Geophysical Research Abstracts
Vol. 18, EGU2016-11637, 2016
EGU General Assembly 2016

Neutral wind acceleration in the polar lower E-region during an intense electric-field

Takuo T. Tsuda (1), Stephan C. Buchert (2), Satonori Nozawa (3), Shin-ichiro Oyama (3), Yasunobu Ogawa (4), and Ryoichi Fujii (3)

(1) The University of Electro-Communications, Japan (takuo.tsuda@uec.ac.jp), (2) Swedish Institute of Space Physics, Sweden, (3) Nagoya University, Japan, (4) National Institute of Polar Research, Japan

The Joule heating and ion drag effects are considered as important factors in the neutral wind dynamics in the polar E-region. However, quantitative evaluations for these effects are insufficient for correct understanding, particularly, in the lower E-region (100-110 km heights) where the anomalous heating effect, related with the electron Pedersen currents, can occur during the intense electric field. In the present study, using EISCAT Svalbard radar data, we have investigated, for the first time, the normal and anomalous heating effects to the neutral wind acceleration in the lower E-region.