

Cooperative Hydropedological Research - NSSC's Soil Survey Research and Laboratory Branch is collaborating with Dr Henry Lin and the Department of Ecosystem Science and Management at Pennsylvania State University in hydropedologic studies within the Shale Hills Critical Zone Observatory (CZO) and the Klepler Research Farm in central Pennsylvania. Hydropedology is an emerging interdisciplinary science that studies soil-water-landscape dynamics and relationships across different spatial and temporal scales and their impact on ecosystems, contaminant fate, and land-use. The NSSC has provided non-invasive, continuous profiling geophysical tools (e.g., ground-penetrating radar and electromagnetic induction) and expertise that have helped reveal the complexity of soil architectures and their impact on flow and transport across different spatiotemporal scales. A fundamental goal of this research is to partition landscapes into functional units that have more similar soil and hydrologic processes and properties. Results from these geophysical studies have been recently included in several chapters of a book (Lin, H., 2012. *Hydropedology: Synergistic Integration of Soil Science and Hydrology*. Academic Press, Elsevier) and article (Zhu, Q., H.S. Lin, and J.A. Doolittle, 2013. Functional soil mapping for site-specific soil moisture and crop yield management. *Geoderma* 200-201: 43-54).