

Interactive comment on “A homogenized daily *in situ* PM_{2.5} concentration dataset from national air quality monitoring network in China” by Kaixu Bai et al.

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Responses to Reviewer #1 comments

The PM_{2.5} data has been widely used for human exposure risk assessment and air quality management. However, as the author said, given the absence of an open access and quality assured *in situ* PM_{2.5} concentration dataset in China, it is urgent need to open a stable and reliable PM_{2.5} data access method. This paper attempted to generate a long-term coherent *in situ* PM_{2.5} concentration dataset for scientific community to use in future applications. Methods involving missing value reconstruction, change point detection, and bias adjustment were applied sequentially to deal with data gaps

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and inhomogeneities in raw PM_{2.5} observations. It is a nice and well-organized paper with a clear focus. In my opinion, there are some minor problems need to be solved before publishing. My biggest concern is whether the data set will continue to be updated. I suggest that the author add a statement in the conclusion, stating the update frequency and download link of the homogenized PM_{2.5} datasets. In the change points detection, how long is the breakpoint interval?

Reply: Thank you for your valuable comments and suggestions in helping improve the quality of this manuscript. Our point-by-point replies to your concerns and comments were summarized as follows:

1) “My biggest concern is whether the data set will continue to be updated”

Reply: The homogenized in situ PM_{2.5} concentration dataset will be regularly updated for every six-month based on our newly retrieved data records, and the extended dataset is also freely accessible per the user’s request. A full dataset will be then published online on PANGAEA once we have one-year’s new measurements.

2) “I suggest that the author add a statement in the conclusion, stating the update frequency and download link of the homogenized PM_{2.5} datasets”

Reply: Per your suggestion, we will clearly state the updating frequency of the dataset in our revised manuscript.

3) “In the change points detection, how long is the breakpoint interval?”

Reply: The PMT method was hereby applied to detect possible break points in each PM_{2.5} concentration time series in reference to the generated reference series. As the default configuration in the RHtests v4 software package, a length scale of 5 was defined as the minimum interval between two possible change points, which means that no change point would be detected from the 5 adjacent observations. More technique details of PMT method can be found in the following reference, which has been also cited in section 3.

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References: Wang, X.L. Accounting for Autocorrelation in Detecting Mean Shifts in Climate Data Series Using the Penalized Maximal t or F Test. *J. Appl. Meteorol. Climatol.* 2008, 47, 2423–2444, doi:10.1175/2008JAMC1741.1.

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