

Earth Syst. Sci. Data Discuss., referee comment RC1
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Comment on essd-2021-187

Anonymous Referee #1

Referee comment on "Black carbon and organic carbon dataset over the Third Pole" by Shichang Kang et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-187-RC1>, 2021

Review on paper #ESSD-2021-187

The manuscript entitled "APCC Data Report I: Black carbon and organic carbon dataset from atmosphere, glaciers, snow cover, precipitation, and lake sediment cores over the Third Pole " by Kang and colleagues present a systematic data report on black carbon and organic carbon from various environmental medias including atmosphere, glaciers, snow cover, precipitation, and lake sediment cores over the Third Pole. The authors setup an observation network named atmospheric pollution and cryospheric change (APCC) covering the Tibetan Plateau (TP) and its surrounded region, noting their efforts for APCC are very commendable. The data reported in the manuscript from the APCC is valuable and crucial for understanding the atmospheric pollution and their impact on cryosphere on TP, where continually observations are scares. The topic of the paper is of great importance, and within the scope of the journal Earth System Science Data. The manuscript is logically organized, well structured, nicely written, and the figures and tables are appropriate. I suggest a minor revision, and recommend the authors address the following suggestions before publication:

Line 112: This paper reported data from APCC. However, the description about the network is too short. Please provide more detail information, eg. the background of the network setup, the beginning and development of the network.

Line 126-127: Do these three domains have exact bound? Please add the longitude and latitude if have.

Line 142 and 145: sometimes you use '2 stations' but sometimes 'two stations'. Please use consistent expression.

Line 166-171: you introduced some aerosol sampling sites in central Asia but didn't provide OC and EC data of these sites.

Line 178: why only detected rBC in the site? Why chose Everest station?

Line 195, 200: again use three, five glaciers. Please check the whole manuscript.

Line 200: "Five glaciers studied in the Karakoram..." confused about this sentence.

Line 240: why do you collected TSP but not PM2.5? I think fine particles are easily to transport to remote regions. Actually, I think APCC will be of great importance to scientific communities worldwide. However, by now, it seems that the APCC only observes BC, EC, OC and some other related indexes. Will you observe other important atmospheric pollutant in the future? for example, PM2.5, POPs.

Line 243: Could you give more description on the roof the TSP sampler setup? For example, how high the roof is? Is it different for the remote sites and urban sites? Do you think that the height of the roof influences the sampling?

Line 265, 266: does the 'snowpit' and 'snowpack' represent the same meaning? If yes, use one for easy reading.

Line 290: the eBC was measured for TSP? Why it is BC but not EC? Because for aerosol samples, you use EC in section 4.2.

Line 302: The title of 4.2 is not clear. What is Atmospheric aerosol EC and OC methods?

Line 327: please check the manuscript, some words were deleted using revision mode.

Line 365: this has been described in section 3, thus the first sentence can be deleted here.

Line 367: what is the pore diameter of the quartz filter? Please clarify because if the pore size is big, some particles will be lost.

Line 390, 411: again there are some words deleted using revision mode.

Line 394: the author introduced the blanks information for WSOC measurement, but didn't provide information for other equipment.

Line 507: put 'and' before 'samples'

Table 1: it seems the abbreviations are not used in this manuscript. In addition, can you add the location of every site in TP (eg. southern, northern). This would be useful for reading.

Figure 1: is that possible to add the boundary of three domains?

Caption of figure 3: please use correct reference style.

Figure 10: put the long descriptions in the title but not in the figure.

Figure 11: add unit to the title of y-axis.