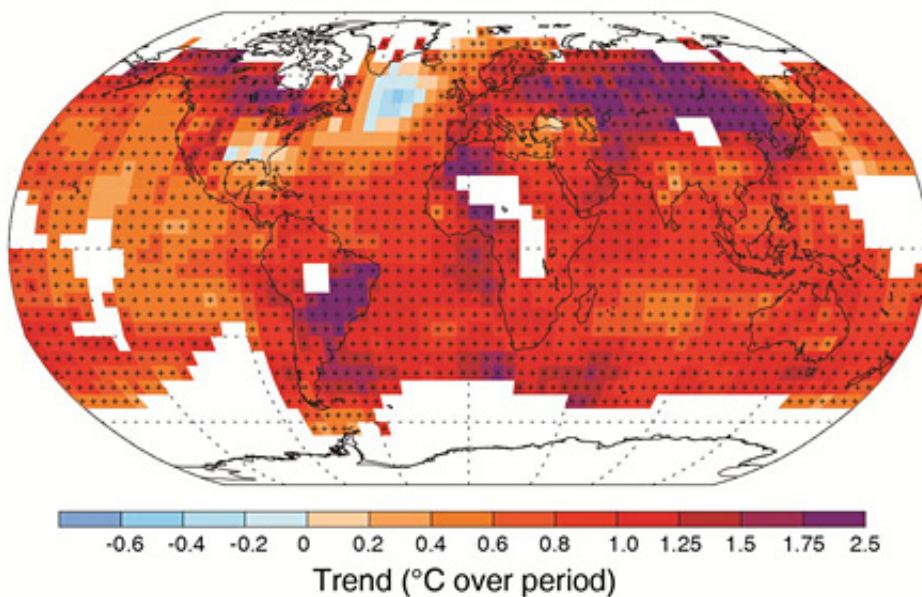


Newly released climate change report reinforces need for action

September 30 2013, by Robert Sanders

Observed change in average surface temperature 1901–2012



Some areas of the globe have seen a 2.5 degree Celsius, or 4.5 degree Fahrenheit, increase in temperature since 1901. Image from IPCC AR5.

The release last week of Assessment Report 5, a new report by the Intergovernmental Panel on Climate Change (IPCC), bolsters the conclusions of its 2007 report that humans are responsible for global warming, and it highlights the need for immediate action to reduce carbon emissions.

"The IPCC has reviewed and confirmed—yet again—the clear human influence on the climate in the form of fossil fuel burning and [global warming](#)," said Daniel Kammen, who was one of the coauthors of the initial [report](#), which won a Nobel Peace Prize in 2007. "The key message from the detailed and collaborative work in this report is this: global warming is a confirmed process, and we have the ability to address it through investment in a low-carbon energy system."

As with the 2007 report, an international team of climate scientists worked together to evaluate the reliability of the [climate models](#) used in the IPCC's assessment. William Collins, UC Berkeley professor of earth and planetary science and a Berkeley Lab researcher who was lead author on the AR5 report's chapters on climate models, noted that both the quantity and quality of climate models have increased significantly in the last six years.

"The models are far more complete," Collins said. "Also their resolution has increased dramatically. We're able to start to resolve regional [climate change](#) in greater detail."

These improved models only strengthen the fundamental conclusion reached by climate scientists more than 20 years ago.

"Increased fidelity of the models is not altering the underlying conclusion: that increased carbon dioxide will lead to dramatic changes in our climate," Collins said. "We have very high confidence that the models are simulating the key features in the earth's climate."

"I started studying climate change when atmospheric CO₂ levels was around 340 parts per million and global air temperature changes were still within the bounds of natural fluctuations," said Inez Fung, professor of earth and planetary science and a coauthor of the 2007 report. "Now CO₂ is nearly 400 parts per million, and temperatures have been

increasing steadily, decade by decade, and cannot be explained by natural fluctuations of the climate system. We now have definitive evidence that the upper 700 meters of the ocean have been warming, and that the oceans have become more acidic because of the invasion of anthropogenic CO₂. Glaciers and sea ice are melting at unprecedented rates."

Given the renewed consensus, Kammen emphasizes the necessity of acting now to mitigate or adapt to climate change.

"We still have time to make significant changes in our energy system and mitigate the damages of warming, though it will not be easy," said Kammen, the Class of 1935 Distinguished Professor of Energy, co-director of the Berkeley Institute of the Environment and founding director of the Renewable and Appropriate Energy Laboratory (RAEL).

As Kammen and his colleagues detailed in the Special Report on Renewable Energy and Energy Efficiency (SSREN) in 2011, the transition to an energy system with 80 percent or less emissions (from the 1990 baseline) is possible regionally and globally.

"With the costs of a business as usual emissions path on arctic warming alone estimated in the trillions of dollars, the choice to act should be clear," he said. "The IPCC AR5 report shows that it is time to get on with the job."

The new AR5 report addresses the physical science behind the arguments for climate change. Two other reports on mitigation and adaptation are expected to be released next year. The IPCC was formed in 1988 by the World Meteorological Organization and the United Nations Environment Programme to assess the evidence for climate change and predict the consequences.

Provided by University of California - Berkeley

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