

Review of manuscript egosphere-2024-2936 submitted to Weather and Climate Dynamics

Frequency anomalies and characteristics of extratropical cyclones during extremely wet, dry, windy and calm seasons in the extratropics

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General comments:

This manuscript analyses the properties of extratropical cyclones during extreme seasons in both hemispheres using 1050 years of the CESM Large Ensemble historical simulations. Overall, this manuscript is written with an excellent level of detail and proficiency in English. I believe that this paper sheds light on the dynamics of extratropical cyclones and is suitable for the Weather and Climate Dynamics portfolio. I recommend that this paper be accepted, subject to minor comments.

Specific comment:

1) Main comment on stationarity: My primary comment is regarding the concept of cyclone stationarity. Stationarity is referenced multiple times, but a more detailed explanation of what defines stationarity is needed, as well as a discussion on the limitations of this definition.

2) **Line 274:** What is your hypothesis that stationary cyclones are more frequent at lower latitudes during the wet season?

3) **Line 343:** Could the positive anomaly be potentially linked to tropical cyclones in this region? (Gulf of Mexico and Central Pacific)

4) **Line 418:** What criteria were used to select these regions?

Technical corrections:

-Line 30: in winter 2013/14, the United Kingdom (UK).

-Line 121: obtain high-resolution three-dimensional model-level output. **This needs more detail; for instance, how much has the vertical resolution increased? Can you describe previous and news vertical levels?**

-Figure 1: The figure (i) description is not provided.

-Figure 3: Consider adding information about the contours in the caption or increasing their font thickness on the maps, as they are currently difficult to see.

-Line 301: In addition, anomalously stationary cyclones contribute to extremely wet summers over the exit regions of the NH storm tracks and large parts of central, eastern and southeastern Europe, the eastern Mediterranean and Kazakhstan (not shown). **Could you include this in the supplementary material, at the very least?**

-Line 361-364: Can you add a reference?

-Table 2: Adding lines to separate the rows would be helpful, as the lack of separation makes it difficult for the reader to follow.