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Interactive comment on "A seesaw haze pollution in North China modulated by sub-seasonal variability of atmospheric circulation" *by* Ge Zhang et al.

Anonymous Referee #3

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The authors identified an interesting sub-seasonal seesaw pattern of winter haze pollution in northern China, featuring high and low PM2.5 concentrations in two adjacent months. They also found that this phenomenon is related to the circulation patterns modulated by El Nino and Arctic Oscillations. In general, I think this manuscript is well structured and the topic is suitable for ACP. But I still have some concerns about the robustness of the proposed mechanism before ACP accepts this paper.

The analysis is based on only three super El Nino events after the 1980s. The number of cases is too few here. Does the proposed mechanism also apply to the El Nino events with smaller magnitudes and these before the 1980s? I think the readers also

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Discussion paper

would like to see a figure displaying the circulation anomalies from an ensemble of El Nino events.

If the El Nino peaks in December 2015, its effects on northern China winds may appear one or two months later due to the time spent on the wave propagation. So I am wondering whether the El Nino really causes the high PM2.5 concentrations in December 2015. I wish the authors can have some comments here.

Interactive comment on Atmos. Chem. Phys. Discuss., https://doi.org/10.5194/acp-2018-916, 2018.