

MEET MICHELE L. COONEY, EDITOR-IN-CHIEF



Michele L. Cooney

Michele Cooney received her Bachelor of Science in geology (environmental writing minor) from Allegheny College, Meadville, Pa., in 2013. She currently is working toward her Master of Science in safety sciences from the Indiana University of Pennsylvania, and also serves as a full-time geologic contractor for the Pennsylvania Geological Survey in Pittsburgh.

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She served as Environmental Geosciences Special Issues editor 2012-14, and in mid-2014 she became the journal's editor-in-chief. She is working toward her license to become a professional geologist in Pennsylvania, having passed the fundamentals portion of her exam in 2014. Michele is a member of AAPG, DEG, the Geological Society of America, the Pittsburgh Geological Society and the Pennsylvania Association of Petroleum Geologists. She co-authored a poster at the

DIVISION OF ENVIRONMENTAL GEOSCIENCES

Mission Statement and Purpose

- **EDUCATING** the membership of AAPG and the general public about important issues that affect petroleum energy minerals exploration and production.
- **COMMUNICATING** to the general public and government agencies the Association's commitment to protect the environment while developing the world's natural resources in a responsible manner.
- **APPLYING** the expertise developed in the petroleum/energy minerals industries and hydrogeology to resolve environmental problems.
- **PROMOTING** environmental self-regulation within the petroleum/energy minerals industries.
- **PROVIDING** relevant educational opportunities and services for professional development of the AAPG membership through seminars and conferences in environmental geosciences, hydrogeology and related fields.

2013 AAPG Annual Convention and Exhibition and was a contributing author for "A Geologic Playbook for Utica Shale Appalachian Basin Exploration."



MEET JENNIFER DELANEY, SPECIAL ISSUES EDITOR



Jennifer Delaney

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As an undergraduate student, Jennifer worked as a research assistant on several faculty projects. In 2011 she assisted in the mineral identification for the ongoing geoarchaeology project, "Tin Sources and Settlement in the Bronze Age of Southeastern Europe." That same year she provided field assistance to the Museum of Natural History, Division of Paleontology. She aided in the investigation of the Cretaceous Fox Hills Formation (Badlands National Park) for the purpose of refining ammonite biostratigraphy and documenting new species of belemnite.

Jennifer was elected president of the Brooklyn College Geology Society in 2012. She organized campus events,

local geology field trips and secured grant funding for colleagues to attend professional conferences. She also established working relationships and collaborated with small non-profit environmental organizations to build awareness about local pollution. Jennifer interned at the Aquatic Research and Environmental Assessment Center in 2013, and while there she conducted a series of geochemical tests on water samples for the New York City Environmental Protection and Parks and Recreation departments.

Jennifer received the Dr. Salvatore J. Mazzullo and Chellie S. Mazzullo Geology Scholarship in 2012 and Angelo Tagliacozzo Memorial Geological Scholarship in 2013. The Geology Society received the 2012 Club of the Year Award from Brooklyn College's Academic Club Association during Jennifer's tenure as president.

Jennifer is a member of both AAPG and DEG, and serves as an adjunct lecturer at her alma mater. She has plans on attending graduate school and wants to specialize in hydrology/fluid dynamics.

FROM THE EDITOR-IN-CHIEF'S DESK

Michele L. Cooney

The June issue of Environmental Geosciences treats our readers to two manuscripts studying the feasibility of geologic CO₂ sequestration.

Kelly Harrington and **Janice Gillespie** investigate the carbon storage and CO₂ enhanced oil recovery potential of the Phacoides reservoir in the northeast McKittrick oilfield of the San Joaquin Valley. This compartmentalized reservoir would require injection wells in each fault block, each with varying reservoir pressures. This study, which investigates the amount of CO₂ that can be injected, also makes estimates for the amount of additional oil that could be recovered during the process.

Constantin Cranganu and **Hamid Soleymani** provide an analysis of textural and compositional controls on caprock sealing capacity in the Oklahoma Panhandle region to determine which characteristics have a greater control on sealing capacity. The study evaluates 30 core samples from the region and employs principal component analysis to infer relationships between textural and compositional parameters.



THE RANT, HOW DO YOU PERCEIVE RISK? *Kristin Carter, Managing Editor*

I recently read an excellent commentary in EARTH magazine by Katherine Fox-Glassman¹ about how people perceive risk. She stated that there are essentially two methods that people use to learn about the likelihood that a rare event (such as a volcanic eruption or earthquake) will occur: (1) verbal descriptions and (2) personal experiences. As you might imagine, each has its shortcomings.

With just a verbal description of the probability that something will happen, we may not understand what has been said. In other situations, the description of the probability may not be enough to overcome what we want to occur instead. In both of these situations, we're likely to ignore the probability altogether, even though each could be addressed through learning more about the potential situations and/or comparing the probabilities in question to the probabilities of other rare events (for example you're less likely to die in an airplane crash than you are driving to the airport). Another way we may deal with verbal descriptions of probability is to distort them. In essence, according to Fox-Glassman, it is human nature to take a low-probability situation and assign a greater likelihood to it (or "over-weight" that probability).

The other method of dealing with risk – personal experiences – refers to the scenario where we tend to "under-weight" the probability that a rare event will happen because it's happened to us before. This "under-weighting" may be partly due to our familiarity with the situation, which makes the potential hazard seem less dangerous to us, but it also has been shown to be another systematic human reaction to probability.

So what does all of this mean anyway? Does the human race have any chance of perceiving and assigning appropriate risk levels to any scenario?

Surely, we cannot change our human nature tendencies, as described by Fox-Glassman, but I would argue that we could (and should) make our best attempts to overcome flawed perceptions of risk. Of course, to do this right we need to have an open mind, a willingness to learn new concepts and the ability to trust the validity of technical data specific to the

matter at hand. As geologic and earth scientists, we need to lead the charge to educate the mass public on the processes and inner workings of those rare events that people oppose most (hydraulic fracturing, pipeline projects, climate change and the like).

To this point, I maintain that DEG and the professional community at large are working hard to address these concerns, but it seems like a lot of it falls on deaf ears. Maybe this is due to those human nature tendencies mentioned above, but based on my personal experience with colleagues, loved ones and friends, it also appears that people are not willing to keep an open mind, and they do not trust scientific data.

I don't have the answer for this dilemma, but I am thankful to be affiliated with DEG as we rise to this challenge and continue to identify solutions.

1 – <http://www.earthmagazine.org/article/comment-our-flawed-perceptions-risk>

THE GOOD, THE BAD AND THE UGLY – THE KEYSTONE XL PIPELINE

Take a quiz (prepared by the Wall Street Journal) to check your knowledge of this proposed project:

<http://www.wsj.com/articles/the-keystone-xl-pipeline-what-do-you-really-know-1430881499>

TransCanada's website dedicated to this high-visibility project: <http://keystone-xl.com/>

Friends of the Earth discusses expected environmental impacts, should this project proceed:

<http://www.foe.org/projects/climate-and-energy/tar-sands/keystone-xl-pipeline>

News about this project, including commentary and archived articles, published in The New York Times:

http://topics.nytimes.com/top/reference/timestopics/subjects/k/keystone_pipeline/index.html

According to the Harvard Political Review, young voters tend to align more with environmentalists than the general U.S. populace when it comes to pipeline projects and hydraulic fracturing:

<http://harvardpolitics.com/hprgument-posts/young-voters-conflicted-keystone-fracking/>

Scientific American blog regarding the public's opinion of the Keystone XL project:

<http://blogs.scientificamerican.com/plugged-in/2015/04/29/a-nation-divided-on-keystone-xl/>



BEAUTY IN GEOLOGY – SAPELO ISLAND, GEORGIA



Sapelo Island is one of many barrier islands situated along the Georgia coast, and is home to the University of Georgia's Marine Institute, the Sapelo Island National Estuarine Research Reserve and the 8,420-acre R.J. Reynolds Wildlife Management Area. On a recent trip to this beautiful locale Allegheny College students learned about the sedimentology, hydrogeology and history of the island.

While studying tidal creek processes and mapping sedimentary features on a small point bar in the Duplin River (just off Lumber Landing), students noted three-dimensional ripples, trough cross stratification and other structures. Students also were treated to a dolphin sighting – even geologists stop what they're doing to enjoy nature!

Photographed by Kristin Carter, March 2015

FEEDBACK?

We welcome your articles, comments and feedback for the quarterly newsletter publication.

Kristin Carter, Managing Editor

3rd Quarter submissions deadline is Aug. 1, 2015

Please submit to kr Carter@pa.gov

