Review of the manuscript 'Multidecadal variability of the ITCZ from the Last Millennium Extreme Precipitation Changes in Northeastern Brazil'

by

Isela L. Vásquez P. et al.

Major comments:

In my opinion, it would be good if the authors would edit – in an editorial sense - the manuscript again before I can comment on the actual scientific part as a reviewer. I am looking forward to reviewing an edited version of the manuscript.

- I would appreciate it if the authors would carefully revise the text again. On the one hand, there are still some incomplete sentences. On the other hand, the English is still inadequate, which sometimes leads to the fact that I cannot grasp the message of the sentences. Therefore, the manuscript should be revised linguistically, as sentences are not understandable.

  Examples:
  - ' This approach has been widely used in the components LFCs precipitation CMIP6 models and their possible association with AMO variability, according to their age, given by the midpoint of the time window, and coloured-coded the frequencies for which the spectral power exceeded red-noise false-alarm levels (confidence levels) of 95%.'
  - 'The resulting low-frequency patterns (LFPs) and low-frequency components (LFCs). This method is presented in (Wills et al., 2018).'

  Please carefully revise the entire text in terms of language, punctuation and completeness of sentences.

- Please also check the content of the manuscript. Regardless of the linguistic difficulties, it seems to me that some statements are also implausible - perhaps simply due to inattentiveness during the writing process. For example: 'When comparing the trends in the δDwax data with the LFC2 of precipitation during the MCA, it is observed that for the ensemble model, negative trends predominate over the period, different from the ensemble model where positive trends predominate.'

- The method part, especially the LFCA method, needs to be described and reformulated in more detail. At the moment it is just an incorrect/incomplete copy and paste from the homepage where you can download the corresponding programs.

  Manuscript:' LFCA is a method that transforms the leading empirical orthogonal functions (EOFs) of a data set in order to identify a pattern with the maximum ratio of low-frequency to total variance (based on application of a low-pass filter). The resulting low-frequency patterns (LFPs) and low-frequency components (LFCs). This method is presented in (Wills et al., 2018).

  Homepage: 'Low-frequency component analysis (LFCA) is a method that transforms the leading empirical orthogonal functions (EOFs) of a data set in order to identify a pattern with the maximum ratio of low-frequency to total variance

(based on application of a lowpass filter). The resulting low-frequency patterns (LFPs) and low-frequency components (LFCs) isolate low-frequency climate variability and are useful in diagnosing the corresponding mechanisms. This method is presented in Wills et al. (2018, GRL).'

- Please make it clearer throughout the text which region regarding the ITCZ you mean. Depending on the case, in several instances it is not clear whether you mean the ITCZ in the Atlantic, in other regions, or as a zonal mean. Please be more specific, especially when referring to the literature.

- I wonder if the data from the last millennium simulations are from just two models available. The variables - like slp, precipitation, winds, omega - seem to be very basic model outputs.

- I am not familiar with the LFCA method. But I wonder a bit about the results shown in Figures 10 and 11. If I understand correctly, the LFCA was calculated separately for the MCA and LIA periods. If the spatial patterns were robust, I would expect that the patterns during the MCA and LIA periods should be the same, probably in a different order (explained variance). Some patterns seem similar, but most are different. Is this an indication that the spatial patterns are not stable/robust? Or are there not a few dominant patterns, so the patterns change position/explained variance easily? I think it should be checked if the individual patterns are stable and clearly separated.

Minor comments:

- Not all abbreviations are explained, at least not the first time they are used.
- Rephrase titel
- Title and text: make more clear that you refer to the ITCZ in the Atlantic region
- In line 78: Models can be downloaded => Data of the model simulations can be downloaded
- rephrase title; at the moment, it reads like two unrelated clauses.
- Line 112, line 341: AT=> TA?
- Please define the tropical Atlantic (TA) region precisely, in particular the longitudes – because it seems that you have also used precipitation over land (not ocean restricted).
- Line 197: Fig.2 => Fig.4 ?
- Line 237: p eriod => period
- line 360, 363, 372: blank missing