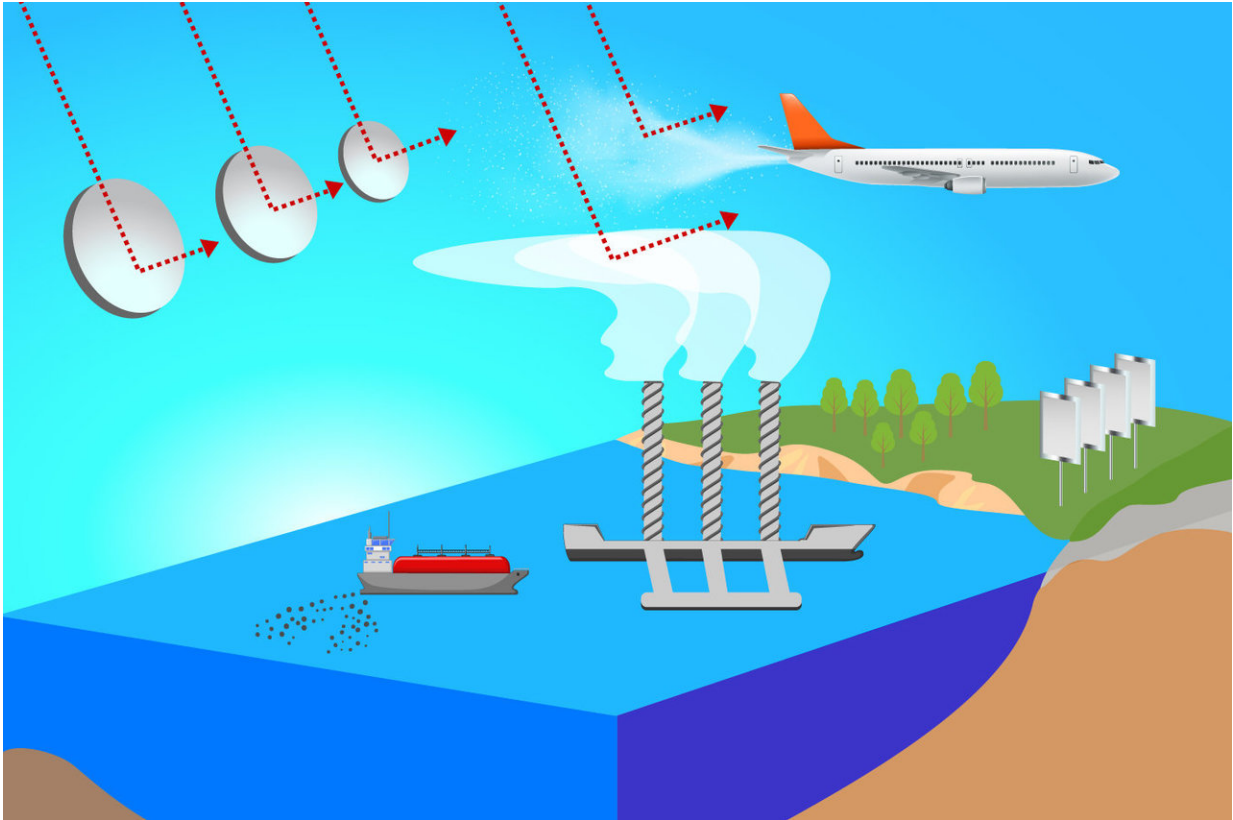


Risks of manipulating the global thermostat

December 12 2017, by Allie Nicodemo



Credit: Allie Nicodemo

If someone offered you a magic pill that claimed to cure all health ailments, would you take it? Let's say you did. Perhaps you'd start eating pizza and ice cream for every meal, since proper nutrition would no longer be a concern. Maybe that exercise regimen would fall by the wayside as well. You could forgo all prescribed medications. The risk, of

course, is that the pill would fail, or come with unintended consequences.

The concept of climate engineering—large-scale efforts to manipulate the "global thermostat"—is like a [magic pill](#) for [climate change](#). Rather than transitioning society and the economy from reliance on fossil fuels to renewable energy, or focusing on social change to reduce [greenhouse gas emissions](#), some seek to solve climate change with a sweeping technological fix by using climate engineering.

There are several problems with this approach, explained Northeastern's Jennie Stephens, Dean's Professor of Sustainability Science and Policy and associate director for strategic research collaborations at the Global Resilience Institute. Stephens recently co-wrote a paper on the topic with Peter Frumhoff, chief climate scientist and director of science and policy at the Union of Concerned Scientists.

The proposed climate engineering project that has received the most attention involves injecting aerosols—or small particles—into the atmosphere to mimic the effects of a large volcano erupting. Some scientists are eager to begin experiments to try it. But as Stephens points out, there are multiple risks in doing this research. "Advancing research builds momentum toward deployment, and there is no international governance system to manage this," she said.

Rain, rain, go away

There's a reason the weather is our trusty universal conversation-starter—it impacts everyone. But only a small number of scientists are exploring ways to control it.



If climate engineering technology is advanced, it could also be weaponized. “One powerful person, entity, or country could decide to do this on its own, almost unilaterally, and that would have an impact on the whole world,” said Jennie Stephens. Credit: Adam Glanzman/Northeastern University

"There is a potential for a huge power differential with regard to who's making decisions for who," Stephens said. And it's "almost inevitable" that optimizing the climate in one region of the world will have unforeseen consequences in another. For example, "It's easy to imagine that the United States might want to seek outcomes that maintain favorable precipitation patterns for Midwest farmers," Stephens said, "but in doing so, it might actually exacerbate conditions in the Sahel." This could widen the global inequality gap even further.

If competition to control the climate snowballs into a full-fledged geopolitical power struggle, the results could be messy, Stephens said. And if climate engineering technology is advanced, it could also be weaponized.

"One powerful person, entity, or country could decide to do this on its own, almost unilaterally, and that would have an impact on the whole world," Stephens said.

Research risks

As the risks of climate change increase, interest in climate engineering is growing. Last month, the U.S. House Committee on Science, Space and Technology held a joint subcommittee to discuss the future of research, technology, and innovation in geoengineering. At the meeting, some politicians expressed their interest and support for exploring climate engineering options.

"Scientists need to engage in broader international conversations about both the risks of [climate](#) change and the risks of [climate engineering](#)," Stephens said.

Provided by Northeastern University

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