

ALERT Geomaterials 2025 Annual Meeting

Preliminary Workshop & Conference Program

Workshop: September 29th to October 1st

Session 1 (29/09/2025) "It is about time – time-dependent response of geomaterials", organized by J. Dijkstra, E. Gerolymatou and J.-M. Pereira

- Fluid-granular coupling in impacts into granular fluid beds, by S. Hall, J. Engqvist, P. Huang, A. Henningsson, B. Lukic, and J. Dijkstra
- Elastic viscoplastic continuum modelling of the settling and creeping of the natural Alpine snow cover using the Material Point Method, by A. Pellet
- A DEM virtual centrifuge to study pile set-up in sands, by M. Arroyo, J. Lei, and M. O. Ciantia
- Systematic evaluation and classification of time-dependent mechanical behavior of site-specific rock salt from the radioactive waste repository Morsleben, by S. Lerche, and N. Saruulbayar
- Grain Breakage Mitigation in a Uniform Grain Size Distribution: Experimental and Modeling Insights, by H. Loubane and A. Daouadji
- Investigating Crushable Sand Behavior Using X-Ray Imaging, by M. A. Sayyah and M. Roustaei
- Monodisperse behavior of polydisperse flows, by M. Cabrera, M. Renouf, N. Estrada, and E. Azéma
- A Unified Constitutive Framework for Anisotropic and Time-Dependent Behavior of Clays under Monotonic and Cyclic Loading, M. Tafili and T. Wichtmann
- Creep in clay, a hyperplasticity approach, by G. Grimstad, S. A. G. Amiri, D. Dadras-Ajirlou and G. R. Eiksund
- Data-Driven Reduced Order Modelling of Time-Dependent Problems in Geomechanics, M. Ouyang, A. Petalas, W. M. Coombs, and C. E. Augarde
- Can cyclic injection affect the hydromechanical performance of underground hydrogen reservoirs?, by Z. Xu, J. Sulem, and P. Braun

Session 2 (30/09/2025) "Ice in porous media", organized by J.-M. Pereira, A. Tengattini and G. Viggiani

- Premelted film theory to interpret ice lens formation in frost heave experiments, by G. Guida, R. Verzicco Giulia and M.B. Viggiani
- LNAPL migration in frozen and thawed heterogenous sands using physical modelling techniques, by R. Beddoe, K. Mumford Maj and A. Lefebvre
- Mechanical behaviour of frozen soils: frost heave experiments and FFT-based numerical homogenisation, by M. C. Olarte Garzon, C. Tabbiche, A. M. Tang, and J.-M. Pereira
In-Situ X-ray Tomography of Ice Lens Formation in frost heaving soils, by T. Mlady
- Influence of Salt Content on the Behaviour of Frozen Soils, by N. Molls, L. Wachter and R. Fuentes

Session 3 (01/10/2025) "Nature-based (-inspired) geotechnical engineering", organized by N. Benahmed, A.-C. Dieudonné and L. Van Paassen

- Keynote lecture, by V. Morales
- Influence of fungal growth on the hydraulic and mechanical behaviour of granular soils, by G. El Mountassir, B. Nagy, Q. Zhang, A. Fathollahi, and A. Tarantino
- Arbuscular mycorrhizal fungi effect on the hydrological regime in vegetated soil, by A. Tarantino, E. G. Roberts-Self
- Perspectives for growing robot based on experimental measurements of plant root growth and mechanical interaction with the soil, T. Nagayama, L. Sibille, E. Del Dottore, B. Mazzolai, and G. Viggiani
- Anisotropic Behaviour of Rooted Soils: Mechanisms, Modelling, and Applications, by A. A. Karimzadeh, R. Fuentes, A. K. Leung
- Bio-Engineering Soil Resilience: Effects of Root and Fiber Intruders on Vadose Zone Hydraulics and Pore Structure, by F. Anselmucci, H. Cheng, and V. Magnanimo
- Use of Posidonia Oceanica Fibers for Soil Reinforcement: X-ray Synchrotron Imaging and Hydromechanical Insights, by J. Karimiazar, E. Romero, R. Petti, M. Carcagni, J. Torres-Serra, A. Fraccica, G. Pinzon, G. Viggiani, and C. Vitone
- Keynote lecture, by L. Van Paassen
- From Microbes to Models: Advancing Hypoplastic Constitutive Modelling for Biocemented Soils, by H. Abdellatif, M. Tafili, N. Irani, and T. Wichtmann
- BIGALPS: From Concept to Construction – Accelerating the Maturation of Biocementation, by I. Prodan, O. Bujor, F. Vasile, E. Andras, B. Gliga, N. Benahmed, S. Nicaise, A. Farhat, A. Hegde, P. Philippe, and A. Wautier

- Field monitoring of the hydrological response of a sloping pyroclastic cover affected by vegetation, by L. Comegna, M. Calvello, A. Esposito, R. Greco, R. Menichini, G. Pecoraro, M. Pirone, M. Ramondini, G. Rianna, G. Sequino, A. Santo, A. Stinca, and G. Urciuoli
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- X-ray CT Investigation of Vortex-Inspired Tip Penetration in Granular Media, by M. Belachew, M. Arciero, O. Stamati, C. F. Arson, G. Viggiani, J. D. Frost
- Geomechanics of termite mounds, by T. G. Murthy

Doctoral School October 2nd to October 4th

"The Role of Geomechanics in the Energy Transition", organized by M. Lesueur, J.-M. Pereira, H. Rattez, M. Veveakis, and A.-C. Dieudonné

Day 1: Fundamentals, shallow Geothermal Energy and Offshore wind

Morning Session: Course Introduction

Lecture 1: Introduction to Energy Transition & Geomechanics

Lecture 2: Shallow Geothermal Energy – Technology & Evolution

Lecture 3: Geomechanics in Geothermal Systems

Afternoon Session: Offshore wind

Lecture 4: Offshore Wind Turbines – Technology & Evolution

Lecture 5: Geomechanics of Offshore Wind Turbine Foundations

Day 2: Radioactive Waste & CO₂ and Hydrogen Storage

Morning Session: Radioactive Waste Disposal

Lecture 6: Nuclear Waste Repositories – Technology & Evolution

Lecture 7: Geomechanics of Nuclear Waste Disposal

Afternoon Session: Hydrogen Storage and CO₂ Storage

Lecture 8: Subsurface Hydrogen (and CO₂ Storage?) – Technology & Evolution

Lecture 10: Hydrogen storage challenges

Lecture 11: Microscale geomechanics

Day 3 (Half-Day): Deep geothermal & Future Perspectives

Morning Session: CO₂ Injection & Long-Term Storage

Lecture 12: Deep geothermal – Technology & Evolution

Lecture 13: Geomechanics of deep geothermal

Closing Session: Integration & Future Perspectives

Panel Discussion: Geomechanics Challenges in the Energy Transition