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Upstream transients and their influence on the bow shock and magnetosheath

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We will present results of the GI Cluster project "Upstream transients and their influence on the bow shock and magnetosheath". We study the main characteristics of upstream transients (cavitons and SHFA), and discuss how they can modify the solar wind, the bow shock structure, and the magnetosheath. The use of Cluster positioned at short separation distances will allow us to determine in detail the 3D morphology of structures such as cavitons, and determine how they evolve as they approach the shock and interact with other foreshock phenomena. We also want to study in more detail the formation of SHFA and their internal micro structure. Other point of interest is to understand how these transients can contribute to processes such as shock reformation and shock rippling.