

Pc3-4 EVENTS IN THE SOUTHERN POLAR CAP AND AT LOW LATITUDE: RELATIONSHIP WITH UPSTREAM WAVES

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We analyze Pc3-4 pulsation events observed during 2005 in Antarctica, at the Italian/French base of “Concordia” at Dome C (Corrected Geomagnetic Latitude 88.84 S), located in the polar cap close to the geomagnetic pole, and at the Italian “Mario Zucchelli” base at Terra Nova Bay (80.01 S), also located in the polar cap but at a lower latitude, and at the low latitude station of L’Aquila (36.33 N, Italy). We monitor the interplanetary medium conditions and foreshock region, to investigate the connection to upstream waves. Entry mechanisms of upstream waves into the magnetosphere and their propagation paths at different geomagnetic latitudes are investigated for various conditions of interplanetary parameters, such as cone angle, interplanetary magnetic field and solar wind velocity. We found, as a general result, a greater occurrence of pulsation events, possibly related with upstream waves, for cone angle values in the range 20-50 degrees at all stations. The magnetic local time distribution of Pc3-4 events shows an almost uniform distribution through the day at Dome C, while at L’Aquila they are mostly concentrated in the morning hours, with the main peak between 09-15 LT. Our results reveal that upstream waves can be a source for Pc3 pulsations also in the deep polar cap, and suggest additional propagation channels to the ground via the magnetotail lobes.

magnetosphere – polar cap – MHD waves

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