



PROGRAM

(Final Version)

3rd IAHR Europe Congress

April 14 – 16, 2014

Department of Civil Engineering, Faculty of Engineering, University of
Porto, Portugal

Sponsors and Exhibitors



Águas do Porto, EM
<http://www.aguasdoporto.pt>



Porto de Leixões (Port of Leixões)
<http://www.apdl.pt>



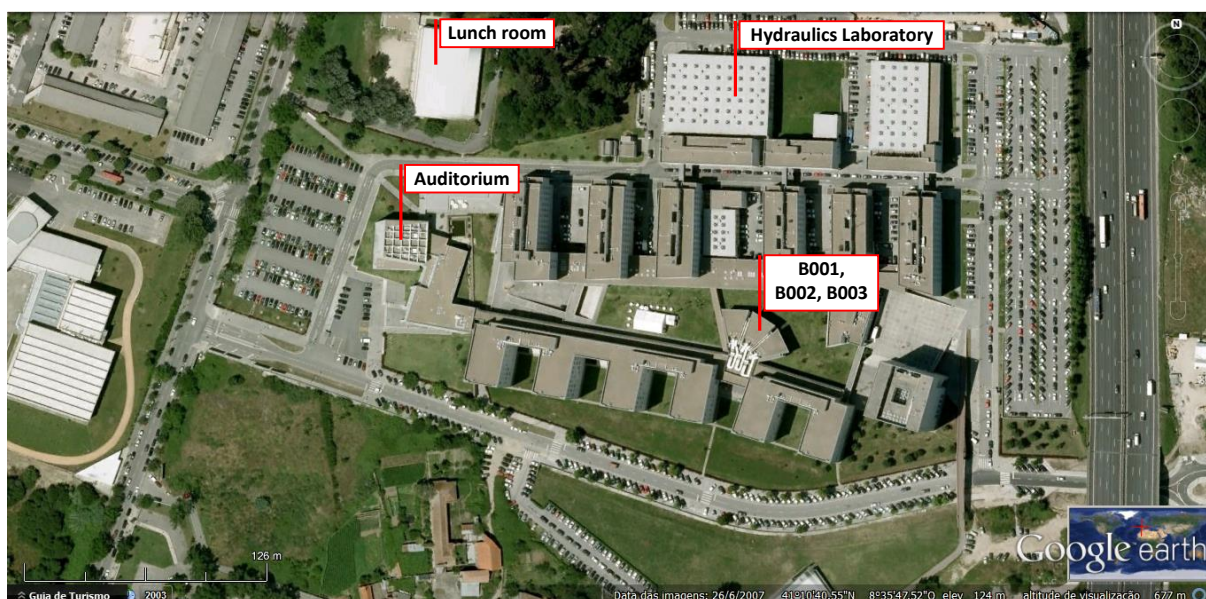
EDP - Energias de Portugal, S.A.
<http://www.edp.pt/>



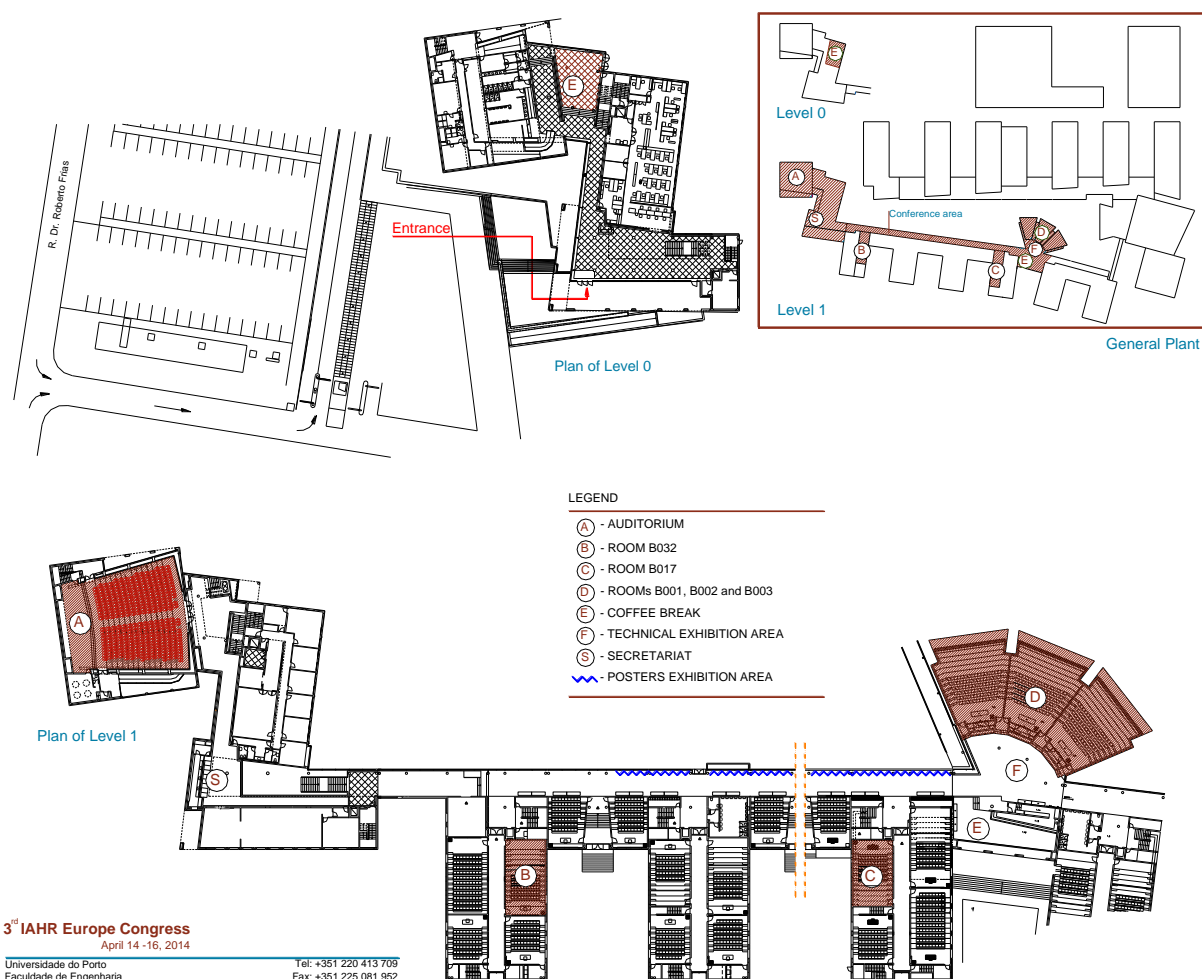
TenCate/Geosin
<http://www.tencate.com/>
<http://www.geosin.net/>

FEUP Overview

Location of the Congress's reference places.



Congress Plan



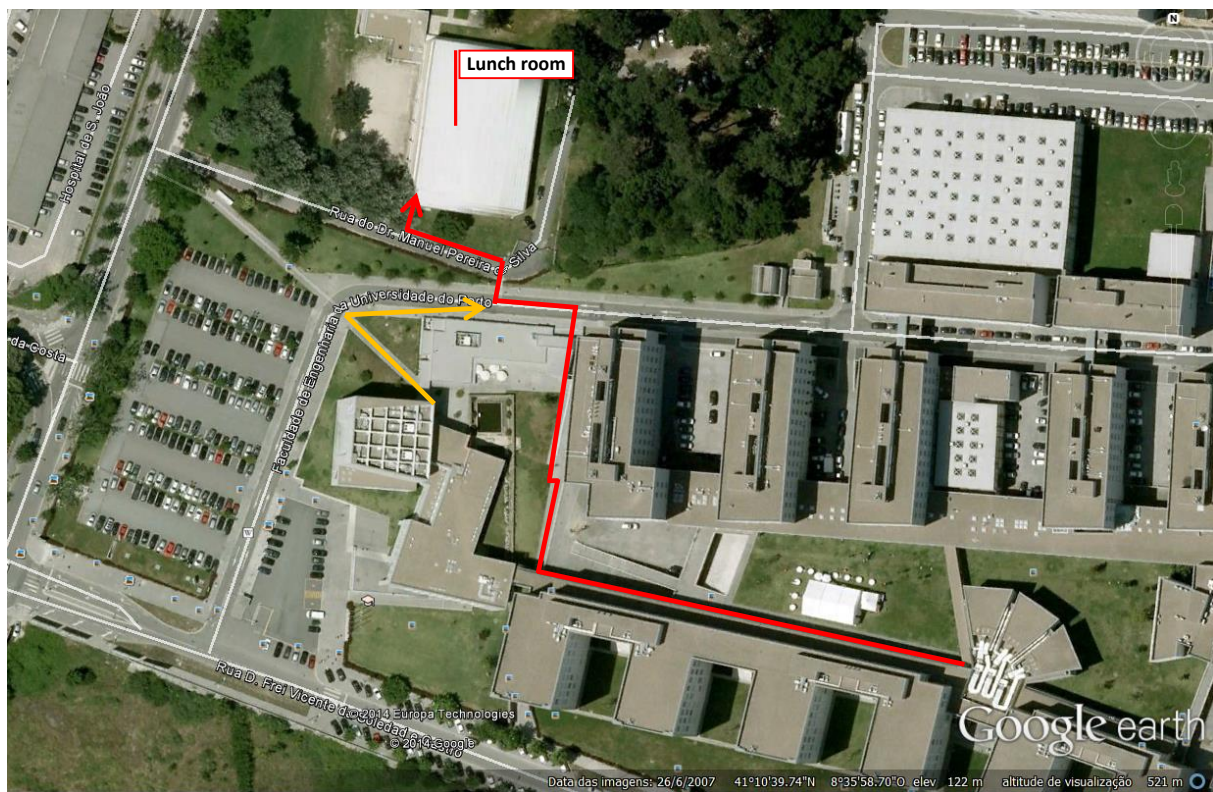
3rd IAHR Europe Congress
April 14 - 16, 2014

Universidade do Porto
Faculdade de Engenharia
Departamento de Engenharia Civil
R. Dr. Roberto Frias, 4200-465, Porto, Portugal

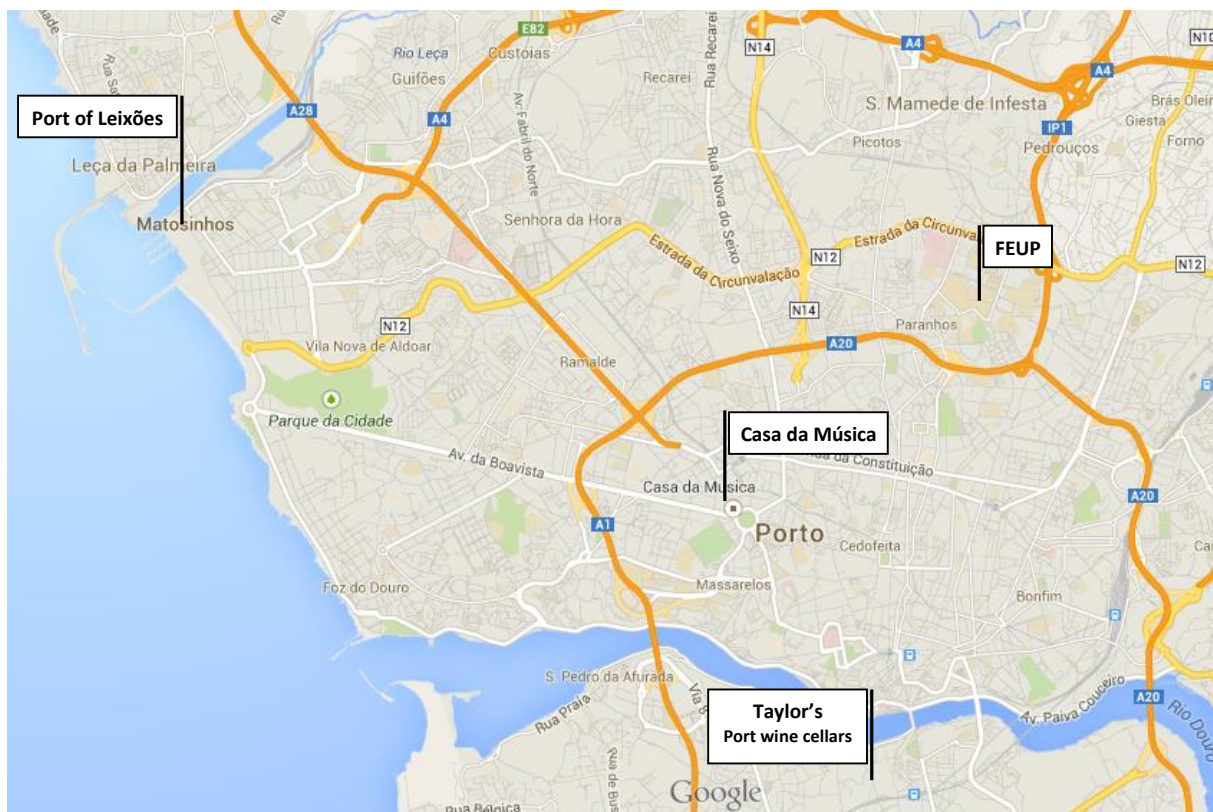
Tel: +351 220 413 709
Fax: +351 225 081 952
E-mail: iaehr2014@fe.up.pt
http://webpages.fe.up.pt/iaehr2014

Lunch Room:

About 250 m pathway from the congress area



Oporto Map



Port wine (vinho do Porto in Portuguese) is a Portuguese fortified wine produced exclusively in the Douro Valley in the northern provinces of Portugal, one of the world's oldest and most beautiful vineyard areas where wine has been made for at least two thousand years. One of the fascinating aspects of Port wine is its variety of different styles, each with its own characteristic flavours. Traditionally it is served towards the end of the meal with cheese, as a dessert wine or as an after dinner drink although some styles, like white Port, can also be enjoyed as an aperitif.

Established over three centuries ago in 1692, Taylor's is one of the oldest of the founding Port houses. Based in Oporto and the Douro Valley the company is closely involved in all stages of the production of its Ports, from the planting of the vineyard and the cultivation of the grapes to the making, ageing, blending and bottling of the wines.

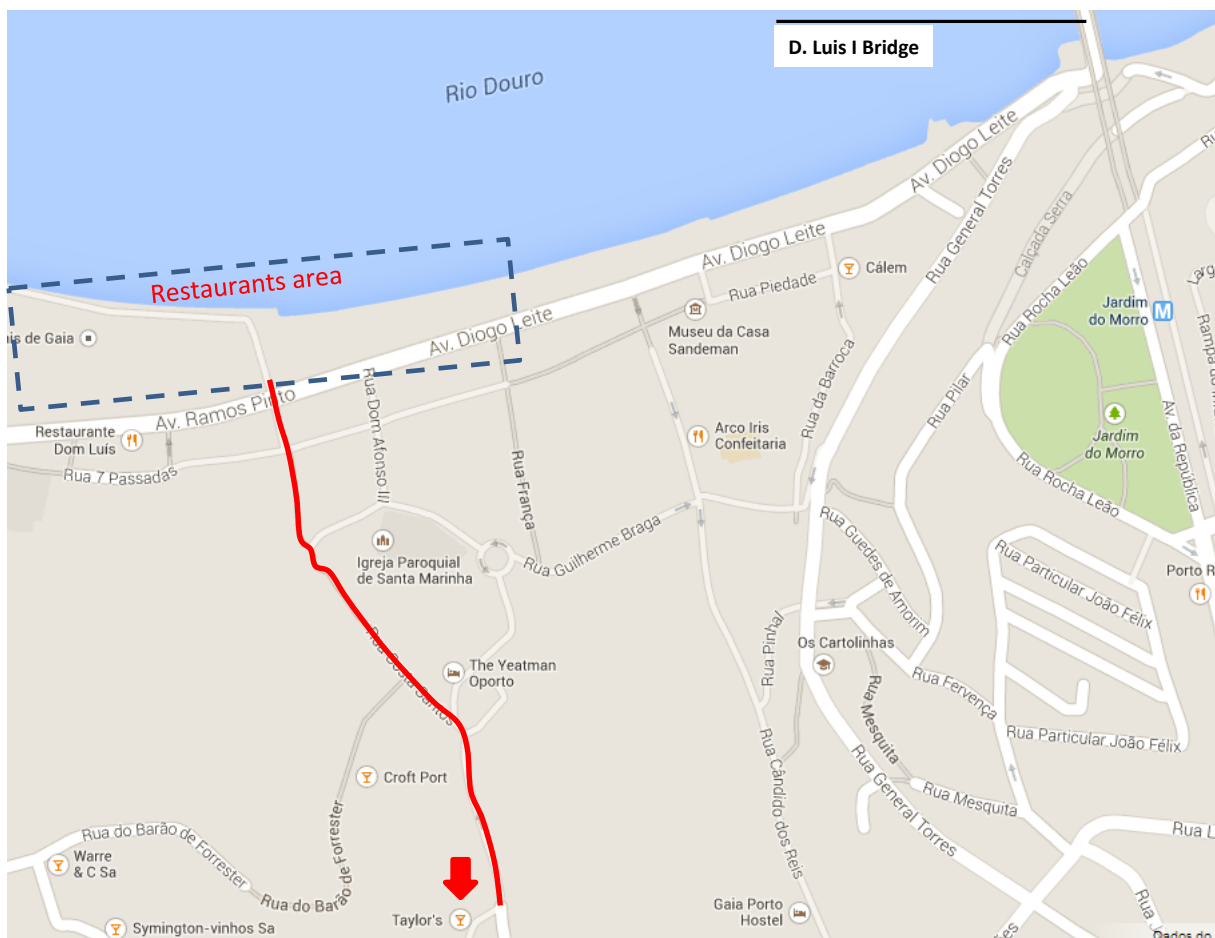


More information may be found at: <http://taylor.pt/en/>

Location: Taylor's Port, Rua do Choupelo nº 250, 4400-088 Vila Nova de Gaia, Portugal,

GPS Coordinates: 41°08'03.44"N, 08°36'52.20"W

How to get there: By bus – some buses were booked to take you there (or consult the Taylor's website).



Casa da Música (English: House of Music)

Casa da Música was conceived to mark 2001, the year in which Porto was Cultural Capital of Europe, and it is the first new building in Portugal to be entirely dedicated to music - to the presentation and public enjoyment of music, to music education and to the creation of music. It was designed by the Dutch architect Rem Koolhaas with Office for Metropolitan Architecture and Arup-AFA. Casa da Música opened its doors to the public on April 15th, 2005, and it houses the cultural institution of the same name with its three orchestras: Orquestra Nacional do Porto, Orquestra Barroca and Remix Ensemble.

Casa da Música was planned as a home for all types of music. Underlying it is an innovative and wide-ranging cultural project, which aims to make an exciting contribution to the national and international music scene, as an arena for all types of musical events - from classical music to jazz, from fado to electronic music, from great international productions to more experimental projects.



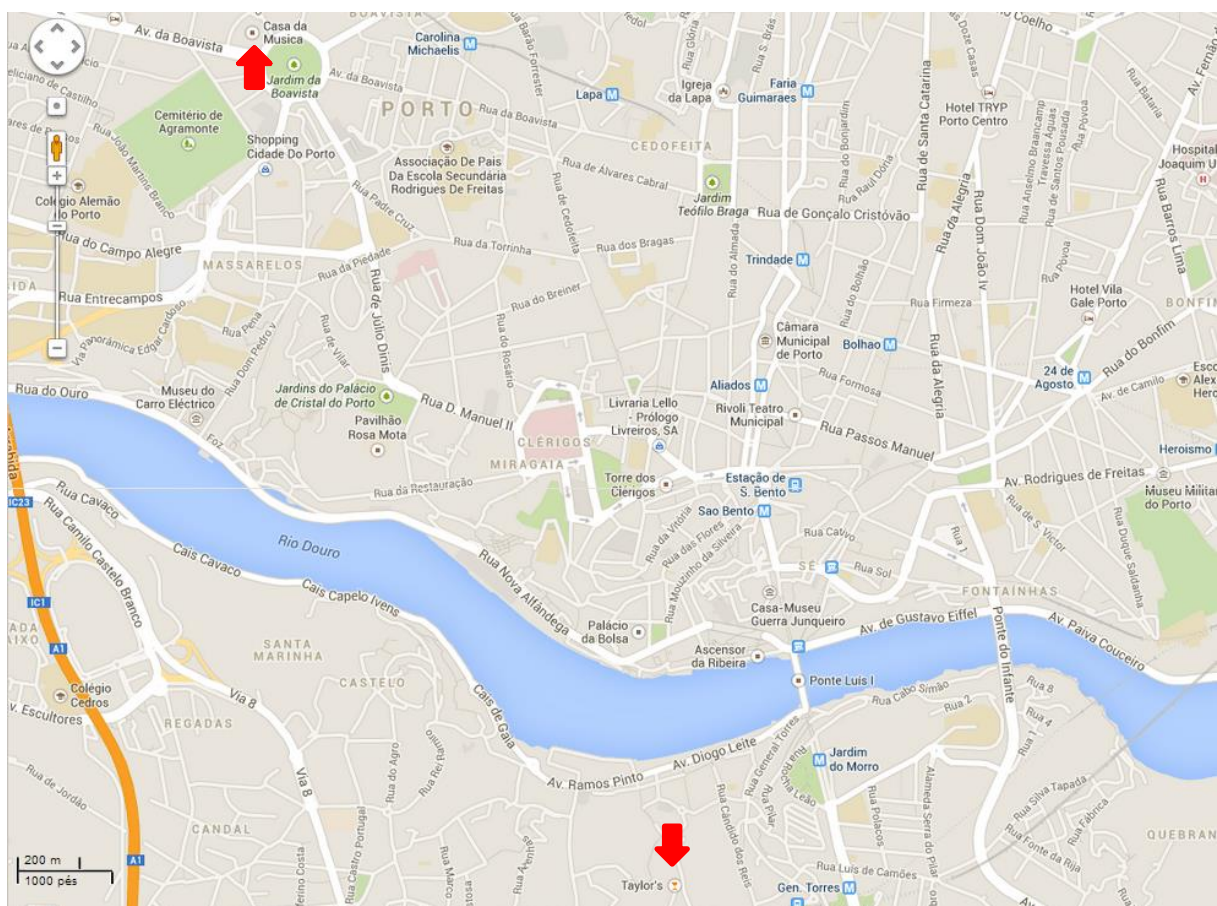
More information may be found at:

Casa da Música: <http://www.casadamusica.com/>

Location: Av. da Boavista, 604-610, 4149-071 Porto, Portugal

GPS Coordinates: 41°09'30.01"N, 08°37'50.63"W

How to get there: please see *Casa da Música* website



Port of Leixões

The **Port of Leixões** is situated in the north of Portugal, in the north-west of the Iberian Peninsula, about 2½ miles to the north of the mouth of the River Douro. The port is surrounded by the cities of Leça da Palmeira, on the North, and Matosinhos, on the South, and has 5 km of quays, 55 ha of embankments, 120 ha of wet area. Representing 25% of the Portuguese foreign trade and handling 15 million tons of commodities a year, the Port of Leixões is one of the most competitive and versatile multi-purpose ports in the country. Around 3.000 vessels a year come through Leixões, carrying all sorts of goods: textiles, granites, wines, timber, vehicles, cereals, containers, scrap metal, iron and steel, alcohol, schnapps, sugar, oil, molasses, petroleum products, and even passengers from Cruise Liners.

The new Cruise Terminal is in operation since April 2011, has 340 m of quay length, depths of -10 m (CD) and may be used by ships of up to 300 m overall length. The central building of the complex will include a passenger station, spaces dedicated to research in sea related topics, among others. The construction of the main building is progressing and is expected to be completed by the second half of 2014.



Crestuma-Lever Dam

Crestuma-Lever dam is located only a few kilometers from the city of Porto and is in operation since 1985. It is the further downstream dam in River Douro and has an installed capacity of 117 MW. This run-of-river dam is of the movable type, 470 m long and constituted by nine pillars, each measuring 25.5 m in height, which support eight discharging sluices and a navigation lock next to the left bank of the river. The maximum head is about 14 m.



Venda Nova III

Venda Nova dam is located in the river Rabagão, in the municipality of Vieira do Minho, Portugal. The dam upgrading under construction includes an additional underground powerhouse, equipped with two reversible units, and an hydraulic circuit 4.5 km long. The two reversible and variable speed units have 380MW (rated power in turbine mode).

In early 2015, Venda Nova III will be connected to the grid, becoming Portugal's largest hydroelectric power station. This project represents an investment of about 350 M€ and takes advantage of two existing reservoirs, created by the Venda Nova and Salomonde dams, and a 420 m head over an extension of 4500 m.



INSTRUCTIONS FOR PREPARING YOUR PRESENTATION

Please read these instructions carefully to optimize the impact of your presentation:

- The time slot for each presentation is **15 minutes** and the LOC will recommend a **12-min talk** with the remaining time for questions. The session chairs will be instructed to strictly adhere to the allotted time to ensure the parallel sessions are truly parallel;
- A **12-min presentation** is a challenging format, so make sure you prepare and rehearse your talk, and focus on your key points and take-home message;
- Presentations will be done on **Windows 7** computers with **Microsoft Office 2010** (PowerPoint). Please make sure your presentation is compatible with this platform;
- Given the very short changeover time between presentations, the LOC cannot allow presenters to use their own laptop;
- You must upload your presentation on the computer in the room you are presenting on the day of your talk, but well before your session. There will be someone present in every presentation room throughout the day to assist you with this process.

INSTRUCTIONS FOR PREPARING YOUR POSTER

Please read and carefully follow these instructions when preparing your poster:

- To maximize the impact of your poster the LOC prepared for you a **poster layout template**. Please be sure to strictly follow the template guidelines.
- Posters must be produced using **standard A0 portrait format** (841 x 1189 mm or 33.1 x 46.8 inches). Note that A0 posters in **landscape** format **CANNOT** be accommodated;
- Posters will be affixed in the congress main corridor (see congress plan) in order to maximize the impact of your work. Poster mounting should be done preferably on **Sunday the 13th of April**, or by Monday, April 14th at the latest;
- The planned poster session is scheduled to **Monday, April 14th**, between **14:00-14:30**. The author(s) must be prepared to present, discuss, and answer questions during the planned poster session.
- Posters should remain in exhibition throughout the full duration of the congress.

Wi-Fi access

To access to the network from a computer running Windows:

- Click on the network connections icon that is available on the inferior right side of the screen;
- Select the **"feup.conferencias"** options and press **"Connect"**;
- Next, open an internet browser (IE, Mozilla, Chrome, etc.). And if a message appears on the screen, you will have to select the **"Proceed to website"** option;
- Click on **"login"** and enter the following credentials,

Login: [iahrcongress](#)

Password: [feupporto](#)

3rd IAHR Europe Congress - April 14 – 16, 2014

TECHNICAL PROGRAM

Sunday, April 13th, 2014

- 16:00 – 17:00** Registration
- 17:00 – 18:00** Welcome Drink | Students' Musical Moment
Place: FEUP (area E – please consult the congress map)

Monday, April 14th, 2014

- 08:00 – 09:00** Registration
- 09:00 – 09:30** Opening Ceremony
Room: Auditorium
Chair: Aronne Armanini, A. Betâmio de Almeida and F. Veloso Gomes
- Sebastião Feye de Azevedo, Dean of the Faculty of Engineering of the University of Porto
Aronne Armanini, IAHR Europe Division Chair
António Betâmio de Almeida, Local Organizing Committee Chair
Fernando Veloso Gomes, Local Organizing Committee Chair
Roger Falconner, IAHR President
António Abel Henriques, Civil Engineering Department of FEUP
- 09:45 – 11:00** Keynote Lectures 1&2 and IAHR 2015 Congress
Room: Auditorium
Chair: António Betâmio de Almeida and Fernando Veloso Gomes
- 09:50 – 10:20** *Water: the challenge of sustainability*
Francisco Nunes Correia
- 10:20 – 10:50** *Mitigation of climate change – the case of Rio de Janeiro. Improving Climate Resilience*
Suzana Kahn Ribeiro
- 10:50 – 11:00** *Presentation of the IAHR 2015 Congress*
Arthur E. Mynett, IAHR Vice President /Chair LOC WC 2015
- 11:00 – 11:30** Coffee-Break
- 11:30 – 13:00** Journal of Applied Water Engineering and Research (JAWER) Session (1)
Room: B032
Chair: Teodoro Estrela
Presentation: 12 min | Q&A: 3 min
- 11:30 – 12:15** Introduction to the joint IAHR-WCCE initiative
Roger Falconer, IAHR President
- JAWER DEBATE: Putting Science into Practice**
Teodoro Estrela, JAWER Deputy Editor in Chief
- 12:15 – 12:30** Characterizing wave breaking on rubble mound breakwaters on steep bottom slopes (Page. 64)
M.P. Herrera, J. Molines, V. Pardo, M.E. Gómez-Martán J.A. González-Escrivá
and J.R. Medina

12:30 – 12:45	An experimental study of an oscillating water column with different bottom configuration <u>V. Sundar</u> , S.A. Sannasiraj, John Ashlin and B. Jegatheeswaran	(Page. 96)
12:45 – 13:00	Refinements to turbine representation in modelling the Severn barrage <u>Samuel Bray</u> , Reza Ahmadian and Roger A. Falconer	(Page. 195)
11:30 – 13:00	Wave-Structure Interaction Room: B001 Chair: Peter Troch Presentation: 12 min Q&A: 3 min	
11:30 – 11:45	Scour around marine foundations in layered sediments: a mathematical modelling approach <u>Tiago Ferradosa</u> , Francisco Taveira Pinto, Bruno Oliveira, Richard Simons and Kate Porter	(Page. 90)
11:45 – 12:00	Full-scale wave overtopping resiliency tests of grass established on sandy soils <u>Christopher Thornton</u> , Steven Hughes and Jeffrey Beasley	(Page. 50)
12:00 – 12:15	Analysis of the performance of swash in harbour domains <u>Joan Alabart</u> , Agustín Sánchez-Arcilla and Gerbrant Van Vledder	(Page. 53)
12:15 – 12:30	Port breakwater development in Spain. The last fifteen years <u>R. Gutierrez-Serret</u> , J.M.Grassa, and J.I. Grau	(Page. 111)
12:30 – 12:45	Numerical modelling of free surface flow through porous structures with openFOAM <u>Pablo Higuera</u> , Javier L. Lara and Iñigo J. Losada	(Page. 97)
11:30 – 13:00	Hydraulic Structures I Room: B002 Chair: Anton J. Schleiss Presentation: 12 min Q&A: 3 min	
11:30 – 11:45	Hydraulics of circular bottom intake orifices <u>Mustafa Gogus</u> and Muhammed Bulut	(Page. 130)
11:45 – 12:00	Experimental investigation of beyhan 1 dam and hydroelectric power plant water intake structures <u>Mustafa Gogus</u> , A.Burcu Altan-Sakarya, Ismail Aydin, Mete Koken, Cunezt Yavuz, Ali Ersin Dincer and Kutay Yilmaz	(Page. 138)
12:00 – 12:15	Experimental and numerical study of water intakes: case study of the Foz tua hydropower plant <u>Inês Meireles</u> , Soraia Silva, Teresa Viseu and Vitor Sousa	(Page. 188)
12:15 – 12:30	Constructing a correlation between flow resistance of circular corrugated pipes and geometric parameters using CFD methods <u>Saeed Vazifehkhah</u> , Kenan Kaya, Alilhsan Koca and Zafer Gemici	(Page. 12)
12:30 – 12:45	Airflow computational in partially filled conduits using CFD <u>Sarai Diaz</u> and Javier Gonzalez	(Page. 152)
11:30 – 13:00	Climate Change and Eco-Hydrology Room: B003 Chair: Peter Goodwin Presentation: 12 min Q&A: 3 min	
11:30 – 11:45	Modeling the influence of the climate change on the vegetation pattern variation using a cellular automata model <u>Domenico Caracciolo</u> , Erkan Istanbuluoglu and Leonardo V. Noto	(Page. 18)

11:45 – 12:00	Thermodynamics of hydrologic systems explains vegetation patterns in river basins <u>Manuel del Jesus</u> , Romano Foti, Andrea Rinaldo and Ignacio Rodriguez-Iturbe	(Page. 34)
12:00 – 12:15	Climate-proofing of large reservoirs in Belgium by the development of enhanced operation rules <u>Martin Bruwier</u> , Benjamin Dewals, Sébastien Erpicum, Michel Piroton and Pierre Archambeau	(Page. 203)
12:15 – 12:30	Modeling the shrub encroachment in the northern chihuahuan desert grasslands with a cellular automata model <u>Domenico Caracciolo</u> , Erkan Istanbuluoglu and Leonardo V. Noto	(Page. 149)
12:30 – 12:45	The importance of mulching on soil and water dynamics: laboratory experiments under simulated rainfall <u>João R.C.B. Abrantes</u> , A.A.A. Montenegro, V.P. Silva Júnior and J.L.M.P. de Lima	(Page. 41)
13:00 – 14:00	Lunch	
14:00 – 14:30	Poster Session (2 minutes presentation for evaluation) Chair: Rui Aleixo	
14:30 – 16:00	Journal of Applied Water Engineering and Research (JAWER) Session (2) Room: B032 Chair: Teodoro Estrela Presentation: 12 min Q&A: 3 min	
14:30 – 14:45	Impact of different sources of uncertainty on the free surface profile in a natural river in flood conditions. An approach based on the Monte Carlo simulation technique <u>Maria Manuela Portela</u> , António Betâmio de Almeida and Ana Isabel Oliveira	(Page. 216)
14:45 – 15:00	Influence of hydraulic resistance on flow features in an open channel confluence <u>S. Creëlle</u> , T. de Mulder, L. Schindfessel and T. Van Oyen	(Page. 189)
15:00 – 15:15	Hydrodynamics of flow in the vicinity of wall-mounted cylinder with fitted collar <u>O. Birjukova</u> , P. Sanches, R.M.L. Ferreira and A.H. Cardoso	(Page. 23)
15:15 – 15:30	Steel-lined pressure tunnels and shafts in anisotropic rock <u>Alexandre J. Pachoud</u> and Anton J. Schleiss	(Page. 141)
15:30 – 15:45	Comparison of piano key weir discharge coefficients from experimental and numerical models <u>Mario Oertel</u> and Blake P. Tullis	(Page. 151)
14:30 – 16:00	Coastal Morphological Numerical Modelling Room: B001 Chair: Javier L. Lara Presentation: 12 min Q&A: 3 min	
14:30 – 14:45	Numerical analysis of groundwater in a drained beach <u>Alessandra Saponieri</u> and Leonardo Damiani	(Page. 79)
14:45 – 15:00	Numerical modelling of the erosion phenomena on nice shoreface using TELEMAC system Rémi Dumasdelage, Olivier Delestre, Didier Clamond, Arnaud Bonnin, Michaël Moretti, Patrick Ceruti and <u>Philippe Goubesville</u>	(Page. 108)
15:00 – 15:15	Production of regional shingle sediment budgets from beach monitoring data in southeast England Alec Dane, Jonathan Clarke and Uwe Dornbusch	(Page. 61)
15:15 – 15:30	Modelling sediment resuspension caused by navigation, waves and currents (gulf of Trieste, northern Adriatic) <u>Dušan Žagar</u> , Vanja Ramšak, Maja Jeromel, Marko Perkovič, Matjaž Ličer, and Vlado Malačič	(Page. 86)

15:30 – 15:45	Longshore transport at shingle beaches Roberto Tomasicchio and Felice D'Alessandro	(Page. 105)
14:30 – 16:00	River Modelling and Engineering Room: B002 Chair: Ana M. Ferreira da Silva Presentation: 12 min Q&A: 3 min	
14:30 – 14:45	Numerical modeling of compound channel flows <u>E. Awad</u>	(Page. 147)
14:45 – 15:00	Flow structure around two rows of cylindrical rods in floodplain of a compound channel Alireza Keshavarzi and <u>James Ball</u>	(Page. 24)
15:00 – 15:15	Velocity measurements in compound open channel with pile permeable groynes <u>Hassan Safi H. Ahmed</u> , Mona M. Mostafa, Gamal Abozied Abelraheem, Nashaat Abdllah Ali and Akihiro Tominaga	(Page. 21)
15:15 – 15:30	Numerical 3D simulation for groin flow characteristics upstream the gauge Hattingen at river Ruhr Jan Balmes and <u>Mario Oertel</u>	(Page. 155)
15:30 – 15:45	John Fisher Kennedy's contributions to the advancement of river engineering <u>Robert Ettema</u>	(Page. 196)
14:30 – 16:00	Environmental Hydraulics: Water Quality I Room: B003 Chair: James Ball Presentation: 12 min Q&A: 3 min	
14:30 – 14:45	Mathematical modeling of the dispersion-diffusion of momentum and solutes in channel bends <u>Valerio Caleffi</u> and Alessandro Valiani	(Page. 126)
14:45 – 15:00	Multiphase CFD modeling of nearfield fate of sediment plumes <u>Sina Saremi</u> and Jacob Hjelmager Jensen	(Page. 127)
15:00 – 15:15	Hydraulic aspects of a field experiment on the influence of temperature increase on a manipulated stream ecosystem <u>J.L.M.P. de Lima</u> and C. Canhoto	(Page. 14)
15:15 – 15:30	Stream diurnal profiles of dissolved oxygen - case studies <u>A. Rajwa</u> , P.M. Rowiński, R.J. Bialik and M. Karpiński	(Page. 32)
15:30 – 15:45	Predicting bacteria movement in rivers - a computational tool based on physical experiments on the fate and transport of bacteria <u>Kordula Schwarzälder</u> , Minh Duc Bui and Peter Rutschmann	(Page. 38)
16:00 – 16:30	Coffee-Break	
16:30 – 18:00	Coastal and Tidal Extremes Room: B032 Chair: Valeri Penchev Presentation: 12 min Q&A: 3 min	
16:30 – 16:45	Influence of circulation weather types on the tide levels along the Portuguese coast <u>P. Pinotes</u> , M.A.V.C. Araújo, A. Trigo-Teixeira and I.F. Trigo	(Page. 73)
16:45 – 17:00	Simulation of a storm surge event in the Tagus estuary J. Rolim, <u>M.A.V.C. Araújo</u> and A. Trigo-Teixeira	(Page. 91)

17:00 – 17:15	A tsunami in Lisbon - assessment of critical areas D. Conde, M.J. Telhado, C. Antunes and <u>R.M.L. Ferreira</u>	(Page. 94)
17:15 – 17:30	From long wave to short wave evolution <u>Rodney J. Sobey</u>	(Page. 51)
17:30 – 17:45	Influence of initial boundary conditions on undular tidal bores L. David, B. Lebon, L. Chatellier and D. Calluau	(Page. 60)
16:30 – 18:00	Hydraulic Structures II Room: B001 Chair: Elsa Carvalho Presentation: 12 min Q&A: 3 min	
16:30 – 16:45	Salamonde II repowering project: natural flood protection of the outlet structure Vitor Ribeiro, Adriano Oliveira, Sílvia Amaral, José Falcão de Melo and João Nuno Fernandes	(Page. 156)
16:45 – 17:00	Complementary spillway of Salamonde dam: physical and 3D numerical modelling <u>Miguel R. Silva</u> , Lúcia T. Couto and António N. Pinheiro	(Page. 172)
17:00 – 17:15	River bed protection corrective measures downstream of a movable dam founded in a deep alluvia. The case of Crestuma-Lever dam, in Douro river <u>José Dias da Silva</u> , José Melo, Irene Fernandes, Laura Caldeira and Luís Mendonça	(Page. 142)
17:15 – 17:30	Scour analysis downstream of Paute-Cardenillo dam <u>Luis G. Castillo</u> and José M. Carrillo	(Page. 162)
17:30 – 17:45	Scour analysis downstream a converging stepped spillway equipped with a ski jump bucket <u>N. Figueiredo</u> , E. Carvalho and F. Taveira Pinto	(Page. 185)
16:30 – 18:00	Risk Management of Floods and Draughts Room: B002 Chair: J. Ferreira Lemos Presentation: 12 min Q&A: 3 min	
16:30 – 16:45	Flood mapping at river Tagus: A methodology based on mathematical modelling and SAR imaging <u>R.B. Canelas</u> , S. Heleno, R. Pestana and R.M.L. Ferreira	(Page. 213)
16:45 – 17:00	Methodology for flood resilience index Jelena Batika and <u>Philippe Gourbesville</u>	(Page. 215)
17:00 – 17:15	Decision support system for flood forecasting in the Ebro and Guadalquivir river basins E. García, A. Moya, A. Andrés, A. Castiella, E. Martínez and E. García	(Page. 209)
17:15 – 17:30	Drought risk and climate change impacts on Querença-Silves aquifer and Odelouca Watershed (Algarve - PT) <u>M.E. Novo</u> , M.M. Oliveira and L. Oliveira	(Page. 16)
17:30 – 17:45	Global sea surface temperature as drought predictor <u>Manuel del Jesus</u> , Justin Sheffield, Fernando Méndez, Iñigo Losada and Antonio Espejo	(Page. 214)
16:30 – 18:00	Water Pressure Systems Room: B003 Chair: Massimo Greco Presentation: 12 min Q&A: 3 min	
16:30 – 16:45	Hydraulic transients in pumping systems with horizontal pipes <u>João Delgado</u> , Dídia I.C. Covas and António Betâmio de Almeida	(Page. 143)

16:45 – 17:00	Experimental investigation into the rapid reserve generating capability of Francis-type turbines Dean R. Giosio, Alan D. Henderson, Jessica M. Walker, Paul A. Brandner and Jane E. Sargison	(Page. 153)
17:00 – 17:15	Determination of the quality of water hammer software using lab and field measurements <u>Sam van der Zwan</u> , Michiel Tukker and François Clemens	(Page. 167)
17:15 – 17:30	Characteristics of air-water interface of air pockets in a conduit Chang Lin, Chia Hsun Lu, Ting Liu and James Yang	(Page. 178)
17:30 – 17:45	Velocity distribution in a pressurized pipe flow using CFD: mesh independence analysis <u>Nuno M.C. Martins</u> , Nelson J.G. Carrião, Dídia I.C. Covas and Helena M. Ramos	(Page. 145)
16:30 – 18:00	Young Professionals Workshop Room: B017 Chair: Anton J. Schleiss Presentation: 12 min Q&A: 3 min	
16:30 – 16:45	Welcome IAHR President <u>Roger Faconner</u>	
16:45 – 17:15	How to Write a Good Paper <u>Vladimir Nikora</u>	
17:15 – 17:30	Presentation of Cardiff YP Network <u>Sam Bray</u> , Vice-President, IAHR Cardiff Young Professionals Network, UK	
17:30 – 17:45	Presentation of Universidad Politécnica de Cartagena Student Chapter <u>José María Carrillo</u> , President, IAHR Universidad Politécnica de Cartagena Student Chapter, Spain	
17:45 – 18:00	Presentation of University of Coimbra Student Chapter <u>Ricardo Martins</u> , President, IAHR University of Coimbra Student Chapter, Portugal Presentation of University of Porto YPN Representative <u>Tiago Ferradosa</u> , FEUP, Portugal	
18:30 – 20:00	Reception (Taylor's Port Wine Cellars)	

Tuesday, April 15th, 2014

08:30 – 10:00	International Journal of River Basin Management (JRBM) Session (1) Room: B032 Chair: Michaela Bray Presentation: 12 min Q&A: 3 min	
08:30 – 09:00	Introduction to JRBM Roger Falconer ⁽¹⁾ /Michaela Bray ⁽²⁾ <i>⁽¹⁾ IAHR President, ⁽²⁾ JRBM Editor in Chief</i>	
09:00 – 09:15	Analytical formulation for the aerated hydraulic jump and physical modelling comparison <u>Daniel Valero</u> , Omar Fullana, Rafael García-Bartual, Ignacio Andrés-Doménech, Francisco Vallés and Juan Marco	(Page. 129)
09:15 – 09:30	Influence of flow rate in the mean and fluctuating pressures of a stilling basin <u>N. Figueiredo</u> , E. Carvalho and F. Taveira Pinto	(Page. 184)
09:30 – 09:45	Hydropower dams in the lower zambezi river: water quality simulation of Boroma and Lupata reservoirs P.A. Diogo, A.C. Rodrigues, P. Colaço and A. Alves	(Page. 39)

09:45 – 10:00	Multivariate statistical analysis of flood variables by copulas: two Italian case studies Matteo Balistrocchi, Roberto Ranzi and Baldassare Bacchi	(Page. 204)
08:30 – 10:00	Numerical Wave Modelling Room: B001 Chair: Constantine Memos Presentation: 12 min Q&A: 3 min	
08:30 – 08:45	Hybridisation of a wave propagation model (SWASH) and a meshfree particle method (SPH) for real applications J.M. Domínguez, T. Suzuki, C. Altomare, A.J. Crespo and M. Gómez-Gesteira	(Page. 47)
08:45 – 09:00	SPH numerical and physical modeling of wave overtopping a porous breakwater Eric Didier, Diogo Neves , Paulo Teixeira, João Dias and Maria Graça Neves	(Page. 52)
09:00 – 09:15	A multi-resolution discontinuous Galerkin method for one dimensional shallow flow modeling Georges Kesserwani, Nils Gerhard, Siegfried Muller and Dilshad A. Haleem	(Page. 70)
09:15 – 09:30	2D-3D coupling of shallow water equations with Navier Stokes equations Florian Mintgen and Michael Manhart	(Page. 77)
09:30 – 09:45	On SPH modelling of surf zone turbulence under weak plungers Christos V. Makris , Constantine D. Memos, and Yannis N. Krestenitis	(Page. 85)
08:30 – 10:00	Surface and Groundwater Hydraulics and Hydrology Room: B002 Chair: Benjamin J. Dewals Presentation: 12 min Q&A: 3 min	
08:30 – 08:45	Applicability of common surface water simulation programs for urban flash floods Svenja Peterseim , Andreas Schlenkhoff and Sebastian Czickus	(Page. 120)
08:45 – 09:00	Impact of different sources of topographic information on hydraulic modelling of floods: application to the Johor river, Malaysia A. Md Ali , G. di Baldassarre and D.P. Solomatine	(Page. 199)
09:00 – 09:15	Implementation of a local timestep scheme to a regional scale flood inundation model Sam Jamieson, Grant Wright, Julien Lhomme and Ben Gouldby	(Page. 150)
09:15 – 09:30	Modeling periodic seepage face formation and water pressure distribution along a vertical boundary of an aquifer Seyed Mohammad Hossein Jazayeri Shoushtari , Peter Nielsen, Nick Cartwright and Pierre Perrochet	(Page. 125)
09:30 – 09:45	Completion/extension of available data based on dendrochronologies and stochastic evaluation of results Bruno Oliveira , Eduardo Vivas, Levi Brekke and Rodrigo Maia	(Page. 212)
08:30 – 10:00	Open-channel Flow: Experimental Techniques Room: B003 Chair: Jochen Aberle Presentation: 12 min Q&A: 3 min	
08:30 – 08:45	Stereoscopic piv measurements in turbid waters on natural beds Maxime Rouzès , Frédéric Moulin and Olivier Eiff	(Page. 20)
08:45 – 09:00	Velocity field measurements in tailings dam failure experiments using a combined piv-ptv approach R. Aleixo , Y. Ozeren, M. Altinakar and D. Wren	(Page. 177)

09:00 – 09:15	Failure by overtopping of earth dams. Quantification of the discharge hydrograph S. Amaral, R. Jónatas, A.M. Bento, J. Palma, T. Viseu, R. Cardoso and <u>R.M.L. Ferreira</u>	(Page. 182)
09:15 – 09:30	Development of a method using infrared thermography for shallow flow visualization and quantitative estimation of velocity <u>Rui P. de Lima</u> , Theodore G. Cleveland and Rita F. De Carvalho	(Page. 176)
09:30 – 09:45	Use of thermal tracers to characterize overland flow velocities <u>J.L.M.P. de Lima</u> and J.R.C.B. Abrantes	(Page. 124)
08:30 – 10:00	Drainage Systems and Sustainable Solutions Room: B017 Chair: Corrado Gissoni <i>Presentation: 12 min Q&A: 3 min</i>	
08:30 – 08:45	Water and energy nexus towards smart water grids: hydropower and irrigation solutions <u>Avin Dadfar</u> and Helena M. Ramos	(Page. 28)
08:45 – 09:00	Sediment transport through sustainable urban drainage systems: monitoring methods for long term, multiple event analysis <u>Deonie Allen</u> , Scott Arthur, Heather Haynes, Robert Ellam, Valerie Olive, Kevin Black and Jenny Mant	(Page. 139)
09:00 – 09:15	Numerical modelling of air-water flows in a vertical drop and a backdrops P.M.G. Beceiro, M.C. Almeida and J. Matos	(Page. 193)
09:15 – 09:30	Multi-criteria optimization towards cost-effectiveness solution for energy recovery in sustainable urban drainage systems (SUDS) Marion Huchet and Helena M. Ramos	(Page. 163)
09:30 – 09:45	Energy recovery for sustainable urban drainage systems (SUDS) Irene Samora, H.M. Ramos and Anton J. Schleiss	(Page. 169)
10:15 – 11:00	Keynote Lecture 3 Room: Auditorium Chair: Francisco Taveira Pinto <i>Coastal engineering challenges in a changing world</i> Steven A. Hughes	
11:00 – 11:30	Coffee-Break	
11:30 – 13:00	International Journal of River Basin Management – JRBM Session (2) Room: B032 Chair: Michaela Bray <i>Presentation: 12 min Q&A: 3 min</i>	
11:30 – 11:45	Transboundary water management and cooperation: priority issues in the Axios/Vardar river basin. Perspectives of common approach <u>Elpida Kolokytha</u> , Anastasia Tsavdaridou and Yannis Mylopoulos	(Page. 119)
11:45 – 12:00	Longitudinal development of compound channel flows João Nuno Fernandes, João Bento Leal and António Heleno Cardoso	(Page. 36)
12:00 – 12:15	A comparison of statistical and deterministic methods for predicting extreme floods in an alpine catchment <u>Fränz Zeimet</u> , Ramona G. Receanu, Anton J. Schleiss and Jean-Michel Fallot	(Page. 134)

12:15 – 12:30	Analysis of sedimentation and flushing into the reservoir Paute-Cardenillo <u>Luis G. Castillo</u> , Manuel A. Alvarez and José Maria Carrillo	(Page. 164)
12:30 – 12:45	Flood risk assessment and mitigation management plan E. Martínez, M.A. Arrabal, S. Gonzalez, C. Luengo, C. C. Lobera, J. Dominguez, P. Roldán, F. Casas and M. Rodríguez	(Page. 211)
11:30 – 13:00	Coastal Physical Modelling Room: B001 Chair: Paulo Rosa Santos Presentation: 12 min Q&A: 3 min	
11:30 – 11:45	Calibration of the large physical model of the port of Zeebrugge <u>Marc Willems</u> , Wael Hassan and Glen Heyvaert	(Page. 99)
11:45 – 12:00	Laboratory effects on measuring impact loads on rigid coastal structures Andrea Marzeddu, Xavier Gironella, Agustin Sánchez-Arcilla and James Sutherland	(Page. 59)
12:00 – 12:15	3D experimental investigation of wave reflection on a vertical seawall with wave return <u>Theodora Giantsi</u> , Agisilaos Papadopoulos and C.I.Moutzouris	(Page. 84)
12:15 – 12:30	Assessing the importance of the initial topography for large scale tests of beach profile response under erosive or accretive conditions <u>M. de la Torre</u> , M.I. Vousdoukas, S. Schimmels, H. Fernandez and T. Kirupakaramoorthy	(Page. 62)
12:30 – 12:45	PIV measurements of air bubble breakwater kinematics <u>Maciej Paprota</u>	(Page. 80)
11:30 – 13:00	Hydraulic Structures III Room: B002 Chair: Arturo Marcano Presentation: 12 min Q&A: 3 min	
11:30 – 11:45	Angled trashracks with streamwise bars S. Raynal, <u>L. Chatellier</u> , D. Courret, M. Larinier and L. David	(Page. 15)
11:45 – 12:00	Contraction under inclined and radial gates <u>Gilles Belaud</u> , Severine Tomas and Bruno Cheviron	(Page. 186)
12:00 – 12:15	Hydraulic performance of inlet controlled culverts in steep streams under sediment load Ida E. Gotvassli and <u>Jochen Aberle</u>	(Page. 165)
12:15 – 12:30	Experimentally-based analytical model for air entrainment in central jet dropshafts Angela Esposito, <u>Federico Dell’Orfano</u> , Guelfo Pulci Doria and Paola Gualtieri	(Page. 179)
12:30 – 12:45	A detailed measurement campaign of spatial velocity profiles in vertically submersible pumps <u>F.I.H. Verhaar</u> , A. de Fockert and S.A.A. Zwanenburg	(Page. 117)
11:30 – 13:00	Environmental Hydraulics: Water Quality II Room: B003 Chair: J. Pedroso de Lima Presentation: 12 min Q&A: 3 min	
11:30 – 11:45	Disinfection kinetics in CFD modelling of solute transport in contact tanks Athanasios Angeloudis, Thorsten Stoesser and <u>Roger Alexander Falconer</u>	(Page. 122)
11:45 – 12:00	Sensitivity of an escherichia coli transport model to the decay rate in a coastal basin Maria Bermudez, <u>Reza Ahmadian</u> , Bettina Bockelmann-Evans, Luis Cea and Jeronimo Puertas	(Page. 19)

12:00 – 12:15	Modelling quantified source specific microbial pollution from human sources during high flows Aisling Corkery, John O'Sullivan, Louise Deering, Katalin Demeter, Elisenda Ballesté, Bat Masterson, Wim Meijer, Gregory O'Hare	(Page. 27)
12:15 – 12:30	Management proposal for an intermittently closed coastal lagoon using a wave-driven seawater pump and a volume-salinity box model <u>S.P.R. Czitrom</u> , I. Penié and G. De la Lanza	(Page. 31)
12:30 – 12:45	Modelling the impact of urban floods in heavily polluted rivers: the case of Kampung Melayu in Jakarta <u>Diogo Costa</u> , Senthil Gurusamy, Paolo Burlando and Shie-Yui Liong	(Page. 159)
11:30 – 13:00	Urban Flooding, Flood Mitigation and Control Room: B017 Chair: Rui Ferreira Presentation: 12 min Q&A: 3 min	
11:30 – 11:45	Use of 3D classified topographic data with fullswof for high resolution simulation of a river flood event over a dense urban area Abily Morgan, Delestre Olivier, Amosse Laura, Bertrand Nathalie, Laguerre Christian, Dulut Claire-Marie and <u>Gourbesville Philippe</u>	(Page. 208)
11:45 – 12:00	Flash flood analysis in urban areas E. Martínez, S. Gonzalez, S. Cordero, M. Rodríguez and J. Dominguez	(Page. 210)
12:00 – 12:15	Water-filled tube constructions for the use in emergency flood control <u>Baerbel Koppe</u> , Armin Krebs and Karsten Daedler	(Page. 202)
12:15 – 12:30	Flood defence design parameters correlation influence on failure probability – case study of backward erosion piping <u>J.P. Aguilar López</u> , J.J. Warmink, R.M.J Schielen and S.J.M.H Hulscher	(Page. 205)
12:30 – 12:45	Hydraulic efficiency of street inlets <u>Andreas Schlenkhoff</u> and Svenja Peterseim	(Page. 121)
13:00 – 14:00	Lunch	
14:00 – 15:00	IAHR Europe Division Open Meeting – Room: B032 (Members)	
15:00 – 16:30	Workshop 1-I - <i>New Visions on Sediment Transport</i> Session I Room: B032 Convener: Aronne Armanini <i>Università degli Studi di Trento, Italy</i>	
15:00 – 15:25	Fluctuations of particle transport rates in graded-bed rivers or the quest for equilibrium? <u>Christophe Ancey</u> , Joris Heyman and Patricio Bohorquez	(Page. 221)
15:25 – 15:50	Hyperconcentrated flows on mobile bed <u>Aronne Armanini</u>	(Page. 222)
15:50 – 16:05	Interaction forces in submerged gravitational granular flows <u>Elena Nucci</u>	(Page. 223)
16:05 – 16:20	Bed morphological changes in river contractions <u>Giuseppe Oliveto</u> and Maria Cristina Marino	(Page. 225)
16:20 – 16:30	General discussion	

- 15:00 – 16:30 Workshop 2 - *Climate Change Impacts on Hydraulics and Water Resources***
Room: **B001**
Convener: **Roberto Ranzi**
Università degli Studi di Brescia, Italy
- 15:00 – 15:15 Long term statistics of river flow regime: climatic or anthropogenic changes?** (Page. 233)
Roberto Ranzi and Maximo Tomirotti
- 15:15 – 15:30 Sea level rise impact assessment of Alexandria shoreline, Egypt** (Page. 234)
Akram Soliman and Youssef Khairy
- 15:30 – 15:45 Agricultural development in Lake Koronia. The role of the water footprint of major crops in combating climate change** (Page. 237)
Elpida Kolokytha
- 15:45 – 16:00 Methodology for the development of climate change scenarios and climate inputs to run impacts models. Application to the Guadiana river basin** (Page. 238)
Vanessa Ramos, Eduardo Vivas, Levi Brekke and Rodrigo Maia
- 16:00 – 16:15 Climate change impacts on groundwater dependent coastal ecosystems: Melides case study** (Page. 239)
M.E. Novo, M.M. Oliveira, L. Oliveira and T. Martins
- 16:15 – 16:30 General discussion**
- 15:00 – 16:30 Workshop 3 - *Advanced Numerical Methods in Morphodynamics***
Room: **B002**
Convener: **Pilar Garcia-Navarro**
Universidad de Zaragoza, Spain
Presentation: 15 min | Q&A: 3 min
- 15:00 – 15:15 One-dimensional finite-volume modeling of the flow and morphological processes during the 1996 lake Ha!Ha! dyke break event** (Page. 243)
F. Franzini and S. Soares-Frazão
- 15:15 – 15:30 Development of novel Riemann solvers in hyperbolic systems of equations including source terms** (Page. 244)
J. Murillo and P. Garcia-Navarro
- 15:30 – 15:45 2DH shallow-water and morphology solver for strongly transient flows** (Page. 245)
R. B. Canelas and R.M.L. Ferreira
- 15:45 – 16:00 Debris flows at the interface between fixed and mobile bed conditions: the development of a “composite” Riemann problem and a possible approximated solver** (Page. 246)
D. Zugliani and G. Rosatti
- 16:00 – 16:15 2D numerical simulation of granular flow dynamics and validation with experimental data** (Page. 247)
C. Juez, A. Lacasta, D. Caviedes-Voullième, J. Murillo and P. García-Navarro
- 16:15 – 16:30 General discussion**
- 15:00 – 16:30 Workshop 4-I - *Hydrodynamics of Vegetated Flows: Turbulence, Flow resistance, Mixing, Sediment Transport***
Session I - Experimental studies
Room: **B003**
Convener: **Vladimir Nikora**
University of Aberdeen, United Kingdom
- 15:00 – 15:20 Experimental characterization of drag on arrays of rough cylinders** (Page. 251)
A.M. Ricardo, M. Martinho, P. Sanches, M.J. Franca and R.M.L. Ferreira

15:20 – 15:40	Drag and reconfiguration of trees: towing tank experiments with TLS based plant characterization <u>J. Jalonen</u> , J. Järvelä, J.-P. Virtanen, M. Vaaja, H. Hyypä	(Page. 252)
15:40 – 16:00	Scouring processes downstream of a rigid bed and effect of vegetation: experimental investigation in a laboratory flume <u>Donatella Termini</u>	(Page. 254)
16:00 – 16:30	Discussion: <i>Experimental studies of vegetated flows: Current state and perspectives.</i>	
15:00 – 16:30	Workshop 5-I - <i>Marine Energy</i> Session I - <i>Overview, Policy, Marine Energy Resource(s)</i> Room: B017 Convener: Martin Wosnik <i>Center for Ocean Renewable Energy, University of New Hampshire, USA</i>	
15:00 – 15:15	A strategic policy framework for promoting the marine energy sector <u>A. Vázquez</u> , S. Astariz and G. Iglesias	(Page. 261)
15:15 – 15:30	Potential wave energy along the coasts of Sicily (Italy) <u>C. Iuppa</u> , L. Cavallaro and E. Foti	(Page. 262)
15:30 – 15:45	Impact of wave energy exploitation in the Galician (NW Spain) wave climate <u>H. Fernandez</u> , R. Carballo, G. Iglesias and S. Schimmels	(Page. 263)
15:45 – 16:00	Wave energy potential along the coast of Santa Catarina (Brazil) Vincenzo Ferrante, Marcus Polette and Diego Vicinanza	(Page. 264)
16:00 – 16:15	The available power obtainable from tidal stream turbines from a flow around an idealised headland <u>Thomas A.A. Adcock</u>	(Page. 265)
16:15 – 16:30	General discussion	
16:30 – 17:00	Coffee-Break	
17:00 – 18:30	Workshop 1 -II - <i>New Visions on Sediment Transport</i> Session II Room: B032 Convener: Aronne Armanini <i>Università degli Studi di Trento, Italy</i>	
17:00 – 17:25	Models of river meanders <u>Stefano Lanzoni</u>	(Page. 226)
17:25 – 17:50	On the behaviour of rivers dominated by large-scale horizontal coherent structures <u>Ana Maria Ferreira da Silva</u>	(Page. 227)
17:50 – 18:05	Bed topography evolution in a discordant bed channel confluence <u>Sebastián Guillén</u> , Mário J. Franca, Anton J. Schleiss and António H. Cardoso	(Page. 228)
18:05 – 18:20	An experimental study of the turbulent events over a loose particle under supercritical flow conditions <u>Elsa Carvalho</u> , Rodrigo Maia and Rui Aleixo	(Page. 229)
18:20 – 18:30	General discussion	

- 17:00 – 18:30** **Workshop 6 - *Medium to Long-term Coastal Evolution***
Room: **B001**
Convener: **Marcel Stive and Joep Storms**
Technical University of Delft, The Netherlands
- 17:00 – 17:15** **The future of long term morphodynamics research** (Page. 273)
Marcel Stive
- 17:15 – 17:30** **Long term morphodynamics modelling of tidal systems** (Page. 273)
Mick van der Wegen
- 17:30 – 17:45** **The role of stratification in long term coastal evolution** (Page. 273)
Martijn Henriquez
- 17:45 – 18:00** **Scaling issues and uncertainty in long term morphodynamic modelling** (Page. 273)
Liang Li
- 18:00 – 18:30** **General discussion**
- 17:00 – 18:30** **Workshop 7 - *Advanced Pressure Transient Analysis***
Room: **B002**
Convener: **Helena Ramos and Dídía Covas**
Universidade de Lisboa, Instituto Superior Técnico, Portugal
- 17:00 – 17:15** **Intrusion effects in leaks due to transients** (Page. 277)
Amparo López-Jiménez, J. Jesús Mora-Rodrigues and Helena M. Ramos
- 17:15 – 17:30** **Two-phase gas-liquid experiences in fluid transients: hydraulic system behavior with entrapped air under rapid pressurization** (Page. 278)
Sandra Martins, Helena Ramos and A. Betâmio de Almeida
- 17:30 – 17:45** **Stress-strain analysis of a coiled copper pipe for inner pressure loads** (Page. 279)
David Ferras, Dídía Covas and Anton Schleiss
- 17:45 – 18:00** **Fluid structure interaction (FSI) in water supply systems** (Page. 281)
Mariana Simão, Jesus Mora and H.M. Ramos
- 18:00 – 18:15** **Transients Overview**
A. Betâmio de Almeida
- 18:15 – 18:30** **General discussion**
- 17:00 – 18:30** **Workshop 4 -II - *Hydrodynamics of Vegetated Flows: Turbulence, Flow resistance, Mixing, Sediment Transport***
Session II - *Analytical and numerical studies*
Room: **B003**
Convener: **Vladimir Nikora**
University of Aberdeen, United Kingdom
- 17:00 – 17:20** **Flow patterns in a partially vegetated large channel** (Page. 256)
Mouldi Ben Meftah, Francesca de Serio and Michele Mossa
- 17:20 – 17:40** **Numerical modelling of flow - vegetation interaction under oscillatory and unidirectional flow** (Page. 257)
Maria Maza, Javier L. Lara and Iñigo J. Losada
- 17:40 – 18:00** **Application of SAS turbulence model in flows through rigid submerged vegetation** (Page. 258)
G. Papadonikolaki and A.I. Stamou
- 18:00 – 18:30** **Discussion: *Analytical and numerical modeling of vegetated flows: Current state and perspectives.***

17:00 – 18:30 Workshop 5-II - *Marine Energy*

Session II - Technology

Room: **B017**

Convener: **Martin Wosnik**

Center for Ocean Renewable Energy, University of New Hampshire, USA

- 17:00 – 17:15** **Evaluation and comparison of the levelised costs of tidal, wave and offshore wind energy** (Page. 266)
S. Astariz, A. Vásquez and G. Iglesias
- 17:15 – 17:30** **CECO wave energy converter: concept and physical model tests** (Page. 267)
Paulo Rosa-Santos, Francisco Taveira-Pinto, Luis Teixeira and José Ribeiro
- 17:30 – 17:45** **Productivity analysis of the full scale ISWEC prototype: the test case of Pantelleria island** (Page. 268)
Andrea Cagninei, Mattia Raffero, Ermanno Giorcelli, Giuliana Mattiazzo and Davide Poggi
- 17:45 – 18:00** **An overview of the Wecwakes project: physical modeling of an array of 25 wave energy converters** (Page. 269)
Peter Troch, Vasiliki Stratigaki, Tim Stallard, David Forehand, Matt Folley, Jens Peter Kofoed, Michel Benoit, Aurélien Babarit, Marc Vantorre and Jens Kirkegaard
- 18:00 – 18:15** **Performance prediction of a tidal in-stream current energy converter** (Page.270)
Philipp Daus, Frank Biskup, Andreas Ruopp, and Raphael Arlitt
- 18:15 – 18:30** *General discussion*

20:00 – 23:00 Congress Diner (Casa da Música)

Wednesday, April 16th, 2014

08:30 – 10:00 Numerical Modelling and Sediment Transport

Room: **B032**

Chair: **A. Trigo Teixeira**

Presentation: 12 min | Q&A: 3 min

- 08:30 – 08:45** **Implicit time step relaxation of bidimensional shallow water finite volume models in unstructured meshes: application to estuarine flow** (Page. 72)
Jónatan Mulet Martí and Francisco Alcrudo Sánchez
- 08:45 – 09:00** **Numerical modelling of wind waves on a river flood plain** (Page. 109)
Antoine Joly, Elodie Gagnaire-Renou, Michel Benoit and Damien Violeau
- 09:00 – 09:15** **Experimental verification of a new 3d numerical model involving wave transformation through flushing culverts** (Page. 81)
Michalis K. Chondros, V. Katsardi, V. Tsoukala and K. Belibassakis
- 09:15 – 09:30** **Particle motions in oscillatory flow over a smooth bed** (Page. 68)
Karsten Lindegård Jensen, B. Mutlu Sumer, Jørgen Fredsøe and Jacob Hjelmgager Jensen
- 09:30 – 09:45** **Morphometric analysis of a sandy dune and breach scenarios: a 3D GIS based approach** (Page. 63)
Jorge Almeida, Fernando Veloso-Gomes and Claudino Cardoso

08:30 – 10:00	River Morphology Room: B001 Chair: Robert Ettema Presentation: 12 min Q&A: 3 min	
08:30 – 08:45	Modelling dynamic bed form roughness for operational flood forecasting <u>J.J. Warmink</u> and Ralph M.J. Schielen	(Page. 200)
08:45 – 09:00	Cross-sectional flow and bed shear stress: application of the depth-averaged momentum equation in a meandering laboratory flume <u>Donatella Termini</u>	(Page. 175)
09:00 – 09:15	Accounting for river morphology in the management of Red river (Vietnam): a numerical modelling approach <u>Dario Bernardi</u> , Rafael Schmitt, Simone Bizzi, Leonardo Schippa and Rodolfo Soncini-Sessa	(Page. 168)
09:15 – 09:30	Large-scale horizontal coherent structures in deep flows and their morphological consequences Arash Kanani and <u>Ana Maria Ferreira da Silva</u>	(Page. 187)
09:30 – 09:45	Can a 3D-numerical model be a substitute to a physical model in estimating parameters of 1D-confluence models? <u>Dejana Dordević</u>	(Page. 158)
08:30 – 10:00	Eco and Environmental Hydraulics Room: B002 Chair: A. Pinheiro Presentation: 12 min Q&A: 3 min	
08:30 – 08:45	Hydraulic modeling of the effects of glen canyon dam operations on larva rainbow trout habitat in the colorado river <u>Weiwei Yao</u> , Minh Duc Bui and Peter Rutschmann	(Page. 17)
08:45 – 09:00	Improving the representation of fine sediment impacts on salmon spawning habitat in numerical modelling <u>I. Pattison</u> , D.A. Sear, A.L. Collins, J.I. Jones and P.S. Naden	(Page. 26)
09:00 – 09:15	Assessing environmental flow through monthly duration curves <u>Elena Carcano</u> and Daniele Bocchiola	(Page. 35)
09:15 – 09:30	Assessing fishway attraction flows using an ethohydraulic approach <u>Ianina Kopecki</u> , Jeff A. Tuhtan, Matthias Schneider, Stefan Thonhauser and Martin Schletterer	(Page. 30)
09:30 – 09:45	Evaluation of energy recovery in compressed air energy storage (CAES) systems <u>Mohsen Besharat</u> , Sandra C. Martins and Helena M. Ramos	(Page. 173)
08:30 – 10:00	Computational Hydraulics I Room: B003 Chair: Jean-Paul Chabard Presentation: 12 min Q&A: 3 min	
08:30 – 08:45	Large-eddy simulation of the flow around a wall-mounted circular cylinder <u>Wolfgang Schanderl</u> and Michael Manhart	(Page. 11)
08:45 – 09:00	Numerical simulation of the flow around a pier using OpenFOAM Pedro Xavier Ramos, João Pedro Pêgo, and Rodrigo Maia	(Page. 146)
09:00 – 09:15	The influence of porosity on the structure and behavior of gravity currents propagating into an aquatic canopy <u>Ayse Yuksel Ozan</u> and George Constantinescu	(Page. 22)

09:15 – 09:30	A free surface vortex modeling with 3D CFD comparison between an experimental case and a numerical one <u>Grégory Guyot</u> and Amaury Pittion-Rossillon	(Page. 194)
09:30 – 09:45	Analyses of hydraulic performance of velocity caps <u>Erik Damgaard Christensen</u> , Mark Chr. Degn Eskesen, Jeppe Buhrkall and Bjarne Jensen	(Page. 191)
10:15 – 11:00	Keynote Lecture 4 Room: Auditorium Chair: Pawel Rowinski <i>Ecosystem hydrodynamics: conceptual framework, recent advances, and perspectives</i> Vladimir Nikora	
11:00 – 11:30	Coffee-Break	
11:30 – 13:00	Coastal Physical Modelling (2) Room: B032 Chair: Marc Willems <i>Presentation: 12 min Q&A: 3 min</i>	
11:30 – 11:45	Review of hydraulic performance studies on detached breakwaters F. Taveira-Pinto, D. Vicinanza, V. Penchev, V. Ferrante and R. Silva	(Page. 113)
11:45 – 12:00	Stability of small breakwaters roundheads armoured with single-layer cubipod breakwaters J. Sande, <u>Enrique Peña</u> , Enrique Maciañeira, L. Priegue and M.E. Gómez-Martín	(Page. 104)
12:00 – 12:15	Overtopping reduction for harbor quays under very oblique waves attack Sebastian Dan, Corrado Altomare, Tomohiro Suzuki, Tim Spiesschaert, Marc Willems, and Toon Verwaest	(Page. 66)
12:15 – 12:30	A new sheet pile berth for controlling wave reflection within ports located in seismic areas C. Bosco, R.E. Musumeci, G. Indelicato, and E. Foti	(Page. 101)
12:30 – 12:45	A side-hinged planar wavemaker Wojciech Sulisz and <u>Aneta Dargacz</u>	(Page. 110)
11:30 – 13:00	Local and Contraction Scour Room: B001 Chair: Mário Franca <i>Presentation: 12 min Q&A: 3 min</i>	
11:30 – 11:45	Application of an artificial neuronal network for estimation of contracting scour <u>Minh Duc Bui</u> , Petr Penz and Peter Rutschmann	(Page. 123)
11:45 – 12:00	Contribution of complex pier components on local scour depth Mario Moreno, Rodrigo Maia, <u>Lúcia Couto</u> and António Heleno Cardoso	(Page. 131)
12:00 – 12:15	Local scour at single piers revisited Cristina Fael, Rui Lança, Lúcia Couto and António Heleno Cardoso	(Page. 171)
12:15 – 12:30	The effect of hydrographs on the geometric characteristics of the scour holes around the bridge piers <u>Gokcen Bombar</u>	(Page. 192)
12:30 – 12:45	Airborne hydromapping - a progress in river engineering Michael Mett, Markus Aufleger and Frank Steinbacher	(Page. 161)

11:30 – 13:00	Water Quality Room: B002 Chair: Damien Violeau Presentation: 12 min Q&A: 3 min	
11:30 – 11:45	High resolution oil spill model for harbour and coastal areas <u>Giulia Zanier</u> , Andrea Petronio, Federico Roman and Vincenzo Armenio	(Page. 55)
11:45 – 12:00	Hydro-environmental modeling of sewage and riverine discharges into coastal area: comparison of depth-averaged and 3D models Zeinab Bedri, John J. OSullivan, Aisling Corkery, L. Deering, K. Demeter, W. G. Meijer, G. O'Hare and B. Masterson	(Page. 56)
12:00 – 12:15	Wave-induced pore pressure states on seabeds with a high mud content <u>Valeria Chavez</u> , Edgar Mendoza, Rodolfo Silva, Ana Meneses, Dulce Perez, Maria Clavero, Izaskun Benedicto and Miguel Losada	(Page. 88)
12:15 – 12:30	NW iberia shelf dynamics: the river douro plume <u>I. Iglesias</u> , X. Couvelard, P. Avilez-Valente, and R.M.A. Caldeira	(Page. 46)
11:30 – 13:00	Extreme Precipitation and Peak Flow Room: B003 Chair: P. Gourbesville Presentation: 12 min Q&A: 3 min	
11:30 – 11:45	Trends in extreme rainfall in mainland Portugal, 1941-2012 M. Isabel P. de Lima, Fátima Espírito Santo, Sofia Cunha and Álvaro Silva	(Page. 206)
11:45 – 12:00	Spatio-temporal variability of dry and wet episodes in mainland Portugal, using the standardized precipitation index Fátima Espírito Santo, M. Isabel P. de Lima, Álvaro Silva and Vanda Pires	(Page. 207)
12:00 – 12:15	Rainfall uncertainty in distributed hydrological modelling in large catchments: an operational approach applied to The Vu Gia-Thu Bon Catchment - Vietnam Vo Ngoc Duong and Philippe Gourbesville	(Page. 170)
12:15 – 12:30	A comparison of distributed hydrological models for runoff generation in the Portuguese Guadiana Hélder Magalhães, Eduardo Vivas, Levi Brekke and Rodrigo Maia	(Page. 174)
12:30 – 12:45	An improved two-layer shallow water model for the simulation of gravity currents moving on both flat and up-sloping beds <u>Claudia Adduce</u> , Valentina Lombardi, Giampiero Sciortino, Mario Morganti and Michele La Rocca	(Page. 29)
12:30 – 14:00	Hydraulic Associations Meeting – Room I-105 (Invited)	
13:00 – 14:00	Lunch	
14:30 – 16:00	Coastal Hydrodynamic Numerical Modelling Room: B032 Chair: Enrique Peña González Presentation: 12 min Q&A: 3 min	
14:30 – 14:45	Effect of turbulence modelling on swash flow generated by bore collapse on rough slope <u>Maria Tsakiri</u> and Panayotis Prinos	(Page. 83)
14:45 – 15:00	Comparison between time, spectral and wavelet analysis on wave breaking and propagation J.M.P. Conde, R. Lemos and C.J.E.M. Fortes	(Page. 92)

15:00 – 15:15	Directionality in stochastic simulation of sea waves <u>Michalis K. Chondros</u> and Constantine D. Memos	(Page. 45)
15:15 – 15:30	Validation of a Boussinesq-type wave model applicable to any depth <u>Constantine Papadopoulos</u> , Anastasios Metallinos and Constantine Memos	(Page. 57)
15:30 – 15:45	Boussinesq modelling of the impact of pressure retarded osmosis plants in nearshore regions A. Viviano, R.E. Musumeci and E. Foti	(Page. 103)
14:30 – 16:00	Hydraulic Structures IV Room: B001 Chair: Jorge Matos Presentation: 12 min Q&A: 3 min	
14:30 – 14:45	Review on pressure distribution on stepped spillways <u>M.J. Ostad Mirza</u> , M. Pfister, J. Matos and A.J. Schleiss	(Page. 128)
14:45 – 15:00	Venda Nova III repowering project: outlet and downstream channel scale model studies Vitor Ribeiro, Pedro Pinto, Sébastien Derrien and Luc Bazerque	(Page. 157)
15:00 – 15:15	Bi-stable flow fields and two-way couplings between flow and sedimentation in shallow reservoirs <u>Benjamin Dewals</u> , Yann Peltier, Michel Piroton, Pierre Archambeau and Sébastien Erpicum	(Page. 13)
15:15 – 15:30	Estimation of the turbulent features of flow in vertical slot fishway: improvements on fishway design criteria <u>Damien Calluau</u> , Gerard Pineau, Alain Texier and Laurent David	(Page. 10)
15:30 – 15:45	Application of SPH to real-world free-surface flows <u>Damien Violeau</u> , Martin Ferrand, Agnès Leroy, Arno Mayrhofer, Alexander Vorobyev and Alexis Herault	(Page. 148)
14:30 – 16:00	Environmental Coastal Issues Room: B002 Chair: Luciana das Neves Presentation: 12 min Q&A: 3 min	
14:30 – 14:45	Assessment of material fluxes in aquatorium of the port of Bourgas (Bulgarian Black Sea coast) by LOICZ biogeochemical model <u>Dimitar Marinov</u> , Svetla Miladinova and Jordan Marinski	(Page. 75)
14:45 – 15:00	Common model for environmentally and sustainability development of the south-east European sea ports <u>Jordan Marinski</u> , Dimitar Marinov, Tatiana Branca, Matilda Mali, Tania Floqi and Leonardo Damiani	(Page. 25)
15:00 – 15:15	Multivariate analysis of pressures and driving factors affecting the environmental status of the Rio de Janeiro coastal zone <u>Arianna Azzellino</u> , Serap Cevirgen, Marcus Polette and Diego Vicinanza	(Page. 76)
15:15 – 15:30	Effects of the wave motion on the propagation of gravity currents <u>R.E. Musumeci</u> and E. Foti	(Page. 100)
15:30 – 15:45	Definition of Sines port wave regime using an artmap artificial neural network with fuzzy logic F.L. Santos, <u>Diogo R.C.B. Neves</u> , Maria Teresa Reis, Conceição Juana Fortes, Pedro Poseiro, A.D. Lotufo, and G.F. Maciel	(Page. 107)

14:30 – 16:00 Computational Hydraulics II

Room: **B003**

Chair: **Dejana Djordjevic** (to be confirmed)

Presentation: 12 min | Q&A: 3 min

- 14:30 – 14:45** **Steady and unsteady supercritical shallow water modelling using a transformed lattice Boltzmann scheme** (Page. 09)
Amir H. Hedjripour, David P. Callaghan and Tom E. Baldock
- 14:45 – 15:00** **Experimental study of friction slope in unsteady non-uniform flow in rectangular channel** (Page. 118)
Magdalena M. Mrokowska, Paweł M. Rowiński and Monika B. Kalinowska
- 15:00 – 15:15** **Sensitivity analysis of different finite-volume numerical schemes to a variation in the celerity estimate for the simulation of dam-break flows** (Page. 136)
Stefania Evangelista, Massimo Greco and Angelo Leopardi
- 15:15 – 15:30** **2D numerical simulation of granular flow dynamics and validation with experimental data** (Page. 144)
Carmelo Juez, Asier Lacasta, Daniel Caviedes-Voullième, Javier Murillo and Pilar García-Navarro
- 15:30 – 15:45** **Numerical modeling of supercritical open channel bend flows with OpenFOAM using the volume of fluid (VOF) technique** (Page. 180)
Javier L. Lara, Pablo Higuera and Iñigo J. Losada

16:00 – 16:30 Coffee-Break

16:30 – 17:30 Closing Ceremony

Room: **Auditorium**

Chair: **António Betâmio de Almeida** and **Fernando Veloso Gomes**

Message of the Local Organizing Committee

Handover of "Book" from Porto to next Congress

Presentation of the IAHR Europe Congress in 2016

Thursday, April 17th, 2014

Buses leave from FEUP

Technical Visit 1 | 09:00 – 13:00 | Port of Leixões

Technical Visit 2 | 09:00 – 13:00 | Crestuma-Lever Dam

Technical Visit 3 | 08:30 – 17:00 | Venda Nova III Dam

- Carbon footprint, capture and sequestration of double twist wire mesh solutions in river training works** (Page. 285)
 Giuliano Sauli, Lorenzo Pellizzari and Marco Vicari
- An operational statistical scheme for tropical cyclone induced rainfall forecast** (Page. 289)
Qinglan Li, Hongping Lan, Johnny C.L. Chan, Chunyan Cao and Cheng Li
- Effects of reservoirs on downstream flood frequency curves** (Page. 290)
Alessandro Masoeiro, Daniele Ganora, Pierluigi Claps and Alberto Petaccia
- The impact of damaging hydrogeological events on urbanised sectors: the case of 19th November 2013 in Catanzaro (Italy)** (Page. 292)
 Tommaso Caloeiro and Olga Petrucci
- Comparison of methods to assess the reservoir volume and sedimentation based on bathymetric surveys** (Page. 293)
M.V. Estigoni, N.P. Requena Sanchez, R.B. Miranda, J.I. Kuwajima and F.F. Mauad
- Manipulation of non-aerated cavity flow on a stepped spillway model** (Page. 294)
Daniel B. Bung and Mario Oertel
- Characterization of basic fluvial dunes parameters: a field study in the Vistula river, Poland** (Page. 295)
Robert J. Bialik, Mikolaj Karpinski, Agnieszka Rajwa and Oskar Glowacki
- Comparison of extreme storms in the North Atlantic and Mediterranean** (Page. 296)
S. Ponce de León, J. Gómez, Agustin Sánchez-Arcilla and C. Guedes Soares
- The risk analysis of levee systems** (Page. 297)
Rémy Tourment, Michael Wallis, Bruno Beullac, Andreas Kortenhaus, David M. Schaaf and Harry Schelfhout
- Empirical Orthogonal Function analysis of High Frequency radar surface currents in Galway Bay** (Page. 300)
Lei Ren, Stephen Nash and Michael Hartnett
- Comparison between streamflow peaks and daily maximum streamflows: torrential catchments** (Page. 301)
Elena Carcano and Paolo Bartolini
- Water management in the ancestral agroecosystem with mix drainage of Suka Kollus, north Bolivia** (Page. 302)
Edwin Guarachi, Humberto Sainz and Genaro Serrano