Scripps deal could change climate policies

Mike Lee, San Diego Union-Tribune, 1-22-11

Just two years after British researchers discovered a hole in Earth's ozone layer, countries around the globe agreed to phase out chemicals that caused the problem in what became known as the Montreal Protocol of 1987. Scientists still use that pact as an illustration of how the ability to measure environmental changes leads to new programs and regulations. Closer to home, attempts to curtail beach pollution in California blossomed in the late 1990s after expanded water-quality testing highlighted bacterial pollution in coastal waters.

With a deal announced in mid-January, the Scripps Institution of Oceanography in La Jolla has launched itself into a new era of measuring, one that might change how agencies and companies around the world respond to climate change.

The institution, part of the University of California San Diego, has partnered with Maryland-based Earth Networks to deploy 100 greenhouse-gas sensors around the world in what they call the most comprehensive attempt of its kind.

It's familiar ground for Scripps, which was pivotal in raising concern about climate change when researcher Charles David Keeling charted carbon dioxide in the atmosphere starting in the 1950s.

The five-year project, financed by Earth Networks, will cost about $25 million — all to track the most controversial gases on the planet at a regional or state scale instead of a global or continental level. The potential for advancing climate science entices scientists worldwide as they deploy the next generation of greenhouse-gas measuring devices on Earth and in outer space.

"We can't yet answer the question, 'What is the net emission for any country on the planet?' " said Rob Jackson, a climate change researcher at Duke University. "My hope would be that in 10 years or certainly in 20, all of these observational capabilities will help us resolve the carbon budget of a state like California or even a city like Los Angeles or San Diego."

Researchers at Scripps and elsewhere are optimistic that the unprecedented, real-time network can be used to verify compliance with emissions-trading agreements, fine-tune existing pollution calculations, find undetected sources of greenhouse gases and fuel other ventures that no one has dreamed of yet.

They are quick to add that more data alone won't settle sticky arguments such as what — if anything — to do about reducing emissions of carbon dioxide and similar gases.

"We are not going to get involved in the policy debate or the politics of it," said Robert Marshall, chief executive of Earth Networks. "All we want to do is make sure that we produce high-quality measurements of the atmosphere that can verify whatever policy is going to happen. … The only way to know for sure whether any policy is working is to measure the atmosphere."

A June report by Tufts University in Medford, Mass., said a successful greenhouse-gas measurement program is critical for a functioning, international pollution-reduction plan.

"Few issues combine the technical and political dimensions of climate change policy more than that of measuring, reporting and verifying 1) emissions reductions; 2) carbon storage and sequestration; and 3) the implementation of policy pledges," it said.

Currently, there are only a few dozen spots around the globe where greenhouse gases are continuously monitored, and they don't provide the kind of regional or state details that scientists and policy makers want. Scripps and Earth Networks plan to make that data much more robust by providing the backbone of a "network of networks" that eventually could have 1,000 sensors.

They hope to deepen scientists' ability to determine where greenhouse gases originate, how they circulate around the globe and where they are taken out of the atmosphere.

The program also may help nations verify that treaty partners are honest in reporting greenhouse-gas emissions and managing programs such as cap-and-trade.

Some European countries have dramatically understated their emissions by trying to count all the ground-level sources, such as power plants and factories, and adding them together in what's known as the "bottom-up" approach.

"Because (the calculations) are so complex, they are not very transparent," said Lydia Olander, a colleague of Jackson's at Duke and an expert in greenhouse-gas policies.

A "top-down" method offered by Scripps and Earth Networks is viewed as a way to prove actual emissions. The planned grid also could help researchers detect still-unknown sources of pollution.

Other scientists are trying to answer related climate questions with their own new ventures. In September, the Carnegie Institution, the World Wildlife Fund and the government of Peru announced that they had created the first maps of the carbon locked in a swath of Amazon rain forest using satellites, airborne lasers and ground-based surveys.

In 2013, NASA plans to launch its Orbiting Carbon Observatory, at the cost of $70 million, to provide "the first complete picture of human and natural carbon dioxide sources and 'sinks,' the places where gas is pulled out of the atmosphere and stored."

It's supposed to map the global distribution of those spots and changes over time.

Some experts compare such efforts to those leading to the discovery of a hole in the Antarctic ozone layer 26 years ago. Much like the early years of ozone research, the value of the current climate-monitoring plan may not be known for years.

"Once the new data are available to the research community, you will end up seeing that it will be used in ways that may not be anticipated," said Stephen Seidel, vice president of policy analysis for the Pew Center on Global Climate Change in Arlington, Va.