



Results from a high-speed imaging system for the observation of transient features in OH-Airglow with focus on small-scale structures

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The OH-airglow layer in about 87 km altitude is suited to investigate atmospheric dynamics in a unique way, allowing continuous observations of the night-sky throughout the year. Especially, atmospheric gravity waves are prominent features in the data of airglow imaging systems.

In the year 2014 the imaging system FAIM (Fast Airglow IMager) for the study of small-scale features (both in space and time) was operational at the NDMC (Network for the detection of mesospheric change) station Oberpfaffenhofen.

The instrument covers many of the brightest OH vibrational bands between 1.0 μm and 1.7 μm and acquires images with a temporal resolution of 2 frames per second. It measures the night sky with an aperture angle of about 20° and a zenith angle of 45° oriented to the Southern Germany Alpine region. Hence, the field of view (FOV) is about 50 km times 60 km in the height of the mesopause (87 km) with a mean spatial resolution of about 200 m. With this resolution, the focus of the instrument is on small-scale wave structures ranging from about 1 km to 30 km and instability structures like so-called ripples or Kelvin-Helmholtz-Instabilities. Case studies will be presented showing dissipating gravity waves and the results of spectral analyses will give an overview of the prominent directions of propagation and the horizontal wavelengths within the year 2014.

This work is funded by the Bavarian State Ministry of the Environment and Consumer Protection by grant no. TUS01UFS-67093. The project aims to analyse the influence of the Alpine region on the generation of atmospheric waves.