

## Intensification of oval activity during transpolar arc event

\*Takahiro Obara<sup>1</sup>

1. Planetary Plasma and Atmospheric Research Center, Tohoku University

In the northern polar cap region, the transpolar arc was detached from the morning (evening) side oval and moves dusk ward (dawn ward), corresponding to IMF By change from negative to positive (positive to negative) during northward IMF condition. In the past work by Obara et al. (1988), it was demonstrated that oval intensification has been taking place when the transpolar arc was diminishing its intensity. Based on the IMAGE FUV data, we have examined the location of intensification in the night side oval. Though the number of intensification of oval activity during transpolar arc was small, it seems likely that the intensification of the night side oval occurs dusk ward (dawn ward) of the transpolar arc with respect to local time during IMF By > 0 (IMF By < 0) condition in the northern hemisphere.

Tanaka et al. (2004) demonstrated that a movement of transpolar arc is caused by the growth of new merging cell. Open field lines in the new merging cell in the polar cap may reconnect, and newly formed closed lines result in the blocking of the return path of closed field lines generated in the old merging cell. Losing their return path, closed field lines which have been generated in the old merging cell accumulate on the night side, resulting in the transpolar arc.

Merging of field lines in the new merging cell in the night side could accumulate magnetic fluxes. Some changes of IMF Bz polarity; positive to negative for instance, could trigger oval intensification.

In the presentation, we like to demonstrate the examples of the events and will discuss the location of the oval intensification with respect to the transpolar arc location and consider the onset of the oval intensification.

Keywords: Transpolar Arc, Oval Activity Intensification

