

## ***Interactive comment on “Establishing the dominant source of uncertainty in drought indicators” by G. Naumann et al.***

### **Anonymous Referee #2**

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I am very interested to see and in fact appreciate the research outcome presented by the manuscript. The experiment of using various most-commonly used drought indices on up-to-date datasets, and the geographically representative study areas are the highlights that contribute well to the research community. I do, however, have some points listed below that may need authors' attention and explanation.

1. The title is inaccurate if not misleading. The paper indeed discusses the (dis)agreements among various drought indices. The (dis)agreements can certainly be referred to as variations but using the term uncertainty might have gone to far. I do notice that the authors mentions sources of uncertainty but I am afraid they are not fully explored by the paper.

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2. P13408, L22: "Further comparison suggests that the main source of errors ...". I am not sure if "error" is an accurate term since we don't know the true value. The word "discrepancy" might be closer to what is discussed.

3. P13410, Section 2.1 mentions that several river basins are taken as the study areas. I wonder whether using the term "river basin" makes too much sense other than referring to the geographical locations. For example, does the boundary of the basin play a role in getting the areal precipitation (and as such deriving the indices) or the river flow data is used to validate the indices. Also they are indicated by the rectangle boxes on Figure 1. Are these boxes used to derive the indices or the basin shape/size has been taken into account.

4. It would be helpful to see more details of each and every dataset. Especially the number of rain gauges involved (e.g., being merged) when referring to each study area. Although understandably it is difficult to have data of the rain gauges (to derive a reference set of indices), it is still very useful to get a sense which dataset may be more accurate/reliable.

5. I am rather curious to see (if I am not missing) the comparison of precipitation value over each study area from various datasets before deriving the indices. I notice that there is a continental one (Fig 2) showing the closeness in annual average, but looking at local scale with higher temporal (say monthly) resolution will ensure the quality/performance of the dataset and to avoid any unrealistic rain data is used in the derivation of indices.

6. P13434, Fig. 4, please explain the large chunks of white areas near and over ITCZ.

7. P13416 L13: "coefficients which is" should "... which are..."

8. P13421 L1: "are those that ..." I suggest to remove "are those".

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