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Interactive comment on "An integrated observation dataset of the hydrological-thermal-deformation dynamics in the permafrost slopes and engineering infrastructure in the Qinghai-Tibet Engineering Corridor" *by* Lihui Luo et al.

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Response to referee comment 2:

The manuscript by Luo et al. described multiple observation data sets in the Qinghai-Tibet Engineering Corridor (QTEC). I agree with the previous reviewer's comments about the hard-won data in this manuscript. What is particularly commendable is that

the author chose a study area where railway, highway and electrical towers are all distributed on a frozen soil slope. Temperature, air and ground temperature, is the most important indicator of changes in frozen soil. The author uses drones equipped with thermal infrared sensors to monitor spatial changes in surface ground temperature. This data should be relatively rare. This set of data is of great significance for studying the interaction between frozen soil engineering and slopes. Overall, this is a well-prepared manuscript with useful data. The study area is very typical and distinctive.

Response: Thank you for the insightful comments. In revising the paper, we have carefully considered your comments and suggestions. We agree with your comments regarding the metadata, code execution, and data description, among others. To address these concerns, we have made the following modifications to the manuscript: (1) we have added README.md files for the entire dataset of the manuscript and for each data set, such as meteorological and ground observations, TLS measurements, UAV RGB and TIR images, and R code of permafrost indices and visualization, and generated the corresponding README pdf and html files; (2) we have checked the integrity of the data file and added the missing data, including InSAR data and the study area boundary shapefile data in the TLS measurement dataset; (3) we have added vector and raster data of the boundary, DSM (digital surface model), and mosaic of the study area processed by UAV monitoring data; (4) we have renamed some data files because it was difficult for data users to obtain certain data due to naming reasons, and reorganized the file directory, (5) we have modified many inappropriate expressions, including the title; (6) we have updated the data DOI; (7) we have deleted some references with little relevance and added some related references; and (8) we have improved the flow of the language throughout the manuscript (Figure R1). We have tried our best to address each of your points in detail. We feel the revision represents an improvement, and we hope that you agree. For more details, please see our replies below.

Figure R1. Editorial Certificate.

Therefore, I don't have any major suggestions on how to improve the manuscript. Please see some minor comments below.

Minor comments: 1. Please provide a more detailed metadata description of the data set.

Response: We have added metadata files README.md for all datasets and generated the corresponding html and pdf format files. The study area embeds Google Maps in the README.md file. Meteorological and ground observations, as well as the R code of permafrost indices and visualization, include the period from 1955 to 2019. TLS measurements and UAV RGB and TIR images are from 2014 to 2017. We have added a description of the time period in the main text and README.md.

2. It is recommended to add the running notes in the code, and increase the readability of the code, so that users can not only execute, but also modify and improve.

Response: Thank you for the insightful comments. We have reorganized the code, added the required comments and instructions to the code, added a new instruction document on how to use the code, and added the README.md markdown file for operation of the code, including the corresponding html and pdf files. We have also recorded an operation video and provided it in README.md and README.html.

3. Please delete Figure B3. If possible, just describe it in the text.

Response: We have deleted Figure B3.

4. The latest references need to be cited, and some references need to be added. As in the following article: Wu, Q., Sheng, Y., Yu, Q., Chen, J., and Ma, W.: Engineering in the rugged permafrost terrain on the roof of the world under a warming climate, Permafrost and Periglacial Processes, 31, 417-428, https://doi.org/10.1002/ppp.2059, 2020.

Response: We have added the indicated reference and updated some references in the manuscript.

5. This manuscript focuses on ground and drone monitoring data, so it is recommended to delete InSAR data.

Response: As a supplement to the TLS point cloud data, we have prepared Sentinel-1 deformation data for the freeze-thaw stage in the study area from 2014 to 2020 using interferometric synthetic aperture radar (InSAR) technology. These are the InSAR data for the entire study area. These data are a good supplement and comparison to the TLS point cloud data. We still retain these data in the TLS measurement dataset.

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Please also note the supplement to this comment:
https://essd.copernicus.org/preprints/essd-2020-106/essd-2020-106-AC2-supplement.pdf

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