

Characteristics of mid-latitude Pc5 pulsations observed on the nightside with the SuperDARN Hokkaido radar during a sudd

Mariko Teramoto^{1*}, Nozomu Nishitani¹, Kazuo Shiokawa¹, Tsutomu Nagatsuma², Ken T. Murata²

¹STEL, Nagoya University, ²National Institute of Information and Communications Technology

Sudden commencements (SC) cause quasisinusoidal ULF waves in the wide range of periods from 1 to 600 s. Using the magnetic field data observed by ground magnetometers over wide latitudinal and longitudinal extension and/or by the satellites in the magnetosphere, a scenario of these ULF waves suggested by previous studies is that compressional waves propagate from the dayside to the nightside in the magnetosphere and shear Alfvén waves are excited. Characteristics of ULF waves associated with a SC in the ionosphere are poorly understood while a number of studies have investigated characteristics of ULF waves on the ground and/or in the magnetosphere.

In this study, we focus on Pc5 pulsations associated with the SC which occurred at 11:09 UT on 8 March 2012. The Pc5 pulsations with 200 s periods appeared in the SuperDARN Hokkaido radar field of view at unusually low latitudes (41-53 degrees magnetic latitude) on the nightside. We obtained azimuthal wave number for Pc5 pulsations in the radar Doppler velocity using the azimuthally separated pair of Hokkaido radar beams and found that this Pc5 pulsation had a low azimuthal wave number of 9.6 with westward propagation. Pc5 pulsations observed by the SuperDARN Hokkaido radar were not similar to geomagnetic perturbations on the nearby ground station, St. Paratunka. On the other hand, the UK Sub-Auroral Magnetometer Network (SAMNET) located on the noonside observed clear Pc5 pulsations, which had high coherence with those observed by the SuperDARN Hokkaido radar at 5.5mHz. Details of the analysis will be presented.