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Nonlinear Processes in Geophysics
Discussions
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Interactive comment on "Global teleconnectivity structures of the El Niño-Southern Oscillation and large volcanic eruptions – An evolving network perspective" *by* Tim Kittel et al.

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The reviews of the mss point to major issues with the results (especially) and the methods presented in the paper. I will echo Ref #1's review: "My major point is therefore that the authors should make a better effort to connect this (network) description to physical phenomena found in observations and models. This requires a substantial literature search and a rewrite of the sections 2, 4 and 5."

What this entails is quantitative outcomes, in addition to qualitative ones. These quantitative outcomes should have meaning in the climate science context.

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If the above is not successfully addressed, the referees will not likely allow this paper to proceed any further.

In addition to the points raised by Ref #1, there are editorial changes that require attention and should be dealt with in the next round of review: The Abstract has serious issues. For example: " Recent work has provided ample evidence that global climate dynamics at time-scales between multiple weeks and several years can be severely affected by the episodic occurrence of both, internal (climatic) and external (non-climatic) perturbations"

By recent, how many hundreds of years do you mean?

" we aim to improve our understanding...

we present an approach to

quantify teleconnectivity"

The first part says you aim to improve understanding of the physics. The second one state that you are going to present an approach...this makes no logical sense.

" we apply this

framework to study the impacts of different phases"

Impacts? you need to be specific.

"Taken together, the resulting time-dependent patterns

of network connectivity allow a tracing of the spatial extents of the dominating effects of both types of climate disruptions"

Since ENSO and volcanic teleconnections are known and there is quantitative techniques to eke these out already, you

either need to demonstrate that your method is superior to other methods and/or you need to tell us something new about these teleconnections.

In the Conclusions Section:

One conclusion is that you confirm what is known about ENSO already. The other is

"In this regard, one possible mechanism could involve the modulation of monsoons by strong El Niño and/or La Niña periods,

which could be further modulated by volcanic eruptions (Maraun and Kurths, 2005). Confirming this hypothesis in the context

of climate network studies would, however, require much more elaborated approaches than those used in the present work, and is therefore outlined as a subject of future research."

This reads as a speculation, not a conclusion, so it does not belong in the Conclusions Section.

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Handling Editor,

NPG

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