



## **Global expansion of the dayside magnetopause during radial IMF conditions: Statistical study on GOES observations**

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Unusual locations of the magnetopause for the radial interplanetary magnetic field (IMF) have been reported in many studies that used in situ observations. These studies showed that the magnetopause for the radial IMF expanded either over all magnetic local times (MLTs) on the dayside, named as a global expansion, or just near the noon, named as a bullet-like expansion. However, the type of the magnetopause expansion is still controversial because of limited in situ observations near the magnetopause for the radial IMF. In this study, 19-year dayside geosynchronous magnetic fields obtained from GOES are used to remotely infer the shape of the dayside magnetopause. Since the solar wind dynamic pressure is one of major factors that control the size of the magnetopause, we compare the MLT distribution of the geosynchronous magnetic fields for the radial IMF with that for the northward IMF under the same distribution of dynamic pressure in order to examine whether the shape of the magnetopause depends on which of both IMF conditions. We find that the magnetic fields for the radial IMF are smaller than those for the northward IMF over all the MLTs on the dayside regardless of magnetic latitudes and seasons. This result implies that the dayside magnetopause globally expands during the radial IMF condition.