

The Cryosphere Discuss., referee comment RC2
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Comment on tc-2022-9

Anonymous Referee #2

Referee comment on "Permafrost Stability Mapping on the Tibetan Plateau by Integrating Time-series InSAR and Random Forest Method" by Fumeng Zhao et al., The Cryosphere Discuss., <https://doi.org/10.5194/tc-2022-9-RC2>, 2022

The paper aims to develop a method for permafrost stability mapping on the Tibetan Plateau, which combines integrates InSAR and random forest. The work is an innovative and very worthwhile attempt, and it has a good guiding for disaster research in some regions with a complex geological environment like the Qinghai Tibet Plateau particularly. However, some minor issues still need to be improved. The specific comments are given as follows.

- There are two spelling mistakes in line 48 and 305 that "too that many" and a sudden "s".
- Line 177: please explain why do you use vertical ground deformation, but not LOS ground deformation, i.e. what are the advantages over here by doing so?
- It is mentioned in line 265 that permafrost instability mainly distributed in the valley areas with low altitude. However, in your Fig. 4(a), there are many areas with high deformation that distribute in high altitude mountainous areas. Please explain!
- It is mentioned in line 266 that the ground deformation mainly took place in the west-facing slopes. In theory, it is right due to the "descending" approach of the satellite. However, in Figure 4b and 4c it seems that there are more points on the east-facing slopes. Why?
- In line 370, the threshold values are set as ± 0.15 mm/year and -40 mm/year. Please state or provide a scientific basis of setting up such values.
- In line 397, the ROC curve is used to evaluate the accuracy of the model, but where is the ROC figure?