

The indirect effects of aerosols onto biogeochemistry and climate

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The net effect of anthropogenic aerosols on climate is usually considered the sum of the direct radiative effect of anthropogenic aerosols, plus the indirect effect of these aerosols through aerosol-cloud interactions. However, an additional impact of aerosols on a longer time scale is their indirect effect on climate through biogeochemical feedbacks, largely due to changes in the atmospheric concentration of CO₂. Aerosols can affect land and ocean biogeochemical cycles by physical forcing or by adding nutrients and pollutants to ecosystems. The net biogeochemical effect of aerosols is estimated to be equivalent to a radiative forcing of -0.5 ± 0.4 watts per square meter, which suggests that reaching lower carbon targets will be even costlier than previously estimated.