

低緯度磁気共役点における大気光撮像で観測されたプラズマバブルの消失過程

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

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We report the first observation of the disappearance of plasma bubbles over geomagnetically conjugate points. It was observed by airglow imagers at Darwin, Australia (magnetic latitude: -22N) and Sata, Japan (21N) on 8 August 2002. The plasma bubble was observed in 630-nm airglow images from 1530 UT (0030 LT) to 1800 UT (0300 LT) and disappeared equatorward at 1800-1900 UT (0300-0400 LT) in the field of view. The ionograms at Darwin and Yamagawa (20 km north of Sata) show strong spread-F signatures at ~16-21 UT. At Darwin, the F-layer virtual height suddenly increased from ~200 km to ~260 km at the time of bubble disappearance. However a similar F-layer height increase was not observed over the conjugate point at Yamagawa, indicating that this F-layer rise was caused not by an eastward electric field but by enhancement of the equatorward thermospheric wind over Darwin. We think that this enhancement of the equatorward neutral wind was caused by an equatorward-propagating large-scale traveling ionospheric disturbance, which was identified in the north-south keogram of 630-nm airglow images. We suggest that either F-region dynamo or polarization electric field associated with this equatorward neutral wind drive plasma drift across the magnetic field line to cause the observed bubble disappearance.