



Climate change mitigation by seeding marine boundary-layer clouds?

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Recently, climate change mitigation by so-called “geo-engineering” has attracted large attention. One of the discussed options is to seed marine boundary-layer clouds by spraying sea salt aerosols into them. A greatly enhanced cloud droplet number concentration (CDNC) would lead to a increased cloud albedo and imply a negative forcing. To offset the positive forcing by the increase in greenhouse gas concentrations, authors of the proposal indicate that CDNC should be increased to 400 cm^{-3} over the world oceans. Let aside the technical feasibility of this task and the imbalance between a warming forcing in the terrestrial and a cooling forcing in the solar spectrum, we investigate here the potential to cool the planet’s surface enough to offset the warming by a doubling of carbon dioxide. We firstly make use of a new study computing the forcing by the aerosol indirect effect from satellite data. Our results suggest that CDNC would need to be increased by roughly an order of magnitude. This implies a much larger effort needed to balance greenhouse warming by seeding marine boundary-layer clouds than previously suggested. The results derived from satellite data are compared to a model study of the effect of an increase of CDNC to 400 cm^{-3} over the world oceans.