



## **Plasmapause expansions under influences of radial IMF**

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The north-south component of the interplanetary magnetic field (IMF) has a significant influence on the location of the plasmapause. Its influence by the radial IMF, where the magnetic field is aligned with the solar wind flow direction, has not been studied yet. In this study, we identify both the innermost and outermost plasmapause boundaries from observations of the THEMIS satellites under the radial IMF. We attempt to investigate how the two boundaries respond to the radial IMF; the average location of the innermost plasmapause is relatively unchanged; however, the outermost plasmapause moves outward. We further find that the average outward expansion effect for the outermost plasmapause is the largest near midnight and morning side. We suggest the overshielding effect to explain the local time-dependent plasmapause expansion under an influence by the radial IMF. To compare the effect of the radial IMF with that of another quiet solar wind condition, we also determine the plasmapause locations under the northward IMF  $B_z$  using the same THEMIS observations. On average, more outward expansion of the plasmapause under the radial IMF is found than that of the northward IMF  $B_z$  condition. These results are important to understand the dynamics of the plasmasphere, which possibly affects the structure of the radiation belts.