Japan Geoscience Union Meeting 2014
(28 April - 02 May 2014 at Pacifico YOKOHAMA, Kanagawa, Japan)

PEM37-P04 会場:3 階ポスター会場 時間:4 月 30 日 18:15-19:30

JAXA 準天頂衛星と MAGDAS 地上観測点による沿磁力線電流の同時観測
Simultaneous observation of a field-aligned current by the JAXA QZS satellite and a MAGDAS ground observatory

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In this paper we conduct a QZS-MAGDAS conjunction study of a field-aligned current (FAC). QZS (Quasi-Zenith Satellite) is operated by JAXA, and MAGDAS is the ground magnetometer network mainly operated by ICSWSE (International Center for Space Weather Science and Education), Kyushu Univ.

There have been only limited number of papers on satellite-ground conjunction studies of FACs, because satellites usually passes overhead at a ground observatory in a short time.
On the other hand, the footpoint of QZS stays near one ground point in Siberia, Russia, because the orbit of QZS is close to that of geosynchronous satellites on the Japanese meridian. Moreover, a few Siberian MAGDAS observatories exist near the QZS footpoint.

Another advantage of QZS is that, unlike geosynchronous satellites, QZS has 41deg inclination and 0.1deg eccentricity which enable QZS to stay for a long time at northern high latitudes in the magnetosphere; this high-latitude feature increases the detectability of FACs, because the FAC magnitude is in general smaller near the equator, i.e., the FAC source region in the magnetosphere. Thus, the pair of QZS and Siberian MAGDAS is expected to have more chances of simultaneously observing the same FAC than past satellite-ground pairs.

We have been searching for events in which, when QZS and a Siberian MAGDAS observatory were located near the same field line (calculated by the Tsyganenko 96 model), QZS and MAGDAS simultaneously observed transient magnetic field perturbations.

In this paper we present such an event observed by QZS and a Siberian MAGDAS observatory CHD (Chokurdakh). We have found that the transient magnetic perturbations of this event can be interpreted to have been generated by the motion of a local current circuit consisting of line FACs and an ionospheric current. More details will be presented at the meeting.