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2010 : March 2010 - New Hot Papers : Susan Solomon on Carbon Dioxide in the Atmosphere

new hot papers - 2010

March 2010



Susan Solomon talks with *ScienceWatch.com* and answers a few questions about this month's New Hot Paper in the field of Geosciences. The author has also sent along images of their work.



Article Title: Irreversible climate change due to carbon dioxide emissions

Authors: **Solomon, S**; Plattner, GK; Knutti, R; Friedlingstein, P

Journal: PROC NAT ACAD SCI USA, Volume: 106, Issue: 6, Page: 1704-1709, Year: FEB 10 2009

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(addresses have been truncated.)

SW: Why do you think your paper is highly cited?

The paper addresses an issue that is of very broad interest in climate change, and it tries to do that in an accessible way. I think that it makes an important point and does so in a manner that is more easily understood than previous work.

SW: Does it describe a new discovery, methodology, or synthesis of knowledge?

The paper contains some synthesis of existing knowledge, but it also has some new discoveries that build from the synthesis.

SW: Would you summarize the significance of your paper in layman's terms?

The paper showed that the climate changes that take place due to human-caused changes in carbon dioxide should be considered irreversible for at least a thousand years, even if we stop emitting this gas, and it discussed some of the impacts that this will lead to— unless we develop some kind of geoengineering to actively cool the climate, which is not yet in hand and which we don't consider in the paper.

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Susan Solomon does research on both ozone depletion and climate change, and she is pictured here at the South Pole.

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- [Author Commentaries](#)
- [Institutional Interviews](#)
- [Journal Interviews](#)
- [Podcasts](#)

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- [Featured Analyses](#)
- [What's Hot In...](#)
- [Special Topics](#)

Data & Rankings

- [Sci-Bytes](#)
- [Fast Breaking Papers](#)
- [New Hot Papers](#)
- [Emerging Research Fronts](#)
- [Fast Moving Fronts](#)
- [Corporate Research Fronts](#)
- [Research Front Maps](#)
- [Current Classics](#)
- [Top Topics](#)
- [Rising Stars](#)
- [New Entrants](#)
- [Country Profiles](#)

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Key impacts include a lock-in to commitments to slow long-term sea level rise and large reductions in dry season rainfall in several regions. Most scientists, including myself, assumed that if we stopped emitting carbon dioxide that the warming it produces would be gone in a few hundred years or so, but we show that this isn't correct. So, the paper has increased the understanding of the risks being taken as we continue to emit.

SW: How did you become involved in this research, and were there any problems along the way?

In working with other colleagues and reading the literature, I noticed some studies probing certain aspects of the long lifetime of carbon dioxide in the atmosphere, and of a few that looked at long-term warming. This led me to want to probe more deeply and organize that material better, so that was what we did. It was actually a remarkably easy thing to do once we decided upon our approach, and we didn't encounter any significant hurdles.

SW: Where do you see your research leading in the future?

I find climate change endlessly fascinating and expect to continue to work on it for several years.

SW: Do you foresee any social or political implications for your research?

Climate change is an issue that certainly has social and political implications in terms of our collective future choices, which ought to be informed by the best possible scientific understanding.

Susan Solomon, Ph.D.

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KEYWORDS: DANGEROUS INTERFERENCE; PRECIPITATION; SEA LEVEL RISE; WARMING; GREENLAND ICE-SHEET; SEA-LEVEL RISE; MODEL; INCREASE; CO₂; PROJECTIONS; ATMOSPHERE; OCEAN; CYCLE; 21ST-CENTURY.

Additional information:

- [Read a Science Watch® Newsletter Classic Interview \(13\[5\]:3-4 September/October 2002\) with Susan Solomon.](#)
- [Susan Solomon](#) is featured in [ISIHighlyCited.com](#)

 PDF

[back to top](#) 

2010 : [March 2010 - New Hot Papers](#) : Susan Solomon on Carbon Dioxide in the Atmosphere

