

## Improvement of time resolution of equivalent ionospheric current system deduced from grand magnetic observation

OYAMA, Tatsuya<sup>1\*</sup>, KITAMURA, Kentarou<sup>1</sup>, YUMOTO, Kiyohumi<sup>2</sup>

<sup>1</sup>Tokuyama College of Technology, <sup>2</sup>Space Environment Research Center, Kyushu University

In the present study, the equivalent ionospheric current system is estimated by using the geomagnetic data observed at the multi-point grand observatories. As a preparation of the analysis, two kinds of interpolation are taken to the original data. First the observed points are virtually expanded in the longitude by taking the current vectors at every each one hour for six hours. Then the vector field of the ionospheric current system is calculated on the coordinated mesh grid with interval of 5 degrees in both latitude and longitude, by using the trigonometric interpolation.

The electric potential is obtained from the interpolated ionospheric current system by spherical harmonic analysis. As a result, the ionospheric current pattern estimated from 12-orderd spherical harmonic analysis well corresponds with that from the row current vector data which shows the snap shot of the ionospheric current system. It is confirmed that the reduction of the time resolution is not so critical, whereas more careful validation should be required in the future study.

Keywords: Equivalent ionosheric current system, geomagnetic observation