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Developing a routing model based on multi-satellite data sets to better estimate P-ET

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Quantifying the P-ET as an important component of the climate is very crucial in global studies. Remote sensing data sets give different estimates for P and ET especially over poorly gauged regions like Congo. The goal of this study is to use GRACE estimates for the total water storage changes and multi-satellite based inundation data along with topography information to be able to quantify the surface water terms of the water balance (R+d(S)/d(T)) in a simple source-to-sink routing model. The P-ET from different remote sensing based estimates can be evaluated by comparing to the estimated values from the model. This method can reduce uncertainties in P-ET term in poorly gauged Congo basin. We constructed the model and have evaluated its estimates in Amazon basin, which has large drainage area and has runoff gauges. The large Congo basin is divided to smaller sub-basins and the estimated runoff values from inundation data and topography (SRTM) is computed as net runoff for each sub-basin. Then average water storage estimates from GRACE for each sub-basin will be used to compute P-ET= R+dS/dT . Different precipitation and ET data sets using remote sensing data will be used to compare to the averaged to the sub-basins. The best P and ET data will be chosen based on the consistency with the model estimates. These new information can be used to evaluate also other climate models.