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Comment on acp-2021-324

Anonymous Referee #1

Referee comment on "Decadal changes of connections among late-spring snow cover in West Siberia, summer Eurasia teleconnection and O_3-related meteorology in North China" by Zhicong Yin et al., Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2021-324-RC1, 2021

This study makes a full investigation about connection between snow cover/EU teleconnection and O3 pollution in north China. The April-May snow cover in West Siberia was proposed as a preceding climate driver that influenced the summer surface O3-related meteorology in North China during 1980–1998, and the associated physical mechanisms were also explained by comparing the periods before and after the mid-1990s. The results of this study could provide a reference for the seasonal prediction of O3. This paper is well written and organized. I recommend it to be published in ACP after several minor corrections.

- Based on the content in the main text, the O3-related meteorology (OWI) is focus on summertime. I would suggest to clarify the specific season in the title, which will give a more direct expression about the seasonal prediction mechanism.
- The high level O3 concentrations before mid-1990s are considered to be connected with the positive phase of EU teleconnection. While, after mid-1990s, the northward shift of snow cover results to the insignificant connections between snow anomalies, EU pattern and O3. What is the possible reason for the change point of mid-1990s? That is, why 1990s was selected as the turning point in this study. Is it based on the statistical analysis or some physical mechanisms?
- Some detailed information about the calculation of OWI index in Line 105 are suggested to add. E.g., how to normalize the meteorological variables. The absolute value of observed O3 concentration and OWI should be included to indicate the robust of OWI.