

Experiments to dim the sun given green light

A government research group will explore whether Earth could be cooled by bouncing away sunlight

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Research into whether the sun could be dimmed to combat global warming will be given the go-ahead by the government within weeks and £50 million is expected to be spent on experiments and analysis.

The geo-engineering techniques that will be explored include spraying aerosolised particles high into the stratosphere to deflect a small fraction of the sun's energy away from the Earth.

Early modelling studies have suggested that this may cool the planet relatively cheaply.

Advocates have pointed to natural experiments in which emissions of such particles through volcanic eruptions led to the Earth cooling. However, experts have warned of possible unintended consequences, including the potentially catastrophic disruption of weather patterns.

Other geo-engineering techniques that will be looked at include “marine cloud brightening” – spraying sea salt into the atmosphere, making the clouds whiter and deflecting solar radiation. Another option involves thinning natural cirrus clouds, which act as heat-trapping blankets.

All of the proposals are controversial. Critics have argued that investment in geo-engineering risks giving politicians a licence not to tackle the carbon emissions that are the root cause of global warming, and that far more research is needed to project the effects.

The experiments will be funded by the Advanced Research and Invention Agency, or Aria, a government body that has set aside £50 million for geo-engineering research. In total, it has been given £800 million of taxpayers' money to invest over the next four years to explore ideas that are on the “edge of the possible”.

Widely seen as the brainchild of Dominic Cummings, Boris Johnson's chief adviser during his time as prime minister, Aria is modelled in part on the American Defense Advanced Research Projects Agency. Darpa is often credited with dreaming up the internet, but its output has also included armed drones, driverless cars and the herbicide Agent Orange.

Professor Mark Symes, the programme director for Aria, who is heading the geo-engineering project, said the research could include “small controlled outdoor experiments on particular approaches”.

A document published by Aria last year raised the prospect of large-scale and long-lasting interventions. “Through carefully considered engineering solutions it may eventually be possible to actively and responsibly control the climate [at a] global scale,” it said. It also suggested that the pursuit of such solutions would generate knowledge about how Earth's climate works that might eventually help to terraform – make habitable – other planets.