Atmospheric Measurement Techniques Discussions

Atmos. Meas. Tech. Discuss., referee comment RC2
https://doi.org/10.5194/amt-2022-238-RC2, 2022

Comment on amt-2022-238

Anonymous Referee #2

Referee comment on "Validation of tropospheric ties at the test setup GNSS co-location site in Potsdam" by Chaiyaporn Kitpracha et al., Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2022-238-RC2, 2022

The paper is another contribution to the ongoing discussions and developments related to colocation of space techniques and/or different array of equipment making use of similar neutral-atmospheric conditions, aka, tropospheric ties. The paper presents and analysis two experiments made by the group at GFZ Potsdam, one concerned with effects of GNSS radomes and differential height among antennas, and the other mostly concerned with different GNSS antenna types. The analysis is fair and the results tend to confirm what other previous studies have found. Overall, I consider it a useful contribution as we need much more work to realy understand and make good use of the potential of atmospheric ties.

A few suggestions, comments and questions are posed below.

Are atmospheric ties a function of the GNSS receiver or of the GNSS antenna?

The abstract refers to a " previous study" apparently not referenced.

Better to use " elevation angle" instead of just " elevation"

The data collection was mostly during the "cold season." Any exprected differenceif the experiment took place in summer?

The word uncertainty used in Table 3, does it refer to RMS at 1-sigma?

Suggesting to write "This suggests that using highER elevation angles"

Suggesting towrite "This finding agrees with previous studies, such as ..." (there are more than the study quoted)

What does empirical standard deviation mean?

What does " standard deviation of S0" mean?

Why are biases caused by different atmospheric conditions since they are under the same? What do the authors mean by using the word "atmospheric"? Does ionosphere or space weather affect that too?

Are the biases high or comparable to other experiments?

Table 6: are the gradients values significant numbers?

Figure 13: Why gradients not shown as table to be consistent with what was done before?