

Interactive comment on “Comparing soil moisture anomalies from multiple independent sources over different regions across the globe” by Carmelo Cammalleri et al.

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We would like to thank to the anonymous reviewer for the thoughtful comments. Here we provide a brief response to the major comments to highlight the edits that will be made on the manuscript to address them.

1) The use of time-aggregated data is a common practice in drought analyses in order to ensure the statistical robustness of the computed anomalies. Daily values are often too noisy to allow for a robust statistical analysis. The use of a monthly temporal scale is quite common in the drought literature, and it has been preferred over the ten-day scale (adopted in EDO) for operational/technical reasons. Indeed, the monthly time

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scale will be the one implemented in the GDO system as a first approach. Higher temporal resolution will be tested and implemented in the future. We will clarify this point in the revised version.

2) Additionally, the use of monthly aggregated data ensures minimizing the discrepancies between the three datasets related to various layer depths (as the reviewer correctly highlighted in comment 2). We will discuss more thoughtfully the implications of such choice in the new version of the manuscript.

3) Since standardized anomalies are used (dimensionless, expressed as multiples of the standard deviation), the units of the errors are expressed in this unit as well. The standardization procedure also allows having all the three datasets in the same range of variability (zero mean, unitary standard deviation), which removes the need of a reference data space. Additionally, as briefly stated in the “Methods” section, we adopted the TCA “covariance notation”, which does not require a common (arbitrary) reference dataset. We will further clarify this point in the revised text.

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