



## **Confrontation of LEW Zambezi model, calibrated on discharges and ERA40 convergence data, with GRACE storage variation**

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Storage models derived from the Gravity Recovery And Climate Experiment (GRACE) have been confronted with storage estimates from a hydrological model of the upper Zambezi based on the Lumped Elementary Watershed (LEW) approach. The LEW model has been calibrated on discharge observations and its storage pattern has been validated on storage variations derived from a combined terrestrial and atmospheric closure of the water balance using ERA40 convergence data. The validation of the model shows that the storage pattern of LEW has a good resemblance with the validation data set, although ERA40 shows a larger amplitude than LEW. Furthermore, in recent periods, the behaviour improves, probably because in recent periods a more reliable remotely sensed rainfall product has been used as forcing. The confrontation of the model with GRACE derived storage estimates reveals a bias in amplitude of around 50 mm, probably due to the spatial filtering that was applied. Moreover, small inconsistencies in the phase can be observed. The most plausible reason for this is the indistinct overpass moment of the GRACE satellites over the upper Zambezi.