### DEPARTMENT NEWS

#### EAPS COLLOQUIA

**Chang Liao**  
PhD candidate  
**Tuesday, March 7, 2017**  
4:00 PM  
HAMP 2201

**Tonglin Zhang**  
Dept. of Statistics, Purdue University  
**Thursday, March 9, 2017**  
3:30 PM  
HAMP 1252

#### PUBLICATIONS


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### EAPS MEETINGS & EVENTS

#### CoS SPRING FACULTY MEETINGS

**April 18, 2017**  
3:30-4:30 PM  
LWSN 1142

#### EAPS-SPRING FACULTY MEETINGS

- **March 7, 2017**  
- **March 28, 2017**  
- **May 2, 2017**  
  3:00 PM  
  HAMP 3201

#### EAPS AWARDS BANQUET

**April 17, 2017**  
5:30 PM  
Ross-Ade Pavilion, Buchanan Club

#### EAPS ALUMNI ADVISORY BOARD

**April 18, 2017**  
8:30 AM-4:00 PM  
HAMP 2201

#### BLACK AND GOLDEN JUBILEE

**September 21-23, 2017**
EAPS RELAY FOR LIFE

This year the EAPS Graduate Student Association is participating in the Purdue Relay for Life event held at the COREC on April 7-8th from 6 pm-6 am. We ask that any and all interested should attend or help us with fundraising efforts. Each and every donation helps fund groundbreaking cancer research, patient care programs, and can make a difference in communities like ours.

Please join our team or make a donation at the following URL:
http://main.acsevents.org/site/TR?team_id=2152663&page=team&fr_id=81475&s_locale=en_US&et=fCqIDcTblecHnRAH6k9Q

BLACK AND GOLDEN JUBILEE OPEN FOR REGISTRATION

The Black & Golden Jubilee website is now open for registration. For more information on the event, go to the event website. To register, go to the registration website.

GLOBE OBSERVER TUTORIALS

GLOBE Observer is an international citizen science initiative to understand our global environment. Citizens make environmental observations that complement NASA satellite data in helping scientists study Earth and the global environment.

EAPS Outreach will be conducting GLOBE Observer tutorials during Purdue Springfest on April 8, 2017.

THREE MINUTE THESIS

The Three Minute Thesis (3MT™) is a research communication competition developed by The University of Queensland. The competition develops academic, presentation, and research communication skills and supports the development of students’ capacities to effectively explain their research in language appropriate to an intelligent but non-specialist audience.

Graduate students will have three minutes to present a compelling discussion on their research topic, its significance and relevance to the general public. 3MT™ is not an exercise in trivializing or ‘dumbing-down’ research but forces competitors to consolidate their ideas and crystalize their research discoveries. It is a celebration of the discoveries made by graduate students and will allow the broader community to learn about on-going research at Purdue.

This is a fast-paced competition where the top 10 finalists compete by summarizing their 3+ years of research in only 3 minutes with only 1 slide. It is a free event and open to the public. A Panel of Judges will select the 1st and 2nd place winners but the People’s Choice Award will be selected by the audience.

For more information, go to http://www.purdue.edu/gradschool/student/3mt.html.

FREE SCIENCE COMMUNICATION WEBINAR

The AGU Heads and Chairs program and the American Geosciences Institute is please to be offering a free webinar on Science Communication 101 in Support of Your Program. Leading this month’s webinar are Dr. Olivia Ambrogio and Dr. Shane Hanlon from AGU’s Sharing Science program.
Please consider registering yourself or invite any of your faculty or colleagues (and students!) who are interested in learning more about communicating their science.
We invite you to join us on Friday, 17 March 2017 from 1:00 P.M. - 2:00 P.M. EST.
Register for free for the webinar at: https://attendee.gotowebinar.com/register/8377745720899462146

SEVERE WEATHER WARNING DECISION MAKING RESEARCH ASSOCIATE

The Cooperative Institute for Mesoscale Meteorological Studies (CIMMS) at The University of Oklahoma is currently seeking a Research Associate to collaborate with scientists and instructors at the National Weather Service (NWS) Warning Decision Training Division (WDTD) in Norman, OK, on training for severe weather warning decision making.

Applicants should identify expertise within any of the following areas: experience in teaching/training; operational experience related to severe weather forecasting and warning, including winter weather forecasting techniques; warning-related inputs such as radar, satellite, lightning, and storm-scale models; weather analysis software (such as AWIPS); graphic design or illustration; project management/teamwork; oral and written communication, including collaboration tools; Linux (or Unix) operating systems; programming skills (Python, JAVA, object oriented programming, GIS-based, web-based, etc.); human factors and human performance technology.

To apply for the position, please forward your resume, cover letter and list of three references to:

Tracy Reinke
Executive Director, Finance and Operations
University of Oklahoma CIMMS
120 David L. Boren Blvd., Suite 2100
Norman, OK 73072-7304

For more information, see the attached flier.

CROSSROADS GEOLOGY CONFERENCE

The student members of the Rho chapter of Sigma Gamma Epsilon at Indiana University would like to extend a formal invitation to participate in the 17th annual Crossroads Geology Conference, March 31 & April 1, 2017 at Indiana University in Bloomington, IN.

Crossroads is a student-organized event featuring research presentations by graduate and undergraduate students across the Midwest. This conference is open to any student in Earth, atmospheric, or planetary science to present their research. Students from other fields, such as archaeology, physics, or anthropology, are also welcome to present research relating to geological sciences.

Crossroads is free to all students (including meals) and is an excellent opportunity to interact with judges from a variety of industry and academic fields. Awards will be presented to top oral and poster presentations for undergraduate and graduate students. In addition, students are encouraged to participate in networking social, a campus geology tour and a career panel discussion lead by our judges.

For more information, go to http://www.indiana.edu/~sgeweb1.

STAFF SCIENTIST-DATA PRODUCTS

Battelle and its affiliate, Battelle Ecology, Inc., manage and operate the National Ecological Observatory Network (NEON) project, which is solely funded by the National Science Foundation. A 30+ year project dedicated to understanding how changes in climate, land use and invasive species impact ecology, the observatory’s scientists and engineers are collecting a comprehensive range of ecological data on a continental scale across 20 eco-climatic domains representing US ecosystems. Our teams use cutting-edge technology, including an airborne observation platform that captures images of regional landscapes and vegetation; mobile, relocatable, and fixed data collection sites with automated ground sensors to monitor soil and atmosphere; and trained field
crews who observe and sample populations of diverse organisms and collect soil and water data.

The Staff Scientist – Data Products will manage the efforts for developing and delivering the micrometeorology data product through an internal working group (working Integrated Product Team - wIPT) responsible for delivering Eddy-Covariance data products. Responsibilities include: ensuring delivery of data products and associated documentation, including design, specification, implementation, testing, and publication. This position requires understanding Battelle Ecology, Inc.’s data and sample acquisition systems and their scientific design and goals, and assessing and realizing the utility of algorithms necessary to enable community use of the products. The Staff Scientist will also be expected to interact with external working groups and advisory panels, liaising with the larger ecological modeling and micrometeorology communities to ensure Battelle Ecology, Inc.’s chosen approaches are appropriate.

See attached flyer for additional information.

FREE ONLINE COURSE ON RESERVOIR GEOMECHANICS

Professor Mark Zoback, Stanford University
Start Date: 3 April 2017
Duration: 10 weeks, 20, 90-minute lectures, 8 homework (HW) assignments

This interdisciplinary course encompasses the fields of rock mechanics, structural geology, earthquake seismology and petroleum engineering to address a wide range of geomechanical problems that arise during the exploitation of oil and gas reservoirs. To date, 7,000 people – principally college students and current industry professionals – have successfully completed the course.

The course considers key practical issues such as prediction of pore pressure, estimation of hydrocarbon column heights and fault seal potential, determination of optimally stable well trajectories, casing set points and mud weights, changes in reservoir performance during depletion, and production-induced faulting and subsidence. The first part of the course establishes the basic principles involved in a way that allows readers from different disciplinary backgrounds to understand the key concepts.

Reservoir Geomechanics is a practical course for geoscientists and engineers in the petroleum and geothermal industries, and for research scientists interested in stress measurements and their application to problems of faulting and fluid flow in the crust.

The course follows the text book, Reservoir Geomechanics by Prof. Zoback. The book is recommended, but not required for the course. It is available from Cambridge University Press and Amazon. It is also available in electronic form for the Kindle.

A Certificate of Accomplishment will be issued to students who complete HW assignments with a grade of 70%, or better.

For more information and to enroll go to the following URL:

UNDERGRADUATE RESEARCH AND POSTER SYMPOSIUM

The 2017 Undergraduate Research and Poster Symposium has been set for Tuesday, April 11, 2017. If you are a student, consider participating in this wonderful opportunity, and, if you are a faculty member, consider being a judge for the College of Science. Please think about donating an hour (or more) of your time to participate as a judge, it would be greatly appreciated.

More information can be found on the symposium website. If you have any questions, you can send them to Robin Sipes at rsipes@purdue.edu.
2017 PCCRC DISTINGUISHED LECTURE

Dr. Noah Diffenbaugh, a former EAPS faculty member and director of PCCRC, will present the 2017 Distinguished Lecture, titled "Quantifying the influence of observed global warming on the probability of historically unprecedented extreme climate events." The event information is as follows:

Friday, March 24
3:30 PM
Pfendler Hall, Rm. 241

For more information, please see the attached flyer.

VII EARTH SCIENCES CONVENTION
(EXHIBITION OF PRODUCTS, NEW TECHNOLOGIES AND SERVICES)

The Cuban Geological Society (SCG) is inviting scientists, professionals, technicians, and university students of Geology, Geophysics, and Mining and related Geosciences, to participate in the VII Earth Sciences Convention, to be held at the International Conference Center in Havana, Cuba on April 3-7, 2017.

For further information, please contact: www.scg.cu; www.cubacienciasdelatierra.com; geociencias@mnhnc.inf.cu or see attached flier.

SAFETY CHAIR MEETING AND SAFETY FAIR

Purdue’s Radiological and Environmental Management department will hold its annual Safety Chair Meeting from 8 a.m. to 11 a.m. March 1 in Stewart Center, Room 214. Room 218 will feature a safety fair from 7:30 to 11:30 a.m. with a variety of vendor displays and REM representatives to answer questions about safety needs.

Departmental safety representatives and building deputies are invited to attend to hear presentations on environmental health and safety issues and compliance updates. Faculty and staff are welcome to attend any or all of the sessions.

The Safety Chair Meeting is split into three sessions. The first session at 8 a.m. features an occupational safety theme targeting a nonacademic audience. The second session, 9-10 a.m., will apply to all audiences. The third and final session, 10-11 a.m., will have a laboratory theme targeting an academic research audience.

Doug Condon, contractor safety leader from Dow AgroSciences, will discuss that company’s successful safety culture implementation during the 9 a.m. session.

The full program agenda is available here.
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 Logan Judy (ljudy@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.htm

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
What Happens in the Arctic Doesn’t Stay in the Arctic

Chang Liao
PhD Candidate

The effects of global warming on the cryosphere are most visibly manifested on the snow covers, mountain glaciers and permafrost. In northern high latitudes, the increase in near surface air temperature is almost twice as large as the global average. The Arctic is expected to experience significant changes under the warming climate, including decreasing snow cover extent and permafrost thawing. In Arctic terrestrial ecosystems, both water and carbon cycles are subsequently affected. However, our understanding to the relationships among these dynamics are very limited. Using process-based, three-dimensional, high spatial-temporal resolution ecosystem and biogeochemistry models, we are able to quantify water and carbon lateral flows to oceanic systems.
Marked point processes are popular statistical approaches for randomly appeared events developed in space and time, which have been extensively used in natural hazard studies including forest wildfires and earthquakes. A marked point process is often composed of points for spatiotemporal locations and marks for their magnitudes. The major interest in marked point processes is to discover the connection between points and marks such that future occurrences can be predicted based on their connection. In the talk, I am going to present basic marked point process approaches in statistics, which will include important definitions, famous statistical models, estimation and computational methods, and a few applied examples. It will contain much of my previous research on marked point processes for forest wildfires and earthquakes.
TEACHING AND LEARNING ABOUT CLIMATE CHANGE

A Framework for Educators

Edited by Daniel P. Shepardson, Anita Roychoudhury, and Andrew S. Hirsch
YOUR THESIS IN 3 MINUTES
ARE YOU UP TO THE CHALLENGE?

HONE YOUR COMMUNICATION SKILLS
GET FEEDBACK ON YOUR PRESENTATION
WIN CASH PRIZES!

Final Competition Open to the Public
April 4, 2017
Fowler Auditorium at 7 p.m.

Graduate Students Must Register by:
March 17, 2017

More details at: www.purdue.edu/gradschool
Quantifying the influence of observed global warming on the probability of historically unprecedented extreme climate events

Effective climate risk management requires robust quantification of the probability of different kinds of hazards, such as heat waves, droughts, floods, and severe storms. As a result, there has been increasing interest in the extent to which historical global warming has influenced the occurrence and severity of individual extreme climate events. However, although trends in the extremes of the seasonal- and daily-scale distributions of climate records have been analyzed for many years, quantifying the contribution of observed global warming to individual events that are unprecedented in the observed record presents a particular scientific challenge. I will describe a framework for leveraging observations and large climate model ensembles to quantify the influence of observed global warming on the probability of unprecedented extreme events. This approach is grounded on three tenets: (1) Focus on understanding the physical causes of the individual event; (2) Use formal uncertainty quantification to test the probability of those physical conditions occurring in the current climate, and (3) Use formal hypothesis testing to compare the probability of those physical conditions occurring in the current climate and a climate without human influence. My group has applied our analysis to a number of different climate variables from a number of individual events, including temperature, precipitation, soil moisture, and atmospheric circulation patterns. Together, this work has shown that global warming can influence the risk of extreme events that are unprecedented in historical experience, particularly by altering the probability of the physical conditions that are responsible for the event. In addition, given the widespread public interest in "real time" attribution, the prospects for operational attribution analysis will also be discussed.
Research Associate – Severe Weather Warning Decision Making

The Cooperative Institute for Mesoscale Meteorological Studies (CIMMS) at The University of Oklahoma is currently seeking a Research Associate to collaborate with scientists and instructors at the National Weather Service (NWS) Warning Decision Training Division (WDTD) in Norman, OK, on training for severe weather warning decision making.

The duties of this position are:

1) Integration of NWS operational warning decision making principles of science, technology, and human factors into support of training development and delivery.
2) Collaborate with WDTD instructors in a project-based environment to develop and deliver training on the WSR-88D and its applications to meteorological and hydrological operations.
3) Develop technical expertise with AWIPS-2; products and applications with respect to WSR-88D, MRMS, satellite, lightning and convective-allowing models; and the warning decision-making process.
4) Acquire skills in operation of Linux and Windows workstations to support development of simulations and other tools for warning decision-making training.
5) Participate in experimental warning/forecast exercises and WDTD training workshops.
6) Attend meetings and professional conferences to become knowledgeable of new meteorological applications and to interact with the applied-research community.
7) Review technical/professional publications and attend seminars to stay abreast of current developments in meteorological applications.
8) Perform related duties as assigned.

The minimum qualifications for the position are:

1) A Master’s Degree in Meteorology, Atmospheric Science, or related area; or
2) A Bachelor’s Degree in Meteorology, Atmospheric Science, or related area and at least three years’ experience in operational meteorology or applied research.

Emphasis will be place on applicants with severe weather experience.

Applicants should identify expertise within any of the following areas: experience in teaching/training; operational experience related to severe weather forecasting and warning, including winter weather forecasting techniques; warning-related inputs such as radar, satellite, lightning, and storm-scale models; weather analysis software (such as AWIPS); graphic design or illustration; project management/teamwork; oral and written communication, including collaboration tools; Linux (or Unix) operating systems; programming skills (Python, JAVA, object oriented programming, GIS-based, web-based, etc.); human factors and human performance technology.

Normal working hours will be observed except for occasional irregular hours during data collection, warning/forecast experiments, or workshops conducted at remote sites. Incumbents will receive training and gain expertise in the latest training technology and warning decision-making methodologies.

Supervision will be provided by CIMMS staff. Technical oversight will be provided by CIMMS staff, NWS meteorologists, and WDTD management. The incumbent will work under general supervision but is expected to determine action to be taken in handling all but unusual situations. Incumbents in this position are not expected to supervise other employees, but may serve as leaders of technical teams.

The beginning salary will be salary commensurate with experience with University of Oklahoma benefits. Information on benefits may be found at [http://hr.ou.edu/Employees/New-Employees-at-OU/OU-Benefits-Overview](http://hr.ou.edu/Employees/New-Employees-at-OU/OU-Benefits-Overview).

To apply for the position, please forward your resume, cover letter and list of three references to:

Tracy Reinke
Executive Director, Finance and Operations
University of Oklahoma CIMMS
120 David L. Boren Blvd., Suite 2100
Norman, OK  73072-7304
treinke@ou.edu

JOB REFERENCE: WDTD – Severe Weather

*The University of Oklahoma is an equal opportunity/Affirmative Action employer.*
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<thead>
<tr>
<th>Time</th>
<th>Friday March 31</th>
<th>Saturday April 1</th>
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<tbody>
<tr>
<td>8:00 AM</td>
<td>breakfast</td>
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<td>9:00 AM</td>
<td>poster session 1</td>
<td>awards ceremony</td>
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<tr>
<td>10:00 AM</td>
<td>break</td>
<td>judges career panel discussion</td>
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<td>11:00 AM</td>
<td>lunch</td>
<td>campus geology tour</td>
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<td>12:00 PM</td>
<td>poster session 2</td>
<td>11:00 AM</td>
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<td>1:00 PM</td>
<td>break</td>
<td>11:30 AM</td>
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<td>2:00 PM</td>
<td>keynote talk</td>
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<td>3:00 PM</td>
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<td>6:00 PM</td>
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<td>7:00 PM</td>
<td>Networking Social at Crazy Horse</td>
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<td>8:00 PM</td>
<td>(214 W. Kirkwood Ave. Bloomington, IN 47404)</td>
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Staff Scientist-Data Products
Location: Boulder, CO, US

COMPANY OVERVIEW
Battelle and its affiliate, Battelle Ecology, Inc. manage and operate the National Ecological Observatory Network (NEON) project, which is solely funded by the National Science Foundation. A 30+ year project dedicated to understanding how changes in climate, land use and invasive species impact ecology, the observatory’s scientists and engineers are collecting a comprehensive range of ecological data on a continental scale across 20 eco-climatic domains representing US ecosystems. Our teams use cutting-edge technology, including an airborne observation platform that captures images of regional landscapes and vegetation; mobile, relocatable, and fixed data collection sites with automated ground sensors to monitor soil and atmosphere; and trained field crews who observe and sample populations of diverse organisms and collect soil and water data. Once structures are completed, a leading edge cyberinfrastructure will calibrate, store and publish this information. The Observatory includes more than 500+ personnel and is the first of its designed to detect and enable forecasting of ecological change at continental scales.

Job Location: Boulder, CO

JOB SUMMARY
The Staff Scientist – Data Products will manage the efforts for developing and delivering the micrometeorology data product through an internal working group (working Integrated Product Team - wIPT) responsible for delivering Eddy-Covariance data products. Responsibilities include: ensuring delivery of data products and associated documentation, including design, specification, implementation, testing, and publication. This position requires understanding Battelle Ecology, Inc.’s data and sample acquisition systems and their scientific design and goals, and assessing and realizing the utility of algorithms necessary to enable community use of the products. The Staff Scientist will also be expected to interact with external working groups and advisory panels, liaising with the larger ecological modeling and micrometeorology communities to ensure Battelle Ecology, Inc.’s chosen approaches are appropriate.

ESSENTIAL DUTIES AND RESPONSIBILITIES
- Support the development of Battelle Ecology, Inc.’s eddy covariance data products, including managing cost and schedule.
- Provide technical guidance on the development of Battelle Ecology, Inc. data products, particularly eddy covariance data products.
- Coordinate porting/testing/validation of all Micrometeorology science code into operational cyberinfrastructure, including development of standardized plans for transferring science code into the cyberinfrastructure.
- Coordinate implementation, dataflow and data formats for public access.
- Support working groups and product teams (internally and externally) to address cross-cutting science issues associated with sensor and algorithm deployment, implementation, maintenance and QA/QC.
- Provide expertise and feedback in designing, developing, and implementing state-of-the-art tools for manipulating, processing, and analyzing Battelle Ecology, Inc. wide variety of data.

REQUIRED: EDUCATION, EXPERIENCE, KNOWLEDGE AND SKILLS
- Ph.D. with applicable experience in an environmental science field, such as community land modeling, micrometeorology, biometeorology, ecosystem science, or atmospheric sciences.
- Two or more years’ experience (may be postdoctoral).
- Sound understanding of a wide range of sensors and measurement techniques, and their associated data acquisition and analysis procedures.
- In-depth knowledge of quantitative uncertainty analyses, time-domain, frequency-domain and QA/QC procedures. Experience with combining data of different types and from multiple spatial & temporal scales.
Proficiency in one or more programming languages, such as Fortran90+, Java, Python, C/C++
Experience with common statistics packages, such as R or SAS

PREFERRED EDUCATION, EXPERIENCE, KNOWLEDGE AND SKILLS

- Demonstrated experience leading teams
- Demonstrated experience working with interdisciplinary teams
- Knowledge of soil, tower, and airborne sensors and measurement techniques and their associated data acquisition and analysis procedures.
- Demonstrated experience working at the micro- to meso-meteorological scale
- Ability to develop dataflow designs for different and contrasting types of data
- Experience in operationalizing science code and working with large, complex data sets
- Design of data visualization tools
- Demonstrable knowledge of two or more ecological sciences relevant to Battelle Ecology, Inc.
- Peer-reviewed journal publications and a record of professional accomplishment related to the Battelle Ecology, Inc. mission

Apply to: www.neonscience.org

Battelle Ecology, Inc. provides employment and opportunities for advancement, compensation, training, and growth according to individual merit, without regard to race, color, religion, sex, national origin, sexual orientation, gender identity, marital status, age, genetic information, or disability. Our goal is for each staff member to have the opportunity to grow to the limits of their abilities and to achieve personal and organizational objectives. We will support positive programs for equal treatment of all staff and full utilization of all qualified employees at all levels within Battelle Ecology, Inc.
VII EARTH SCIENCES CONVENTION
EXHIBITION OF PRODUCTS, NEW TECHNOLOGIES AND SERVICES

XII Geology Congress (GEOLOGIA '2017)
IX Geophysics Congress (GEOFISICA '2017)
VII Mining Congress (MINERIA '2017)
VI Oil and Gas Congress (PETROGAS '2017)
XIII Informatics and Geosciences Congress (GEOINFO '2017)

"Geosciences at services of Society and Development"

The Cuban Geological Society (SCG) is pleased to invite scientists, professionals, technicians and university students of Geology, Geophysics, Mining and related Geosciences, to participate in the VII Earth Sciences Convention, and Exhibition of Products, New Technologies and Services, to be held at the International Conference Center of Havana, Cuba on April 3-7, 2017.

The convention welcomes presentations about Cuba, the Caribbean and other regions or in general about the geology, geophysics and mining experiences in the search and management of natural resources, including minerals (metals, industrial), water, oil and gas, construction, earthquake research and other geohazards, education of geosciences; as well as any other related to the sustainable exploitation of natural resources.

We invite professional societies, institutions and non-government organizations to organize workshops, round tables and meetings during the Convention.

Dr. Manuel A. Iturralde Vinient
President of the Cuban Geological Society

www.scg.cu; www.cubacienciasdelatierra.com
geociencias@mnhnc.inf.cu