# Tropospheric Ozone Budgets in UKESM-Strattrop CCMI2022 Experiments

Paul T Griffiths

National Centre for Atmospheric Science, Cambridge University, United Kingdom

## Author list (excluding presenting author)

James Keeble, Alex Archibald, N.Luke Abraham

## Abstract

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 transport of ozone from the stratosphere to the troposphere has been shown to be a key contributor to the tropospheric ozone budget. It is estimated that the stratosphere-to-troposphere flux of ozone (STT) leads to ~500 Tg of ozone transported into the troposphere each year, which is comparable to the net chemical production of ozone within the troposphere. We will present an analysis of the tropospheric ozone budget in the CCMI2022 experiments performed with UKESM-StratTrop, a whole atmosphere chemistry-climate model. We focus on the specified dynamics experiments covering 1982-2018, during which there was significant ozone depletion. We intercompare the ozone budget derived using the complementary approaches of Ox and Oy species and also examine attribution experiments involving idealised changes in anthropogenic emissions. We explore the use of idealised tracers to diagnose the role of stratosphere-to-troposphere transport on tropospheric composition.

## Early Career Scientist

NO, I am not an early career scientist.