

Earth Syst. Dynam. Discuss., referee comment RC2
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Comment on esd-2022-9

Anonymous Referee #2

Referee comment on "Complex network analysis of fine particulate matter (PM_{2.5}):
transport and clustering" by Na Ying et al., Earth Syst. Dynam. Discuss.,
<https://doi.org/10.5194/esd-2022-9-RC2>, 2022

Using the complex network theory, the authors studied the particulate matter (PM_{2.5}) transport pattern and routes around China in a more efficient way. They showed evidently that PM_{2.5} can transport from Beijing-Tianjin-Hebei-Henan-Shandong (BTHHS) region to Yangtze River Delta (YRD) region with one-or two-day time lags, and then they divide 284 cities in China into 9 clusters according to their synchronicity characteristics. This work can give us some advice on inter-city cooperation governance to solve the haze pollution problem, especially in winter when the pollution transport is the most severe. After reading this paper, I have some questions and advice as follows:

- In the introduction section, line 50, the authors mentioned that there are considerable discrepancies in the current studies of PM_{2.5} transmission in different cities/regions during different air pollution periods. I would suggest the authors add one or two examples here to better introduce the "discrepancies".
- In the introduction section, I would suggest the authors add a few more sentences to show why complex network analyses are important and should be used in the analysis. Compared to the traditional approaches, what are the advantages of the complex network analysis?
- In line 82, what do you mean by "eliminate the effects of autocorrelations in the records"? Do you mean Eqs. (2) and (3)?
- In line 128, I guess only zero values indicate that the node is isolated, right?
- In line 159, what is the definition of the "clustering coefficient"?
- In line 191, it should be figure 5.
- In line 200, it should be figure 6.
- The figure caption for Fig. 6 is not correct.
- Figure 7(a) is not very clear, I would suggest the authors improve the resolution of the figure?
- In line 134, "the weight if node i and j" should be "the weight of node i and j"?