**Session Proposal**

# Session Title

Hydropedology: Addressing real-world problems through interdisciplinary science

# Session Organizers

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# Session Description

Hydropedology, as an interdisciplinary science at the nexus of soil science, hydrology, and geomorphology, plays a critical role in addressing real-world environmental challenges. This session will explore the application of hydropedological principles in solving pressing global issues such as water security, land degradation, and sustainable land management. By integrating field-based investigations, modeling approaches, and innovative analytical techniques, hydropedology provides essential insights into soil-water interactions across multiple scales.

This session seeks to bring together researchers and practitioners from diverse disciplines to highlight advancements in hydropedological research and its application in policy, land-use planning, and ecosystem restoration. Topics will include, but are not limited to, the role of hydropedology in predicting and mitigating natural hazards, improving agricultural water use efficiency, and enhancing hydrological modeling through soil-based parameterization. By fostering interdisciplinary dialogue, this session aims to bridge the gap between scientific research and practical implementation, ensuring that hydropedology continues to inform sustainable water and land management strategies globally.

# Relevance

This session aligns with the Congres**s** theme by highlighting hydropedology’s role in sustaining healthy soils for a shared future. Understanding soil-water interactions is crucial for mitigating soil degradation, enhancing water security, and ensuring resilient agricultural and natural ecosystems. By integrating interdisciplinary approaches, hydropedology offers solutions for improving soil health, optimizing land use, and adapting to climate change. As soil continues to degrade globally, this session will showcase how hydropedology contributes to preserving soil functions essential for food security, carbon sequestration, and sustainable land management—ensuring soils remain a foundation for livelihoods and ecosystems worldwide.

# Format

Oral presentations with a closing panel discussion on the future of the hydropedological working group under the IUSS

# Proposed Speakers

* Dr. Edward Smit, North-West University; leading expert in incorporating hydropedological interpretations in hydrological modelling.
* Dr. Darren Bouwer, Digital Soils Africa; Consultant working on hydropedological mapping and the impact of land cover change on hydropedological functioning.
* Prof. Dr. Qing Zhu, Nanjing Institute of Geography & Limnology Chinese Academy of Science. leading expert in coupling hydropedological processes and the nitrogen cycle across spatial scales.
* Prof. Dr. Yujun Ma, Sun Yat-sen University, Young expert on hydropedology, he published paper entitled “hydropedology: interactions between pedologic and hydrologic processes across spatiotemporal scales”.
* Yunqiang Wang, Institute of Earth Environment, Chinese Academy of Sciences, leading expert in hydropedology and critical zone in the loess plateau.
* Prof George van Zijl, North-West University. Expert in linking digital soil mapping for hydropedological purposes and to conceptualise regional hydrology.