**Session Proposal**

# **Session Title:**

# The digital age in the study, evaluation and teaching of soil sciences.

# Session Organizers

**Dr. Fernando Ayala Niño**. Laboratorio de edafología aplicada y Servicios Ambientales Unidad de Biotecnología y Prototipos (UBIPRO). Facultad de Estudios Superiores Iztacala-UNAM. Tlalnepantla de Baz Estado de México, México. [fernando.ayala@comunidad.unam.mx](mailto:fernando.ayala@comunidad.unam.mx)

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# Session Description

This session addresses the relationship between new technologies and soil sciences. New digital tools are revolutionizing the understanding, evaluation, management, and teaching of soil sciences. Some examples are: a) augmented and mixed reality that allow the visualization of soil profiles in real-time, facilitating on-site analysis and improving the educational experience in the field; b) smartphone applications allow the consultation of a large volume of information in the field for expeditious decision making; c) web development allows the agricultural evaluation of soil profile horizons based on their physical and chemical properties; d) artificial intelligence allows the estimation of soil properties that are difficult or expensive to measure; e) the management of soil profile images allows the identification of horizons and the automatic quantification of some soil properties; f) web developments allow the creation of new forms of teaching and evaluation of students and g) next-generation drones improve soil studies with high-resolution imaging, real-time data collection, and precision mapping.

This session represents an opportunity to establish international collaborations between soil scientists, software developers, and technology experts. Attendees will be able to share experiences implementing innovative technological solutions in soil research and discuss the potential of these tools to address global challenges in soil conservation and sustainable management.

# Format

Oral and poster presentations.

# Potential Presentations

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| **Author** | **Affiliation** | **Potential presentation** |
| **Francisco Bautista Zúñiga**  [leptosol@ciga.unam.mx](mailto:leptosol@ciga.unam.mx) | Centro de Investigación en Geografía Ambiental, Universidad Nacional Autónoma de México-UNAM. México | The agricultural soil profile evaluation system of Michoacán, México |
| **Fernando Ayala Niño**  [fernando.ayala@comunidad.unam.mx](mailto:fernando.ayala@comunidad.unam.mx) | Unidad de Biotecnología y Prototipos (UBIPRO) Facultad de Estudios Superiores Iztacala Universidad Nacional Autónoma de México-UNAM. México | The National Museum of Soil: a tour by mixed reality |
| **Dra. Ángeles Gallegos**  [atavera@pmip.unam.mx](mailto:atavera@pmip.unam.mx) | Laboratorio Universitario de Geofísica Ambiental.Centro de Investigación en Geografía Ambiental, Universidad Nacional Autónoma de México-UNAM. México | Artificial intelligence for estimating forgotten soil properties: the case of volcanic soils in Mexico |
| **Dr. Héctor Estrada Medina**  [hector.estrada@correo.uady.mx](mailto:Hector.estrada@correo.uady.mx) | Campus de Ciencias Biológicas y Agropecuarias. Universidad Autónoma de Yucatán. Mérida, México. | Using AI in soil classification with the WRB |

# Potential posters

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| **Author** | **Affiliation** | **Potential poster** |
| **Dra. Ángeles Gallegos**  [atavera@pmip.unam.mx](mailto:atavera@pmip.unam.mx) | Laboratorio Universitario de Geofísica Ambiental.Centro de Investigación en Geografía Ambiental, Universidad Nacional Autónoma de México-UNAM. México | The “Campeche Soils” smartphone app: WRB, and Maya soil classification |
| **Francisco Bautista Zúñiga**  [leptosol@ciga.unam.mx](mailto:leptosol@ciga.unam.mx) | Centro de Investigación en Geografía Ambiental, Universidad Nacional Autónoma de México-UNAM. México | - Soil education in the 21st century: the virtual museum of Soil Geography of México |
| **Yaotzin Sánchez**  **[yaotzinyamanias@outlook.com](mailto:yaotzinyamanias@outlook.com)**  **Dr. Héctor Estrada Medina**  [hector.estrada@correo.uady.mx](mailto:Hector.estrada@correo.uady.mx) | Centro de Investigación en Geografía Ambiental, Universidad Nacional Autónoma de México-UNAM. México  Campus de Ciencias Biológicas y Agropecuarias. Universidad Autónoma de Yucatán. Mérida, México. | Soil Mapping at plot scale for avocado cultivation  Potential uses of artificial intelligence in soil sciences |

# Proposed Speakers

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| --- | --- | --- |
| **Author** | **Affiliation** | **Potential presentation** |
| Alex Mcbratney  [alex.mcbratney@sydney.edu.au](mailto:alex.mcbratney@sydney.edu.au" \t "_blank) | The University of Sydney Institute of Agriculture  Australia | The evolution of Soil Sciences: can technology help us become better soil scientists? **(Conference to be confirmed).** |
| Mojtaba Naeimi  [biswas@uoguelph.ca](mailto:biswas@uoguelph.ca" \t "_self) | School of Environmental Sciences, University of Guelph. Canada | Image-based soil characterization: A review on smartphone applications **(Conference to be confirmed).** |

Additionally, we would like to extend this session to invite other potential parties interested to participate with us in this important session.