

Weather Clim. Dynam. Discuss., referee comment RC2
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Comment on wcd-2021-7

Anonymous Referee #2

Referee comment on "Large-scale drivers of the mistral wind: link to Rossby wave life cycles and seasonal variability" by Yonatan Givon et al., Weather Clim. Dynam. Discuss., <https://doi.org/10.5194/wcd-2021-7-RC2>, 2021

This analysis provides a new perspective in explaining the observed variability of Mistral events in the Mediterranean recognizing different large-scale dynamical patterns in terms of PV. This work follows an approach already tested for heavy rainfall events but not yet explored for characteristics of strong winds outbreaks. In that respect is highly original. The methodology, through the use of self-organizing map clustering, is rather innovative in this field I think.

The paper is very well written, easy to follow, and right to the point. I have few remarks and I think, after having improved on the following points, it will be ready for publication.

Specific comments:

- In line 69, "... (1986) designed a numerical QG experiment.", the abbreviation QG has not been introduced before

- Between lines 188 and 121. The method to identify the cyclone Era-Interim is not very clear. Could you expand on this? And, even more, how the choice of the cyclone criteria is impacting the population of the database. I guess you should mention some sensitivity here since this is directly controlling the number of the Mistral events

- Figure 2: Any comments on the odd presence of very long duration events (14 days and 15 days). Maybe you could start drawing when the frequency is above 2 to avoid spurious counting probably due to a very low threshold on the average wind (2m/s over the GOL domain).

- Line 150 - 155: Could you clarify the normalization (which I do not fully understand in this way) ? Wouldn't it have been better to work with standardized anomalies $(Pv - Pv_mean)/STD$?

- In Fig3 you can improve readability by plotting geopotential with a greater contour interval (every 40m ?) . In addition the colormap for PV is missing

- In Fig5 the coastlines can be confused with MSLP isolines (same color). Have you tried with thin black coastlines to see if the readability improves?

- By the way, I would change coastline color in all maps (and maybe thin out other fields as well) to improve readability of Fig.6 and case studies

- I wonder plotting the number of occurrences inside the colored rectangles would help the interpretation of the transition matrix in fig.7. It is not easy to appreciate changes in likelihood with this color scale. And the same in fig 8