

The authors addressed all reviewer comments and improved the manuscript quality consistently. However, in my opinion, before the manuscript can be accepted for publication, the part of the manuscript regarding the error analysis must be improved. After these issues are solved, the manuscript should be accepted for publication.

- Section 3.5 is unclear in two points:

a) I don't understand why the authors choose to compute the rRMSE relative to the variation in  $X$ ,  $(\max(X)-\min(X))$ . For the case  $\min(x)=0$  this would be the maximum value (which is the case for this dataset), and if the variation in  $X$  is small the relative values diverge. I would use either the mean value as for the STE, or normalize each error  $(Y-X)$  by  $X$  before computing the root mean. Please change it or give a valid reason for using this type of normalization.

b) It is also not clear from the text which dataset  $Z$  is used for determining the STE. I assume this are the different traces used for one datapoint. Please explain more it in detail. Since the STE is given for each sample should it not be more correct to use the standard deviation? Moreover, if  $Z$  is the sample of traces used for one datapoint then  $N$  must be the number of traces, which is different of the  $N$  used for RMSE which is the number of datapoints. Use different symbols if this is the case.

- I don't agree with the argument of the authors that it is not necessary to indicate the RMSE and rRMSE of the data in figure 11. It is true that comparison between in-situ and GNSS data is tricky due to the different footprint. However, some information is better than no information. The footprint point can still be explained in the text. Please indicate RMSE and rRMSE for figure 11 a1,b1 and c1. The same is true for sentence at line 510.

Moreover, the second part of figure 11 is visually very appealing but unfortunately the higher bars cover the points in the back. I suggest using a simple color plot since the z-axis is already indicated by the color. (At least I think since the z-axis label is missing). I also find valuable to use a color plot similar to Figure a1,b1 also for fig. 11a1,b,c1. It would indicate the density of point relative to the 1:1 line.

**Below a few minor comments.** Mostly style and language. The line numbers refer to the document with track changes.

Line 40: delete good. "the potential" is sufficient.

Line 47: delete "years of"

Lines 68-69: "remote sensing has a long revisiting period (>20 days) and high cost ..."

Line 99: "... for typical GNSS-IR sites..."

Line 128: It is not clear to me in which sense snow is a natural disaster for pastoral area if is providing fresh water. Do you mean the lack of snow?

Figure 4: Please indicate E in (a).

Line 285: Indicate the return period. Do the tracks repeat every day?

Line 303: housing instead of small house.

Line 336: It is not clear to which site you are referring to. Figure 5 has 3 sites.

Line 411: "...site over from October...". Delete "over".

Line 421: included instead of involved.

Line: 424: Please change to "... possible error due to vegetation..."

Line 474: See comment above about STE. Do you indicate the same STE for each point?

Lines 475-476: It is not clear to me what the authors mean with this sentence. Did you filter all data with large STE. In this case why? Specify how many outliers (percentage) were deleted and precise which other effects besides GNSS frequency you expect.

Lines 496-500: It is not clear to me relative to which data the RMSE and rRMSE indicated in this paragraph were computed. Please specify.

Lines 518-521: All snow depth values? I see just 16 sites but the dataset contains much more sites. Please correct or specify.

Figure 14 and corresponding text: Can you give an explanation for the underestimation of mean snow depth by PMW? It has a larger footprint but why is the mean snow depth over a larger footprint smaller?

Line 578: Change to "PMW data were available only for the period 2016-2020."

Line 689: Provide a reference of the previous study.

Line 693: change to "30 seconds for which is impossible ..."