13th International Atmospheric Limb Workshop



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3-D tomography for the MATS satellite mission

MATS (Mesospheric airglow/Aerosol Tomography and Spectroscopy) is a Swedish satellite launched in November 2022. It is a limb imager that observes O_2 A-band airglow (four different spectral channels) in near-infrared and UV light scattered from noctilucent clouds (two channels) in the 70 km to 110 km altitude range. The airglow observations can be used to obtain a 3-D tomographic temperature data product with high vertical resolution, enabling the identification and characterisation of individual gravity waves and their full 3-D spatial structure. Similarly, the UV data set can be used for 3-D reconstruction of the noctilucent clouds.

In this talk, the 3-D tomographic retrieval algorithm will be introduced and some of the first 3-D temperature data will be presented. The steps in Level 1 processing of MATS images that are particularly relevant to tomography will also be discussed.

Topic

Current and past limb and occultation instruments: algorithms, products, validation

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