

## **Evaluating land water storage in the GSWP-2 simulations**

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The second Global Soil Wetness Project (GSWP-2) is an initiative to compare and evaluate 10-year simulations by a broad range of Land Surface Models (LSMs) under controlled conditions. Simulations by 13 LSMs from five nations have been performed in “offline mode” (i.e. prescribed atmospheric conditions) to provide global estimates of land states and fluxes at a  $1^\circ \times 1^\circ$  resolution, spanning the years 1986-1995. In this analysis, we present an evaluation of the GSWP-2 land water storage. The runoff and drainage fields given by the GSWP-2 simulations are routed to the oceans by the Total Runoff Integrating Pathways (TRIP) model. The simulated land water storage, i.e. sum of soil moisture, snow and groundwater (given by TRIP), is compared with the Topex/Poseidon altimetry data. We show that the seasonal variation of the continental water storage is well represented in GSWP-2. In this study, we also examine the relationship at seasonal and inter-annual timescales between the simulated land water storage and the thermal expansion of the oceans, obtained via global ocean temperature data set.

Keywords: land water storage, routing scheme, Topex/Poseidon, GSWP-2