

## Estimation of the electron density in the ionospheric D-region from MF radio wave observed by S-310-37 rocket

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S-310-37 rocket was launched at Uchinoura Space Center (USC) at 11:20 a.m. (LT) on January 16, 2007. Electric Field Detector(EFD) was carried to observe the natural electric field and estimate the electron density in the ionospheric D-region. EFD observed the electric field of two frequencies. One is frequencies less than 32Hz for the natural electric field. The other is a medium frequency(MF) of 873kHz for the radio broadcast wave, NHK Kumamoto 2nd channel, for estimating the electron density. The electron density in the ionospheric D region is estimated from analysis of the MF wave propagation characteristics.

The wave propagation characteristics in ionosphere can be calculated by Full-wave method. We calculate the wave propagation characteristic in a temporarily electron density profile by Full-wave method at first because we have not known the electron density profile yet. Next, we correct the temporarily electron density profile as the calculated wave propagation characteristics accord with the observed one. This operation is repeated until according. When they are according, the estimated electron density profile is determined as equal to the temporarily one. In this presentation, we will discuss the analysis method and the estimated electron density profile.