

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 PM_{2.5} concentrations in two adjacent months. They also found that this phenomenon is related to the circulation patterns modulated by El Niño 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 Niño events after the 1980s. The number of cases is too few here. Does the proposed mechanism also apply to the El Niño events with smaller magnitudes and these before the 1980s? I think the readers also

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

If the El Niño 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 Niño really causes the high PM_{2.5} concentrations in December 2015. I wish the authors can have some comments here.

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