

MEET OUR NEW SECRETARY/TREASURER



Steven P. Tischer

Steve Tischer is a senior environmental coordinator for ConocoPhillips with responsibilities to the Mid-Continent Business Unit. Tischer provides internal environmental guidance on due diligence, spill emergency response/remediation, waste disposal options and water issues.

Tischer received his Bachelor of Science in geosciences from the University of Texas at Dallas in 1979 and his master's degree in geology from the University of Texas of the Permian Basin in 2000. He began his career as a petroleum geologist with Coastal Oil & Gas Corp. in Midland, Texas in 1979. With oil price fluctuations in the 1980s, he transitioned into environmental geology to focus on water resource and environmental remediation projects with a consulting firm.

In the early 1990s, Tischer became environmental manager for Parker & Parsley Petroleum, which merged with Mesa Petroleum in 1998 to become Pioneer Natural Resources USA, Inc. He rejoined the environmental consulting ranks in 1998, where he served as associate vice president for Arcadis with responsibilities for the Corpus Christi and Midland, Texas offices. He returned to the oil industry in 2012 when he moved to his current position with ConocoPhillips.

Tischer is a registered professional geologist in Texas and Wyoming, and is a member of the American Association of Petroleum Geologists, Society of Petroleum Engineers and the West Texas Geological Society. He has published five times on water resource, groundwater remediation and oil well blowout restoration. He received the Gordon I. Atwater Award in 2001 for his poster on an oil well blowout emergency response, natural resource damage assessment, restoration and remediation project in south Louisiana.

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.



CARBON, TAXES, ATTITUDES TO GLOBAL WARMING, AND AAPG



Response by Lee C. Gerhard

Lee Gerhard is a charter member and past president of DEG. He is an Honorary Member of AAPG. He chaired the society's work in climate change science for many years and led publication of Studies in Geology 47, Geological Perspectives of Global Climate Change. He has published more than 25 articles and given numerous presentations on climate change science and policy. Although he also has a meteorology background, he started studying climate change directly in 1989.

The American Association of Petroleum Geologists is to be commended for being the only major earth science society to insist on data and the scientific method rather than computer models or societal hubris as the foundation for its position on global climate change. The great preponderance of data argues that all recent climate fluctuations are natural, that recent temperature changes are within normal bounds for both rate of change and absolute value, and that any anthropogenic influence on climate is de minimus.

The data sets that support these conclusions include oxygen isotope ratios from ice cores, satellite temperature measurements, comparison of rural and urban temperatures, comparison of carbon dioxide concentration to temperature changes, measured solar isotope emplacement in sediments, calculation of logarithmic diminished effect of carbon dioxide with increasing concentration, cyclical temperature variations of the past and the current multi-decadal temperature hiatus in the face of increasing carbon dioxide concentration. The work of some academicians, such as H.H. Lamb, has provided a wealth of data about past climates in human history.

Current carbon dioxide levels are just a fraction of past levels, and the human contribution to the total greenhouse gas concentration is insignificant. If one were to assign a value of \$1,000 to the total greenhouse gas content of the atmosphere, the human contribution would be worth about 28 cents. Although societal hubris enjoys pretending that humans can modify any of the earth's dynamic systems, the energy immensity of plate tectonics, magnetism, gravity and climate are not susceptible to significant human control.

The climate computer models upon which the politics of climate "change" are based lack any well-defined, data-supported, conceptual basis and are fundamentally flawed. Their predictions are inaccurate and unrealistic for a number of reasons, not the least of which are failure to account for the nearly 20 years of current climate stasis, and failure to back model to the beginning of the 20th century using the same algorithms and values used in their forward models.

The original assertion that carbon dioxide from human sources started to affect temperature in the late 1800s and continued to the present was shown to be inaccurate when modelers discovered that the Gleissberg Cycle temperature highs (the putative 60-80 year temperature cycle) of the 1930s falsified the correlation drawn between carbon dioxide and temperature during the first half of the 20th century. In response, the modelers simply dropped 70 years from the models.

The nadir of that Gleissberg Cycle occurred in the 1970s. Arguments for anthropogenic climate influence now start then, the natural warming portion of the cycle. Temperature is likely to have now passed the apogee of the next Gleissberg (late 1990s) and started down the cooling portion of the cycle.

There has been extensive manipulation of U.S. temperature data euphemistically characterized as "corrections" to help establish a stronger correlation between carbon dioxide and temperature change. However, the validity of those corrections has not been established.

Little credence should be given the Intergovernmental Panel on Climate Change as a scientific research organization, because its charge and mission is simply "to document human influence on climate." That is advocacy, not science.

The AAPG is correct in arguing for continued research into the causes of climate variability. We do not know what causes climate change. There is well-established strong correlation between solar activity and temperature changes. We have observed that ocean cycles correlate well with some temperature changes. We have correlated glacial episodes with orbital cycles. My colleagues and I have correlated the onset of continental scale glaciation with plate tectonic movements.

But, CORRELATION DOES NOT IMPLY CAUSATION. Continued study of the causes of climate changes at all scales is necessary to understand and predict climate stresses on society. Anything less is not acceptable.

AAPG members are scientists, we let data guide theory, we question assumptions and we know history. We use data, logic and deduction to find new oil miles below the surface. And that is how we continue to analyze climate change.

FROM THE EDITOR-IN-CHIEF'S DESK



Michele L. Cooney

In the upcoming issue of Environmental Geosciences, our readers will be treated to two returning authors. Duke Brantley, who co-authored a manuscript for the journal in 2009, provides a preliminary assessment for potential injection of carbon dioxide (CO₂) into the South Georgia Rift, an under-studied basin with large potential to sequester CO₂. He uses the USGS SEAWAT program and TOUGH2-ECO2N computer model to demonstrate the capacity of this basin for long-term geologic storage of the U.S. Department of Energy's minimum capacity requirement – 1 million tons of CO₂ per year for 30 years.

Our second author, Jon Atkinson, who was featured in the March 2012 issue of Environmental Geosciences, presents his examination of historical water-quality data for Rock Creek in eastern Nebraska and provides insight for why the downstream portion of the creek exhibit elevated sodium, chloride and total dissolved solids concentrations. The results of this study provide geochemical data to augment an otherwise historical water-quality dataset for Rock Creek and point to a geologic origin for these constituents.

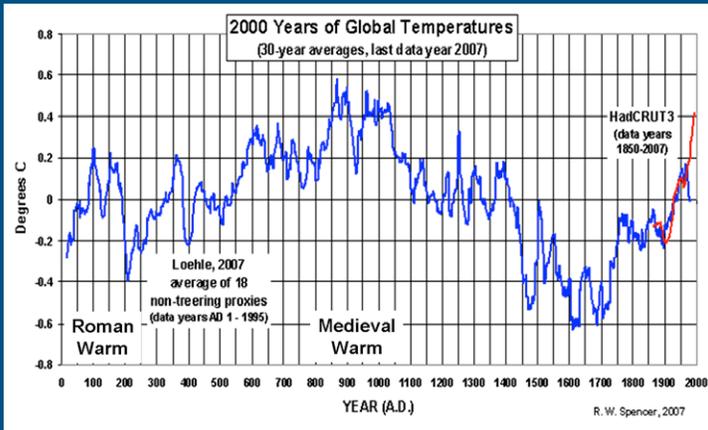


Figure 1: Temperature plot for the last 2,000 years.

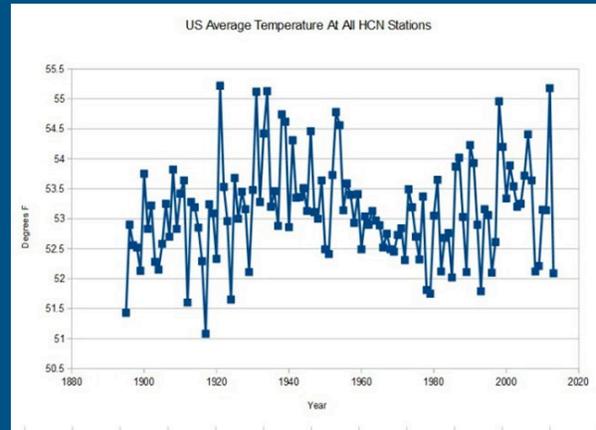


Figure 2: Temperature plot for the last 150 years.

CLIMATE CHANGE COMMITTEE PROPOSAL *Robert C. Shoup*



In James Rine's essay "Carbon, Taxes, Attitudes to Global Warming, and AAPG," which appeared in the December 2014 Spheres of Influence, he calls for the re-establishment of AAPG's Climate Change Committee. Although I do not agree with Rine's reason for wanting to re-establish the committee, I do agree that AAPG should consider re-establishing the committee.

If re-established, the Climate Change Committee should be charged with providing the following facts to our politicians and to the general public:

Fact 1: Temperatures today are not at record levels.

Several times in history, global temperatures have been as high, or higher, than the recent warm temperatures. Both the Roman Warm and the Medieval Warm mark periods that were as warm as or warmer than the modern warm (Figure 1). Neither of these two warm periods were the result of human activity.

In fact, the most recent warming is not the warmest period in modern history. Temperatures between the late 1920s and late 1930s were as warm as or warmer (Figure 2). Between the 1940s and the 1970s global temperatures underwent a significant decline, resulting in the global cooling scare of the 1970s.

These observations are not consistent with the hypothesis that increasing levels of CO₂ are causing an increase in global temperatures. Furthermore, when we examine the three most posted temperature curves, NOAA, NASA and Hadley (East Anglia University), we do not see this decline in temperatures from 1940 to 1970 (Figure 3).

We do not see that decline because the data has been manipulated to hide it. Whether that data manipulation was intentional, or an unintended consequence of the data processing remains to be determined. Sometime between 2008 and 2012 some of the temperature records in NASA's GISS database have been altered to show up to 2 degrees Fahrenheit more recent warming than has actually occurred (Figures 4 and 5).

The recent claims by NOAA and NASA GISS that 2014 was the hottest year on record is based on these altered curves. When NASA and NOAA were challenged about their claim that 2014 was the hottest year on record, they responded that there is only a 38 percent chance that 2014 was the hottest year on record, being only slightly warmer than 2010. The previously hottest year on record is 2010 only because NASA and NOAA have altered the historical data (Figures 4 and 5). NOAA has admitted it altered the data, but NASA GISS has not.

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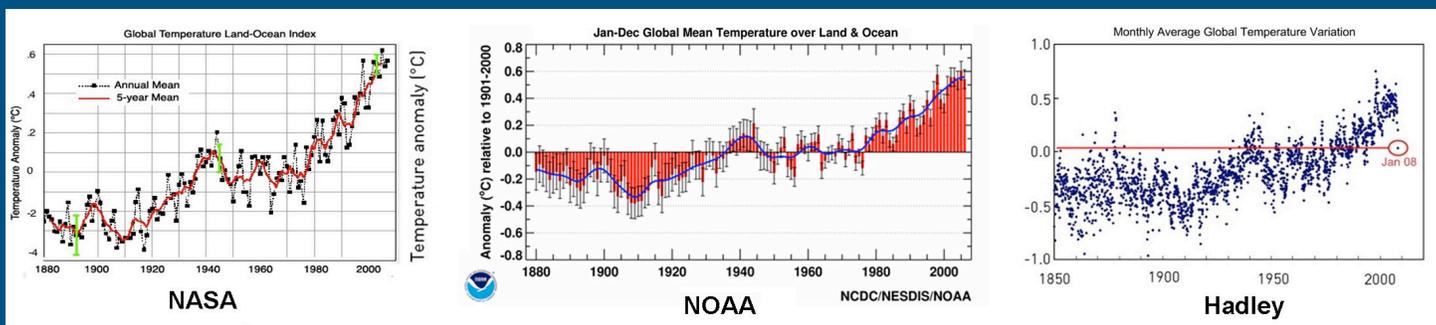


Figure 3: Temperature plots from NASA, NOAA and Hadley.

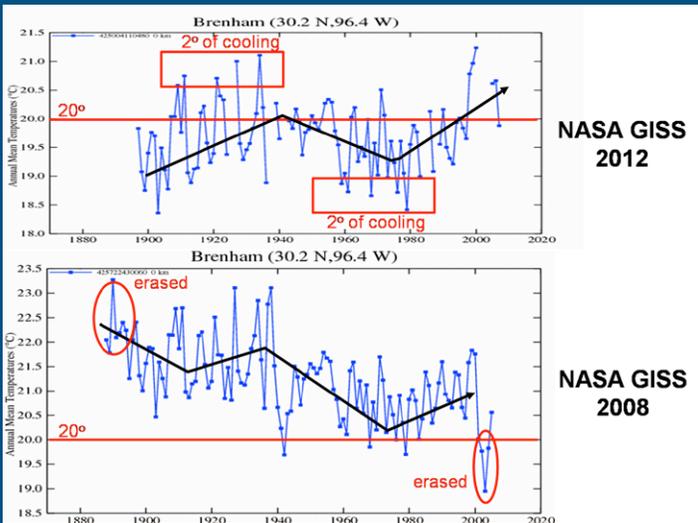


Figure 4: Temperature station data for Brenham, Texas. The upper graph was downloaded from the NASA GISS database in late 2012. The lower graph was downloaded from the same site in mid-2008. Two degrees of cooling have been added to the 2012 curve for several years between 1900 and 1940 and again for several years between 1955 and 1985. As a result, the Brenham Station now shows an overall warming trend, whereas in 2008 the data showed a general cooling trend.

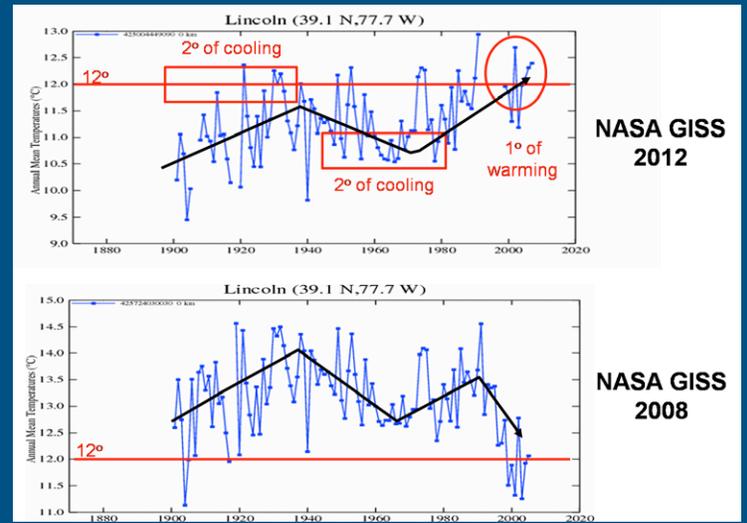


Figure 5: Temperature station data for Lincoln, Va. The upper graph was downloaded from the NASA GISS database in late 2012. The lower graph was downloaded from the same site in mid-2008. Two degrees of cooling have been added to the 2012 curve for several years between 1900 and 1940 and again for several years between 1955 and 1985. As a result, the Lincoln Station now shows an overall warming trend, whereas in 2008 the data showed a cooling trend.

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Fact 2: Changes in temperature precede changes in CO₂ levels.

There is undoubtedly a link between CO₂ and temperature (Figure 6). However, temperature increases precede CO₂ increases by 700 to 800 years. As such, increased levels of CO₂ cannot cause increases in temperature.

Fact 3: Computer models are not data.

The basis for all estimates of future global warming is the output of Global Circulation computer models. Global Circulation models are sophisticated mathematical programs that simulate climate. Most Global Circulation models are incredibly robust and highly sophisticated. However, no matter how robust or sophisticated, they are only a simulation of climate, not climate. Although these models can provide insight into climate and climate drivers, they cannot now, or ever, be confused with data.

The Global Circulation models are all programmed with CO₂ as a key driver of temperature. If CO₂ increases then temperature increases, if CO₂ decreases, temperature decreases. This relationship is in complete disagreement with Fact 2 above. Moreover, the current Global Circulation models do not model the effect of water vapor on temperature. Water vapor is the most prevalent greenhouse gas and is known to significantly impact climate.

Climate Change Committee

There are a great many misconceptions regarding climate change. These are

caused in part by the politicization of the science. AAPG, as a scientific organization, should consider reprising the Climate Change Committee as a joint committee between the DEG and the DPA to promote science over politics. The committee should have three responsibilities:

- 1) Advocate for the application of the scientific method. Data manipulation, alarmism, appeals to consensus, and ad hominem attacks have no role in the scientific process, and should be condemned by AAPG, and all scientific organizations for that matter.
- 2) Make information regarding the facts of climate change available to our state and federal legislators and all political leaders so that they may make informed decisions and policies.
- 3) Educate AAPG members and the public about the three facts of climate change discussed above.

And while they are at it, the committee could address the many falsehoods that have been raised regarding hydraulic fracturing.

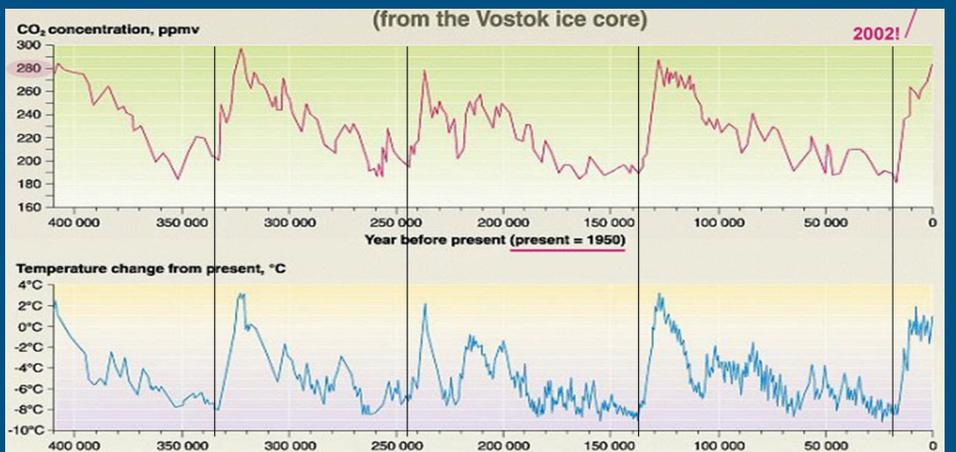
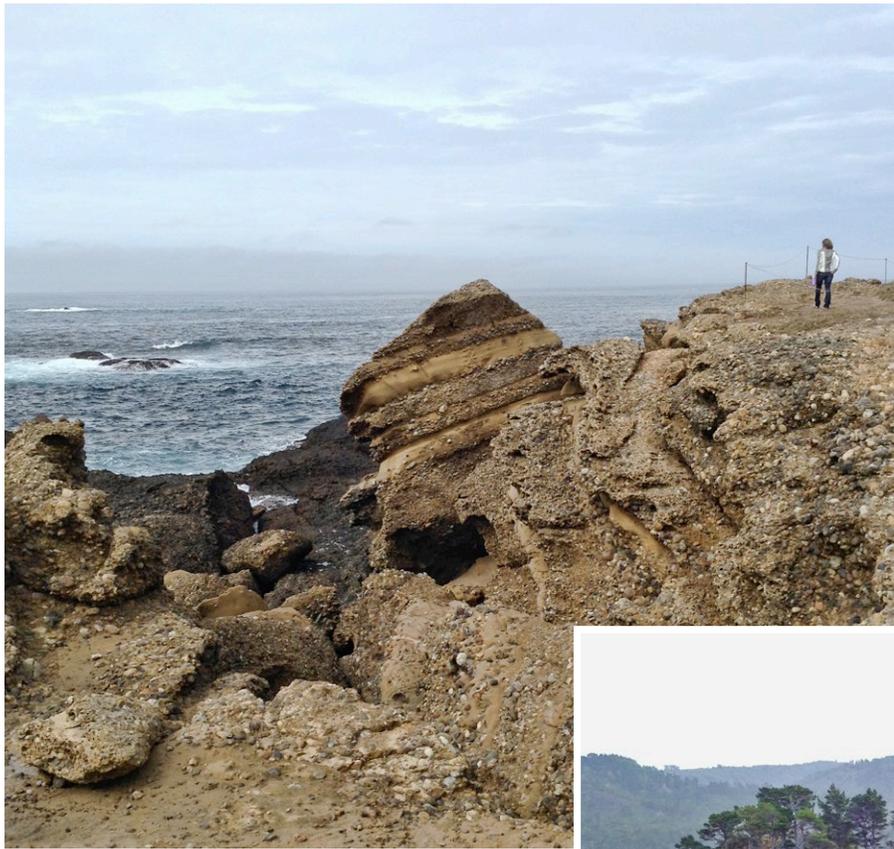


Figure 6: Relationship between temperature and CO₂.

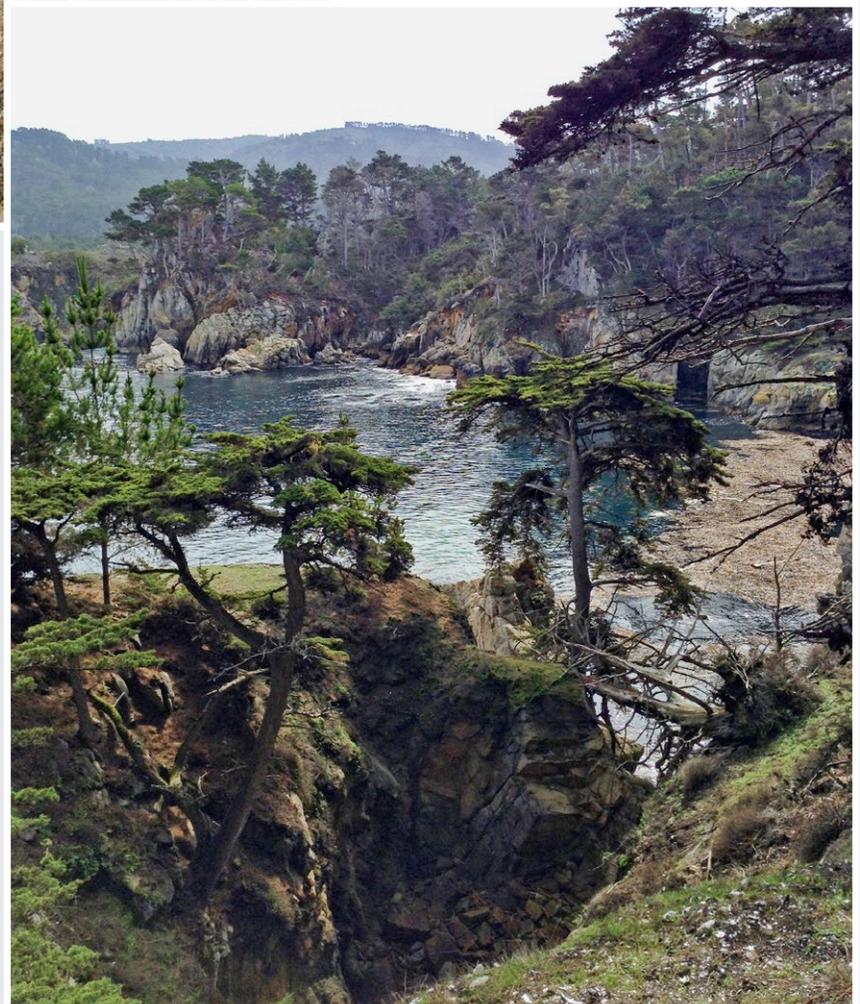


BEAUTY IN GEOLOGY – MONTEREY, CALIFORNIA



These photographs were taken at the Point Lobos Ecological Reserve near Monterey, Calif. An ocean-side hike took us back to the Paleocene (55 ma), when a submarine canyon incised the Santa Lucia Granodiorite bedrock, depositing the Carmelo Formation. The Carmelo Formation is best described as a turbidite complex with alternating layers of cobble conglomerates (debris flow) and medium-grained sandstone (turbidity current). Migrating blue whales and laughing sea lions also were observed on this hike.

Photographed by Sage Wagner, Indiana University of Pennsylvania, April 2014



FEEDBACK?

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

Kristin Carter, Managing Editor

2nd Quarter submissions deadline is May 1, 2015

Please submit to krcarter@pa.gov

The AAPG Statement on Climate Change can be found online at aapg.to/climatechange.