

## High-speed neutral wind observed in the polar lower thermosphere

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The high-speed neutral wind was observed on 16 June 2005 by the EISCAT Svalbard Radar (ESR) at Longyearbyen ( $78.2^\circ$  N,  $16.0^\circ$  E,  $75.2^\circ$  N invariant latitude). During 1000-1300 UT (1300-1600 MLT), the neutral wind velocity at 118 km became about 700 m/s and the convection electric field in the F region reached about 100 mV/m. Before one and a half hours (at 0830 UT), the southward turning of IMF Bz (from 5 nT to -15 nT) was observed by the ACE satellite. These results suggest that the high-speed neutral wind would be produced by the strong ionospheric convection due to the southward IMF. In general, when the relative velocity between the flow and something (e.g., the heating region) becomes closer to the sonic speed, the compressibility of the fluid becomes an important factor. Thus, the high-speed neutral wind would play an important role in the thermospheric dynamics, while our understandings of the high-speed neutral wind are limited because there is few published literature that has focused on the high-speed neutral wind in the thermosphere.

In order to understand the influence of the high-speed neutral wind on the thermospheric dynamics, we study the high-speed neutral wind in the lower thermosphere in the polar cap using the ESR data. In this presentation, we will show the ESR results on 16 June 2005 and discuss the generation of the high-speed neutral wind and the influence of the high-speed neutral wind on the neutral dynamics.