

Interactive comment on “Robust Predictors for Seasonal Atlantic Hurricane Activity Identified with Causal Effect Networks” by Peter Pfleiderer et al.

Anonymous Referee #1

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The study introduces a statistical forecast model of the July-October North Atlantic accumulated cyclone energy (ACE) wherein the causal effect network (CEN) approach is used to identify relevant precursors of the seasonal tropical cyclone (TC) activity in late and early spring of the same year. In the current version, I see the paper largely as a demonstration of the CEN method. There is not much value in other results. In the case of May forecasts, the robust precursors are well known. Results of the March forecasts are more interesting. However, it is not clear what physical mechanisms are at play, and whether the reported results will hold if a longer observational record is used. To improve the manuscript, I suggest the following: a) Provide more discussion of the physical relevance of the March precursors. Incidentally, does the MSLP dipole

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pattern also exhibit a trend? b) Build a forecasting model based on March reanalysis data using a longer observational record. At least JRA55 data is available since 1958. This would allow to assess the robustness of the presented results and perhaps provide more insight into the physical mechanisms.

Minor Comments: 1. Line 30: I suggest replacing “regional” with “global and regional”. 2. Line 65: What time period reanalyses data do you use? 3. Line 90: Please clarify why for the seasonal forecasting case potentially existing common drivers do not represent a problem. 4. Line 105: Maybe “for seasonal hurricane activity of the same year”? 5. Line 110: I suggest providing more background why SST and MSLP are used to find precursors of VWS. 6. Line 230: “(Fig. 7c)” instead of “(Fig. 7b)”. 7. Line 235: “(see Figs. 7b and d)” instead of “(see Fig. 7c and d)”. 8. Line 290: Please clarify why it may be challenging to incorporate other favorable conditions into your framework.

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