ClimateWire

3. SCIENCE: Intrepid British climate modeler sets out to win over doubters *(07/19/2011)*

Jeremy Lovell, E&E European correspondent

LONDON -- David **Stainforth** is a brave man. His mission is to try to remove some of the confusion over the climate debate by explaining why uncertainty has to be a part of the computerized climate models that scientists use to forecast the expected impacts of climate change, including more violent storms as well as more flooding and droughts.

Stainforth, a climate modeler and senior research fellow at the London School of Economics, hopes that by coming clean on the degree of difficulty in making such predictions, he and his fellow climate scientists will find it easier to make -- and win -- the argument that prompt action now is not only necessary but the far cheaper alternative to inaction.

"Governments and people want certainty about what will happen with climate change, so scientists tend to turn to climate modeling. But the models are wrong in so many ways because there are so many uncertainties and unknowns built into them," **Stainforth** told *ClimateWire* here at the Royal Academy's recent annual Summer Science Exhibition.

"The reason is that they are just that, models, not reality. The bottom line is that they give a quite useful message from science to the adaptation community. But it is all relative and hedged about with qualifications. They give likelihoods not certainties, ranges of probabilities, not absolutes. That is where the discussion then must start, not end," he added.

It is a bold step to take at a time when the climate skeptics appear to be making the most of the continuing public confusion and denial over the issues shown in repeated polls in the United States and United Kingdom. Skeptics have taken advantage of the revelations of scientific infighting with the leaked emails from the United Kingdom's University of East Anglia in late 2009. They have also pointed to evidence of some sloppy science by the Intergovernmental Panel on Climate Change to assert that the feared results of climate change may be more fiction than science.

Climate modeler David Stainforth. Photo courtesy of David Stainforth.

Take that, add the diplomatic bickering and backsliding in international climate change talks, then fold in the news of the continuing global economic crisis and reports that renewable energy will drive up energy costs. You will get a sense that what **Stainforth** is attempting is a very hard sell.

The 'trouble' with climate models

"You can explain in five or 10 minutes why we need to do something about climate change -- and do it without using climate models. But it is far harder to persuade people of the degree and speed of what needs to be done without the models, and that is where the trouble starts," said Stainforth.

"Governments and the media demand certainty. They don't want uncertainties and probabilities. For example, all our models predict wetter winters and warmer summers, but they are far less certain about wetter or drier summers, and that has major implications for the siting and size of flood defenses," he explained, referring to dams and levees.

"Climate scientists have moved a long way beyond discussing whether climate change is a threat to our societies and economies. That is settled. But that is not to say they do not still disagree about a lot of things like the design of the models and the degree of change," he added.

He remains hopeful that the non-scientific public will understand the strong consensus among climate scientists that makes the remaining bickering look small. "There is uncertainty, but there is also probability. By showing and discussing the degree of each in public and with the public, we hope to involve them and therefore get out of the loop and move forward."

Stainforth's mission is backed by an array of groups including the United Kingdom's Natural Environment Research Council, the Economic and Social Research Council and the Centre for Climate Change Economics and Policy as

well as the London School of Economics. There is also the Grantham Research Institute on Climate Change and the Environment -- headed by Lord Nicholas Stern, whose report on the economics of climate change in 2006 electrified governments worldwide on the issue.

Trying some interactive games

Using literature and interactive games at the Confidence in Climate website, the project sets out to show how probabilities work and why different models may come up with quite widely differing predictions. It then applies this to a composite of theories and observations on the climate conundrum.

"When you make a decision about the future -- whether it is based on theory or observation -- it is a sort of gamble. You can never know what is going to happen. When we make decisions about how to tackle climate change it is no different," the website says.

"Because of the uncertainty we can't be sure exactly what degree of challenge we will face. None the less, some things are clear -- uncertainty doesn't mean ignorance. ... We also know that bigger increases in atmospheric greenhouse gas levels are likely to lead to much bigger impacts; the impact of a 4 degree warming is likely to be more than twice the impact of a 2 degree warming," it adds.

As for Stainforth, he thinks the debate urgently needs to be widened considerably from the rather restricted inner core of scientists, modelers, meteorologists and statisticians who have monopolized it to date.

"We need ecologists, farmers, doctors, anthropologists, sociologists, engineers, psychologists, hydrologists, social scientists. The climate change problem involves everyone and should therefore include everyone," he said.

"We have to grasp the nettle here and communicate openly the uncertainty, to explain what is uncertain, where, why and to what degree. We don't want it split into 'believers' and 'unbelievers'; we want people to understand."