



Rivers and floodplains as key components of global terrestrial water storage variability

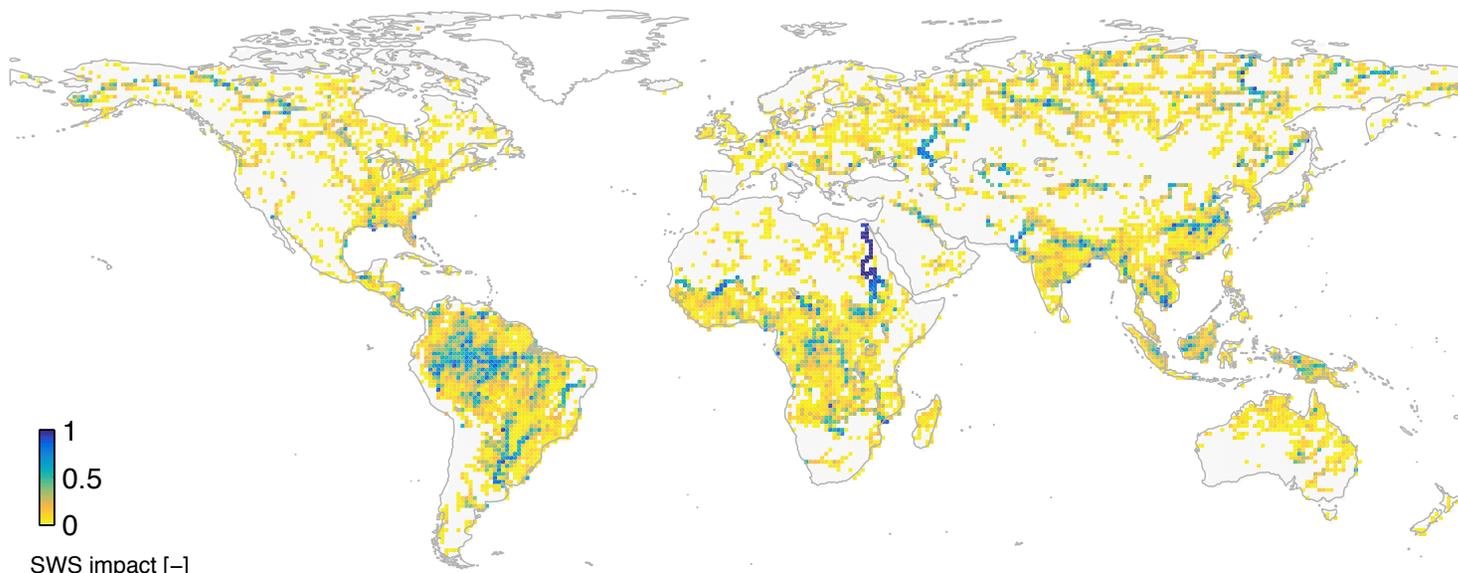
A. Getirana (617), S. Kumar (617), M. Girotto (610), M. Rodell (617), 2017. *Geophysical Research Letters*, **44** (20), 10,359-10,368.



Science Question: How much does surface water storage (SWS) in rivers and floodplains contribute to terrestrial water storage (TWS) variability around the world?

Findings:

1. Rivers and floodplains store 2,860 km³ globally and contribute to 8% of global TWS change;
2. SWS is a principal component of TWS variability (i) in the tropics, (ii) where major rivers flow over arid regions, and (iii) at high latitudes;
3. Rivers and floodplains account for ~22-27% of TWS variability in both the Amazon and Nile basins.



Fractional contribution of surface water storage (SWS) variability on total terrestrial water storage variability

Impact: In many regions surface water storage is a larger component of terrestrial water storage than previously assumed, which has significant implications for interpreting data from the GRACE, GRACE FO, and SWOT missions and for assimilating those data into models of land surface hydrological processes.

Why does it matter? Water is vital to people, agriculture, and ecosystems, and its availability is being pressured by population growth and climate change. Hence it is crucial that we accurately observe, understand, and predict its distribution and variations.