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Study of Magnetopause Motion based on multiple Crossing of THEMIS Spacecraft FATEMEH BAGHERI, RAMON E LOPEZ, PAULINE DREDGER, RICHARD BONDE, CRISTINA XING, CHELSI NELSON, NABIN CHAPAGAIN, MICHELLE BUI, University of Texas at Arlington — The magnetopause is a thin current-carrying plasma surface layer which is the magnetic discontinuity separating the weaker interplanetary magnetic field from the stronger Earth magnetic field. The location of the magnetopause is determined by the balance between the pressure of the dynamic planetary magnetic field and the dynamic pressure of the solar wind. As the solar wind pressure increases or decreases, the magnetopause moves inward or outward in response. In this work, we study the magnetopause motion and structure based on observation from multiple crossings of the magnetopause of THEMIS spacecraft with simultaneous solar wind observations. The solar wind data shows the IMF was radial and the velocity of solar wind was almost constant. The thickness of the current layer is about one gyro diameter. The average magnetopause speeds were in the low 10's of km/s, however, speeds up to 100km/s were observed. During this period there is no evidence of hot flow anomalies in the magnetosheath near the magnetopause. Although the orientation of the IMF during the observations would have been predicted to cause wavy motions of the magnetopause boundary, in our study there is no evidence of such kind of motion.

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