

The 8th International Conference on Unsaturated Soils

Pre-Conference Workshop

“Long-term measurement of soil suction in the field and its modelling”

Programme Overview and Speakers

09:15-09:30	Introduction	M. Bardanis
09:30-10:15	On the long-term measurement of suction in the field and its importance for the evolution of Unsaturated Soil Mechanics	M. Bardanis
10:15-10:50	Advances in field measurements of soil water content	D. Cobos
10:50-11:25	Advances in technology and techniques for monitoring soil suction in the field and the lab	L. Rivera
11:25-11:40	Break	
11:40-12:15	Long-term performance of conventional tensiometers installed in the Adige River flood embankment in Italy	A. Tarantino
12:15-12:50	Measurement and monitoring of soil matric suction using High Capacity Tensiometers	J. Mendes
12:50-13:25	Experiences from the long-term measurement of suction in Cyprus expansive soils	D. Loukidis
13:25-14:00	Numerical modelling of suctions in the field	K. Tsiampousi
14:00	Lunch	

On the long-term measurement of suction in the field and its importance for the evolution of Unsaturated Soil Mechanics, by Dr Michael Bardanis



Michael Bardanis is the Director of Laboratory of EDAFOS Engineering Consultants S.A., a geotechnical consultancy based in Athens, Greece. He holds a Diploma in Civil Engineering from the National Technical University of Athens (NTUA), an MSc in Soil Mechanics from Imperial College, London, and a PhD degree in Unsaturated Soil Mechanics from NTUA. Michael has worked as a geotechnical engineer since 1998 on projects in Greece, Cyprus and Bulgaria, including large landslide remediation projects, highways, dams, airports, investigation and restoration of historical monuments. Between 2018 and 2021 he was a Visiting Lecturer at Neapolis University Paphos, Cyprus. He has been elected several times on the Executive Committee of the Hellenic Society of Soil Mechanics and Geotechnical Engineering (HSSMGE), serving as its Secretary General between 2015 and 2019, and as its President since 2019. He is the Chairman of the 8th International Conference on Unsaturated Soils, Milos, Greece.

Advances in field measurements of soil water content, by Dr Doug Cobos



Doug Cobos is a Senior Research Scientist and the Vice President of Research and Development at METER Group. He also holds an adjunct appointment in the Department of Crop and Soil Sciences at Washington State University where he co-teaches Environmental Biophysics. Doug's advanced degrees are from Texas A&M and the University of Minnesota in Soil Science. Doug was the Lead Engineer for the Thermal and Electrical Conductivity Probe (TECP) that was designed by Decagon and flew to Mars aboard NASA's 2008 Phoenix Scout Lander. His current research is focused on instrumentation development for use in soil, plant, and atmospheric research.

Advances in technology and techniques for monitoring soil suction in the field and the lab, by Dr Leo Rivera



Leo Rivera operates as a research scientist and Director of Scientific Outreach at METER Group. He earned his undergraduate and master's degree in soil science at Texas A&M University. There, his research focused on the impacts of land use and landscape on soil hydraulic properties. He also helped develop an infiltration system for measuring hydraulic conductivity used by the NRCS in Texas. Currently, Leo leads METER's collaborative research efforts and focuses on application development in hydrology instrumentation. He also works in R&D to explore new instrumentation for water and nutrient movement in the soil.

Long-term performance of conventional tensiometers installed in the Adige River flood embankment in Italy, by Prof. Alessandro Tarantino



Alessandro Tarantino is Professor of Experimental Geomechanics at the University of Strathclyde in Glasgow, Scotland. His current research interests include the direct measurement of water tension in soils and plants, micromechanical behaviour of saturated and unsaturated clays, soil-plant-atmosphere interaction, and stability of natural and engineered slopes subjected to rainwater and floodwater infiltration. He has led major European consortium research projects including the Marie Curie European Training Network 'TERRE' ('Training Engineers and Researchers to Rethink geotechnical Engineering for a low carbon future, 2015-2019). He is co-editor of the books 'Advanced Experimental Unsaturated Soil Mechanics' (2005) and 'Laboratory and Field Testing of Unsaturated Soils' (2009). He has been keynote/theme lecturer at numerous International Conferences (the 16th IACMAG Conference 2022 the most recent one) and will deliver the next ICE Géotechnique Lecture (October 2023).

Measurement and monitoring of soil matric suction using High Capacity Tensiometers, by Assist. Prof. Joao Mendes



Joao Mendes (PhD) is Assistant Professor in Civil Engineering at Northumbria University at Newcastle since May 2017. Research interests are primarily related to the understanding of the hydro-mechanical behaviour of unsaturated soils through physical experimentation (laboratory and field). On one hand, understanding the impact of future climate and its effects on the stability and serviceability of earth structures (e.g. embankments); and, on the other, in the development and optimisation of new and existing methodologies for the study of unsaturated soils in laboratory (e.g. development of double cell triaxial cells) or as means of monitoring the water retention behaviour in earth infrastructure (e.g. in the improvement of high capacity tensiometers or HCTs). On the latter, particular focus is given in the understanding and prevention of cavitation in HCTs as to extend their performance with the ultimate goal of developing HCTs as a tool for monitoring critical earth infrastructure.

Experiences from the long-term measurement of suction in Cyprus expansive soils, by Assoc. Prof. Dimitrios Loukidis



Dimitrios Loukidis is Associate Professor of Geotechnical Engineering in the Department of Civil & Environmental Engineering of the University of Cyprus. Upon completion of his undergraduate studies in Civil Engineering at the National Technical University of Athens (NTUA), he pursued graduate studies at Purdue University in the area of geotechnical engineering, where he received his Master's and PhD degrees. His main research interests focus on foundation engineering, and the use of the finite element method in geotechnical engineering. He has performed research on pile foundations, advanced constitutive modelling of sands and clays, fault rupture propagation through soils and its impact on pipelines, simulation of large deformation problems in geotechnical engineering, and the impact of swelling soils

on foundations. Since 2009, he has been the head of the Geomechanics Laboratory of the University of Cyprus. He has served as President of the newly founded Cypriot Society of Soil Mechanics and Geotechnical Engineering (2016-2022).

Numerical modelling of suctions in the field, by Dr Katerina Tsiampousi



Katerina Tsiampousi is a Senior Lecturer at Imperial College London, specialising in constitutive and hydraulic modelling of unsaturated soils and in numerical modelling of geotechnical infrastructure. Her recent work in the area of unsaturated soil mechanics has focused on numerical modelling of soil-atmosphere interaction and the associated seasonal development of suctions in the field, for which she has developed and applied equations governing coupled consolidation, and constitutive and hydraulic models for unsaturated soils. She is an elected member of the British Geotechnical Association and a member of the ISSMGE Technical Committee 106 Unsaturated Soils nominated by HSSMGE. She seats at the Editorial Panels of Géotechnique and of Computers and Geotechnics.

***Visit to the field measurements station
in the premises of the Conference Centre***

Attendees of the Workshop will be guided to the field station for measurement of suction and volumetric water content, combined with a full meteorological station, in the conference venue. Measurements from the instruments of the station will be presented during the Workshop along with details of its construction and the soil materials found. The help received from personnel of the George Eliopoulos Conference Centre, personnel of our exhibitor EDAFOS for the installation and our Silver Sponsor METER for the sensors provided and all the help received are greatly acknowledged!



The new field station for measurement of suction and volumetric water content, combined with a full meteorological station, in the conference venue!