

## **ESCAPE OF HIGH-ENERGY OXYGEN IONS THROUGH MAGNETOPAUSE RECONNECTION UNDER NORTHWARD IMF**

SATOSHI KASAHARA 1, Hiroshi Hasegawa 1, Kunihiro Keika 2, Yukinaga Miyashita 3, Masaki N. Nishino 1, Yoshifumi Saito 1, and Toshifumi Mukai 1

1. ISAS/JAXA, JAPAN
2. OeAW/IWF, AUSTRIA
3. STEL, JAPAN

During a storm recovery phase on 15 May 2005, the Geotail spacecraft repeatedly observed high-energy ( $>180$  keV) oxygen ions in the dayside magnetosheath near the equatorial plane. We focused on the time period from 11:20 UT to 13:00 UT, when Geotail observed the oxygen ions and the interplanetary magnetic field (IMF) was constantly northward. The magnetic reconnection occurrence northward and duskward of Geotail is indicated by the Walén analysis and convective flows in the magnetopause boundary layer. Anisotropic pitch angle distributions of ions suggest that high-energy oxygen ions escaped from the northward of Geotail along the reconnected magnetic field lines. From the low-energy particle precipitation in the polar cap observed by DMSP, which is consistent with magnetic reconnection occurring between the magnetosheath field lines and the magnetospheric closed field lines, we conclude that these oxygen ions are of ring current origin. Our results thus suggest a new escape route of oxygen ions during northward IMF. In the present event, this escape mechanism is more dominant than the leakage via the finite Larmor radius effect across the dayside equatorial magnetopause.

Ring Current Decay, Oxygen Ions, Magnetopause Reconnection

Satoshi Kasahara, 3-1-1, Yoshinodai, Sagamihara, Kanagawa, JAPAN, tel: +81-42-759-8168, fax: +81-42-759-8456, e-mail: [HYPERLINK "mailto:kshr@stp.isas.jaxa.jp"](mailto:kshr@stp.isas.jaxa.jp)  
[kshr@stp.isas.jaxa.jp](mailto:kshr@stp.isas.jaxa.jp)