Comment on egusphere-2022-476
Anonymous Referee #1

Referee comment on "Assessing decadal to centennial scale nonstationary variability in meteorological drought trends" by Kyungmin Sung et al., EGUsphere, https://doi.org/10.5194/egusphere-2022-476-RC1, 2022

General comments

This manuscript presents a description of the model, analysis, and research gap. The writing and derived conclusion are clear. Some assumptions need further analysis to be expressed correctly. The graphs and tables provide valuable information for the analysis but deeper interpretations are needed. The dataset provides multiple ways to formulate the research approach that can be further explored.

Major comments

Line 146. The window of a 3-month moving average is not small? considering tree ring only provide growing/not growing period?

Line 147. The sixth percentile is a bit vague, even though it is a fitted two-parameter Gamma distribution. What is the difference with a 5%-10% threshold for the results?

Line 187. Does the assumption of a better non-linear fitness than linearity come from drought trends' particular behavior? The obtention of the smoothed long-term trend is the reason? (line 195).

Line 232. Which is the adequate NASPA reconstruction skill threshold and why? Table 1, shows a lower score of 0.220.
Line 369. How much can be considered natural variability?

Line 393. Natural variability should be addressed. Also, regarding altered seasonality alteration, is it in the natural variability to state that is drier or wet?

Minor comments

Line 103. Does the application of KNN for downscaling make it a novelty itself, just because it was not performed in tree-ring data?

Line 138. Is it correct to use the n-days distribution to convert accumulated precipitation into the standard normal distribution?

Line 203. Why the parameter's shape can change slowly on a multi-decadal scale?

Figure 5. The SPI +1.5 to -1.5 is only different for the ASO. Is it better to provide another visualization?

Line 327. Which is the order of magnitude improvements of the dsNASPA (of negative bias) over drought severity?

Line 344. Why is the drier trend especially severe? Is it the only one with this trend on the west coast?

Line 378. Is wider uncertainty the correct way to refer to higher uncertainty?

Line 425. Improve writing.