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Discussions

Interactive comment on "The use of GNSS zenith total delays in operational AROME/Hungary 3D-Var over a Central European domain" *by* Máté Mile et al.

Anonymous Referee #2

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This paper presents the results on the impact studies of assimilating GNSS ZTD observations together with conventional observations, radar reflectivities and Doppler winds, and radiances from satellites with an experimental AROME/Hungary system over a domain in central Europe for two periods. The pre-processing, the description of the experiments , and the results are explained in detail. And the impact shown seems to be consistent with previous published studies. My recommendation is to accept the publication once minor modifications suggested below are taken into account: - A map of the GNSS stations coverage before and after the 20km thinning could be recommended to include. - As it is well explained in this study, the winter period has been carried out without the previous adaptation of the bias coefficients

and then the impact is more neutral. It could be reconsidered here the possibility to include a study of these bias values in the period itself to check if they have already stabilized, as it is suggested in the text, or even if it is necessary to include this period in this work due to showing the impact of assimilating GNSS ZTD observations and also the impact of using variational or static bias corrections (as Sanchez-Arriola et al. 2017) with the domain and nwp system selected might be enough. Other suggestions are: P1L2: replace "numerial" by "numerical" P1L4: replace "ZTDs" by "ZTD" P1L8: replace "ZTDs" by "ZTD" P2L33: You may probably have forgotten to add the TOUGH (Targeting Optimal Use of GPS Humidity Measurements in Meteorology) Project in the list that took place just after COST 716 and before EGVAP (http://tough.dmi.dk/) P3L10: replace "ZTDs" by "ZTD" P3L16: replace "ES1206" by "COST ES1206" P3L22: replace "Applied" by "Description of the" P3L27: replace "Meso-NH(?)" by "Meso-NH (Lac et al., 2018)" P3L50: Assimilated satellite observations could be more explained P4L18: replace "COST Action ES-1206" by " COST ES1206" P4L35: replace "ZTDs" by "ZTD" P5L5: replace "station multiplication " by "stations that are processed by more than one Analysis Centre" P5L10: replace "consist 197" by "consist of 197" P7L25: Figure 7 could be a little bit more explained. P7L: replace "consist 197" by "consist of 197" Cannot Figure 9 and Figure 10 be after Figure8 and before the Conclusions?

Please also note the supplement to this comment: https://www.atmos-meas-tech-discuss.net/amt-2018-433/amt-2018-433-RC2-supplement.pdf