
From Your Newsletter Editor

Greetings Division members! We (meaning I) have been remiss in getting a current newsletter out to you. Thus below is our June-July 2011 newsletter for your enjoyment. It includes a call for nominations for the position of GED Second Vice-Chair. Elections for this position will take place soon, so be sure to nominate a colleague (or yourself) by July 18. See details below.

If you have items you would like included in the next newsletter, please send them to me at mhafen@usf.edu.

Mark Hafen
University of South Florida

Call for Nominations: A Chance to Server Your GED

Seeking nominations for 2011-2012 2nd Vice Chair, Geoscience Education Division, Geological Society of America

The Geoscience Education Division of the Geological Society of America is seeking candidates for the position of second vice-chair to join the executive board. The job of second vice-chair entails executive board planning work, as well as supervising the Biggs Award and other Division award processes. The second vice-chair moves up each succeeding year to first vice-chair, chair, and past chair, so the position is a four-year commitment. Attendance at the GSA Annual Meeting is strongly recommended during all four years of service. It's a great way to get to know your colleagues in the geoscience education community, and to learn more about how GSA works.

If you are interested in running for this position, or if you would like to nominate someone else, please respond to Eric Pyle at pyleej@jmu.edu by July 18th, 2011. We will request a brief bio and statement for the ballot. Elections will be held in August, with the new member officially joining the board at the 2011 GSA meeting.

Biographical sketch and statement:



Required information:

- Name: Last, First MI.
- Specialties: A, b, c.
- Education (ascending): Degree(s) & specialty (especially if not Geology - do not include years of degrees), Inst (abbreviate wherever meaning is clear); next degree, next Inst; etc.
- Professional Experience (chronologically ascending): Institution, position & years; next set; etc.
- Concurrent Positions (include if significant & relevant; chrono ascending w/ order as for Prof Exp)
- Professional Affiliations: GSA since yr, iff Fellow yr; other org's by acronym or by abbrev if less known, don't include years for those
- GSA Service: (chrono ascending)
- Additional Service: if significant & relevant (chrono ascending)
- Honors/Awards: recent & relevant (chrono ascending); give especially if they are GSA awards
- Research Interests: brief list
- Address (short form); e-mail (these 2 items will not appear on final ballot bio)
- Statement of Interest: Candidates may provide a BRIEF (up to 100 words) statement on why they are interested in serving in the position - since this directly follows their biographic information, it doesn't need to restate a candidate's experience but is an opportunity for the candidate to explain how they would represent their group, what their own issues of special interest are & how those fit with the group's interests, and/or what motivates them to run for this office.

Example of a "brief bio" used for balloting:

Tonndrah, Rock E. Geomorphology; geomathematical analysis. Educ: BS Civil Engineering, MS Geology, North Shore Univ; PhD Geology, Farther North Univ. Prof Exp: GeoSteppe, Juneau, Staff Geologist 88-92; Cold Clime Univ, Dept Geosciences Asst Prof 92-96, Assoc Prof 96-01, Prof 01-present, Director Frozen Debris Research Ctr 99-present. Concurrent Pos: Glacial Rubble Inst, Res Scientist 90-92. Prof Affil: GSA since 85, Fellow 01; AGU, IAG, NW Glac Soc. GSA Service: Hummock Award Chair 90-91; Mathematical Geology Div Chair 99-00; JTPC 00-present. Addtnl Service: Journal of Frozen Ground, Assoc Ed 94-97; NWGS Task Force, Chair 98-99. Honors/Awards: GSA Math Geol Div Achvt Award 02. Rsrch Int: Patterned ground fractals, cryogenic alteration of moraine margins. Address: Cold Clime Univ, Dept Geosciences, Norway, AK 99000; e-mail: tonndrah@ccu.edu. Statement of Interest: (optional.)

Eric J. Pyle, Past Chair-Geoscience Education Division
James Madison University

Double Down to Support the Geoscience Education Fund

The purpose of the Geoscience Education Fund is to support geoscience education awards, grants, scholarships, and other activities as determined by the GED management board. The management board plans is currently discussing the creation of a new geoscience education research grant drawn from the Geoscience Education Fund.

Donations can be made by going to <http://www.gsafweb.org/makeadonation.html> and selecting "Geoscience Education Fund." GED members may also "double their dues" (normally \$5) by clicking on the above link or when renewing membership at the end of the year. These donations will contribute to an important and worthwhile endeavor to promote educational research and professional development in the geoscience.

Thank you for your support!

Paul Baldauf, Chair-Geoscience Education Division
Nova Southeastern University
Chris Atchison, Secretary/Treasurer- Geoscience Education Division
Georgia State University



Craters of the Moon Geology Seminar



Craters of the Moon National Monument and Preserve is again offering a two-day seminar on the Geology of the Park and region on July 16th and 17th. Seminar will be held in the park and half or more of the time will be spent in the field studying features firsthand. Class is taught by the Park Geologist, who is also the Education Specialist for the park. One hour of undergraduate credit or graduate credit is available to teachers through the College of Southern Idaho, Boise State, or McCall Outdoor Science School. Call Doug Owen (208) 527-1331 to sign up or for further questions.

Douglass E. Owen
Park Geologist and Education Specialist
Craters of the Moon National Monument and Preserve
P.O. Box 29, Arco, ID 83213

A Prehistoric Journey gets a new beginning

The Denver Museum of Nature and Science unveiled a new entrance to its permanent exhibit gallery, *Prehistoric Journey*, in May. The exhibition opened in 1995 as a state-of-the-art approach to teaching the history of life on Earth in museums. *Prehistoric Journey* takes visitors on an expedition from ancient Ediacaran seas to the Ice Age. With the renovated entryway, each visitor's journey begins even earlier — with the very early Earth, 4.54 billion years ago.



The new entryway was designed to welcome visitors to *Prehistoric Journey* and provide them with an overview of the exhibition's content as they begin their travel through time, featuring a large map of the exhibition. The new entryway also features touchable specimens and a short video animation that shares the story of Earth's first four billion years, dramatically illustrating that Earth was once very different from the planet we know today. The touchable specimens are real fossils and rocks representing important moments in Earth's history. The specimens include a large banded ironstone, a stromatolite, a chunk of Paleozoic seafloor covered in brachiopods, a dinosaur footprint, and a fossil mammal skull.

The video is perhaps the most captivating component of the new entrance. In just 90 seconds visitors witness the first four billion years of Earth as never seen before. This animation shows key events such as the collision that formed the moon, the late heavy bombardment, global glaciations, and the assembly and breakup of supercontinents Nuna and Rodinia. This dramatic video combines cutting-edge realistic animation with new unpublished data from scientists all over the world.

We invite everyone to stop by and check out the new entryway the next time you are in Denver. If you are interested in learning more about the exhibition or using the new video for educational purposes, please contact Samantha Sands at Samantha.sands@dmns.org

Samantha Richards, Educator/Coordinator for Earth Gallery Programs
Whitey Hagadorn, Tim and Kathryn Ryan Curator of Geology
Frances Kruger, Senior Exhibit Developer/Interpretive Writer
Lindsey Pierce, Coordinator of Volunteers for Earth Sciences
Tommy Kilpatrick, Senior Systems Support Specialist

17th Falls Fossil Festival

The Falls of the Ohio State Park's 17th "Falls Fossil Festival" will be held September 17 (9 a.m. - 6 p.m.) and 19 (10 a.m. - 5 p.m.). This event, sponsored by the Falls of the Ohio Foundation, will feature:



Falls of the Ohio State Park
Clarksville, Indiana

- Daily non-technical programs and workshops for hobbyists, educators and the curious on fossils, minerals, and collecting. (Keynoter this year: Dr. William Andrews – The Birth of the Ohio River.)
- Vendors selling fossils, minerals, educational material, crafts and food.
- Children's Activity Area with a variety of craft-making activities scheduled.
- Resource Tent where you can get fossils and rocks identified by members of the Indiana Society for Paleontology, the Kentucky Paleontological Society and others. Learn about other geological sites with material from many other fossil parks in North America, as well as information and free literature from the Indiana and Kentucky Geological Surveys. This year two universities will have information about degrees in geosciences.
- Fossil and mineral identification (Bring in your mystery rocks!)
- Hikes on the fossil beds, including extended hikes on the outer fossil beds
- Collecting Silurian and Devonian fossils from special rock piles donated by local quarries and mineral piles from the dumps of Cave in Rock fluorite mines

Proceeds benefit the educational programs at the Falls of the Ohio State Park which reach more than eleven thousand K-16 students each year!

A web site with a detailed schedule for the Festival is posted on our web site at:

http://www.falloftheohio.org/special_events.html

For more information contact Alan Goldstein at 812-280-9970 ext. 403 or park@falloftheohio.org.

Alan Goldstein, Certified Interpretive Planner
Interpretive Naturalist
Falls of the Ohio State Park

GSA Position Statement Draft

THE IMPORTANCE OF TEACHING EARTH SCIENCE

I would like to call your attention to the June Issue of *GSA Today*. I wanted to draw your attention to page 46 of the PDF, in particular. I wonder if you wouldn't mind sharing this more broadly with other GSA members that are involved in K-12 through undergraduate teacher candidate training. (Note: to view this on-line, go to <http://rock.geosociety.org/pub/GSAToday/gt1106.pdf>, and scroll to page 46).

Page 46 is the "draft" of a heavily revised GSA position statement regarding "The Teaching of Earth Science." It is now being released for general GSA membership comment for the next ~4-6 weeks-online deadline is 15 July (there is a comment link on the Society's website at www.geosociety.org along the left-ish side of the new format, under the heading **GSA Panel Seeks Input**). I was a GSA Geology and Public Policy liaison (and thus, panelist) helping facilitate the Panel (which was productively chaired by Aida Awad). Several others worked diligently on crafting this position statement.

I think that the more education-minded folks that offer endorsement or constructive criticism during the call for comment (noting that the requirement being that a person is also GSA members since this is a Society position statement), the better the statement will be in its final form.

Wendi J. W. Williams
University of Arkansas - Fayetteville

Wagner Receives Catalyst Award



Emeritus Professor of Geology John R. Wagner received the South Carolina Science Council's highest award for a science educator on November 5, 2010 at the Council's annual convention held at the Myrtle Beach Convention Center. The '**Catalyst Award for Educational Excellence**' is presented each year to a science educator who has made a significant difference in the way science is taught in the state of South Carolina. Wagner was honored for his work in several K-12 curriculum development projects for the earth and environmental sciences, in particular the SC MAPS and SE MAPS programs; and for his many years of providing exemplary professional development opportunities for teachers through graduate courses, workshops, and field experiences. The

South Carolina Science Council is a chapter of the National Science Teachers Association and boasts over 2,000 members from South Carolina's K-12 and higher-education science teaching community. Wagner is a past-president of the National Association of Geoscience Teachers and a member of the Geoscience Education Division of the Geological Society of America.

The photo above shows Wagner receiving the award from South Carolina Science Council President Donald Poland. Congratulations John!

John R. Wagner - Emeritus Professor of Geology
Clemson University

Special Calls for Abstracts for GSA Minneapolis

As you begin planning for the GSA annual meeting this fall in Minneapolis, we ask you to consider submitting an abstract to the following topical session:

T208. Developing Resource Policies Informed by Geoscience: Applications from the Classroom to the Capitol
Conveners: Mike Phillips and David Szymanski. **Sponsors:** GSA Geology and Society Division; GSA Geology and Public Policy Committee; National Association of Geoscience Teachers; GSA Geophysics Division; GSA Geoscience Education Division.

As we enter the Anthropocene, we face the depletion of many important resources. This session will explore ways to ensure the geologic perspective on resource use and depletion is included in coursework and in policy making.

The increase in societal demand for water, energy, and mineral resource coincides with a decline in the availability of many of those resources and concern for the impact inherent in resource exploitation. Geoscientists must be proactive and provide objective information based on the best available data to ensure its inclusion when plans for exploration and development of resources are made. How do these efforts begin in the classroom? How do they extend to the political realm, where today's decisions will have consequences that reach far into the future? We welcome your perspectives on developing well-informed resource policy, from either of these venues and anywhere between.

You can submit your abstract online at <http://gsa.confex.com/gsa/2011AM/cfp.epi>. The deadline for submissions is July 26, 2011.

Please contact Mike Phillips (Mike_Phillips@ivcc.edu) or David Szymanski (dszymanski@bentley.edu) with questions.

Mike Phillips
Illinois Valley Community College



Enjoying the view? Most of us entered the geosciences in part because of a strong personal connection to the land, with particular places special to each of us playing a key role in our personal and professional development. Learning to read, and ultimately becoming part of, the stories of the places special to us can be a powerful motivator for teaching, learning, research and service for students. If you use this approach in your academic work, please consider submitting an abstract to one of the place-based sessions at this Fall's GSA meeting.

T158: Sense of Place, Geoparks and National Parks: Strategies for Improved Earth Science Education, and

T159: Sense of Place, Geoparks and National Parks: Strategies for Improved Geoscience Education (Posters)

These sessions investigate how sense of place affects our capacity to learn, drives advances in inquiry, and augments improved earth-science literacy with existing National Park initiatives and the development of UNESCO Geoparks. William Rose, Michigan Tech, Erika Vye, Michigan Tech, Mark Klawiter, Michigan Tech.

T160: Stories of Place: Place-Based Research Projects as a Vehicle for Geoscience Education and Service Learning

This session seeks to highlight and share those classroom techniques, field methods, research projects, and service learning programs that use student knowledge and interest in specific places as a mechanism for broader geoscience education.

Sadredin Moosavi GED 2nd Vice Chair
Rochester Community Technical College, smoosavi@charter.net

GED Student Travel Grants



Students in geoscience education: are you presenting at GSA this fall? The Geoscience Education Division will offer several travel grants up to \$250 to student members who are presenting work at the 2011 GSA Annual Meeting in Minneapolis from October 9-12, 2011. Grants will be awarded based on merit and financial need.

To be eligible for an award, you must be:

- A student member of GSA and the Geoscience Education Division in good standing – to join contact GSA Sales and Services at gsaservice@geosociety.org.
- Presenting a poster or talk at the 2011 Annual Meeting in a geoscience education topical or discipline session.

To apply for the award, please send the following (as a single email attachment):

1. Confirmation of your standing as a student member of the GED (member number).
2. A copy of your accepted abstract.
3. A current CV, limited to 2 pages.
4. A brief itemized budget and statement of your financial needs, including all other sources of funding.

Applications should be sent to Sadredin Moosavi at smoosavi@charter.net, and must be received by August 1, 2011 for consideration. Notification of grant status will be made prior to the registration deadline, and awards will be made following confirmation of attendance at the annual meeting.

Faculty, please direct your students' attention to this opportunity!

Sadredin Moosavi GED 2nd Vice Chair
Rochester Community Technical College

NAGT Activities at Fall GSA

There will be several short courses and many topical sessions of interest to geoscience educators at the annual GSA meeting this coming fall. You can read about all of them (whether sponsored by NAGT or not) on the NAGT website: <http://www.nagt.org/nagt/programs/meetings/GSA11.html>

Registration for short courses opened in mid-June, and abstract submissions have already begun. The abstract deadline is July 26.

Carol Ormand
Carleton College (SERC)\

Field Trip at Fall GSA

Do you work with pre or in-service teachers or general education audiences? Do you get excited about field trips spanning billions of years of Earth history? Have you struggled to find field trip ideas or locations in the "boring" areas where most people live?

Join us for a 2-day pre-meeting field trip before attending the 2011 GSA Annual Meeting in Minneapolis.

3.5 Billion Years of Geologic History: A Teachers Guide to the Rocks of Southern Minnesota

Dates: Friday October 7 – Saturday October 8

Departing: Minneapolis Convention Center

Cost: \$190

Contact: Sadredin Moosavi (smoosavi@charter.net)

Description: This field trip is designed for teachers of geology and general education audiences seeking an overview of the 3.5 billion year geology of southern Minnesota. Archean and Paleozoic rocks of the Minnesota River Valley, Proterozoic and Paleozoic rocks of the St. Croix River Valley and Quaternary geology of the region will be the focus. Strategies for using the outcrops visited for K-16 field trips will be discussed.

More, More, More for GSA Minneapolis!

Short Courses

F G 507. Preparing for the Tenure Process.

Fri., 7 Oct., 5 p.m.–8 p.m.

\$20; includes a light dinner. Limit: 35. CEU: 0.3.

Cosponsors: *On the Cutting Edge*; GSA Geoscience Education Division.

Kristen St. John, James Madison Univ.; R. Mark Leckie, Univ. of Massachusetts–Amherst.

F G 512. Virtual Field Experiences in Geoscience Education.

Sat., 8 Oct., 8 a.m.–5 p.m.

\$50; includes continental breakfast and lunch. Limit: 30. CEU: 0.9.

Richard Kissel, Paleontological Research Institution; Don Duggan-Haas, Paleontological Research Institution; Frank Granshaw, Portland Community College. **Attendees will need to bring laptop computers.**

F G 516. Teaching about Earth's Climate History.

Sat., 8 Oct., 8 a.m.–5 p.m.

\$50; includes continental breakfast and lunch. Limit: 35. CEU: 0.9.

Cosponsors: *National Science Foundation; Wiley Blackwell Publishers; GSA Sedimentary Geology Division; GSA Geoscience Education Division.*

Kristen St. John, James Madison Univ.; R. Mark Leckie, Univ. of Massachusetts–Amherst; Kate Pound, St. Cloud State Univ.; Megan Jones, North Hennepin Community College; Larry Krissek, Ohio State Univ.

F G 519A. Teaching Students How to Learn.

Sat, 8 Oct., 8 a.m.–noon.

\$35 for one course—or, get two-for-one!—**\$35 for combined courses (519C or 519D)**; includes lunch. Limit: 40. CEU: 0.4.

Cosponsors: *GSA Geoscience Education Division; National Association of Geoscience Teachers.*

Dexter Perkins, Univ. of North Dakota; Karl Wirth, Macalester College.

F G 519B. Teaching Climate Science with Active Learning Strategies.

Sat., 8 Oct., 8 a.m.–noon.

\$35 for one course—or, get two-for-one!—**\$35 for combined courses (519C or 519D)**; includes lunch. Limit: 40. CEU: 0.4.

Cosponsors: *GSA Geoscience Education Division; National Association of Geoscience Teachers.*

Karin Kirk, Science Education Resource Center; Susan Buhr, CIRES.

F G 519C. Retooling Your Geosciences Class: Strategies to Assess Learning and Improve Student Success.

Sat., 8 Oct., 1–5 p.m.

\$35 for one course—or, get two-for-one!—**\$35 for combined courses (519A or 519B)**; includes lunch. Limit: 40. CEU: 0.4.

Cosponsors: *GSA Geoscience Education Division; National Association of Geoscience Teachers.*

David McConnell, North Carolina State Univ.; David Steer, Univ. of Akron.

F G 519D. Teaching with Google Earth.

Sat., 8 Oct., 1–5 p.m.

\$35 for one course—or, get two-for-one!—**\$35 for combined courses (519A or 519B)**; includes lunch. Limit: 40. CEU: 0.4.

Cosponsors: *GSA Geoscience Education Division; National Association of Geoscience Teachers.*

Peter Selkin, Univ. of Washington–Tacoma; Declan De Paor, Old Dominion Univ.

F G 528. Common Misconceptions about Plate Tectonics, Earth's Interior, and the Rock Cycle, with Active Learning Approaches to Correct Them.

Sun., 9 Oct., 8 a.m.–12 p.m.

\$20; includes continental breakfast. Limit: 40. CEU: 0.4.

Cosponsors: *GSA Geoscience Education Division; National Association of Geoscience Teachers.*

Scott Clark, Univ. of Wisconsin–Eau Claire; Karen Kortz, Community College of Rhode Island; Jessica Smay, San José City College.

Topic Sessions

T91. Geology in the National Forests and Grasslands: Stewardship, Education, and Research

GSA Geology and Society Division; GSA Hydrogeology Division; GSA Quaternary Geology and Geomorphology Division; USDA Forest Service; GSA Environmental and Engineering Geology Division

Michael A. Crump, Christopher P. Carlson

T104. Urban and Suburban Lakes: Paleorecords of Human Impacts and Opportunities for Geoscience Education

GSA Limnogeology Division; GSA Geoscience Education Division; National Association of Geoscience Teachers

Amy Myrbo, Kate S. Pound

T138. Honoring Maynard M. Miller, Founder of the Juneau Icefield Research Program

Foundation for Glacier and Environmental Research; GSA Quaternary Geology and Geomorphology Division

P. Jay Fleisher, Guy Adema

T145. Geology in the National Parks: Research, Mapping, Outreach, and Resource Management

GSA Geophysics Division; GSA Quaternary Geology and Geomorphology Division; GSA Environmental and Engineering Geology Division

Bruce A. Heise, Tim Connors, Jason P. Kenworthy

T146. Student-Involved Research Experience in Earth-System Science: An Effective Tool for Recruitment and Retention in the Geosciences (Posters)

National Association of Geoscience Teachers; GSA Geoscience Education Division; GSA Geology and Society Division

Nazrul I. Khandaker, Stanley Schleifer

T147. What Are Undergraduates Learning in/from Our Programs? (Posters)

National Association of Geoscience Teachers

Solomon A. Isiorho

T148. Geophotography across the Spectrum

J.F. Magloughlin, Brent H. Breithaupt, Neffra A. Matthews

T149. Virtual Reality in Geoscience Education (Digital Posters)

GSA Geoscience Education Division; GSA Geoscience Education Division; GSA Structural Geology and Tectonics Division; GSA Geoinformatics Division; GSA Planetary Geology Division; National Association of Geoscience Teachers; Google Inc.; Oxford University Press; Minnesota Planetarium Society

Declan G. De Paor, Steven J. Whitmeyer, John E. Bailey

T150. Teaching about Hazards in the Geoscience Classroom

National Association of Geoscience Teachers

John R. McDaris

T151. Engaging Early-Career Geoscientists and Geoscience Students in Outreach Activities

National Association of Geoscience Teachers; YES Network; American Geological Institute

Mary Seid, Tiffany A. Rivera

T152. The Growing Role of Adjunct Faculty in the Earth Sciences

GSA Geoscience Education Division; National Earth Science Teachers Association; National Association of Geoscience Teachers

Sue Ann Finstick, Gwyneth Jones

T153. Effective Practices for Broader Impacts in K-12: How to Share Your Research and Make Meaningful Contributions

National Association of Geoscience Teachers

Nicole LaDue, Heather Pacheco

T154. Implementation and Assessment of Interactive Strategies in Earth and Space Science Courses

Leilani Arthurs, Sarah Bean Sherman

T155. Broadening Participation in the Geosciences (Posters)

National Center for Earth-Surface Dynamics

Diana Dalbotten, Antony R. Berthelote, Amy Myrbo

T156. Engaging Minority Undergraduate Students in the Geosciences

Lisa Majkowski, Michael J. Pullin

T157. Innovative Hands-on Geoscience Lab and Class Activities for use in Undergraduate Teaching

National Association of Geoscience Teachers; National Center for Earth-Surface Dynamics

Kate S. Pound, Cathryn Manduca, Lee Schmitt

T158. Sense of Place, Geoparks and National Parks: Strategies for Improved Earth Science Education

GSA Geoscience Education Division; National Association of Geoscience Teachers

William I. Rose, Erika C. Vye, Mark F. Klawiter

T159. Sense of Place, Geoparks, and National Parks: Strategies for Improved Earth Science Education (Posters)

GSA Geoscience Education Division; National Association of Geoscience Teachers

William I. Rose, Erika C. Vye, Mark F. Klawiter

- T160. Stories of Place: Place-Based Research Projects as a Vehicle for Geoscience Education and Service Learning**
GSA Geoscience Education Division; National Association of Geoscience Teachers; Council on Undergraduate Research
Sadredin C. Moosavi
- T161. The Transition from Student to Investigator: Promising Classroom Strategies and Best Educational Practices**
Council on Undergraduate Research; National Association of Geoscience Teachers
Jeffrey Ryan, Elizabeth A. Heise
- T162. Increasing Accessible Opportunities in the Geosciences for Students with Disabilities: Current Research and Best Practices**
GSA Geoscience Education Division; National Earth Science Teachers Association; National Association of Geoscience Teachers; GSA Diversity in the Geosciences Committee; International Advisory for Geoscience Diversity
Christopher Atchison, Sharon Locke
- T163. International Field Trips: Introducing Students to the Rocks of the World (Posters)**
Richard Diecchio, Stanley Williams, David G. Bailey
- T164. Challenges and Successes in Involving Undergraduates in Research on Climate Change and Energy Resources**
Council on Undergraduate Research; GSA Geology and Society Division; GSA Geoscience Education Division; National Association of Geoscience Teachers
Anne E. Egger, Christopher S. Kim
- T165. Geoscience for All: Strategies for Effectively Teaching a Broad Student Population: Lessons Learned from Two-Year Colleges and Other Open-Door and Diverse Institutions**
GSA Geoscience Education Division; National Association of Geoscience Teachers
Eric M.D. Baer, Joy M. Branlund, Robert H. Blodgett
- T166. Geoscientists Without Borders®: A Model for the Development Programs That Apply Geoscience to Humanitarian Needs**
GSA Environmental and Engineering Geology Division; YES Network; American Geological Institute; Society of Economic Geologists; Society of Exploration Geophysicists Foundation
Leila M. Gonzales, Sophie J. Hancock, William Barkhouse
- T167. Time, Events, and Places: Understanding Temporal and Spatial Learning in Geoscience Education**
National Association of Geoscience Teachers; Spatial Intelligence and Learning Center
Thomas Shipley, Steven Semken, Carol J. Ormand
- T168. Overcoming Threats to Earth and Space Science Instruction at K-12 Levels**
National Association of Geoscience Teachers; National Earth Science Teachers Association; American Geological Institute
Jacqueline E. Huntoon, Carol A. Engelmann
- T169. Geo-Workforce Preparation for 21st-Century Challenges**
GSA Geoscience Education Division; GSA Geophysics Division; National Association of Geoscience Teachers
Marilyn J. Suiter, Lina C. Patino, David J. Matty
- T170. Using GIS and Remote Sensing to Teach Geoscience in the 21st Century**
GSA Geoscience Education Division; On the Cutting Edge
Barbara Tewksbury, Brian M. Hynek
- T171. Developing the Global Geoscientist through International Geoscience Networks and Research Projects**
GSA Geoscience Education Division; YES Network; American Geological Institute; Society of Exploration Geophysicists Foundation; GSA Geophysics Division
Leila M. Gonzales, Sophie J. Hancock
- T172. Geocognition Research in Classroom, Laboratory, and Informal Environments**
GSA Geoscience Education Division; National Association of Geoscience Teachers
Sheldon P. Turner

T173. Geocognition Research in Field-Based Environments

GSA Geoscience Education Division; National Association of Geoscience Teachers

Eric M. Riggs

T174. Identifying and Addressing K-16 Student Misconceptions in the Earth-Science Classroom

National Association of Geoscience Teachers

Laura A. Guertin, Tanya Furman, Jason Petula, Scott McDonald

T175. Innovative Approaches to Enhancing the Earth Science Competence and Confidence of Elementary Teachers

National Center for Earth-Surface Dynamics; National Center for STEM Elementary Education

Karen M. Campbell

T176. Innovative Methods for Broadening Participation in the Geosciences through In-Service Teacher Professional Development

GSA Geoscience Education Division; American Geological Institute; National Association of Geoscience Teachers; National Earth Science Teachers Association

Carol Engelmann, William I. Rose, Jacqueline E. Huntoon, Mark F. Klawiter, Erika Vye, Stephen R. Mattox, Ann E. Benbow

T177. Place-Based Education, Traditional Knowledge, and Research on Tribal Lands: Special Considerations for Collaborating with Native Communities on Geoscience Research (Posters)

National Association of Geoscience Teachers; National Center for Earth-Surface Dynamics; LacCore/Limnological Research Center; University of Minnesota

Holly Pellerin, Amy Myrbo, Lowana Greensky, Diana Dalbotten, Emi Ito

T178. Reaching the Next Generation: Tales of Successful Strategies and Frustrating Challenges from Teaching Earth-Science Courses For Pre-Service Elementary Teachers

GSA Geoscience Education Division; National Association of Geoscience Teachers

Kyle Gray, Ann Bykerk-Kauffman

T179. Results from Undergraduate Research in the Geosciences (Posters)

National Center for Earth-Surface Dynamics

Diana Dalbotten, Karen M. Campbell

T180. Solitary Geoscience Faculty: Collaborating Outside Our Programs

National Association of Geoscience Teachers; GSA Geoscience Education Division

Kyle C. Fredrick, Abigail M.S. Domagall, Janis D. Treworgy

T181. Teaching and Learning in the Field: Helping Students to “Read the Record” and “Tell the Story of Earth”

GSA Geoscience Education Division; National Association of Geoscience Teachers; GSA Structural Geology and Tectonics Division; GSA Sedimentary Geology Division; GSA Hydrogeology Division; GSA Mineralogy, Geochemistry, Petrology, and Volcanology Division

David W. Mogk, J.W. Geissman, Christopher Bailey, Miriam Barquero-Molina

T182. Teaching Geoscience Online

GSA Geoscience Education Division; National Association of Geoscience Teachers

Karin B. Kirk, William H. Hirt

T183. Teaching Students to Learn

National Association of Geoscience Teachers; GSA Geoscience Education Division

Dexter Perkins, Karl Wirth

T184. The 21st Century Geoscience Classroom: Creating Learner-Centered Environments for Undergraduates (Digital Posters)

National Association of Geoscience Teachers

Candace L. Kairies Beatty, William Lee Beatty, Jennifer L. Piatek

T185. Truth in Advertising: Do Students Gain Conceptual Awareness of Science in General Education Curricula?

National Association of Geoscience Teachers; GSA Geoscience Education Division
Edward Nuhfer, Julie Libarkin

T186. Registration and Discovery of Geoscience Information Resources: Metadata, Search, and Catalogs

GSA Geoinformatics Division; Geoscience Information Society
Stephen M. Richard, Rusty Kimball

T205. Combat Geology: Safeguarding Geologists in the Field

U.S. Geological Survey; Association of American State Geologists
M. Lee Allison, Kathleen M. Johnson

T206. STEMming the Tide: How Can We Promote Science Literacy?

GSA Geology and Society Division; American Geological Institute; American Geophysical Union; Geology and Public Policy Committee; GSA Environmental and Engineering Geology Division; GSA Geoscience Education Division; American Association of State Geologists; National Association of Geoscience Teachers
J.E. Fryxell, David W. Szymanski, James F. Davis

T208. Developing Resource Policies Informed by Geoscience: Applications from the Classroom to the Capitol

GSA Geology and Society Division; GSA Geology and Public Policy Committee; National Association of Geoscience Teachers; GSA Geophysics Division; GSA Geoscience Education Division
Michael A. Phillips, David W. Szymanski

T211. 30+ Years of Teaching about Planetary Geology: Past Lessons Learned and Future Possibilities

GSA Planetary Geology Division; GSA Geoscience Education Division
Jayne C. Aubele, Eric J. Pyle

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