



## **Reaction of the bow shock and magnetopause on interplanetary shocks: Multipoint observations and MHD modeling**

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CME driven interplanetary (IP) shocks are sources of the largest geomagnetic disturbances. However, the IP shock should pass the bow shock and magnetopause and the interaction of IP shocks with these boundaries is a complicated process leading to their significant distortions and to a modification of the interplanetary shock itself. Theoretical studies have shown that the interaction strongly depends on the reaction of the magnetopause. Slow or delayed magnetopause reaction on the pressure pulse arrival would lead to the reflection of a fast compression wave, whereas a rarefaction wave would propagate upstream from the magnetopause moving rapidly inward.

We compare profiles of magnetic field and plasma parameters observed by several spacecraft in the solar wind and magnetosheath with the profiles of the same parameters resulting from MHD local and global models in order to determine the speed of the magnetopause response. We can conclude that experimental data are well reproduced by modeled profiles despite the fact that the profiles exhibit complicated structures. A comparison of two runs of the global MHD model reveals unexpectedly important role of the ionosphere in the solar wind - magnetosphere interaction.