

BRUCE SMITH, DEG VICE PRESIDENT



Bruce Smith

Bruce Smith is a geophysicist with the U.S. Geological Survey (USGS), Crustal Geophysics and Geochemistry team in Denver. He received a master's degree in geology from the University of Wyoming, a master's in geophysics from Stanford University and a doctorate in geophysics from the University of Utah.

In his more than 40 years with the USGS, Bruce has conducted integrated geophysical studies and developed interpretational methods for projects in mineral and ground water resources both within the United States and internationally. His work has been conducted in cooperation with a number of federal and international government, state and municipal agencies. His major area of expertise is electromagnetic geophysics (borehole, ground and primarily airborne) as part of programs he has developed and participated in that integrate geophysics, geology, geochemistry and hydrology.

He is a member of many organizations, including the Engineering and Environmental Geophysical Society Board of Directors, Society of Exploration Geophysicists, European Association of Geoscientists and Engineers, National Ground Water Association, Canadian Exploration Geophysical Society, American Geophysical Union, Geological Society of America and the Denver Geophysical Society. For the past 20 years, Bruce has worked in the development of techniques to assess the impact of produced waters from a variety of different types of energy development. He has been awarded "scientist of the year" by DEG for his pioneering work in application of airborne electromagnetic surveys to mapping saline waters in environments of energy production.

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.



PRESIDENT'S COLUMN **Jeffrey B. Aldrich**

What Were the Biggest Environmental Stories of 2015?

What do you consider the biggest environmental headline of 2015? The media certainly focuses on events like COP21, The Pope's Encyclical, President Obama's veto of the Keystone XL pipeline and the NOAA statement of 2015 being the warmest on record. All of these did work to raise the issue of climate change in the minds of many in the OECD, but I have serious reservations that any of these events will do anything significant to either effect climate change or improve the lives of people in the developing world.

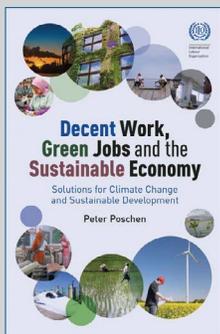
Perhaps the biggest event with the longest lasting consequences was the global crash in petroleum prices that affected crude oil, LNG and natural gas markets. Sometimes lost in numbers is that demand for all three commodities has been steadily increasing, just not as fast as production. The developing world is using more coal, more oil and more gas than ever before, and despite events like COP21, the demand is unlikely to reverse in the next 50 years.

The low commodity prices are spurring innovation and efficiency in the oil fields that will drive productivity for the next generation. The developing countries will not be left behind and will demand affordable energy; it is our responsibility that it is produced in an environmentally sound manner. One of the steps we can take as an organization is to look at the societal impacts of climate policy and help inform a sound, scientific and rational discussion. To that end there is now an application before the AAPG Executive Committee to form a new Special Interest Group (SIG) "Adaptation, regulation and economics related to climate change." This group will be formed to hold technical sessions, forums and discussions on the issue. I encourage the Executive Committee to approve the application and members of the DEG to then become active members of this SIG.

BOOK REVIEW **Kristin M. Carter, Managing Editor**

Decent Work, Green Jobs and the Sustainable Economy: Solutions for Climate Change and Sustainable Development

Peter Poschen, International Labour Organization: Geneva, Switzerland and Greenleaf Publishing Limited: Sheffield, United Kingdom, 2015. 182 pp.



Good things will come when we transition to a sustainable economy, but make no mistake – this transition is no longer an option, it's a necessity. This book focuses on two enormous challenges that we face in the 21st century – environmental sustainability and social and economic stability shaped by decent work for all. Poschen argues that we (the human race) must tackle both simultaneously to

solve either challenge, and he notes how the assumption that a green economy will only be realized by sacrificing employment and social protection is flawed.

The author presents and discusses three opportunities that exist for the global community as it realizes a sustainable economy. (1) net gains in employment across the globe; (2)

improvements in job quality and reduction of poverty; and (3) advancement of social inclusion through access to clean energy and energy-efficient products and services. With these opportunities, however, come the following challenges: (1) the need to restructure economies to support sustainable production and consumption; (2) climate change is already adversely affecting economic activity around the world; and (3) some policies that likely would be used to green the economy (e.g., carbon pricing) will increase energy prices and are, therefore, socially regressive.

Much of the book emphasizes the role that policies must play in addressing these challenges. Through inset case study narratives, graphics and charts, Poschen explains how key policies aimed at varying scales of implementation (e.g., redirecting investments, assisting small or medium-size business enterprises, or worker training) can and have made a difference. Not every country

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or region will have the same experience, though, and it seems that developing nations tend to be the most environmentally, socially and (therefore) economically proactive in establishing sustainability. Even so, it doesn't necessarily help that such economies often rely on environmentally and socially challenged industries (like agriculture, fishing and forestry), or that they exist in parts of the world already seeing the effects of climate change (low latitudes near the equator).

Those who have a soft spot for economics will thoroughly enjoy this book. I am rusty on my resource economics, so some of the terminology (e.g., employment elasticity) slowed me down. All in all, Poschen provides a good read supported

by real-world, empirical examples that will give hope to the skeptics of a sustainable economy.

"Governments, employers and workers are not passive bystanders, but rather agents of change. They can develop new ways of working that safeguard the environment for present and future generations, eradicate poverty and promote social justice by fostering sustainable enterprises and creating decent work for all." (p. 144)

FROM THE EDITOR-IN-CHIEF'S DESK **Michele L. Cooney**

The March 2016 Issue of Environmental Geosciences highlights two studies on methane in domestic groundwater wells in the Appalachian Basin. Don Siegel, Bert Smith, Elizabeth Perry, Rikka Bothun and Mark Hollingsworth present and interpret nearly 20,000 pre-drilling groundwater samples collected between 2009 and 2012, showing a significant number of samples with elevated dissolved methane. In the second study, Bert Smith, Don Siegel and Mark Becker document temporal changes in dissolved methane and relate varying levels of this gas to both seasonal changes and water-level drawdown during water well pumping.

The deadline for the June 2016 issue of Environmental Geosciences, a Special Issue on CO₂ capture, storage and utilization is March 1, 2016. Please contact Editor Michele Cooney at Michele.L.Cooney@gmail.com with any questions about submission.

THE GOOD, THE BAD AND THE UGLY – THE PERIODIC TABLE

Admit it – you've had multiple run-ins with the periodic table over the course of your career, haven't you? Even if those experiences weren't all happy, I think (well, okay, hope) most of us would agree that the periodic table is a fascinating topic! On Dec. 30, 2015, four new elements were officially added to the periodic table, completing the seventh row. Known only by their atomic numbers at this time (113, 115, 117 and 118), the International Union of Pure and Applied Chemistry (IUPAC) will be assigning formal names soon. Check out the following Web links to find out more:

CBS News reports on the four new elements: <http://www.cbsnews.com/news/the-periodic-table-is-getting-four-new-elements/>

An online, interactive periodic table: <http://www.chemicool.com/>

CNN's coverage of the new elements and who's credited with their discovery: <http://www.cnn.com/2016/01/04/world/periodic-table-new-elements/index.html>

An online periodic table quiz: <http://www.sporcle.com/games/g/elements>

Article regarding how the atomic weights of certain elements are now being represented on the periodic table: <http://www.sciencedaily.com/releases/2010/12/101215133325.htm>

Scientific American article regarding how the periodic system has evolved over the centuries: <http://www.scientificamerican.com/article/the-evolution-of-the-periodic-system/>

A visually appealing version of the periodic table: <http://www.periodictable.com/>

"The reason your chemistry homework is doable in a reasonable amount of time" <http://dmitri-mendeleev.org/index.html>

Write words or names using the periodic table: <http://www.harmonicsystems.net/elemental/>



BEAUTY IN GEOLOGY – SWEET ARROW LAKE, EASTERN PENNSYLVANIA



(a)

This photograph was taken at Sweet Arrow Lake County Park in Schuylkill County, Pennsylvania. The waterfall (a) is located in the southern portion of the park where outcrops of Montebello Sandstone and Mahantango Shale (both members of the Middle Devonian Mahantango Formation) are found. The water erodes away the softer shale at the bottom of the waterfall, causing a 15-foot drop at the vertical joint in the sandstone (b).

Photograph by Priscilla Clark, Shippensburg University, Oct. 8, 2015.



(b)

FEEDBACK?

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

Kristin Carter, Managing Editor

2nd Quarter submissions deadline is May 1, 2016

Please submit to kcarter@pa.gov