AGU Technical Committee: Soils Processes and Critical Zone

The Soils Processes and Critical Zone Technical Committee is pleased to give an update on activities and events related to soil processes and the critical zone at AGU. Our last committee meeting was held on June 22, 2023 online. At the meeting, we discussed the proposal sessions related to our committee and activities to be organized at the AGU Fall Meeting.

Every year, we create a “Guide to Soil Processes and the Critical Zone”, with a brief introduction and links of relevant AGU topic sessions in Hydrological Sciences (distributed via AGU Digest) and webinars related to Soil Processes and the Critical Zone. For more information about our committee and ways to become involved (e.g., joining our community, organizing AGU topic sessions and social events), please visit our website or reach out to Jingyi Huang (Chair, jhuang426@wisc.edu), Rose Abramoff (Vice-Chair, rose.abramoff@gmail.com), or any members.

The Soils Processes and Critical Zone Technical Committee promotes the understanding of soils at the interface of biogeochemistry, critical zone science, and hydrology within AGU. Our aims are to broaden understanding of critical functions and ecosystem services of soils in Earth Systems, integrate the interests of soils across AGU sections, and provide context for the following key roles of soil:

- Soil is a functioning, complex natural system with unique characteristics that cannot be deduced from a collection of its constituents or individual processes.
- Soil is a thin film of life covering much of the terrestrial surface and acting as the planet’s life support system; mineral weathering in soils controls nutrient release and occlusion.
- Soil moisture plays a key role in the terrestrial water cycle and land-atmosphere interactions by controlling the exchange and partitioning of water and energy fluxes at the land surface.
- Soil is the most biologically active compartment of the biosphere, hosting Earth’s largest pool of biodiversity.
- Soil, with its related biota, is Earth’s recycling system, providing most of our needs for food, feed, fiber, and energy, while forming a global biogeochemical cycle of C, N, and P and serving as the largest terrestrial stock of organic carbon.
- Soil provides essential ecosystem services such as provision of fresh and clean water, essential for human primary needs of drinking water and food production, and functions as a water purification system.

At AGU 2023 Fall Meeting, our committee will organize a topic session in collaboration with International Soil Modeling Consortium (ISMC), entitled “Advances and Challenges in Soil and Critical Zone Science (Oral and Poster)”. We aim to bring together modelers from diverse backgrounds, such as critical zone and hydrology, soil biogeochemical cycle, terrestrial ecosystem, geophysics, climate, and Earth system modelers, to discuss approaches, challenges, and unresolved issues in representing and parameterizing soil processes in Earth System Models, benchmarking strategies, and critical datasets. We look forward to your submission to this session and opportunities to collaborate with you on the cross-disciplinary research to better understand Soils Processes and Critical Zone.

With the contributions from the current committee members: Jingyi Huang Chair (University of Wisconsin-Madison); Rose Abramoff Vice-Chair (LSCE); Kathe Todd-Brown Outgoing Chair (University of Florida); Alfred Hartemink (University of Wisconsin Madison); Avni Malhotra (University of Zurich); Binayak Mohanty (Texas A&M University); Dani Or (ETH Zürich and Desert Research Institute); Ester Szein (National Academy of Sciences and Geological Society of America); Kathleen Lohse (Idaho State University); KC Carroll (New Mexico State University); Markus Flury (Washington State University); Michael Young (University of Texas, Austin); Salvatore Calabrese (Texas A&M University); Sean M. Schaeffer (University of Tennessee); Sushant Mehan (Colorado State University); Umakant Mishra (Sandia National Laboratories); Achla Jha Student Representative (Texas A&M University).