Relation between the ionospheric convection observed by the SuperDARN Hokkaido Pair of (HOP) radars and low-latitude auroras

*Nozomu Nishitani¹, Tomoaki Hori¹, Ryuho Kataoka², Yusuke Ebihara³, Kazuo Shiokawa¹, Yuichi Otsuka¹, Hidehiko Suzuki⁴

1.Institute for Space-Earth Environmental Research, Nagoya University, 2.National Institute of Polar Research, 3.Research Institute of Sustainable Humanosphere, Kyoto University, 4.Meiji University

Recent SuperDARN deployment toward lower latitudes made it possible to study ionospheric convection associated with low-latitude auroras (up to below 50 degrees geomagnetic latitude) with high temporal resolution (1 min). In this paper we report on the relationship between the appearance of low-latitude auroras for a few geomagnetic storm events (such as that on March 17, 2015 and on December 21, 2015) and ionospheric convection observed by the SuperDARN Hokkaido Pair of (HOP) radars. Associated with low-latitude auroral emission in the postmidnight sector, there was a sheared flow structure with westward flow equatorward of eastward flow, with the equatorward boundary of auroral emission embedded in the westward flow region. Such kind of flow distribution was also observed with other events such as that on January 20, 2016. The observations suggest that the presence of electric field distribution plays some roles in keeping low latitude auroral emission. Detailed discussion of the relationship between the low latitude auroras and the electric field distribution will be presented.

Keywords: SuperDARN Hokkaido Pair of (HOP) radars, low-latitude auroras, mid-latitude / subauroral latitude ionospheric convection