

Earth Syst. Sci. Data Discuss., referee comment RC2
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Comment on **essd-2021-112**

Anonymous Referee #2

Referee comment on "Nitrogen deposition in the UK at 1□km resolution from 1990 to 2017" by Samuel J. Tomlinson et al., Earth Syst. Sci. Data Discuss.,
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N deposition is very crucial and is associated with ecosystem biodiversity and human activities. The dataset showed that the N deposition decreased for 1990-2017 in the UK. The method used in this article is reasonable and easy to understand. Having professed my general enthusiasm for the dataset and its importance, I have some concerns that some issues need to be addressed before it can be considered for publication.

1. There are several similar other N deposition data. What are new findings on this study? Can you do some contrastive analyses to show the improvement of your new data?

2. The paper did evaluation with four different metrics. None of these N depositions pass all four metrics (Table 4). But the results look better while separating the data into three parts (Table 5). How will these evaluation metrics have affected by degree of freedom? Are these evaluation metrics good enough or still need to improve?

3. Did you do the sensitivity analysis to address the uncertainties of your model to make sure the results reliable?

4. What are the temporal-spatial resolution of measured observations used in the evaluations?

5. There are huge heterogeneities in left-top panels of Figure 5. The authors explained this in Line 304-305. Please explain the heterogeneity difference in Figure5, i.e., why the side-by-side noises only exist in left-top panel not the other three?

6. It is better to calculate the decrease/increase rates in Figure 6&8 in addition to just showing the changing percentages.

7. It is better to show the latitude and longitude line in the geographic maps (Figure 5&7).