**Session Proposal**

# Session Title

Leveraging Site and Spatial data for Soil monitoring

# Session Organizers

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# Session Description

Soil monitoring is important for agriculture, environment. This session explores cutting-edge strategies to integrate site-specific data (e.g., soil pH, nutrient levels) with spatial analytics (e.g., satellite imagery, GIS mapping) for transformative soil monitoring solutions. Attendees will discover how advancements in remote sensing, IoT sensors, drones, and machine learning are enabling precise, scalable insights into soil properties, degradation risks, and remediation opportunities. Key topics include but not limited to: (1) Advanced sensing technology: data-driven soil sampling strategies, next generation of *in-situ* portable and tractor-mounted soil sensors, citizen science and soil information crowdsourcing, AI Agent for soil monitoring. (2) Land degradation monitoring: Combining legacy datasets with AI-driven models to predict soil carbon, salinity, depletion, acidification, and contamination. (3) Precision Agriculture: Using spatial interpolation and real-time sensor data to optimize irrigation, fertilization, and crop yields. (4) Environmental Resilience: Monitoring erosion, drought impacts, and land-use changes through geospatial tools. (5) Policy & Innovation: Bridging data-driven insights with global initiatives like the FAO’s Global Soil Partnership.

# Format

Oral presentations

# Proposed Speakers

Dr. Prof. Huajun Tang, Member of the Chinese Academy of Engineering, Chinese Academy of Agricultural Sciences, a world leading expert in the field of soil and land science.

Dr. Prof. Zhaoliang Li, Member of the Academia Europaea, Chinese Academy of Agricultural Sciences, a world leading expert in the field of thermal infrared remote sensing.

Dr. Prof. Alfred Stein, University of Twente, a world leading expert in the field of spatial statistics and image analysis.

Dr. Zhanguo Bai, ISRIC–World Soil Information, a leading expert in soil and land degradation assessment.

Dr. Prof. Sonoko Dorothea Bellingrath-Kimura, Co-Head at Leibniz Centre for Agricultural Landscape Research, a leading expert in digital soil science.

Dr. Prof. Wim Cornelis, Ghent University, a leading expert in soil physics.‬‬‬

Dr. Rastislav Skalsky, Senior Research Scholar at the International Institute for Applied Systems Analysis, a leading expert of the AI 4 Soil Health Program.

Mr. Changbao Ma, Cultivated Land Quality Monitoring and Protection Center, Ministry of Agriculture and Rural Affairs, PRC.

Dr. Prof. Yuchun Pan, National Engineering Research Center for Information Technology in Agriculture.

Dr. Prof. Yuanfang Huang, China Agricultural University.

Dr. Xianli Xie, Institute of Soil Science, Chinese Academy of Sciences.

Dr. Miao Lu, Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences.

Dr. Prof. Zhou Shi, Zhejiang University.