

# Bright water proposal to cut global warming

29 March 2010, by Lin Edwards



(PhysOrg.com) -- A Harvard physicist has proposed the Earth could be cooled by pumping vast numbers of tiny bubbles into the sea to lower ocean temperatures and increase the water's reflectivity. The same strategy could be used in rivers and lakes to reduce evaporation.

The bubbles in turbulent water already provide "undershine" beneath the surface, and these contribute around 0.1% of the Earth's reflectivity, or albedo. Harvard University scientist Russell Seitz's proposal is to use ships to pump tiny "microbubbles," about 0.002 mm in diameter, into the sea as they travel, in a strategy he terms "Bright Water". Seitz said the bubbles would, in effect, act as tiny mirrors containing air, and could be created by mixing water supercharged with compressed air with swirling jets of water. This would emulate and amplify a naturally occurring phenomenon.

Using computer modeling, Seitz discovered that a concentration of only one part per million of microbubbles can double the reflectivity of water, and could cool Earth by up to 3°C if the system could be deployed. Adding [microbubbles](#) to a square kilometer of ocean is feasible, but Seitz

admitted that scaling it to cover an entire ocean would be technically difficult, not because of the energy requirement, which he said would be equivalent to about 1000 windmills, but because of the fact that the bubbles may not last long enough to effectively spread over large areas.

[Geoengineering](#) is a field that studies methods of making large-scale changes that may affect the entire globe, with the aim of reducing the effects of [climate change](#). Other geoengineering ideas include adding small particulates to the air to increase the reflectivity of the atmosphere, and adding thousands of tons of [iron oxide](#) to the surface of the sea, or [pumping nutrients](#) to the surface to make phytoplankton numbers increase, carrying carbon dioxide to the bottom of the ocean with their bodies when they die. The long-term effects of all these proposals is unknown. See PhysOrg articles [here](#) and [here](#) for more on geoengineering ideas.

Seitz delivered his findings last week at the Asilomar International Conference on Climate Intervention Technologies at Asilomar in California. He has submitted a paper on "Bright Water" to the *Climatic Change* journal.

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