Review

"Juniper tree-ring data from the Kuramenian Mountains (Republic of Tajikistan), reveals changing summer drought signals in western Central Asia"
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The manuscript present a new 366-year series of Jun-Jul scPDSI modeled with the help of tree rings. The topic is relevant to the scope of CD.

I find that the manuscript is not strong enough for publication. It holds many unclear issues related to the reconstruction model, data analysis, and interpretations.

The paper title suggests a discussion of changing drought signals in juniper tree rings of western Central Asia, although much of the Discussion emphasizes the linkages between the Tajikistan-site PDSI reconstruction, regional PDSI pattern and atmospheric circulation.

The paper has a number of short-comings. The most obvious that the authors try to explain the variability of reconstructed moisture with ENSO, solar activity (Fig 9 cross wavelets) and volcanic eruptions (L216-217). The Discussion is lacking conclusive assertions explaining how these factors drive the moisture variability across the region.

The conceptual scheme linking the drought reconstruction solely to the Asian monsoon ("tropical domains") sounds speculative. How is the impact of Arctic and Atlantic air masses compatible with the Asian monsoon variability?
The tree rings collected in cold semi-arid climate is mostly influenced by the westerlies. The side map shows the position of the study area along the west-northern margin of Central Asian mountain system, where the Alay-Pamir Mountains (Tajikistan/Afghanistan) is merging with the Tian Shan Mountains (Kazakhstan/Kirgizstan).

More generally, it is unclear why the moisture fluctuations between eastern and western sub-regions of Central Asia appear so similar and coherent. It is just hard to believe that the Asian Monsoon controls the moisture regime of this entire region. The PCA analysis of the PDSI-derived moisture records must be shown and explained prior to the Discussion.

Technical flaws:

The physiological mechanism underlying the response of tree rings to moisture is not well explained and cited. There is a dozen different species of juniper trees in the studied region and their climatic response to temperature and moisture vary significantly (see Seim et al. 2016, Mukhamedshin 1980). For example, *J. seravschanica* is highly sensitive to cold but well adapted to low moisture. In opposite, *J. turkistanica* favors wet and cold habitats. *J. seravschanica* studied in the paper is strongly limited by the Apr-Sept moisture conditions (Seim et al. 2016). Why do the authors select the Jun-Jul window for their reconstruction model? How do they explain the physiological mechanism underlying the tree-ring response to soil moisture of the mid-summer months?

The reconstruction model is not clearly explained, e.g. the regression equation is not given, the residuals and quality of the model are not analyzed. Fig. 5 shows $R^2_{adj.} = 0.637$, which is actually the correlation (Table 2). The wavelet plots are unreadable due to 1) invisible arrows displaying the difference in phases (time lag) and signal coherence, and 2) missing the cone of influence (area of uncertainties). How was the periodicity of 24.3 and 11.4 yrs assessed? The Principal component analysis applied to the Tajikistan reconstructed series and Central Asian regional record (Cheng et al. 2015) is not shown in the Results. Fig. 10 is missing scale bar and location of the study. Abstract and Results have no indication for the span of reconstructed series. Notice that the sampling was done in the Kuramin Range. Calling this range "Kuramenian Mountains" is nor correct.