

## Diagnosis of troposphere-induced positioning errors using high-resolution numerical weather model

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In the routine analysis of GEONET, positioning errors caused by the tropospheric delay have been occasionally observed, which make the crustal deformation monitoring a difficult task. In the case study, we found that the characteristic positioning errors observed in the routine analysis of GEONET were reproduced using numerical weather model and the induced mechanism of errors was clarified.

In this research, we investigated which the numerical weather model is useful for diagnosis of troposphere-induced positioning errors in various typical weather conditions such as seasonal rain front, typhoon, extratropical cyclone, and so on. For this purpose, we used the numerical weather model with 1.5km horizontal resolution and 30-minute temporal resolution computed by the Weather Research and Forecasting (WRF) model while assimilating JMA meso-scale analysis data. We produced simulated GPS observation datasets using Satellite Positioning System Simulator (SPSS) developed by GSI with the numerical weather model data. Then, we analyzed simulated GPS data by the PPP method using GIPSY-OASYS ver.6.1 to estimate positioning errors due to tropospheric delay. In presentation, we will report on these results.