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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Influence of three phases of El Niño-Southern Oscillation on daily precipitation regimes in China" *by* Aifeng Lv et al.

Anonymous Referee #2

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The paper attempts to find the impact (if any) of the El Niño-Southern Oscillation (ENSO) on daily rainfall in China. For doing so, it uses rainfall data from more than 700 stations (1960-2013) across the country. It is known that establishing a link between ENSO and rainfall at a specific region is not an easy task, since there are a lot other variables in play.

Major comments: The index used for the selection of ENSO years needs a careful thought. A common index to use to identify a given ENSO year is Multivariate ENSO Index (MEI, https://www.esrl.noaa.gov/psd/enso/past_events.html). Using different indices for the identification may result in (wrongly) classifying the same year as an El Nino, la Nina or a neutral year. This seems to be the case in this paper where several of the years in Table 2 do not correspond with the events identified using MEI. Since the

entire analysis and interoperation of the result strongly depends on the ENSO event identification, the authors should make sure that they are using an accurate index. Furthermore, ENSO events can last longer than 1 calendar year often spanning Fall of one year to Summer of the following year. Some precipitation indices presented in the paper are wrongly termed as "new" (line 88), while they have been used by the WMO and several other studies (see for example Zhang et al., 2011, Alexander et al., 2013). The paper needs a wider literature review on hydrological impacts of ENSO. There are important works which are overlooked, leading to mistakenly labelling the central pacific El Nino as a new type (Line 67-70) while it has been recognised since, at least, 2005 (Larkin and Harrison, 2005; Hu et al., 2016). Also see Emerton et al. (2017) for the likelihood of ENSO-driven global flood hazard.

Other comments: - The three phases of ENSO as commonly known are Neutral, El Niño or La Niña. It is a bit confusing the way it is used in the title. - Line 47-50: break the sentence into two. - Line 84: remove one bracket - Line 87: what do you mean by amount? Possibly to mean "duration, intensity and frequency"? - Line 96: 2011 is not new. - Table 2. Number of wet days is not really extreme. - What is the threshold for the definition of we days (e.g., 0mm/day)? - Are the El Nino/La Nina years excluded from the calculation of the multi-year average? - The blue shading in figures 2, 4, and 5 are interchanged. The dark blue should correspond with the intense rainfall.

References

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