Review of ESDD manuscript: "The Standardized Vertical Velocity Anomaly Index (SVVAI): Using Atmospheric Dynamical Anomalies to Simulate and Predict Meteorological Droughts" by Liu et al.

The authors propose a new drought index (SVVAI) derived from vertical velocity anomalies and compare it with the 3-month Standardized Precipitation Index (SPI-3). Although the overall idea of the SVVAI may be original and the quantified performance of the newly introduced index seems to be fairly good, the manuscript has major issues that, in my opinion, make it not suitable for publication in ESD.

Please find below my major concerns:

(1) The English is poor, so that while reading the paper I had difficulties in understanding many sentences and their key messages. Punctuation sometimes is incorrect and references are not well incorporated within the text. I suggest to let a native English-speaker check carefully the whole text before a possible re-submission.

(2) At the end of the manuscript (Discussion/Conclusion(s) sections), it is not clear to me what really are the advantages that the SVVAI may bring to for example operational forecast of drought, compared to the SPI-3. Moreover, the Discussion section only highlights the limitations of the SVVAI. It is good to mention them, but I would have expected at least a balance between pros and cons.

(3) The SVVAI has been compared to the SPI-3, but how it performs compared to the other SPI indices (e.g. SPI-1 and SPI-6)? And how it performs more generally compared to other indices of drought, such as the PDSI and SPEI?

(4) What the authors can say about the fact that SVVAI is computed with daily observations, whereas the SPI is computed with monthly data, by also including a time-lag in this case of 3 months?

(5) In Section 2.5, the main definition of the SVVAI index is not clear. Equations 2-3 need to be amended to fully reflect the SVVAI definition. What is the range of values of the SVVAI? Is it the same as the SPI or different? This is again not clear and very important, because many figures show SVVAI and SPI-3 values on the same range of values and colors.

(6) Within the analyses the authors made use of the Temporal Correlation Coefficient (TCC) and Pattern Correlation Coefficient (PCC), but no key references are provided with respect to these two statistical tests. In addition, statistical significance (p-values) of these correlations are not provided. Therefore, it is difficult to quantify the robustness of the results.

(7) The Figure captions are not exhaustive, so that it is difficult to interpret the plots. I suggest adding more information so that the reader can understand the plots without the need to refer to other sections of the paper.