

Interactive comment on “Quantifying the contribution of anthropogenic influence to the East Asian winter monsoon in 1960–2012” by Xin Hao et al.

Anonymous Referee #2

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The manuscript investigated the contribution of anthropogenic influence to the EAWM by the simulation in the All-Hist and Nat-Hist experiment. And they found that the weakening of EAWM in 1960-2012 is mainly attributed to the anthropogenic influence, especially in the frequency of strong EAWM event.

In general, I found the paper appropriate for ACP. However, it need to be minor revised before accepted this paper for publication in ACP with addressing those comments listed below:

Major Comments: 1. Although Nat-Hist and All-Hist experiment is well designed to investigate the impact of the natural forcing and anthropogenic forcing, I still suspect

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that whether the SST in Nat-Hist overestimate or underestimate the influence of anthropogenic forcing and induce uncertainty. Therefore, I think the author should give discuss the uncertainty and explain why there is an increase trend in EAWMI in Nat-Hist. is it reasonable?

2. Line 186-187 and Fig. 5, “the case with the normalized index larger than 1.0 (smaller than -1.0) is defined as a strong(weak) EAWM event” but why the situation with zero weak event exist? I think may be due to “Note that the time series of the EAWM indices base on outputs of model in the Nat-Hist runs are standardized by the climatology simulated by the All-Hist runs.” (the Line 435-436). This operation induce the averaged value of EAWMI in Nat-Hist is a positive value, so there is zero weak event. I think the author should explain why should standardized EAWMI in Nat-hist by the climatology of All-Hist. If standardized by itself climatology, does the conclusion of strong event decrease 45% also exist?

Minor Comments: 1. Line 420, should be “(b), (d) as in (a), (c)”, and the title in Fig. 1d should be “Model-HGT”

2. Line 179-181, “an increase of SLP in the high-latitude East Asia” is contract with “the change of SLP also indicate a weak decrease of the Siberian high and an intensified Aleution low.”, Based on the fig. 4c, the latter should be right.

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