

## ESD-2016-67R: EDITOR DECISION

April 10<sup>th</sup>, 2017

Dear Authors,

Thank you very much for all your efforts and diligence in carefully preparing an improved manuscript, taking into consideration the concerns raised in the peer-review process, and providing thoughtful and comprehensive responses to the evaluation reports.

The referee that kindly re-evaluated the manuscript acknowledged the improvements and was supportive of publication conditional to addressing the raised concerns mostly related to the soil moisture sensitivity experiment.

Further to the comprehensive referee report, I would note the following aspects for consideration in a *Minor Revision*:

- Page(P.) 6, line(l.) 30: Regarding RCP 8.5, it would be helpful for the less-informed readership to add a small parenthesis noting that this is a worst-case scenario emerging from particularly pessimistic assumptions and associated parameter setup in climate projections. Consistency of extreme tests (e.g. massive SST increases) with this scenario is logical and worth noting given the extreme nature of the events focused in this study.
- P.10, l.27: "a non-linear relationship further discussed below": Even though the non-linearity in the precipitation response to the thermal marine forcing is mentioned several times in the paper, it is essentially described as "non-linear way" without specific detail about the underlying non-linear functional relationship. Addressing this would further strengthen the discussion.
- P.11, l.31: "It seems that the Atlantic Ocean might steer the atmospheric moisture stronger in winter Sodemann and Zubler (2010)." → Consider rephrasing along this line: "This is consistent with the argument that the North Atlantic might influence the atmospheric moisture more strongly in winter (Sodemann and Zubler, 2010)".
- Detecting low sensitivity in the analysed Vb events to Atlantic SST changes in summer does not necessarily imply that the Atlantic has low influence on the events taking place during that season. Undetected Atlantic influences may be manifested through mechanisms elusive to the analysis, such as ocean-atmospheric fluxes conditioning the hemispheric-scale mid-latitude atmospheric dynamics where the regionally emerging Vb cyclones are nested.

In addition to these, I leave the following short technical notes:

- P.2, l.16: "Furthermore, the large-scale dynamics seem to determine, if a Vb cyclones delivers high precipitation or not" → consider removing the second comma and slightly rephrasing as: "Furthermore, the large-scale dynamics seem to determine whether a Vb cyclone delivers high precipitation or not"
- P.5, l.17: "Note, the spin-up" → consider rephrasing as: "Note that the spin-up"
- P.5, l.25: "Note, that" → "Note that" (no comma)
- P.5, l.34: "longer spin-up times than 6 hours" → "spin-up times longer than 6 hours"
- P.6, l.1-3: Unnecessary commas can be removed in: "SST experiments[,] we"; "soil[,] the variables".
- P.12, l.8: "our analysis are" → "our analyses are" (plural subject concordant with verb)
- P.14, l.29-30: "Hence, a non-linear behaviour in precipitation is found, and can be attributed to" → "Hence, a non-linear behaviour is found in the precipitation sensitivities, attributable to".

I look forward to the revised manuscript.

With very best wishes,

Rui Perdigão  
(ESD Editor)