

Comment on **essd-2022-85**

Anonymous Referee #1

Referee comment on "Permafrost changes in the northwestern Da Xing'anling Mountains, Northeast China, in the past decade" by Xiaoli Chang et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2022-85-RC1>, 2022

Permafrost in NE China is prevalent but has been ignored for quite a long time. The paper presents the latest permafrost conditions and dynamics in this region via 7 boreholes in the Da Xing'anling Mountains. The paper is generally well organized and clear to me. As a permafrost researcher, I, therefore, appreciate the considerable efforts taken by the authors to the permafrost community. I also very much welcome the publication of valuable permafrost datasets.

Major comment

1. Change trend

Many times, the authors provided the permafrost temperature and active layer change rate based on the in situ measurements. My major concern is that are the trends significant, i.e., p -value < 0.05 ? This is important as permafrost temperature at some sites seems "maintained" without a trend, right? Please clarify.

I also suggest authors use the unit of $^{\circ}\text{C dec}^{-1}$ or m dec^{-1} for the estimated trend. In such a case, authors at least could avoid so many "0".

2. Ground temperature amplitude

It is not surprising that ground temperature amplitude decreased with increased depth if groundwater is absent. I suggest authors provided the depth of zero annual amplitude

(ZAA), its annual ground temperature is also often taken as permafrost MAGT.

3. Data availability

The authors mentioned the data used in this study are public open via TPDC, but it seems the link does not really work. Could you please double-check the link? This will also be required by the ESSD journal if the paper is accepted for final publication.

Specific comments:

- P1, L34: about "one quarter"
- P1, L36: In this case, the permafrost region over the TP was about $1.59 - 0.31 = 1.28$? Could you please update the statistics based on the latest results from Cao et al., 2019, or Zou et al., 2017?
- P5, L196: Please check if the estimate is significant.

Tables & Figures

Table 1: Could you also please provide the last measured MAGT and ALT? This would then provide clear TSP info at the measured sites to readers.

Figure 1: Is the permafrost distribution from IPA map? Please clarify.

References

Cao B, Zhang T, Wu Q, Sheng Y, Zhao L, Zou D. Permafrost zonation index map and statistics over the Qinghai-Tibet Plateau based on field evidence. *Permafrost and Periglacial Process*. 2019;30:178–194. <https://doi.org/10.1002/ppp.2006>

Zou, D., Zhao, L., Sheng, Y., Chen, J., Hu, G., Wu, T., Wu, J., Xie, C., Wu, X., Pang, Q., Wang, W., Du, E., Li, W., Liu, G., Li, J., Qin, Y., Qiao, Y., Wang, Z., Shi, J., and Cheng, G.: A new map of permafrost distribution on the Tibetan Plateau, *The Cryosphere*, 11, 2527–2542, <https://doi.org/10.5194/tc-11-2527-2017>, 2017.