

## Real-time ionosphere 3-D tomography and its validation by MU radar incoherent scatter measurements

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Real-time ionospheric 3-D tomography with GEONET real-time data has been operated since March 2016. 3-D ionospheric density profiles over Japan are reconstructed every 15 minutes with about 6 minutes delay [Saito et al., NAVIGATION, 2017].

The reconstructed ionospheric density profiles are shown to be generally in agreement with the foF2 measured ionosondes. The 3-D tomography has also been compared with the electron density profiles measured by the MU radar (34.85N, 136.11E) incoherent scatter (IS) measurements on a few days to show good agreements in their heights and shapes around the F region peak. However, it has also been shown that the foF2 values estimated by the 3-D tomography are not always in good agreement with those observed by ionosondes.

To evaluate the performance of the 3-D tomography in terms of the F region peak height and shapes of the electron density profile, further comparison with the MU radar IS observations were conducted. MU radar IS observation data from 35 days from May 2016 to September 2017 are used. Trend in the agreements in the F region peak height and shapes of profiles in different seasons will be discussed. Based on the comparison, the way forward to improve the ionosphere 3-D tomography will also be discussed.