

## Propagation Pattern of Omega Signals Observed by Poynting Flux Analyzer Onboard Akebono

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To observe the Earth's magnetosphere and plasmasphere, Japan has launched a satellite nicknamed Akebono (EXOS-D) in 1989. The PFX subsystem onboard of Akebono has been observing omega signal that was transmitted by 8 ground stations of omega system around 1989-1997 and is valuable for study about propagation characteristics of VLF waves in the ionosphere and plasmasphere. To analyze these signals, we are using automatic detection methods by developing an analyzer software. For the methods itself it consist of FFT analyses, determination of the stations which transmitted the signals, estimation of delay time, discrimination of signal existence and estimation of signal intensity. We also added some error detection and efficiency processing method for fast analyzing process. The result of intensity, delay time, and local time dependence analyses are presented in geographic and geomagnetic map.

After analyzing 2 years of PFX data from 1989 to 1990, we found that omega signals from each station have unique pattern propagation but they also have some common pattern. Latitudinal location of the station affects much of the propagation, that is, signals from the stations at higher latitude will show very wide propagation with large intensity, while signals from the stations at lower latitude show very narrow propagation with weak intensity. We also found that the signal become more electrostatic it propagates wider and further to the other hemisphere from the original transmission station. The omega system was operated until 1997, so that the PFX data obtained from 1991-1997 is available for further statistical analysis and it is now under study.