

## Estimating the motion of atmospheric water vapor using the Global Positioning System

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Water vapor is both an important component in the atmosphere for the transport of energy and a noise source for satellite SAR observations of the Earth's surface, such as for interferometric SAR (InSAR) measurements. GPS data collected from ground receivers are sensitive to the total amount of water vapor above the antenna and data from continuously operating GPS receivers are routinely used to estimate delays caused by atmospheric water vapor. Using these time series of atmospheric delay from networks of GPS receivers, we have estimated the motion of atmospheric water vapor above GPS networks. The motion above each site is determined by comparing the timeseries from different sites and estimating relative time offsets in these time series. These are then used to determine the velocity field of the atmospheric delays as they move across the network. Such results can be useful for improving the understanding of the energy transport in the atmosphere, the spatial interpolation of water vapor, and for calibrating InSAR observations for delays caused by water vapor.

Section 2: GPS meteorology: atmospheric sensing with ground and space-based GPS receivers

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