Comment on essd-2022-10
Anonymous Referee #2


General comments

This manuscript shows the dataset of microbial abundance and geochemistry of ice cores, snow pit, surface ice/snow, and glacial runoff collected from 40 mountain glaciers in Tibetan Plateau. The data set contains valuable information on microbes and chemistry to study glacier ecosystems of the region. Since the distinct microbial communities from polar regions have been reported on Asian glaciers, it is important to publish such data set. Although some additional information is necessary in the data set as shown below, I would support to publish them after revision.

L75 Does “the multiyear average temperature” mean air temperature or snow temperature? Please specify. If snow/ice temperature is available for all glaciers, please add them in “Glacier info.xlsx”.

L80 There is a lack of elevation of the sites of sample collections as microbes and snow/ice chemistry vary with elevation. Please indicate the locations of the sites of the ice cores and snow pits.

L121-123 There is a lack of measurement procedures for conductivity and pH shown in Figure 9.
L140-141 I wonder the bacteria analyzed in this study were those grew in situ in snow or were cells deposited from atmosphere. Please explain the possible sources of bacteria in each ice core.

L146 Is there any geographical trend of the bacterial abundance? Also, is there any relationship between the altitude of drilling site and the bacterial abundance?

L155 It would be worth to add some explanation of possible sources of DOC and TN in the ice cores.

More information on the glaciers would be worth in “Glacier info.xlsx”. For example, mountain range of the location, type of glaciers (valley or ice cap), elevation range, equilibrium line altitude (ELA).

Date of sampling, coordinates, and elevation are necessary for each sample in “DOC-TN surface snow ice.xlsx” as geochemistry of the surface snow and ice varies temporally and spatially.

As water characteristics of glacier runoff have a diurnal variation, it is necessary to show the time of sample correction for the runoff data (“DOC-TN-runoff.xlsx”). The time seems to be partially included in the column of “SampleID”, but they would be better to be shown in an independent column. Time zone (probably Beijing standard time?) should also be shown.