GWD-LR: a satellite-based global database of river channel width

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River width is a fundamental parameter of river hydrodynamic simulations, but no global-scale river width database based on observed water bodies has yet been developed. Here we present a new algorithm that automatically calculates river width from satellite-based water masks and flow direction maps. The Global Width Database for Large Rivers (GWD-LR) is developed by applying the algorithm to the SRTM Water Body Database and the HydroSHEDS flow direction map. Both bank-to-bank river width and effective river width excluding islands are calculated for river channels between 60S and 60N. The effective river width of GWD-LR is compared with existing river width databases for the Congo and Mississippi Rivers. The effective river width of the GWD-LR is slightly narrower compared to the existing databases, but the relative difference is within +/-20% for most river channels. As the river width of the GWD-LR is calculated along the river channels of the HydroSHEDS flow direction map, it is relatively straightforward to apply the GWD-LR to global- and continental-scale river modeling.