

磁気共役点における全天大気光イメージャーで観測されたプラズマバブルの消失

塩川 和夫 [1]; 大塚 雄一 [1]; Lynn Kenneth J. W.[2]; Wilkinson Phil[3]
[1] 名大 STE 研; [2] Ionospheric Systems Research; [3] IPS Radio and Space Services

Airglow-imaging observation of plasma bubble disappearance at geomagnetic conjugate points

Kazuo Shiokawa[1]; Yuichi Otsuka[1]; Kenneth J. W. Lynn[2]; Phil Wilkinson[3]
[1] STEL, Nagoya Univ.; [2] Ionospheric Systems Research; [3] IPS Radio and Space Services

We show an event of plasma bubble disappearance observed by airglow imagers at geomagnetic conjugate points at Darwin, Australia (12.4S, 131.0E, magnetic latitude (MLAT): -22.1N) and Sata, Japan (31.0N, 130.7E, MLAT: 21.2N) on August 8, 2002. Such a disappearance of plasma bubbles is rarely observed. The plasma diffusion across magnetic field line is too slow to explain the observed disappearance in the ionosphere. The plasma bubble was observed in 630-nm airglow imagers at Darwin from 15 UT (00 LT) to 18UT (03 LT) and disappear at 18-19 UT (03-04 LT) in the field-of-view of the imagers. Similar motion of the bubbles was also observed at Sata. A Fabry-Perot interferometer at Shigaraki, Japan, indicates decrease of eastward thermospheric wind from ~50 m/s (15 UT) to 0 m/s (18 UT) consistent with slowing down of eastward motion of the bubble. The ionograms at Darwin show spread-F signatures at 16-22 UT, even 2-3 hours after the bubble disappearance. The ionograms also show that the ionospheric height increases from 18 to 19 UT when the bubble disappeared. The 630-nm airglow intensity decreases associated with this ionospheric height increase. Based on these observations, we suggest that an enhancement of equatorward neutral wind pushed the ionosphere to higher altitudes and caused apparent disappearance of plasma bubble in 630-nm airglow images which have an emission layer at altitudes of 200-300 km.