Shields up to beat global warming

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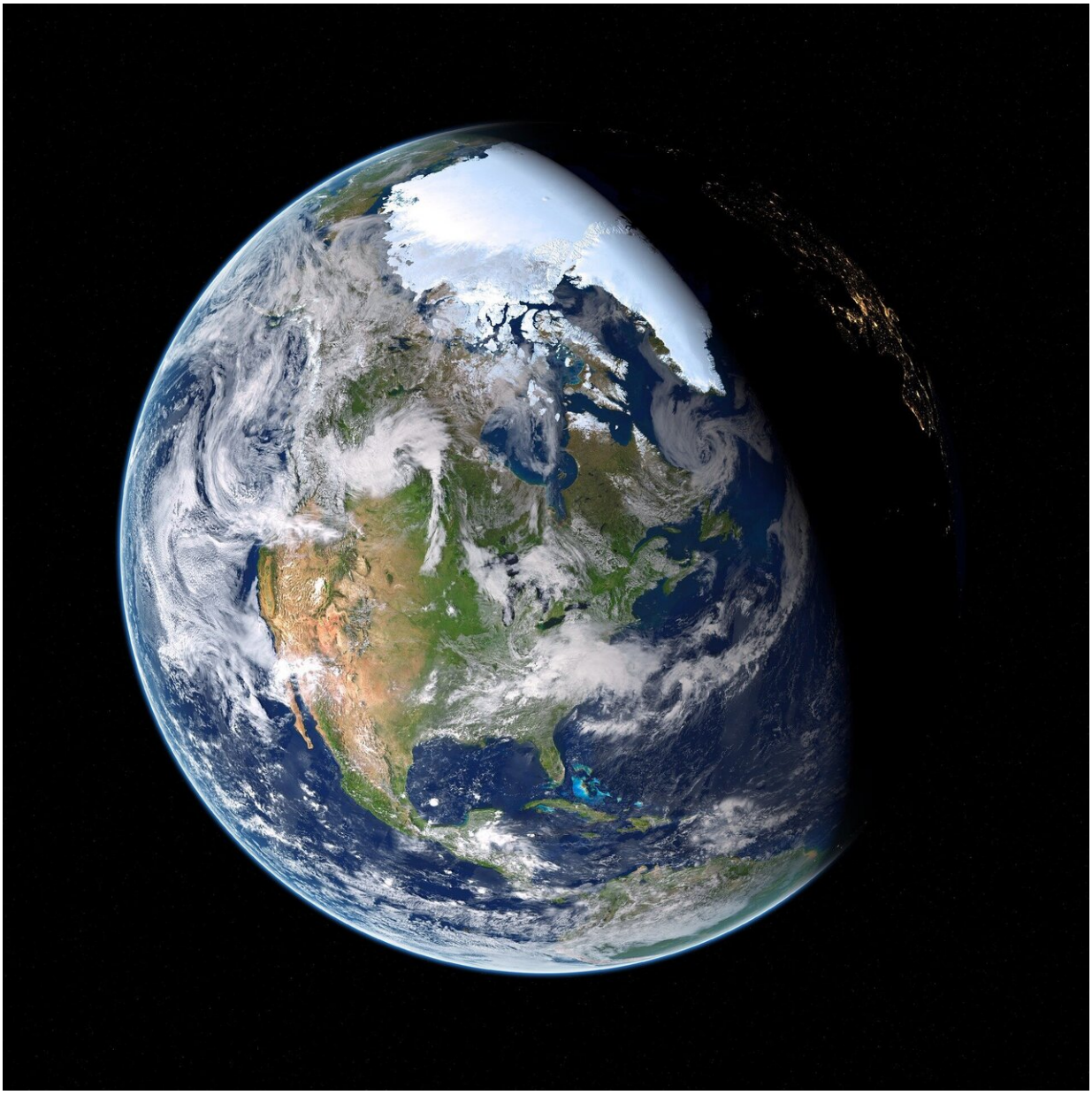

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Might an enormous orbiting "shield" be one way to combat the rising temperatures around the world caused by elevated atmospheric carbon dioxide levels? Writing in the International Journal of Global Warming, a team in China has done the calculations and they suggest it might be possible to lower average global temperatures by a third of a degree Celsius with such a shield. This could have a significant, low-cost impact on climate change when we consider that fractions of a degree rises in temperature are already causing serious problems at the Earth's extreme environments.

Jie He of the School of Mechanical Engineering, at Xi'an Aeronautical University, in Shaanxi and Fei Zheng of the School of Electromechanical Engineering, at Xidian University also in Shaanxi, outline the details in their paper. There have been numerous suggestions for how we might combat the effects of rising atmospheric carbon concentrations due to the ever-increasing industrialization of the world and our seemingly insatiable appetite for burning fossil fuels whether coal, oil, or natural gas.

Many of the schemes involving taxing emissions to make it prohibitively expensive to burn fossil fuels. Other approaches involve finding ways to sequester carbon dioxide from exhaust gases or the atmosphere as a whole. There are schemes where developed nations can offset their carbon emissions by financing more sustainable options—wind, solar, geothermal, hydroelectric—in the developing world. Large-scale engineering—geoengineering—also has its schemes for reversing the effects by seeding the oceans with iron to help cultivate algae that can absorb carbon dioxide.

Then, there is the off-planet approach being addressed by He and Zheng. At first, such a scheme—essentially putting in place a giant parasol to

shield our planet to some degree from the sun—seems farfetched, the stuff of futuristic science fiction. And yet it has many merits, the team argues. The team has tested successfully a much-reduced scale model of such a shield, just 2 metres in diameter. The concept of the shield being a controllable spacecraft that shifts in its orbit depending on what region of the planet needs shielding at a given time over the course of the day will be considered in future work.

More information: Jie He et al. Efficiency evaluation of huge space shield for mitigating global warming, *International Journal of Global Warming* (2019). DOI: 10.1504/IJGW.2019.100172

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