Comment on acp-2022-466

Anonymous Referee #1

Referee comment on "Three dominant synoptic atmospheric circulation patterns influencing severe winter haze in eastern China" by Shiyue Zhang et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2022-466-RC1, 2022

The physical mechanism of severe winter haze in eastern China has been revealed in this work. Three dominant atmospheric circulation patterns effecting the haze occurrence have been clustered. The paper is generally well written and recommended for publication after addressing the following specific comments.

- Air pollution mainly occurred in the atmospheric boundary layer, which is usually under 2km above the surface. While, the 500hPa geopotential height anomalies are used for circulation clustering. Could you please give more details about the reason for selecting the 500hPa data?
- The samples used in the clustering are not in a fixed region, which is a rectangular box moving with the specific observation station. This clustering method is different from the usual treatment. What is the advantage of this method?
- I would like to suggest to change a colormap for Fig. 3(a), in which the Type1 and Type 2 is hard to distinguish based on the current color.