

Research Highlights

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Shutting out sun

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Proposals to cool the planet using geoengineering — for example, by pumping reflective aerosols into the upper atmosphere — have been criticized on the basis that they would do little to solve ocean acidification. Acidic waters pose a threat to marine organisms that build their shells from carbonate compounds such as aragonite.

New research suggests that although climate engineering could moderately dampen ocean acidification, it would not reduce damage to marine calcifiers. Damon Matthews of Concordia University in Montreal and colleagues used an Earth-system model to examine how engineered reductions in solar radiation would affect pH and levels of aragonite in the ocean over the twenty-first century. According to their simulations, if climate engineering reduced surface air temperatures to pre-industrial levels, it could also increase ocean pH by 0.05 units at 2100, relative to a world without climate engineering. But this reduction in ocean acidity would occur only if there was an increase in the amount of carbon absorbed on land, say the authors.



Although geoengineering could reduce acidity, Matthews and colleagues say it would not prevent concentrations of aragonite in the ocean from falling as a result of escalating CO₂ emissions, suggesting that engineering alone cannot protect marine ecosystems.

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