



Conjugate response of the dayside magnetopause and dawn/dusk flanks using Cluster-THEMIS conjunctions and coordinated Ground based observations.

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The nature of the interaction of the solar wind and associated magnetic field benefits from simultaneous coverage over a range of different magnetopause sites. Cluster-THEMIS conjunctions allow exploration of the conjugate response of the dayside magnetopause and dawn/dusk flanks through such coverage of the magnetopause. During the April to July 2007 epoch, the array of four Cluster spacecraft were separated at large distances (10,000 km), traversing the dawnside magnetopause at high and low latitudes. In conjunction with this coverage, the five THEMIS spacecraft were placed initially into a 'string of pearls' configuration, all lying on the same equatorial orbit and traversing the low latitude, dusk-side magnetosphere and flank magnetopause. In addition, the Double star, TC-1 spacecraft lies in an equatorial orbit between the local times of the THEMIS and Cluster orbits, near local noon. This combination of 10 spacecraft provides an opportunity to simultaneously monitor the dawn/dusk magnetopause behaviour across the whole range of local times, simultaneously, and to probe IMF and solar wind controlled asymmetries. The distribution and grouping of spacecraft also allow multi-scale analysis of local phenomena operating on both flanks of the magnetopause, such as Kelvin-Helmholtz waves and formation of the plasma sheet; boundary layer extent to be monitored, and simultaneous dawn-dusk tracking of the signatures of sporadic reconnection.