also provided training in group dynamics and provided a structure to enable discussions to proceed more quickly and effectively than would have otherwise been possible. These sessions enhanced the productivity of the symposium while also exposing the participants to new skills that they can use throughout their careers, whether mentoring and advising students, managing labs, or in devising and conducting interdisciplinary research projects.

Communication Beyond the Ivory Towers

This experience has really encouraged me to reach out more and more often to researchers in the
Effective communication was a unifying theme for the week and this training was developed though all activities. Oral presentations provided an opportunity for Scholars to present their research to a non-specialist audience, and, through their evaluations, to study how others made such presentations. Presentations were excellent, and Scholars saw many successful communication examples they might use. The panel and small-group sessions provided other ways to hone communication skills in an interdisciplinary context within the ivory towers.

**Communicating with the Media** Bud Ward, Editor of the Yale Forum on Climate Change and the Media, led a half day session devoted to communication beyond the ivory towers. Ward began with a keynote "Wither the Mass Media: Evolution? Revolution? Devolution?" This provided an overview of the role of journalists and state of the news media and was followed by interactive training on how to communicate with the media. Scholars practiced preparing and presenting a press conference. Ward also presented information from his new book, Communicating on Climate Change. This book is the product of a series of workshops funded by the National Science Foundation and other, independent foundation involving climate scientists and news media representatives. The six workshops, held over four years, focused on communicating to the public about climate science findings; see [http://www.metcalfinstitute.org/Communicating_ClimateChange.htm](http://www.metcalfinstitute.org/Communicating_ClimateChange.htm)

**National Science Foundation**

Robert E. O’Connor, Program Director for Decision, Risk and Management Sciences, gave a keynote entitled *The National Science Foundation: What You Should Know*. This included an overview of the NSF, current trends and opportunities, the review process, and elements of successful proposals. Current trends include increasing inter-directorate cooperation, increased support for interdisciplinary projects, support for complex science and environmental research. After developing an idea for a project, O’Connor recommended contacting a program officer in the program most closely aligned with one’s research. That person can clarify whether the project is appropriate for NSF and can identify more appropriate programs if necessary. He also urged Scholars to gain experience by reviewing proposals and serving on review panels. Visit [http://nsf.gov](http://nsf.gov) to find information about NSF. See [http://nsf.gov/publications/pub_summ.jsp?ods_key=nsf091](http://nsf.gov/publications/pub_summ.jsp?ods_key=nsf091) for the most recent grant proposal guide.

**Panels & Discussion Groups**

"[I appreciated] the diversity of training [and], the freedom to interact with others often and in ways that were adapted to the type of conversation we wanted."

Several discussions were held as panel sessions, with Mentors and participants both serving as panel members. This provided an opportunity for interactive discussions directed by questions from Symposium Scholars. These sessions are summarized below.

**Interdisciplinarity: Challenges, Opportunities & Strategies** Brent Sohngen, Professor of Agricultural, Environmental and Development Economics at Ohio State University, opened this panel with a presentation on *Adapting in Climate Change Research by Building Bridges across Disciplines*. He briefly described how he developed his own interdisciplinary connections and offered insights into how these new scholars might proceed. Insights included: Good ideas come from many different places so build bridges to good colleagues, within and outside your own discipline; Go outside your comfort zone; and, Be opportunistic.

Discussion was then opened to a panel comprised of all Mentors. The 34 scholars had already engaged in interdisciplinary research as part of their thesis or post-doctoral work. Many hoped to develop more far-reaching interdisciplinary connections and/or become more involved in public outreach and policy. While an increasing percentage of jobs are being advertised as interdisciplinary, it is not clear that the institutions are structured in a way that makes success in these positions easy over the long term. The major advice given was to address any concerns about a position at the beginning of negotiations, and keep an open dialogue with key people at the institution (department chairs, deans, supervisors). If a position is split between departments, make sure that one department is identified as the “primary”
responsibility and/or develop clear guidelines for advancement. Mentors stressed that disciplinary expertise is still needed – one must be a “master” of one trade. Questions were also raised concerning when to diversify. The panel agreed the answer depends on individual circumstance – particularly the nature of the questions a scholar might want to ask. The need for interdisciplinary collaborations will grow from this. Interdisciplinary collegial interactions may catalyze the formation of new ideas. Beyond that, much depends on the institution and department. Before tenure, the best way to proceed is to engage members of the department in the early stages to develop support for the area you would like to develop.

**Strategies for Successful Interdisciplinary Proposals**

Chris Still, Associate Professor of Geography at the University of California at Santa Barbara, began the session by providing his perspectives on developing research ideas and writing successful proposals. A good place to get started is with seminars or reading groups where you can meet scholars from different disciplines and learn to speak their language. Ideas may take a long time to germinate. When working collaboratively, one person must take the lead; this sounds simple but it is not always done and should be to avoid difficulties later. In addition, get to know the people at your institution’s office of sponsored research. He also reiterated O’Connor’s advice to talk to your program officer, and indicate a willingness to serve on a panel and/or review proposals.

This panel took place after the presentation on the National Science Foundation and the NSF proposal review process by Robert O’Connor. In addition to covering the NSF operation and “life history” of a proposal, O’Connor outlined his recommendations for a successful proposal.

During the panel, mentors each shared insights gained during their careers and addressed specific questions from the scholars. Discussion focused on building successful collaborative projects. Success often depends on identifying colleagues who are good working partners. The DISCCRS peer network provides scholars with exactly such collegial ties to those in many different fields. After identifying colleagues, the “who, what, where, when” should be worked out and responsibilities should be written into proposals. The project PIs do not expect research collaborations to develop directly as a result of the any specific DISCCRS Symposium, given that candidates are selected for diversity rather than an interest in a specific research area. That said, we do expect the Symposia to have indirect affects that encourage collaborations that would not otherwise occur because of DISCCRS-initiated new thinking, exchanges of ideas, recommendations of other collaborators, exchanges of students, and the like.

**Interdisciplinary Careers Panel**

This panel provided an opportunity for the mentors to present a wide range of views about the benefits, costs, and challenges of building a successful interdisciplinary career in a disciplinary world. Questions from participants demonstrated strong interest in issues related to building an interdisciplinary career, reflecting a mix of commitment to such a career track, and anxieties about the challenges this track entails. The consensus is that interdisciplinarians must obtain and retain strong disciplinary research expertise, and develop collegial connections to various fields where their research might be applied. With most institutions maintaining a strong disciplinary emphasis, many graduates will need to work with constraints on diversification. Others may find themselves in new academic or other structures where a strong interdisciplinary direction is considered more desirable. Graduates need to identify the expectations of their employer early on, and follow guidelines as best they can to ensure their research fits the expectations for advancement. The panel format provided an opportunity for those who already had professional positions to talk about their personal job hunting experiences and to provide guidance on how to prepare for an academic tenure-track position or for employment outside academia. The session provided an excellent opportunity for the participants to guide the direction of the discussion and to ensure that there was ample time to address the concerns most important to the group.

**Other Professional Issues**

Professional development was discussed in both panel, small-group, and one-on-one formats. A key issue for both men and women was that of professional and personal balance. Academic work today can be all-consuming. It is a challenge to find time for personal interests or even to simply think about one’s personal and professional direction. Families and dual-career job issues further complicate matters. As a dual-career couple, Ann Kinzig and Charles Perrings led this session and were
able to provide insights from their own situation. Early career mentor Kristy Dahl, a Research Program Coordinator at Rutgers University described her career path, which has led her away from the tenure track. She also brought her 6-month old son to the symposium and led discussions on work and family. Panels also focused on conducting successful job interviews, and on gaining tenure. This tied in with the discussion on interdisciplinarity.

Discussion Groups

*It was highly beneficial to hear so many perspectives... and then get specific examples from others in the group on how to apply them.*

Discussion groups on topics identified by participants were developed during a collective brainstorming session and were further refined by several mentors and participants. Participants then chose their preferred topics and were assigned to groups based on their preferences. Discussion topics were wide ranging and included both science-based concerns such as carbon trading and offsets, academic interests such as teaching and mentoring, and non-academic and personal issues such as balancing work and family. The facilitation and group training provided by Olex earlier in the week was practiced in these sessions. Participants agreed this greatly increased group efficiency.

Interdisciplinary Team Exercise

*My take-home message is that there is a real need to have trained, disciplinary people working at the margins as interfaces between disciplines, as well as between natural science and social science and/or policy.*

The United States’ Climate Change Science Program’s (CCSP) Scientific Strategic Plan adopted five principal goals. Symposium Scholars were divided into groups to discuss two of these five goals: Goal 4: Understand the sensitivity and adaptability of different natural and managed ecosystems and human systems to climate and related global changes; Goal 5: Explore the uses and identify the limits of evolving knowledge to manage risks and opportunities related to climate variability and change. These two were chosen because they are fundamentally interdisciplinary and addressing them requires contributions from all the disciplines and perspectives represented by the scholars. The exercise began with Scholars meeting in “Disciplinary Clusters” of those with relatively closely related disciplinary training to identify aspects of both CCSP goals that would be most “salient” to people in those disciplines. Scholars emerged from these groups with lists of five contributions that the disciplines represented in their Disciplinary Cluster could make to addressing Goals 4 and 5. Then Scholars met in interdisciplinary teams, selected by the PIs to ensure disciplinary diversity. These teams were tasked with identifying links between and among the natural and social sciences to meet the disciplinary and interdisciplinary challenges that exist to addressing CCSP Goal 4 or 5. Each group had to identify three contributions from existing research and areas for new research that would contribute to meeting one of the CCSP Goals. Scholars rejoined in Plenary session where each team presented their contribution to the group for questions and discussion. Through this exercise, scholars were able to practice their communication and facilitation skills and develop a better sense of how large-scale questions related to climate change can be better addressed from an interdisciplinary perspective.

Visioning Exercise

*I have a new appreciation for the value and importance of having a vision for my future and how I can take steps to get there –*

As part of the PIs commitment to continuous improvement in the DISCCRS agenda, we piloted a visioning exercise at DISCCRS IV. That exercise was based on those used with increasing frequency in efforts at policy-making, including by the US Department of Transportation and various US state-level planning agencies. Our two-part exercise asked Scholars to develop a “career vision” and a “sustainable world vision.” Most participants had not engaged in such exercises before and, based on feedback from the evaluation forms and oral debriefing, we have decided focus more on the career visioning, and hold the exercise earlier in the week to provide more time for the scholars to think about and discuss their visions with others. The sustainable-world vision was so broad as to be intractable and we plan to consider whether and how to make it more effective.
Informal Time

The remote, retreat-style location provided ample opportunities for informal interactions between sessions, during meals, free time, and evenings.

**Participant Evaluations and Recommendations for Future Symposia**

*This was hands-down the best meeting I have attended.*

The information and contacts I came away with are already proving helpful in pushing my thinking in different directions,

*I have already thought about some aspects of my future research differently because of this symposium*

The agenda included time for daily “course adjustments,” with participants encouraged to suggest improvements. These were discussed and the agenda modified by consensus. Written evaluations asked participants to rate the experience on a 5-point scale with

1 = Not at all pertinent or effective to
5 = Extremely pertinent or effective. The results were overwhelmingly positive –The average for overall program value for the 33 evaluations received was 4.7 with twenty-five 5’s, seven 4’s and one 3.

Evaluations of the individual components ranged from 4.8 to 3.8. Participant recommendations will help with the planning of future DISCCRS Symposia.

Participants particularly valued the unique opportunity to combine academic learning with professional development and peer networking. A key recommendation was that more time be devoted to policy issues. Participants also indicated they would like to see a higher proportion of the Symposium Scholars from the social sciences.

**Future DISCCRS Symposia**

This current grant is closing, and a new proposal is being submitted to fund future symposia. Graduates may still register their PhD dissertation at http://disccrs.org/register.html. All those who register will be informed about any new symposia.

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**Acknowledgements**

DISCCRS is supported by the U.S. National Science Foundation (GEO/EAR Education and Human Resources Program, GEO/ATM Climate and Large Scale Dynamics Program and SBE/BCS) grant # EAR-0435728 to Whitman College and # EAR-0435719 to University of Oregon.

Quotations used in this report are from the written DISCCRS IV Symposium evaluations completed on the last day of the symposium.
### Appendix I. 2008 DISCCRS IV Symposium Scholars

<table>
<thead>
<tr>
<th>Scholar</th>
<th>Institution</th>
<th>Current Position</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bancroft, Betsy A.</td>
<td>Oregon State University (USA)</td>
<td>University of Washington, <a href="http://faculty.washington.edu/betsyba/">http://faculty.washington.edu/betsyba/</a></td>
<td>I am interested in the effects of stressors in natural and human-dominated ecosystems. Organisms within these ecosystems frequently encounter several different stressors over days, months, or a lifetime. My work centers on understanding how these stressors may interact and the resulting effects of these stressors on population dynamics.</td>
</tr>
<tr>
<td>Bergin, Michelle S.</td>
<td>Oregon State University (USA)</td>
<td>Georgia Environmental Protection Division</td>
<td>I apply science and engineering tools in control strategy analysis to develop and implement effective approaches to reduce anthropogenic impacts on the atmosphere. My past research includes the use of computational models with uncertainty and sensitivity analysis to reduce ozone and aerosol pollution and to guide transboundary atmospheric policy development.</td>
</tr>
<tr>
<td>Bert, Federico E.</td>
<td>University of Buenos Aires (Argentina)</td>
<td>University of Buenos Aires</td>
<td>I am interested in the implications of interactions between uncertain future climate trajectories, awaited technological developments and individual decision-making in agricultural systems: emerging patterns of land use, land tenure and sustainability of product. Interdisciplinary research as a way to cope with complex problems of complex systems.</td>
</tr>
<tr>
<td>Block, Paul J.</td>
<td>University of Colorado at Boulder (USA)</td>
<td>Columbia University, Lamont Campus, <a href="http://iri.columbia.edu/">http://iri.columbia.edu/</a></td>
<td>My primary research interests lie at the nexus of climate and hydrology/water systems, addressed through a climate risk-management framework. Additionally, filling the void between recognition and incorporation of climate change issues by translating information into a serviceable format for non-climate scientists is also of interest.</td>
</tr>
<tr>
<td>BurnSilver, Shauna B.</td>
<td>Colorado State University (USA)</td>
<td>University of Alaska at Fairbanks</td>
<td>My PhD work on land tenure and pastoral livelihoods in East African rangelands led to research with the goal of quantifying the effects of climatic and economic drivers on sharing networks (i.e. social capital mechanisms) and livelihoods in Arctic communities. The link is an interdisciplinary focus on human ecological responses to drivers of change.</td>
</tr>
<tr>
<td>Chen, Yihsu.</td>
<td>Johns Hopkins University (USA)</td>
<td>University of California at Merced, <a href="http://faculty.ucmerced.edu/ychen/">http://faculty.ucmerced.edu/ychen/</a></td>
<td>I’m interested in studying the economic, environmental and public health implications of air pollution policies. My recent work involves examining pollution leakage, emissions spillover, and contract shuffling under AB32 and RGGI emission trading policies as well as implications of recharging PHEVs on electricity prices and regional air pollution.</td>
</tr>
</tbody>
</table>
I am interested in the production of nature - in particular how land and trees are conceptualized and commoditized to enter the climate change regime and the implications of such process on the ground. I am also interested in the application of an eco-system approach to adaptation.

Gutierrez, Maria. 2007. All that is air turns solid: The creation of a market for sinks under the Kyoto Protocol on climate change. City University of New York (USA)

Currently: International Institute for Sustainable Development (IISD)  
http://www.iisd.ca/

Hastings, Meredith G. 2004. Studies of reactive nitrogen in the atmosphere using global modeling and stable isotope measurements. Princeton University (USA)

Currently: Brown University  
http://www.geo.brown.edu/Faculty/MGH.htm

My research aims to elucidate connections between air quality, climate and changes in the biosphere. My tools include isotopic measurements and global modeling, currently centered on the impacts, sources and chemistry of nitric acid deposition. My research involves expertise in atmospheric sciences and biogeochemistry.

Hurteau, Matthew D. 2007. The effects of climate change and nitrogen deposition on the Sierran mixed-conifer understory plant community. University of California at Davis (USA)

Currently: Northern Arizona University  
http://oak.uce.nau.edu/mdh22/

My research focus is on the impacts of climate change on fire prone forested systems. I utilize field and modeling studies to identify diversity, productivity, and carbon cycle responses to changing climatic conditions and fire regimes.


Currently: University of Washington  
http://www.urbaneco.washington.edu/

My dissertation research looked at carbon and water exchange dynamics in the Amazonian rainforest. My current research interests focuses on the other end of the development spectrum looking at urban carbon dynamics and patterns of land cover change.

Jessup, Christine M. 2006. Asking big questions of small worlds: The ecology and evolution of microbial host-parasitoid interactions. Stanford University (USA)

Currently: NIH - Fogarty International Center

I am interested in effects of environment on microbial interactions. I currently combine evolutionary ecology, mathematical modeling and epidemiology to investigate the effects of environment on microbial diseases. I am also engaged in policy-related work that aims to advance the research agenda associated with the health impacts of climate change.


Currently: Oak Ridge National Laboratory  
http://www.nioo.knaw.nl/PPAGES/pkardol/#sp  
http://www.esd.ornl.gov/~5pz/

My research focuses on 1) the role of soil organisms, particularly micro-organisms and nematodes, in spatio-temporal plant community dynamics and ecosystem functioning, and 2) the effect of environmental and climatic changes, such as elevated levels of atmospheric CO₂, warming, and altered patterns of precipitation, on biotic and abiotic plant-soil feedbacks.
Appendix I. 2008 DISCCRS IV Symposium Scholars


Currently: NASA Jet Propulsion Laboratory
www.mpimet.mpg.de/~landerer.felix

My research centers around sea level change, its variability on short and longer time scales, its physical mechanisms, its relation to ocean circulation changes as well as its impact on Earth rotational parameters. As a tool, I have been using coupled atmosphere-ocean general circulation models extensively.


Currently: University of Washington
http://staff.washington.edu/jlittell/Site/Home.html

I study the impacts of climate change and variability on forest and mountain ecosystems. Specifically, I am interested in the biophysical mechanisms relating climate to ecohydrology, wildfire, tree establishment (especially at upper treeline), plant growth, and biogeography. I am also interested in paleoecology, ecological complexity, and theoretical ecology.

Lucas, Lisanne (Sandy) E. 2007. Mechanisms governing sea surface temperature anomalies in the eastern tropical Pacific Ocean associated with atmospheric intraseasonal variability. Stony Brook University (USA)

Currently: NOAA - National Oceanic and Atmospheric Administration
http://www.cpo.noaa.gov/

My current interest is climate science, policy and the public including the transformation of climate research to relevant information for use by society to better plan, prepare and respond. My dissertation deals with atmosphere-ocean interaction, short-term climate variability (Madden-Julian Oscillation), and how it might influence the initiation of El Niño.

Maraseni, Tek N. 2007. Re-evaluating land use choices to incorporate carbon values: A case study in the South Burnett region of Queensland, Australia. University of Southern Queensland (Australia)

Currently: University of Southern Queensland

My interests are assessing soil carbon benefits with respect to: (1) soil health; (2) water holding capacity and plant available water capacity; (3) soil erosion control; (4) soil workability (cultivation cost); and (5) productivity, individually, and collectively to the gross margin. Other interests are assessing and recommending better land use system by incorporating greenhouse gases and traditional benefits with respect to changing climate.


Currently: University of California at Santa Barbara
www.marinspiotta.com

I am interested in how changes in climate, land-use, and land-cover alter the timing and magnitude of carbon and nutrient fluxes between soils, the biosphere, atmosphere, and hydrosphere. My research also addresses legacies of human disturbance on ecosystem structure and function, through changes in species composition and biogeochemical cycling.

McKinley, Duncan C. 2006. Consequences of conversion of native mesic grassland to coniferous forest on soil processes and ecosystem C and N storage. Kansas State University (USA)

Currently: USDA Forest Service
http://www.serc.si.edu/

I am interested in linkages between nutrient cycling and plant productivity in response to various forms of global environmental change. I currently study the long-term effects of elevated atmospheric CO2 on soil carbon and nitrogen cycling, with a focus on nutrient constraints on whole ecosystem responses to elevated CO2.
Appendix I. 2008 DISCCRS IV Symposium Scholars

Medina-Elizalde, Martin A. 2007. The thermal evolution of the western equatorial Pacific warm pool during the Pleistocene and late Pliocene epochs.
University of California at Santa Barbara (USA)

Currently: University of Massachusetts

I am interested in the fields of Paleoclimatology and Paleoceanography. I utilize geochemical tools (proxies) on various archives (e.g. stalagmites and ocean sediments) to reconstruct past climates. The goal of my research is to understand how different factors (e.g. greenhouse gases) have driven climate variability on various time scales.

Melamed, Megan L. 2006. Aircraft based ultraviolet spectroscopy measurements of sulfur dioxide emissions from point sources.
University of Colorado at Boulder (USA)

Currently: Universidad Nacional Autónoma de México

Currently I research emission sources and transport of air pollution in the Mexico City Metropolitan Area. In the future, I hope to work within an interdisciplinary group researching and implementing effective air pollution and climate change mitigation protocols in Latin America.

University of California at Santa Barbara (USA)

Currently: California State University at Northridge
http://www.csun.edu/~kmichaud/

My research focuses on the politics and policy of climate change and energy. Specifically, I study public opinion on climate change and the way that values and trust influence the public’s understanding of and beliefs about climate change. I also examine public support for climate change and energy policies.

Princeton University (USA)

Currently: Brookings Institution
http://www.brookings.edu/experts/m/mignoneb.aspx

As a former staffer on the Senate Energy Committee and as current Research Director for the Brookings Energy Security Initiative, I am interested in translating knowledge about the energy and climate system into policy-relevant conclusions. My own research currently focuses on the design of domestic regulatory responses to the climate problem.

Misarti, Nicole. 2007. Six thousand years of change in the Northeast Pacific: An interdisciplinary view of maritime ecosystems.
University of Alaska at Fairbanks (USA)

Currently: Idaho State University

Research Interests: How disciplines such as marine science, limnology and archaeology can tell us how the North Pacific marine ecosystem and climate changed over the Holocene and how that affected humans and how humans affected climate and ecosystem change throughout the same time period.

State University of New York (USA)

Currently: University of Minnesota

My research has two foci: one concerns the dependence of human economies and societies on material and energy flows provided by ‘natural’ systems, while the other involves integrating different forms of knowledge for enhancing societal capacity to develop sustainably and to adapt to change.
### Appendix I. 2008 DISCCRS IV Symposium Scholars

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<th>Name</th>
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</table>
Georgia Institute of Technology (USA)  
Currently: NYU School of Medicine |

I specialize in measuring the specific chemical components of aerosols in the atmosphere. My interests are in applying new measurement technologies to broaden our understanding of which chemical components are most responsible for causing human morbidity and mortality, ideally leading to efficient, and effective, mitigation strategies.

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Oregon State University (USA)  
Currently: Florida State University Coastal & Marine Laboratory  
http://www.marinelab.fsu.edu/faculty/petes.aspx |

My approach merges the fields of physiology and ecology to determine the sublethal effects of stress on marine organisms at multiple scales, from the individual to the community. Currently, I am investigating the effects of upstream drought-related water shortages on downstream estuarine oyster health.

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Princeton University (USA)  
Currently: NASA Goddard Space Flight Center |

My modeling research focuses on understanding the impacts of human-emitted, light absorbing particles (aerosols) from both fossil and biofuel sources. These particles can impact the Earth’s climate, air quality, human, health, agricultural production, and may also be altering important large-scale precipitation patterns such as the southeast Asian monsoon.

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Indiana University Bloomington (USA)  
Currently: California State University at Chico  
http://www.csuchico.edu/geop/ |

My research focuses on interactions between changing climate and transportation systems. Particular attention goes to the subject of winter-road maintenance. I investigate how any change in the probability distribution of climate variables would affect both road users’ adjustments to and maintenance providers’ preparedness for changing winter-weather events.

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</table>
| **Saulnier-Talbot, Emilie G.** | 2007. Impacts of postglacial climate evolution on the the lakes of northernmost Ungava, Québec (Canada).  
Université Laval (Canada)  
Currently: McGill University  

In the aim of developing sustainable strategies for conservation, I use a multi-proxy paleolimnological approach to define the long-term effects of environmental variability and anthropogenic activities, including climate change, on the structure and evolution of in-land aquatic ecosystems. My study sites range from high latitude to tropical settings.

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| **Schwartz, Miguel J.** | 2007. Vegetation community change over decadal and century scales in the North Carolina piedmont.  
Duke University (USA)  
Currently: Tel Aviv University |

My research aims to better understand the effect of changing precipitation regimes on natural systems. Currently I am focusing on natural plant communities in Israel, where we are manipulating rainfall and species composition in order to help anticipate what the future may bring in this water controlled and highly biodiverse region.
**Appendix I.** 2008 DISCCRS IV Symposium Scholars

**Selin, Noelle Eckley.** 2007. Mercury in the global atmosphere: Chemistry, deposition, and land-atmosphere interactions. Harvard University (USA)

*Currently:* Massachusetts Institute of Technology
http://web.mit.edu/selin/www

*My research focuses on atmospheric pollution issues such as climate change, mercury pollution, chemicals, and air pollution-climate interactions. Specific topics include: biogeochemical mercury cycling; urban impacts of ozone and particulates; and persistent organic pollutants. I combine research approaches from natural and social sciences (atmospheric modeling, economic modeling and policy analysis).*

**Sharma, Sapna.** 2007. The effects of climate change on the northward range expansion of the smallmouth bass (*Micropterus dolomieu*) and the consequential impacts on native fish populations. University of Toronto (Canada)

*Currently:* Université de Montréal

*My research interests entail effectively predicting the effects of climate change and other environmental stressors on ecological processes to elucidate how ecological systems and species will respond to changing abiotic and biotic stressors, particularly in vulnerable northern environments. I am also interested in environmental public outreach.*

**Stearns, Leigh A.** 2007. Outlet glacier dynamics in East Greenland and East Antarctica. University of Maine (USA)

*Currently:* University of Maine
http://www.geology.umaine.edu/user/Leigh_Stearns/index.html http://www.climatechange.umaine.edu/glaciology/leigh.html

*My research interest is in glaciers and ice sheets and their response to current and past climate change. The role that ice sheets play in modulating global sea level rise depends largely on the dynamics of large outlet glaciers. I use field methods and satellite imagery to study the dynamics of these large glaciers in both Greenland and Antarctica.*

**Wang, Xianfeng.** 2006. Late Quaternary climate changes in Brazil recorded by speleothems. University of Minnesota at Twin Cities (USA)

*Currently:* University of Minnesota

*My research focuses on late Quaternary climate reconstruction through cave calcite deposits, with particular interest in abrupt climate change that occurs on decadal-to-millennial timescales, and the timing and relationship between the tropical and the high-latitude abrupt climate events.*
## DISCCRS IV Symposium Agenda

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<tr>
<th>TIME</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
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<th>Day 6</th>
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<tbody>
<tr>
<td>7:30 AM</td>
<td>Breakfast</td>
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<tr>
<td>8:00 AM</td>
<td>Welcome, Overview, 2-min. Introductions</td>
<td>Announcements</td>
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<tr>
<td>8:30 AM</td>
<td>Billi Ward: Communication Training &amp; Practice</td>
<td>B. O’Connor: Funding Opportunities</td>
<td>Proposal Development Panel</td>
<td>CCSP Teams: Disciplinary</td>
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<td>8:45 AM</td>
<td>17 Scholar Presentations: 7-minute talks with two 20-minute breaks</td>
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<tr>
<td>9:00 AM</td>
<td>Mentor Intros</td>
<td>Breakfast</td>
<td>Communication Practice</td>
<td>Lunch</td>
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<td>10:30 AM</td>
<td>17 Scholar Presentations: 7-minute talks with two 20-minute breaks</td>
<td>MBTI</td>
<td>Field Trip</td>
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<td>11:00 AM</td>
<td>Lunch</td>
<td>A. Kinzig</td>
<td>Interdisciplinarity Panel &amp; Small Groups</td>
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<td>12:00 PM</td>
<td>Arrivals, Transfer Presentation files, Poster Set up</td>
<td>A. Kinzig</td>
<td>Interdisciplinarity Panel &amp; Small Groups</td>
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<td>2:00 PM</td>
<td>Lunch</td>
<td>C. Perrings</td>
<td>Self-Organizing Research Groups</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Symposium Evaluations &amp; Debrief</td>
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<td>2:30 PM</td>
<td>Lunch</td>
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<td>Self-Organizing Research Groups</td>
<td>Symposium Evaluations &amp; Debrief</td>
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<td>Self-Organizing Research Groups</td>
<td>Symposium Evaluations &amp; Debrief</td>
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<td>Symposium Evaluations &amp; Debrief</td>
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<td>5:00 PM</td>
<td>Lunch</td>
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<td>Mentor Discussions</td>
<td>Symposium Evaluations &amp; Debrief</td>
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<td>5:30 PM</td>
<td>Reception</td>
<td>Lunch</td>
<td>Mentor Discussions</td>
<td>Symposium Evaluations &amp; Debrief</td>
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<td>Reception</td>
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<td>7:00 PM</td>
<td>Dinner</td>
<td>Lunch</td>
<td>Mentor Discussions</td>
<td>Symposium Evaluations &amp; Debrief</td>
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<td>8:00 PM</td>
<td>D. Jamieson, J. Bates</td>
<td>Dinner</td>
<td>Mentor Discussions</td>
<td>Symposium Evaluations &amp; Debrief</td>
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**Appendix II**

**Day 3**
- Mentor Intros

**Day 4**
- Arrivals, Transfer Presentation files, Poster Set Up

**Day 5**
- 17 Scholar Presentations: 7-minute talks with two 20-minute breaks
- MTBI
- Break
- Facilitation
- Break
- Communication Practice

**Day 6**
- Field Trip
- Self-Organizing Research Groups
- Mentor Discussions

**Day 7**
- Symposium Evaluations & Debrief
- Farewells