

---

## News Release

December 16, 2008

John McGeehin

703-648-5349

mcgeehin@usgs.gov

Jessica Robertson

202-821-2698

jrobertson@usgs.gov

703-648-6624

---

# **Abrupt Climate Change: Will It Happen this Century?**

The United States faces the potential for abrupt climate change in the 21st century that could pose clear risks to society in terms of our ability to adapt.

“Abrupt” changes can occur over decades or less, persist for decades more, and cause substantial disruptions to human and natural systems.

A new report, based on an assessment of published science literature, makes the following conclusions about the potential for abrupt climate changes from global warming during this century.

- Climate model simulations and observations suggest that rapid and sustained September arctic sea ice loss is likely in the 21<sup>st</sup> century.
- The southwestern United States may be beginning an abrupt period of increased drought.
- It is very likely that the northward flow of warm water in the upper layers of the Atlantic Ocean, which has an important impact on the global climate system, will decrease by approximately 25–30 percent. However, it is very unlikely that this circulation will collapse or that the weakening will occur abruptly during the 21<sup>st</sup> century and beyond.
- An abrupt change in sea level is possible, but predictions are highly uncertain due to shortcomings in existing climate models.
- There is unlikely to be an abrupt release of methane, a powerful greenhouse gas, to the atmosphere from deposits in the earth. However, it is very likely that the pace of methane emissions will increase.

The U.S. Geological Survey led the new assessment, which was authored by a team of climate scientists from the federal government and academia. The report was commissioned by the U.S. Climate Change Science Program with contributions from the National Oceanic and Atmospheric Administration and the National Science Foundation.

“This report was truly a collaborative effort between world renowned scientists who provided objective, unbiased information that is necessary to develop effective adaptation and mitigation strategies that protect our livelihood,” said USGS Director Mark Myers. “It summarizes the scientific community’s growing understanding regarding the potential for abrupt climate changes and identifies areas for additional research to further improve climate models.”

Further research is needed to improve our understanding of the potential for abrupt changes in climate. For example, the report's scientists found that processes such as interaction of warm ocean waters with the periphery of ice sheets and ice shelves have a greater impact than previously known on the destabilization of ice sheets that might accelerate sea-level rise.

To view the full report, titled *Synthesis and Assessment Product 3.4: Abrupt Climate Change*, and a summary brochure on abrupt climate change, visit <http://www.climatescience.gov/default.php>.

USGS provides science for a changing world. For more information, visit [www.usgs.gov](http://www.usgs.gov).

Subscribe to USGS News Releases via our electronic mailing list at [http://www.usgs.gov/newsroom/list\\_server.asp](http://www.usgs.gov/newsroom/list_server.asp) or RSS feed at <http://feeds.feedburner.com/UsgsNewsroom>.

\*\*\*\* [www.usgs.gov](http://www.usgs.gov) \*\*\*\*