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Geotechnical Engineering Challenges to Meet Current and Emerging Needs of Society

Les Défis de la Géotechnique pour Répondre aux Besoins Actuels et Émergents de la Société

Edited by

Nuno Guerra

NOVA University of Lisbon, Portugal

Manuel Matos Fernandes

University of Porto, Portugal

Cristiana Ferreira

University of Porto, Portugal

António Gomes Correia

University of Minho, Portugal

Alexandre Pinto

President of the Portuguese Geotechnical Society, Portugal

Pedro Sêco e Pinto

President of the Scientific Committee of ECSMGE 2024



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Preface

The ISSMGE European Region and the Portuguese Geotechnical Society (SPG) are pleased to welcome you to the XVIII European Conference on Soil Mechanics and Geotechnical Engineering in Lisbon, Portugal, on the 26th to the 30th of August 2024.

The geotechnical challenges that the world faces are getting increasingly complex and interrelated. To develop a renewed commitment with the engineering core values and ethics in this time of rapid and defying changes, the theme of the Conference is: "Geotechnical Engineering challenges to meet current and emerging needs of society". Considering this framework, the topics of the conference are:

A - New developments on structural design.

B – Geohazards.

C - Risk analysis and safety evaluation.

D - Current and new construction methods.

E - Environment, water and energy.

F - Future city world vision.

After the pandemic period, the aim of the conference is to share in person knowledge and experience with our colleagues and strengthen the relationship between members of the geotechnical community, emphasizing the important contribution of the geotechnical engineering to solve the current and emerging society needs.

We hope that this conference exceeds your expectations with very interesting lectures, papers, posters, exhibitions and technical visits.

We gratefully thank all the speakers, authors, reviewers, supporting committees, members of ISSMGE technical committees, chairs of sessions, exhibitors, institutional partners, as well as all other participants making this conference outstanding.

We hope you have a pleasant stay in Portugal and look forward to seeing you again.

Lisbon, August 2024

Lyesse Laloui,
ISSMGE Vice-President for Europe

Alexandre Pinto,
Chairman of the Organizing Committee of the XVIII ECSMGE 2024

Acknowledgements

The Portuguese Geotechnical Society (SPG) gratefully acknowledges the important support to the XVIII ECSMGE, Lisbon, 2024, from all the Conference Partner companies.

The Portuguese Geotechnical Society also acknowledges the enthusiasm and support of the members of the Advisory Committee, the Scientific Committee and the Organizing Committee of the XVIII ECSMGE, as well as the strong participation of the Board of Reviewers that contributed to the high scientific quality of the proceedings.

The Portuguese Geotechnical Society acknowledges the important role of the authors, keynote lecturers, SOA, Forum and HTC lecturers, chairpersons, and all the persons and entities that contributed to the success of the XVIII ECSMGE.

The editors thank Mr. Manuel Carvalho and Miss Maria João Carvalho for their meticulous and comprehensive efforts in proofreading and formatting the text. Their dedication has contributed to the high quality and readiness for publication of these proceedings.

The editors extend their appreciation to Leading and in particular to Maria Brito, for her expertise in crafting the captivating graphical design of the book cover.

Editor Biographies

Nuno Guerra is Associate Professor at NOVA School of Science and Technology, where he lectures undergraduate, master and postgraduate courses in the fields of Soil Mechanics and Geotechnical Engineering, in the Civil Engineering Department. His research interests are the study of the collapse of geotechnical structures, geotechnical design considering the variability of soil properties, soil-structure interaction and the performance of retaining structures. He was Vice-President of the Portuguese Geotechnical Society (2012-2016), member of several Organizing and Scientific Committees of national conferences and Geotechnical Engineer and Consultant. He was (2004-2008) and is now (from 2016) member of the Board of the journal “Geotecnia” published by SPG, ABMS and SEMSIG. He is author of 75 papers published in national and international journals and in the proceedings of national and international conferences.

Manuel Matos Fernandes is Professor of Soil Mechanics and Geotechnical Engineering at the Faculty of Engineering of the University of Porto. His main research areas concern numerical modelling of geotechnical works, deep urban excavations and the history of Construction. He was editor of the journals *Geotecnia* (2000-04) and *Soils & Rocks* (2012-16) and President of the Portuguese Geotechnical Society (2016-20). He is author of textbooks on Soil Mechanics and Geotechnical Engineering published in Portugal and internationally. From 1991 to 2012, he co-organized the series International Workshops on Applications of Computational Mechanics in Geotechnical Engineering and co-edited its proceedings (6). In 2013 he was awarded with the Prize in Pedagogy Excellency at his university.

Cristiana Ferreira is Assistant Professor in the Department of Civil Engineering at the Faculty of Engineering of the University of Porto and an integrated member of CONSTRUCT (Institute of R&D in Structures and Construction). Her research is mainly focused on laboratory and field soil characterisation, wave-based non-destructive testing, seismic and static liquefaction characterisation and mitigation, and the mechanics of non-textbook geomaterials. She has 3 published books as editor, 32 papers in peer-reviewed scientific journals and more than 50 papers in conference proceedings.

António Gomes Correia is professor and researcher at the Institute for Sustainability and Innovation in Structural Engineering (ISISE) of University of Minho. His activities involve research, teaching and consulting in the general field of geotechnical and transportation engineering for 44 years. He has been a keynote speaker and member of the organising/technical committees for many well established international conferences. He is a co-founder of the International Society for Intelligent Construction (ISIC) as well as has founded the conference series on Transportation Geotechnics. He is also one of founding editors for the international journal “Transportation Geotechnics” (from 2014), as well as for “Transportation Engineering” (from 2020), both published by Elsevier. He is also editor of the journal “Geotecnia” (from 2016) published by SPG, ABMS and SEMSIG. He is an author/coauthor of 190 scholarly publications indexed in SCOPUS.

Alexandre Pinto is founder and technical manager of JETsj Geotecnia Lda. and invited Professor at Instituto Superior Técnico (IST) of Technical University of Lisbon. His activities involve consulting and teaching in the general field of geotechnical engineering for 30 years. He is an author/coauthor of 120 technical papers. He has been a keynote speaker and member of the organising/technical committees for several conferences. He was Vice President of Portuguese Geotechnical Society from 2016 to 2020 and is President from 2020 to 2024.

Pedro Sêco e Pinto was a Full Professor of Geotechnical Engineering at Coimbra University. He is a member of European Union Academy of Sciences, a Fellow of Portuguese Institute of Engineers and a former Director of Research of National Laboratory of Civil Engineer (LNEC). He was ISSMGE Board Member, Immediate Past President, ISSMGE President and ISSMGE Vice President. He was Chairman of ISSMGE TC “Earthquake Geotechnical Engineering“. He presented 350 State-of-the Art Lectures in 80 countries. He was an Editorial in Chief of 2 International Journals and he is member of 7 Editorial Boards. He has been a member of Advisory Committee of 100 International Conferences. He worked as World Bank Consulting and United Nations Consulting. He worked on 450 major projects in Dams, Power plants, Bridges, Special Foundations, Tunnels, Highways, Landslides, Dykes, Airports and Quay Walls, in 23 countries. He is author or co-author of 500 Technical and Scientific Reports and 180 papers for Conferences and Journals and contributed for 13 Books. He received more than 50 International Awards.

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Waldemar Swidzinski
Zsolt Szilvagyí
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Luc Thorel
Joaquim Tinoco
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Michał Topolnicki
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K Van Dalen
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António Viana da Fonseca
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Castorina Vieira
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Ákos Wolf
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Xinyuan Yu
Yeliz Yukselen
Katarzyna Zabielska-Adamska
Lidija Zdravkovic
Sabid Zekan
Maurizio Ziccarelli
Cor Zwanenburg