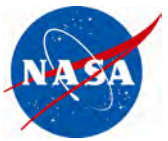


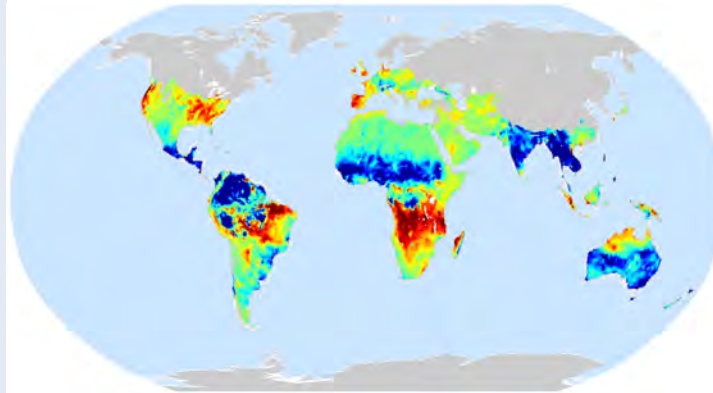
SMAP Provides New Information about the Land Surface Net Water Flux



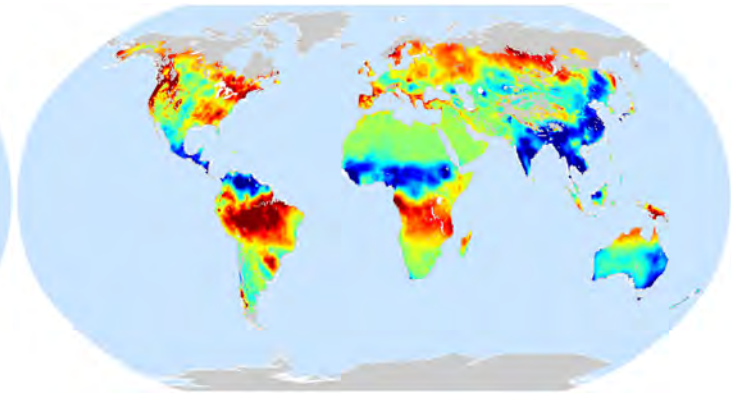
Problem: Land surface net water flux (NWF) is the residual of the surface water balance equation ($NWF = P - ET - R$) and determines the long-term groundwater variations. Estimation of NWF from the water balance equation using multiple satellite data often suffers from large mass balance errors due to accumulated systematic biases of the individual flux components (P, ET, R).

Findings: SMAP near-surface soil moisture, all by itself, contains adequate information to directly retrieve the land surface net water flux.

SMAP-based NWF (cm month⁻¹), July 2016



P - ET - R (cm month⁻¹), July 2016



Impact: The impacts of this advance are far reaching, with potential to significantly improve our predictions of groundwater storage variations and availability, which are crucial for sustainable water management and food security for the rapidly growing global population.