Parameters of ionosphere-origin ion flows in the magnetotail and correlations to geomagnetic activity and solar wind condition

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A large amount of the Geotail spacecraft data obtained in the near-Earth and distant magnetotail regions enables us to investigate variations of densities and velocities of the ionosphere-origin ion flows and their correlations to geomagnetic activities and solar wind conditions. While the geomagnetic activities directly influence enhancements of the densities and velocities of the ion flows in the near-Earth regions, changes of solar wind conditions could also affect the parameter variations of the ion flows during their transport from the near-Earth source regions to the observation sites in the distant tail lobe/mantle. It is because the structure and flapping motion of the magnetotail drastically change due to the solar wind conditions.