

## Seminar über Microwavephysics and Atmospheric Physics

**Referent:** Dr. Martin Lainer, Institute of Applied Physics, University of Bern

**Titel:** Water vapor in the middle atmosphere: Long-term measurements to study the variability of quasi 2-day waves and trends

Atmospheric water vapor is a key climate parameter. Long-term observations from ground and space are required to study trends and the variability on different time scales. In the stratosphere and mesosphere, water vapor can be used as a tracer to study atmospheric waves.

A mesospheric water vapor data set obtained by the middle atmospheric water vapor radiometer (MIAWARA) close to Bern, Switzerland (46.88°N, 7.46°E) between October 2010 and September 2017 is investigated to study the long-term evolution and variability of quasi 2-day waves (Q2DWs). We present a climatological overview and an insight on the dynamical behavior of these waves with the occurring spectrum of periods as seen from a mid-latitude observation site. The analysis of autobicoherence spectra gives evidence that Q2DWs occasionally are to a high degree phase coupled to diurnal oscillations and to waves with a period close to 18 hour.

The second part of the talk presents results on a water vapor trend study in the middle atmosphere with 5 ground-based microwave radiometers operated in the scope of NDACC and with space-based observations by the Aura MLS satellite. The trend assessment is performed with a multi-linear parametric trend model which includes a linear term, the solar variability, the El Niño–Southern Oscillation (ENSO) index, the quasi-biennial oscillation (QBO), the annual and semi-annual oscillation.

**Zeit:** Freitag, 27.04.2018, 10:15 Uhr

**Ort:** **Hörsaal A97**, Gebäude exakte Wissenschaften, Sidlerstrasse 5, Bern, Schweiz