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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 #1

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Review comments on Lv et al. "Influence o three phases of El Nino-Southern Oscillation on daily precipitation regimes in China".

Lv et al. analyzed the precipitation (and related indexes of extreme events, including drought) anomalies during various phases/types of ENSO events by using observational weather station data. The unique new findings from this study are the analyses on the extreme precipitation (and dry) events and the inclusion of the CP events for these analysis and comparisons among them. A big uncertain from this study is using observed daily precipitation data to accounting for the rainfall intensity and frequencies and using the annual period to account the total precipitation (or indexes), rather than the real duration of ENSO events/phases. Another limitation is the authors failed to explain the data/results with possible processes or mechanism; which is more meaningful

to enhance out current understanding on the teleconnections during ENSO events.

Minor comments: Line 86: 713 stations; line 91: 719 stations Table 1. 1. Add definition of "wet days"; 2. Need rephrase the definition of R95P (i.e. need to clarify the time step of precipitation and describe what is the 95th percentile of multi-year average).

Line 104: need more detailed descriptions on Mann-Whitney U test. Fig. 2: Line 110: define the "developing years" and "decaying years", and describe their physical meanings. In some certain years, they are both belonging to stages of either developing or decaying years of different phases (EP, CP, or LN). Will this affect the conclusion? Line 130: Should add "decaying" between "CP" and "phases"? Line 135: define "precipitation frequency" and define "precipitation intensity"; are they counted for each precipitation event or each individual rainy day? Line 159: add "(Fig. 4)" after "while more than 70% experienced negative anomalies in precipitation frequency"; Line 188: delete "but also increase"; Line 192-193: Rephrase the sentence "Although a positive anomaly ...". Line 206: the conclusion that "ENSO events triggered larger changes in both the frequency and intensity of precipitation events and the occurrence of precipitation extremes than during non-ENSO periods" is not support by the data; to support this claim, a comparison with precipitation indexes from "non-ENSO" period should be conducted. Line 226: add "(Fig. 6a)" after "occurred during CP decaying years"; and line 227: add "(Table 3)" after "observed negative anomaly in annual precipitation". Line 227-229: rephrase this sentence. The main point is not clear. Line 247: may need briefly describe the "anomalous Western North Pacific (WNP) anti-cyclone"; how it happens and what its effect. Line 258: 1. what is "these and other regions"? 2. Please explain what is "high incidence of anomalies". Line 257-259: need explain why "the continental climate zone (NW) is more sensitive to ENSO events than these and other regions".

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