

Interactive comment on “Improvement in the decadal prediction skill of the northern hemisphere extra-tropical winter circulation through increased model resolution” by Mareike Schuster et al.

Anonymous Referee #1

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This study explores the prediction skills of MiKlip decadal hindcast system with low and high resolution for stormtracks, blocking, cyclone and windstorm frequencies. The model biases and prediction skills are assessed by comparing the synoptic variability in the model outputs for lead years 2-5 with ERA-interim.

For the most part, I am satisfied with the data, methods, and interpretations offered, however, writing needs to be improved. Though the sentences are grammatically correct, they often sound awkward.

Specific comments:

p1, l.20: the first sentences sound as if extra-tropical circulation is important because it may be linked to extreme events. Isn't it important in a more general sense? After all, it is not a paper on extremes. Will be good to discuss the motivation in a broader context.

The term 'stormtrack' is confusing when used along with the cyclone frequencies - they are sometimes used interchangeably (not in this paper). Though the Methods describe what is meant by the stormtrack, I recommend commenting on the difference early in the manuscript (maybe even in the abstract)

The same goes to lead years/winters - it is worthwhile explaining which months are considered. I only found this information in Figure captions.

p2, l28: comment on what parametric bias adjustment approach is.

p10,l1: The word 'shift' often implies change in time, consider revising

p10,l13: I would be more precise here and stick to the words used in the Methodology, i.e. 'open' and 'closed'. Otherwise, you need to clarify what you mean by weak/strong cyclones.

p.10,l14: I would like to see a figure confirming that positive bias is due to the weak and/or short leaved cyclones. p.10,l.15-16: How do you explain then negative wind-storm vs positive stormtrack anomaly over the Atlantic?

p10, l.31: I can see a discussion on negative correlations further in this section (e.g.p13, l7)

p12,l6: I How about a strong reduction of skill over Northern Canada and the Barents Sea?

p.12, l3: 'significant skill improvement' - the authors probably mean that HR model shows statistically significant correlation with ERA-Interim at some points. In my opin-

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ion, though, this statement makes an impression that skills of model prediction have become really good (so say at least 'statistically significant skill improvement' or rephrase). More important, the prediction skills, as shown in the paper, are remarkably low for most part of the region, but this message is not conveyed by the paper - will be good to see more discussion on that.

Figures 4-5: In line with the previous comment, it will be interesting to calculate the percentage of area that is significantly (positively?) correlated with ERA-Interim. This number can be added to each subplot.

Discussion and Conclusions: this section is too long, consider shortening. Parts of the discussion may be moved to the Results. The last sentence of the article is not clear, please revise.

Fig4: significant at what level?

Minor comments:

p2,l.11: remove comma before dash. p2, l18-19: put references in brackets p2, l29: did you mean more skilfull ? Skilful is misspelled. p5, l11: 1000 time - should '1000 time steps' be better? p10, l6: should read 'these results'

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