

Interactive comment on “The pan-tropical response of soil moisture to El Niño” by Kurt C. Solander et al.

Anonymous Referee #1

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Solander et al.

The paper aims to update the documentation of the response of soil moisture to El Niño in tropical regions. The work is very well presented and has a high potential to be published because of its contribution to improve the predictions of the impacts of extreme El Niño on tropics hydrology. The scientific methods and assumptions are valid. However, I give some general comments for strengthen the results and a second part I will give to the authors some minor comments concerning the manuscript presentation.

General Comments:

The work seems to be a product test-oriented paper, knowing the need to evaluate remote sensing products for large-scale phenomena as El Niño. Even being an inter-

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esting and ambitious paper, I recommend to contextualize it into the current problems of the large-scale hydroclimatology of extreme events and how valid is the comparison with in-situ data for explaining the relationship between spatial scales (please reinforce the paragraph on page 10, lines 238-247).

For instance, It is well known that a significant fraction of precipitation above land originates from local evaporation because of soil moisture content. Therefore, which role soil moisture plays on extreme El Niño precipitation apart from oceanic influence? It could be interesting to infer in which regions soil moisture content could be important as sea surface temperature for regional climate with GLDAS product. There is a soil-moisture-rainfall feedback mechanism shown in Figures 6, 7 and 8, please explain and linking them with more detail, taking into account the non stationarity of Extreme El Niño events.

Minor Comments:

-Please add the location of 16 observation sites into a figure (maybe in Figure 9 or another).

In References section:

-Please add in the manuscript or delete the next references: Ashok et al., 2007; Banholzer et al., 2014; Kranowski and Lai,1998; Kug et al., 2009; Larkin and Harrison, 2005; L'Heureux et al., 2015; Takahashi et al., 2011; Wang et al., 2017; Yu and Kim, 2013.

-Please list in alphabetical order: van Schaik et al., 2018.

-Correct the year: Schaefer et al., 2007; Caliński and Harabasz, 1974.

-List in ascending year, references with the same author: Miralles, D.G; Koster, R.D.

-A missing reference: Alsdorf et al., 2007 (see line 486, page 21).

-Correct the last name: Gaur and Mohanty, 2016 (see line 498, page 21); Ratkowksy

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and Lance, 1978 (see page 36).

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-535>, 2019.