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Interactions between a solar wind discontinuity and the Earth's bow shock

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The present study examines the interactions of a solar wind discontinuity with the Earth's bow shock, using data obtained on 21 June 2007 from Wind and ACE in the solar wind, THEMIS in the duskside magnetosheath, Cluster in the dawnside magnetosheath, and DSP/TC1 in the magnetosheath near noon. We choose two cases of the interactions: one for a density increase and the other for a density decrease across the solar wind discontinuity. We focus on the propagation of the bow shock, discontinuity, and fast forward shock/rarefaction wave generated at the bow shock through the interaction, and the response of the magnetosphere.