



GNSS tomography and optimal geometrical setting to retrieve water vapour density of the neutral atmosphere

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Day by day, the number of GNSS satellites, ground receivers and slant observations are increasing. From these measurements a better monitoring of the water vapour of the neutral atmosphere is expected using tomographic imaging. For the moment the limitation of GNSS tomography is still due to a weak geometric representation. For this reason, this study will present some tests about the sensitivity of tomographic retrievals to different geometry of network and to different vertical and horizontal distributions of the adjusted volumic pixels (voxels). Using a synthetic approach (slant water vapour contents simulated from numerical atmospheric model outputs, e.g. ERA-interim and BASCOE) to retrieve information about the water vapour of different layers of the neutral atmosphere, this study will show the respective optimal geometrical setting of GNSS tomography. A validation of these configurations will be shown using real GNSS observations of SIWV (established from ZTD and gradients) and tomographic retrievals compared to profiles from radiosondes and sun-synchronous satellites sensors (i.e. IASI on MetOp-A and MLS on Aura).