

Development of TEC observation method using small differences of arrival angles of geostationary-satellites

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We have been observing Total Electron Contents (TEC) with the Faraday rotation method using positioning signals transmitted from geostationary satellites, ETS-VIII and MTSAT-2 [1]. On the other hand, to observe a slight change in angle of arrival when geostationary satellite positioning signal to pass through the ionosphere, caused by ionosphere refraction of radio wave propagation path, it can be converted into TEC values are known [2].

But most of all reports [3] do not argue about absolute values, but about fluctuations. In this study, to examine the relevance of numerical value between the Faraday and the angle-of-arrival methods, we set up the interferometer by the three parabolic antennas were installed at the intervals of 50 ~ 80 m as well as the Faraday measurement [4].

When we made a presentation last year, angle-of-arrival method was twice as Faraday method. So we re-examine a phase difference method between each antennas. And we recalculate orbital calculation. As a result, angle-of-arrival method was similar to Faraday method.

In addition, we compare QZS-TEC and IRI model with angle-of-arrival method. And we observed sporadic-E by arrival angle method. This result was same as GEONET in July 4th 2012. We speak these results.

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Reference

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