In order to understand generation mechanisms of day-to-day Sq current variations for space weather study, we tried to visualize (1) daily Sq equivalent currents estimated by MAGDAS/210 MM data, (2) daily Sq patterns obtained by the empirical model (Yamazaki et al., 2010), and (3) the subtraction of (1) - (2), i.e. the daily disturbance driven by changes in the solar wind and atmospheric neutral wind.

The daily Sq currents from 4 January to 31 December 2008, were obtained from magnetic data at 16 stations of MAGDAS/CPMN project, Space Environment Research Center, Kyushu University. In the present paper, we investigated the relationship between the interplanetary electric field (i.e. $E_y = -V_{sw} \times B_z(IMF)$) and (3) the subtracted Sq currents in the magnetic equatorial region.

It is found that about 20% of 363 days the subtracted Sq currents at the magnetic equator showed a good correlation with the interplanetary magnetic field (IMF), i.e. the eastward EEJ was enhanced during the negative IMF $B_z$ component, while the westward EEJ appeared during the positive IMF $B_z$ component. On the other hand, 66% of 363 days we could not find a good relation between the subtracted Sq current near the dip equator and the IMF $B_z$ variations, indicating the possibility of a coupling mechanism with the atmospheric neutral wind.

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