EAPS MEETINGS & EVENTS

EAPS SPRING FACULTY MEETING SCHEDULE
Apr. 12, 2016
HAMP 3201
3:00-4:30 PM

EAPS AWARDS BANQUET
April 18, 2016
Buchanan Club of Ross-Ade Pavilion
Reception: 5:30 PM
Dinner at 6:00 PM

CoS SPRING FACULTY MEETING SCHEDULE
Apr. 19, 2016
LWSN 1142
3:30-4:30 PM

ALUMNI ADVISORY BOARD MEETING
April 19, 2016
HAMP 2201

DEAN’S VISIT TO DEPARTMENT
April 21, 2016
1:30 - 4:00 PM

EAPS FACULTY & STAFF FALL RETREAT
August 18, 2016
Beck Ag Center, Rm 111
8:30 AM – 4:00 PM

EAPS FALL WELCOME BACK PICNIC
August 18, 2016
Happy Hollow Park, Shelter 1
4:30 – 7:00 PM

EAPS COLLOQUIA

Peter Eichhubl
Faculty Candidate
University of Texas, Austin
“Natural fracture growth in unconventional hydrocarbon reservoirs: Rates, mechanisms, and implications for flow”
Monday, April 4, 2016
3:00-4:00 PM
ARMS 1109

Zhenong Jin
PhD Candidate
“Using Crop Model to Assess and Mitigate the Impact of Climate Change on the US Agriculture System”
Tuesday, April 5, 2016
4:00 PM
HAMP 2201

Tiffany Shaw
University of Chicago
“What Does the Seasonal Cycle Tell Us About the Atmospheric Circulation Response to Global Warming”
Thursday, April 7, 2016
3:30 PM
HAMP 1144

EAPS NEWS

Terry West attended the 131st annual meeting of the Indiana Academy of Science on March 26, 2016 at the J.W. Marriott hotel in Indianapolis where he chaired the Engineering Section meeting and presented the following oral paper: Terry R. West and Darryl Granger, “Radiocarbon Dating of Gravel Sluiceway, Wea Creek Near Lafayette, Tippecanoe County, Indiana”. Dr. West is a Fellow and Past President (2002) of the Academy.

Fallon McQuern was selected to be one of Purdue’s Benefits Ambassadors (to serve as a liaison between the Human Resources benefits team and the College of Science) for 2016-2017. This new Purdue initiative is to ensure that benefit-related information is relayed to employees across campus. She will be organizing four workshops in 2016 (to be announced).
**UNDERGRADUATE AND GRADUATE STUDENT INFORMATION**

**NATIONAL SCIENCE FOUNDATION AWARDS**

**GREAT JOB!**

Marie McBride - received the National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP) Honorable Mention!

David Cannon - received an Honorable Mention!

Mariah Romero - was awarded a Graduate Research Fellowship!

**18TH NATIONAL SCHOOL ON NEUTRON AND X-RAY SCATTERING**

Graduate students at North American universities are invited to apply to attend the 18th National School on Neutron and X-ray Scattering, held at Argonne and Oak Ridge National Labs from **July 30 - August 12, 2016**. This school is designed to introduce students to the capabilities available at U.S. neutron and x-ray user facilities and pays for students’ travel, meals and lodging costs.

Lectures, presented by researchers from academia, industry, and national laboratories, include basic tutorials on the principles of neutron and x-ray scattering theory, the characteristics of neutron and synchrotron sources, as well as seminars on the application of scattering methods to a variety of scientific subjects. As part of the school, students also conduct a series of short experiments to provide some hands-on experience using instruments at neutron and synchrotron sources, both at Argonne's Advanced Photon Source (August 7-12), and Oak Ridge's Spallation Neutron Source and High Flux Isotope Reactor facilities (July 30-August 6). An informational flyer can be found at: [https://www1.aps.anl.gov/sites/default/files/NXSflyer2016_0.pdf](https://www1.aps.anl.gov/sites/default/files/NXSflyer2016_0.pdf).

**How to Apply:** Applicants are encouraged to register electronically through the website at [http://aps.anl.gov/nx](http://aps.anl.gov/nx).

Applications must be submitted by **April 4th**. The application process is quite competitive and requires submission of evaluation letters from among the student’s advisor, department chair and other professors. Complete program and application details can be found at [https://www1.aps.anl.gov/nx](https://www1.aps.anl.gov/nx) and at [http://neutrons.ornl.gov/nxs/](http://neutrons.ornl.gov/nxs/).

**PUPS (PURDUE UNIVERSITY PLANETARY SCIENCE)**

There is a new student club called PUPS (Purdue University Planetary Science)--to provide a sense of community for students who are interested in planetary sciences, as well as, providing encouragement and information about the future of planetary science. The goal is to increase awareness of and the interdisciplinary nature of planetary sciences. Advisor: Briony Horgan. E-mail: briony@purdue.edu

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**SUMMER REGISTRATION RESEARCH HOURS CHANGE**

There has been a change in the registration of Summer research hours (EAPS 69800 and EAPS 69900). Research credits will now cover all three modules instead of just the second and third. Summer session now begins **May 16th**.

- It’s very important that all graduate students conducting research – on or off campus – be appropriately registered. The number of 69800 and 69900 credits taken during the summer should reflect a graduate student’s research and writing efforts.
- EAPS 69800 and 69900 are scheduled from **May 16 through August 2**.
- A maximum of nine (9) credits taken during Summer Session are permitted to fulfill graduation requirements.
- Graduate staff must be registered for at least three (3) credits in order to hold their assistantships (i.e., if you are being paid, you must be registered).

As during the Fall/Spring semesters, a Form 23 is required in order to register for research hours. Failure to register by **May 16th** will invoke a $200 late registration fee. If you have questions contact Kathy Kincade at kkincade@purdue.edu

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**2016 CSU SACRAMENTO-GEOLGY FIELD CAMP**

Spring 2016 field course open to senior geology majors. Note that the entire class is conducted from: **June 1-July 10, 2016**.

Applications form is available at [www.csus.edu/geology](http://www.csus.edu/geology). Email application PDF and materials to geology@csus.edu (cc: hausback@csus.edu) or mail to: Geology 188 Application c/o Geology Department California State University, Sacramento 6000 J Street Sacramento, CA 95819-6043

See the attached flyer for more information, schedule, fees, and deadlines. Please contact Brian Hausck at hauscak@cusu.edu if you have questions.
SHORT TERM STUDY ABROAD PROGRAMS

The GREEN Program offers accredited 8-10 day programs which take students to epicenters of clean tech, sustainability, and innovative industries. Programs available winter, summer, or spring break. See attached flyer.

- Engage in hands-on, experiential education with industry experts and professionals
- Gain behind-the-scenes access to innovative clean energy facilities and sustainability projects
- Supercharge resumes with a global perspective and unique cultural experience
- Network and develop relationships with powerhouse student leaders and professionals
- Bridge the gap between traditional textbook learning and real-time industry insight
- Participate on world-class bucket list adventure excursions
- Earn an academic transcript for transfer credit short term abroad programs for future clean energy & sustainability leaders

Apply: www.thegreenprogram.com

SUMMER 3-CREDIT FIELD COURSE OPPORTUNITIES WITH ECOSYSTEM FIELD STUDIES!

Caribbean Ecosystem Field Studies - Study, snorkel & SCUBA dive along the Caribbean coast of Mexico May 21- June 9

Colorado Ecosystem Field Studies – Study, camp, & hike in the Colorado Rocky Mountains from June 21 - July 10 or July 18 - August 6

An opportunity to apply classroom & textbook learning while immersed in an incredible ecosystem setting! Gain valuable career skills in hands-on ecosystem field research. Earn 3 undergraduate transfer credits. Also offering post-course, extended credit options of Independent Research & Conservation Internship

Open to students from all universities & majors. Accredited by the University of Montana at Missoula’s Environmental Studies. Program: ENST 391- for 3 undergraduate semester transfer credits.

For all course information visit the course website: www.EcoFS.org or see the attached flyer.

Direct any further questions to Professor Steve Johnson, Course Director at steve@EcoFS.org

MERIT-BASED SUPPORT TO GRADUATE STUDENTS

The EAPS Department provides the opportunity for merit-based support to graduate students to present their research at professional conferences. The maximum yearly amount of department support is $400 per graduate student (each fiscal year). Submit your form to Kathy Kincade (Room 2169D/HAMP) no later than one month prior to the start of the conference you plan to attend. Requests after the fact or after that timeframe will not be accepted.

UNIVERSITY NEWS

DIVERSITY AND INCLUSION RESEARCH PROJECT’S SYMPOSIUM

Monday, April 4, 2016
Dauch Alumni Center

The guests for the symposium include Erica Simmons, Gustavo Garcia-López, Denise Sekaquaptewa, Susan Seizer, and Andrew Rojecki. Their evening keynote will be delivered by Scott Page.

Please see attached informational flyers and schedule of activities.

“SKILLS PERFORMANCE” TRAINING OPPORTUNITIES AVAILABLE FOR STAFF

Purdue University - Training offers a wide selection of extension courses for both personal and professional growth. Taught by experts in their fields, the courses provide practical, hands-on experience. And, best of all, anyone can afford them. Take a look through their online catalog for courses that interest you. Then, register for the courses you want right now using the web site below!

Please click here to sign up for upcoming classes: https://www.eventreg.purdue.edu/training/Home.aspx

ENVIRONMENTAL EDUCATION WORKING GROUP, C4E CALLOUT

The Environmental Education Working Group, C4E, is an interdisciplinary group of Purdue faculty and staff interested in informal and k-12 environmental education. If you have a desire to collaborate in promoting and supporting environmental education in Indiana, please come to the meet and greet session. See the flyer for additional information or contact Dan Shepardson at dshep@purdue.edu

Thursday, April 7, 2016
3:00 p.m. - 4:30 p.m.
MANN 203
INTERDISCIPLINARY COMPUTATIONAL SCIENCE AND ENGINEERING CONFERENCE (CSESC 2016)

This conference highlights the breadth of computational science and engineering research that is being done across the different departments. It allows students to see how the modeling and numerical techniques are being applied to other disciplines. Keynote speaker is Prof. Michael J. Miksis, Northwestern University. His talk is titled “Dynamics of Complex Interfaces”. Find additional information and register at: https://goo.gl/xDxywQ

Friday, April 8, 2016
9:00 a.m. – 5:00 p.m.
MANN & MRGN

OTHER NEWS

SUMMER WORKSHOP IN MATHEMATICAL MODELING OF EARTH’S DYNAMIC SYSTEMS

This workshop will be an intense, hands-on introduction to the creation and use of numerical models as a method for investigating the dynamics of Earth systems. Participants will learn how to translate their understanding of Earth processes into systems of differential equations, and solve them to test hypotheses concerning both modern and ancient systems. In addition, participants will learn how to apply and evaluate selected existing Earth system models. The short course is open to graduate students and faculty. The event is from July 31-Aug 5, 2016 in University Park, PA. See the attached flyer for additional details and registration information.

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JOB POSTING

Research Physical Scientist, AST, Atmospheric Chemistry & Dynamics

ANNOUNCEMENT NO: LA16D0008

POSITION: Research Physical Scientist, AST, Atmospheric Chemistry & Dynamics, GS-1301-12/13

LOCATION: E303, Science Directorate, Chemistry & Dynamics Branch

OPENING DATE: March 31, 2016

CLOSING DATE: April 14, 2016

AREA OF CONSIDERATION: This announcement is open to all qualified U.S. citizens.

The Chemistry and Dynamics Branch within the Science Directorate (SD) is seeking a physical scientist with a background in instrumental methods development, measurement technology, atmospheric sciences and dynamics to help advance, maintain, apply and enhance their optical in situ measurement capabilities for delineating aspects of atmospheric composition important to climate, air quality and satellite/model validation, with preferred emphasis on carbon cycle species, greenhouse gases and water vapor. The incumbent will work with the carbon dioxide/trace gas/water vapor (AVOCET/DACOM/DLH) and aerosol/cloud (LARGE) groups to both (1) support field measurements, analysis and modeling of the fundamental atmospheric composition and aerosol/cloud research programs, and (2) to extend the capability of the existing measurement systems.

This is a developmental position; management may select at any grade level. If you are selected at the GS-12 level you may receive a one-time non-competitive promotion to the full performance level of GS-13, when eligible and recommended by management.

Identification of promotion potential in this position does not constitute a commitment or an obligation on the part of management to promote the employee. Promotion will depend upon administrative approval and the continuing need for an actual assignment and performance of higher level duties.

Additional details are available at the following websites prior to the closing date:

http://www.usajobs.gov/GetJob/ViewDetails/434276700

FUN FACT OF THE WEEK

Did you know? Marble is used as a building material, including statues and buildings? "Marble" means "Shining Stone." The world famous Taj Mahal is made of marble.
IMPORTANT NOTICE ABOUT THIS NEWSLETTER

This newsletter is used as the primary information source for current and upcoming events, announcements, awards, grant opportunities, and other happenings in our department and around campus. Active links to additional information will be provided as needed. Individual email announcements will no longer be sent unless the content is time-sensitive. We will continue to include our publications, presentations and other recent news items as well. Those using paper copies of the newsletter should go to our newsletter archive on the EAPS website at http://www.eaps.purdue.edu/news/newsletters.html and Click on News to access active links as needed. Material for inclusion in the newsletter should be submitted to Fallon McQuern (fmcquern@purdue.edu) by 5:00pm on Thursday of each week for inclusion in the Monday issue.

If it is in the newsletter, we assume you know about it and no other reminders are needed. For answers to common technology questions and the latest updates from the EAPS Technology Support staff, please visit http://www.eaps.purdue.edu/resources/information_technology/index.html.

Also, as an additional resource for information about departmental events, seminars, etc., see our departmental calendar at http://www.EAPS.purdue.edu/events-calendar.html.
Abstract: Natural fractures form preferred pathways for basinal fluid flow and associated heat and mass transport. In gas sandstone reservoirs with low matrix permeability, fractures provide flow pathways between organic-rich source and reservoir layers during gas charge, and between matrix pores, hydraulic fractures, and the well bore during production. While the formation of natural fractures has previously been associated with gas generation and pore fluid pressure increase through a process referred to as natural hydraulic fracturing, other driving mechanisms such as stress changes by tectonic or exhumation processes remained viable alternatives. To test whether these mechanisms contributed to fracture development we investigated the spatial and temporal distribution of fracture formation and its relationship to gas generation, migration, and charge in sandstone of the Cretaceous Mesaverde Group across the entire production interval on a basin-wide scale. Using fluid inclusion microthermometry of crack-seal fracture cement formed concurrently with fracture opening we observed temperature trends that, when compared with temperature evolution models of the formation, date fracture formation 20-30 m.y. prior to maximum burial eliminating changes in stress state associated with exhumation as a mechanism for triggering the onset of fracture formation. Instead, calculated paleo-pore fluid pressures during fracture opening approaching lithostatic values and the presence of methane-rich inclusions in fracture cement suggest that fracture formation was aided by high pore fluid pressures during gas generation in organic-rich shales and coals. An observed age progression in the onset of fracture formation from deeper to shallower horizons of the Mesaverde Group is consistent with gas generation and onset of fracture formation activated by burial temperature with limited upward migration of gas at this stage of reservoir evolution. This age progression with depth is inconsistent with fracture formation triggered by changes in stress conditions associated with tectonic or structural processes expected to affect the entire formation synchronously. Our observations are thus most consistent with fracture formation by natural hydraulic fracturing in response to gas generation in interbedded source layers and reservoir charge. Based on widespread observations of fractures with similar structural and diagenetic attributes we consider natural hydraulic fracture formation in response to thermocatalytic gas generation a fundamental mode of brittle failure in otherwise structurally quiescent basins.
The increasingly frequent and severe extreme climatic events (ECEs), such as heat wave and drought, have exerted strong negative impacts on the US agricultural sector and are predicted to continue in this century. To manage and alleviate risks from these ECEs, traditional crop models and simulation techniques become unsatisfying since they are designed to capture the average state based on the long-term climatology. The recent advent of high-performance computers and communication technologies provides opportunities for developing operational platforms that use hyper-local growth monitoring, high-resolution real-time weather assimilation and crop modeling to help farmers detect resources deficit, predict crop yields and make decisions. These opportunities, however, are impeded by our poor ability to quantitatively reproduce what’s actually happening in a field with the right scale and reasonable accuracy. Developing crop models that are capable of capturing the impacts of ECEs with respect to both trends and magnitudes is in urgent need. This talk consists of a range of topics related to the development and application of crop models for assessing and mitigating the impact of climate change on the US agriculture system, including: (i) investigate the ability of 16 major crop models in capturing the impacts of heat and drought stress on maize yield; (ii) identify the optimal strategy for maximizing the US maize and soybean yield within a nested Genotype Environment Management space; (iii) use crop models and satellite imagery to build a prototype of very-high-resolution (5m × 5m) decision support tool for on-farm precision N management.

Tuesday, April 5, 2016
4:00 p.m.
Room 2201 HAMP

Refreshments at 3:30 pm
Room 2201/ HAMP
The atmospheric circulation exhibits large seasonal changes between winter and summer that reflect the growth of the Monsoon. Here we exploit similarities between the present-day seasonal circulation changes and the projected circulation response to increased carbon dioxide (both are examples of direct radiative forcing) to understand future regional summertime circulation changes.

What Does the Seasonal Cycle Tell Us About the Atmospheric Circulation Response to Global Warming

Tiffany Shaw
University of Chicago

Thursday, April 7, 2016
3:30 p.m.
Room 1144 HAMP

Refreshments at 3:00 pm
Room 2201/HAMP
Join us at the Diversity and Inclusion Research Project Symposium!
Monday, April 4, 2016 | Dauch Alumni Center | 12:30-5:00 PM
Our guests include:

Gustavo Garcia-Lopez, University of Puerto Rico, Río Piedras Campus
Assistant Professor at the Graduate Planning School

Andrew Rojecki, University of Illinois at Chicago
Associate Professor and Director of Graduate Studies

Susan Seizer, Indiana University Bloomington
Associate Professor, Department of Communication and Culture

Denise Sekaquaptewa, University of Michigan, Ann Arbor
Professor of Psychology, Associate Chair, and Faculty Associate at the Research Center for Group Dynamics in the Institute for Social Research

Erica Simmons, University of Wisconsin-Madison
Lyons Family Faculty Scholar and Assistant Professor of Political Science and International Studies

Special Keynote by Scott Page at 6 PM, Krannert Auditorium

Sponsored by the Diversity and Inclusion Research Project, the Department of Political Science, the Diversity Resource Office, and the Center for Research on Diversity and Inclusion
## Diversity and Inclusion Research Project Symposium
**Dauch Alumni Center, Rudolph and Prusiecki Rooms**  
**Monday, April 4, 2016**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>12:30-12:40</td>
<td>Welcome and Introduction- Laurel Weldon</td>
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<tr>
<td>12:40-1:00</td>
<td><strong>Panel 1: Meanings of Diversity and Inclusion</strong>&lt;br&gt;Chair: Venetria Patton&lt;br&gt;Presenters: Maren Linett, TJ Boisseau, and Pat Boling</td>
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<td>1:00-1:15</td>
<td>Break</td>
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<tr>
<td>1:15-2:45</td>
<td><strong>Panel 2: Social Movements</strong>&lt;br&gt;Presenters: Fernando Tormos and Laurel Weldon, Rachel Einwohner and Jared Wright, Kim Marion Suiseeya&lt;br&gt;Discussants: Erica Simmons and Gustavo García-López</td>
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<td>2:45-3:00</td>
<td>Break</td>
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<tr>
<td>3:00-3:45</td>
<td><strong>Panel 3: Women in STEM</strong>&lt;br&gt;Presenters: Margo Monteith and Laura Parker&lt;br&gt;Discussant: Denise Sekaquaptewa</td>
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<td>3:45-4:00</td>
<td>Break</td>
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<td>4:00-5:00</td>
<td><strong>Panel 4: Humor and the Politics of Race and Ethnicity</strong>&lt;br&gt;Presenters: Aaron Hoffman, Dwaine Jengelley and Anish Vanaik&lt;br&gt;Discussants: Susan Seizer and Andrew Rojecki</td>
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<tr>
<td>5:00-5:45</td>
<td>Closing Remarks and Wine Reception</td>
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<tr>
<td>6:00-7:15</td>
<td>Scott Page Keynote, <em>Krannert Auditorium</em></td>
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The Diversity and Inclusion Research Project Keynote Lecture

THE MECHANISMS OF DIFFERENCE: THE VALUES OF IDENTITY AND COGNITIVE DIVERSITY

MONDAY, APRIL 4, 2016 AT 6:00PM
KRANNERT AUDITORIUM

PROFESSOR SCOTT E. PAGE
UNIVERSITY OF MICHIGAN, ANN ARBOR

Professor Page is the Leonid Hurwicz Collegiate Professor of Complex Systems, Political Science, and Economics, the Director of the Center for the Study of Complex Systems, and also External Faculty at the Santa Fe Institute. He has written three books, The Difference, Complex Adaptive Social Systems (with John Miller), and Diversity and Complexity. His research focuses on the many ways in which diversity is important to changes within complex systems.

Abstract: Empirical evidence suggests that cognitive and identity diversity are capable of exceptional performance. The best performing teams, most cited papers, and most important patents disproportionately include diverse members. Yet, many studies show little benefit from diverse group composition. In short: diversity can improve outcomes, yet does not always do so. An analytic dive into the question of when and how diversity produces benefits reveals several insights. First, diversity matters most on hard problems (hence, the evidence on patents and papers). Second, realizing the benefits of diversity depends on inclusive practices (hence, the lack of inclusion partly explains poor performing diverse groups). Third, no “magic diversity bonus” exists. Instead, differences in perspectives, heuristics, models, and categories combine in ways that we can understand and leverage.

Sponsored by the Diversity and Inclusion Research Project, the Department of Political Science, the Diversity Resource Office, the Center for Research on Diversity and Inclusion, and the Purdue Systems Collaboratory.