



## **Energetic proton precipitation related to Pc1**

**A.G. Yahnin**, T.A. Yahnina

Polar Geophysical Institute, Apatity, Russia (yahnin@pgi.kolasc.net.ru)

In this report we briefly describe recent findings related to particle precipitation that occur in close connection to observations of EMIC waves seen on the ground as Pc1 pulsations. As evidenced from the data of low-orbiting satellites, this is a localized energetic proton precipitation within anisotropic zone equatorward of the isotropy boundary. Two types of the energetic proton precipitation bursts are distinguished as particle counterparts of Pc1 and IPDP pulsations. It is shown that the precipitation arise from the region in the equatorial plane where westward drifting energetic ions contact with the localized cold plasma structures forming the plasmaspheric plume. We conclude that the localized proton precipitation is an indicator of the field line of the Pc1 source. The observations of the precipitation can be used to monitor the location of the ion-cyclotron interaction. We demonstrate that some features of Pc1, such as long-term variations of the Pc1 frequency and multi-band Pc1 can be explained from the analysis of the peculiarities of the localized proton precipitation.