Effects of atmospheric oscillations on the field-aligned ion motions in the polar F region

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This paper reports on a comparison of the field-aligned velocities obtained at Tromso, Norway simultaneously during the night of February 8, 1997 from two independent instruments; the European Incoherent Scatter (EISCAT) UHF radar and a scanning Fabry-Perot interferometer (FPI). We assume that the FPI monitors neutral

motions at the altitude where the emission rate of the auroral red-line has a peak. Then the comparison of the field-aligned ion and neutral wind velocities in the polar F region (150-300 km height) suggests that during this observation the vertical neutral wind drag contributed more dominantly to the field-aligned oscillations of ions rather than the meridional wind. The oscillations have periods in agreement with gravity waves and the thermospheric Brunt-Vaisala period.

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