



Delft University of Technology

## Preface

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5<sup>th</sup> European Conference on Unsaturated Soils  
Biotechnology in Geotechnical Engineering  
Lisbon, 1 to 3 September 2025  
<https://eunsat2025.tecnico.ulisboa.pt>

## Preface

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The 5<sup>th</sup> European Conference on Unsaturated Soils, including Biotechnology applied to Geotechnical Engineering, EUNSAT2025+BGE, has been held in Lisbon, Portugal, from 1 to 3 September 2025.

EUNSAT2025, supported by TC106 of ISSMGE, covered a broad variety of topics related to UNSATURATED SOILS AND ROCKS, including Field Cases and Instrumentation in Ground Engineering, Linear Infrastructures, Environmental Geotechnics, Sustainable Geotechnical Design, Energy Geotechnics, Mining Industry, Landslides and Climate Stresses, Historical Constructions, Soil Improvement, Multiscale and Multiphysics Modelling and Experimental Techniques, and Nano-Micro Technology.

Considering the natural link between Unsaturated Soils and Bio-Inspired Technology, such as Nature-based Solutions, Biocementation, Rooted Soils, and Soil-Vegetation-Atmosphere Interactions, the organization has decided to plan for special sessions related to Biotechnology in Geotechnical Engineering, BGE.

EUNSAT2025+BGE proceedings contain over one hundred contributions. The authors represent 30 different countries across five continents. Although 57% of the authors were from Europe, the numbers confirm that Unsaturated Soils is a worldwide topic of interest.

The 114 papers accepted were classified into six broad areas:

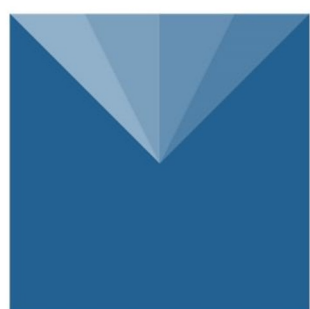
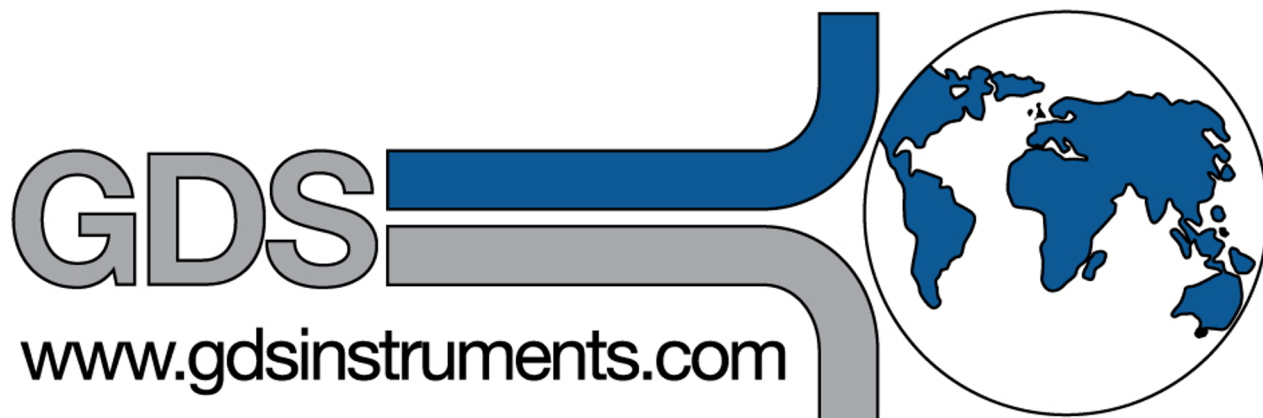
- 1 - Field studies and engineering applications (13 papers)
- 2 - Theoretical and numerical models (25 papers)
- 3 - Experimental evidence and techniques (35 papers)
- 4 - Studies on coupled phenomena (12 papers)
- 5 - Soil improvement using biotechnology (17 papers)
- 6 - Hydromechanical effects of roots and vegetation on geotechnical structures (12 papers)

The last two topics were part of BGE and include 29 papers in total. This number corresponds to 25% of the EUNSAT2025+BGE papers, indicating a growing number of researchers working in this field, mainly associated with the Unsaturated Soils community. The contributions are a brilliant example of new fields of application of our knowledge of Unsaturated Soils in research and engineering applications.

The previous edition of this conference was in 2020 (EUNSAT 2020) and held online due to the COVID-19 pandemic. We were very pleased to be able to organize this new edition in 2025 in a lively scientific format in Lisbon. Back in 2020, we expressed our desire for this conference series to focus on future applications, seeking sustainability and novel applications. We believe that the topics discussed at BGE represent a step in that direction. Since unsaturated soils are such a fundamental research field, this and many other topics may inspire future conferences on Unsaturated Soils. All the rigorous theoretical and experimental work we have mastered certainly provides a solid foundation for solving practical problems across various fields.

We acknowledge our sponsors GDS, Meter, Wille-Geotechnik and European Project Safe Land, who also joined the event, as well as FUNDEC and Abreu Agency for their fundamental help in the organization. Acknowledgements are also due to the Portuguese Society of Geotechnics for advertising the event, and Turismo de Lisboa and CGD for supporting part of the expenses.

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Cristina Jommi  
Enrique Romero



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and Innovation for  
Sustainability



**fct**

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