

Global Warming: Understanding the Data and the Controls on Climate and Separating Hype, Media Misrepresentation and Politics in Deciding Whether to Adapt, Mitigate, or Do Nothing

By Paul Belanger and Genevieve Young

In the April 2006 *Outcrop* editorial, Bob Cluff discussed the global warming (GW) issue in right vs. left end-member views. Bob brought up the short-term versus long-term geologic time-scale perspectives about climate change that geologists see in comparison to the general public. He also noted that there are shortcomings in collecting either long-term proxy data or short-term measurement data in assessing global changes in temperature, atmospheric gases, ocean chemistry, etc. Further, global sampling, whether present-day or through proxy-data for past estimates, should be random and uniform to be statistically valid and is critical to developing accurate climate models.

At the heart of the issue is whether or how much the carbon dioxide (CO₂), methane (CH₄) and other GW gases that man has introduced into the atmosphere have influenced short-term GW, versus natural influences for which solar variability may also be a cause. Longer-term climate changes are controlled by higher-order influences such as ocean-circulation and orbital parameters. Rarely discussed is that it might be a combination of both man-made and natural influences to the short-term GW, for the proponents of either side focus on their end-member favorite, natural vs. man-made, and reported by the media in those extremes. Some go even as far as to say there is no short-term GW.

This led Bob Cluff to propose that maybe one or two people lead a "study-group format" forum for our fellow geoscientists who want to understand more about the overall issues and be better informed citizens and voters.

Paul Belanger's dissertation and Ocean Drilling Program background (ODP Leg 161 – Mediterranean) in paleoceanography, paleoclimate and stable isotopes have allowed him to keep more current than most on the issues. Genevieve Young's work at the Colorado geological survey has done the same. That led both of them to volunteer to lead a study-group. It is not an RMAG-sponsored group; it is strictly independent. Bob Reynolds has had the

resources and time to compile vast amounts of data to present to the public and has been a "de-facto" leader as well. He and the Denver Museum of Nature and Science (DMNS) have graciously allowed us to host our meetings at their facility – generally once a month.

In the August 2006 solicitation in the *RMAG Outcrop*, Paul and Genevieve referred to Michael Glantz's June, 2006, article that divided those in the GW debate into different "pigeon holes":

Hawks are convinced beyond reasonable doubt that human activities not only can, but are, altering the chemical composition of the atmosphere in ways that influence global climate;

Doves are those who believe that Earth's atmosphere is so robust that it can absorb any insult that humans might do to it;

Owls are mostly those who lean either toward the hawks' or the doves' view, but are still not sure what the truth is; and

Ostriches include those who refuse to think about global warming as a problem, who refuse to consider any new scientific research, and who think that someone somewhere will solve this problem before it becomes a crisis.

Our planet has experienced natural warming and cooling cycles several times in its history. Scientific data show that carbon dioxide and methane levels have been at times higher than they are today. So what makes our current warming trend different? What has become clear is that CO₂ is now 30% higher than it's ever been in the last 800,000 years. Similar figures exist for methane. CO₂ has been higher in the more distant past, but it's undergoing a remarkable percentage increase in a short period of time (the last 200 years). One third of this increase occurred between 1800 and 1960; the other 2/3rds of that increase has occurred since 1960. What it means, and its short-term to long-term impact on the planet's natural processes at this rate of increase, is at the heart of the public debate.

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As many of you know, AAPG's older climate card statement and on-line debate led to significant criticism by the membership of AAPG's position statement. That criticism led AAPG's Executive Committee to appoint a committee that led to its proposed rephrased and more neutral position statement. The membership criticism does not mean that geologists, petroleum geologists or otherwise, should not be involved in the discussion, debate and education of the general public, but was a statement that there is an apparent conflict of interest for AAPG to take its old public stand on the GW controversy.

Regardless of what kind of bird you are, please consider joining our Global Warming Study Group to take a careful look at the issues related to this controversial topic. We remain committed to presenting data, recommend readings and entertain discussions directed at separating fact from fiction and misrepresentation in a debate where there is too much of the latter. Politicians and populist opinions often mislead and misrepresent the data. We are trying to present and discuss data – without proselytizing personal views – and attempting to represent both sides/ issues of interpretation.

Previous speakers have focused on reviews of long-term climate proxy data and controls, the Greenland ice cap, atmospheric methane, CO₂ sequestration and solar variability. In future meetings we will seek to attract scientists knowledgeable in specific fields who can present the data and open the floor for discussion. Topics will include data collection, modeling, mitigation and associated costs, adaptation, alternative energy choices and impact, etc.

Mark Your Calendar!

RMAG Fall Symposium

"New Structural Concepts and Applications in Rocky Mountain Hydrocarbon Plays"

September 14, 2007

Grand Hyatt Hotel, Downtown Denver

Optional Field Trip to the Golden-Boulder Flatirons

Saturday, September 15, 2007

Advances in structural concepts and applications provide new opportunities for Rocky Mountain hydrocarbon exploration and development. This symposium will feature examples of active Rockies plays with diverse structural aspects. We will also consider scales ranging from plate tectonic drivers of foreland deformation to 4D (3D space + time) reservoir-scale visualizations of complex pre-, syn-, and post-tectonic fracturing.

Co-Chairs: Eric Erslev, CSU
Christopher Potter, USGS
Ned Sterne, Petro-Hunt

If you would like to suggest or volunteer to give a presentation, contact Eric Erslev at erslev@warnercnr.colostate.edu

Please express your interest in joining us at meetings, or simply in email correspondence by contacting either: Paul Belanger at pbelanger@elkresources.net, or Genevieve Young at Genevieve.Young@state.co.us. Or feel free to look at our FTP site where past talks, data and email discussions have been stored on at FTP site graciously hosted by Elk Resources, Inc.: <https://sslaccess.elkresources.net/files>.

As Bob Cluff concluded in April 2006: "Last, everyone should keep an open mind and stay flexible in their opinions." ◀