Characteristics of energetic particles in the inner radiation belt during magnetic storms

Akira Morioka [1], Yoshizumi Miyoshi [2], Hiroaki Misawa [3], Fuminori Tsuchiya [4], Akira Tsuruuti [5]

[1] Planet. Plasma and Atmos. Res. Cent.,Tohoku Univ., [2] Planet. Plasma and Atmos. Res. Cent., Tohoku Univ., [3] Planet. Plasma and Atmos. Res. Cent., Tohoku Univ., [4] Planet. Plasma Atomos. Res. Cent., Tohoku Univ., [5] Tohoku Bureau of International Trade and Industry

The relation between the energetic particle flux in the inner radiation belt and the magnetic storm is investigated using the NOAA12 and Akebono data. The characteristics of inner belt particles are disclosed as follows.

1) The particle flux increases up to 10 times at the time of the magnetic storm.

2) The duration of this enhancement(impulsive enhancement) is 1 or 2 days.

3) This impulsive enhancement is synchronized with the onset of the outer belt particle increase.

4) The impulsive enhancement is not accompanied with the transport or injection from the outer belt, indicating that the phenomena is independent of the outer belt dynamics.

5) The impulsive enhancement is sometimes associated with the LF wave intensification.

The relation between the energetic particle flux in the inner radiation belt and the magnetic storm is investigated using the NOAA12 and Akebono data. The characteristics of inner belt particles are disclosed as follows.

1) The particle flux increases up to 10 times at the time of the magnetic storm.

2) The duration of this enhancement(impulsive enhancement) is 1 or 2 days.

3) This impulsive enhancement is synchronized with the onset of the outer belt particle increase.

4) The impulsive enhancement is not accompanied with the transport or injection from the outer belt, indicating that the phenomena is independent of the outer belt dynamics.

5) The impulsive enhancement is sometimes associated with the LF wave intensification.