



Magnetosheath modification and bow shock movement during an interplanetary shock passage

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Fast forward interplanetary shocks (IPS) representing discontinuities in the solar wind with sharp changes of plasma parameters and magnetic field exert pressure pulses on the Earth's magnetosphere that result in large and fast movement of magnetospheric boundaries, including inward movement of the Earth's bow shock. Observations of the interplanetary shock passages in the magnetosheath revealed characteristic plasma flux and magnetic field time profiles suggesting a trough or surface wave propagating along the bow shock behind the interplanetary shock fronts. Depending on the observation satellite position in the magnetosheath and IP shock properties, close outward and inward bow shock crossings are often encountered. While various bow shock models predict the bow shock position for steady solar wind conditions, a passage of an interplanetary shock is a highly dynamic case. In this contribution we aim to describe bow shock movement delays, speeds and amplitudes based on numerous above mentioned IP shock observations along the magnetosheath and in the solar wind.