

CRISTINA JOMMI

Cristina Jommi is Professor of Dykes and Embankments at Delft University of Technology, and Professor of Soil Mechanics and Geotechnical Engineering at Politecnico di Milano. She has nearly 30 years' experience in research and she is one of the leading experts in Europe on unsaturated soils, organic soils behaviour, and dyke engineering.

Of relevance for this project, her background covers advanced experimental, theoretical and numerical approaches for earth constructions. At TU Delft, she has been leading a full-scale test on a historical dyke, which was supported by seven Water boards and three Provinces, which are in charge of the maintenance and strengthening of nearly 17.000 km dykes. The test, which ended with a successful dyke breach in October 2015, was designed to benchmark current Dutch assessment rules against regional flood defences behaviour. She also promoted a number of research project, including a comprehensive study on the behaviour of peats and common pitfalls in the interpretation of standard data on organic soils. She also analysed various aspects of soil-atmosphere interaction of relevance for dyke maintenance, including evaporation, cracking, and gas formation due to biodegradation. She was part of the EU-IAPP MAGIC, looking into a combination of geophysical and geotechnical measurements to collect as much information as possible from multiscale investigation of dykes and their foundations. She has a long lasting experience as PhD supervisor (25 candidates in total), both at Politecnico di Milano and Delft University of Technology, as well as in the role of co-supervisor of foreign candidates.

Teaching and Organisation of Doctoral Schools

- Organisation of the ALERT Doctoral School on Stochastic Analysis and Inverse Modelling, Aussois (FR), 2015 (with MA Hicks)
- Organisation of the ALERT OC Zienkiewicz Summer Doctoral School on Geomechanics of Soft Soils, Assisi (IT), 2017 (with C Tamagnini)
- Participation to the International ALERT OC Zienkiewicz Doctoral School 2010 – Lausanne (CH)
- Participation to the International Doctoral School ALERT 2012 – Aussois (FR)
- Participation to the International ALERT OC Zienkiewicz Summer Doctoral School 2015 – Barcelona (SP)
- Participation to the ETHZ Winter Doctoral School 2017 – Monte Verità (CH)
- Participation to the International Doctoral School TERRE 2017 – Lausanne (CH)

Invited Lectures and Contributions in Conferences and Workshops

- Fifth International Conference on Unsaturated Soils, Barcelona, 2010 (Panellist)
- Modelling coupled electro-hydro-mechanical processes based on an effective stress definition and accounting for gas generation and transport. Euromech Colloquium 539 – Mechanics of unsaturated porous media: effective stress principle from micromechanics to thermodynamics, Utrecht, NL, 2012
- 18th International Conference on Soil Mechanics and Geotechnical Engineering Paris, France, 2013 (General Reporter)
- Soil and geotechnical structures under transient hydraulic loads. Geotechniekdag, Dutch Geotechnical Society, Breda, NL, 2013
- Time Dependent Approach in the Assessment of Dykes and Levees. Prague Geotechnical Days, Czech and Slovak Society of ISSMGE, Prague, 2014
- Geotechnical response of dykes to hydraulic loads. XXV National Geotechnical Conference, Baveno, Italy, 2014 (Panel Lecture)
- The deviatoric behaviour of peats: modelling some experimental observations. EUROMECH Colloquium 572 Constitutive Modelling of Soil and Rock Innsbruck, Austria, 2016
- Modelling the bio-mechanical behaviour of peats. IV International Workshop Modern Trends in Geomechanics, Assisi, Italy, 2016.
- Fabric and clay activity in soil water retention behaviour. 3rd European Conference on Unsaturated Soils, Paris, France, 2016 (Invited Lecture)
- Evidences of the Effects of Free Gas on the Hydro-mechanical Behaviour of Peat. Advances in Laboratory Testing and Modelling of Soils and Shales (ATMSS), Villars-sur-Ollon, CH, 2017 (Keynote Lecture)
- Hydromechanical response of fibrous materials: influence of degradation of fibres and generation of gas from organic matter. Unsat-Waste, Shanghai, China, 2017 (Keynote Lecture)

Selected Information on Editorial Activity

- Member of the Editorial Board of the Canadian Geotechnical Journal, since 2016
 - Member of the Editorial Board of the Italian Geotechnical Journal (2009-2015)
 - Reviewer for more than 20 International Journals
 - Member of the sub-panel of the 2011 Géotechnique Symposium in Print: Partial Saturation in Compacted Soils.
 - Guest Editor of Research and Applications in Unsaturated Soil Mechanics. Engineering Geology, Vol. 165: 1-170 (with C Mancuso)
 - Guest Editor of a Special Issue on Soil-Atmosphere Interaction. Environmental Geotechnics (with P Vardon, in press).
 - Guest Editor of a Special Issue on the Monitoring of Infrastructures. Physics and Chemistry of the Earth (with A Tarantino and D Gallipoli, 2018).
- Book Editor
- C Mancuso, C Jommi, F D'Onza (Eds.) 2012. Unsaturated Soils: Research and Applications Vol 1. Springer-Verlag Berlin Heidelberg. ISBN 978-3-642-31115-4. DOI 10.1007/978-3-642-31116-1.
 - C Mancuso, C Jommi, F D'Onza (Eds.) 2012. Unsaturated Soils: Research and Applications Vol 2. Springer-Verlag Berlin Heidelberg. ISBN 978-3-642-31342-4, DOI 10.1007/978-3-642-31343-1
 - M A Hicks, C Jommi (Eds.) Stochastic Analysis and Inverse Modelling. ALERT Geomaterials, Grenoble, p. 1-280. ISBN: 978-2-9542517-5-2.
 - S Bonelli, C Jommi, D Sterpi (Eds.) Internal Erosion in Earthdams, Dikes and Levees, Springer, Cham, p. 1-368. ISBN: 978-3-319-99422-2.

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Participation to EU-CODES

Since 2016: Convenor of the CEN TC250/SC7/WG3/TG1 - Slope Stability: revision of general principles implementation for slopes and cuts in the forthcoming EU-codes

International Committee Membership

Since 2014: Member of the TC106 Unsaturated soils, nominated by the Dutch Geotechnical Society

Since 2014: Member of the TC214 Soft Soils, nominated by the Italian Geotechnical society

Member nominated by the Italian Geotechnical Society of the TC6-Unsaturated soils, Technical Committee of the International Society for Soil Mechanics and Geotechnical Engineering (2006-2009).

Core Member of the TC106 Unsaturated soils, Technical Committee of the International Society for Soil Mechanics and Geotechnical Engineering (2010-2013).

Member nominated by the Italian Geotechnical Society of the TC215-Environmental Geotechnics, Technical Committee of the International Society for Soil Mechanics and Geotechnical Engineering (2010-2013).

Roles in National Committees

Member of the Direction Board of the Italian Geotechnical Society (2009-2015)

Member of the Scientific Board of the Inter-Department Centre for Environment Information Research, Politecnico di Milano (2009-2013)

Selected Research Projects

2007-2008: Experimental and theoretical study on the applicability of electrokinetic processes for pollution control. Italian Strategic Research Project, founded by the Italian Ministry of University and Research

2009-2011: Experimental and theoretical study on chemo-hydro-mechanical behaviour of fractured clayey soils. Italian Strategic Research Project, founded by the Italian Ministry of University and Research

2009-2011: GEO-engineering EXChanges between Europe and Latin-America, Geo-Excel, founded by the European Community – FP7 (PI-Polimi)

2013-2017: MAGIC – Monitoring and Adaptation of Geotechnical Infrastructures under Climate loads I-APP, Founded by the European Community (PI-TU Delft)

2013-2014: Gas in Peats, part of Dijken op Veen II, founded by the Dutch Ministry of Public Work and Infrastructures, NL

2014-2016: Stress test at the Leendert de Boerspolder, founded by STOWA (Dutch Foundation for resaaerch on rural dykes), 7 Waterboards and 3 Provinces all around the Netherlands, NL

2016 : Study on the application of partial factors approach in FE assessment of dykes, founded by STOWA, NL

2020-2024 : “Sustainable Dykes: sustainable design and reinforcement strategies for dykes in a changing climate”, NOW, NL

Selected Scientific Activities

- Member of the Evaluation Committee of Research Projects financed by Rijkswaterstaat (Dutch Ministry of Public Works), 2016.

- Senior Research Scientist, Deltares, The Netherlands (2015-2017)

- Chair of the II European Conference on Unsaturated Soils, 2012, Napoli (with C Mancuso)

- Chair of the IV European Conference on Unsaturated Soils, 2020, Lisboa (with R Cardoso and E Romero)

- Organiser of the 25th Annual Meeting of European Working Group on Internal Erosion in Embankment Dams & their Foundations, 2017, Delft, NL (with V van Beek, A Koelewijn, JJ Heerema and A Bezuijen)

- Organizer of the 26h Annual Meeting of European Working Group on Internal Erosion in Embankment Dams & their Foundations, 2018 Milano, IT (with D Sterpi)

Publications

<https://orcid.org/0000-0002-9439-528X>

Delft, 5 February 2020

