

## Observation of GNSS scintillation in Tromso

Yusaku Ito<sup>1\*</sup>, Yuichi Otsuka<sup>1</sup>, Kazuo Shiokawa<sup>1</sup>, Keisuke Hosokawa<sup>2</sup>, Yasunobu Ogawa<sup>3</sup>

<sup>1</sup>STEL, Nagoya Univ., <sup>2</sup>UEC, <sup>3</sup>NIPR

A radio signal passing through small-scale irregularities in the ionospheric electron density fluctuates in amplitude and phase because the irregularities act as diffraction gratings. This phenomenon is known as scintillation. The GNSS(Global Navigation Satellite System) scintillation is caused by irregularities with scale-size of several hundred meters. In this study, we install GNSS receivers at the EISCAT radar site in Tromso, Norway, where optical and radio measurements are carried out. On January, 2012, we have installed a GNSS receiver at EISCAT radar site in Tromso, Norway. The receiver has an ability to measure phase and signal-to-noise ratio of the radio wave at dual frequency (L1 and L2) at 50 Hz, so that total electron content and phase and amplitude scintillations can be obtained. On September, 2012, we have installed two more receivers. Mutual distances between the GNSS receivers are 172m, 242m and 218m, respectively. Drift velocities of irregularities can be measured using cross-correlation analysis with the time series of the GNSS signal intensity and phase obtained from the three receivers.