



Geoscience Major Begins Fall 2009



Geosciences Newsletter

This coming fall, geoscience will be offered as a major at UConn. No longer run through the individualized major program, this newer version of the former Geology and Geophysics major will be available for students to declare and run directly through the Center for Integrative Geosciences. A minor also is available for students to declare.

The new Geoscience major has been overhauled significantly from the former Geology and Geophysics major to include more of an interdisciplinary approach to the traditional discipline. This news comes at an interesting time for geoscience programs across the country, with a few slated to close after this year. The reinstatement of this revamped major is a great

step for Geosciences at UConn. New courses have been offered as part of this major, see article below for information!

Welcome to undergrads who have declared or are planning to declare the geoscience major: Caitlin Arnold, Samantha Avis, Daniel Feder, Meredith Fichman, Regina Graziano, Mark Higgins, Blase Lasala, Lisa Martland, Thomas McCarthy, David Mirakian, Sarah Morton, John Pawlowski, Catherine Thorne, and Samuel Volet.

We also have 8 students in the ENVS Geoscience Concentration and 4 students planning on doing the minor.

Congrats to our last 2 IMJR Integrative Geoscience students who are graduating this spring! James Cassanelli (who will continue on with us as a graduate student in the fall) and Scott Bockus. *Good luck to both of you!*

The Daily Campus recently published a story highlighting the new major. See the full article here:

[http://media.www.dailycampus.com/media/storage/paper340/news/2009/04/22/News/](http://media.www.dailycampus.com/media/storage/paper340/news/2009/04/22/News/Geoscience.Major.Added.After.Being.Disbanded.By.Bot.In.2004-3720866.shtml)

[Geoscience.Major.Added.After.Being.Disbanded.By.Bot.In.2004-3720866.shtml](http://media.www.dailycampus.com/media/storage/paper340/news/2009/04/22/News/Geoscience.Major.Added.After.Being.Disbanded.By.Bot.In.2004-3720866.shtml)

New GSCI Classes for Fall

Along with the 'new' geoscience major comes some newly developed classes for majors to take, as well as a new acronym: GSCI. So don't look for GEOL classes anymore after this semester!

This past spring Robert Thorson offered a newly updated class, **GEOL (GSCI) 4210—Glacial Processes and Materials**. This course covers topics such as reconstruction of former glaciers and the interactive processes leading to the

character and distribution of unconsolidated surface materials in glaciated regions.

This coming fall, look for these classes to take!

GSCI 4110—Sedimentology (Christophe Dupraz) Basic principles of sedimentology with an emphasis on the description of sedimentary texture and structure. Physicochemical and biological processes that characterize depositional environments. Diagenesis. Exami-

nation of modern systems to interpret ancient sedimentary environments.

GSCI 4330—Active Tectonics (Tim Byrne). This course looks at tectonic processes that shape the Earth's surface, particularly its landforms. Emphasis on short-term processes that produce disasters and catastrophes and affect human society.

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In the News for Geosciences:

- *The Phoenix Mars Lander recorded snow falling from Martian clouds about 4 km above the planet's surface. The snow appears to vaporize before it hits the ground. The lander also found evidence of calcium carbonate and clay, two substances that, on Earth, only form in the presence of liquid water.*

Announcements, Awards, Publications, etc.

Publications:

Stephens, E. O. Braissant, and **P.T. Visscher**. 2008. Spirochetes and salt marsh microbial mat geochemistry: Implications for the fossil record. *Notebooks in Geology* CG2008_AO9:1-11.

Paterson, D.M., R.J. Aspden, **P.T. Visscher**, M. Consalvey, M.S. Andres, A.W. Decho, J. Stolz, R.P. Reid. 2008. Light-dependant biostabilization of sediments by stromatolite assemblages. *PLoS Biology* 3:1-10.

Decho, A.W., **P.T. Visscher**, J. Ferry, T. Kawaguchi, L. He, T. Kay-Watson, K.M. Przekop, R.S. Norman, R.P. Reid. 2009. Autoinducers extracted from microbial mats reveal a surprising diversity of N-acylhomoserine lactones (HSL) and abundance changes that may relate to pH. *Environ. Microbiol.* 11:409-420.

Bush, A. M., and G. M. Daley. 2008. Comparative paleoecology of fossils and fossil assemblages. In P. H. Kelley and R. K. Bambach, eds. *From evolution to geobiology: research questions driving paleontology at the start of a new century*. Paleontological Society Paper 14:289-317.

Wang, S. C., and **A. M. Bush**. 2008. Adjusting global extinction rates to account for taxonomic susceptibility. *Paleobiology*:434-455.

Braissant, O., A.W. Decho, K.M. Przekop, K.M. Gallagher, C. Glunk, **C. Dupraz, P.T. Visscher**. 2009. Characteristics and turnover of exopolymeric substances (EPS) in a hypersaline microbial mat. *FEMS Microbiol. Ecol.* 67:293-307.

Dupraz, C., R.P. Reid, O. Braissant, A.W. Decho, R.S. Norman, **P.T. Visscher**. Processes of Carbonate Precipitation in Modern Microbial Mats. *Earth Sciences Reviews*. In press

Calvert, C., **Joesten, R.**, Ngala, K., Villegas, J., Morey, A., Shen, X., and Suib, S. L., 2008. Synthesis, characterization, and Rietveld refinement of tungsten-framework-doped porous

manganese oxide (K-OMS-2) material. *Chemistry of Materials*, 20, 6382-6288.

Xu, L., Sithamabram, S., Zhang, Y., Chen, C-H., Jin, L., **Joesten, R.**, and Suib, S. L., 2009. Novel urchin-like CuO synthesized by a facile reflux method with efficient olefin epoxidation catalytic performance. *Chemistry of Materials*, 21, 1253-1259.

Thorson, Robert. *Beyond Walden: The Hidden History of America's Kettle Lakes and Ponds*. Spring 2009, Walker and Company.



[walden.html](#)

For more information go here: <http://thor.uconn.edu/>

Crespi, J.M., and Underwood, H.R., 2008. Transpressional deformation in Taconic slates and its relation to basement architecture, in Selleck, B., ed., *Field Trip Guide for the 80th Annual Meeting of the New York State Geological Association: Lake George, New York*, p. 57-64.

Bontognali, T.R., Vasconcelos, C., Warthmann, R.J., **Dupraz, C.**, Bernasconi, S.M., and McKenzie, J., (2008), Microbes produce nanobacteria-like structures, avoiding cell entombment. *Geology*, 36., 663-666.

GSA Presentations:

Myshrall, K.L., Norman, R.S., Thompson, J.B., **Visscher, P.T.** Microbial community composition in modern thrombolites: A comparison of open marine and freshwater systems using molecular techniques, GSA Annual Meeting, October 2008.

Visscher, P.T., and **Dupraz, C.** Modern microbialites: A lesson for the 3.5-billion-year record of microbe-sediment interactions? GSA Annual Meeting, October 2008.

Dupraz, C., Braissant, O., Gallagher, K.L., Glunk, C., Decho, A.W., and **Visscher, P.** The Role of EPS Properties and Turnover in Carbonate Mineral Nucleation. GSA Annual Meet-

Grad student Patrick Getty shows us how dangerous field work can get.



ing October 2008.

Wijewardena, G., and **Crespi, J.**, 2009, *Regional-scale patterns of fault geometry and kinematics in the Taiwan arc-continent collision zone: Analysis of a decade-long record of focal mechanisms*: Geological Society of America Abstracts with Programs, v. 41, p. 29.

Crespi, J., 2009, *Orogenic curvature in the northern Taconic allochthon and its relation to footwall geometry*: Geological Society of America Abstracts with Programs, v. 41, p. 20.

Andrew Bush gave an invited talk entitled "Comparative paleoecology of fossils and fossil assemblages" at the Paleontological Society's short course at GSA, which was part of their 100th anniversary celebration. After the meeting, Patrick Getty and Andy went to see the dinosaur footprints & assorted attractions at Glen Rose, TX, and as you can see from the picture (above right), Patrick almost did not make it back.

GSA Northeast Presentations:

Robbins, G.A., and **Cassanelli, J.**, 2009, *Temporal and Spatial Trends in the Salt Content of Connecticut's Groundwater over the Last 100 years*, Geol. Soc. of Amer., Northeastern Section Meet., abstracts with programs, March 22, Portland, Me. p 21.

Cassanelli, J., and **Robbins, G.A.**, 2009, *Assessing the Impact of Road Salting on Ground And Surface Water in Connecticut Using GIS*, Geol. Soc. of Amer., Northeastern Section Meet., abstracts with programs, March 22, poster, Portland, Me., p 44.

Meyer, T.H., Metcalf, M J., **Robbins, G. A.**, and Thomas, M A., 2009, *Development of*

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Geoscience Currents

The American Geological Institute (AGI) Workforce Program has initiated Geoscience Currents, a new series covering geosciences workforce and educational data snapshots, that are expected to be released on a near-weekly basis.

To subscribe to these free data snapshots, go to <http://www.agiweb.org/workforce/> and click "Register."

From the latest edition #19: Effects of Economic Crisis on Geoscience Departments.

This issue provides a snapshot of the impacts of the economic downturn as of March 2009 on geoscience departments within the United States as well as in other countries. The report includes analyses based on institution type and regional analyses for U.S. geoscience departments.

Overall, 83 percent of geoscience departments that responded to the survey expect budget

cuts for 2009 and/or 2010. These budget cuts are expected to impact faculty (reductions and hiring freezes) and support activities (IT, lab equipment, etc.) the most. Graduate student admission and graduate student support will be least impacted.

Although the majority of departments expect to be viable beyond the next three years, several U.S. departments indicated that their future was "definitely" or "immediately" threatened by the impacts of the economic downturn.

Geoscience Websites of Interest

For each newsletter that comes out, we will try to feature a few great sites related to geosciences that may be of interest to students and faculty associated with the Center. Please feel free to send any sites you find along to Abi, to be included in this section in future editions!



- **THERMAL VENTS AND PLATE TECTONICS**— Learn about deep ocean exploration, thermal vent ecology, and plate tectonics.

<http://www.divediscover.who.edu/>

- **SETI INSTITUTE, SETI**— The Mission of the SETI Institute is to explore, understand and explain the origin, nature and prevalence of life in the universe. We believe we are conducting the most profound search in human history - to know

our beginnings and our place among the stars. Check out the scientific lectures section.

<http://www.seti.org/Page.aspx?pid=1241>

• **MISCONCEPTIONS ABOUT THE BIG BANG**, Enjoy this article titled "Misconceptions about the Big Bang. Renowned physicists, authors of astronomy textbooks and prominent popularizers of science have made incorrect, misleading or easily misinterpreted statements about the expansion of the universe.

<http://www.sciam.com/article.cfm?id=misconceptions-about-the-2005-03>

More to come in the next edition!

Announcements *cont.*

Continued from pg. 2

Bedrock Surface Elevation and Depth to Bedrock Maps for the Coventry Quadrangle, Connecticut, Using Water Wells and Lidar Data, Geol. Soc. of Amer., Northeastern Section Meet., abstracts with programs, March 22, poster, Portland, Me., p 42.

Sime, T.S., and **Getty, P.R.** 2009. *Sedimentology and Paleontology of the Nash Dinoland Quarry (Early Jurassic Portland Fm)*, Granby, MA. Geological Society of America Abstracts with Programs, Northeastern Section, v. 41, p. 89.

Attanavake, J., T. Byrne, R-J. Rau, Y-C. Chang 2009. *Strain Partitioning and Block extrusion in the Taiwan arc-continent collision*, Northeast GSA meeting (poster)

Other Meeting Presentations:

Attanavake J., V.F. Cormier, K. He 2008. *Modeling the Inner Core Boundary with Antipodal Seismic Waves*, American Geophysical Union, Fall 2008 (poster)

He K., **J. Attanavake, V. F. Cormier,** A Stroujkova 2008. *Texture study of the u p permost inner core from seismic coda waves*, American Geophysical Union, Fall 2008 (poster)

Dupraz, C. The microbially-mediated carbon cycle: Processes of carbonate precipitation in microbial mats. Bochum to Bochum" - A Review of IAS and Sedimentology between

1980 and 2008, Plenary Session of IAS regional meeting **Keynote Address, Bochum**, Germany, September 2008.

Student Awards:

Denise Burchsted: Covenant Insurance Company Scholarship in May for \$2000.

Patrick Getty: GSA Carboniferous tetrapod trackways from southeastern Massachusetts Grant in April for \$850.

Januka Attanavake: Travel Grant, Student Education Program (SEP), Society of Exploration Geophysics (SEG) / ExxonMobil, Annual Meeting 2008, Las Vegas, NV

Grants and other News:

• **Jean Crespi** worked with the Association for Women Geoscientists (AWG) Foundation to establish two new awards for students to travel to national and international meetings to present research results. Look for announcements of the Takken Student Research Presentation Travel Award and the Sand Student Research Presentation Travel Award in an upcoming issue of Gaea, the bimonthly newsletter of the AWG, or visit the AWG website after 1 June (www.awg.org).

• **Lanbo Liu** has been awarded a Fulbright Scholarship and will spend 6 months (08/09-02/10) at the Norwegian National University of Science and Technology for a research

topic on seafloor sediment shear wave velocity characterization using ambient noise. He will be on sabbatical next year for this project.

• **Pieter Visscher & Christophe Dupraz** NASA Exobiology Grant, The metatranscriptome and biogeochemistry of marine thrombolitic microbial mats: pathways to biosignatures;

• **Christophe Dupraz** Microbial processes during early diagenesis of carbonate reservoirs: A laboratory approach. Petroleum Research Fund, Doctoral New Investigator: (PI) 2009-2010

• **Undergrads and Grads: Interested in starting back up a Geoscience Club?** We could start one this fall if we have a good group of folks interested in participating. See Abi in the main office or email geology@uconn.edu if you'd like to get on an email list about forming a club!

• Undergrad **Tom McCarthy** is working on a suite of invertebrate trace fossils from a dinosaur footprint site in Holyoke, Mass. with Andy Bush. Tom also got a grant from NE GSA for his research, and this summer will be doing an internship at Fossil Butte National Monument.

• **Pieter Visscher** was elected to the Connecticut Academy of Sciences and Engineering.

Earth Science Picture of the Day



EPOD from 4/22/2009— The photo above shows sweeping, green fields of ripening wheat surrounding Steptoe Butte in southeastern Washington, about 12 miles (19 km) north of the city of Colfax, along the Washington/Idaho border. It's possible to drive over this scenic butte to view the surrounding, undulating landscape -- the rolling hills of the Palouse region of Washington. This picture was taken from atop the Steptoe Butte (at an elevation of 3,612 ft or 1,100 m), looking toward the southwest. The butte is an ancient (400 million years old) quartzite protrusion. In the early morning, as pictured here, the shadows play with the terrain and the planted fields, enhancing the natural beauty of the Palouse. *Photo taken in June of 2006 by Philip A. Dombrowski.*

2009 Annual Meetings and more...

Hard to believe, but it's time to think about annual meetings for next academic year!

- This year's **Annual GSA** meeting is titled *From Volcanoes to Vineyards: Living with Dynamic Landscapes* and will be held in Portland, OR from October 18-21. Abstract submittal is now open and will close August 11th. Registration opens in June. Find out more about the meeting here: <http://www.geosociety.org/meetings/2009/>
- **GSA's Northeast** sectional meeting will combine with the Southeast in 2010 for a joint meeting held in Baltimore, MD from March 13-16. Stay up to date on meeting information here: <http://www.geosociety.org/sectdiv/sections.htm>

- **AAPG's** meeting is June 7-10, 2009, in Denver, CO. Find out more about the meeting here: <http://www.aapg.org/Denver/>

- **AGU** Fall meeting is the 14-18 of December in San Francisco, CA. Find out more about the meeting here: <http://www.agu.org/meetings/fm09/>

- **Environmental Scholarships Available!** Environmental Professionals Of Connecticut recognizes its duty to assist in the education of individuals planning a career in the environmental industry. Consequently, the EPOC Environmental Scholarship Fund was established in to assist **Connecticut residents** who are



attending a college or university (CT colleges or out of state colleges) and have **declared majors pertinent to the environmental field**. The scholarships are awarded annually to junior, senior, and graduate level students (full or part time) enrolled in accepted programs of study <http://www.epoc.org/> and go to scholarship.

Earth Science Week 2009—Oct. 11-17



AGI invites you to take part in Earth Science Week 2009! Being held **October 11-17**, Earth Science Week 2009 will encourage people everywhere to explore the natural world and learn about the geosciences.

"Understanding Climate," the theme of

Earth Science Week 2009, will promote scientific understanding of a timely, vital topic: Earth's climate.

AGI hosts Earth Science Week in cooperation with sponsors as a service to the public and the geoscience community. Each year, local groups, educators, and interested individuals organize celebratory events. Earth Science Week offers opportunities to discover the Earth sciences and engage in responsible stewardship of the Earth. The program is supported by the U.S. Geological Survey,

NASA, the National Park Service, the AAPG Foundation, and other geoscience groups.

For More Information on Earth Science Week visit: <http://www.earthsciweek.org>

Check out the "Why Earth Science" Video on YouTube! <http://www.youtube.com/watch?v=jxbIJH4fTYo>

GeoTrivia!

Fun with Geoscience Trivia

1. What name is given to substances, like carbon, that can be found in two or more forms (such as diamond or graphite)?
2. In what period would you find

the Coblentzian?

3. A crystal that is in the shape of a dodecahedron has how many faces? (*hint: see photo!*)

Check your answers:

http://www.geosociety.org/GSA_Connection/0903/trivia.htm





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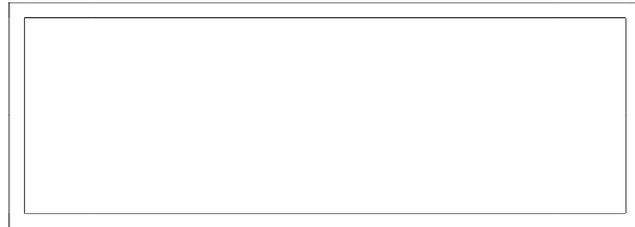
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The Center for Integrative Geosciences mission is to offer transdisciplinary programs of instruction and research that advance understanding of the interaction of biological, chemical, geological, and physical processes, including feedback mechanisms, at all spatial and temporal scales that have shaped Earth through geologic time, continue to shape the environment today, and which provide the basis for understanding the present and future impact of human activity on this planet.

We will be issuing these newsletters monthly throughout the academic year to keep associated students, staff, alumni, and faculty up-to-date on the Center's activities!



Status of the Geoscience Workforce—2009

The “Status of the Geoscience Workforce” report provides a comprehensive benchmark of the geoscience profession. The report is based on original data collected by the American Geological Institute as well as existing data from federal data sources, professional membership organizations, and industry data sources. The report synthesizes all available data for the geosciences, from the supply and training of new students, to workforce demographics and employment projections, to trends in geoscience research funding and economic indicators.

The report is available as a complete document, as well as on a per chapter basis. Some highlights are below:

- **The nature of geoscience work is expected to change in the future across all employment sectors.** For example, as oil and gas fields become smaller and more difficult to locate, geoscientists will need to employ new technologies for exploration and develop other avenues for energy produc-

tion.

- **Geoscientists will be expected to re-apply their skills from one field to the next as workforce demographics change and society's needs shift.** A geoscientist working on reservoir characterization for oil today, for example, may apply his or her skills and techniques to carbon sequestration in the future, or may utilize the principles of fluid dynamics learned from oil exploration to locate and characterize water resources.
- **From 1982 to 2005, less than a quarter of each graduating high school class took earth science/geology courses.** Although the percentage of graduating high school students who took earth science/geology courses increased from 13.6% in 1982 to 23.1% in 2005, it is still lower than the percentage high school graduates taking other science courses. The percentage of high school graduates who took a biology course increased from

77% in 1982 to 92% in 2005, Chemistry increased from 32% in 1982 to 66% in 2005, and Physics increased from 15% in 1982 to 33% in 2005.

- Within the geoscience funding pool, **interdisciplinary research has received the largest portion of funding since 2000** while research in geological sciences and atmospheric sciences has decreased since 1995. Since 1999, NSF reports that the proportion of geosciences funds applied to geological sciences (Earth Science proposals and awards) has increased to just below 30%.
- **Employment projections from the BLS indicate an overall 19% increase in all geoscience jobs between 2006 and 2016.** The increase varies among industry with the professional, scientific, and technical services industry having the highest increase in geoscience employment (47%). Trends in geoscience graduates have not increased over the past 10 years, and there is no indication that they will increase to meet this projected demand of geoscientists by 2016.

*To download this report or find other information, visit
<http://www.agiweb.org/workforce/reports.html>*