Joe Francisco elected to National Academy of Sciences!

The National Academy of Sciences announced April 30, 2013 the election of new members in recognition of their distinguished and continuing achievements in original research, including our very own Professor Joe Francisco!!


Many congratulations to Joe for this well-deserved honor and recognition for his outstanding accomplishments!!

SPRING 2013 COMMENCEMENT

Div. I – Friday, May 10, 2013 – 8:00 pm
(Science; Technology)

Div. II – Saturday, May 11, 2013 – 9:30 am
(Agriculture; Education; Management)

Div. III - Saturday, May 11, 2013 – 2:30 pm
(Engineering)

Div. IV - Sunday, May 12, 2013, 9:30 am
(Health & Human Sciences; Vet. Med)

Div. V - Sunday, May 12, 2013, 2:30 pm
(Liberal Arts; Pharmacy)

Congratulations to all of the EAPS Graduates!

END OF THE SEMESTER

The spring semester and the 2012-13 academic year are winding down. We hope that the semester has been productive and enjoyable.

We would like to wish you an enjoyable and productive summer as well as safe travels if you are on the road for research, study or other forms of pleasure and enlightenment.

EAPS PUBLICATIONS

Paper of Note in BAMS: CO2 Snow Deposition in Antarctica to Curtail Anthropogenic Global Warming, Summary by Ernest Agee and Andrea Orton, May issue, 2013. (Selected by Senior Editor, Chris Cappella)

EAPS PRESENTATIONS

Angel Torres-Valcarcel, EAPS PhD candidate, offered a presentation talk, on May 1, about "Environmental Sustainability" to Seniors and 10th grade students from "Luis Lorréns Torres" High School at Juana Díaz, Puerto Rico.

EAPS Class Field Trip to Chicago

On April 25, 2013, Terry West's EAPS 385 class, Principles of Engineering Geology, enjoyed a special field trip to Thornton Quarry, on the south side of Chicago, at the invitation of Haywood Baker Company, that specializes in subsurface construction projects. An elaborate grouting procedure around the rim of the large dolomite quarry is underway to prepare a surface reservoir for the TARP project in Chicago to house urban runoff following high rainfall events in the city. This is final phase to solve the Combined Sewer Overflow problem which challenges many cities of the U.S., including Indianapolis and Lafayette. The 300 foot deep grouting procedure, dam construction, monitoring and rock removal from the quarry were observed during the special field trip for applied geologists in the Chicago area. The Association of Environmental and Engineering Geologists (AEG), arranged for the trip and member companies supported the cost of student attendance.

CAMPUS NEWS

THE DYNAMICS OF CLIMATE CONFERENCE

The May 15-17 conference is designed to prepare participants to use a professional development toolkit for climate science education and provide up-to-date information on climate science from Purdue scientists. David Archer is the keynote speaker. For more information about the conference and how to register see the attached brochure.
Limited Submission: NSF Online Resource Center for Ethics Education in Science & Engineering (ORCEESE)

The National Science Foundation has issued a program solicitation for the Online Resource Center for Ethics Education in Science & Engineering (ORCEESE) program. The program will fund one five-year award to collect and curate multi-media materials (including research findings, pedagogical materials, and promising practices) for an online, state-of-the-art resource center that will support efforts by scientists and engineers to incorporate ethical issues and reasoning into their pedagogy, research and practice. The online resource center should be creative, comprehensive, accessible, and evolving. The team will incorporate strategies and techniques to keep the Ethics Online Resource Center relevant and up to date.

For this competition, Purdue may submit only one proposal. The full announcement may be found at http://www.nsf.gov/pubs/2013/nsf13558/nsf13558.htm.

Internal deadlines are as follows:

**Monday, May 6**: Letters of Intent due to the OVPR (Be sure to include information on the IRGs associated with your center).

**Wednesday, May 29**: Preproposals due to the OVPR.

**Wednesday, June 5**: Rankings due to the OVPR.

NSF deadline: **August 7, 2013**

Please note: Letters of intent, preproposals, and rankings to the OVPR should be e-mailed to OVPRlimited@purdue.edu. Purdue’s limited submission policy and template for letters of intent may be found at http://www.purdue.edu/research/vpr/rschdev/lsid1.php. For any case in which the number of internal letters of intent received is no more than the number of proposals allowed by the sponsor, the OVPR will notify the PI that an internal preproposal will be unnecessary.

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### GRADS AND POST-DOCS’ NEWS

#### GCC2013

**7th GRADUATE CLIMATE CONFERENCE**

MIT’s Program in Atmospheres, Oceans, and Climate and the Woods Hole Oceanographic Institution.

**Who:** Graduate students studying climate

**What:** 7th Graduate Climate Conference

**When:** November 1-3, 2013

**Where:** Woods Hole Oceanographic Institution

**Woods Hole, MA**

**Email:** gcc-2013@mit.edu

**Website:** http://gradclimateconf.mit.edu

**Abstract Deadline:** June 7, 2013

(See flyer for more details)

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### NATIONAL RESEARCH COUNCIL of the NATIONAL ACADEMYs

The National Research Council of the National Academies sponsors a number of awards for graduate, postdoctoral and senior researchers at participating federal laboratories and affiliated institutions. These awards include generous stipends ranging from $42,000 - $80,000 per year for recent Ph.D. recipients, and higher for additional experience. Graduate entry level stipends begin at $30,000. These awards provide the opportunity for recipients to do independent research in some of the best-equipped and staffed laboratories in the U.S. Research opportunities are open to U.S. citizens, permanent residents, and for some of the laboratories, foreign nationals.

Detailed program information, including online applications, instructions on how to apply and a list of participating laboratories, is available on the NRC Research Associateship Programs Website (see link above).

Questions should be directed to the NRC at 202-334-2760 (phone) or rap@nas.edu.

There are four annual review cycles.

- **Review Cycle:** May; Opens March 1; Closes May 1
- **Review Cycle:** August; Opens June 1; Closes August 1
- **Review Cycle:** November; Opens September 1; Closes November 1
- **Review Cycle:** February; Opens December 1; Closes February 1

Applicants should contact prospective Adviser(s) at the lab(s) prior to the application deadline to discuss their research interests and funding opportunities.

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**Distinguished Lecture May 16, 9:15AM, MRGN 121**

**Professor David Archer**

**The Impact of Fossil Fuel Combustion on Earth’s Carbon and Methane Cycles**

A professor in the Department of the Geophysical Sciences at the University of Chicago and a Fellow of the American Geophysical Union, publishing on Earth’s carbon cycle and its interaction with global climate. Dr. Archer has written a series of books on climate change, including Global Warming: Understanding the Forecast, a text for non-science major undergraduates now in its second edition; The Long Thaw: How Humans are Changing the Next 100,000 Years of Earth’s Climate; The Climate Crisis, a Summary of the IPCC Scientific Assessment; The Global Carbon Cycle, a primer in climate science; and The Warming Papers: The Scientific Foundation for the Climate Change Forecast. He teaches classes on global warming, environmental chemistry, and global biogeochemical cycles, and is a regular contributor to the climate science blog site realclimate.org.

Dr. Archer’s presentation will keynote the Dynamics of Climate Conference. For more about the conference, attached flyer or visit:

http://www.purdue.edu/discoverypark/climate/climate-change/

(See attached flyer with more information including abstract)
PhD project focused on the biogeochemical cycling of elements and biomarkers at active sites of serpentinization.

Serpentinization – the hydration of ultra-mafic rocks – creates conditions amenable for biotic and abiotic production of hydrocarbons in the subsurface. Serpentinizing systems may be (or have been) contributing organics to Earth’s present-day subsurface biosphere, early Earth, and other ultra-mafic planets such as Mars. Continental serpentinite springs are ‘windows’ into the subsurface biogeochemistry of these hydrogen- and methane-rich systems. During this PhD project field and laboratory experiments will be deployed to study the biogeochemical cycling of elements, and biomarker identification and preservation at multiple continental serpentinite spring locations. This study will have implications to the fields of astrobiology, hydrocarbon sourcing, and life in ultra-basic environments and the subsurface biosphere.

Experience with field work in the geosciences, geomicrobiology, biogeochemistry and/or organic geochemistry particularly at the M.Sc. level is desired. This position will be available as early as September 2013 through the Department of Earth Sciences at Memorial University. Send inquiries or applications, including a letter of interest, transcript(s), curriculum vitae and contact information for 3 references, to: Dr. Penny Morrill, Department of Earth Sciences, Memorial University, St. John’s, NL, Canada; pmorrill@mun.ca; http://www.mun.ca/earthsciences/Our_People/Faculty/Faculty_Pages/Morrill.php. Applications will be considered until May 31, 2013.

Postel Competition - Climate Adaptation/Mitigation
U.S. Department of Energy and the MIT Energy Initiative (MITEI)

Recent extreme weather events have increased attention on utilizing both mitigation and adaptation strategies to address climate change. The U.S. Clean Energy Education and Empowerment (C3E) program organizers invite graduate student research posters from any academic discipline focused on the development and/or analysis of climate mitigation and/or adaptation policies, tools, or technologies.

You: A female graduate student engaged in research addressing energy-related climate change adaptation and/or mitigation.

Us: C3E Ambassadors who will invite the top ten posters from across the country to attend the annual C3E Symposium in September, 2013 at MIT.

The final winner will be selected and announced at the 2013 C3E Symposium and will receive a $5,000 award. Deadline to apply is June 1st. Find out more, and submit your work to the competition at c3eawards.org.

More about the C3E Symposium
The U.S. Department of Energy and the MIT Energy Initiative (MITEI) have partnered to implement a U.S. Clean Energy Education and Empowerment (C3E) program, an effort to advance the careers and leadership of women in the field of clean energy.

As part of the U.S. C3E program, MITEI also invites nomination for mid-career women for outstanding work in clean energy for a $10,000 award in one of six categories. The goal of the Awards program is to raise the visibility of the high-achieving, high-potential women in the clean energy field through a national recognition program. The deadline to nominate an awardee is midnight on May 15, 2013. Nominate an awardee at c3eawards.org.

Questions?
Please contact C3Eawards@MIT.edu for questions related to the Awards Program, the poster competition, or the C3E Symposium.

For questions about the C3E Ambassadors or general questions about the C3E Initiative, contact C3E@hq.doe.gov.

NASA Langley Research Center
The Langley Aerospace Research Student Scholars (LARSS) Research Internship Program

The NASA LARSS internship program is a paid (stipend) research experience open to U.S. citizens who are full-time undergraduate (juniors and seniors) and graduate students. http://www.nlanet.org/larss
(See the attached flyer for details)

A NOTE FROM OUR COUNSELOR
Curricula Updates

The faculty of the College of Science has completed a year-long assessment of the Science Core Curriculum. The assessment was completed to determine if current requirements were successful in meeting the learning outcomes established for the new curriculum in the fall 2007. The assessment process has resulted in the following changes:

Teaming and Collaboration Requirement:

The Teaming and Collaboration requirement has been modified. SCI 21000 has been removed as a required course for this requirement. Students will complete the Teaming and Collaboration requirement by completing an approved course or experiential learning contract. The list of approved courses may be found at the following website. [Note: PHYS 17200, CS 15800 or CS 17700 at Purdue fulfills this requirement. If you have already completed SCI 21000, it counts as one of your free electives.]

General Education Sequence Requirement:

The sequence stipulation has been removed from the General Education Sequence requirement. Students need to complete three approved general education courses for this requirement – that part has not changed. You can find the approved course list for “gen eds” at the following website:

http://www.science.purdue.edu/Current_Students/curriculum_and_degree_requirements/general-education.html

Reminder: You may use only one ECON, MGMT, OBHR, ENTR course to meet the general education requirement.

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 www.purdue.edu/eas/ and Click on News to access active links as needed. Material for inclusion in the newsletter should be submitted to Wanitta Thompson (thompsow@purdue.edu) by Friday noon 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.purdue.edu/eas/info_tech/index.php.

Also, as an additional resource for information about departmental events, seminars, deadlines, etc., see our departmental calendar at http://calendar.science.purdue.edu/eas/seminars.

May Birthdays

Jon Harbor – May 5th
Bill Zinsmeister – May 6th
Dan Shepardson – May 26th
What’s in the toolkit?

- professional development program manual
- PowerPoint presentation with video clips and talking points
- presenter’s guide that details the talking points, video clips, and instructional activities
- materials packet including the handouts, visuals, and data sets for the instructional activities and program
- teachers’ guide for climate system instruction
- an administrative packet for implementing a professional development program in climate education

The Dynamics of Climate conference is made possible through NSF Grants GEO-1034821 and DRL 0822181 and supported by the following departments at Purdue University, West Lafayette campus:

- Earth, Atmospheric, and Planetary Sciences in the College of Science
- Curriculum and Instruction in the College of Education
- Agronomy in the College of Agriculture

The program and toolkit were developed in collaboration among Dan Shepardson, Purdue, Project PI and Dev Niyogi, CoPI and Indiana State Climatologist, and:

Adam Baker, Meteorologist, National Weather Service, Indianapolis
Mary Cutler, Naturalist, Tippecanoe County Parks and Recreation Department
Olivia Kellner, PhD student, Purdue University
Mark Koschmann, Science Teacher, St. John’s Lutheran School, Midland, MI
Ted Leuenberger, Former Science Teacher, Benton Jr./Sr. High School
Ian Pope, Graduate Research Assistant, Purdue
Hans Schmitz, Extension Educator, Purdue
Jan Sneddon, Director, Indiana Earth Force and President, Environmental Education Association of Indiana

Questions about registration?
Call Purdue Conferences, 765-494-7231.
Questions about the Conference?
Call Peggy Favorite, 765-494-6814.
The *Dynamics of Climate* conference for informal and formal educators is designed to prepare participants to use a professional development toolkit for climate science education and provide up-to-date information on climate science. The conference and toolkit take a climate system approach to understanding how the Earth’s climate is changing.

The toolkit utilizes climate datasets and activities to develop understanding of climate. Small group and individual activities require participants to interpret, analyze, and represent climatic data and use scientific concepts to explain climate events. Conference sessions take participants through the implementation of the professional development toolkit.

**Included in your $25 conference registration:**

- **Atlas of Climate Change**, by Kirstin Dow and Thomas Downing, a 2006 Planeta.com Book of the Year winner
- Breakfasts, lunches, and BBQ social
- Digital toolkit and professional website access
- Access to the network mentoring group

**Early Bird Special** — the first 50 registered participants will receive one night lodging (single occupancy) or both nights (two participants sharing double occupancy) at the Purdue Memorial Union Club Hotel. Be one of the first! Register at: www.conf.purdue.edu/climate

*May 1, 2013 is the last day to register.*

David Archer is a professor in the Department of the Geophysical Sciences at the University of Chicago and a Fellow of the American Geophysical Union, publishing on Earth’s carbon cycle and its interaction with global climate. Dr. Archer has written a series of books on climate change, including *Global Warming: Understanding the Forecast*, a text for non-science major undergraduates now in second edition; *The Long Thaw: How Humans are Changing the Next 100,000 Years of Earth’s Climate; The Climate Crisis, a summary of the IPCC Scientific Assessment; The Global Carbon Cycle, a primer in climate science*; and *The Warming Papers: The Scientific Foundation for the Climate Change Forecast*. He teaches classes on global warming, environmental chemistry, and global biogeochemical cycles, and is regular contributor to the climate science blog site realclimate.org.

**CONFERENCE HIGHLIGHTS**

**May 15**

11:00  Registration and check in
1:30—Welcome and Overview Professional Development Toolkit
Midwest Climate: Past, Present, and Future
Toolkit: Climate Continuum and Climate System
BBQ Social at Prophetstown State Park

**May 16**

Keynote:  **David Archer**, University of Chicago
Toolkit: A Changing Climate
Climate Panel:  **Matt Huber**, Otto Doering, **Linda Prokopy**, and **Leigh Raymond**, Purdue
Toolkit:  Greenhouse Gases, Greenhouse Effect and the Carbon Cycle
Toolkit:  Climate Data, Scales and Models
Toolkit:  Adaptations and Mitigation

**May 17**

Climate Education:  Meeting the Needs of Teachers and Students
Toolkit:  Action and Impacts
Supplemental PD Resources
Planning for Action
3:00 Wrap Up
PCCRC Distinguished Lecture
The Impact of Fossil Fuel Combustion on Earth's Carbon and Methane Cycles

May 16, 2013
Burton Morgan Center
Room 121
9:15am

David Archer is a Professor of Geophysical Sciences at the University of Chicago. He is a Fellow of the American Geophysical Union, publishing on Earth's carbon cycle and its interaction with global climate.

www.purdue.edu/climate
The Impact of Fossil Fuel Combustion on Earth’s Carbon and Methane Cycles
Professor David Archer
Burton Morgan Center, Room 121
May 16, 2013
9:15AM

ABSTRACT

When fossil fuel CO2 is released to the atmosphere, it essentially accumulates in the relatively rapidly cycling atmosphere/ocean/land biosphere carbon cycle. The atmospheric concentration of CO2 spikes through a time period of CO2 emissions, then is expected to slowly decline over the centuries as CO2 invades the ocean. The “lifetime” of fossil fuel CO2 in the atmosphere is a complicated question because there are multiple processes operating, but in general the CO2 concentration will be higher than natural for hundreds of thousands of years. Some components of the climate system, such as the ice sheets in Antarctica and Greenland, will respond most strongly to the "long tail" of the fossil fuel CO2, ultimately raising sea level by 10's of meters, something like 100 times more than the IPCC forecast for the year 2100. The interaction of the long tail with orbital forcing has the capacity to alter the trajectory of the glacial / interglacial cycles for hundreds of thousands of years into the future.

Methane released to the atmosphere is oxidized to CO2 on a time scale of about a decade. The concentration in the atmosphere is determined by a dynamic balance between its sources and sinks. The ongoing loss of methane keeps its concentration much lower than that of CO2, eliminating any cumulative effect to that of the oxidation product, CO2, but also lessening the “band saturation effect” for methane, making it a more powerful greenhouse gas than CO2 per molecule. Dr. Archer will discuss the usefulness of limiting methane vs. CO2 emissions, the possibility of a methane feedback to CO2-induced climate change, and the possible role of the permafrost and methane hydrate carbon pools in the carbon cycle of the distant future.
About the GCC

MIT’s Program in Atmospheres, Oceans, and Climate and the Woods Hole Oceanographic Institution are pleased to announce the 7th annual GCC, a unique conference for graduate students, organized and run by graduate students. The goal of the GCC is to provide a discussion forum for graduate students undertaking research on climate and climate change in an array of disciplines. The format is designed to encourage new climate scientists to become acquainted with the details of diverse areas of climate research and place their own research in the context of the climate science community.

Food, lodging and conference costs will be provided by our generous sponsors. Limited travel funding will be available on an as-needed basis. Applications open April 15 on our website.

Who: Graduate students studying climate
What: 7th Graduate Climate Conference
When: November 1-3, 2013
Where: Woods Hole Oceanographic Institution
   Woods Hole, MA
Email: gcc-2013@mit.edu
Website: http://gradclimateconf.mit.edu
Abstract Deadline: June 7, 2013

Potential Sessions:
Paleoclimate
Cryosphere
Clouds/Aerosols
Hydrology
Climate Policy
Atmosphere/Ocean Dynamics
Biogeochemical Cycles
Ecosystems/Biosphere
Climate Change Impacts
Atmosphere/Ocean Chemistry
The Langley Aerospace Research Student Scholars (LARSS)
Research Internship Program
http://www.nianet.org/larss

The NASA Langley Research Center (Hampton, VA) offers paid, year-round (3 sessions), highly competitive research internships for exceptional students to work with Langley engineers and scientists on some of the Nation’s most important, difficult, and challenging problems. The LARSS program emphasizes multi-disciplinary and collaboratively developed solutions to problems in such broad areas as (1) flight, including entry, descent, and landing, in all atmospheres; (2) Earth systems science, including the characterization of all atmospheres; (3) affordable, safe, and sustainable space exploration systems and technology; and (4) materials and structural concepts, analysis, and integration.

ELIGIBILITY REQUIREMENTS
• U.S. Citizenship
• Full-time student status at an accredited U.S. college or university
• Classification as a rising undergraduate junior or senior, or graduate student (master's or doctoral level)
• Cumulative 3.0 GPA on a 4.0 scale

PROGRAM SESSION DATES
• 2013 Spring Session (15 weeks) Jan. 22 – May 3, 2013
  Application Deadline: Oct. 11, 2012
• 2013 Summer Session (10 weeks) June 4 – Aug. 9, 2013
  Application Deadline: Feb. 1, 2013
• 2013 Fall Session (15 weeks) Sept. 4 – Dec. 13, 2013
  Application Deadline: June 26, 2013

CONTACT INFORMATION
Debbie Murray
LARSS Program Coordinator
Phone: 757-864-5215
Fax: 757-864-9701
Deborah.B.Murray@nasa.gov

Find additional LARSS information, application, and deadlines at
http://www.nianet.org/larss