Review: High temporal resolution wet delay gradients estimated from multi-GNSS and microwave radiometer observations

The study analyzes wet delay gradients from the gnss and the water vapor radiometer (wvr). Results are consistent with results from previous studies. Some new interesting details are provided. In general i find the paper well written and i suggest publication after the following points are addressed:

P 2, L 36: "...The temporal resolutions of such comparisons are to our knowledge so far limited to 1 h for WVRs (Lu et al., 2016), 2 h for VLBI (Steigenberger et al., 2007), and 6 h for numerical weather models (Zus et al., 2019)." I think at this point it is worth to mention the following recent paper:

Kačmařík, M., Douša, J., Zus, F., Václavovic, P., Balidakis, K., Dick, G., and Wickert, J.: Sensitivity of GNSS tropospheric gradients to processing options, Ann. Geophys., 37, 429–446, https://doi.org/10.5194/angeo-37-429-2019, 2019.

In this paper hourly nwm/gnss data were utilized in the comparisons.

P2, L55: "...We used the Vienna Mapping Function 1 (VMF1) (Boehm et al.,552006) to map the zenith delay and the gradient mapping function was the one presented by Bar-Sever et al. (1998)" Please provide the formulas for the wet delay gradients somewhere in the manuscript. Maybe this is the right point to do so. For many readers it is not clear what you mean by wet delay gradients. Also the formulas will help to understand why the estimated wet delay gradients depend on the observation geometry, elevation cut off angle, elevation dependent weighting etc.

P3, L65: "...In order to compare to the wet component inferred by the WVR, we subtracted the hydrostatic component computed from the reanalysis product of the European Centrefor Medium-Range Weather Forecasts (ECMWF), ERA5, from the total gradient to get the GNSS wet gradient…" Please provide the details (or reference) on how you calculated the hydrostatic gradient from the weather model. What about the wet gradient? Is it worth to be included in your comparisons?I mean is it close to the wvr and the gnss estimates?

P4, L95: You make use of a four parameter model to obtain tropospheric parameters. This is very similar to what is done with the gnss. Why do you not apply similar constraints?

P5: In figure 3 you show the gnss installation. Can you provide a multipath map for the two installations? What do you think is the main limiting factor for the accuracy of the gnss gradient estimates?

P5: In figure 4 you show the observation geometry that is used to estimate the gradients. With such measurements you could investigate the role of the observation geometry, right? For example, you could remove certain observations to the north to get an idea on how well the gradient can be estimated with the limited observation geometry of the gnss.

Figure 10: Do you have an explanation for the significant bias in the zwd? Out of curiousity: did you compare the measured wvr zwd (measured in zenith direction) with the estimated wvr zwd (estimated by least square adjustment)?

Figure 11: This is a very interesting plot. again, my question is the following: what would happen if you apply constraints in the wvr estimation procedure.