

# Team Trump Ponders Climate 'Engineering'

**Exclusive:** Rather than take prudent steps to reduce the release of global-warming gases, some Trump advisers are pondering risky gambles to re-engineer the Earth's climate, as Jonathan Marshall explains.

By Jonathan Marshall

While President Trump floors the accelerator to speed up global warming through executive orders and appointments of notorious climate deniers to his administration, more and more scientists are pinning their hopes on "Plan B": planetary-wide interventions to engineer ways to avoid global climate disruption. But critics warn that such a prescription, however alluring, may be as bad as the disease.

Now, to compound the irony, members of Trump's inner circle are touting climate engineering as a cheap way to insure the planet against harm without any need to change lifestyles or curb the oil and coal industries. They resemble compulsive eaters who count on frequent liposuction rather than maintaining strict diets to keep their body fat in check and stay healthy.

Evidence of climate disruption is all around us, including record-high temperatures, record-low sea ice, the die-off of major coral reefs, acidification of the oceans, drought-induced famines, and more extreme storm damage.

At the same time, climate scientists warn that barring breakthroughs in energy technology and adoption of cleaner transportation, industrial and agricultural processes, the world faces severe risks of economic and social disruption over the next half century from potentially irreversible warming.

Such considerations helped motivate more than 100 scientists and policy makers to meet in Washington, D.C., late last month to discuss some largely untested ways to prevent runaway warming by limiting the Earth's absorption of solar radiation. These measures could include using aircraft to release tiny particles into the upper atmosphere to reflect sunlight, or using fleets of boats to spray the air with saline mist to promote the formation of reflective clouds.

Several prominent Trump supporters are big boosters of such climate engineering. For example, Newt Gingrich, the President's close adviser and former House Speaker, gushed that it "holds forth the promise of addressing global warming concerns for just a few billion dollars a year. Instead of penalizing ordinary Americans, we would have an option to address global warming by rewarding

scientific innovation.”

And Secretary of State Rex Tillerson told investors in 2015, when he was still CEO of Exxon Mobil, “Our plan B has always been grounded in our beliefs around the continued evolution of technology and engineered solutions to address and react to whatever the climate system and its outcomes present to us.”

### **Dangerous Gamble**

Responsible scientists, on the other hand, have little faith in untested proposals to re-engineer the earth’s climate system, even if they back further research into such stop-gap measures.

“Climate intervention is no substitute for reductions in carbon dioxide emissions and adaptation efforts aimed at reducing the negative consequences of climate change,” concluded a two-volume study released by the National Academy of Sciences in 2015. “However, as our planet enters a period of changing climate never before experienced in recorded human history, interest is growing in the potential for deliberate intervention in the climate system to counter climate change.”

Strategies to reflect more solar radiation, it added, “could rapidly cool the planet’s surface but pose environmental and other risks that are not well understood and therefore should not be deployed at climate-altering scales; more research is needed to determine if [such] approaches could be viable in the future.”

In 2013, the American Meteorological Society adopted a policy statement, which declared that climate engineering “must be viewed with caution because manipulating the Earth system has considerable potential to trigger adverse and unpredictable consequences.”

Among those consequences could be severe weather changes for different nations and peoples, “thus raising legal, ethical, diplomatic, and national security concerns.” For example, shifting storm and precipitation patterns could dry out some regions and promote famines while subjecting others to devastating floods. The end result might not seem so promising to Gingrich if the Midwest turned into a dust bowl.

Researchers have also warned that one popular proposal – lacing the upper atmosphere with reflective sulfur dioxide particles – could deplete the Earth’s ozone layer, increasing the penetration of destructive ultraviolet radiation.

Tinkering with the atmosphere to reflect solar radiation could also “distract the public and policy makers from critically needed efforts to reduce greenhouse

gas emissions and build society's capacity to deal with unavoidable climate impacts," the AMS statement continued.

If CO2 concentrations in the atmosphere were allowed to grow, continued ocean acidification would have a devastating effect on biological systems. And if the world ever let up on its solar radiation management, for whatever reason, global warming would rapidly accelerate in the carbon-rich atmosphere.

### **Who Would Decide?**

Perhaps the single biggest obstacle to climate engineering is not technical but political: who would govern its deployment? Could a mad billionaire take matters into his own hands? Could rogue nations weaponize the technology, trying to fine tune solar radiation to disrupt the climate of their enemies?

Rutgers University climatologist Alan Robock has even warned about the increased risk of nuclear war: "Because if countries can't agree on what the temperature should be, and somebody is mad at somebody else for controlling their climate, the situation could escalate into hostilities."

Harvard physicist David Keith, one of the scientific community's leading proponents of further climate engineering research, insists that the rapid pace of climate change – and the failure of governments to address it in time – make it imperative to look seriously at every option for preventing runaway global warming.

But he and his colleagues are quick to agree with critics that "fear of solar geoengineering is justified" and that "it would be reckless to deploy solar geoengineering based on today's limited research." While stoutly defending the need for more research, they add, "if Trump were to push solar geoengineering while gutting climate science, we believe the only appropriate response is active resistance."

**Jonathan Marshall is author of "Global Warming's Threat to Trump's Mar-a-Lago," "Dangerous Denial of Global Warming," "To Fight Global Warming, Canada Ponders a Carbon Tax," and "Global Warming Adds to Mideast Hot Zone."**

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