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Activities of Pc5 pulsations in high-latitudes associated with energetic ion enhancement at geosynchronous altitudes

Osuke Saka[1*], Kanji Hayashi[2]

[1]Office Geophysik, [2]University of Tokyo

There have been two aspects associated with high latitude Pc5 pulsations. The first one is propagation characteristics in east-west direction (Saka et al., JGR, 1983) and the other one is association of the local injection of particles (Saka et al., JGR, 1992). Those results suggest that Pc5 pulsations in high latitudes are not only related to the flow shear in the solar wind but also to substorm injections.

We show in this report that Pc5 events (17 Jan and 10 Aug, 1994) observed at the high latitude stations in the morning sector are accompanied by energetic ion enhancement related to the inflation of inner magnetosphere that began 10 min after the onset of substorm injection (e.g., Saka et al., JASTP, 2010).

The dipole field configurations invoked by the inflation might be a favorable condition for the flow shear to excite field line oscillations. The Pc5 activities are then related to both the solar wind flow and local injection of particles.

Keywords: Pc5 pulsation, energetic particles, inner magnetosphere, geosynchronous altitudes, auroral region