

Pi2 waves simultaneously monitored by Cluster and MAGDAS/CPMN on the same meridian

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We study wave characteristics of Pi2 events simultaneously monitored by the Cluster spacecraft and ground magnetometers that belong to MAGDAS/CPMN (MAGnetometer Data Acquisition System/Circum-pan Pacific Magnetometer Network). We focus on cases for which Cluster was located in the inner magnetosphere. We also focus on cases for which Cluster and MAGDAS/CPMN were located on the same meridian: To be more specific, we study Pi2 events for which Cluster was located within the magnetic-longitude range of 180-240 deg, because the distribution of MAGDAS/CPMN magnetometers is dense around the 210 deg magnetic meridian.

Features of thus found Pi2's are studied, with the ground Pi2 signal as a key reference, by using the coherence analysis and the independent component analysis. The results include the following. We have found a few cases for which a few (the rest) of the Cluster satellites were located within (outside) the plasmasphere: Outside the plasmasphere, the Pi2 signal had amplitudes comparable to that on the ground, while inside the plasmopause, the Pi2 amplitude was a few times smaller than that on the ground. The Pi2 amplitude outside the plasmasphere increased with increasing latitude, both in space (Cluster) and on the ground (MAGDAS/CPMN). The phase relationship among the ground stations and the Cluster satellites suggests that the observed Pi2 waves correspond to field-line eigenoscillations rather than propagating waves.