Dear the editor:

First, we would like to take this opportunity to thank the editor for your constructive comments and relevant questions. By adding the answers/revisions to these questions to the revised version of the manuscript, we feel that the quality of the manuscript has been improved. A revised manuscript has been submitted, and all modifications are only included in the revised manuscript for the sake of non-repeat. Answers to your concerns and questions are presented as follows.

Yours sincerely
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Respond to the editor comments:
The referees' comments are reproduced in black hereafter, and responses are shown in red.

At Dome A you have the columns "tg_01, tg_1, wd, tg_3, tg_10"
- please reorder the columns so that "wd" is not in the middle of the "tg"(1)
- what does the number next to "tg_" mean? especially the "01"? I guess it is the depth of installation? It is not described in the readme file or in the manuscript. (2)
- Please give in manuscript the instrumentation used for subsurface temperature. Update table 1. (3)
- wd and bar do not have an associated height. (4)

Response: (1) It has been modified.

(2) You are right, the number next to "tg_" means the depth of installation, subsurface 0.1m, 1m, 3m and 10m, respectively.

(3) It has been added in the section "2.1 Observation region and site descriptions" and updated in table 1:

Table 1. Locations, operational periods, observed variables and heights, and instrumentation and accuracies of AWSs in the PANDA network

Stations	Location	Altitude	Period (DDMMYYYY)	Variable	Sensor	Accuracy	Height
Zhongshan	69.37°S 76.38°E	17.7 m a.s.l.	1 Mar 1989- 31 Dec 2020	Ta/RH	Vaisala HMP155	(0.2260-0028*Ta) °C/1%	2m
				P	Campbell CS106	1.5hPa	2m
				WS	Huayun XFY3-1	1m s^{-1}	10m
				WD	Huayun XFY3-1	5°	10m

Panda 100	70.22°S 76.65°E	1352 m a.s.l.	8 Feb 2019- 10 Jul 2021	Ta/RH	Vaisala HMP155	(0.2260-0028*Ta) °C/1%	2/4m
				P	Vaisala PTB110	0.3hPa	2m
				WS	Huayun XFY3-1	1m s^{-1}	2/4m
				WD	Huayun XFY3-1	5°	2/4m
				SDR/SUR	Li-Cor Li200X	5% Max/3% Typical	2m
Panda 200	70.97°S 77.19°E	1952 m a.s.l.	16 Dec 2016- 10 Jul 2021	Ta/RH	Vaisala HMP155	(0.2260-0028*Ta) °C/1%	4/6m
				P	Vaisala PTB210	0.5hPa	4m
				WS	Huayun XFY3-1	1m s^{-1}	4/6m
				WD	Huayun XFY3-1	5°	4/6m
				SDR/SUR	Li-Cor Li200X	5% Max/3% Typical	4m
Panda 300	72.00°S 77.94°E	2344 m a.s.l.	13 Dec 2019- 10 Jul 2021	Ta/RH	Vaisala HMP155	(0.2260-0028*Ta) °C/1%	2/4m
				P	Vaisala PTB210	0.5hPa	2/4m
				WS	Huayun XFY3-1	1m s^{-1}	2/4m
				WD	Huayun XFY3-1	5°	2/4m
				SDR/SUR	Li-Cor Li200X	5% Max/3% Typical	2m
Panda 400	72.86°S 77.38°E	2572 m a.s.l.	14 Dec 2019- 10 Jul 2021	Ta/RH	Vaisala HMP155	(0.2260-0028*Ta) °C/1%	1/2/4m
				P	Vaisala PTB210	0.5hPa	2m
				WS	Huayun XFY3-1	1m s^{-1}	1/2/4m
				WD	Huayun XFY3-1	5°	1/2/4m
				SDR/SURLDR/LUR	Li-Cor Li200X	5% Max/3% Typical	2m
				Ts	Campbell Sl-111	0.2°C	0m

Station	Lat/Lon	Elevation	Period		Instrument	Accuracy	Height
				Tg	Campbell 109	0.6°C	0.05/0.1/0.2/0.4/0.8m
Taishan	73.86°S 76.98°E	2626 m a.s.l.	24 Dec 2012- 10 Jul 2021	Ta/RH	Vaisala HMP155	(0.2260-0028*Ta) °C/1%	2/4m
				P	Vaisala PTB110	0.3hPa	2m
				WS	Huayun XFY3-1	1m s^{-1}	2/4m
				WD	Huayun XFY3-1	5°	2/4m
				SDR/SUR	Campbell CNR4	10%	2m
				Ts	Campbell Sl-111	0.2°C	
				Tg	Campbell 109	0.6°C	0.1/0.4 m
Eagle	76.42°S 77.02°E	2825 m a.s.l.	28 Jan 2005- 31 Dec 2020	Ta	FS23D	0.02°C	1/2/4m
				RH	Vaisala HMP35D	2%(RH<90%)	2m
				P	Paroscientific 6015A	0.5hPa	2m
				WS	RM Young 12170C	0.5m s^{-1}	1/2/4m
				WD	Aanderaa 3590B	6°	1/2/4m
				Tg	FS23D	0.02°C	0.1/1/3/10m
Panda 1100	79.01°S 76.99°E	3736 m a.s.l.	28 Dec 2016- 10 Jul 2021	Ta/RH	Vaisala HMP155	(0.2260-0028*Ta) °C/1%	2/4m
				P	Vaisala PTB210	0.5hPa	2m
				WS	Huayun XFY3-1	1m s^{-1}	2/4m
				WD	Huayun XFY3-1	5°	2/4m
				SDR/SUR	Li-Cor Li200X	5% Max/3% Typical	2/4m

				Ta	FS23D	0.02°C	1/2/4m
				RH	Vaisala HMP35D	2% (RH<90%)	4m
Dome A	80.37°S 77.37°E	4093 m a.s.l.	17 Jan 2005- 26 Jan 2021	P	Paroscientific 6015A	0.5hPa	2m
				WS	RM Young 12170C	0.5m s^{-1}	1/2/4m
				WD	Aanderaa 3590B	6°	1/2/4m
				Tg	FS23D	0.02°C	0.1/1/3/ 10m
				Ta	Vaisala HMP155	(0.2260- 0028*Ta) °C	2/4m
				RH	Vaisala HMP155	1%	4m
Kunlun	80.43°S 77.12°E	4093 m a.s.l.	6 Jan 2017- 10 Jul 2021	P	Vaisala PTB210	0.5hPa	2m
				WS	Huayun XFY3-1	1m s^{-1}	4m
				WD	Huayun XFY3-1	5°	4m
				SDR/SUR	Li-Cor Li200X	5% Max/3% Typical	2m
				Ta	Vaisala HMP155	(0.2260- 0028*Ta) °C	4m
				RH	Vaisala HMP155	1%	4m
Panda S	82.33°S 75.99°E	4027 m a.s.l.	15 Jan 2008- 30 Apr 2021	P	Campbell CS106	0.1hPa	4m
				WS	Huayun XFY3-1	1m s^{-1}	4m
				WD	Huayun XFY3-1	5°	4m

Statement: SDR: downward shortwave radiation; SUR: upward shortwave radiation; LDR: downward longwave radiation; LUR: upward longwave radiation.

(4) It has been modified.

Panda300 has a first line with chinese characters:
,,,熊猫 300 站建于 2019 年 12 月 13 日 21 时（北京时）东经 77°56.460″，南纬 71°59.510″，海拔高度 2344 米,,,,,,,,,,,,

Response: It has been deleted.

Surface temperature measurements are not described in the manuscript. Which sensor do you use? If you use upward long-wave radiation please give the original measurement along with the ts (e.g. at Panda400 only ts is given). Also give the emissivity value used to derive ts.

Response: At Panda 400 and Taishan, we use Sl-111 to measure surface temperature. Other AWSs not measure surface temperature.

Please give table (in csv format) with station coordinate in the documentation folder. Coordinates should be given with time-period to describe station relocation (like LGB69).

Response: The table (csv) with station coordinate has been added in the documentation folder.

PandaS has "444" as NaN value unlike the other files. (1) At that same station "1" and "0" also appear to be used as NaN (for wd and bar for example). Please check this file thoroughly. (2) Please also explain why that site has a lower data coverage. (3)

Response: (1) it has been modified.

(2) it has been modified.

(3) Due to heavy hoar frost and extremely cold air temperature in the Antarctic inland, the sensors at Panda S often froze during austral winter, which leads to invalid measurements.

The number of digits differs from file to file, f.e.: Panda100 pressure has no digits while at Eagle pressure has 1 digit. Some temperatures are given with one digit, some with two. Please harmonize or justify the number of digits given in the datafiles.

Response: It has been modified.

SD is mentioned in the ReadMe file and in "data available. tif" but I can't see it in the data files. If it is being measured, it should be put in the datafiles as it is a crucial variable for the interpretation of the temperature and humidity measurements.

Response: The snow depth (SD) has been added in the Panda 200 and Panda 400, but the Eagle and Dome A not added. Snow depth observation or transmission problem at Eagle, the returned data is null, and the SD at Dome A is almost unavailable

Why did you remove the radiation measurement information form Table 1? This should be put back.

Response: It has been backed.

Table 1: What is the manufacturer of the PRT 2-wire Bridge? Dates in the main manuscript should be given as 25 July 2007 (dd month yyyy). Consider giving day and not just month/year.

Response: It is error and has been modified. The dates have been modified according your advice, detail information please see Tab.1.

Table 2: why were averaged values replaced by "-"

Response: The row of Panda S has been deleted. The data of Panda S is missing for more than 4

months (from May to September) every year. Thus, the annual information of Panda S is missing and replaced by "-".

Table 2 The mean values of meteorological variables on AWSs in the PANDA network

Stations\ elements	Air temperature /°C	Relative humidity/%	Pressure /hPa	Wind speed /m s^{-1}	Number of hourly values
Zhongshan	-10.0	58	985	6.9	184695
Panda 100	-21.6	73	827	11.2	21216
Panda 200	-26.5	72	763	10.9	40010
Panda 300	-30.0	68	726	10.4	13811
Panda 400	-32.0	34	710	10.0	13783
Taishan	-35.4	67	699	10.9	74893
Eagle	-41.2	54	683	3.6	139608
Panda 1100	-47.7	55	603	3.6	39648
Dome A	-50.5	42	575	2.9	140484
Kunlun	-50.8	55	574	3.9	39515

Figure 3 please add the standard deviation for each station as background shading.
Response: It has been added.
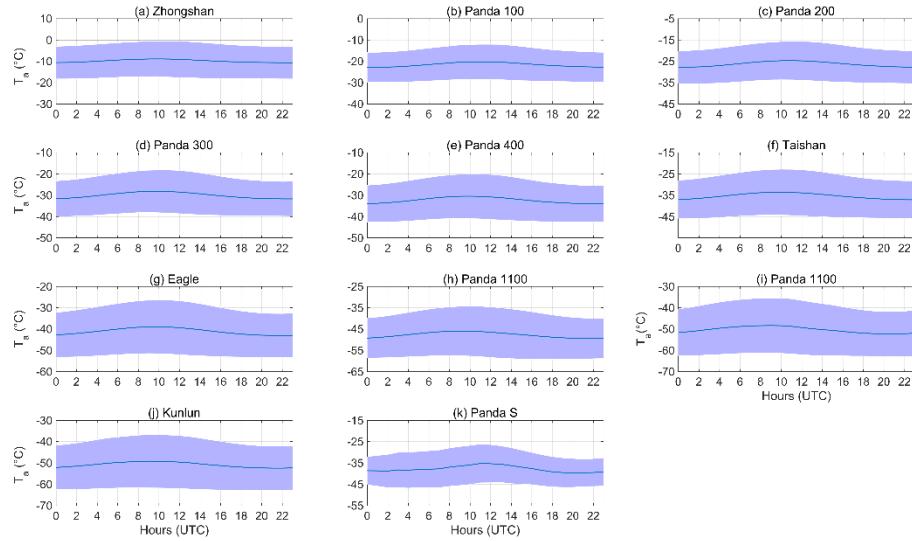
Figure 3. Average diurnal variation of air temperature at AWSs in the PANDA network. The calculation years for these sites are the same as for Fig. 1, excepting that Zhongshan is calculated during 2002-2020.

"bar" is not an acceptable variable name, it is a unit
please replace by "ps" or "pres"
Response: It has been modified as "P".

Time in datafiles should use the ISO8601 format: https://en.wikipedia.org/wiki/ISO_8601
In your case it is "YYYYMMDDTHHZ". Note the "T" to indicate hours and "Z" to indicate that it is UTC.
Response: It has been modified.

Last line in Dome A and Panda200 file contains strange data.
Response: it has been deleted.

SDR should always be higher than SUR. I think you have exchanged the two variables in the datasets.
Response: It has been modified.

Note that your data repository replaces the spaces in you top folder name by "%20"
This leads to a too long path and generate errors while unzipping in windows:
The%20PANDA%20automatic%20weather%20station%20network%20between%20the%20coast%20and%20Dome%20A%2C%20East%20Antarctica%20%281989-2021%29/
Please give a shorter name with no or few spaces to the folder that is distributed on the data server.
Response: Sorry, it has been stop updated, the data repository please see https://doi.org/10.11888/Atmos.tpdc.272721. At present, the updated data has been packaged (data.zip) and uploaded to the system. Later, it will be updated on the "Big Earth Data for Three Poles".

ta4, ta4_min at Panda1100 contain only erroneous data

Response: Sorry, we forget to set them as missing values, and have eliminated them during previous calculation.

Pressure at Dome A, Taishan and Panda300 contains erroneous values that can be removed easily by a min/max filter.

Since you mention quality control "consistent with ... Lazzara et al. (2012)", and Lazzara et al. (2012) uses min/max filters, then it is implied that you do the same on your data.

Response: The data set has been updated. Sorry, in some AWSs, we forgot to put the data that was finally processed into the published dataset, and the all data have eliminated them during previous calculation.