Thematic Session 24

The role of clays in critical zone architecture and function

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The complex process of argillic/clay horizon formation in the below-ground critical zone (CZ) serves as “Nature’s clay factory” and controls CZ architecture and function. These clays and clay minerals have a profound influence on hydrologic, ecologic, geochemical, and geomorphic land functions, over both geologic and human time scales, thereby helping ecosystems services and human wellbeing. This thematic session seeks to bring together the new generation of CZ-networks and field-based clay mineral studies used in concert with other CZ network observations to validate forecasting and hindcasting CZ function. To determine further the role of clays and clay minerals in the CZ and develop such clay factory models, this session further seeks contributions, including model laboratory experiments, that characterize and identify the dynamic role of clays in the CZ, which will help to better understand of the fate of nutrients, contaminants, and water resources in the CZ.

Keywords: Nutrients, Ecosystems services, Anthropocene, Soil erosion, Hydrology, Paleosols, Legacy sediment, Landforms.

Potential Journals: Geoderma, Earth Surface Processes and Landforms.