Magnetic field disturbances observed by Arase (ERG) associated with the magnetic dipolarization

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It is known that magnetic field disturbances often appear in the night-side magnetosphere associated with the magnetic dipolarization. The disturbances carry significant energy which is considered to be released by the global configuration change of the magnetosphere, The energy normally directs to the earth in the inner magnetosphere at the several Re distance from the earth. It suggests that the disturbances are generated in the near-earth magnetotail region, presumably about 10 Re distance from the earth. However, it is not still very clear how the magnetic field disturbances are excited and affect the particle motion in the inner magnetosphere.

The Arase (ERG) satellite was launched on December 20, 2016, to investigate the plasma physics in the inner magnetosphere. The energy exchange between particles and fields is one of the major subjects of the Arase project. We are studying the magnetic dipolarization and associated disturbances observed by Arase. The characteristics (compressibility, polarization, propagation direction, and so on) are investigated for typical events to limit the generation mechanism of the disturbances. Very close investigation of the disturbances should lead to the future statistical study, occurrence ratio, distribution and relation with the particle signature.

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