INTERNATIONAL CONFERENCE ON ENERGY GEOTECHNICS

17 - 19 JUNE 2025 PARIS, FRANCE

Table of contents

Welcome message

The energy transition is underway, and geotechnical engineering is essential for its successful implementation. It is therefore our great pleasure to welcome you to the 3rd International Conference on Energy Geotechnics (ICEGT-2025), organised under the auspices of the ISSMGE Technical Committee 308 on Energy Geotechnics. Taking place at ENPC in Paris, this three-day event will bring together researchers and engineers from around the world to share their knowledge and expertise on the latest advances in energy geotechnics.

A total of 155 extended abstracts have been accepted for presentation over the next three days. The conference proceedings will be published open access, and selected contributors will be invited to submit full research papers for publication in special issues.

Three keynote speakers will share their views on research contributing to the energy transition across a range of topics, including energy geostructures, deep geothermal energy, and radioactive waste disposal. We are also delighted to host the TC308 Honorary Lecture and two Bright Spark lectures.

Finally, we are particularly pleased that around 40% of participants are research students. Following on from the pre-conference event, W(H)YDOC25, a workshop for young geomechanics doctors, ICEGT conference will offer many opportunities for intergenerational exchange.

We hope that you will enjoy the conference.

for the Organising Committee

Jean-Michel Pereira

ICEGT-2025 Chair

Jean-Michel Pereira

Mathias Lebihain

Lina-Maria Guayacan Carrillo

Philipp Braun

Yujun Cui

Anh-Minh Tang

Siavash Ghabezloo

LABORATOIRE NAVIER

Site map

The Ecole Nationale des Ponts et Chaussées (ENPC), founded in 1747, is one of France's oldest and most prestigious engineering schools. Known for its rigorous programs in civil engineering, environmental engineering, transportation, urban planning, and economics, ENPC emphasizes both theoretical knowledge and practical application. Located in Marne-la-Vallée near Paris, the school features state-of-the-art facilities and numerous research centers.

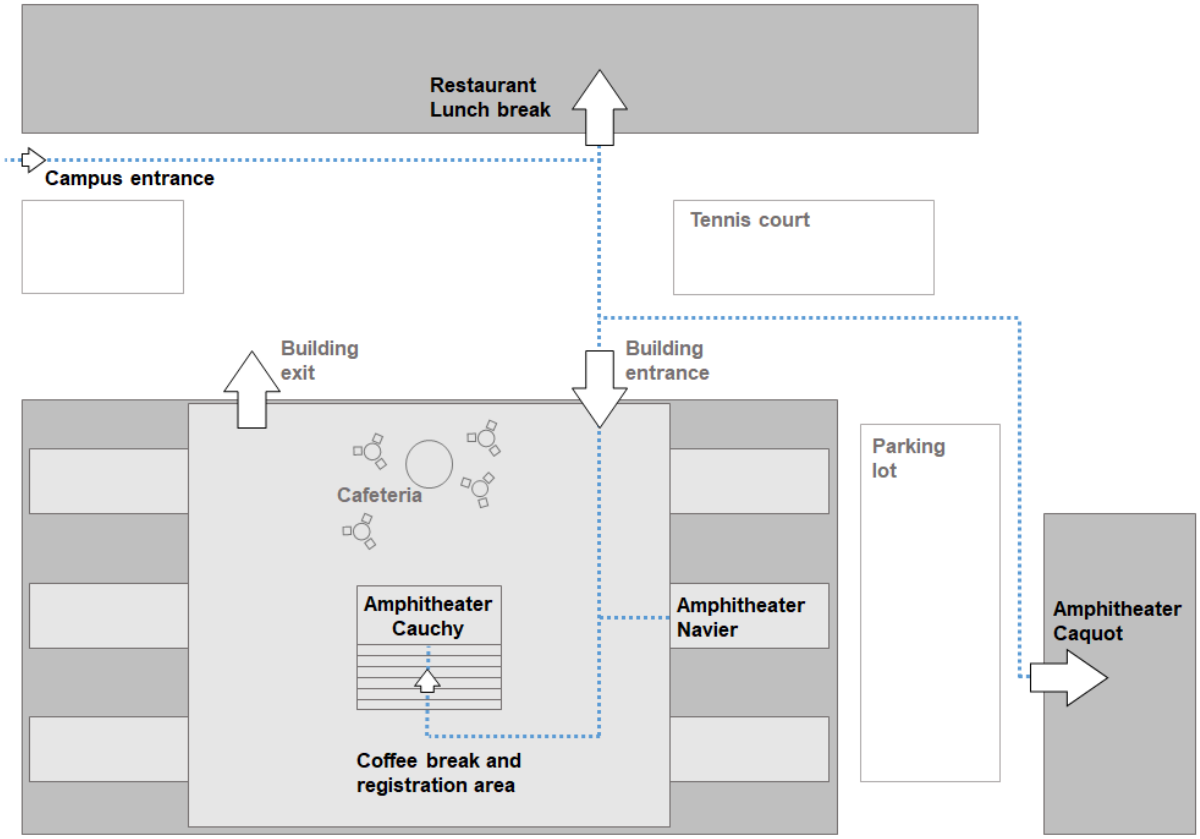
The ENPC campus is located in the East of Paris within a convenient public transport network. **The campus entrance is at 12 boulevard Copernic, 77455 Marne-la-Vallée.**

The conference is organized in three buildings within the campus, seen on the map below:

Amphitheatres **Cauchy (plenary sessions)** and **Navier**, as well as the **coffee breaks** and **registration** are located in the main building.

Amphitheatres **Caquot 1 and 2** are in a separate building within 2 min walk.

The **lunch breaks** take place in the restaurant in a third building, in front of the main ENPC building.



Refreshments and social events

Lunch

Lunch will be served on all three conference days in the self-service restaurant located in a separate building.

Coffee breaks

Coffee breaks will be offered close to Amphi Cauchy, in the morning of the first conference day during registration, and on all days in-between parallel session blocks.

Icebreaker

Monday 16th June 19:00 - 21:00, Registration area close to Amphi Cauchy

Registered participants are invited to join a pre-conference cocktail reception, which will be held in the conference registration area. Conference registration and badge pickup will be possible during this time.

Gala dinner

Wednesday 18th June 19:30 – 23:00, the exact location will be announced during the conference.

All conference participants are warmly invited to attend the gala dinner aboard a Bateaux Parisiens cruise on the Seine, on the evening of June 18. Participation is included in the conference registration fee.

The embarkment location next to the Seine River can be reached by different public transport routes:

- Option 1: RER A stop Gare de Lyon, then with the Metro 14 stop Cour Sain-Emilion
- Option 2: RER A stop Nation, then with the Metro 6 stop Bercy

Internet access

Select the wifi network “ENPC-VISITEURS”.

Open your browser. The wifi login website should show up automatically:

Click on the button “CREER UN COMPTE” to create a new user account. Enter your lastname (“Nom”), surname (“Prenom”) and email address, then click on the button “ENREGISTRER”. You will receive an email with your connection details.

In the above window, you will be able to use your email under “Identifiant” and your password under “Mot de passe”, and then clicking on “SE CONNECTER” to connect to the wifi.

Programme overview

Tuesday June 17				
Room	Cauchy	Navier	Caquot1	Caquot2
	Plenary session: Cauchy			
8:30 - 9:00	Welcome Address			
9:00 - 10:00	Keynote lecture Prof. Fleur Loveridge			
10:00 - 11:15	A 1	B 1	C 1	A 2
11:15 - 11:45	Coffee break			
11:45 - 13:00	A 3	B 2	C 2	A 4
13:00 - 14:30	Lunch break			
14:30 - 15:20	Bright spark lecture Dr. Merita Tafili			
15:20 - 16:35	A 5	B 3	C 3	
16:35 - 17:05	Coffee break			
17:05 - 18:20	A 6	B 4	C 4	

Wednesday June 18			
Room	Cauchy	Navier	Caquot1
	Plenary session: Cauchy		
9:00 - 10:00	Keynote lecture Prof. Jean Schmittbuhl		
10:00 - 11:15	A 7	D 1	E 1
11:15 - 11:45	Coffee break		
11:45 - 13:00	A 8	D 2	E 2
13:00 - 14:30	Lunch break		
14:30 - 15:20	Bright spark lecture Dr. Anne-Catherine Dieudonné		
15:20 - 16:35	A 9	B 5	E 3
19:30 - 23:00	Gala Dinner		

Thursday June 19			
Room	Cauchy	Navier	Caquot1
	Plenary session: Cauchy		
9:00 - 10:00	Keynote lecture Prof. Enrique Romero		
10:00 - 11:15	A 10	F 1	E 4
11:15 - 11:45	Coffee break		
11:45 - 13:00	A 11	F 2	E 5
13:00 - 14:30	Lunch break		
14:30 - 15:30	Honorary lecture Prof. Marcelo Sánchez		
15:30 - 16:45	A 12	A 13	E 6
16:45 - 17:15	Closing ceremony		

Parallel session topics	
A	Thermal energy geo-structures
B	Fundamentals of geo-energy and low-carbon engineering
C	Underground storage of carbon dioxide and energy
D	Unconventional hydrocarbon and hydraulic fracturing
E	High level radioactive waste disposal
F	Other geotechnical activities related to the energy sector

Oral presentation guidelines

Parallel sessions are organized in blocks of 1h15min duration, including 5 presentations each. Each presentation is allocated a **12min presentation**, which is followed by **3min time for questions**.

Timing will be strictly enforced by the session chairs, to help to keep to schedule and give each speaker equal conditions.

There is no conference template for presentation slides. The preferred format is PowerPoint or PDF. We ask speakers to present themselves to the session chair at least 10 min before session start and upload their file to the local computer.

Detailed programme

Monday 16 June 2025		
19:00 21:00	Icebreaker	
19:00 21:00	Registration, Badge pickup	

Tuesday 17 June 2025		
08:00 08:30	Registration, Badge pickup and coffee reception	
08:30 09:00	**Welcome address**	**Prof. Jean-Michel Pereira**
9:00 10:00	**Keynote lecture, Amphi Cauchy**	**Prof. Fleur Loveridge**
10:00 11:15	**Parallel session A1, Amphi Cauchy** **Thermal energy geo-structures**	
	Incorporating Atmospheric and Solar Influences in Numerical Analyses of Energy Piles: A Validation Study	Polat Semra, Guner Mert, Erginag Ugur Can, Sutman Melis, Cinicioglu Ozer
	Influence of groundwater flow on energy pile groups: a centrifuge modelling analysis	Sá Letícia Menezes Santos, De Sauvage Jean, De Hollanda Cavalcanti Tsuha Cristina, Dubreucq Thierry, et al.
	Influence of Soil Retention Properties on the Response of Pile Heat Exchangers in Partially Saturated Soils	Kumar Arvind, Bidarmaghz Asal, Khoshghalb Arman
	Numerical Modelling of Ground Improvement Thermal Parameters for Long-Term Energy Pile Performance	Beh Maxine, Liu Ryan Yin Wai, Taborda David M. G., Al-Tabbaa Abir
	Investigating the behaviour of cyclically thermally-activated helical piles with tapered helices using physical modelling	Bashiri Mohammadreza, Ghazavi Mahmoud, Bourne-Webb Peter J., Siahkouhi Mona
10:00 11:15	**Parallel session B1, Amphi Navier** **Fundamentals of geo-energy and low-carbon engineering**	
	Determining Water Quantities and Forms in Clays with Static ^{1}H-NMR	Murase Sota, Shibue Toshimichi, Ruan Kunlin, Ito Daichi, Wang Hailong, Komine Hideo
	Influence of Testing Apparatus on Swelling Pressure Assessment in Clay Rocks	Cardin Michelangelo, Ferrari Alessio, Giger Silvio
	Thermal Behavior of Shallow Soil Deposits and Relationship with Physical Properties	Yildiz Tahir, Batuge Yusuf, Dağ Ersin
	Unified Modelling of Thermal and Mechanical Creep in Fine-Grained Soils	Tafili Merita, Wichtmann Torsten
	Evolution of the stress state during the debonding of biocemented granular matter	Sac-Morane Alexandre, Veveakis Manolis, Rattez Hadrien

Tuesday 17 June 2025		
10:00 11:15	**Parallel session C1, Amphi Caquot 1** **Underground storage of carbon dioxide and energy**	
	Impact of Drainage System on the Stability of Underground Lined Rock Cavern Gas Storage	Fei Wenbin, Zhou Aohui, Li Peng
	Underground energy storage by means of injected bentonite double membranes	Walter Jonathan, Mugele Luis, Gudehus Gerd, Stutz Hans
	Caprock degradation mechanism under monotonic and cyclic loading: insights from elastic wave measurements	Ciancimino Andrea, Foti Sebastiano, Musso Guido
	Green hydrogen production: Physical and financial impact of geothermal well heat losses on overall system performance	Narsilio Guillermo, Hamlehdar Maryam, Makasis Nikolas, Ferrari Alessio
	Thermal Effects on the Hydraulic Conductivity of Bentonite Mixtures in Short- and Long-Term Conditions	Alpaydin Sukran Gizem, Yukselen Aksoy Yeliz
10:00 11:15	**Parallel session A2, Amphi Caquot 2** **Thermal energy geo-structures**	
	A data-driven approach to predicting the long-term thermal performance of thermo-active piles	Sánchez Fernández Javier, Provost Alison, Ruiz López Agustín, Taborda David M. G.
	A solar-collection system for tunnel thermal storage	De Feudis Simone, Insana Alessandra, Barla Marco
	Advancements in System Modeling and Load Assessment for Infrastructure's Ground-Source De-Icing	Salciarini Diana, Capati Giulia, Lupattelli Arianna, Corradini Alessandro, Rafai Mouadh, et al.
	Air Flow and Temperature Effects on Energy Geostructures: A Case Study of the Lainzer Tunnel	Brunner Adrian Thylbert, Markiewicz Roman, Dziwok Ann-Christine, Adam Dietmar
	An approach for including heat pump performance in the design of thermo-active piles	Provost Alison, Sanchez Fernandez Javier, Sapin Paul, Taborda David M G
11:15 11:45	Coffee break	
11:45 13:00	**Parallel session A3, Amphi Cauchy** **Thermal energy geo-structures**	
	Investigating the stability of boreholes in sand	Grubben Tessel, Koulidis Alexis, Van Der Schans Martin, Bloemendal Martin, Hartog Niels, Muraro Stefano, Vardon Philip
	Investigations on the effects of Freezing-thawing cycles on energy piles	Rafai Mouadh, Tang Anh Minh, Tiwari Arvind Kumar, Vardon Philip, Salciarini Diana, Dong Yuepeng, Tafili Merita, et al.
	Numerical Analysis of Mine Water Geothermal Systems for Sustainable Energy Solutions	Polat Semra, Friedrich Daniel, Sutman Melis
	Numerical Analysis of Thermal Efficiency and Resilience in Energy Geo-Structures: Performance Optimisation and Thermal Recharge	Ardakani Fatemeh, Moura Mehravar, Cha Wonjun, Faramarzi Asaad, Shadabi Sadri
	Poroelastic analysis of nonuniform permafrost ground responses under group heat exchanger operations in a Canadian subarctic climate	Khaksar Kian, Li Biao

Tuesday 17 June 2025		
11:45 13:00	**Parallel session B2, Amphi Navier** **Fundamentals of geo-energy and low-carbon engineering**	
	Numerical investigation on the behavior of clays under thermal and mechanical cyclic loading	Ashrafi Mohammadsadegh, Tafili Merita, Wichtmann Torsten
	A thermo-mechanical elastoplastic constitutive model for saturated soils using bounding surface plasticity	Morvan Mathilde, Khalili Nasser
	Wood waste biochar as a green strategy for enhanced soil water retention and carbon sequestration in plant-soil system	Wang Yuchen, Ni Junjun
	Thermo-acoustical-mechanical characterization of rock properties under in-situ conditions	Ghare Haghighat Nima, B. Motra Hem, S. Sattari Amir, Wuttke Frank
	Development of sustainable soundless cracking agents for rock fracturing in energy geotechnics	Xu Bo, Yi Yaolin
11:45 13:00	**Parallel session C2, Amphi Caquot 1** **Underground storage of carbon dioxide and energy**	
	Optimal Lined Rock Cavern Diameter Selection for Compressed Air Energy Storage	Zhou Aohui, Li Peng, Fei Wenbin
	Required Research Steps Towards the Realization of CO2-Hydrate Geo-Capsules for Underground Mechanical Energy Storage	Klar Assaf, Franza Andrea, Von Solms Nicolas, Lev Yehudi Omer, Tang Anh Minh, Llabjani Qazim, Dalmazzone Didier, Laloui Lyesse
	Pumped underground hydroelectric energy storage system in sand: an overview of the field trials in Foulum, Denmark	Franza Andrea, Sørensen Kenny K., Stutz Hans Henning
	Behaviour of carbonate reservoir rocks under hydrostatic cyclic loading for hydrogen storage application	Xu Zhaochen, Braun Philipp, Sulem Jean
	The Application of Atmosphere-Soil Interaction and Hydro-Thermal Coupling of Porous Media in Shallow Geothermal Energy Applications	Tang Fujiao, Nowamooz Hossein
11:45 13:00	**Parallel session A4, Amphi Caquot 2** **Thermal energy geo-structures**	
	Analytical validation for Energy walls with dual heat exchanger pipes	Gupta Aakash, Loveridge Fleur, Shafagh Ida, Ruiz Carvalho Tosin Bruna, De Hollanda Cavalcanti Tsuha Cristina, et al.
	Balancing Complexity and Practicality: Is Advanced Modeling Necessary for Shallow Geothermal System Design?	Baser Tugce, Stumpf Andrew
	Centrifuge study of a laterally loaded energy pile	Khamis Eva, Blanc Matthieu, Dubreucq Thierry, Badinier Thibault, Pereira Jean-Michel, De Sauvage Jean
	Climatic effects on geothermal district heating networks	Förderer Aaron, Fuentes Raul
	Coupled THM Finite Element Modeling of Cyclic Thermal Loading on Energy Piles Using a Hypoplastic Model in OpenGeoSys	Pico María, Mašín David
13:00 14:30	Lunch break	

Tuesday 17 June 2025		
14:30 15:20	**Bright spark lecture**	**Dr. Merita Tafili**
15:20 16:35	**Parallel session A5, Amphi Cauchy** **Thermal energy geo-structures**	
	Development of scale model energy diaphragm wall panels for centrifuge modelling	Guan Xiaoyu, Knappett Jonathan, Brown Michael, Gupta Aakash, Loveridge Fleur, Shafagh Ida, Tosin Bruna Ruiz Carvalho, et al.
	Different perspectives for assessing shallow geothermal potential for the city of Cambridge, UK.	Makasis Nikolas, Kreitmair Monika, Chen Kecheng, Soga Kenichi, Choudhary Ruchi
	Effect of groundwater flow on ground heat accumulation induced by ground source heat pump systems under unbalanced seasonal building thermal loads	Yan Yuanzhong, Wang Yu
	Effects of subzero temperature circulating fluids on the performance of Energy Micropiles	Romiti Giulia, Gerola Marco, Scuderi Francesco, Guida Giulia, Cecinato Francesco
	Energy piles system to limit the earth pressure development on integral abutments	Alnahar Seif, Loveridge Fleur, Heitor Ana
15:20 16:35	**Parallel session B3, Amphi Navier** **Fundamentals of geo-energy and low-carbon engineering**	
	Mineral Type Impact on Thermal Conductivity of Biocement and Biocemented Sand	Zeinali Shadi, Rizvi Zarghaam Haidar, Wuttke Frank
	Improved Evaluation of Bender Element Testing for Different Confinement Stress Levels	Vargas-Neuville Chehem, Atefi-Monfared Kamelia, Cascante Giovanni
	InTCM: A deep learning based automatic thermal conductivity device for the full range of saturation	Rizvi Zarghaam, Basu Dipanjan, Wuttke Frank
	Early Detection of Damage in Concrete Using Hilbert-Huang Transform	Shakir Ammar, Cascante Giovanni, Ameen Taher
	Micromechanical porous media simulation incorporating solid contact through enhanced Linear Complementarity Problem methodology	Zhang Li, Collins-Craft Nicholas Anton, Pereira Jean-Michel, Braun Philipp
15:20 16:35	**Parallel session C3, Amphi Caquot 1** **Underground storage of carbon dioxide and energy**	
	Effects of Xanthan Gum as a Promoter on CO_2 Hydrate Formation in Sandy Soil: A Comparative Study	Chea Sokpheanika, Kang Chul-Hwan, Kim Jin, Hwang Hyun-Joong, Cho Gye-Chun
	Experimental study and numerical modeling of the effects of cyclic mechanical and thermal loading on the well integrity in CO_2 injection projects	Javani Dariush, Ghabezloo Siavash, Pérez-Fernández María
	Bridging the gap between mechanical and reactive transport models for calcite-rich caprocks for geological carbon storage applications	Della Vecchia Gabriele, Musso Guido, Gramegna Liliana
	Chemo-mechanical effects of carbonates dissolution on a Carbonate Clay	Vespo Vincenzo Sergio, Fiorucci Adriano, Musso Guido
	Impact of Wettability on Brine Drying and Salt Precipitation in Fractured Rock	Zhang Hui, Budi Zhao
16:35 17:05	Coffee break	

Tuesday 17 June 2025		
17:05 18:20	**Parallel session A6, Amphi Cauchy** **Thermal energy geo-structures**	
	Enhancing Thermal Performance of Energy Geostructures with Phase Change Materials	Salciarini Diana, Lupattelli Arianna, Capati Giulia
	Harvesting low-temperature heat from asphalt pavements for road snow melting	Ghalandari Taher, Pereira Jean-Michel, Tang Anh Minh, Vuye Cedric
	Heating and Cooling Thermo-Mechanical Effects on Driven Energy Piles in Norwegian Quick Clay	Sadeghi Habibollah, Tiwari Arvind Kumar, Singh Rao Martand
	Impact of Matric Suction Variations on the Lateral Earth Pressures Acting on Earth-Retaining Structures	Campos Luciano F., Zubrow Alex, Sutman Melis, Abdelaziz Sherif L.
	Impact of thermal loading on pore pressure and K0 in low-permeability clayey soils	Sau Núria, Romero Enrique, Van Baelen Hervé
17:05 18:20	**Parallel session B4, Amphi Navier** **Fundamentals of geo-energy and low-carbon engineering**	
	Development of a frost heave experimental setup using MRI	Tabbiche Christelle, Tang Anh Minh, Pereira Jean-Michel, Bornert Michel, Aimedieu Patrick, Sidi-Boulenouar Rahima, et al.
	Preventing human-induced seismicity to fight climate change	Gutierrez-Oribio Diego, Stefanou Ioannis
	Computing the thermoporomechanical response of porous composites by an FFT-based method	Olarte Garzon Maria Camila, Pereira Jean-Michel, Dangla Patrick
	Evaluation of Thermal Conductivity Performance of Zeolite-Bentonite Mixtures with Aluminum Powder Additive at High Temperature	Güneri Esra, Baş Selin
	Considerations Regarding the Choice of Construction Methods and Techniques to Limit the Environmental Footprint of Structures	Delerablée Yvon, Bernuy Charles, Amalberti Tom
17:05 18:20	**Parallel session C4, Amphi Caquot 1** **Underground storage of carbon dioxide and energy**	
	Coupled chemo-thermo-hydromechanical simulation for integrity assessment of CO2 injection wells	Pierre Maxime, Ghabezloo Siavash
	Pattern Formation in Coupled Fluid-Grain Flows within a Hele-Shaw cell	Ke Feihu, Kwok Chung Yee, Duan Kang
	Surfactant Injection in CCS: Effects on Interfacial Properties and Implications for Safety	Jeon Min-Kyung, Lee Joo Yong, Kwon Tae-Hyuk
	Thermal-Hydraulic-Mechanical-Chemical Analysis of Oceanic Carbon Dioxide Hydrate Storage	Zhou Ting, Qingping Li, Chuiqian Meng, Jian Liu
	Understanding the behavior of expansive soil in conventional element tests by HMC coupled FEM simulation considering surface phenomena of mineral crystal	Kyokawa Hiroyuki, Urata Ryuhei, Ueno Yuna

Wednesday 18 June 2025		
9:00 10:00	**Keynote lecture**	**Prof. Jean Schmittbuhl**
10:00 11:15	**Parallel session A7, Amphi Cauchy** **Thermal energy geo-structures**	
	Numerical Investigation of Thermo-Hydro-Mechanical Modelling of Energy Pile under Continuous and Intermittent Operation	Shadabi Sadri, Moura Mehravar, Rezk Ahmed, Ardakani Fatemeh, Thornley Patricia
	Numerical Model of Hypothetical Energy Piles and Energy Storage in Hawaii, USA	Talagi Melia
	Numerical modelling of Cutter Soil Mix energy walls	Gerola Marco, Leclercq Vincent, Vardon Philip, Cecinato Francesco
	Integrating small strain stiffness into the elasto-plastic framework for energy tunnel analysis	Rottemberg Maria Julieta, Bidarmaghz Asal, Khoshghalb Arman, Sfriso Alejo Oscar
	Numerical simulation of the ground thermal storage of solar heat through an energy wall system	Alvi Maria Romana, Insana Alessandra, Barla Marco
10:00 11:15	**Parallel session D1, Amphi Navier** **Unconventional hydrocarbon and hydraulic fracturing**	
	Chemically enhanced fluid-driven crack propagation in analogue rock	Chen Jing, Manman Hu
	Numerical simulation of Rayleigh wave propagation to estimate hydraulic fracture stimulation efficiency	Rho Minshik, Kim Jin, Chea Sokpheanika, Woo Jongwon, Cho Gye-Chun
	Mechanical characterization of hydrate-bearing sediments using multistage triaxial testing	Rao Mahima S, Wani Sahil, Kandasami Ramesh Kannan
	Experimental and Numerical Investigation of Hydraulic Fracturing in Dry Sandstone	Kanin Evgenii, Talebkeikhah Mohsen, Lecampion Brice
	Micro- and Macro Mechanism of Shear Behaviour of Gas Hydrate-Bearing Sediment at Various Densities	Chen Qing, Zhou Chao
10:00 11:15	**Parallel session E1, Amphi Caquot 1** **High level radioactive waste disposal**	
	Impact of Alkaline Perturbations on the Self-Sealing Properties of Callovo-Oxfordian Claystone	Allache Mehana, Mokni Nadia, Cui Yujun
	Thermo-Hydro-Mechanical Behavior of a Clay-Pellets Mixture Intended for Barrier Systems	Sahin Abdulvahit, Fabbri Heber, Sanchez Marcelo
	Effect of Sand Particle Size and Dry Density on Bentonite Penetration Behaviors into Sand Voids	Urano Chiharu, Wang Hailong, Ruan Kunlin, Komine Hideo, Ito Daichi
	Numerical Simulation of Heat Dissipation from Deep Geological Repository of Radioactive Waste in Granitic Rocks	Nada Rapantova, Pospisil Pavel
	Hydro-mechanical behaviour of Boom Clay investigated through high capacity uniaxial, oedometric and triaxial compression tests.	De Kock Sophie, Francois Bertrand, Collin Frédéric, Levasseur Séverine
11:15 11:45	Coffee break	

Wednesday 18 June 2025		
11:45 13:00	**Parallel session A8, Amphi Cauchy** **Thermal energy geo-structures**	
	Numerical study on the application of energy diaphragm wall in Northern Germany	Hu Linwei, Rizvi Zarghaam, Wuttke Frank
	One-dimensional numerical modelling of long-term thermo-mechanical behaviour of energy pile in clay	Qiu Changhao, Tang Anh Minh, Mroueh Hussein, Szymkievicz Fabien, Vasilescu Roxana
	Optimising the design and delivery of ground-source energy systems through interdisciplinary research	Taborda David, Alghami Rami, Al-Tabbaa Abir, Black Leon, Cao Benyi, Crucitti Francesca, Liu Ryan, Mac Dowell Niall, et al.
	Optimization of Large-Scale Shallow Geothermal Systems for District Heating using Thermo-Hydraulic Modelling	Xu Shuoshuo, Rodríguez-Salgado Pablo, Walsh John, Zhao Budi
	Parametric Numerical Investigation of Energy Piles for Thermal Energy Storage Across Diverse Climatic Conditions	Scuderi Francesco, Makasis Nikolas, Kreitmair Monika J., Aresti Lazaros, Cecinato Francesco
11:45 13:00	**Parallel session D2, Amphi Navier** **Unconventional hydrocarbon and hydraulic fracturing**	
	Numerical study on strategies to mitigate sand production risk in gas hydrate reservoirs	Uchida Shun, Abe Shungo
	Modeling Well Stimulation and Heat Production in EGS	Fabbri Heber, Sanchez Marcelo
	A robust numerical solver for the simulation of fluid-driven ruptures on pre-existing discontinuities in fractured rocks	Lecampion Brice, Gupta Ankit, Sáez Alexis, Fakhretdinova Regina, Sarma Antareep, Brisson Sylvain
	Permeability damage caused by non-isothermal fluid injection in enhanced geothermal systems	Zhai Xinle, Atefi Kamelia
	Mechanical Behavior of Cement-Rock and Rock-Rock Discontinuities in the Presence of Supercritical CO_2: Experimental and Numerical Evaluation	Diego Manzanal, Laskowski Cecilia, Muñiz Mauro, Martín Stickle Miguel, Orlandi Sandra, Allard José
11:45 13:00	**Parallel session E2, Amphi Caquot 1** **High level radioactive waste disposal**	
	Distributed Fibre Optic Sensing in High-Pressure Gas Injection Experiments on Shale	Llabjani Qazim, Ait Oumeziane Mohamed Akli, Ferrari Alessio, Marschall Paul, Laloui Lyesse
	Using X-ray computed tomography to characterise the composition and integrity of clay cores	De Jong Ties, Toshniwal Vidushi, Vardon Philip, Dieudonné Anne-Catherine
	Temperature effect on water movement in bentonites during saturation	Ruan Kunlin, Komine Hideo, Wang Hailong, Ito Daichi
	Effect of Pore Fluid Chemistry on the Hydro-Mechanical Behaviour of Poorly Indurated Boom Clay	Al Mais Hassan, Cui Yujun, Li Xiangling, Valcke Elie, Seetharam Suresh, Georgieva Temenuga, et al.
	Modelling the excavation damaged zone considering the influence of the anisotropic mechanical behaviour of sedimentary rocks with the discrete element method	Michalon Juliette, Pardoen Benoit, Branque Denis, Jaber Jana, Armand Gilles
13:00 14:30	Lunch break	

Wednesday 18 June 2025		
14:30 15:20	**Bright spark lecture**	**Dr. Anne-Catherine Dieudonné**
15:20 16:35	**Parallel session A9, Amphi Cauchy** **Thermal energy geo-structures**	Chair: Name
	Numerical evaluation of the thermo-hydro-mechanical behavior of energy micropiled raft in hypoplastic clay	Ciardi Giovanni, Tamagnini Claudio
	Reliability analysis of energy piles using importance sampling based algorithm	Barba-Galdámez David Francisco, López-Acosta Norma Patricia
	Stability of thermal embankments: effect of temperature and water content evolutions	Lahoori Mojdeh, Tang Fujiao, Rosin-Paumier Sandrine, Nowamooz Hossein, Masrouri Farimah
	Study of the Performance of Shallow Horizontal Closed Loop Geothermal System in Arid Climate	Badr Mabrouk Ahmed, Kianmehr Peiman
	The characterisation of thermal creep for energy pile systems	Vardon Philip J., Rafai Mouadh, Tang Anh Minh, Badinier Thibault, Golchin Ali, De Sauvage Jean, Salciarini Diana
15:20 16:35	**Parallel session B5, Amphi Navier** **Fundamentals of geo-energy and low-carbon engineering**	
	Long-term response of sand subjected to repetitive heating and cooling cycles : Shakedown, ratcheting, and terminal void	Cha Wonjun, Santamarina J. Carlos
	Relationship between CO2 fixation ability and relative humidity of fly ashes with different water retentivity	Suzuki Haruya, Komine Hideo, Ito Daichi, Ruan Kunlin, Suzuki Kiyohiko, Kunihiro Aya
	Tensile strength and crack pattern during desiccation of compacted clayey soils	Hesam Ebrahimisadr Hesam, Francois Bertrand
	Thermal conductivity of residual and basaltic sands	Villalobos Felipe, Vasco Diego, Matamala Felipe, Fumeron Javier
	Informing the Length Scale in Nonlocal Gradient Models through DEM Virtual Experiments	Xue Dawei, Lu Xilin
15:20 16:35	**Parallel session E3, Amphi Caquot 1** **High level radioactive waste disposal**	
	Gas transport behaviour of bentonite/sand mixtures used in sealing systems	Mesa-Alcantara Arisleidy, Torres-Serra Joel, Romero Enrique, De La Vaissière Rémi, Talandier Jean
	Feasibility: the Free-Free Resonant Column (FFRC) Method to Assess Damages in Compacted Bentonite Blocks under High-Temperature Conditions	Noh Dong-Hwa, Lamichhane Anup, Kim Seunghee
	Hele-Shaw experiments on radial water infiltration in compacted bentonite: Effect of gap spaces and gap fillers in engineered barrier systems	Kim Jinwoo, Kim Jin-Seop, Kwon Tae-Hyuk
	Impact of Groundwater Chemistry on the Swelling Behavior of Compacted Bentonite for High-Level Nuclear Waste Disposal-Numerical study	Almasri Roaa, Camilo Jose Sanchez Avellaneda, Sanchez Marcelo
	Hydro-mechanical properties for unsaturated-saturated Volclay bentonite	Yoshino Akari, Nishimura Tomoyoshi
19:30 23:00	Gala dinner	

Thursday 19 June 2025		
9:00 10:00	**Keynote lecture**	**Prof. Enrique Romero**
10:00 11:15	**Parallel session A10, Amphi Cauchy** **Thermal energy geo-structures**	
	The energy wall at Campus Ullevål – use of clay for energy storage	Gjengedal Sondre, Sadeghi Habibollah
	The impact of thermal creep on energy pile systems	Rafai Mouadh, Vardon Phil, Tafili Merita, Salciarini Diana, Dong Yuepeng
	The thermal response of large diameter energy piles	Loveridge Fleur, Owen Joseph
	Thermal Influence Zone of Energy Tunnels under Different Scenarios in terms of Groundwater Levels and Operation Periods	Magdy Alaaeldin, Di Donna Alice, Mroueh Hussein
	Thermal response test on an energy wall in an unsaturated tropical soil site	Ruiz Carvalho Tosin Bruna, De Hollanda Cavalcanti Tsuha Cristina, Antonio Schiavon José, et al.
10:00 11:15	**Parallel session F1, Amphi Navier** **Other geotechnical activities related to the energy sector**	
	Experimental Study on Instability Mechanisms of Tailings Dams	Fok Jonathan, Yang Jun
	An Experimental Study on Strength and Permeability of Soil Treated with AC-assisted Microbially Induced Carbonate Precipitation	Tian Angran, Tang Xiaojie, Chen Jing, Hu Manman
	Evaluating the role of key thermo-hydro-mechanical parameters in artificial ground freezing of silty sand	Joudieh Zeina, Cuisinier Olivier, Abdallah Adel, Masrouri Farimah
	Terminal void ratio evolution of natural marine sediments under cyclic loading	Kim Jinwook, Lee Jong-Sub, Lee Joo Yong
	Material Point Method Simulation of Suction Caisson Installation in Clay	Alturki Mohammad, Mehravar Moura, Dobrisan Andrei, Faramarzi Asaad
10:00 11:15	**Parallel session E4, Amphi Caquot 1** **High level radioactive waste disposal**	
	Assessing the Potential of Deep Borehole Disposal for Intermediate-level Nuclear Waste Management in Western Canada - DeepSAFE	Zambranonarvaez Gonzalo, Shafaei Bajestani Mahsa, Lopezsaavedra Sebastian, Chalaturnyk Rick
	Gas generations for some bentonite materials under isotropic conductivity on heat effect	Nishimura Tomoyoshi
	Modelling the micro- and mesoscopic hydromechanical behaviour of damaged Callovo-Oxfordian claystone	Boubakeur Echeima, Pardoen Benoit
	Multiscale characterisation and modelling of the hydromechanical behaviour of a bentonite-sand mixture	Eizaguirre Pablo, Tang Anh Minh, Talandier Jean, Bornert Michel, Dangla Patrick, Pereira Jean-Michel, Aimedieu Patrick, et al.
	Volume change and hydraulic behavior of compacted granular bentonite under elevated temperatures	Lu Yu, Ogata Riho, Takai Atsushi, Katsumi Takeshi, Mccartney John
11:15 11:45	Coffee break	

Thursday 19 June 2025		
11:45 13:00	**Parallel session A11, Amphi Cauchy** **Thermal energy geo-structures**	
	Thermal Stratification Effects on Geothermal Heat Exchange Systems in Pit Lakes: A Modelling Perspective	Narsilio Guillermo, Carcamo Medel Mauricio, Fuentes Raul
	THERMETRENNES Project- The Cleunay station	Sauvenier Jeanne, Di Donna Alice
	Thermo-hydraulic Response of Energy Raft Foundations under Various Groundwater Conditions	Pratama Ignatius Tommy, Jello Josiane, Huang Chin-Chin, Yang Kuo-Hsin, Tsai Jui-Pin, Baser Tugce
	Thermo-Hydro-Mechanical Analysis of Geothermal Piles: Implications for Shaft Bearing Capacity	Tourchi Saeed, Noorzad Ali, Lavasan Arash
	Thermo-Mechanical Analysis of Energy Quay Walls	Morcioni Andrea, Gerola Marco, Haasnoot Jacco, De Vries Jorrit P., Cecinato Francesco
11:45 13:00	**Parallel session F2, Amphi Navier** **Other geotechnical activities related to the energy sector**	
	Ground Source Hydronic Heated Pavement Systems for De-Icing and Snow Melting: Opportunities and Challenges in Sustainable Infrastructure	Ghalandari Taher, Salciarini Diana, Gennesseaux Eric, Naman Karim Ali, Adl-Zarrabi Bijan
	Large–Deformation Finite Element Model Setup for Modelling the Anchor Keying Process	Dao Duy Anh, Tafili Merita, Kwa Katherine, Grabe Jürgen, Wichtmann Torsten, Gourvenec Susan
	Performance Evaluation of a Novel Steam-Based Thawing Method for Permafrost Regions	Nouri Aylin, Maghoul Pooneh, Fortier Daniel, Roustaei Mahya
	Low-Cost Anchorage of Floating Wave Energy Generators	Tomac Ingrid, Lin Yuquan, Shen Yue, Mccartney John
	Which saturation-dependent inclusion shape functions best describe the equivalent microstructure of partially saturated soils?	Masłowski Mikołaj, Bodak Bartłomiej, Różański Adrian
11:45 13:00	**Parallel session E5, Amphi Caquot 1** **High level radioactive waste disposal**	
	Laboratory and numerical investigation on the poro-elasto-visco-plastic behaviour of in-situ heated Callovo-Oxfordian claystone	Ren Junfeng, Braun Philipp, Ghabezloo Siavash, Plúa Carlos, Vu Minh Ngoc
	Particle size evolution of granular bentonite upon wetting and loading	Zeng Hao, Gonzalez-Blanco Laura, Romero Enrique
	Modelling the effects of heterogeneity on two-phase flow in clays	Huang Zhaojiang, Liaudat Joaquín, Van Den Eijnden Bram, Vardon Philip, Hicks Michael, Dieudonné Anne-Catherine
	Fracture characteristics in normally consolidated Boom clay under Direct shear conditions	Chandan Malagar Bhini, Vardon Philip, Dieudonné Anne-Catherine
	Impact of Groundwater Chemistry on the Swelling Behavior of Compacted Bentonite for High-Level Nuclear Waste Disposal	Sanchez-Avellaneda Camilo, Almasri Roaa, Sanchez Marcelo, Deng Youjun
13:00 14:30	Lunch break	

Thursday 19 June 2025		
14:30 15:30	**Honorary lecture**	**Prof. Marcelo Sánchez**
15:30 16:45	**Parallel session A12, Amphi Cauchy** **Thermal energy geo-structures**	
	Thermoactivation of the A-5 cut-and-cover urban tunnel in Madrid	González Tejada Ignacio, Muñoz Antón Javier, González Galindo Jesús
	Thermomechanical Behavior and Bearing Capacity of Energy Piles: Insights from Dry and Moist Soil Comparisons	Jafarzadeh Fardin, Afzalsoltani Sina
	Three-dimensional thermal loads and their effects on the structural performance and durability of energy piles	Erginag Ugur Can, Guner Mert, Polat Semra, Sutman Melis, Cinicioglu Ozer
	Investigating the effects of pile installation method and soil density on helical piles under mechanical and thermal loading	Rezaie Navid, Bashiri Mohammadreza, Ghazavi Mahmoud, Siahkouhi Mona, et al.
15:30 16:45	**Parallel session A13, Amphi Navier** **Thermal energy geo-structures**	
	Determination of Hydraulic Parameters T and S to Air-conditioning System by Using Circulating Groundwater	Chihping Kuo, Liao Hungjiun
	Durability and Efficiency of Energy Piles: A Multi-Year Investigation Under Real Operating Conditions	Vasilescu Roxana, Kotronis Panagiotis, Dano Christophe, Fauchille Anne-Laure, Gotteland Philippe
15:30 16:45	**Parallel session E6, Amphi Caquot 1** **High level radioactive waste disposal**	
	Effects of Poro-Mechanical Coupling on Fracture Propagation Around a Pressurized Excavation	Fallah Joseph, Pouya Amade, Brochard Laurent, Vu Minh Ngoc, De Lesquen Christophe
	Hydro-Mechanical Evolution of a Two-Component Bentonite Barrier for Radioactive Waste Disposal	Villar María Victoria, Iglesias Rubén J., García-Herrera Guillermo, Gutiérrez-Álvarez Carlos
	Mini-cell for studying microstructural changes during gas transport through X-ray micro-CT	Gonzalez-Blanco Laura, Lakimahalleh Salar, Romero Enrique
	Exploring the role of the granular skeleton on the swelling pressure of heavily compacted bentonite/sand mixtures	Torres-Serra Joel, Romero Enrique, Mesa-Alcantara Arisleidy
	Coupled THM simulation of high-frequency mechanical wave propagation and heat generation in the vicinity of a low permeable oil well	Khanghahi-Bala Borzouyeh, Habibagahi Ghassem, Ghabezloo Siavash
16:45 17:15	**Closing ceremony**	**Jean-Michel Pereira**

ICEGT 2025 Organisation

Organizing committee

Chair (Navier Laboratory):
Jean-Michel Pereira

Co-chairs (Navier Laboratory):
Philipp Braun
Yujun Cui
Lina Maria Guayacan Carrillo
Siavash Ghabezloo
Mathias Lebihain
Anh-Minh Tang

Scientific committee (ISSMGE TC308)

Abraham Chung-Fai Chiu	China
Adrian Różański	Poland
Ahmed Mohammed (Elmannaey)	Egypt
Alaaeldin Magdy	Egypt
Alessio Ferrari	Switzerland
Alice Di Donna	France
Ana Vieira	Portugal
Angelica Tottolomondo	Switzerland
Anh Minh Tang	France
Anne-Catherine Dieudonne	Netherlands
Anthony Leung	Hong Kong Special Administrative Region
Antonio Gens	Spain
Apiniti Jotisankasa	Thailand
Asal Bidarmaghz	Australia
Asha Panchal	United Kingdom
Ashraf Osman	United Kingdom
Atsushi Takai	Japan
Ayman Abed	Sweden
Benjamin Cerfontaine	United Kingdom
Bertrand François	Belgium
Bisheng Wu	China
Budi Zhao	Ireland
Camellia Atefi	Canada
Cesar Pasten	Chile
Changho Choi	South Korea
Chris Martin	United Kingdom
Christos Tsatsanifos	Greece
David Taborda	United Kingdom
Diego Manzanal	Argentina
Dietmar Adam	Austria
Dipanjan Basu	Canada
Duhee Park	South Korea
Emmanouil Spyropoulos	United Kingdom
Enrique Romero	Spain
Fleur Loveridge	United Kingdom
Francesca Casini	Italy
Francesco Cecinato	Italy
Frank Wuttke	Germany
Gabriele Della Vecchia	Italy
Gangqiang Kong	China

Gregory Siemens	Canada
Guido Musso	Italy
Guillermo Narsilio	Australia
Gust Van Lysebetten	Belgium
Gye-Chun Cho	South Korea
Henry Gustavsson	Finland
Hiromasa Iwai	Japan
Hiroyuki Kyokawa	Japan
Igor Fernandes Gomes	Brazil
Ingrid Tomac	Croatia
Iulia-Consuela Prodan	Romania
Jacco Haasnoot	Netherlands
Jana Frankovská	Czech & Slovak Republics
Jinhyun Choo	South Korea
John McCartney	United States
Jun Yang	Hong Kong Special Administrative Region
Jung Jongwon	South Korea
Laura Asensio Sánchez	Spain
Laura González Blanco	Spain
Lele Liu	China
Leonardo Guimarães	Brazil
Manas Kumar Bhoi	India
Manman Hu	Hong Kong Special Administrative Region
María Victoria Villar	Spain
Masrouri Farimah	France
Melis Sutman	Turkey
Meng-Chia Weng	Chinese Taipei
Merita Tafili	Germany
Mingjing Jiang	China
N. Nair Unnnikrishnan	India
Norma Patricia López Acosta	Mexico
Ozer Cinicioglu	Turkey
Rodrigo Palma	Portugal
Salah Sadek	Lebanon
Santiago Peña	Spain
Shanyong Wang	Australia
Sheng Dai	United States
Shun Uchida	United States
Tae Sup Yun	South Korea
Tae-Hyuk Kwon	South Korea
Tanusree Chakraborty	India
Te-Fu Chiu	Chinese Taipei
Tommaso Bizzotto	United Kingdom
Victor Terente	United Kingdom
Volkan Kalpakçı	Turkey
Wenbin Fei	China
Xiaohui Cheng	China
Yeliz Yukselen	Turkey
Zhenyu Yin	Hong Kong Special Administrative Region
Zhonghao Sun	China

Notes

INTERNATIONAL CONFERENCE ON ENERGY GEOTECHNICS

17 - 19 JUNE 2025 PARIS, FRANCE