

SCIENCE in SERVICE to the Nation

A conversation with oceanographer Ray Schmitt

In 1863, as the Civil War raged, Congress established the National Academy of Sciences (NAS), an honorary society of scholars that any government department could call upon to “investigate, examine, experiment, and report upon any subject of science or art.” In 1916, during another

war, the NAS created the National Research Council to draw on the expertise of a wider scientific community. The NRC enlists committees of the nation’s top scientists, engineers, and other experts, who volunteer their time to study designated issues and provide scientific and technological advice for policymaking.

In 2008, Congress asked the NRC to establish a committee to investigate “the serious and sweeping issues relating to global climate change.” Ray Schmitt, a physical oceanographer at Woods Hole Oceanographic Institution, was among some 90 experts in science, economics, law, industry, and energy policy who in May 2010 issued a new report, *America’s Climate Choices*.

How is this report different from what we’ve heard before, particularly the controversial Intergovernmental Panel on Climate Change (IPCC) report of 2007?

I think we stated the facts more assertively than other reports. Scientists tend to

offer very qualified statements, and they’ve been relatively conservative on the subject of climate change in the past. We were not conservative. We did not equivocate.

From our perspective, climate change is not a theory. It’s going to happen. It’s happening right now. I’d say our approach for the entire report revolves around the notion that you can’t populate the planet with nine billion people and expect the environment not to notice.

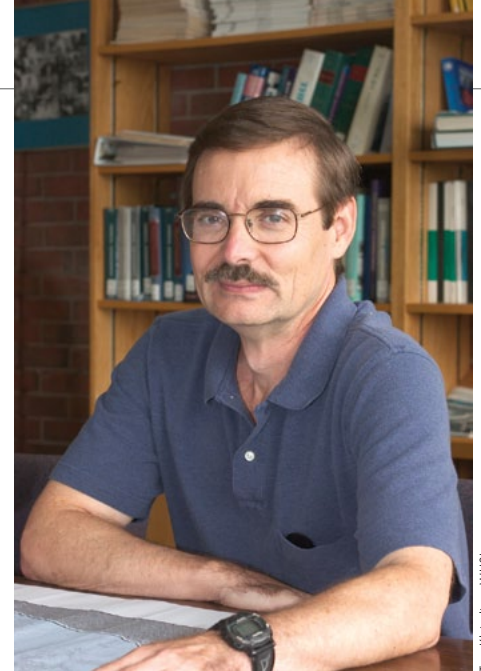
Did the report’s findings surprise you?

I found all of the research sobering. For example, the projections from the IPCC report said that sea levels could rise by a foot by 2100. In the past three to five years, a number of papers have come out saying that it looks like the rate of melting of the icecaps is a lot faster than had been anticipated, and that we could get a sea level rise of 3 to 4 feet by the end of the century.

A foot of sea level rise we might be able to live with; but 3 feet of sea level rise is a big problem for a lot of people. Anyone who lives in coastal areas will feel tremendous impacts.

Besides shoreline erosion, what are some of the problems that would come along with sea level rise?

Probably the big change would be how far storm surges come into land. That will



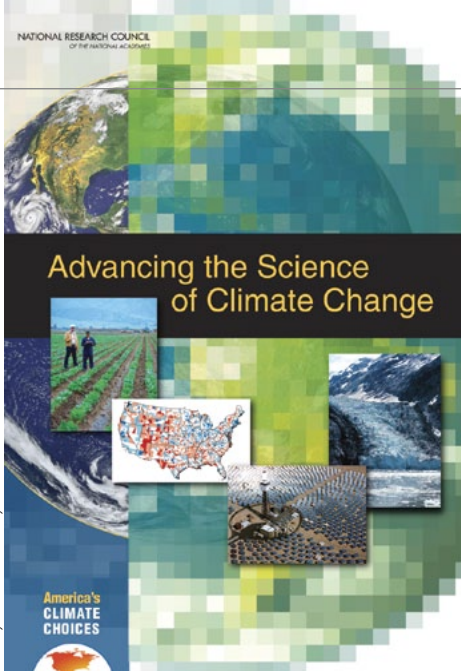
Tom Kleindinst, WHOI

WHOI physical oceanographer Ray Schmitt was a member of a National Research Council panel that investigated issues relating to global climate change.



Courtesy of NOAA

Sea levels could rise by 3 feet or more by the end of the century. Such rises would cause storm surges to travel farther inland, threatening buildings that once would have been a safe distance from the shore.



The NRC panel's report was called *America's Climate Choices: Advancing the Science of Climate Change*.

just get worse and worse. With a big rise in sea level, all of a sudden you're in much worse shape than you would have been without that sea level rise. The sort of flood that would only happen every 100 years, now might happen every 10 years.

What are our options? How do we deal with it?

We can do four things: We can do nothing and suffer; we can adapt; we can mitigate, using geoengineering to treat the problems; or we can try to reduce the levels of CO₂ [carbon dioxide, a greenhouse gas] in our atmosphere and avoid all these problems. To do that, we would have to change our economy. People talk about it being too expensive. That's kind of a ridiculous argument. You'd just have a *different* economy.

We could be developing solar energy, wind energy, wave energy from the oceans. There's plenty of energy around. I'm a physicist; I see energy all around me. And I know we waste huge amounts of it. We don't *have* to be doing this fossil-fuel thing.

Did the report address that?

A main recommendation of the report is that you have to put a price on carbon. The report suggests we need to embrace a greenhouse gas budget, that is, the notion that there's only so much CO₂ we should allow ourselves to emit by a certain date. That's

a worthwhile idea, and there are lots of ways of getting to that budget.

For example, putting a penalty on burning coal so that it would pay to switch all coal plants to natural gas, which produces half the carbon emissions for the same amount of energy. That would be a good step. But if the senators from the coal-producing states are in control of appropriations, it's a tough political fight.

What other major recommendations does the report make?

We addressed the problem that Washington has with managing climate change research. There's some climate change science in the National Science Foundation, some in the National Oceanic and Atmospheric Administration, some in NASA—but it's not a priority for any one of them, and they don't necessarily cooperate with one another very well. So we're hoping to restructure the way science is organized and funded in Washington for climate change. [Editor's note: The U.S. Geological Survey and the U.S. Forest Service were created on NAS recommendations.]

Who do you hope will read the report?

It was commissioned by Congress, so we're hoping that congressional staffers will take it seriously and use it to justify legislation that they may be writing. Basically, we've compiled the evidence for people who do want to make changes to legislation or for policymakers—people who are, say, the water system manager for Los Angeles who has to take information like this into account and decide, 'Should we build water storage

"You can't populate the planet with nine billion people and expect the environment not to notice."

facilities to compensate for increasing droughts?' Or the harbormaster in any little town, who has to plan 20 to 30 years in advance how to adapt to sea level rise.

It's hard to get the body politic to pay attention to things that have a long time horizon. People have more immediate priorities. Nobody wants to think long term.

Do you have any suggestions on how to get people and policymakers to think long term?

I think two recent events, the mine explosion in West Virginia and the BP oil spill, are very visible manifestations of the cost of fossil fuels and the impact of our addiction to fossil fuels on the environment. In both cases, people died, and that's a much more visible result of these issues than the slow inexorable pollution that's arising from carbon dioxide.

We can't see the carbon dioxide, but it's going to have a huge impact on future generations. If we can leverage the more tangible examples to help raise awareness about the importance of focusing on the less tangible ones, perhaps we'll actually start to change the way people think about dealing with the pollution of the atmosphere and how it's going to affect the planet.

—Cherie Winner and Matt Villano



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