



Effect of large and fast solar wind dynamic pressure changes on the geosynchronous magnetic field

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We present a comparison of large and sharp solar wind dynamic pressure changes, observed by several spacecraft, with fast disturbances in the magnetospheric magnetic field measured by the GOES-8, 9 and 10 geosynchronous satellites. More than 260 solar wind pressure changes in the period 1996-2003 were selected for this study. Using the large statistics we found that increases (decreases) in the dynamic pressure P_d always result in increases (decreases) in the geosynchronous magnetic field magnitude. The amplitude of the geomagnetic field response strongly depends on the local time and has a peak near noon meridian. On the average, geosynchronous magnetic field response is linear with the value of local magnetic field before the response under the constant relationship of solar wind dP_d/P_d and as the magnitude of the solar wind pressure disturbances increases, the slope of the linear fit line also increases. This result is agree with our numerical simulations.