

Analysis of tropospheric ozone budgets in CMIP6 experiments

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A grand challenge in the field of chemistry-climate modelling is to understand the connection between anthropogenic emissions, atmospheric composition and the radiative forcing of trace gases and aerosols. The AerChemMIP model intercomparison project, part of CMIP6, focuses on calculating the radiative forcing of gases and aerosol particles over the period 1850 to 2100.

We present an analysis of the trends in tropospheric ozone budget in UKESM1 and other models from CMIP6 experiments. We discuss these trends in terms of chemical production and loss of ozone as well as physical processes such as transport and deposition. Where possible, AerChemMIP attribution experiments such as histSST-piCH4, will be used to quantify the effect of individual emissions and forcing changes on the historical ozone burden and budget. For future experiments, we focus on analogous experiments from the SSP3-70 scenario, a ‘regional rivalry’ shared socioeconomic pathway involving significant emissions changes.

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