

Long-term variation of plasmasphere observed from the Akebono PWS data

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Plasmaspheric density structures have been studied for a long time. However, continuous observations longer than one-solar cycle have not been realized, so that long-term variations associated with solar activity have been unclear. In this study, using plasmaspheric density observations from the PWS experiments on board the Akebono satellite from 1989 to 2008, we conduct statistical analyses on variations of plasmaspheric structures. We divide the data into two groups for geomagnetically quiet/active periods, and derive spatial distributions as functions of L-magnetic local time, and altitude-magnetic latitude. As a result, we confirm that the plasmopause location moves into lower-L shell during geomagnetically active periods. The plasma density in the inner magnetosphere at solar minimum is higher than that at solar maximum even though the geomagnetic condition is almost same.

Keywords: plasmasphere, plasmopause, electron density, akebono satellite