

Interactive comment on “Review: visual analytics of climate networks” by T. Nocke et al.

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Dear editors of NPG, dear reviewers of our article,

thank you very much for organizing the review process and the positive reviews of our article. In the following, we provide responses to the reviewers' comments:

Anonymous Referee Comment #1:

“The first additional comment is on the history on how the complex network approaches have been introduced in the context of climate networks. New researchers in climate will get benefits if they can understand how the ideas of complex networks were introduced to climate research, and they can hopefully find what have not been done yet.”

Answer: In this point, we see a small misunderstanding of our publication: first of all it

C299

reviews the state-of-the-art in climate network visualization, and the other aspects related to climate network research in general are discussed as a framing and in relation to the visualization issue. The review is already relatively long anyway, and because of that we integrated the following two references (only) to better reflect the history of climate networks: “Tsonis, A. A., Swanson, K., & Kravtsov, S. (2007) and “Tsonis, A. A., Swanson, K. L., & Wang, G. (2008)”. Please note also that an overview of the field of climate network analysis and its relations to other statistical methods of data analysis is given in Section 2 of the manuscript.

Anonymous Referee Comment #2:

“The second additional comment is on the conclusion. I strongly agree that the time-dependent approach is necessary to understand climate networks more deeply. Therefore, it would be great if the authors could summarize what methods exist in the literature of complex networks that can characterize temporal evolution of complex networks but have not been applied to climate datasets yet, for example, ones in Iwayama et al., Sci. Rep. 2, 423 (2012). By introducing this kind of the existing literature to the field of climate networks, the future research in this field will be accelerated to a great extent so that readers may gain, in the future, new insights into time-dependent nature of climate networks. By taking into account these two additional comments, the authors will be able to attract more potential readers to this review article.”

Answer: Similarly to our answer to comment #1, we see an intensive discussion on the temporal aspects of climate networks being out of scope of the article, however, we agree that there are challenges for the analysis and visualization of evolving networks, too. We included a reference to the Iwayama et al., 2012 paper and added the following statement into section 2: “Temporal climate networks have been applied to investigate the complex spatio-temporal variability of ENSO teleconnections on regional and global scales relying on standard network measures computed from individual time-slices separately (Yamasaki et al., 2008; Radebach et al., 2013; Ludescher et al., 2013; Ludescher et al., 2014). More advanced methods and algorithms from the theory of

C300

temporal networks promise further deep insights into nonstationary climate system dynamics in the future (Holme and Saramäki, 2012; Iwayama et al., 2012; Lehnertz et al., 2014).”

In addition, we added several literature references that came up in the last months to round up the literature review.

We are now confident that the paper is now suitable for publication in *Nonlinear Processes in Geophysics*.

Best regards, Thomas Nocke (on behalf the other co-authors)

Interactive comment on *Nonlin. Processes Geophys. Discuss.*, 2, 709, 2015.