

Comment on **essd-2022-85**

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Community 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-CC1>, 2022

General comment:

This study investigated the changes in thermal regime of permafrost on the northwestern Da Xing'anling Mountains, Northeast China in the past decade based on a ten-year observation of permafrost and active-layer temperatures. The topic of this study is hot, the results have potential benefit for understanding responses of permafrost to climate change. However, there are some flaws and concerns that should be clarified. I recommend a major revision.

Specific comments:

- In my opinion, one scientific value of this study is to provide valuable long time series data for other permafrost and related studies, such as, statistic analysis, model evaluation and development, reanalysis dataset validation, etc., however, current version didn't emphasize this point.
- As authors stated, many studies have been analyzed the permafrost changes (e.g., Jin et al., 2000; Jin et al., 2007; Shanshan Chen, 2020; Zhang et al., 2019; Jin et al., 2021), new insights that is expected are few. For example, how the frozen soil has changed in the last decade and how it is different from the past were not clear.
- The data at Gen'he has large missing values (Figure 5, 6), the linear trend was calculated on base of intermittent series that should be not robust.
- The possible reasons for cooling permafrost in the last decade on the northwestern slope of the Da Xing'anling Mountains should be further investigated, its relations to winter precipitation, snow cover and maximal snow depth are just appearances, how snow affect the soil temperature of permafrost through surface energy budget (e.g., albedo effect, insulation effect, etc.) should be clarified.
- Uncertainties of some quantitative results should be discussed, for example, line 183 "warming at an average rate of 0.004-0.020 °C /yr", its magnitude is much small than the observation error.
- Linear trend should be made significant test.