

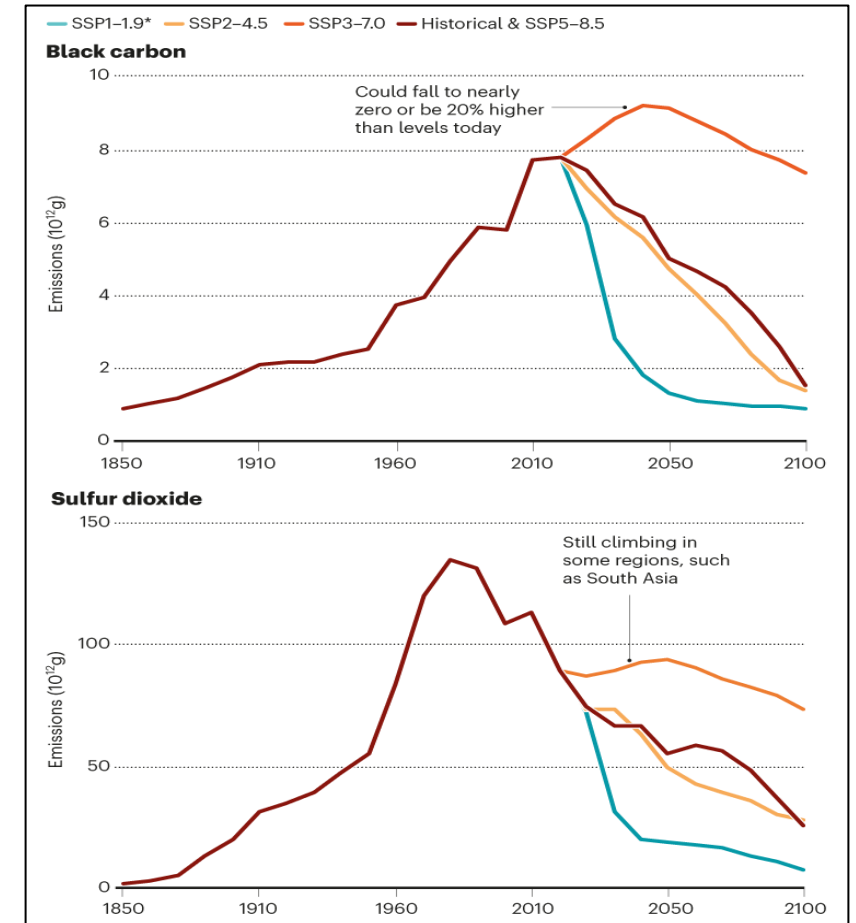
Aerosols must be included in climate risk assessments

Science Question

- Aerosols are hugely important to the climate, globally and regionally. Some aerosols warm the atmosphere, others cool it, depending on their type, height above ground and impact on clouds. Without aerosols, the global warming today would be 30–50% greater.
- It is not clear whether aerosol emissions are set to rise, fall or stabilize (see figure). The amount of uncertainty about aerosol levels by 2050 is as large as the total increase since pre-industrial times. Over the next 20–30 years, we might — or might not — see aerosol-driven climate changes as large as those that have played out over the past 170 years, adding as much as 0.5 °C to global warming, and rapidly changing the likelihood of extreme events occurring in many regions, with a geographical pattern that is very different from what greenhouse gas emissions bring.

Key Accomplishments

- In this paper, researchers are calling for funding agencies, foundations, universities and national laboratories to better determine the impacts of aerosols on regional climate change. They also urge consultants, NGOs and policymakers to invest in and adopt new ‘aerosol aware’ methods of estimating climate risk.



Drastic uncertainty: black carbon and sulfur dioxide, the two key aerosol types, have implications for climate change that could alter in widely different ways up to 2050 and beyond.

Persad GG, BH Samset & LJ Wilcox, *Nature* 2022, 611:662-664. Co-signatories: RJ Allen, MA Bollasina, BBB Booth, C Bonfils, M Joshi, MT Lund, K Marvel, J Merikanto, K Nordling, S Undorf, D van Vuuren, DM Westervelt, A Zhao, 10.1038/d41586-022-03763-9



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