Simulations suggest geoengineering would not stop global warming if greenhouse gasses continue to increase

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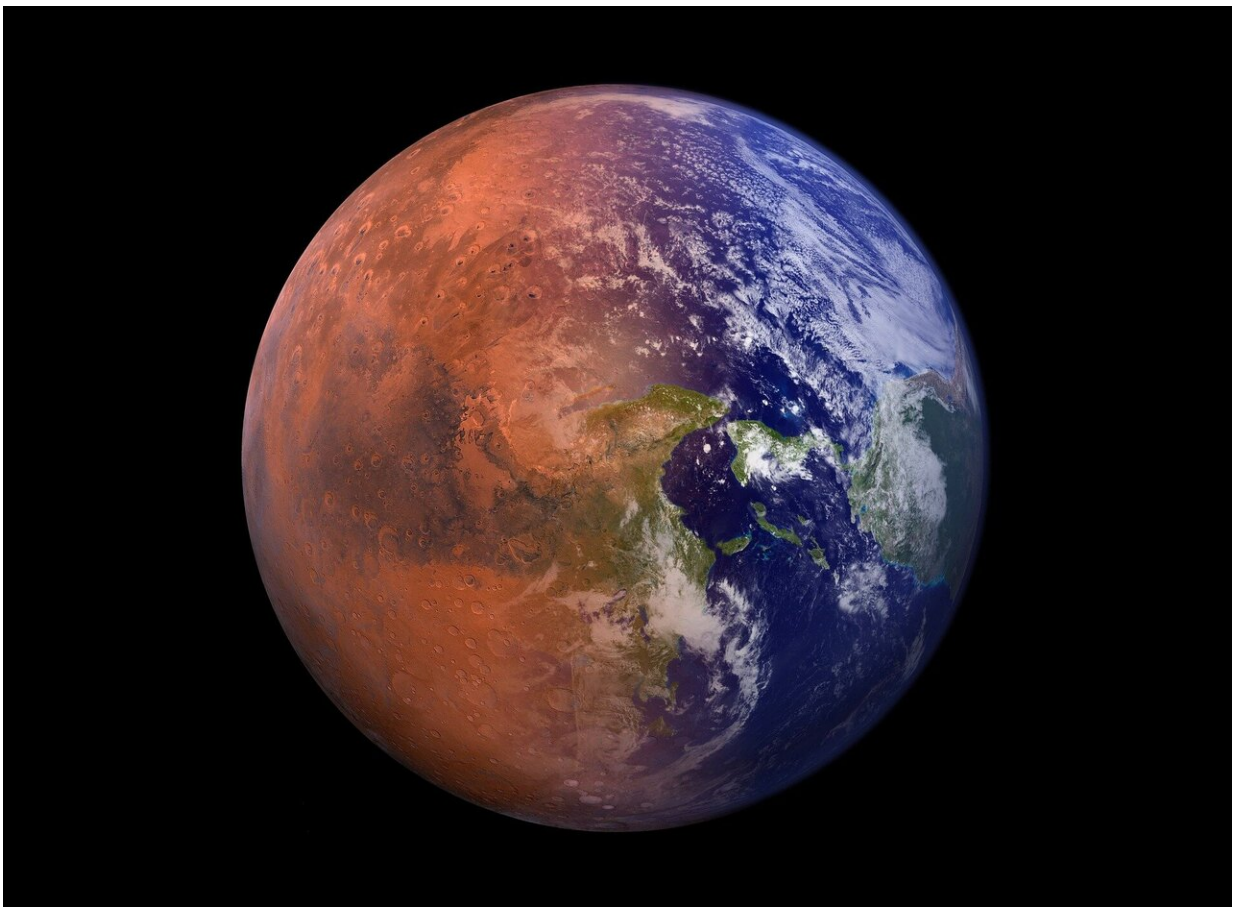

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A trio of researchers, two with Pacific Northwest National Laboratory and the other the California Institute of Technology, developed computer simulations suggesting that using geoengineering to cool the planet would not be enough to overcome greenhouse effects if emissions continue at the current rate. Tapio Schneider, Colleen Kaul and Kyle Pressel have published their results in the *Proceedings of the National Academy of Sciences*.

As scientists have become frustrated with the lack of progress toward greenhouse gas emission reductions, some are championing other ways to save the planet. One approach involves geoengineering—altering the Earth to solve a problem. Geoengineering to reduce global warming would involve emitting particulate material into the stratosphere to reflect heat from the sun back into space. Ideas for such an effort involve releasing reflective particles into the stratosphere where they would surround much of the Earth, reflecting back heat and cooling the planet. The idea is based on prior research demonstrating that parts of the Earth become cooler after volcanic eruptions due to ash spewed into the atmosphere. It has not been tested in the real world, and some researchers suggest there could be significant unforeseen side-effects. Additionally, the same technology could, in theory, be used as a weapon. In this new effort, the researchers built a computer simulation to determine whether such an approach would work.

They found that geoengineering could work, but only up to a certain point. If greenhouse gasses are not curbed, they will rise to levels that would have a negative impact on stratocumulus clouds, making them thin, and in some cases, eliminating them. Without this cloud cover, even the introduction of particles into the atmosphere would not be enough to prevent global warming. They suggest that geoengineering would not be a solution that some have proposed if levels of greenhouse gas emissions are not reduced.

More information: Tapio Schneider et al. Solar geoengineering may not prevent strong warming from direct effects of CO2 on stratocumulus cloud cover, *Proceedings of the National Academy of Sciences* (2020). DOI: 10.1073/pnas.2003730117