

## Characteristics of global Pi 2 propagation derived from data of ETS-VIII and MAGDAS stations.

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Pi 2 magnetic pulsations are an impulsive hydromagnetic oscillations with periods of 40 -150 second. Pi 2s are observed by ground magnetometers and satellites with the substorm onset. Pi 2 have been widely investigated, however there are few studies that compare onset of Pi 2 observed by satellite and multiple ground magnetometers with second time-scale. Our present study indicated time lag(0-100s) of Pi 2 observed by ETS-VIII(M.Lat=-7.88, M.Lon=218.56, Hight=36000km)[Koga and Obara, 2008] and MAGDAS/YAP(M.Lat=1.49, M.Lon=209.09) [Yumoto et al., 2006].

In this study, we rigorously compared the Pi 2 waveforms and onset time at ETS-VIII and MAGDAS stations located along 210MM and near the magnetic equator. The time resolution of all data is 1 second.

We selected 91 isolated Pi 2 pulsations observed at YAP during 18:00-04:00LT and analyzed statistically. The analysis period covered three months from June 2009 to August 2009. We calculated time lags of H-component of Pi 2 between ETS-VIII and YAP objectively, using correlation coefficient and revealed local time and Kp dependence of the time lags. We also estimated the ratio between the amplitude of each component Pi 2s observed at ETS-VIII and YAP.

From the analysis, the following results are obtained;

(1)The onset time of Pi 2 observed at ETS-VIII is earlier than at each ground station, although the phase of Pi 2s observed ground slightly shift depending on latitude or longitude of the station.

(2)The time lags of H-component Pi 2 between ETS-VIII and YAP show Kp and local time dependence.

(3)69% of Pi 2s shows that the amplitude of H-component observed at ETS-VIII is larger than that observed at YAP.

(4)72% of Pi 2s shows that the amplitude of H-component observed at ETS-VIII is larger than that of D-component Pi 2s. The ratio(D/H) shows clear local time dependence.