

Interactive comment on “Extratropical cyclone statistics during the last millennium and the 21st century” by Christoph C. Raible et al.

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Dear Reviewer

Please find below our reply to your review in the discussion process of our manuscript. Please note that this reply is not the comprehensive point-to-point response which will be due in a later stage of the review process (depending on the editor’s decision). Thus, we concentrate on the major comments and try to show how we will deal with the helpful suggestions and questions raised.

The main comment concerns the regression analysis applied in Section 4.3. Our aim with this analysis was to give a broad picture of how mean (over the North Atlantic) cyclone characteristics are connected to other variables illustrating e.g. the mean cir-

C1

ulation. The reviewer suggests to apply EOF analysis to the different cyclone characteristics and then assess the spatial pattern obtained in more details. This is in principle a very interesting idea and we thought about it when performing the analysis. Still there are some issues of concern. The cyclone characteristics make not much sense on the grid point scale (they are mostly measures related to the cyclone center and there are certainly grid points where no cyclones have traveled over), so some area averaging is necessary (e.g. using all grid points in a circle of 500 or 1000 km around a point). This averaging would induce some spatial dependency which will affect the EOF analysis. For the moment we thought that such an analysis is a story of its own and is a bit beyond the scope of study to give a broad picture. Certainly, we have the plan to focus more on the impacts of Europe in an accompanied study and separate Europe in northern, southern and central part. Still to improve the current manuscript we will try to discuss in more details which mechanism can be obtained from such an analysis and which not.

Furthermore, the reviewer added several very helpful minor comments. We will include the minor comments in the revised version of the manuscript and clarify the raised questions on the model output and the volcanic imprint.

Thank you again for the helpful comments which certainly will improve our manuscript.

Sincerely yours,

Christoph Raible

on behalf of the author team

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C2