SPATIAL-TEMPORAL STUDY OF HOT FLOW ANOMALIES USING CLUSTER MEASUREMENTS

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In spite of the large amount of hot flow anomaly (HFA) observations provided by Cluster and other spacecraft, their spatial-temporal and turbulent features are not sufficiently known. On January 20, 2007 at 14:16, while near their orbital apogee, Cluster 1 (C1) and C2 satellites observed in burst mode the magnetic signature of a HFA. C3 and C4 spacecraft did not observe the feature but the tangential discontinuity (TD) which later interacts to the bow shock was observed at L1 point by the magnetic instrument on-board the ACE satellite. These observations suggest that the orientation and motion of the TD were almost parallel to the ecliptic and that Cluster observed the far region of the active currents sheet – so called HFA. Another event, closer to the bow shock, was observed in burst mode of the magnetometers by all Cluster satellites at 21:22 on January 26, 2006. The comparison of these events using data acquired by the magnetic field (FGM), ion (CIS/HIA) and resonance sounder (WHISPER) instruments on-board Cluster is a unique opportunity for studying the HFA characteristics far from its generation region, its turbulent features and its spatial-temporal development.

Bow shock, tangentional discontinuity, hot flow anomaly
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