

Earth Syst. Sci. Data Discuss., referee comment RC1  
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## Comment on **essd-2021-241**

Anonymous Referee #1

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Referee comment on "High frequency observation during the sand and dust storms in the Qingtu Lake Observatory" by Xuebo Li et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-241-RC1>, 2021

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The authors provide a high frequency array data in the desert of Qingtu Lake including 50 Hz sonic anemometer data and 1 Hz dust monitor data. The wall-normal array had 11 sonics and monitors spaced logarithmically from  $z = 0.9$  to 30 m. Based on these data, the non-stationary feature of sand and dust storms event was analyzed. During ascending, stabilizing and descending stages, the different dynamic mechanisms of the wind and dust fields are characterized. Temporal evolution of the scaling exponent from Fourier power analysis suggests slightly below the classical Kolmogorov value of  $-5/3$  for the three-dimensional homogeneous and isotropic turbulence. During the stabilizing stage, the collected PM<sub>10</sub> shows a very intermittent pattern, which can be further linked with the burst events in the turbulent atmospheric boundary layer. This dataset is very valuable for studying turbulent structures and boundary layer character, as well as sand and dust storm dynamics. I appreciate to introduce this paper to communities.