



First year of observations of OH airglow with the new infrared spectrometer GRIPS 6 in Southern Germany

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Routine airglow measurements with the new spectrometer GRIPS 6 (ground-based infrared p-branch spectrometer) are performed at the German Aerospace Center in Oberpfaffenhofen (48.09° N 11.28° E) since late January 2009. The instrument covers the wavelength range between 1.5 μ m and 1.6 μ m providing data from vibrational-rotational transitions of the OH(3-1) q- and p-branches as well as from the OH(4-2) r- and q-branches originating from a thin layer in 87 km height. Data from the OH(3-1) p-branches is used for derivation of rotational temperatures. The instrument is equipped with a sensitive InGaAs photodiode array allowing a temporal resolution of up to 15 seconds with a temperature uncertainty of typically 10 K or less than 5 K for one minute means. Good performance of the instrument resulted in 276 observations of more than two hours duration in 2009, from which nightly mean values were successfully estimated.

Nightly time series of rotational temperatures and relative spectral intensities are analysed with respect to the gravity and tidal wave frequency regime. The statistical distribution of wave activity as a function of wave frequency is calculated for all seasons. Also time spans of several nights with remarkable wave activity are highlighted in more detail. It is concluded that atmospheric waves with periods of less than five hours play a major role in the dynamics of the OH Meinel bands throughout the vast majority of nights at our location.