



## **Dayside magnetopause boundary layers under radial IMF conditions**

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The radial IMF leads to asymmetric magnetosheath  $B_z$  orientations at the magnetopause in different hemispheres. The asymmetry forms the special structure of magnetopause boundary layers in the low-latitude region. We used two magnetopause crossings during one prolonged radial IMF event to study the variations of the boundary layer structure and its time evolution. We analyze profiles of plasma parameters and magnetic field as well as the ion pitch-angle distributions observed by THEMIS probes. The non-simultaneous appearance of parallel and anti-parallel field aligned flows suggests two spatially separated sources of these flows. We have identified (1) the inner part of the low-latitude boundary layer (LLBL) on closed magnetic field lines; (2) the outer LLBL on open field lines; (3) the inner part of the magnetosheath boundary layer (MSBL) formed by dayside reconnection in the southern hemisphere; and (4) the outer MSBL resulting from lobe reconnection in the northern hemisphere.