

19th WCSS Hydropedology Working Group Proposed Symposium

Architecture of Soil Structural Diversity: From the Nano to the Landscape Scale

Co-Convenors: Henry Lin and David Chittleborough

The heterogeneous structure of soil is manifest in a diversity of forms in the continuum from the microscopic to the landscape scale. This structure is both a consequence of, and a prerequisite for, many critical processes regulating soil functions.

In this symposium, we seek contributions that explore: i) the visualization and quantification of soil structure from the pore scale to the soil profile to catena, ii), linkages between structural properties and soil functions, including water flow and solute transport, storage and transformations of reactive chemicals and organic matter and, and iii) soil as heterogeneous living space for organisms that contributes to the inherent biodiversity in soil.

A special focus of this symposium is on research leading to improvements in our understanding of subsurface heterogeneity, the diversity of soil functions dictated by soil architecture, and the processes of structure formation and degradation (the latter driven by physical, chemical and biological agents, including man's activities, such as tillage and traffic). This focus is an essential step towards an integrated predictive modeling of soil systems.

The convenors seek inputs from different branches of soil science. Our focus is to employ pedological knowledge for modeling real-world hydrological processes and transport in soils as suggested by the approach of hydropedology.