Soil Moisture as a Way to Integrate Soils with Hydrology Across Scales

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Soil moisture is emerging, across earth system science, as a fundamental integrator of hydrological, biogeochemical and ecological processes at a range of spatial scales from the pore-scale, to local and continental scales. The ability to understand the relevance of soil hydrological processes in finding solutions to global environmental changes mandates the development of better soil water monitoring and modeling techniques. The main goal of the paper is to present recent exciting advances on soil moisture measurements and modeling to the broad earth sciences community.