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Characteristics of winter-time meridional thermospheric winds over Tromsø during solar minimum

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The background of the winter-time thermospheric wind over Tromsø (69 ºN, 19 ºE) were focused on in this paper. The meridional component of the neutral wind in F-region were derived from the field-aligned ion velocity detected by the European incoherent scattering (EISCAT) radar. In order to eliminate possible influences from solar activity variances and geomagnetic disturbance, only measurements accomplished under geomagnetically quiet conditions (with maximum Kp $\leq$ 3) around the winter solstice during solar minimum (2008-2009) were chosen in present work.

Two major characteristics of the radar derived winds are revealed. The first feature is the vertical variations of the meridional winds. Magnitudes of the equatorward winds observed show a hint of increasing with altitudes during nighttime. The second one is the persistent equatorward winds at altitudes higher than 280 km height during daytime, especially around local noon, whilst the prevailing poleward winds appear at lower altitudes. Thus, significant shears of horizontal winds are expected in the vertical direction.

Detail comparisons with models and discussions of the possible driving forces for the day-time equatorward winds will be presented in the report.