

I appreciate the authors' detailed responses and the revisions made to the manuscript. The revised framing as a controlled synthetic sensitivity experiment is clearer and the manuscript has improved substantially. I only have a few remaining points that I think should be clarified before publication.

- It is now acknowledged that ERA5-Land is used both to derive the storage input and as a precipitation reference; while this can be acceptable within the revised synthetic sensitivity-study framing, the manuscript would benefit from a simple additional diagnostic showing the direct relationship between ERA5-Land-derived storage and ERA5-Land precipitation. For example, the addition of a spatial correlation analysis between ERA5-Land-derived TWS/SWS changes and ERA5-Land precipitation accumulations at the relevant 15-day and 30-day windows is recommended to help readers better understand the degree of coupling within the ERA5-Land framework.
- It is acknowledged that no train/validation split or spatial cross-validation was applied; although this is acceptable for a controlled synthetic sensitivity study, it is suggested to state more explicitly in the limitations that the reported R/RMSE values represent in-sample performance against ERA5-Land and should not be interpreted as independent predictive skill.
- The added parameter statistics are useful, but some parameters appear to reach the imposed bounds; therefore, a brief discussion of this as a possible indication of equifinality or weak parameter identifiability in some regions rather than only as physically consistent behaviour is suggested.
- Since the "TWS" proxy is computed only from the four ERA5-Land soil moisture layers and excludes snow, groundwater, surface water and canopy storage, the presentation of this variable as full TWS without qualification should be avoided; a term such as "ERA5-Land TWS proxy" would more clearly distinguish it from satellite-gravity TWS.
- The Gaussian-noise experiment should be consistently described as a first-order sensitivity test rather than as a mission-realistic error simulation, since real gravity-mission errors may be spatially and temporally correlated.

Overall, I consider the manuscript substantially improved and recommend minor revisions to address the above clarifications.