

Plans to cool planet heat up geoengineering debate

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Photograph by: Getty Images, Getty Images

Billionaire Bill Gates is funding experiments to explore using "artificial" clouds to cool the planet.

Scientists say the experiments are in the early stages and confined to the lab, but critics say they are laying the groundwork for a trial to whiten clouds in a 10,000-square-kilometre patch of the Pacific.

"Bill Gates and his cloud-wrenching cronies have no right to unilaterally change our seas and skies," says Jim Thomas, of the Montreal-based ETC Group, that is part of an international coalition calling for a moratorium on geoengineering experiments.

Gates, the world's richest man, has given \$4.5 million to climate researcher David Keith, of the University of Calgary, and Ken Caldeira of the Carnegie Institution for Science, to fund research on planet-cooling ideas. Keith is on vacation and could not be reached for comment.

Caldeira says the money has gone to different researchers, including about \$300,000 U.S. to researcher Armand Neukermans who is also involved with the Silver Lining Project, which is working on plans to run the world's first cloud brightening trial.

The Silver Lining Project would use "cloud" ships to blast tiny droplets of sea water about a kilometre into the atmosphere in a bid to create bright white clouds to reflect sunlight back into space and cool the atmosphere.

"David Keith and I allocated funds to Armand Neukermans to use laboratory experiments to establish whether it would be technically feasible to produce sea water sprays," says Caldeira. He stresses that Gates' money is not going directly to the Silver Lining field trial.

The distinction is lost on Thomas. If Neukermans succeeds in designing a working spray to brighten clouds, Thomas says the technology is likely to be used on the Silver Lining trial.

Robert Wood, of the University of Washington, is one of the scientists collaborating on the Silver Lining Project. He says the concept of whitening and brightening clouds has been around for years and is still unproven. But he and others say it may be one of the most benign ways of cooling the planet if governments cannot agree to cut the greenhouse gases warming the planet. Wood says he would much prefer to see emissions cut than to have to resort to geoengineering.

A study commissioned by the Copenhagen Consensus Centre, a European think-tank, has estimated that for \$9 billion, a wind-powered fleet of 1,900 ships could be built to cruise the world's ocean, spraying sea water from towers to create and brighten clouds. The idea would be to operate most of the ships in the Pacific, far offshore so they would not interfere with the weather on land.

Wood says the idea is still being tested in the lab, and it will likely take \$25-\$30 million to get the proposed 10,000-square kilometre Silver Lining trial up and running.

"It's very much in its infancy," says Wood, who suggests that the waters off the coast of California would be an ideal place for the trial because of the area's atmospheric conditions. "There is no proposal yet to go into the field."

Thomas and his colleagues, involved in a global movement called "Hands Off Mother Earth," are calling for a moratorium on all geoengineering trials until international agreements and oversight mechanisms are in place. They are also calling for more openness about the geoengineering research the Gates money is financing.

"A key problem here is the lack of transparency — regarding the disbursement of the Gates funds as well as secrecy regarding the operation, aims and plans of The Silver Lining Project," says Thomas.

The Bill and Melinda Gates Foundation did not respond to requests for comment Tuesday. Nor did U.S. entrepreneur Kelly Wanser, who is leading the Silver Lining Project.

Caldeira says the reason for funding the experiments on sea water sprays is that many people feel it may be impossible to make the kind of sprays required to brighten clouds.

"If it could be established that such sprays were infeasible, that would save many people from wasting time researching and discussing and arguing about an infeasible option," Caldeira said via e-mail. "If such sprays are technically feasible, then the research emphasis should shift to using climate and other environmental models to establish the possible environmental consequences of such sea water sprays."

Caldeira said that he agrees there should be no geoengineering field tests by private parties until appropriate regulations are in place.

"Even then I would prefer to see public funding of this research with all results published in the open peer-reviewed literature," says Caldeira, who says it is unfortunate that there is no public funding for such research.

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