

New findings closing gaps in global warming research

By Bob Doppelt

For The Register-Guard

Published: July 7, 2008 12:00AM

A buddy recently asked if the effects of global warming could be seen today. Yes, I told him. Scientific studies showing the consequences and trajectory of global warming cross my desk almost weekly. Each tends to eliminate gaps in the science. They also reaffirm the proper course of action.

Research published in May, for example, showed that since 1970 the temperature of the upper troposphere — the region 7.5 to 10 miles above Earth's surface — has been rising by about 0.65 degrees Centigrade per decade. This is consistent with most climate change models.

Skeptics had previously challenged the validity of these computer models because data gathered by satellites and high-flying weather balloons showed little or no tropospheric temperature increases. This problem is now resolved.

Then, scientists working aboard an Oregon State University research vessel published findings showing that greenhouse gases are turning the waters off the West Coast, including Oregon, acidic enough to dissolve the shells of sea creatures decades earlier than scientists had expected. These findings have potentially catastrophic consequences for marine life, including fisheries, from Canada to Mexico.

Worse, the team said that future ocean acidification, along with the loss of key links in the marine food chain, will likely increase as atmospheric concentrations of greenhouse gases rise. The researchers also said there is a strong correlation between the recent ocean dead zones off the Northwest coast and increasing acidification.

Another June study found that the world's oceans have warmed 50 percent faster than previously thought due to increased carbon dioxide levels. Higher ocean temperatures have expanded the volume of water, contributing to a 0.53 millimeter-per-year rise in sea levels that is submerging small island nations and threatening to wreak havoc in low-lying heavily populated regions around the globe.

Until now, according to researchers, there has been a gap between the sea level rise projections of computer-based climate models and the observations of scientists gathering data from the oceans. As with tropospheric warming, skeptics have used this gap to discount global warming. The new study is the first to reconcile these factors. Another gap has been filled.

To top that off, also in June, the U.S. government's Climate Change Science Program released the first comprehensive analysis of observed and projected changes in weather and climate extremes in North America. The report said, "global warming of the past 50 years is due primarily to human-induced increases in heat-trapping gases" and that "many types of extreme weather and climate event changes have been observed during this time period."

Droughts, heavy downpours, excessive heat and intense hurricanes are likely to become more commonplace as global warming unfolds, according to the study. For example, by mid-century, extremely hot days that now occur only once every 20 years would occur every three years.

These and many other assessments add to the deepening body of evidence about the reality and consequences of global warming. They also point to the need for a four-part response. Think of it as RPEG — reduction, preparation, education and growth.

First, reductions on the order of 80 percent or more will be needed in carbon dioxide and other greenhouse gases.

Through increased energy efficiency in existing and new buildings and the wastewater treatment system, the adoption of alternative vehicles and fuels, and LED traffic and pedestrian signals, the city of Eugene decreased CO2 emissions by 4.6 percent between 2000 and 2005 on a full-time staff equivalent basis.

The city of Springfield and other local governments and utilities have advanced energy efficiency and good environmental management for years. But achieving an 80 percent reduction will require more than good business practices. New ways of thinking, new ways to provide goods and services, and new policies are needed.

Second, we must prepare for the effects of climate change that now cannot be prevented.

The Eugene Water & Electric Board is assessing the likely effects of climate change on its McKenzie River water supply. Few other organizations, however, appear to be overtly preparing.

Third, each of us must become educated about what it means to live in a carbon-constrained world.

Adults must understand the changes that are afoot and learn how to reduce their emissions and prepare for warming. Lane Community College has launched a project to incorporate sustainability into its curricula. Many other higher education institutions, the media and organizations must take on this responsibility.

Children must learn how to think and act in a world that will be very different from the one their parents grew up in. This is the role of public education and, of course, parents.

Finally, we must rapidly grow low-carbon businesses and jobs.

People will not cut their emissions unless their basic needs are met. The expansion of low-carbon economic development opportunities should become the top priority for all economic development agencies — and entrepreneurs.

Reduce emissions, prepare for climate change, educate everyone, and grow sustainable industries. These are the pathways to the future.

HHHH

Bob Doppelt (bob-cwch@att.net) is director of resource innovations at the University of Oregon; he also directs the UO's Climate Leadership Initiative. He is writing a series of columns on climate change for The Register-Guard.

Copyright © 2008 — The Register-Guard, Eugene, Oregon, USA
(<http://regweb.registerguard.com/rga/index.php/info/copyright>)
