



Interannual variability of the quasi two-day wave over Central Europe (52°N, 15°E)

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Using the spaced receiver method in the low-frequency (LF) range, lower E-region ionospheric drifts are measured at Collm Observatory, Germany, since several decades. These drifts are interpreted as upper mesospheric winds at the reflection height of the used amplitude modulated LF radio waves, the latter being measured since 1983 using travel time differences between the ground wave and the ionospherically reflected sky wave within a small sideband range around 1.8 kHz above and below the carrier frequency.

One regular feature of midlatitude upper mesosphere winds is the quasi two-day wave (QTDW), known as a wavenumber 3 or 4 wave in the middle atmosphere, usually occurring as one or more bursts during the summer season at midlatitudes. The QTDW bursts, as measured in LF winds, shows substantial decadal and interannual variability. Long-term comparisons of the wave's behavior with the background winds show that the onset of QTDW bursts is found near maximum values of the vertical wind shear, and maximum QTDW amplitudes are measured, on average, about one week after the maximum wind shear. This supports the theory that the QTDW is forced by instability of the summer mesospheric wind jet.