

# ***Interactive comment on “Cross-validation of GPS tomography models and methodological improvements using CORS network” by Hugues Brenot et al.***

## **Anonymous Referee #3**

Received and published: 25 February 2019

General Comment: The manuscript presented the assessments of the tomographic water vapor fields solved from 5 models. Authors have tested the impacts of various factors including initial conditions, data stacking, pseudo-slant observations and the uncertainty of GPS observations on the tomographic solutions. This paper is well written and structured. I thus recommend it for publication in AMT after a moderate modification.

Specific comments: 1 It is mentioned in section 3 that the voxels of the outer grid are considered inside a band with a width of about 400 km. Since the water vapor is assumed to be homogeneous distribution within each voxel, the huge outer voxels may

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bring nonnegligible errors to the tomographic solution. Please show more details on how to include the outer voxel in the tomography model?

2 Line 16 of page 22, 'applled' to 'applied'

3 Stacking data is a good way to improve the tomographic results. Is the time span of the stacked data same to the time resolution of the tomography? If no, please indicate clearly in the paper the concept of data stacking.

4 Since during extreme weather conditions, the air mass will change very quickly within 10 minutes or higher. It seems that a resolution of 30 min is used in the study. Is it possible to reconstruct the water vapor fields with an interval of 10 min or even higher?

5 Pseudoslant SWDs in direction of GPS satellites are estimated using isotropic mapping function. How did you get the ZWDs for each pseudo-site? If the anisotropic part is not considered in the calculation of pseudo SWDs, it will have the same effects to the use of horizontal constraint on the tomography. Do you think so?

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Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2018-292, 2018.

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