



Investigation of gravity wave activity based on NDMC, NDACC and CTBTO measurements

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GRIPS (Ground based Infrared P-branch Spectrometer) airglow measurements allow the derivation of kinetic temperature in the mesopause region during night with a temporal resolution of 10s to 15s. Amongst others, these time series can be used for the investigation of atmospheric dynamics like gravity wave activity. GRIPS measurements are performed in the framework of NDMC – the international Network for the Detection of Mesospheric Change.

The project ARISE combines NDMC, NDACC (Network for the Detection of Atmospheric Composition Change) and CTBTO (Comprehensive Nuclear-Test-Ban Treaty Organization) measurements to infer a new 3D image of atmospheric dynamics from ground to mesopause. In this context, GRIPS data of about two to three years collected at the Observatory Haute-Provence, France and Catania, Italy are utilized to derive an index for short- and long-period gravity wave activity on daily and seasonal base. This time period includes also a stratospheric warming event.

Potential energy density is calculated and compared with NDACC measurements at Haute-Provence; differences are discussed. For the measurements at the Italian station, comparisons of gravity wave and volcanic activity relying on infrasound array and seismic measurements are performed. First hints for volcanic induced mesopause gravity wave activity are presented.