Generation of the vertical wind in the upper thermosphere at high latitudes -2. Position of auroral oval-

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Previous studies of the vertical thermospheric-motions have shown horizontal structures around the auroral oval. Some investigators have suggested that the region of upwelling is located on the poleward side of the auroral oval during geomagnetically active intervals, whereas others found significantly large velocities on the equatorward side. From November 1998 to February 1999, a scanning Fabry-Perot interferometer (FPI, wavelength 630.0 nm) was used to observe vertical winds at Poker Flat, Alaska. Upwelling winds were observed before about 0 MLT and downwelling ones after about 0 MLT. In this paper, we investigate the relation between the direction of the vertical winds and the location of the auroral oval.

The vertical components of neutral winds in the auroral upper-thermosphere (200-300 km) have been observed with optical instruments such as Fabry-Perot interferometer (FPI) at far greater velocities than predictions with global circulation models. Previous studies have shown that the vertical motions seem to have horizontal structures around the auroral oval. Some investigators have suggested that the region of upwelling is located on the poleward side of the auroral oval during geomagnetically active intervals [e.g., Price et al., 1995], whereas Sica et al. [1986] found significantly large velocities on the equatorward side. From November 1998 to February 1999, a scanning FPI (wavelength 630.0 nm) was used to observe vertical winds at Poker Flat, Alaska (65.11 N, 147.42 W). Upwelling winds were observed before about 0 MLT and downwelling ones after about 0 MLT. The location of the auroral oval changes depending on both MLT and geomagnetic activity. In this paper, we use data obtained from Visible Imaging Sytem (VIS) on board the NASA Polar spacecraft and from a meridian scanning photometer (MSP) during the FPI observations to identify the location of the auroral oval and investigate the relation between the direction of the vertical winds and the location of the auroral oval.