

**26th Annual Meeting of European Working Group
on Internal Erosion**



**10 - 13 September 2018
Politecnico di Milano**

**AULA DE DONATO
P. Leonardo da Vinci 32, Milano**

MONDAY September 10

17:00	Registration	Ice-breaker
18:00		
19:00		

TUESDAY September 11

08:30	Registration
08:50	Opening

09:10	Session 1: Laboratory techniques and findings (1/2) Chair: Jonathan Fannin	
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| 09:10 | Boucher M., Béguin R., Courivaud J.-R. | Development of a new apparatus for the Jet Erosion Test (JET) |
| 09:30 | Marot D., Bendahmane F., Le V.T. | New apparatus for assessing soil suffusion susceptibility under two flow directions |
| 09:50 | Sanvitale N., Bowman E.T., Black J.A. | Viewing fluid flow inside a granular medium |
| 10:10 | Aboul Hosn R., Benahmed N., Nguyen C.D., Sibille L., Philippe P., Chareyre B. | Effects of suffusion on the soil's mechanical behavior: experimental investigations |

10:30	coffee break
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11:00	Session 2: Laboratory techniques and findings (2/2) Chair: Didier Marot	
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| 11:00 | Silva I., Viklander P., Laue J. | Effects of void ratio and hydraulic gradient on permeability and suffusion of glacial till cores |
| 11:20 | Petrula L., Hala M., Říha J. | Uncertainty in determining the critical hydraulic gradient of uniform glass beads |
| 11:40 | Béguin R., Oxarango L., Sapin L., Garandet A., Viglino A., François E., Mora H., Martins F., Duchesne L., Albrecht D., Gutjahr I., Lépine L. | Experimental tests of soil reinforcement against erosion and liquefaction by microbially induced carbonate precipitation |
| 12:00 | Clara Saracho A., Haigh S. | Experimental optimisation of Microbially Induced Calcite Precipitation (MICP) for contact erosion control in earth dams |
| 12:20 | Fannin J., Slangen P., Ataii S., McClelland V., Hartford D. | Erosion of zoned earthfill dams by internal instability: laboratory testing for model development |
| 12:40 | Gaber F., Bowman E.T. | The role of seepage flow rate and deviatoric stress on the onset and progression of internal stability in a gap-graded soil |

13:00	lunch
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14:00	Session 3: From modelling to design criteria (1/2) Chair: Akihiro Takahashi	
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14:00	Seblany F., Vincens E., Picault C.	Simplified estimation of some main characteristics of pores and constrictions in granular materials
14:20	Rousseau Q., Sciarra G., Gelet R., Marot D.	Constitutive modeling of a suffusive soil with porosity-dependent plasticity
14:40	Wautier A., Nicot F., Bonelli S.	Suffusion impact on the mechanical stability of granular materials
15:00	Polanco-Boulware L., Rice J.	Reliability underseepage assessment of levees incorporating geomorphic features
15:20	Robbins B.A., Griffiths D.V.	Modelling of backward erosion piping in two- and three-dimensional domains

15:40	coffee break	
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17:00	social event in Milano centre	
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WEDNESDAY September 12		
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09:00	Session 4: From modelling to design criteria (2/2) Chair: Elisabeth Bowman	
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09:00	Scheuermann A., Harshani H.M.D., Galindo-Torres S.A.	Micro-scale flow conditions leading to the onset of erosion
09:20	Bouziiane A., Benamar A., Tahakourt A.	Finite element analysis of internal erosion effect on the stability of dikes
09:40	Federico F., Cesali C.	A numerical procedure to simulate particle migration at the contact between different materials in earthfill dams
10:00	Rotunno A.F., Callari C., Froio F.	A numerical approach for the analysis of piping erosion in hydraulic works
10:20	Takahashi A., Kokaki H., Maruyama T., Horikoshi K.	Numerical and physical modelling of seepage-induced internal erosion around holes on permeable sheet pile

10:40	coffee break	
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11:10	Session 5: Prevention measures and field assessment (1/2) Chair: Bryant Robbins	
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11:10	Akrami S., Bezuijen A., Rosenbrand E., Koelewijn A., Förster U., van Beek V.	Investigating the formation of a filter cake in column experiments, for combinations of filter and fine sand in a coarse sand barrier
11:30	Rosenbrand E., van Beek V., Koelewijn A., Akrami S., Förster U., van Gerven K., Bezuijen A.	Scale effects in coarse sand barrier experiments
11:50	Bezuijen A., van Beek V., Rosenbrand E., Akrami S.,	Analytical groundwater flow calculations for understanding the flow and erosion in a coarse sand barrier
12:10	Cesali C., Federico V.	Detection of permeability defects within dams and levees through coupled seepage and heat transport analyses
12:30	Garuti D., Jommi C., Rijkers R.	The role of the hydraulic resistance of the river bed and the time dependent response of the foundation layers in the assessment of water defences for macrostability and piping

12:50	lunch	
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14:00	Session 6: Prevention measures and field assessment (2/2) Chair: Vera Van Beek	
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| 14:00 | Bossi G., Bersan S., Cola S., Schenato L., De Polo F., Menegazzo C., Boaga J., Cassiani G., Donini F., Simonini P. | Multidisciplinary analysis and modelling of a river embankment affected by piping |
| 14:20 | Giliberti M.D., Cirincione M., Cavagni A. | Impact of the use of 3D modeling on sand boil risk management |
| 14:40 | Robbins B.A., Doughty M., Griffiths D.V. | A statistical framework for incorporating sand boil observations in levee risk analysis |
| 15:00 | Zhang L., Gelet R., Marot D., Smith M., Konrad J.-M. | Assessing suffusion susceptibility of soils by using construction data: application to a compacted till dam core |

15:20	coffee break	
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16:00	Session 7: Open issues for discussion and contribution Chair: Stéphane Bonelli	
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| 16:00 | Aielli S., Pavan S., Parodi S., Rosso A., Tanda M.G., Marchi M., Vezzoli G., Pantano A., Losa D., Sirtori M. | Collection and analysis of the reactivation data of the historical sand boils in the Po river levees |
| 16:20 | van Beek V., Wiersma A., van Egdome M., Robbins B.A. | Databases for backward erosion piping laboratory experiments and field observations |
| 16:40 | Bridle R. | An update on ICOLD Bulletin 164 on internal erosion |
| 17:00 | Říha J., Alhasan Z., Petruša L., Popielski P., Dąbska A., Fry J.J., Solski S.V., Perevoshchikova N.A., Landstorfer F. | Harmonization of terminology and definitions on soil deformation due to seepage |

17:20	Final discussion and Closure Stéphane Bonelli, Cristina Jommi, Donatella Sterpi	
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20:00	conference dinner	
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THURSDAY September 13		
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09:00	Technical visit	
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| 09:00 | Bus departure from Politecnico | |
| 10:30 | Visit along River Po (Revere - Mantova, Boretto - Reggio Emilia) | |
| 13:30 | Lunch | |
| 14:30 | Visit at the AIPO Laboratory for physical modelling, in Boretto (Reggio Emilia) | |
| 16:30 | Bus departure from AIPO Laboratories | |
| 18:00 | Approximate arrival time at Politecnico | |