**[EDF Voices:](http://www.edf.org/blog)** [People on the Planet](http://www.edf.org/blog)Geoengineering: A cure worse than the disease?[Ilissa Ocko](http://www.edf.org/blog_author/ilissa-ocko) / Published December 11, 2013 in [Climate](http://www.edf.org/blog/category/Climate)

As concerns over climate change continue to grow, the idea of geoengineering—the deliberate manipulation of Earth’s climate—has become increasingly prominent.

So far, solar radiation management (SRM)—that is, finding ways to reduce the amount of sunlight hitting the planet—is the geoengineering technique that is getting the most attention. Theoretically, one way this could be done is by spraying certain sulphur-rich aerosols into the upper atmosphere.

Unfortunately, the implications of SRM, as with all geoengineering schemes, is poorly understood. But a [new international modeling study](http://www.see.ed.ac.uk/~shs/Climate%20change/Climate%20model%20results/4%20x%20CO2%20hydrocycle.pdf) that looks at impacts under relatively extreme conditions suggests that SRM could reduce rainfall to below preindustrial levels, especially in monsoonal regions, thereby threatening food and water supplies.

The study, led by Dr. Simone Tilmes of the National Center for Atmospheric Research, highlights previous concerns that SRM may have significant negative consequences.

The rising carbon dioxide concentrations associated with global warming are expected to increase rainfall. SRM techniques, meanwhile, are expected to reduce rainfall. The new study explored what might happen to the hydrological cycle in a world with a fourfold increase in carbon dioxide levels and simultaneous deployment of SRM that would dim sunlight to balance the trapped heat from the carbon dioxide. (This is a situation that the scientific community hopes the world will never have to face, given the disastrous impacts of having so much carbon in the atmosphere.)

Employing a dozen climate models, the research teams found that in this scenario:

* The global average temperature stabilized, but regional temperatures and rainfall rates did not.
* The tropics cooled while the polar regions warmed.
* Global precipitation was reduced by 4.5% compared to pre-industrial conditions, with further reductions in monsoonal land regions in Asia, Africa, South America and North America. The affected regions span half of the world’s population and agricultural production.
* Further, the frequency of months with heavy rainfall decreased by 20%, compared to an increase by 50% in a carbon dioxide enriched world without geoengineering.

This study highlights [the need for more research](http://blogs.edf.org/climatetalks/2013/10/29/ipcc-mention-of-geoengineering-though-brief-opens-window-for-discussion/) on the potential impacts of geoengineering *before* it is deployed. This precautionary approach will only grow in importance as more and more people are tempted to view geoengineering as a fast-acting, cheap fix for climate change.

In the end, the best hope for the planet’s future remains in mitigation – that is reducing humanity’s CO2 emissions to a level that will prevent the worst impacts of global warming.