



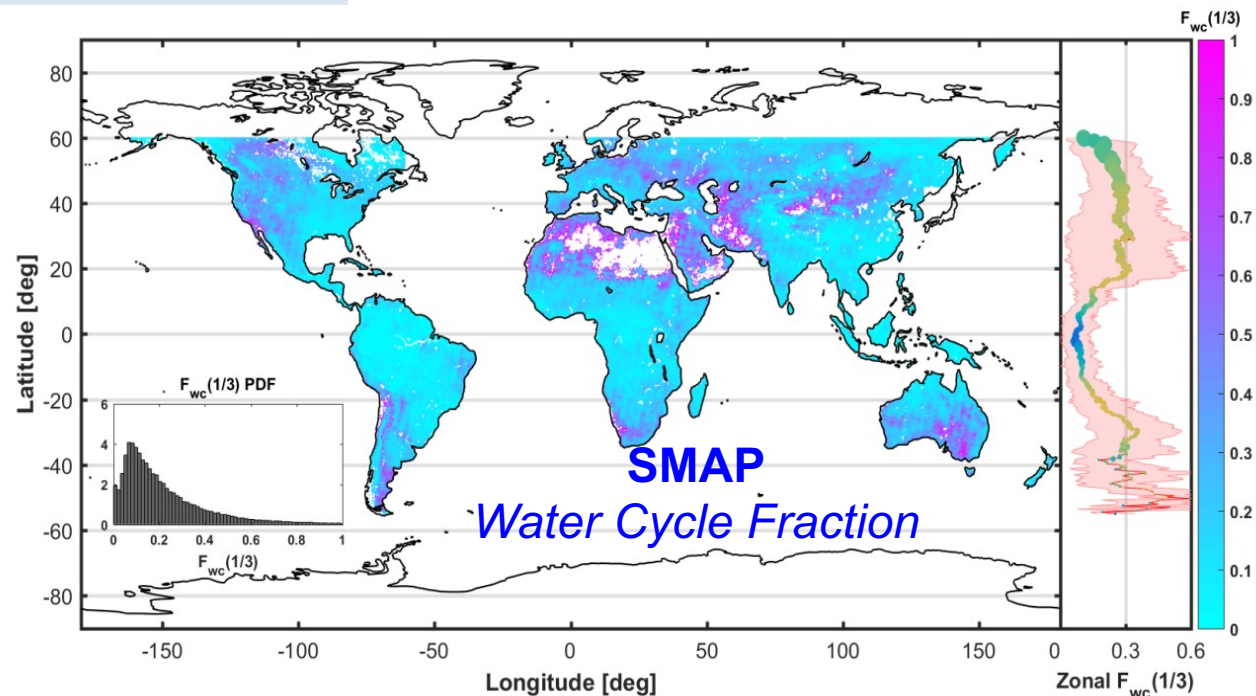
Soil Moisture Plays a Disproportionate Role in Global Water Cycle



Problem: Surface soil moisture is the ‘Gate’ through which all land-atmosphere exchanges of water must pass. The impacts of this role are not quantitatively known.

$$\text{Water Cycle Fraction} = \frac{\text{storage}_{t+1} - \text{storage}_t}{\text{precipitation}}$$

Finding: Even Though Soil Moisture is 0.001% of the Global Water Budget, it Captures About 20% of the Water Cycle



Impact: SMAP results show the local timing of rainstorms and local soil texture control the *Water Cycle Fraction* and the local strength of land-atmosphere coupling