Title: A synthesis dataset of permafrost thermal state for the Qinghai-Tibet (Xizang) Plateau, China

Dear Editor,

Thank you very much for your great efforts dealing with the manuscript, and we appreciate the editors very much for their constructive comments and suggestions. We have replied the editor's comments carefully. The manuscript has been revised to the best with our knowledge according to the suggestions.

Comments to the Author:

I am pleased to inform you that we got several very positive comments on your manuscript (ms: essd-2021-1), although the editor and I have a similar concern. Therefore, I would like to ask you modify the manuscript before it can be acceptable for publication.

The main concern is about figures and tables.

1. Question

One cannot read the information from Table 2 because there are so many values. Do you think it can be a part of datasets? The main context provides the necessary information of these six stations only.

Response:

Thanks a lot. We have checked the dataset, and the information in Table 2 was removed duplicate data in the dataset. We have revised Table 2 as follows:

Table 2. The information of six meteorological stations

Sites	XDT	TGL	LDH	ZNH	AYK	TSH
Elevation (m a.s.l)	4538	5100	4808	4784	4300	4844
Ta (°C)	-3.6	-4.7	-2.3	-4.9	-5.2	-6.0
RH (%)	53.5	51.5	48.2	53.9	46.1	40.6
Precipitation (mm)	384.5	352.0	388.6	277.8	158.6	103.3
Wind speed (m/s)	4.1	4.1	3.2	4.7	4.5	
DSR (W/m^2)	224.2	233.4	231.4	204.8	198.2	250.8
USR (W/m^2)	66.8	61.4	46.6	46.3	53.8	68.5
DLR (W/m^2)	223.0	214.8	237.2	233.8	223.0	211.5
ULR (W/m^2)	304.5	304.5	315.9	303.2	307.6	311.3
Net radiation	75.9	82.3	106.0	89.2	59.8	82.5

2. Question

Figure 5, 6, 7, and 9 are barely readable. Especially, Figure 7&9 are both not very intuitive and

I don’t think anyone can discern the individual years. This can be collapsed or a presented differently?

Response:

Thanks a lot. Figure 7&9 has revised as follows:

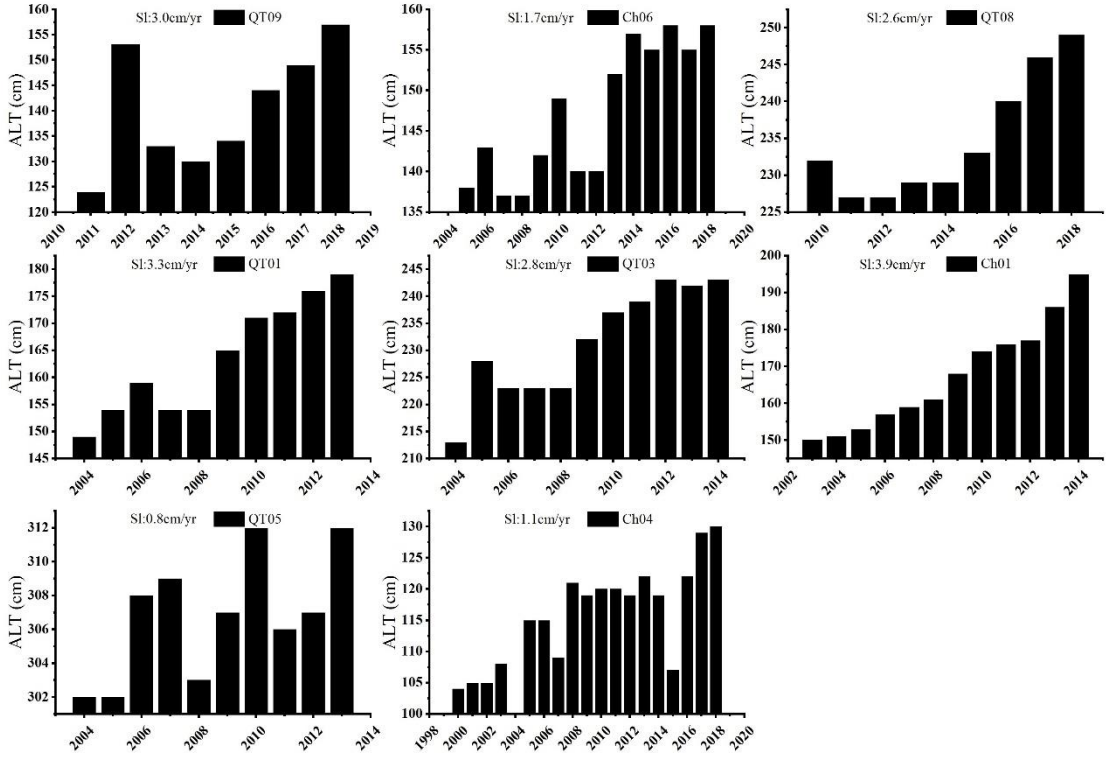

Figure 7. Variation in active layer thickness among different sites. SI represents the active layer thickness average annual increasing rate.

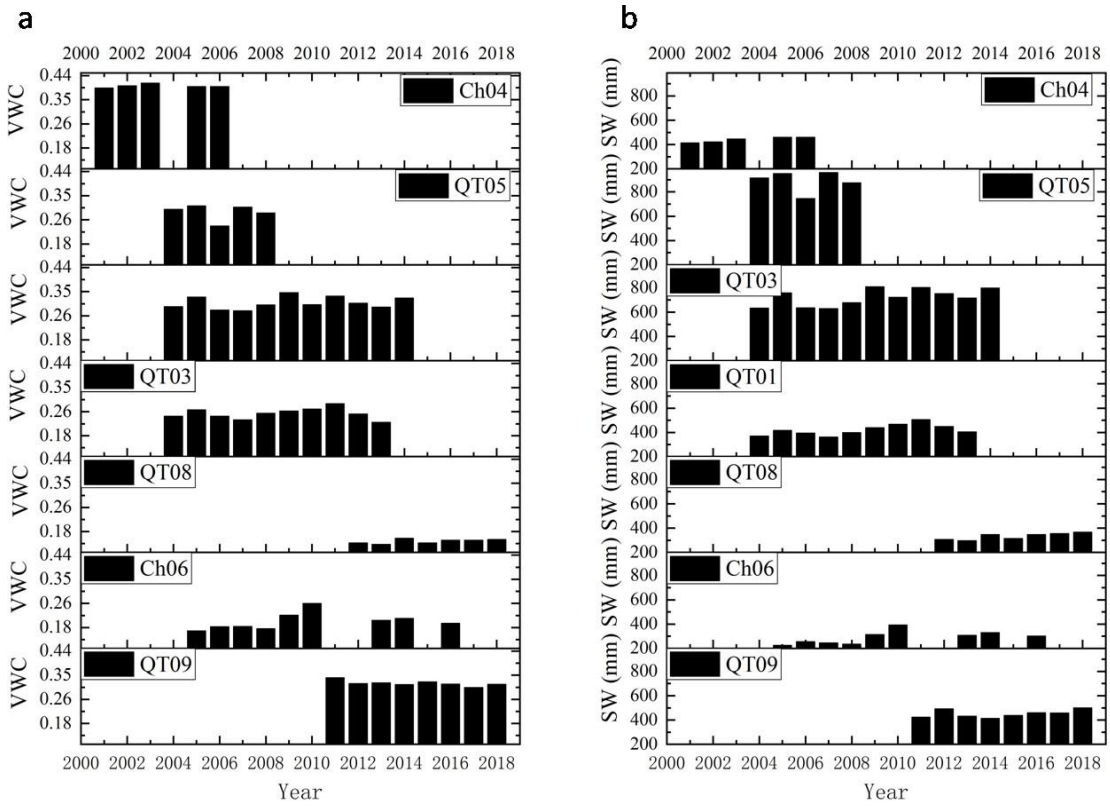

Figure 9. Variation in volumetric water content and soil water equivalent among different sites

Others:

1. Question

Table1 & Line145: The accuracy of ground temperature is 0.05 in Table, while 0.1 in Line 145.

Response:

Thanks a lot. We have revised it to 0.1 ºC in Table1.

2. Question

L170: You mentioned the seasonal variations of thermal variables on the QTP, I would like to suggest the four seasons should be defined due to the longer winter and the shorter summer in the special region.

Response:

Thanks a lot. We have defined it to" The seasonal (spring (Mar.–May), summer (Jun.–Aug.), autumn (Sept.–Nov.), and winter (Dec.–Feb.)) variation of air temperature at all 6 sites is significant with the annual mean from -2.3 to -6 ºC (Fig. 5).". **Line 170-171.**

3. Question

Figure 9: Not the CH01 site?

Response:

Thanks. Here is the CH04 site.

4. Question

L369: free should be read freely.

Response:

Thanks. We have revised it to "All datasets in this paper have been released and can be free download from the National Tibetan Plateau/Third Pole Environment Data Center (https://data.tpdc.ac.cn/en/disallow/789e838e-16ac-4539-bb7e906217305a1d/, doi: 10.11888/Geocry.tpdc.271107), and more information about the Permafrost Monitoring Network on the Qinghai-Tibet Plateau can be found at Cryosphere Research Station on Qinghai-Xizang Plateau (http://new.crs.ac.cn/). ". **Line 373-374.**

The last one, but the most important, is that the manuscript is a data paper. The theme should relate to measures, quality control, uncertainties, potential applications, and the data analysis should be reduced greatly. Please revised the whole of manuscript based on this principle.

Response:

Thanks. We have described in detail to the data of the measurement, quality control, uncertainties in section 2:

2 Monitoring networks and data processing

2.1 Permafrost monitoring networks

2.2 Monitoring data

2.3 Data processing workflow

And, the potential applications were introduced in the conclusions section as follows:

"They could provide accurate inputs and verifications for land surface models, reanalysis data and remote-sensing products, and climate models." …. "In addition, the high-quality comprehensive dataset with a focus on permafrost thermal state on the QTP could provide accurate and effective forcing data and evaluation data for different models. This valuable permafrost dataset is worth maintaining and promoting in the future due to hard-won. It also provides a prototype of basic data collection and management for other permafrost regions." **Line 376-390.**

The data analysis section is mainly a simple analysis and introduction of the hydro-thermal characteristics of permafrost. This section is to show the quality of the data, and to demonstrate the basic characteristics of the permafrost observations data, which could let the reader know what these data can do and how they can be used.

We would like to express our great appreciation to you for comments on our paper.
Looking forward to hearing from you.
Thank you and best regards.

Yours sincerely,
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