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Comparison of space-borne and ground magnetometer data with SuperDARN data for global ULF pulsations: A case study

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This case study deals with the 21–22 January 2005 event of global ULF oscillations. Pulsations in the range of Pc5 were observed globally by on-ground and space-borne magnetometers as well as by the network of SuperDARN radars. The event took place against the background of a compact high velocity stream of the solar wind with large positive value of the interplanetary magnetic field Bz component and dense plasma. The stream produced a weak magnetospheric storm with Dst_{min} = 105 nT. To study wave field structure of the ULF oscillations during this event we used Doppler velocity data from Kodiak HF radar, magnetic measurements from INTERMAGNET observatories and magnetometer data from GOES-10 and 12 geostationary satellites. Four of INTERMAGNET stations, Barrow, College, Shumagin, and Sitka, were located within Kodiak radar field of view or very close to it. Data from the south hemisphere stations, Eyrewell and McQuarie Island, were also used to study magnetic conjugacy of the event. In order to analyse the wave structure along a magnetic field line, GOES measurements were compared with those from the stations closest to the conjugate points of these satellites. The results of study show good correspondence and even coherence for some time intervals between velocity data from the Kodiak SuperDARN radar and magnetic measurements, as well as between pulsations observed near the top of a field line and its foot. Conclusions are drawn about the 3D wave structure

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