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The MATS mission: Locking back and looking forward

The MATS (Mesospheric Airglow/Aerosol Tomography and Spectroscopy) mission is a Swedish satellite initiative designed to investigate atmospheric gravity waves by observing structures in the O2 atmospheric band airglow and noctilucent clouds around the Mesopause. The mission employs a high-resolution telescope to capture continuous images of the atmospheric limb, allowing for tomographic analysis to reconstruct three-dimensional wave structures and provide a global map of gravity wave properties. By splitting light into six separate wavelength channels, the mission aims to extract temperature and microphysical attributes of noctilucent clouds.

In this presentation, we look back at lessons learnt from the entire MATS mission, highlighting how certain complications could have been avoided. We will briefly explain the new in-orbit calibration technique that was created due to significant uncertainties in the laboratory calibrations. Finally, we will show the first scientific results and introduce the newly released dataset. With this, we are looking forward to discussions and research collaborations.

Topic

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

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