Multi-point Pc 1 and PiB observation at middle latitudes

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Multi-point ground observations have shown transverse ionospheric duct propagation of Pc 1 geomagnetic pulsations from high to middle latitudes [Fraser, 1975a]. A triangulation technique with polarization analysis by the multi-point observations is useful to determine the Pc 1 source location [Fraser, 1975b; Fraser, 1976]. However, it is not well understood how and when the Pc 1 pulsations are generated and propagate to middle latitudes.

In order to investigate these processes, three induction magnetometers were installed at Paratunka (PTK, 53.0N, 158.2E, magnetic latitude (MLAT): 45.8N), Moshiri (MSR, 44.4N, 142.3E, MLAT: 35.7N) and Sata (STA, 31.0N, 130.7E, MLAT: 22.0N). The observations with a 64-Hz sample recording have been started on July 5, 2007, at MSR, on August 21, 2007, at PTK, and on September 5, 2007, at STA and will be started at Magadan (MGD, 59.7N, 151.0E,MLAT: 50.6N) in 2008. The propagation direction of Pc 1 pulsations will be determined by the polarization characteristics of the waves. The source of PiB pulsations will be determined by the cross-correlation analysis using these multi-point observations. These magnetometer data will be compared with the data from the new HF radar at Rikubetsu, Hokkaido, and from an all-sky airglow/aurora imager at PTK. In the presentation, we show the analysis of magnetic field variation obtained at STA, MSR and PTK.