



Airglow by oxygen and hydroxyl molecules during the sudden stratospheric warming 2008/09

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Airglow is a luminous effect mainly in the upper atmosphere (mesosphere and thermosphere). It is caused by various photochemical processes. Airglow can be used to derive minor species abundances, to diagnose dynamical phenomena or to derive chemical heating rates (Mlynzcak 1999). In this presentation, we show results for different O, O₂ and OH transitions from our vertically extended EMAC (3d-CTM) version during the sudden stratospheric warming in the Northern Hemisphere winter 2008/09 and compare it to available results from SCIAMACHY satellite instrument observations (OH(3 – 1), O₂(¹Σ), O₂(¹Δ)).

To study airglow with our 3d-model we extended the chemistry by the relevant processes for airglow. All reactions are calculated by the online chemistry module MECCA.

The results of our model are in general good agreement with the observations. Centroid altitude and peak values before, during, and after the warming show a similar behaviour.