National Association of Geoscience Teachers:
Distinguished Speaker Series

Cosponsored with
Joint Oceanographic Institutions, Inc.

Fall 2006 and Spring 2007

Host an NAGT/JOI Distinguished Speaker

Topics for workshops, seminars or talks:

- Innovative teaching techniques,
- Curricula reform,
- Cutting-edge Geoscience education research,
- Research opportunities in EARTHSCOPE, and
- Results and opportunities in scientific ocean drilling (Supported by Joint Oceanographic Institutions, Inc.)

Joint Oceanographic Institutions

Advancing global understanding of the Earth

Tanya Atwater

Dept. of Geological Sciences, U. C Santa Barbara, Santa Barbara, CA

How the West was made: using the last half billion years of geologic history in western North America to illuminate continental plate tectonic processes.

Cenozoic Plate Tectonics in the Western United States, from subduction to the San Andreas – a great illustration of the power of quantitative plate tectonics where oceanic and continental realms entangle.

Plate tectonics, ice ages, sea level shifts, marine terraces, volcanoes, earthquakes, tsunamis, etc: bringing Earth processes alive with computer animations.

Tanya Atwater was educated at M.I.T., U.C. Berkeley, and Scripps Inst. of Oceanography. After earning her PhD in 1972, she was a professor at M.I.T., then joined the U.C.S.B. faculty in 1980. Atwater researches many aspects of plate tectonics, especially the evolution of western North America and the San Andreas Fault system. She teaches at all levels, including many public education projects. Her honors include:N.S.F. Director's Award for Distinguished Teaching Scholars; the G.S.A. Structure and Tectonics Best Paper Award; and election to the National Academy of Sciences. Atwater also runs the UCSB Educational Multimedia Visualization Center which produces educational geo-animations and visualization tools. To download animations, visit http://emvc.geol.ucsb.edu/.

Tracy Gregg

Department of Geology
University of Buffalo, NY

Incorporating research in undergraduate and graduate classrooms

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Improving the undergraduate laboratory experience

Including planetary data in core geoscience courses

Tracy K.P. Gregg is an Associate Professor of Geology at the University at Buffalo (SUNY), and principal investigator on a number of NASA and NSF grants. She teaches a range of upper-level geology courses containing a mix of graduate and undergraduate students. She has developed innovative, hands-on laboratory and classroom exercises for introductory and advanced geoscience courses, and has co-led national workshops on enhancing undergraduate geoscience education.

Eric Grosfils

Geology Department,
Pomona College, CA

Computational Science: An Emerging Tool for Undergraduate Exploration of Complex Geoscience Problems

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Why One Planet Simply Isn't Enough: Engaging and Teaching Students in an Introductory Geology Course

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Tips and Techniques for Integrating Student Research throughout an Undergraduate Geology Curriculum

Eric Grosfils is an Associate Professor at Pomona College. Recipient of the 2001 Biggs Award from GSA, he has taught courses in planetary geology, environmental remote sensing/GIS, geomathematics, geophysics and research methods. Dedicated to the notion that students enjoy doing science more than hearing about it, he mixes research experiences into his teaching within and beyond the classroom. He also enjoys exploring how quantitative analysis and visualization can help move students beyond a basic understanding of geology and enhance their ability to explore interesting problems. His own planetary geology research explores how comparative study of Earth, Venus and Mars can be used to improve our understanding of fundamental volcanic and tectonic processes.

Frank Hall

Ocean Studies Board,
National Academy of Sciences,
Washington, DC

Using Earth Systems Science in the Preparation of Preservice Elementary School Teachers Issues.

Hurricane Katrina: A Personal Perspective

Frank Hall is a Program Officer with the Ocean Studies Board of the National Research Council. Prior to working there, he was an Associate Professor/Geoscience Educator at the University of New Orleans, Department of Earth and Environmental Science where he developed a collaborative program with the College of Education to prepare pre-service elemenatary school teachers in science. He also co-directed programs for grades 5-12 inservice science teachers, and worked with New Orleans Public Schools to assist teachers.

Bruce Herbert

Geology & Geophysics, Texas A&M University, College Station, TX

Developing Student Understanding of Complex Earth Systems.

Seeking Synergy: Designing Programs that Integrate Research and Education.

Understanding Student Learning: Views from the Learning and Cognitive Sciences.

Bruce Herbert is Associate Professor of biogeochemistry and Associate Director of Geosciences with the Information Technology in Science (ITS) Center for Learning and Teaching at Texas A&M University. He is also currently principal investigator of an NSF-sponsored professional development program for intern STEM teachers seeking alternative certification. Dr. Herbert is addressing a number of educational issues and research topics, including the design and implementation of authentic inquiry in the classroom, restructuring curriculum to focus on model-based learning, the use of multiple representations (i.e. physical models, visualizations, and simulations) to support student understanding of complex earth and environmental systems, and programmatic design that builds synergy between scientific research and education.

Jackie Huntoon

Department of Geology, Michigan Technological University, Houghton, MI

Recruiting and Retaining Diverse Graduate Students ----------

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Using Field-Based Experiences to Improve Earth Science Teacher Training.

The Role of Assessment in Geoscience Education.

Jackie Huntoon is Dean of the Graduate School and Professor of Geology at Michigan Technological University. From 2003-2005, she served as Program Director for Diversity and Education in the Directorate for Geosciences at NSF. Jackie is active in geoscience education and professional development programs for teachers. She has developed innovative field courses, participated in development of assessment instruments for education projects, and taken a leading role in her university's effort to broaden participation in science and engineering.

Patricia (Tricia) Kelley

Department of Earth Sciences
University of North Carolina, Wilmington. NC

Evolution and Creation: Conflicting or Compatible? (public lecture)

Teaching Evolution with Integrity and Sensitivity (workshop)

The Arms Race from a Snail's Perspective: Evolution of the Naticid Gastropod Predator-Prey System (research talk)

Patricia Kelley was educated at the College of Wooster and Harvard and has held positions at University of Mississippi, NSF, University of North Dakota, and University of North Carolina Wilmington. She is a Fellow of GSA and AAAS and a past president of the Paleontological Society and the Paleontological Research Institution's Board of Trustees. She received the 2003 Outstanding Educator Award from AWG. As a specialist in mollusc evolution and wife of a Presbyterian minister, Tricia is keenly interested in teaching evolution and the evolution/creation controversy.

Julie Libarkin

Dept. of Geological Sciences, Ohio University Athens, OH

Tale of Three Theories: Development and Use of the Geoscience Concept Inventory.

When Wrong Answers Ask the Right Questions about Student Learning: Conceptual Change and Assessment in College Science Classrooms.

Pictures Say a Thousand Words: Assessment of Alternative Conceptions through Analysis of Student-Generated and Student-Augmented Drawings.

J**ulie Libarkin** is co-developer of the Geoscience Concept Inventory, a valid and reliable instrument for assessment of entry-level geoscience. She is currently an Assistant Professor of Geological Sciences at Ohio University, and an Associate Editor of the Journal of Geoscience Education. Her research is devoted to assessing teaching effectiveness and is actively engaged in studying student conceptions, cognition, and conceptual change in higher education.

David Steer (left) and David McConnell (right)

Department of Geology, University of Akron, Akron

The Tourist, the Gunslinger and the Gardener: Rethinking Metaphors of Teaching and Learning to Enhance Student Learning.

Technology in Support of Effective Pedagogy: Peer Instruction, Electronic Support Systems, and Good Practice in Undergraduate Education.

Teaching for Understanding: Less Talk and More Action in Introductory Science Courses.

David McConnell and David Steer are Professor and Associate Professor, respectively, in the Department of Geology at the University of Akron. Their research focuses on the development of resources to improve learning in large general education geoscience classes. The Davids have made more than fifty presentations of their research at professional meetings, workshops, and seminars, and have received multiple grants for educational research projects from national and state agencies.

Ellen Metzger

Department of Geology, San José State University, CA, San Jose, CA

Trends in Earth Science Education: Challenges and Solutions.

How Earth Scientists Can Reach Out To Teachers: A Model from the Bay Area Earth Science Institute.

Designing an Introductory Earth Science Course for Prospective Teachers.

Ellen Metzger is a professor of Geology and Science Education at San José State University. She co-directs the Bay Area Earth Science Institute (BAESI), a professional development program for teachers that was founded in 1990, and teaches Earth Systems and the Environment, an introductory earth science course for educators. Ellen has served on the Board of Directors of the California Science Teachers Association and as past Chair of the Geoscience Education Division of the Geological Society of America.

Paul Morin

Department of Geology and Geophysics, University of Minnesota, The National Center for Earth-surface Dynamics, Minneapolis, MN

The GeoWall, Using Stereo Projection in the Non-major Geoscience Classroom.

Innovative uses of Geoscience Visualization in a Museum Setting.

Paul Morin has been instrumental in bringing Scientific Visualization to the Earth Science classroom with his work at the Department of Geology and Geophysics and the National Center for Earth-surface Dynamics. His work has led to the development of the GeoWall (www.geowall.org), an inexpensive low-end virtual reality system now used at over 70 undergraduate institutions around the world. Morin was a developer of the Science Museum of Minnesota's Big Back Yard, a 1.2 acre, outdoor biogeomorphology exhibit. He has contributed to over 10 earth science textbooks, numerous PBS science programs and the Encyclopedia Britannica..

Carol O'Donnell

The George Washington University, Graduate School of Education and Human Development Department of Teacher Preparation and Special Education, Washington, DC

Examining the Effects of Inquiry-based Science on Student Learning.

Designing and Using Models to Teach Earth and Space Science.

Teaching Teachers: Geoscientists and K-12 Teachers Working Together to Improve Pre-service and In-service Teacher Content Knowledge.

Carol O'Donnell is Senior Research Associate and Project Director of George Washington University's Scaling up Curriculum for Achievement, Learning, and Equity Project. Carol served as the Geosciences Curriculum Developer for the National Science Resources Center, an organization jointly operated by the Smithsonian Institution and National Academies. Her book, Catastrophic Events, received the Mark Trail Award in 2003. Carol has given numerous talks and workshops nationally related to science education reform.

Christina Ravelo

University of California, Santa Cruz, Santa Cruz, CA

Global Climate Change: Lessons from Ocean Drilling and the Discovery of Earth's Geologic Past.

Christina Ravelo is a professor of Ocean Sciences at the University of California, Santa Cruz. Her research and teaching interests are focused on paleoceanography and global climate change. She is the current director of the Center on the Dynamics and Evolution of the Land-Sea Interface, a UCSC organization that fosters interdisciplinary research on coastal processes. She has been involved in the Ocean Drilling Program for many years, as a shipboard scientist and as a member of its advisory committees.

Eric Riggs

Department of Earth and Atmospheric Sciences, Center for Research and Engagement in Science and Mathematics Education (CRESME)
Purdue University, West Lafayette, IN

Toward an Understanding of Field Mapping Expertise: Student Navigation as a Measure of Problem Solving Skills.

Geoscience Education in Native America: Working with Indigenous Communities' Knowledge and "Sense of Place".

Assessing the Educational Benefits of Field-based Teaching for Pre-service Teachers and Other Non-majors: Research Results, Applications, and Best Practices.

Eric Riggs is an associate professor of geoscience education and geology, and is the founding Co-Director of the Purdue University Center for Research and Engagement in Science and Mathematics Education. He is a member of the Geoscience Education research group at Purdue University. Riggs and his graduate students study many related aspects of field-based teaching and learning in the geosciences, focusing on issues of geoscience knowledge construction, spatial cognition related to geoscience expertise, and cross-cultural education. Riggs is the co-founder of the Indigenous Earth Sciences Project, a research and outreach effort which works to make geoscience education accessible and useful to Native Americans in Southern California and across North America

Marta Torres

College of Ocean and Atmospheric Science, Oregon State University, Corvallis, OR

Life-long Learning Opportunities in Oceanography: A Project Integrating Ocean Sciences into Adult Basic Education Programs.

Methane-ice in Marine Sediments: Where, How and Why we Study these Deposits?

Submarine Springs: The Hot and the Cold.

Marta Torres is an associate professor of oceanography at Oregon State University. She is interested in using chemistry to unravel processes that occur within sediments at tectonic plate boundaries, where water with a chemical composition different from bottom seawater is expelled at the seafloor, in what oceanographers call "cold seeps". Marta has studied cold seeps along the entire Pacific Rim. She conducts her research using conventional research vessels, a deep-sea drilling platform, remotely operated and manned submersibles. Marta is also interested in taking advantage of the fascinating and interdisciplinary nature of ocean sciences to enhance science and numeracy skills for Americans of all ages.

Application to request a Distinguished Speaker, or for funding costs to cover a Speaker's Travel Expenses
(Note: Electronic version may be found on www.nagt.org.)

Name of Contact Person: _____ Phone: _____
Mailing address: _____ FAX: _____
_____ email: _____
_____

Speaker choice(s): List in order of preference
1) _____
2) _____
3) _____
4) _____

Expected audiences (check all that apply)
_____ Faculty teaching primarily undergraduate classes
_____ Faculty teaching both u' graduate & graduate classes
_____ Graduate students interested in academic careers
_____ Undergraduate students interested in K-12 education
_____ K-12 teachers

Has your department been previously funded for an NAGT Distinguished Speaker visit? If so, who and when?
_____
Please describe what your Department/Institution would hope to achieve by the visit
_____
_____
_____
_____
_____
If this application is funded NAGT will pay travel expenses and honorarium for the Distinguished Speaker.

By applying for funding the Department/Institution agrees to the following:
1) Before the visit, the Department will fill out a brief questionnaire describing the curriculum and styles of teaching currently used, and what the Department hopes to achieve by the visit.
2) Before the visit, the Department will make arrangements to invite neighboring schools to the Speaker's visit
3) The Department will cover the speaker's local food, accommodation and travel costs, the costs to photocopy workshop materials, and the cost of a substitute, if the Speaker is a high school teacher.
4) Following the visit, the Department will submit an evaluation of the visit
5) The Department will submit a report to the Speaker Coordinator six months after the visit to report on changes stimulated by the Speaker's visit.

Signature of Department Chair: _____ Date: _____

Return the Application Form or submit equivalent information to:
Ian MacGregor: 31 Crestview Drive, Napa, CA 94558; Phone:707-427-8864; email: nagt@gordonvalley.com

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Instructions:
To schedule a visit (Funded or Standard) please provide the above information to
Ian MacGregor: 31 Crestview Drive, Napa, CA 94558; Phone:707-427-8864; email: nagt@gordonvalley.com

Funded Visits: Funding to cover the cost of a Distinguished Speaker's travel to and from a host institution is available on a first-come-first-serve basis. Responses to the competition will be communicated within two weeks. If the application is funded, we will work with you to schedule a Speaker's visit. Your department will be expected to pay for a Speaker's local expenses, costs for duplicating a reasonable volume of workshop materials, and the cost of hiring a substitute, if the teacher is a pre-college teacher.

Standard Visits: If you do not wish to apply for funding to cover a Distinguished Speaker's travel, do not fill out the application. Instead, contact Ian MacGregor to schedule a visit. A host department is expected to pay for a Speaker's travel and local expenses, expenses for duplicating a reasonable volume of workshop materials, and the cost of hiring a substitute, if the Speaker is a pre-college teacher.