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The Weekly Planet

The integrity of science

By DR. ALAN BETTS

Remarkable developments in 2007 furthered our understanding of climate change. In February 2007 the Intergovernmental Panel on Climate Change released its first report, "Physical Basis for Climate Change." This report presents unequivocal evidence that the climate system is warming as a result of rising greenhouse gas levels, mostly coming from burning fossil fuels (coal, oil, and gas). Later in the year the IPCC issued two more reports and a final summary. These discuss how our society will be forced to adapt to major climate changes later this century and describe how we can reduce the severity of these changes if we act soon.

The scale of effort involved in these exhaustive scientific assessments is hard to grasp. Thousands of scientists volunteered to draft these reports, which took five years to complete. Thousands more reviewed the conclusions carefully. In December, the IPCC was honored with the Nobel Peace Prize for this work – a historic event symbolizing the growing recognition that we face global conflict and immense suffering if society is foolish enough to continue on an energy path based on fossil fuels.

The IPCC report describes how the scientific evidence now fits together: The air and oceans have warmed, snow and ice are melting in many regions, and sea level is rising. The climate is warming faster over land and in the Arctic. Heat waves, heavy precipitation and droughts have become more frequent. The past 50 years have been warmer than any time in the past thousand.

The projections of our models for the future are consistent with what we see happening now. For Vermont, this means a further mean warming close to 2 degrees Fahrenheit by the year 2030. The Earth is now committed to this warming, because with a stronger greenhouse atmosphere, the planet must warm further, just to radiate into space the heat it gets from the sun. In fact, much of the added carbon dioxide coming from the burning of fossil fuels will not be removed from the atmosphere for centuries.

Developments during 2007 revealed that the IPCC may have underestimated how quickly our climate is changing. Scientists were stunned when an additional 20 percent of the Arctic ice cap melted by fall. In December, a report in the journal *Science* warned that even if we reduce our emission rates dramatically, most coral reefs will still vanish from our oceans later this century. Perhaps the worst news was that global emissions of carbon dioxide are currently running above the highest scenarios considered by the IPCC.

The painful truth is that we have delayed taking action to reduce our dependence on fossil fuels much too long. Does this mean it is too late to start? Not at all; the sooner we begin, the larger the beneficial impact for the earth and our children. We can still reduce the warming later this century by about half and so give the earth and our grandchildren a better chance to adapt.

For the past 15 years, a concerted effort has been underway to spread false information, confuse the public, and delay the essential transformation of our industrial society. I have given more than 40 talks around the state in the past year, and I find people want to know the truth. They know their government has deceived them on this issue. They know that lies spread confusion and fear, while the truth sets people free.

But I am still asked why what I say doesn't resemble at all what they hear on some radio talk shows. It is hard not to chuckle. We are exposed to such a deluge of pseudo science: propaganda being fabricated and distributed by those with specific political, economic and environmental agendas. I tell people that science has a fundamental integrity that is lacking in much of our public discourse, particularly in an election year.

The work of climate researchers gets reviewed, published and then examined carefully by a global community of scientists, who are trying to understand the living earth-system of land, atmosphere and oceans. It's quite simple to check scholarly credentials. For instance, if you want to know whether I am a credible scientist, just enter my name, Alan K Betts, at www.scholar.google.com. You'll get a public window not only into my work, but also the work of all the scientists that have found it useful. You don't have to read much to get the feel for it. Then type in your favorite talk show "expert" on climate change. Instead of science, you will find something quite different that will help you understand their specific agenda.

The choices before us may be a little stark, but they are very real. They are filled with possibility and hope, unless we choose to turn away and hide.

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