

Study of sun-aligned arcs with OMTI and SuperDARN

Chika Yamakawa[1]; Keisuke Hosokawa[1]; Tomoka Kashimoto[1]; Kazuo Shiokawa[2]; Tadahiko Ogawa[2]; Takashi Shibata[1]

[1] Univ. of Electro-Communications; [2] STELAB, Nagoya Univ.

Sun-aligned arcs (SAA) are frequently observed at latitudes higher than the auroral oval when the IMF is directed northward. Study of SAA is very important because they can provide an information on the plasma structure at magnetospheric altitudes during northward IMF conditions. In this paper, we have studied fundamental characteristics of SAA observed with the OMTI (Optical Mesosphere Thermosphere Imager) at Resolute Bay, Canada (74.7N, 265.1E). In particular, motion of SAA was statistically analyzed by using image-by-image 2D cross correlation analysis developed by Hosokawa et al. (2006). Then, it is found that the arc appears on the duskside (dawnside) and moves dawnward (duskward) when the IMF B_y is negative (positive). We also revealed plasma convection behind SAA by employing SuperDARN (Super Dual Auroral Radar Network). It is suggested that there exists shear of plasma convection across SAA. This implies an upward field-aligned current produced by converging electric field at SAA.