

Phase characteristics of Pc5 observed simultaneously at the longitudinally separated equatorial stations

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In the previous study (SGEPSS 104, 1998), we showed that a Pc5 propagated westward at the morning dip equator, in correspondence to the Pc5 propagating westward at the auroral latitude. We suggested that the phase propagation of the equatorial Pc5 was due to the penetration of electric field associated with the ionospheric current vortices propagating westward in the auroral region.

In this report, we present two Pc5 events with phase difference between two longitudinally separated equatorial stations, but the propagation direction of both events does not agree with that of the previous event.

The first Pc5 event (period of 10-min) was observed at the dip equator, Ancon (ANC, UT-5.5), Alcantara (ALC, MLT=UT-3), and Mokolo (MOK, UT+1.5) during an interval of 1200 - 1240 UT on January 22, 1994. The amplitude at ALC is greater than that at low latitudes by a factor of 5.8. From the cross-correlation analysis, we find that the phase of the equatorial Pc5 propagates across the noon from post- to pre-noon sector.

The second Pc5 event (period of 12-min) was observed at the dip equator, MOK and Peradenia (PRD, UT+5.5), and Guam (GUA, UT+9) during an interval of 0520 - 0556 UT on January 23, 1994. The amplitude of Pc5 is enhanced at PRD with an enhancement ratio of 2. The second event shows that the equatorial Pc5 is propagating eastward in the morning sector.

For both events, Pc5 at the high latitude propagates in the

same direction as the equatorial Pc5. Consequently, the azimuthal phase propagation of equatorial Pc5 is determined by the propagation direction of high latitude Pc5.