

# Satellite monitoring of surface soil organic carbon dynamics from SMAP

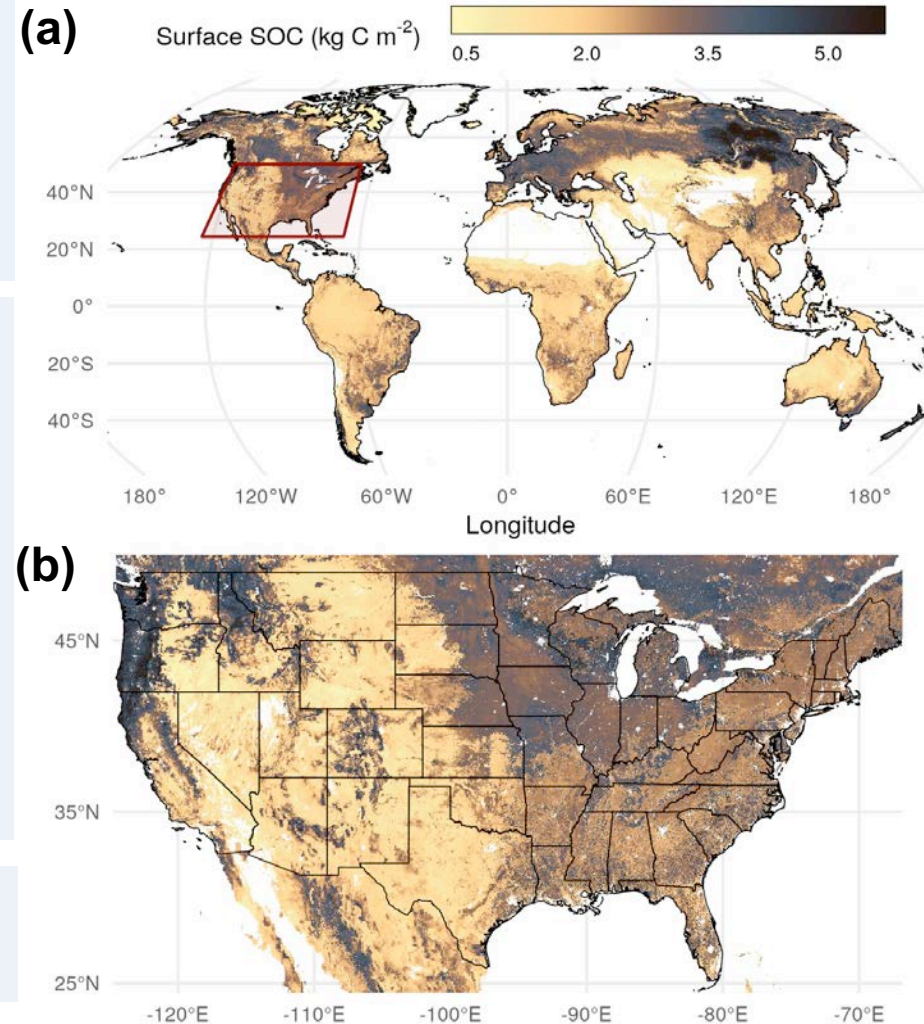


**Problem:** Soil organic carbon (SOC) is a key soil health & carbon storage metric that is climate sensitive, but capabilities for global monitoring of SOC have been lacking, until now.

**Findings:** The L4C SOC global distribution is consistent with soil inventory data & global vegetation models ( $r \geq 0.89$ ), but provides better spatial resolution (1-9km) & daily fidelity. Topsoil SOC MRT ranges from ~1.5 yrs (tropics) to more than 17 yrs (tundra). SMAP soil moisture has greatest SOC impact in semi-arid lands encompassing ~60% of global domain.

**Impact:** New capacity for global SOC & soil health monitoring from SMAP.

Endsley, Kimball, Reichle, Watts, 2020. Satellite monitoring of global surface soil organic carbon dynamics using the SMAP Level 4 Carbon product. *JGR Biogeosciences*.



Global topsoil SOC in 2016 from SMAP L4C 9-km grid product (a); downscaled SOC over continental USA reconstructed from L4C 1-km land cover data (b).