



Investigating solar cycle-climate interactions with an intermediate complexity GCM

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The 11-year solar cycle (SC) is known to drive equatorial ozone and temperature anomalies in the stratosphere. Observational studies and modelling with full-complexity global climate models (GCMs) have also suggested a small but significant connection between the solar cycle phase and mid- and high- latitude tropospheric climate, which may be important for improving the accuracy of near-term seasonal and decadal forecasting. The dominant mechanisms by which the stratospheric SC signal couples to the troposphere are still not fully understood though. Here we present early results from simulations using the MITgcm, an intermediate-complexity GCM with simplified physics, which we run in an idealised aquaplanet set-up, but with extended vertical resolution to dynamically resolve the whole stratosphere. We analyse the responses to imposed stratospheric heating/cooling anomalies, and evaluate the usefulness of this idealised model framework for investigating stratosphere-troposphere coupling mechanisms.