



Solar spectrum dependency in modeling the mean state of the upper atmosphere

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We study the sensitivity of the stratosphere and mesosphere mean state to the specification of different solar spectra in the SOCRATES and EMAC chemistry models. The solar spectra, which describe quiet Sun conditions in the last solar minimum (2008), are taken from the first and second generation of the NRLSSI model, the SATIRE-S model, the *SORCE* observations, the recently released *SOLID* composite and the SSI recommendation for the CMIP6 simulations. Simulations demonstrate a strong sensitivity of the mean temperature and ozone files to the choice of the specified SSI dataset. Temperature anomalies can be as high as 2 K and strengthen when the interactive chemistry coupling is switched off. The stronger ozone anomalies in the tropics were found between the *NRSSI2* and *SATIRE*.