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Modification of solar wind parameters upstream of the Earth's bow shock

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Studies of the solar wind-magnetosphere interactions often rely on L1 observations that are propagated toward the Earth. The propagation techniques are based on an assumption of a negligible evolution of upstream parameters along the solar wind path. The present study uses multi-point observations in the solar wind with the motivation to check this assumption. The data measured in the L1 point by ACE and Wind are propagated and compared with observations of two THEMIS spacecraft in front of the Earth's bow shock with a special attention paid to the differences between the subsolar and flank regions. We have found a systematic deceleration of the solar wind with decreasing distance from the bow shock. This deceleration is attributed to the reflected and accelerated particles that not only excite the waves of large amplitudes but they can modify mean values of quantities measured in an un-perturbed solar wind.