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Controversial Climate-Change Solution May Be In The Clouds

*Posted 9 hours ago by*[*John Holden*](http://techcrunch.com/contributor/john-holden/)*(*[*@JohnHoldenMedia*](https://twitter.com/JohnHoldenMedia)*)*



**John Holden**CRUNCH NETWORK CONTRIBUTOR

John Holden is a journalist specializing in science, tech and innovation. His work has appeared mainly in the Irish Times.

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In a move that has some environmentalists up in arms, a group of retired Silicon Valley engineers and scientists are proposing a new approach to fighting climate change. They want to brighten clouds.

It’s one of the many solutions being proposed in the controversial industry of geoengineering.

For the last seven years, the Marine Cloud Brightening Project ([MCBP](http://www.mcbproject.org/)) team has been meeting on a weekly basis at a lab in Sunnyvale, California. Their aim is to counteract global warming by shooting water droplets into the sky to buffer up existing clouds, thereby reflecting temperature-increasing sunrays back into the atmosphere.

The engineering team, who range in age from 60 to 79 years, is a star-studded group of tech pioneers that includes Armand Neukermans, who helped develop some of the earliest ink jet printers, pharmaceutical chemist Gary Cooper and instrument designer Lee Galbraith.

After seven years, it is now time to test how successfully their machine can shoot tiny seawater droplets into the atmosphere in order to “boost the brightness of clouds,” which, in turn, would reflect rays of sunlight back from where they came.

*If climate change is real, eventually things will get painful for everybody.*

— Klaus S. Lackner

“We are interested in an insurance policy for global warming,” said 79-year-old physicist and laser pioneer, Jack Foster, in a recent interview with the *San Jose Mercury News*. “We are not interested in deploying it unless it’s necessary. But we’d like to have something available, so we know what works and what doesn’t.”

This is uncharted territory for a couple of reasons. First, clouds are one of the least understood aspects of meteorology. Second, mention the term “geoengineering” in public and most people run screaming. It is an ethical minefield, not to mention virtually impossible to find research funding for.

Even if it were to work, deliberately manipulating the climate could have unforeseen negative consequences down the road.

*Clouds are one of the least understood aspects of meteorology.*

Critics also argue that any apparent panacea for climate change may send out the wrong signals to a general populace who need to be thinking and acting more environmentally anyway.

Still, the scientists involved are concerned that eventually someone else may decide to try this approach. Early, open research by high-caliber personnel will make the whole thing a little more palatable.

“It’s not new,” says Kelly Wanser, CEO of [Luminus Networks](http://www.luminusnetworks.com/" \t "_blank) and Director of the MCBP. “The fact is humanity is already engaged in unplanned climate engineering. We’re doing it through coal plant and shipping emissions every day without understanding it very well.”

Wanser is referring to phenomena in which current global shipping and industrial emissions already put particles into the clouds that are producing a cooling effect on the climate, somewhere between one and four degrees Fahrenheit, according to some experts.

“Cloud scientists are already observing how various industrial practices impact clouds and climate more generally,” she adds. “But there lies the problem: all they can do is observe. They cannot control experimentally to understand the key processes occurring between particle emissions and clouds that are having a huge impact on climate.

“That’s where the MCBP is coming from. Most of the atmospheric research team were initially opposed to the idea of engineering the climate, but were very interested in studying clouds this way to fill critical gaps in climate understanding.”

*Deliberately manipulating the climate could have unforeseen negative consequences down the road.*

Have the skeptics in the group changed their minds about climate engineering? “The climate change picture has gotten darker,” says Wanser. “So even those opposed have come to the conclusion that, given the current trajectory we’re on, it’s important we at least research these ideas. We need to understand whether this approach is even possible and what the risks are, in the event that we find ourselves looking for ways to extend time and mitigate warming damage.”

Rob Wood is one of the country’s leading cloud scientists and a member of the MCBP. He is skeptical, but still appreciates the importance of trying to understand how this technology works.

“If we have a means to carry out controlled experiments, we can understand this problem better,” Wood says. “Only then can we figure out the long-term impact of what is essentially already happening through various industrial practices.”

It’s clear the MCBP is the first to admit the potential pitfalls of the research. They are keen to dispel any fears people might have. But geoengineering is a deeply divisive branch of science that raises as many questions as it might have potential answers to.

“It’s a bit like trying to solve a city’s garbage problem by putting everyone’s houses on stilts,” says Klaus S. Lackner, director of the [Center for Negative Carbon Emissions at Arizona State University](http://engineering.asu.edu/cnce/). “It doesn’t solve the problem. Just kicks the can down the road. I view solar radiation management in the same way. It is an emergency response to a rapidly changing climate. It won’t solve the underlying problem. Plus it might even create problems of its own.”

“That being said,” he adds, “if we refuse to learn about it and then have a crisis, we won’t know any better and just do what’s cheapest. It’s always better to learn. If climate change is real, eventually things will get painful for everybody. At that point, we should at the very least aim to try things we already understand.”