

Research Highlights

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Reappraising aerosols

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Atmospheric aerosols may be offsetting greenhouse warming to a lesser extent than previously thought, suggests a new study. The Intergovernmental Panel on Climate Change currently estimates, albeit with large uncertainty, that direct cooling from aerosols can counteract almost one-third of the warming caused by carbon dioxide.

But by resolving an existing discrepancy between satellite-derived and modelled estimates of the effect of aerosols, Gunnar Myhre of the Center for International Climate and Environmental Research–Oslo finds that the true value is likely to be much lower. Myhre calculated the radiative forcing of aerosols — a measure of their impact on the balance between radiation coming into and going out of the atmosphere — using estimates from both a global model and satellite-derived data. He then reconciled the difference between the two estimates by including some vital information. Assuming that aerosols are globally ubiquitous, he included modelled aerosol data in regions where satellite data is currently unavailable. He also accounted for the substantial change in aerosol optical properties that has occurred since pre-industrial times, which largely results from the disproportionate increase in black carbon.



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Myhre's revised estimate suggests that the direct aerosol effect offsets only ten per cent of the warming of greenhouse gases.

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