



4th European Conference on Unsaturated Soils

19 to 21 October 2020

ONLINE conference

FINAL PROGRAMME



FINAL PROGRAMME

Lisbon time - 5h	Lisbon time	Lisbon time + 5h	19 th October			20 th October			21 st October		
04:00	9:00	14:00	Opening session			Plenary session Panel Session Codes of Practice			Plenary session Invited Lectures Effective stresses		
	9:30		Plenary session TC106 European Distinguished Lecturer								
	10:00										
	10:30										
	11:00		S1	S2	S3	S10	S11	S12	S19	S20	S21
	11:30										
	12:00		LUNCH			LUNCH			LUNCH		
8:30	13:30	18:30	Plenary session Keynote #1			Plenary session Keynote #2			Plenary session Young Invited Lectures		
	14:00										
	14:30		S4	S5	S6	S13	S14	S15	S22-1	S23-1	S24-1
	15:00								S22-2	S23-2	S24-2
	15:30		S7	S8	S9	S16	S17	S18	Closing session		
11:00	16:00	21:00									

Detailed description in the next pages

Oral presentation of all papers (10 minutes) followed by discussion (2-5 minutes/paper).

Final Programme also available at: <https://eunsat2020.tecnico.ulisboa.pt/news/default.html>

PAY ATTENTION: all hours below are Lisbon time!

Please see the correspondence between the number of paper from easychair and the number of paper in the proceedings book at the end of this document.

PROCEEDINGS

The proceedings of E-UNSAT 2020 are available online at: www.e3s-conferences.org.

E3S Web of Conferences

Volume 195 (2020)

4th European Conference on Unsaturated Soils (E-UNSAT 2020)

Lisboa, Portugal, October 19-21, 2020

R. Cardoso, C. Jommi and E. Romero (Eds.)

SPONSORS





Monday 19th October

PLENARY SESSION

19/10/2020 Morning 9h00 - 10h30

OPENING

Rafaela Cardoso and the President of DECivil of IST

TC106 - 2nd European Distinguished Lecturer on Unsaturated Soils

Chair: David Toll

New research topics in experimental unsaturated soil mechanics. Hydro-mechanical behaviour of compacted vegetated soils.
Enrique Romero, UPC, Barcelona, Spain

BREAK

PARALLEL SESSIONS

19/10/2020 Morning 10h45 - 12h15

S1

Chair: Maria Victoria Villar

04001 Numerical simulation of a water infiltration test on a proposed backfill material in nuclear waste repositories

Abhishek Rawat, Anne Catherine Dieudonne, Wiebke Baille and Frederic Collin

04002 Development of a THMC code for bentonites in Comsol Multiphysics

Angel Yustres, Rubén López-Vizcaíno, Virginia Cabrera and Vicente Navarro

04003 Hydro-mechanical behaviour of binary bentonite pellet and powder mixtures

Arisleidy Mesa Alcantara, Enrique Romero, Nadia Mokni and Sebastia Olivella

04004 Modelling of oedometer tests on pellet-powder bentonite mixtures to support mock-up test analysis

Arisleidy Mesa Alcantara, Nadia Mokni, Enrique Romero and Sebastia Olivella

04006 A coupled hydro – mechanical approach for modelling the volume change behaviour of compacted bentonite

Jose A. Bosch, Alessio Ferrari and Lyesse Laloui

04009 Hydro-mechanical behaviour of a pellets based bentonite seal: Numerical modelling of lab scale experiments

Liliana Gramegna, Robert Charlier, Jean Talandier, Frederic Collin and Christophe Imbert

02006 Modelling the hydromechanical behaviour of expansive granular mixtures upon hydration

Benjamin Darde, Anh Minh Tang, Jean-Michel Pereira, Jean-Noël Roux, Patrick Dangla, Jean Talandier and Minh Ngoc Vu

19/10/2020 Morning 10h45 - 12h15

S2 - Special session on the reuse of geomaterials

Chair: Olivier Cuisinier

- 06001 Use of class C fly ash for stabilization of fine grained soils
Canan Turan, Akbar Javadi, Raffaele Vinai, Nader Shariatmadari and Raziye Farmani
- 06002 Characterisation of geomaterials and non-conventional waste streams for their reuse as engineered materials
Claudio Oggeri and Raffaele Vinai
- 06003 Hydro-mechanical behaviour of alkali-activated binder treated soil
Enza Vitale, Antonello Marocco, Michael Khatib and Giacomo Russo
- 06004 Water retention curves of lightweight cemented soils
Enza Vitale, Olivier Cuisinier, Giacomo Russo, Dimitri Deneele, Domenico De Sarno, Marco Valerio Nicotera, Raffaele Papa and Gianfranco Urciuoli
- 06005 Biochar for the improvement of soil and rock with acid potential
Erlend Sørmo, Erika Kämäräinen, Matilda Edvardsson and Christian Maurice
- 06006 Amelioration of permeable soil with green liquor dregs for the construction of sealing layers for mine waste storage facilities
Ida Kronsell, Susanne Nigéus, Anna Virolainen, Yu Jia, Thomas Pabst and Christian Maurice
- 06007 Experimental study on the effect of chitosan biopolymer on sandy soil stabilization
Nader Shariatmadari, Mohammad Reza Amiri Tasuji, Pooria Ghadir and A. Akbar Javadi
- 06008 Impact of successive wetting and drying cycles on the hydromechanical behaviour of a treated soil
Olivier Cuisinier
- 06009 Hydromechanical properties and microstructure of a kaolin treated with vinyl-based copolymer
Olivier Cuisinier, Alper Sezer, Sossio Fabio Graziano and Giacomo Russo
-

19/10/2020 Morning 10h45 - 12h15

S3

Chair: Antonio Gens

01027 Numerical study of the application of capillary barrier systems for prevention of rainfall-induced slope instabilities

Riccardo Scarfone, Simon Wheeler and Colin Smith

01030 Performance of a driven battered mini-pile group against expansive soil induced ground movement

Shirin Aminzadeh Bostani Taleshani, Robert Evans, Emad Gad and Mahdi Miri Disfani

01028 Coupled hydro-mechanical modelling of a 1995 Hong Kong landslide

Sabatino Cuomo, Angela Di Perna and Mario Martinelli

01025 Hydro-mechanical modelling of rammed earth structures

Parul Chauhan, Elio Moussa, Noémie Prime, Olivier Plé and Simon Wheeler

01023 Long-term suction measurements in Greece & Cyprus. A continuous update.

Michail Bardanis and Dimitrios Loukidis

01024 Fully-coupled analysis for the behaviour of flexible retaining structures under seismic conditions

Nicola Pontani, Kateryna Oliynyk and Claudio Tamagnini

01019 Water retention and characteristic curves representing tropical clay soils from Africa

Khalid Alhaj Abdalla, Giovanna Biscontin, Mohamed Elshafie and Ashraf Osman

LUNCH BREAK

PLENARY SESSION

19/10/2020 Afternoon 13h30 - 14h30

KEYNOTE 1

Chair: Marcelo Sanchez

Bentonite clay barriers in nuclear waste repositories.

Lyesse Laloui, EPFL Lausanne, Switzerland

BREAK



PARALLEL SESSIONS

19/10/2020

Afternoon 14h45 - 15h45

S4

Chair: Laureano Hoyos

03037 Cyclic behavior of an unsaturated silty soil subjected to hydro- mechanics damages
Tomoyoshi Nishimura

03002 Very-small to large strain dynamic behaviour of unsaturated sand in a wide range of suction
Ali Akbar Karimzadeh and Anthony Kwan Leung

03018 Cyclic mechanical loading of silty clay soils
Henok Hailemariam and Frank Wuttke

03007 Evaluating the Maximum Shear Modulus (G_0) for different bender-soil coupling energies
Caio de Mattos Azevedo de Paula and Thiago de Souza Carnavale

01005 Centrifuge tests to evaluate the effect of depth of water table on seismic response of shallow foundations on silty sands
Amin Borghei, Majid Ghayoomi and Matthew Turner

S5

Chair: Snehasis Tripathy

02005 Modelling of unsaturated gas flow by Thebes code: Validation tests
Ayman Abed and Wojciech Solowski

02017 A frost heave model of unsaturated coarse-grained soil considering vapour transfer
Jianlong Liu, Jidong Teng, Sheng Zhang and Daichao Sheng

02027 Modelling free gas overpressure in peat layers
Stefano Muraro and Cristina Jommi

04008 Gas transport in compacted bentonite and their coupled hydro-mechanical interactions
Laura Gonzalez Blanco, Enrique Romero and Paul Marschall

19/10/2020 Afternoon 14h45 - 15h45

S6

Chair: Gilson Gitirana Jr.

03042 Hydromechanical behaviour of hydrophobised soils of varying degrees of saturation: a comprehensive review
Zheng Zhou and Anthony Leung

03039 Hydrophobisation of clays and nano silica for ground engineering
Yunesh Saulick and Sérgio Lourenço

02030 Water-entry pressure in water repellent soils: a review
Xin Xing and Sérgio Lourenço

03040 Effect of wetting and drying on menisci structures in hydrophobic sands
Zeynep Karatza, Jim Buckman, Gabriela Medero and Christopher Thomas Stone Beckett

BREAK

PARALLEL SESSIONS

19/10/2020 Afternoon 16h00 - 17h00

S7

Chair: Natasa Stambuk Cvitanovic

03009 An Estimation of the Soil Water Characteristics Curves of Trinidad's Expansive Clays
Damian Alexander, Kyung Park and Derek Gay

03027 Comparison between Soil-Water Characteristic Curves based on filter paper method and grain-size distribution/volume-mass prediction: An evaluation of input data stemmed from hydrometer and Cilas grain-size analyser.
Marcos Felipe da Silva André and Thiago de Souza Carnavale

02002 Exponential Functions for Modelling Hysteresis of Soil-Water Characteristic Curves
Alfredo Satyanaga, Jong Kim, Sung-Woo Moon and Martin Wijaya

02010 Determination of soil water retention curve: an artificial intelligence-based approach
Ehsan Nikooee, Amir Mohammad Nouri, Alireza Ghadamgahi Khorassani, Rasoul Mirghafari and Ghassem Habibagahi

02024 Evaluation of prediction models applied to the soil-water characteristic curve of ideal materials
Roberto Alves, Gilson Gitirana and Sai Vanapalli

19/10/2020 Afternoon 16h00 - 17h00

S8

Chair: Giacomo Russo

01016 Leachate production estimation for a landfill in south of Brazil using Hydrus-1D
Jonathan Tenório and Débora Hianca Da Rosa Waisczik

03028 A comparative assessment of chemical stabilisers including waste materials, for the treatment of swelling-shrinking soils
Maria Mavroulidou, Christopher Gray, Fortunate Gumbochuma and Michael Gunn

03004 Effect of Coal on Mine Tailings' Water Permeability and Water Retention
Andrew Vidler, Stephen Fityus and Olivier Buzzi

02003 M4EKR, Multiphysics for ElectroKinetic Remediation of Polluted Soils
Angel Yustres, Rubén López-Vizcaíno, Virginia Cabrera and Vicente Navarro

S9

Chair: Anna Ramón

01018 Rainfall infiltration simulation on embankment containing soluble material
Katsuyuki Kawai, Kaito Arinishi, Satsuki Kataoka and Koji Nakashima

01004 A numerical study on the effect of salinity on the stability of an unsaturated railway embankment under rainfall
Ali Kolahdooz, Hamed Sadeghi and Mohammad Mahdi Ahmadi

01026 Unsaturated Seepage Analysis at Guayabo's Archaeological Site, Costa Rica
Rafael Baltodano-Goulding

01033 Hydro-mechanical behaviour of a sandy silt from a river embankment
Vincenzo Butticè, Alessio Ferrari, Carmine Gerardo Gragnano and Guido Gottardi

02026 A semi-empirical model to predict excess pore pressure generation in partially saturated sand
Sayedmasoud Mousavi and Majid Ghayoomi

Tuesday 20th October

PLENARY SESSION 20/10/2020 Morning 9h00 - 10h30

PANEL SESSION: CODES OF PRACTICE

Chair: Simon Wheeler

Unsaturated soils and Eurocodes

Marcos Arroyo, UPC Barcelona, Spain

The use of unsaturated soil mechanics in engineering practice: Codes and current trends in Australia

Adrian Russell, UNSW, Australia

Opportunities for unsaturated soil mechanics in the geotechnical practice: a few case histories

Cristina Jommi, TUDelft, The Netherlands

BREAK

PARALLEL SESSIONS 20/10/2020 Morning 10h45 - 12h15

S10

Chair: Rafaela Cardoso

01001 Effect of hydraulic parameters on the computed serviceability of infrastructure slopes
Aikaterini Tsiampousi, Lidija Zdravkovic and David M Potts

01029 Field monitoring of soil-moisture to understand the hydrological response of a road-cut slope
Samprada Pradhan, David G. Toll, Nick J. Rosser and Matthew J. Brain

01003 Probabilistic analysis of flood embankment stability: the case study of the Adige River embankment in Italy
Alessia Amabile, Fabio De Polo and Alessandro Tarantino

01022 Effect of Extreme Rainfall Intensity On Matric Suction and Ground Movement
Mastura Azmi, Muhammad Hazwan Zaki, Muhd Harris Ramli and Siti Aimi Nadia Mohd Yusoff

01010 Behavior of unsaturated pelitic soil in a railway context
Bilal Yoka Khail, Pierre Breul and Mathilde Morvan

01015 Stability Analysis of Unsupported Vertical Cuts in the Vadose Zone using 2D and 3D Numerical Methods
Gregory Brennan, Won Taek Oh and Othman Nasir

01017 Field and laboratory investigation of rainfall-triggered slope failure in unsaturated loess soils, New Zealand
Katherine Yates, Adrian Russell and Clark Fenton



20/10/2020 Morning 10h45 - 12h15

S11

Chair: Anthony Leung

- 02011 A water retention curve model for compacted clays subjected to salinization and desalinization processes
Gabriele Della Vecchia, Giulia Scelsi and Guido Musso
- 02014 A deformation-dependent soil-water characteristic surface model considering hysteresis
Guoqing Cai, Tianchi Wu, Hao Li, Chenggang Zhao, Jingjing Tian and Jian Li
- 03005 The influence of rates of drying and wetting on measurements of soil water retention curves
Arash Azizi, Ashutosh Kumar and David Geoffrey Toll
- 02029 Modelling evaporation processes of cement-bentonite mixtures
Vincenzo Sergio Vespo, Gabriele Della Vecchia and Guido Musso
- 03003 Effect of stress state on the water retention curve of pyroclastic soil
Ana Sofia Dias, Abhijith Kamath, Marianna Pirone and Gianfranco Urci
- 02015 Theoretical modeling of retention curve
Jacques Monnet, Boutonnier Luc, Saïd Taïbi, Dino Mahmutovic and Denis Branque
- 01011 Shear strength and retention models of a partially saturated riverbank silty soil
Carmine Gerardo Gragnano, Mariagiovanna Moscariello, Sabatino Cuomo and Guido Gottardi
- 03011 Water retention and transfer properties of a Green roof volcanic substrate
Filip Stanic, Pierre Delage and Yu Jun Cui
-

20/10/2020 Morning 10h45 - 12h15

S12

Chair: Alessio Ferrari

03014 Measurement of xylem water pressure using High-Capacity Tensiometer and benchmarking against Pressure Chamber and Thermocouple Psychrometer
Giuseppe Tedeschi, Roberta Dainese and Alessandro Tarantino

03020 Developing a high capacity axis translation apparatus for gas shale testing
Jinwoo Kim, Alessio Ferrari, Russell Ewy and Lyesse Laloui

03022 Determination of permeability and shear strength properties of unsaturated residual soil from flysch rock mass
Josip Peranić, Mariagiovanna Moscariello, Sabatino Cuomo and Željko Arbanas

03026 Retention behaviour of compacted and reconstituted scaly clays
Marco Rosone and Alessio Ferrari

01020 Subsidence in cultivated peatlands, is it due to shrinkage, consolidation or oxidation?
Leon van Paassen, Nor Hazwani Md Zain and Cristina Jommi

01012 Calibration of a simple 1D model for the hydraulic response of regional dykes in The Netherlands
Ching-Yu Chao, Maarten Bakker and Cristina Jommi

LUNCH BREAK

PLENARY SESSION

20/10/2020 Afternoon 13h30 - 14h30

KEYNOTE 2

Chair: Pierre Delage

A sustainable and bioengineered three-layer unsaturated landfill cover system without a geomembrane.

Charles Ng

HKUST Hong Kong, China

BREAK

PARALLEL SESSIONS

20/10/2020

Afternoon 14h45 - 15h45

S13

Chair: Francesca Casini

01002 The TERRE project: Towards low-carbon geotechnical engineering by exploiting suction as natural untapped soil reinforcement
Alessandro Tarantino, Grainne El Mountassir, Simon Wheeler, Domenico Gallipoli, Giacomo Russo, Charles Augarde, Gianfranco Urciuoli, Marianna Pirone, Alexia Stokes, Jan Willem van de Kuilen, Wolfgang Gard, Thierry Fourcaud, Enrique Romero, Angel Priegue, Colin C Smith, Pyrène Larrey-Lassalle, Patrick Becker and Alessio Ferrari

03001 Tensile strength of a vegetated and partially saturated soil
Alessandro Fraccica, Enrique Romero, Thierry Fourcaud, Mercedes Sondon and Luis Gandarillas

01032 Infiltration behaviour of dike covers made of dredged material on the Rostock Research dike
Tim Jurisch, Stefan Cantre and Fokke Saathoff

01013 Development of a Thornthwaite Moisture Index Map for Trinidad and Tobago
Damian Alexander, Derek Gay and Kyung Park

S14

Chair: Núria Pinyol

03023 Failure mode transitions of unconfined granular media from dry, to unsaturated, to “quasi-fully” saturated states
Katherine Winters, Woodman Berry, Greg Siemens and Oliver-Denzil Taylor

02008 A micromechanical analysis of a drying sand castle using DEM
Carlos Pereira, João Ribas Maranhã and Rafaela Cardoso

03033 An experimental study of the behaviour of two rockfills accounting for the effects of degree of saturation
Roberta Ventini, Alessandro Flora, Stefania Lirer, Claudio Mancuso and Antonio Cammarota

02018 Development of an unfrozen water retention curve for capturing soil density and specific surface effects
Jiwen Zhang, Qingyi Mu, Hongjian Liao and Jie Cao

20/10/2020 Afternoon 14h45 - 15h45

S15

Chair: Gabriele Della Vecchia

03019 Preliminary study on the contribution of osmotic effects for the electrical resistivity of sands

Inês Borges, Vikas Gingine and Rafaela Cardoso

03015 Monitoring drying and wetting of a cement bentonite mixture with Electrical Resistivity Tomography

Guido Musso, Antonio Zibisco, Renato Maria Cosentini, Paolo Trischitta and Gabriele Della Vecchia

03016 Electric Conductivity Probes to Study Change in Degree of Saturation - Bench Top Laboratory Tests

Hadi Kazemiroodsari, Mishac K Yegjian, Akram Alshawabkeh and Seda Gokyer

03012 A new approach of accounting for impedance effects in Gardner's method of determining the hydraulic conductivity of unsaturated soils

Filip Stanic, Pierre Delage and Yu Jun Cui

BREAK

PARALLEL SESSIONS

20/10/2020 Afternoon 16h00 - 17h00

S16

Chair: Alessandro Tarantino

01021 Physical modelling of piles under lateral loading in unsaturated soils

Leonardo Maria Lalicata, Giada Rotisciani, Augusto Desideri, Francesca Casini and Luc Thorel

01009 Analysis of massive sulphate attack to cement-treated compacted soils

Anna Ramon Tarragona and Eduardo Alonso

04005 Impacts of Unsaturated Conditions on The Ultimate Axial Capacity of Energy Piles

Fatemah Behbehani and John S. McCartney

00002 Unsaturated Soils in practice - Closure of the FUNDEC course prepared for the Portuguese technical community

Rafaela Cardoso

20/10/2020 Afternoon 16h00 - 17h00

S17

Chair: Claudio Tamagnini

02022 Application of single-board computers in experimental research on unsaturated soils
Marius Milatz

03006 Expansive Clay Cracking Behavior through Digital Image Correlation
Arthur Gomes Dantas De Araújo, Nayara Torres Belfort, Felipe Araujo Silva Barbosa, Thalita Cristina Rodrigues Silva, Silvio Romero De Melo Ferreira and Leonardo José Do Nascimento Guimarães

03017 Capillary Rise Determination Using Simplified Image Analysis Method
Harris Ramli, Lee Zheng Xian, Mastura Azmi and Fauziah Ahmad

03010 Image-based measurements of degree of saturation
Ferran Parera, Núria M. Pinyol and Eduardo E. Alonso

03021 Experimental and numerical analysis of soil desiccating cracks in compacted and non-compacted specimens
Josbel Cordero, Abdallah Najdi, David Encalada, Pere C. Prat and Alberto Ledesma

S18

Chair: Anne-Catherine Dieudonne

03034 Characterization of Sand and Zeolite Stabilized Expansive Soil as Landfill Liner Material under Environmental and Climatic Effects
Şerife Öncü and Huriye Bilsel

03035 Effect of external hydraulic head on swelling of unsaturated clay
Shay Nachum, Mark Talesnick and Sam Frydman

03036 Frost heave and thaw settlement of initially saturated-slurried and compacted-saturated materials
Snehasis Tripathy, Osama Mahdi Al-Hussaini, Peter John Cleall, Stephen William Rees and Han-Lin Wang

03038 Yielding of partially saturated soils from saturated to dry state
Vincenzo Butticè, Alessio Ferrari and Marco Rosone

Wednesday 21st October

PLENARY SESSION 21/10/2020 Morning 9h00 - 10h30

INVITED LECTURES: SESSION EFFECTIVE STRESSES

Chair: Daichao Sheng

Effective stress in unsaturated soils: a microstructure perspective
Jean-Michel Pereira, ENPC Paris, France

Effective stress in unsaturated soils: lessons from capillarity in regular sphere arrangements
João Ribas Maranha, LNEC, Lisbon, Portugal

Effective stress and microstructure in unsaturated soils
Jean Vaunat, UPC Barcelona, Spain

BREAK

PARALLEL SESSIONS 21/10/2020 Morning 10h45 - 12h15

S19

Chair: Yun-Ju Cui

02025 Numerical investigation on water exchange of shale samples
Sara Incollingo, Alessio Ferrari and Guido Musso

02028 Evaluation of direct shear strength of compacted bentonite having pore-water pressure
Tomoyoshi Nishimura and Masaaki Fukaya

03013 A physical model for the interaction between unsaturated soils and retaining structures
Gianluca Speranza, Alessio Ferrari and Lyesse Laloui

03030 Laboratory testing of seepage in concrete
Miklós Pap, András Mahler and Salem Georges Nehme

03031 Analysis of the suction evolution during direct shear test in a silty sand soil
Omar Al-Emami, Gabriela Medero, Fernando Marinho and Melis Sutman

03032 Preliminary investigation on the water retention behaviour of cement bentonite mixtures
Paolo Trischitta, Renato Maria Cosentini, Gabriele Della Vecchia and Guido Musso

03029 Modeling Unsaturated Soil Response Beyond Residual Suction State via Vapor-Pressure Controlled Triaxial Testing
Mathilde Morvan, Ujwalkumar Patil, Laureano Hoyos, Anand Puppala and Surya S.C. Congress

21/10/2020 Morning 10h45 - 12h15

S20

Chair: Katerina Tsiampousi

02007 Bounding surface constitutive model for unsaturated soils considering microscopic pore structure and bonding effect

Bowen Han, Guoqing Cai, Jian Li, Chenggang Zhao and Hao Li

02009 Modeling multiphase flow with a hybrid model based on Pore-network and lattice Boltzmann method

Eduard Puig Montellà, Chao Yuan, Bruno Chareyre and Antonio Gens

02012 Numerical modelling of the response of an unsaturated silty soil under wetting and gravitational loading processes

Giada Maria Rotisciani, Leonardo Lalicata, Augusto Desideri and Francesca Casini

02013 Overview and conceptual constitutive framework for pellet-based buffer materials

Giulia Marianna Ghiadistri, Lidija Zdravković, David M. Potts and Aikaterini Tsiampousi

02001 A single-stress model for the prediction of yielding of unsaturated cemented soils under isotropic loads

Agostino Walter Bruno, Domenico Gallipoli, Mohamed Rouainia and Marti Lloret-Cabot

02004 An extended generalized effective stress for active clays

Angelica Tuttolomondo, Alessio Ferrari and Lyesse Laloui

02016 A plastic volumetric strain dependent soil water retention curve

Jayantha Kodikara and Chathurika Jayasundara

01006 Numerical study on bearing capacity of a pile group next to a slope in unsaturated soils

Amirreza Pourfatollah, Ali Pirjalili and Aliakbar Golshani

21/10/2020 Morning 10h45 - 12h15

S21

Chair: Sérgio Lourenço

- 01008 Monitoring of thermo-hydrological behaviour in Green Infrastructure
Anil Yildiz, Ross Stirling and Stephanie Glendinning
- 04010 Low-suction water retention capacity of bentonite at high temperature
María Victoria Villar, Carlos Gutiérrez-Álvarez and Rubén Iglesias
- 04012 Restoring initial conditions in a deep argillaceous rock with induced suction on retrieval
Nuria Sau Valenzuela, Enrique Romero Morales and Hervé Van Baelen
- 04013 Effect of initial conditions on the predicted response of thermally-activated piles
Peter John Bourne-Webb, Teresa Maria Bodas Freitas, Donatella Sterpi and Martina Zito
- 04014 Effect of Elevated Temperatures on Lateral Earth Pressures in Unsaturated Soils
Sannith Kumar Thota and Farshid Vahedifard
- 04007 Effects of temperature, test time duration and heat flux in thermal conductivity measurements under transient conditions in dry and fully saturated states
Kamar Aljundi, Ana Vieira, José Lapa and Rafaela Cardoso
- 04015 Numerically reproduced HE-E experiment of Mt Terri project by Thermo-Hydro-Mechanical coupled model
Shin Sato, Shuichi Yamamoto, Masaaki Fukaya, Yasuhiro Tawara, Kei Tanaka, Florian Kober and Seda Torisu
- 01034 Experimental and Numerical Investigation of the Drying of an Agricultural Soil
Njaka Ralaizafisolovony, Kien Duc Tran, Aurore Degré, Benoit Mercatoris, Angélique Léonard, Dominique Toye and Robert Charlier

LUNCH BREAK

PLENARY SESSION

21/10/2020 Afternoon 13h30 - 14h30

YOUNG INVITED LECTURES

Chair: Eduardo Alonso

- Granular Material Point Method or how to model rapid flows of unsaturated granular materials
Wojciech Solowski, AALTO Finland
- Unsaturated soils and large deformations with the Material Point Method.
Alba Yerro, Virginia Tech, USA
-

BREAK

PARALLEL SESSIONS

21/10/2020

Afternoon 14h45 - 15h30

S22-1

Chair: Michael Bardanis

01014 Stabilization of soil erosion using vetiver (*Chrysopogon zizanioides* L.) in slopes: a field case study of selected grounds at Guatemala

Eduardo Garzón Garzón, Flor M. González-Miranda, Juan Reca and Pedro José Sánchez-Soto

03025 Wetting-induced collapse behaviour of a natural and vegetated coarse pyroclastic soil

Leonardo Cascini, Vittoria Capobianco, Sabatino Cuomo and Vito Foresta

01007 Volume change behaviour of root-permeated soils under partially saturated conditions

Anil Yildiz, Frank Graf and Sarah M. Springman

S23 - 1 - Special session on biocementation

Chair: Annette Esnault-Filet

05001 BOREAL, Bio- reinforcement of embankments by biocalcification

Annette Esnault Filet, Ira Gutjahr, Aurelie Garandet, Amandine Viglino, Rémi Béguin, Jean-Michel Monier, Laurent Oxarango, Fabrice Emeriault and Sabine Castanier Perthuisot

05004 Comparison of experimental techniques for biocementation of sands considering homogeneous volume distribution of precipitated calcium carbonate

Francisco Centeno Dias, Inês Borges, Sofia O.D. Duarte, Gabriel A. Monteiro and Rafaela Cardoso

05003 Unsaturated Fluid Flow through Granular Soils Treated with Microbial Induced Desaturation and Precipitation

Elizabeth Stallings Young, Leon van Paassen and Claudia Zapata

05002 Physical and geotechnical properties of a silty sand soil treated with calcium carbonate fixing bacteria

Eduardo Garzón Garzón, Laura Morales, Juan Reca, Enrique Romero and Pedro José Sánchez-Soto

4th European Conference on Unsaturated Soils
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21/10/2020 Afternoon 14h45 - 15h30

S24-1

Chair: Marti Lloret-Cabot

02020 Calibration of a generalized plasticity model for compacted silty sand under constant-suction shearing tests

Marcos García-García, Ujwalkumar Patil, Diego Manzanal, Laureano Hoyos, Anand Puppala and Manuel Pastor

02019 The mechanical behavior of an expansive soil due to long-term seasonal rainfalls

Kai Li, Liang Kong, Hossein Nowamooz and Cyrille Chazallon

02021 Modelling of simple shear tests on volcanic unsaturated sands

Mariagiovanna Moscariello, Yanni Chen, Sabatino Cuomo and Giuseppe Buscarnera

02023 Swelling Curve in Terms of Effective Stress for Expansive Clays

Rafael Baltodano-Goulding

SHORT BREAK

PARALLEL SESSIONS

21/10/2020 Afternoon 15h35 - 16h20

S22 - 2

Chair: Guido Musso

03024 Unsaturated Shear Strength Parameters of Compacted Clayey Soil via Suction-controlled Ring Shear Testing

Laureano R. Hoyos, Jairo E. Yepes and Anand J. Puppala

04011 Swelling behavior of unsaturated claystone/ bentonite mixtures

Marvin Middelhoff, Olivier Cuisinier, Farimah Masrouri, Jean Talandier and Nathalie Conil

03008 Changes on diametral compression behaviour of compacted marls due to drying

Carmen Covadonga Garcia-Fernandez, Rafaela Cardoso, Martina Inmaculda Alvarez-Fernandez and Celestino Gonzalez-Nicieza



21/10/2020 Afternoon 15h35 - 16h20

S23 - 2 - Special session on biocementation

Chair: Annette Esnault-Filet

05005 Discrete Element Modelling for biocemented sand: effect of calcite distribution at the microscopic scale

Mohammad Abbas, Deepak Kunhappan, Abdelali Dadda, Christian Geindreau, Fabrice Emeriault, Annette Esnault-Filet and Aurélie Garandet

05006 Implementation of biocementation for a partially saturated problematic soil of the UK railway network

Muhammad Umair Safdar, Maria Mavroulidou, Michael Gunn, Christopher Gray, Diane Purchase, Jonathan Garelick and Ian Payne

05008 Effect of the soil type on the biocementation process by enzymatic way

Paulo Venda Oliveira and Luís Freitas

05009 The effect of microbial calcite precipitation on the retention properties of unsaturated fine-grained soils: discussion of the governing factors

Rahim Saffari, Ehsan Nikooee and Ghassem Habibagahi

S24-2 - Special session

Chair: Xueyu Geng

3041 Fall cone test on biopolymer-treated clay

Zhanbo Cheng, Jing Ni, Haotian Ding and Xueyu Geng

3043 Investigating the contribution of claystone to the swelling pressure of its mixture with bentonite

Zhixiong Zeng, Yu-Jun Cui, Nathalie Conil and Jean Talandier

3044 Changes in microstructure and mineralogy of a lime-treated silty soil during curing time

Zi Ying, Yu-Jun Cui, Nadia Benahmed and Myriam Duc

1031 Monitoring of earthen long linear embankments by geophysical tools integrated with geotechnical probes

Stefano Utili

SHORT BREAK

PLENARY SESSION

21/10/2020 Afternoon 16h30 - 17h00

CLOSURE

CORRESPONDENCE TABLES

Table 1 - Number from the table of contents vs numbers from easychair system (141 papers in total).

Table of contents	Paper number	Table of contents	Paper number	Table of contents	Paper number	Table of contents	Paper number	Table of contents	Paper number	Table of contents	Paper number	Table of contents	Paper number	Table of contents	Paper number
1001	50	1025	128	2012	95	3003	60	3027	77	4004	249	6001	199		
1002	173	1026	35	2013	62	3004	3	3028	94	4005	134	6002	203		
1003	224	1027	51	2014	217	3005	89	3029	82	4006	123	6003	180		
1004	86	1028	59	2015	165	3006	193	3030	212	4007	109	6004	229		
1005	69	1029	220	2016	48	3007	76	3031	178	4008	215	6005	209		
1006	18	1030	56	2017	14	3008	70	3032	150	4009	67	6006	211		
1007	33	1031	236	2018	5	3009	25	3033	23	4010	49	6007	202		
1008	32	1032	225	2019	43	3010	222	3034	104	4011	57	6008	177		
1009	247	1033	164	2020	226	3011	129	3035	61	4012	214	6009	186		
1010	7	1034	68	2021	42	3012	131	3036	163	4013	159				
1011	105			2022	9	3013	130	3037	15	4014	196				
1012	250			2023	36	3014	122	3038	34	4015	12				
1013	26	Table of contents	Paper number	2024	2	3015	152	3039	21						
1014	157	2001	213	2025	246	3016	197	3040	179	Table of contents	Paper number				
1015	125	2002	248	2026	87	3017	183	3041	242	5001	118				
1016	238	2003	167	2027	219	3018	132	3042	64	5002	156				
1017	27	2004	227	2028	16	3019	38	3043	168	5003	39				
1018	17	2005	53	2029	245	3020	228	3044	74	5004	37				
1019	194	2006	148	2030	79	3021	243			5005	117				
1020	158	2007	218			3022	22	Table of contents	Paper number	5006	140				
1021	103	2008	126	Table of contents	Paper number	3023	73	4001	72	5007	145				
1022	170	2009	96	3001	244	3024	97	4002	166	5008	13				
1023	113	2010	83	3002	138	3025	88	4003	119	5009	221				
1024	233	2011	149			3026	20								

Table 2 - Number from easychair system versus the number in the table of contents (141 papers in total).

Paper number	Table of contents	Paper number	Table of contents	Paper number	Table of contents	Paper number	Table of contents	Paper number	Table of contents	Paper number	Table of contents
2	2024	37	5004	76	3007	126	2008	170	1022	220	1029
3	3004	38	3019	77	3027	128	1025	173	1002	221	5009
5	2018	39	5003	79	2030	129	3011	177	6008	222	3010
7	1010	42	2021	82	3029	130	3013	178	3031	224	1003
9	2022	43	2019	83	2010	131	3012	179	3040	225	1032
12	4015	48	2016	86	1004	132	3018	180	6003	226	2020
13	5008	49	4010	87	2026	134	4005	183	3017	227	2004
14	2017	50	1001	88	3025	138	3002	186	6009	228	3020
15	3037	51	1027	89	3005	140	5006	193	3006	229	6004
16	2028	53	2005	94	3028	145	5007	194	1019	233	1024
17	1018	56	1030	95	2012	148	2006	196	4014	236	1031
18	1006	57	4011	96	2009	149	2011	197	3016	238	1016
20	3026	59	1028	97	3024	150	3032	199	6001	242	3041
21	3039	60	3003	103	1021	152	3015	202	6007	243	3021
22	3022	61	3035	104	3034	156	5002	203	6002	244	3001
23	3033	62	2013	105	1011	157	1014	209	6005	245	2029
25	3009	64	3042	109	4007	158	1020	211	6006	246	2025
26	1013	67	4009	113	1023	159	4013	212	3030	247	1009
27	1017	68	1034	117	5005	163	3036	213	2001	248	2002
32	1008	69	1005	118	5001	164	1033	214	4012	249	4004
33	1007	70	3008	119	4003	165	2015	215	4008	250	1012
34	3038	72	4001	122	3014	166	4002	217	2014		
35	1026	73	3023	123	4006	167	2003	218	2007		
36	2023	74	3044	125	1015	168	3043	219	2027		

