Seminar über Microwave Physics and Atmospheric Physics

Referent/in: Jie Zeng, IAP, University of Bern

Titel: Preliminary results of 3-dimensional Mesosphere/lower thermospheric winds observed by a Chinese multistatic meteor radar network

We present first continuous observations of three-dimensional wind fields and atmospheric motions in the mesosphere and lower thermosphere at the mid-latitudes of the Northern Hemisphere. A recently installed multistatic meteor radar network located between Hefei and Wuhan collected data during an 18-month campaign from February 2022 to July 2023. The Chinese multistatic radar network leverages existing monostatic meteor radar systems in China and was complemented by several multistatic passive meteor radars. To retrieve the atmospheric kinetic properties, we introduced an improved Volume velocity processing (VVP) method exploiting coordinate transformations and the WGS84 reference and non-linear constraints to minimize errors. The vertical winds are estimated separately from the iteration of the horizontal divergence to avoid contamination from the neutral winds due to projection errors. The winds and air motions show annual/semiannual variation characteristics at certain altitudes. We found the largest variabilities occur around the equinoxes. The vertical winds are basically within the magnitude of 1 m/s and are upward during the summer months as expected for mesopause altitudes during the hemispheric summer. This upwelling is associated with a corresponding adiabatic cooling driving the summer mesopause temperatures away from the thermal equilibrium.

Zeit: Freitag, 01. Dezember 2023, 10:15 Uhr

Ort: Room A97
https://unibe-ch.zoom.us/j/97081325603?pwd=d0ozME5xOS9pQVNxallLem81VHQyZz09
Meeting ID: 970 8132 5603
Passcode: iapmw