

## Study of tropospheric tomography for water vapor distribution with Neural Network

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Many meteorological disasters such as landslides with torrential rain have been reported. Monitoring and a prediction of the precipitation activity are very important to mitigate these disasters. However, in the developing countries such as Indonesia and the Philippines, the observation with the radars is difficult in the present conditions due to the cost and the maintenance. The water vapor tomography using a GPS and/or broadband satellite is considered to be effective for the precipitation monitoring system instead of the radars in the above countries.

When the rain cloud bringing the damage of a heavy rain and the thunderstorm is developing, there is an apparent flow of the water vapor from the neighborhood. It is possible that the GPS can detect the flow and distribution of water vapor. Therefore, in this study, we develop a water vapor tomography from GPS and AMeDAS data using algorithm of residual minimization learning neural network (RMTNN). The numerical simulation demonstrates a capacity of the developed method, that is, the reconstructed image can show the transient changes and the inverse layer in given water vapor distributions. The details will be shown at our presentation.

Keywords: tomography, water vapor, GPS