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Identifying Magnetospheric Crossings between Northward and Southward IMF¹ CHELSI NELSON, MICHELLE BUI, CHRISTINA XING, PAULINE DREDGER, FATEME BAGHERI, RAMON LOPEZ, University of Texas at Arlington — The magnetopause is the boundary between Earth’s magnetosphere, controlled by Earth’s magnetic field, and the magnetosheath, comprised of plasma and the solar wind. Our focus for this research was to search for satellite crossings through the magnetopause by utilizing data collected by THEMIS probes found on NASA Space Physics Data Facility’s CDAWeb. In this presentation, we explain how to identify a probe crossing through the magnetopause. A clear crossing can be defined when the ion density sharply increases or decreases and when the z-component (B_z) of the magnetic field sharply decreases or increases respectively. Increasing ion density and decreasing B_z is indicative of the spacecraft moving out of Earth’s magnetosphere. The reverse also applies: THEMIS can move from the magnetosheath into the magnetosphere. The crossing was verified by looking for a sharp change in electron flux. Crossings were considered when the interplanetary magnetic field (IMF) was directed both northward and southward due to solar wind conditions. Searching for multiple satellite crossings in a given time frame can help us determine the location and properties of the magnetopause at a given moment. Identified crossings were recorded and catalogued for analysis of magnetopause activity.

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