

The magnetopause motion in response to solar wind disturbance of 10 February 1997

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The magnetospheric boundary motion in response to solar wind disturbance of 10 February 1997 was considered. The plasma and magnetic field data obtained on WIND, INTERBALL-1, GEOTAIL, GOES 8, 9 satellites, and magnetometer measurements on ground based stations were compared.

The multiple magnetopause crossings were observed on INTERBALL-1 satellite at dusk side of low latitude magnetotail. We considered some causes of the magnetospheric boundary motion, such as variation of solar wind parameters, the Kelvin-Helmholtz (K-H) instability, and substorm activity increasing. It was shown that only the last observed magnetopause crossing was consistent with measured variation of solar wind parameters. The evaluation of K-H instability pointed that only a few magnetopause crossings can be explained by wavy boundary motion connected with K-H instability. The results obtained during substorm increasing suggest the possible connection of short-time motion of the magnetospheric boundary with tail current disruption and the substorm current wedge formation.