The data archived here includes the NASA Catchment Land Surface Model output of monthly TWS anomalies (after removing the long-term mean) used in the investigation of vertical displacement comparison for the Great Basin and Upper Colorado basins in the paper "Comparison of Vertical Surface Deformation Estimates Derived from Space-based Gravimetry, Ground-based GPS, and Model-based Hydrologic Loading over Snow-dominated Watersheds in the United States" for publication in the *Journal of Geophysical Research – Solid Earth*.

The NASA Catchment Land Surface Model (a.k.a. Catchment; Koster et al., 2000; Ducharne et al., 2000) was run on the 25-km Equal-Area Scalable Earth (EASE) grid using meteorological fields provided by the Modern Era Retrospective Analysis for Research Application version 2 product (MERRA-2) as boundary conditions. The netcdf file archived here was reprocessed from the binary output generated directly from Catchment simulations. Daily TWS anomaly estimates across the globe were converted into (approximately) monthly-averaged values based on the specific dates corresponding used in the generation of the GRACE TWS retrievals from January 2003 to March 2016. The time bounds used for calculating each monthly data can be acquired from https://earth.gsfc.nasa.gov/geo/data/grace-mascons. Following the data processing steps discussed in the paper, vertical displacement at each GPS station can be computed using this modeled TWS anomaly data.

The key findings in this paper include: 1) Study highlights agreement between vertical displacements derived from ground-based GPS, GRACE, and Catchment in two snow-dominated basins, 2) Ground-based GPS captures the prolonged drought after the 2010-2011 winter better than Catchment, and 3) Study shows potential of using a data assimilation framework incorporating GRACE and ground-based GPS to improve modeled TWS.

References

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