Comment on essd-2022-211
Anonymous Referee #1

Referee comment on "High-resolution physicochemical dataset of atmospheric aerosols over the Tibetan Plateau and its surroundings" by Xinghua Zhang et al., Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2022-211-RC1, 2022

General comments

This manuscript presents a dataset of hourly resolution data for the aerosol physicochemical and optical properties at seven sites mainly over the Eastern Tibetan Plateau and its surroundings. For the most part, the data set includes chemical compositions of aerosol PM$_1$ measured by HR-ToF-AMS, and the aerosol parameters measured by SMPS, PAX, and Aethalometer etc., which vary with stations. The authors claim the data set are useful for the simulation of aerosol radiative forcing and the evaluation of interactions among different components of the Earth system in numerical models. However, I doubt the potential of the dataset being reused in models, because the completeness of this data set is not quite good in the following aspects.

- The sampling periods of the 7 observation stations are neither long enough nor from same seasons or same year. The data set for each site only covers several weeks, generally in spring or summer. Meanwhile, the observations are in different months/seasons in various year (range from 2015 to 2021). As aerosol compositions vary largely with time, the potential of the short-term observation at specific location could be limited.

- The observations of the aerosol parameters change from one site to another.

- The data set does not include any observations in the large region of the western and
inner Tibetan Plateau and surroundings. So, the data set can hardly be called “the Tibetan Plateau and its surroundings”.

-The concentration and size distribution data are for PM$_1$ aerosol, but most models are aiming to simulate PM$_{2.5}$ and PM$_{10}$.

For above reasons, I doubt the potential of the dataset being reused. Therefore, I do not support its publication in the ESSD.