Distribution of Neutral Winds in the Polar Thermosphere

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It is known that large vertical winds (50-100m/s) are observed on the vicinity of aurora in the polar thermosphere, due to magnetospheric convection and/or Joule, Particle heating accompanied with magnetosphere-ionosphere coupling.

This process is noteworthy because it is completely different from well-know energy transfer process, radiant heating from the sun to the earth. From continuity relation in the neutral atmosphere, these large vertical winds is thought to be accompanied with convergence/divergence of horizontal winds, however, there are few simultaneous observations of vertical and horizontal winds(e.g., Price et al., 1995; Ishii et al. 2001).

In this study, spatial distribution of neutral winds in the polar thermosphere is estiamted with three Fabry-Perot Interferometers at Poker Flat Research Range (PFRR; 65.6N, 261.0E in geomag.) and Eagle observatory (EGL; 66.2N, 267.5E in geomag.).

The observing period is winters from 1998. In addition, we can deduce the relation between neutral wind and aurora using monochromatic all-sky imager at PFRR.