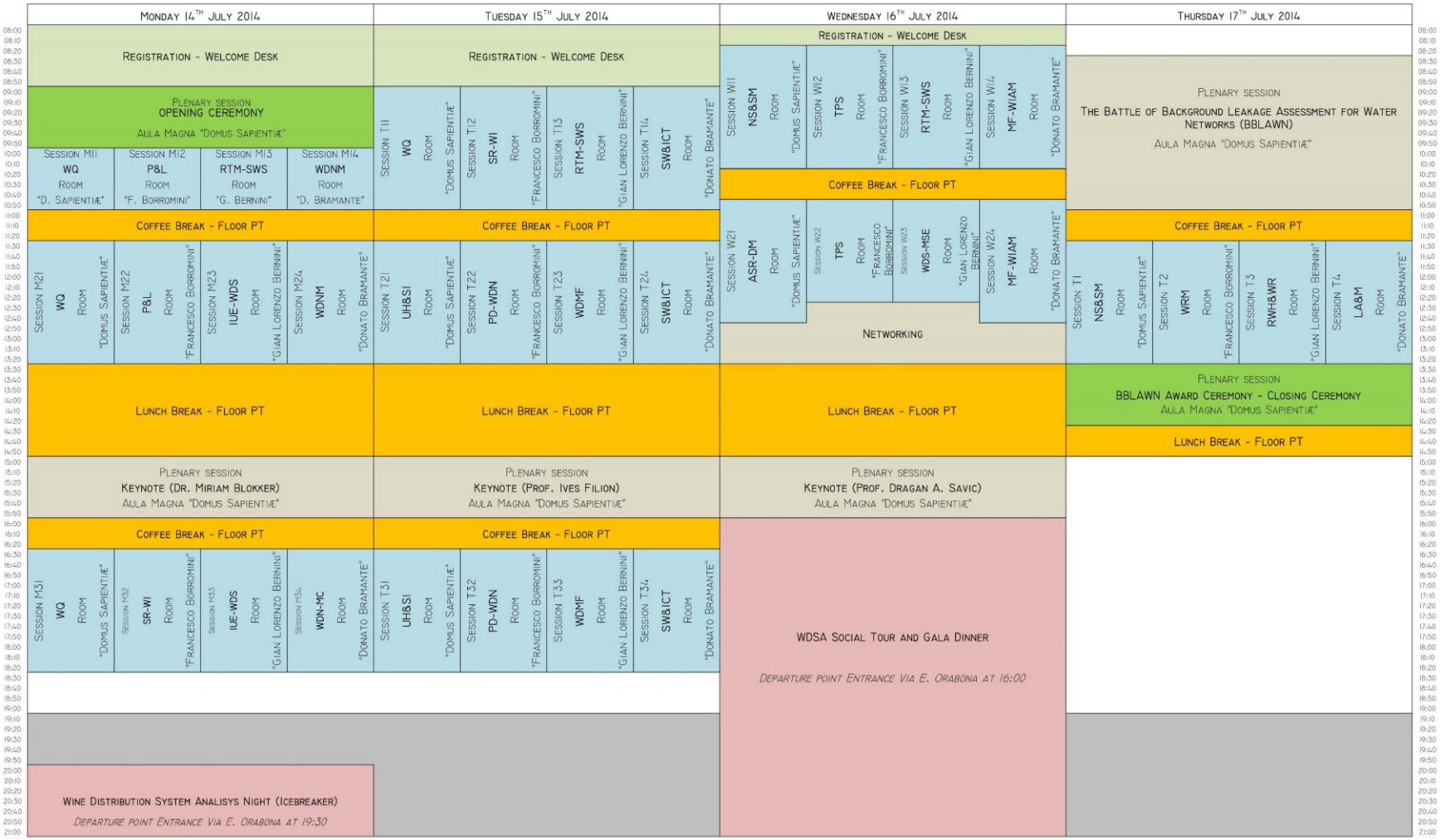

LEGEND OF SESSION TITLES

SR-WI	SUSTAINABLE RESILIENT WATER INFRASTRUCTURES	NS&SM	NETWORK SEGMENTATION AND SMART MANAGEMENT	WDS-MSE	WATER DISTRIBUTION SYSTEMS MODELING FOR SECURITY ENHANCEMENTS
IUE-WDS	INTELLIGENT USE OF ENERGY IN WATER DISTRIBUTION SYSTEMS	MF-WIAM	MODELING "FLOWS" IN WATER INFRASTRUCTURE ASSET MANAGEMENT	ASR-DM	AQUIFERS AS SUBSURFACE RESERVOIRS FOR DROUGHT MANAGEMENT
PD-WDN	PHASING THE DEVELOPMENT OF WATER DISTRIBUTION NETWORKS	SW&ICT	SMART WATER AND ICT	RWH&WR	RAINWATER HARVESTING AND WATER REUSE
WDNM	WATER DISTRIBUTION NETWORK MODELLING	P&L	PRESSURE AND LEAKAGE	TPS	TRANSIENTS IN PIPE SYSTEMS
UH&SI	URBAN HYDRAULIC AND SYSTEMS INTEGRATION	RTM-SWS	REAL-TIME MANAGEMENT OF SMART WATER SYSTEMS USING BIG DATA	WDN-MC	WDN MODEL CALIBRATION
WQ	WATER QUALITY	WDMF	WATER DEMAND MODELING AND FORECASTING	LA&M	LEAKAGE ANALYSIS AND MANAGEMENT
				WRM	WATER RESOURCES MANAGEMENT

Water Quality

ID	Scheduled on	
147	**M11**	Online model for hydraulic and water quality analysis in "Hangzone Sonnenberg", Zurich by: TARNOWSKI Harald, SVITAK Zdenek, ENGELS Ralf
176	**M11**	Controlled, realistic-scale, experimental study of how the quantity and erodibility of discolouration material varies with shear strenght by: FURNASS Will, DOUTERELLO Isabel, COLLINS Richard, MOUNCE Stephen, BOXALL Joby
247	**M11**	Drinking water temperature modelling in domestic systems by: MOERMAN Andreas, BLOKKER Mirjam, VREEBURG Jan
201	**M21**	QMRA in the drinking water distribution system by: BLOKKER Mirjam, SMEETS Patrick, MEDEMA Gertjan
180	**M21**	The relationship between water biostability and initial bacterial growth variations to different organic carbon concentrations by: WANG Qiuhua, TAO Tao, XIN Kunlun
193	**M21**	Optimal disinfection of water distribution networks following a contamination event by: SALOMONS Elad, OSTFELD Avi
190	**M21**	Multivariate data mining for estimating the rate of discolouration material accumulation in drinking water systems by: MOUNCE Stephen R., HUSBAND Stewart P., FURNASS William. R., BOXALL Joby B.
198	**M21**	The role of oxidation-reduction potential (ORP) as an indicator of iron release from corroded iron pipes by: JINGQING Liu, JIANG Wei , YE Ping, QIU Shangde, ZHOU Xiaoyan, YU Shao
197	**M21**	Sensor placement methods for contamination detection in water distribution networks: a review by: RATHI Shweta, GUPTA Rajesh
293	**M31**	Use of SCADA Data and Artificial Neural Networks to Forecast and Control Disinfection Levels in a Water Transmission Pipeline by: WU Wenyan, DANDY Graeme, MAIER Holger
214	**M31**	Water quality supervision of distribution networks based on machine learning algorithms and operator feedback by: KÜHNERT Christian, THOMAS Bernard, MONTALVO ARANGO Idel, REIK Nitsche
202	**M31**	Optimal operation of a multiquality water distribution system with changing turbidity and salinity levels in source reservoirs by: MALA-JETMAROVA Helena, ANDREW Barton, BAGIROV Adil
172	**M31**	Autonomous VPS-based manganese prediction system for sub-tropical water reservoirs by: BERTONE Edoardo, STEWART Rodney A., Hong ZHANG, Charles HACKER, O'HALLORAN K.
240	**M31**	Using the setpoint concept to allow water distribution system skeletonization preserving water quality constraints by: MARTÍNEZ-SOLANO F. Javier, IGLESIAS-REY Pedro L., MORA-MELIÁ Daniel, FUERTES-MIQUEL Vicente S.
256	**M31**	Impacts of large-demand customer on water distribution system by: CHOI Doo Yong, BAE Cheol-Ho , KIM Dohwan , KIM Juhwan
343	**T11**	Rehabilitation actions in water supply systems: effects on biofilm susceptibility by: RAMOS MARTINEZ Eva, HERRERA Manuel, GUTIÉRREZ-PÉREZ Joanna, IZQUIERDO Joaquín, PÉREZ-GARCÍA Rafael

352	**T11**	Safeguarding drinking water: use and quality of water, case study Taranto province by: CALABRESE Angelantonio, MASSARELLI C., URICCHIO V.F. and CAMPANALE C.
326	**T11**	Enhanced adaptive control of water quality in water distribution networks by incorporating abrupt hydraulic changes by: VRACHIMIS Stelios G., ELIADES Demetrios G., POLYCARPOU Marios M.
327	**T11**	Multi sources water supply system optimal control: a case study by: PULEO Valeria, FONTANAZZA Chiara M., NOTARO Vincenza, FRENI Gabriele
398	**T11**	Modeling the fate of disinfection byproducts in water distribution systems by: FULVIO Boano, FIORE Silvia, REVELLI Roberto
421	**T11**	WQNetXL: a MS-Excel water quality system tool for WDNs by: BERARDI Luigi, LAUCELLI Daniele, RIDOLFI Luca, GIUSTOLISI Orazio

Pressure and Leakages

ID	Scheduled on	
175	**M12**	Theoretical modeling of pressure and leakage in water distribution systems by: VAN ZYL Jakobus E.
181	**M12**	Estimating area leakage in water networks based on hydraulic model and asset information by: ADACHI Shingo, TAKAHASHI Shinsuke, HIROMITSU Kurisu, TADOKORO Hideyuki
184	**M12**	Dynamic leakage: Physical study of the leak behaviour of longitudinal slits in MDPE pipe by: FOX Sam, COLLINS Richard, BOXALL Joby
200	**M22**	Use of Torricelli's equation for describing leakages in pipes of different elastic materials, diameters and orifice shape and dimensions by: FRANCHINI Marco, LANZA Luisfilippo
313	**M22**	Experimental investigation on a buried leaking pipe by: DE PAOLA Francesco, GALDIERO Enzo, GIUGNI Maurizio, PAPA Raffaele, URCIUOLI Gianfranco
367	**M22**	Water leakage evolution based on GPR interpretations by: AYALA-CABRERA David, CAMPBELL Enrique, CARREÑO-ALVARADO Elizabeth P., IZQUIERDO Joaquín, PÉREZ-GARCÍA Rafael
349	**M22**	Theoretical investigation of the relationship between leakage and pressure heads in a district by: FERRANTE Marco, BRUNONE Bruno, MENICONI Silvia, CAPPONI Caterina, VERDE Daniele, CIMA Ennio
268	**M22**	Experimental setup to examine leakage outflow in a scaled water distribution network by: GÜNTHER Markus, STEFFELBAUER David, NEUMAYER M., FUCHS-HANUSCH D.
345	**M22**	Applying pressure management to reduce water losses in two Greek cities' WDSs: expectations, problems, results and revisions by: KANAKOUDIS Vasilis, GONELAS Konstantinos

Sustainable Resilient Water Infrastructures

ID	Scheduled on	
194	**M32**	Simultaneous multi-pipe failure impact on reliability of water distribution systems by: GHEISI Alireza, NASER Gholamreza
196	**M32**	A surrogate measure for multi-component failure based reliability analysis of water distribution systems by: GHEISI Alireza, NASER Gholamreza
229	**M32**	Sustainability, robustness, and resilience metrics for water systems: application to the Tucson region by: HUIZAR Luis H., ARNOLD Robert G. , LANSEY Kevin E.
218	**M32**	Robustness of the drinking water distribution network under changing future demand by: AGUDELO-VERA Claudia, BLOKKER Mirjam, VREEBURG Jan, BONGARD Tim, HILLEGERS Sanne, VAN DER HOEK Jan Peter
206	**M32**	A study on the water supply risk assessment and optimal design for new water distribution network by: CHOI Taeho, HYUN Inhwan, KIM Dooil, KIM Mincheol, KOO Jayong
384	**M32**	Dynamic system modeling of water supply system: a tool for decision makers by: CHRISTOPHER Horstman, LANSEY Kevin
207	**T12**	A new approach to urban water management: Safe and SuRe by: BUTLER D., FARMANI R., WARD S., DIAO K., ASTARAIE-IMANI M.
361	**T12**	Water distribution system risk assessment method by: CUBILLO Francisco, PÉREZ Patricia
380	**T12**	Water distribution system performance metrics by: DZIEDZIC Rebecca M., KARNEY Bryan W.
383	**T12**	Upgrading reliability of water distribution networks recognizing valve locations by: GUPTA Rajesh, BABY Anu, ARYA P. V., ORMSBEE Lindell
290	**T12**	Why PRVs tends to oscillate at low flows by: ULANICKI Bogumil, SKWORCOW Piotr
246	**T12**	Fire flow capacity analysis based on hydraulic network model by: XIAO Chaohong, LI Baowei, HE Gang, JILONG Sun, PING Junhui, WANG Ronghe

Real-time Management of Smart Water Systems using Big Data

ID	Scheduled on	
171	**M13**	Principal component analysis of water pipe flow data by: PARK Suwan, JUNG So-Yeon
162	**M13**	Statistical process control techniques for early detection of pressure management valve failures in water distribution systems by: ROMANO Michele, WOODWARD Kevin, KAPELAN Zoran
333	**M13**	A random forest algorithm applied to condition based wastewater deterioration modeling and forecasting by: VITORINO Diogo, COELHO Sérgio, SHEETS Steven, JURKOVAC Bradley, SANTOS Pedro, AMADO Conceição
182	**T13**	A new indicator for real-time leak detection in water distribution networks: design and simulation validation by: ISHIDO Yumiko, TAKAHASHI Shinsuke
263	**T13**	Online burst detection in a water distribution system using the Kalman filter and hydraulic modelling by: OKEYA Isaac, KAPELAN Zoran, HUTTON Chris, NAGA Devina
149	**T13**	Automated water balance calculation for water distribution systems by: KNOBLOCH Axel , GUTH Nicolai, KLINGEL Philipp
195	**T13**	Making water systems smarter using M2M technology by: KENNETH Thompson, KADIYALA Raja
255	**T13**	Water distribution operation systems based on smart meter and sensor network by: KIM Juhwan, CHOI Dooyong, KIM Dohwan, LEE Doojin
227	**T13**	Use of metamodels in real-time operation of water distribution systems by: ODAN Frederico K., REIS Luisa Fernanda, KAPELAN Zoran
212	**W13**	Real-time Model of a Large Scale Water Distribution System by: CHENG Wei Ping, YU Ting Chao, GAN Xu
291	**W13**	Leveraging big data to improve water system operations by: KENNETH Thompson, KADIYALA Raja
276	**W13**	Decentralized real time control in combined sewer system by using smart gates by: CARBONE Marco, GAROFALO Giuseppina, PIRO Patrizia
163	**W13**	Contaminant detection using multiple conventional water quality sensors in an early warning system by: CHE Han, LIU Shuming
377	**W13**	Cloud-based decision making in water distribution systems by: MONTALVO ARANGO Idel, IZQUIERDO Joaquín S., CAMPBELL GONZÁLEZ Enrique O., PÉREZ-GARCÍA Rafael
389	**W13**	Real time control of water distribution systems using a multi-criteria decision-support tool for optimal water network management – A case study by: GANIDI Nafsika, HOLDEN Barrie

Intelligent use of energy in water distribution systems

ID	Scheduled on	
178	**M23**	Optimal water system operation using graph theory algorithms by: PRICE Eyal, OSTFELD Avi
234	**M23**	Genetic algorithm optimization of operational costs and greenhouse gas emissions for water distribution systems by: BLINCO Lisa, SIMPSON Angus, LAMBERT Martin, AURICHT Caroline, HURR Nina, TIGGEMANN Stefanie, MARCHI Angela
165	**M23**	Pumps energy consumption based on new EU legislation by: ANNUS Ivar, UIBO Danel, and KOPPELTiit
356	**M23**	Simple visual tool to analyse pump battery efficiencies for various pump combinations by: SUNELA Markus I., PUUST Raido
215	**M23**	Design and optimization of small hydropower systems in water distribution networks based on 10years simulation with Epanet2 by: SITZENFREI Robert, VON LEON Judith., RAUCH Wolfgang
319	**M23**	Experimental study of Cross-Flow micro-turbines for aqueduct energy recovery by: SAMMARTANO Vincenzo, Gabriele Morreale, SINAGRA Marco, COLLURA Alfonso, TUCCIARELLI Tullio
340	**M33**	Tools for energy footprint assessment in urban water systems by: BAKI Sotiria, MAKROPOULOS Christos
341	**M33**	Energy auditing as a tool for improving service efficiency of water supply systems by: MAMADE Aisha, LOUREIRO Dália, COVAS Dídia, ALEGRE Helena
354	**M33**	Scenario analysis for optimization of pumping schedules in complex water supply systems considering a cost-risk balancing problem by: NAPOLITANO Jacopo, SECHI Giovanni M., ZUDDAS Paola
314	**M33**	Optimal water distribution system management by leakage reduction and energy recovery by: TRICARICO Carla, MORLEY Mark S., GARGANO Rudy, KAPELAN Zoran, DE MARINIS Giovanni, SAVIĆ Dragan, GRANATA Francesco
366	**M33**	Evaluation of PAT performances by modified affinity law by: CARRAVETTA Armando, CONTE Maria C., FECAROTTA Oreste, RAMOS Helena M.
388	**M33**	A control valve for energy harvesting by: MALAVASI Stefano, FERRARESE Giacomo, MARIA Marco, ROSSI Agostino

Water Distribution Network Modelling

ID	Scheduled on	
152	**M14**	Extending the control−volume method to unsteady network hydraulic simulations by: SKIBIN Aleksandr, VOLKOV Vasily
170	**M14**	Analysis of demand and leakage distributing uniformly along pipes by: LIU Jun, YU G.
225	**M14**	Incorporating the FAVAD leakage equation into water distribution system analysis by: PILLER Olivier, VAN ZYL Jakobus Ernst
303	**M24**	Implementing ΔQ method to accelerate the optimization of pressurized pipe networks by: IVETIC Damjan, VASILIĆ Željko, PRODANOVIĆ Dušan, STANIĆ Miloš
236	**M24**	Modelling pressure deficient water distribution networks in EPANET by: ABDY SAYYED Mohd Abbas, GUPTA Rajesh, TANYIMBOH Tiku T.
407	**M24**	Pressure-dependent demand and leakage modelling with an EPANET extension - WaterNetGen by: MURANHO João, FERREIRA Ana, SOUSA Joaquim, GOMES Abel, SÁ MARQUES Alfeu
381	**M24**	Demand constructs for risk analysis by: LIPPAI Istvan, WRIGHT Len
241	**M24**	Artificial neural networks and entropy-based methods to determine pressure distribution in water distribution systems by: RIDOLFI Elena, SERVILI Filippo, MAGINI Roberto, NAPOLITANO Francesco, RUSSO Fabio, ALFONSO Leonardo
347	**M24**	Experimental investigation for local tank inflow model by: DE MARCHIS Mauro, FONTANAZZA Chiara M., FRENI Gabriele, MILICI Barbara, PULEO Valeria

WDN model calibration

ID	Scheduled on	
311	**M34**	Leakage calibration of water distribution networks by: MATAN Maskit, OSTFELD Avi
210	**M34**	Model calibration as a tool for leakage identification in WDS: a real case study by: FIORINI MOROSINI Attilio, COSTANZO Francesco, VELTRI Paolo, SAVIC Dragan
232	**M34**	Determination of water distribution network resistance coefficient and hydraulic capacity by: VAABEL Joonas, KOPPEL Tiit, SARV Laur, ANNUS Ivar
292	**M34**	Calibration of numerical model of WDS in a real case by: DARVINI Giovanna, SOLDINI Luciano
209	**M34**	Identification of measurement points for calibration of water distribution network models by: FIORINI MOROSINI Attilio, COSTANZO Francesco, VELTRI Paolo, SAVIC Dragan
342	**M34**	Real water network comparative calibration studies considering the whole process from engineer's perspective by: PUUST Raido, VASSILJEV Anatoli

Urban hydraulic systems

ID	Scheduled on	
226	**T21**	Optimization of drinking water and sewer hydraulic management: coupling of a genetic algorithm and two network hydraulic tools by: LE QUINIOU Morgane, MANDEL Pierre, MONIER Laurent
230	**T21**	Optiminzing solutions in a scenario planning process for water and wastewater infrastructure by: JUNG Donghwi, WOODS Gwendolyn, KANG Doosun, ARNOLD Robert, LANSEY Kevin
270	**T21**	Resilience-based performance assessment of water-recycling schemes in urban water systems by: BEHZADIAN Kourosh, KAPELAN Zoran, MORLEY Mark S.
216	**T21**	Stability of traditional urban water systems – integrated assessment of transitions scenarios by: SITZENFREI Robert, MAIR Michael, RAUCH Wolfgang
179	**T21**	Cost efficiency of low impact development (LID) stormwater management practices by: JOKSIMOVIC Darko, ALAM Zakia
185	**T21**	Selection of the optimal design rainfall return period of urban drainage systems by: FORTUNATO Antonino, OLIVERI Elisa, MAZZOLA Mario Rosario
286	**T31**	SWMM5 toolkit development for pollution source identification in sewer systems by: BANIK Bijit Kumar, DI CRISTO Cristiana, LEOPARDI Angelo
337	**T31**	Porous pavement quality modelling by: CARBONE Marco, MANCUSO Antonello, PIRO Patrizia
376	**T31**	SITES – A novel approach for controlling combined sewer overflows by: MANCIPE Nestor , BUCHBERGER Steven, SUIDAN Makram
404	**T31**	Sustaining irrigated agriculture in Mediterranean countries with treated municipal wastewater: a case study by: VERGINE Pompilio, LONIGRO Antonello, POLLICE Alfieri, RUBINO Pietro, LOPEZ Antonio
410	**T31**	Climate change and stormwater management strategies in Tehran by: GHAZAL Roozbeh, ARDESHIR Abdollah, ZAHEDI RAD Iman
330	**T31**	Assessment of modelling structure and data availability influence on urban flood damage modelling uncertainty by: NOTARO Vincenza, FONTANAZZA Chiara M., FRENI Gabriele, LA LOGGIA Goffredo

Phasing the development of water distribution networks

ID	Scheduled on	
137	**T22**	The effect of future water demand reduction on WDS rehabilitation planning by: ROSHANI Ehsan, FILION Yves
168	**T22**	Sensitivity of energy use to factors in pipe replacement planning for a large water distribution system by: PROSSER Monica, SPEIGHT Vanessa, FILION Yves
155	**T22**	Prioritization of rehabilitation areas for urban water infrastructure – a case study by: TSCHEIKNER-GRATL Franz, SITZENFREI Robert, HAMMERER Max, RAUCH Wolfgang, KLEIDORFER Manfred
257	**T22**	Development of renovation techniques for medium and large diameter water transmission pipes by: BAE Cheol-Ho, KIM Jeonghyun, KIM Juhwan, CHOI Dooyong, KOO Daehyun
217	**T22**	Network design through the phasing of construction approach by: CREACO Enrico, FRANCHINI Marco, WALSKI Thomas
159	**T22**	A strategy for real options from multi-objective optimal design by: LAUCELLI Daniele, GIUSTOLISI Orazio
269	**T32**	Optimal design of water distribution systems with pressure driven demands by: PÁEZ Diego, SALDARRIAGA Juan, LÓPEZ Laura, SALCEDO Camilo
360	**T32**	Comparison of flow-distribution models for design of water distribution networks with redundancy by: GUPTA Rajesh, YAMINI LAKSHMI Burle, ABDY SAYYED M.A.H., RATHI Shweta
329	**T32**	Dealing with uncertainty through real options for the multi-objective design of water distribution networks by: MARQUES João, CUNHA Maria, SAVIC Dragan, GIUSTOLISI Orazio
306	**T32**	Robust staged development of water supply systems by: BEH Eva H.Y , MAIER Holger, DANDY Graeme C. , KAPELAN Zoran
359	**T32**	A study on economic evaluation for pipeline renewal using contingent valuation method and forecasting pipeline burst by: KIM Kibum, KIM Minhwa, CHOI Suingill, KOO Jayong
422	**T32**	Optimization of distribution systems: water distribution system of Smolensk city pilot district by: PATTI Giuseppe Mario

Water Demand Modeling and Forecasting

ID	Scheduled on	
224	**T23**	Assessment of the predictive uncertainty within the framework of water demand forecasting by using the Model Conditional Processor by: ALVISI Stefano, FRANCHINI Marco
220	**T23**	Multivariate statistical analysis for water demand modeling by: FONTANAZZA Chiara, NOTARO Vincenza, PULEO Valeria, FRENI Gabriele
192	**T23**	Studying a hospital distribution network with a stochastic end-uses demand model by: SPINA Sandra, SBARAGLIA Maria Novella, MAGINI Roberto, RUSSO Fabio, NAPOLITANO Francesco
267	**T23**	The effect of temporal resolution on the accuracy of forecasting models for total system demand by: ARANDIA Ernesto, ECK Bradley, McKENNA Sean
274	**T23**	24-hours demand forecasting based on SARIMA and support vector machines by: BRAUN Mathias, BERNARD Thomas, PILLER Olivier, FERESHTE Sedehizade
288	**T23**	Study on leakage rate in water distribution network using fast independent component analysis by: GAO Jinliang, QI Shihua, WU Wenyan, LI Dongping, RUAN Ting, CHEN Lizhi, SHI Tong, ZHENG Chengzhi, ZHUANG Yongwei
320	**T33**	The Overall Pulse Model to predict the end user water demand by: DI PALMA Federico, DE MARINIS Giovanni, GARGANO Rudy, GRANATA Francesco, GRECO Roberto, TRICARICO Carla
325	**T33**	Water demand projection in distribution systems using a novel scenario planning approach by: CABRAL Marta, LOUREIRO Dália, MAMADE Aisha, COVAS Dídia
344	**T33**	Forecasting the residential water demand, balancing full water cost pricing and non-revenue water reduction policies by: KANAKOUDIS Vasilis, GONELAS Konstantinos
372	**T33**	Model for estimating domestic outdoor water demand of properties in residential estates by: DU PLESSIS Jacques L., JACOBS Heinz E.
299	**T33**	The mixed model for the residential flow demand of a small number of users by: GARGANO Rudy, TRICARICO Carla, BUCHBERGER Steven, DEL GIUDICE Giuseppe, DI PALMA Federico
309	**T33**	In defense of the demand profile: a software approach by: VITORINO Diogo, LOUREIRO Dália, ALEGRE Helena, COELHO Sergio, MAMADE Aisha

Smart Water and ICT

ID	Scheduled on	
188	**T14**	Using smart meters for household water consumption feedback: Knowns and unknowns by: SØNDERLUND Anders Larrabee , SMITH Joanne R. , HUTTON Christopher, KAPELAN Zoran
294	**T14**	Prioritizing use cases for water smart technology development: Similarities and differences from Portugal and UK case studies by: REBELO Margarida, SMITH Joanne R., MENEZES Marluci
253	**T14**	Identifying typical urban water demand patterns for a reliable short-term forecasting – the ICeWater project approach by: CANDELIERI Antonio, ARCHETTI Francesco
409	**T14**	Estimating Water Demands in Buildings by: OMAGHOMI Toritseju, BUCHBERGER Steven
281	**T14**	Urban Water Demand Forecasting for the Island of Skiathos by: KOFINAS Dimitrios , MELLIOS Nikolaos, PAPAGEORGIOU Elpiniki, LASPIDOU Chrysi
243	**T14**	Dynamic day-ahead water pricing based on smart metering and demand prediction by: VASAK Mario, BANJAC Goran, BAOTIĆ Mato, MATUŠKO Jadranko
211	**T24**	Smart metering, water pricing and social media to stimulate residential water efficiency: opportunities for the SmartH2O project by: HAROU Julien, GARONE P., RIZZOLI Andrea Emilio, MAZIOTIS A., CASTELLETTI Andrea , FRATERNALI Piero , , NOVAK Jasminko, WISSMANN-ALVES Ricardo, CESCHI P.A.
158	**T24**	DAIAD: Open Water Monitoring by: ATHANASIOU Spiros, THORSTEN Staake, STIEFMEIER Thomas, SARTORIUS Christian, TOMPKINS Jacob, LYTRAS Efthymios
298	**T24**	Water analytics and intelligent sensing for demand optimised management: the WISDOM vision and approach by: ZARLI Alain, REZGUI Yacine, BELZITI Daniela, DUCE Elenia
416	**T24**	Interactive water services: The WATERNOMICS approach by: CLIFFORD Eoghan, COAKLEY Daniel, CURRY Edward, DEGELER Viktoriya, COSTA Andrea, MESSERVEY Thomas, VAN ANDEL Schalk-Jan, VAN DE GIESEN Nick, KOUROUPETROGLOU Christos, MINK Jan, SMIT Sander
414	**T24**	Integrated support system for efficient water usage and resources management (ISS-EWATUS) by: MAGIERA Ewa, FROELICH Wojciech
250	**T24**	Challenges and benefits of an open ICT architecture for urban water management by: RODRIGUEZ Albert, CISNEROS Andres.
252	**T34**	Analytical Leakages Localization in Water Distribution Networks through Spectral Clustering and Support Vector MACHINES – the ICeWater approach by: CANDELIERI Antonio, SOLDI Davide, CONTI Dante, ARCHETTI Francesco
339	**T34**	Contamination Event Detection in Water Distribution Systems using a Model-Based Approach by: ELIADES Demetrios, LAMBROU T, PANAYIOTOU C, POLYCARPOU M
413	**T34**	Towards an enhanced knowledge-based Decision Support System (DSS) for Integrated Water Resource Management (IWRM) by: ANZALDI Gabriel, RUBIÓN Edgar, CORCHERO Corchero, SANFELIU Robert, DOMINGO Xavier, PIJUAN Josep, TERSA Ferran
418	**T34**	Smart Meters, Smart Water, Smart Societies: The iWIDGET project by: SAVIC Dragan , VAMVAKERIDOU-LYROUDIA Lydia S., KAPELAN Zoran

272	**T34**	An eLearning approach for improving household water efficiency by: KOSSIERIS Panagiotis, PANAYIOTAKIS Angelos, TZOUKA Katerina, GERAKOPOULOU Patricia, ROZOS Evangelos, MAKROPOULOS Christos
390	**T34**	Web Services for Water Systems: the iWIDGET REST API by: BARRY Michael G , PURCELL Mark E , ECK Bradley J., HAYES Jer, ARANDIA Ernesto
271	**T34**	A web-based platform for water efficient households by: KOSSIERIS Panagiotis, KOZANIS Stefanos, HASHMI Adeel, KATSIRI Eli, VAMVAKERIDOU-LYROUDIA Lydia S., FARMANI Raziyeh, MAKROPOULOS Christos, SAVIC Dragan
419	**T34**	Emerging topics and technology roadmap for Information and Communication Technologies for Water Management by: WOJCIESZKO Grazyna

Network segmentation and smart management

ID	Scheduled on	
417	**W11**	Design and performance of district metering areas in water distribution systems by: SAVIC Dragan , FERRARI Giada
153	**W11**	Water distribution network sectorization using structural graph partitioning and multiobjective optimization by: HAJEBI Saeed, TEMATE Suzy, BARRETT Stephen, CLARKE Aidan, CLARKE Siobhán
160	**W11**	Modularity Indexes for Hydraulic Systems Segmentation by: GIUSTOLISI Orazio, RIDOLFI Luca
262	**W11**	Sensor placement and leakage localization considering demand uncertainties by: STEFFELBAUER David, NEUMAYER M., GÜNTHER Markus, FUCHS-HANUSCH D.
310	**W11**	Segment-based reliability/supply short fall analysis of water distribution networks by: GUPTA Rajesh, BABY Anu , ARYA P. V., ORMSBEE Lindell
151	**W11**	Divide and conquer partitioning techniques for smart water networks by: DI NARDO Armando, DI NATALE Michele, SANTONASTASO Giovanni Francesco, TZATCHKOV V., ALCOCER YAMANAKA Victor Hugo
332	**T1**	Simplification of water distribution network simulation by topological clustering - investigation of its potential use in Copenhagen's water supply monitoring and contamination contingency plans by: KIRSTEIN Jonas K., ALBRECHTSEN Hans-Jørgen, RYGAARD Martin
363	**T1**	Identifying the high-level flow model of water distribution networks using graph theory by: FORTINI Matteo, BRAGALLI Cristiana, ARTINA Sandro
312	**T1**	Automatic multi-objective sectorization of a water distribution network by: DE PAOLA Francesco, FONTANA Nicola, GALDIERO Enzo, GIUGNI Maurizio, SAVIC Dragan, SORGENTI DEGLI UBERTI Gianluca
353	**T1**	Water supply network sectorization based on social networks community detection algorithms by: CAMPBELL Enrique, AYALACA-CABRERA David, IZQUIERDO Joaquín, PÉREZ-GARCÍA Rafael, TAVERA Mario
260	**T1**	Comparison of WDN segmentations based on modularity indexes by: BOANO Fulvio, BERARDI Luigi

Aquifers as Subsurface Reservoirs for Drought Management

ID	Scheduled on	
358	**W21**	Aquifer characterization and monitoring by active and passive seismic surveys by: NIETO Daniel, ACCAINO Flavio, BARADELLO Luca, BÖHM Gualtiero, MADRUSSANI Gianni, ALDO Vesnaver
348	**W21**	Monitoring aquifer quality for artificial recharge within the WARBO project by: PEZZI Marco, CHICCA Milvia, VACCARO Carmela, NIETO YÀBAR Daniel Gustavo, ROTA Elisa, LANFREDI Massimo, PEPI Salvatore, MARILENA Leis
392	**W21**	Artificial recharge of phreatic aquifer in the Mereto di Tomba area (Upper Friuli plain) by: MARTELLI Grazia, GRANATI Cristina, PAIERO Giovanni, TEATINI Pietro, COMERLATI Andrea, CARVALHO Tiago, CARVALHO Jose Martins, AFFATATO Alessandro, BARADELLO Luca, Daniel NIETO YÀBAR
357	**W21**	Geophysical methods as support to aquifer recharge by: AFFATATO Alessandro, ACCAINO Flavio, BARADELLO Luca
420	**W21**	Data-driven modeling of the dynamic response of a large deep karst aquifer by: DOGLIONI Angelo, SIMEONE Vincenzo
369	**W21**	Optimal management of the Jucar River and Turia River basins under uncertain drought conditions by: HARO David, SOLERA Abel , PEDRO-MONZONÍS María, ANDREU Joaquín

Water Distribution Systems Modeling for Security Enhancements

ID	Scheduled on	
301	**W23**	Numerical validation of backtracing calculations for the identification of contamination source regions in drinking water distribution systems by: VAN SUMMEREN Joost, VAN THIENEN Peter, VAN DER PIJL Jan, DE GRAAF Bendert, TRIETSCH Eelco
307	**W23**	LES and DNS simulations of imperfect mixing for Double-Tee junctions by: HERVÉ Ung, GILBERT Denis, PILLER Olivier, MORTAZAVI Iraj, IOLLO Angelo
203	**W23**	Improved real-time monitoring and control of water supply networks by use of graph decomposition by: DEUERLEIN Jochen, PILLER Olivier, MONTALVO Idel
157	**W23**	Overall reliability assessment of water distribution system by: ATAOUI Rafet, ERMINI Ruggero
317	**W23**	Smart grid for optimal provider-consumer collaboration by: SCHWARTZ Rafi, OSTFELD Avi

Transients in pipe systems

ID	Scheduled on	
402	**W12**	An energy approach to studying pipe network transients by: KARNEY Bryan, MAKEKPOUR Ahmad, NAULT J.
205	**W12**	Frequency response-based leak detection in a single pipeline with localized wall deterioration by: GONG Jinzhe, LAMBERT Martin F. , SIMPSON Angus R., ZECCHIN Aaron C.
150	**W12**	Experimental quantification of intrusion due to transients in distribution systems by: JONES Sally, SHEPHERD Will, COLLINS Richard, BOXALL Joby
164	**W12**	Experimental investigation of wave scattering effect of pipe blockages on transient analysis by: DUAN Huan-Feng, LEE Pedro J., TUCK J.
283	**W12**	The representation of demand uncertainty in transient models of water distribution systems by: BRUNONE Bruno, CAPPONI Caterina, COLLINS Richard, EDWARDS Jonathan, FERRANTE Marco, MENICONI Silvia
238	**W12**	Bi-level optimization of closed surge tanks placement and sizing in water distribution system subjected to transient events by: SKULOVICH Olya, PERELMAN Lina, OSTFELD Avi
174	**W22**	Condition assessment in hydraulically noisy pipeline systems using a pressure wave splitting method by: ZECCHIN Aaron C., GONG Jinzhe, SIMPSON Angus R. , LAMBERT Martin F.
284	**W22**	Pipe system control by transient tests: the case of Villanova plan in Mantova (I) by: MENICONI Silvia, BRUNONE Bruno, FERRANTE Marco, CAPPONI Caterina, PEDRONI Manuela, ZAGHINI michele, LEONI Francesco
362	**W22**	Inverse transient analysis for a branched pipeline system with leakage and blockage using impedance method by: KIM Sanghyun
374	**W22**	PIV characterization of transient flow in pipe coils by: BRITO Moisés, SANCHES Pedro, FERREIRA Rui M., COVAS Dídia
405	**W22**	A non-oscillatory Preissmann Slot Method based numerical model by: MALEKPOUR Ahmad, KARNEY Bryan

Modeling "flows" in water infrastructure asset management

ID	Scheduled on	
191	**W14**	Dynamic metabolism modeling as a decision-support tool for urban water utilities – applied to the upstream of the water system in Oslo, Norway by: VENKATESH G., UGARELLI Rita Maria, SÆGROV Sveinung, BRATTEBØ Helge
223	**W14**	Life cycle energy and GHG emission within the Turin metropolitan area urban water cycle by: ZAPPONE Mariantonia, FIORE Silvia, GENON Giuseppe, VENKATESH Govindarajan, BRATTEBØ Helge, MEUCCI L.
143	**W14**	Mechanistic, probabilistic model to estimate the factor of safety of large-diameter cast iron water mains: sensitivity analysis by: WILSON Daniel, FILION Yves, MOORE Ian
239	**W14**	Using wireless vibration monitoring to enable condition-based maintenance of rotating machinery in the water and wastewater industries by: MYHRE Bård, PETERSEN Stig, UGARELLI Rita Maria
265	**W14**	Estimation of the efficiency for variable speed pumps in EPANET compared with experimental data by: GEORGESCU Andrei-Mugur, COŞOIU Costin-Ioan, PERJU Sorin, GEORGESCU Sanda-Carmen, HASEGAN Liviu, ANTON Anton
208	**W14**	Comparative study of intake and exhaust air flows of different commercial air valves by: IGLESIAS-REY Pedro L., FUERTES-MIQUEL Vicente S, GARCÍA-MARES Francisco J. , MARTÍNEZ-SOLANO F. Javier
403	**W24**	The assessment of the technical condition of the water distribution systems by: TUHOVČÁK Ladislav, TAUŠ Miloslav , KUČERA Tomáš
308	**W24**	Deterioration forecasting model for water pipeline systems with competitive hazard model by: SHIN Hwisu, KOBAYASHI Kiyoshi
285	**W24**	Infrastructure Value Index: a powerful modelling tool for combined long-term planning of linear and vertical assets by: ALEGRE Helena, VITORINO Diogo, COELHO Sérgio
396	**W24**	Mains condition assessment by Echopulse, a validation of results by: BEUKEN Ralph, HORST Peter, DIEMEL Roel, MESMAN George
399	**W24**	Identification of buried pipes using thermal images and data mining by: CARREÑO-ALVARADO Elizabeth Pauline, AYALA-CABRERA David, PÉREZ-GARCÍA Rafael, IZQUIERDO Joaquín
169	**W24**	Analyzing SCADA to understand the contribution of hydraulic pressures to trunk-main failure by: WILLIAMS Gareth, KUCZERA George

Water resources management

ID	Scheduled on	
235	**T2**	Evaluating infrastructure alternatives for regional water supply systems by model-assisted cost-benefit analysis – a case study from Apulia, Italy by: ARENA Claudio, CANNAROZZO Marcella, FORTUNATO Antonino, SCOLARO Ignazio, MAZZOLA Mario Rosario
371	**T2**	Water accounts and water stress indexes in the European context of water planning: the Jucar River Basin by: PEDRO-MONZONÍS María, FERRER Javier, SOLERA Abel, ESTRELA Teodoro and PAREDES-ARQUIOLA Javier
355	**T2**	Risk and reliability analysis of open reservoir water shortages using optimization by: MARTON Daniel, KAPELAN Zoran
364	**T2**	Using predictive model of mean monthly flows for large open reservoirs hydropower control by: MENŠÍK Pavel, STARÝ Miloš, MARTON Daniel
375	**T2**	Space -time variability of convective precipitation over land by: BONGIOANNINI CERLINI Paolina, BONAMENTE Emanuele, COTANA Franco, ASDRUBALI Francesco, ROSSI Federico

Rainwater harvesting and water reuse

ID	Scheduled on	
222	**T3**	Probabilistic modeling of rainwater tanks by: RAIMONDI Anita, BECCIU Gianfranco
251	**T3**	Rainwater harvesting, risk assessment and utilization in Kosice- City, Slovakia by: KAPOSZTASOVA Daniela, VRANAYOVA Zuzana, PURCZ Pavol
161	**T3**	Potential for peak flow reduction by rainwater harvesting tanks by: CAMPISANO Alberto, DI LIBERTO Dario, MODICA Carlo, REITANO Salvatore
304	**T3**	Rainwater management in compliance with sustainable design of buildings by: ZELENAKOVA Martina, MARKOVIČ Gabriel, KAPOSZTASOVA Daniela, VRANAYOVA Zuzana
136	**T3**	Water-harvesting tradition in Syrian steppe by: DE MIRANDA Adriana
305	**T3**	The concept of rainwater management in area of Košice region by: HUDAKOVA Martina, HUDAKOVÁ Gabriela

Leakage analysis and management

ID	Scheduled on	
387	**T4**	Applying the FAVAD concept and leakage number to real networks: A case study in KwaDabeka, South Africa by: DEYI Mpafane, VAN ZYL Jakobus, E. SHEPHERD Mark
280	**T4**	Losses identification in uncalibrated water distribution networks: a case study by: RUZZA Valentina , CRESTANI Elena, DARVINI Giovanna, SALANDIN Paolo
297	**T4**	Robustness analysis of sensor placement for leak detection and location under uncertain operating conditions by: BLESA Joaquim, NEJJARI Fatiha, SARRATE Ramon
249	**T4**	Methodology for leakage isolation using pressure sensitivity and correlation analysis in Water Distribution Systems by: BORT Carlos Maximiliano Giorgio, DE PASQUALE Gianluca, RIGHETTI Maurizio, BERTOLA Paolo
378	**T4**	Reducing Uncertainty of Infrastructure Leakage Index – A Case Study by: BABIC Branislav, STANIĆ Miloš, PRODANOVIĆ Dušan, DŽODANOVIĆ Boris, ĐUKIĆ Aleksandar
324	**T4**	Best Management Practices for Water Loss Control in Seoul by: CHOI Young Jun, AHN Jae Chan, IM Heon Tae, KOO Ami

Battle of Background Leakage Assessment for Water Networks

ID	Scheduled on	
141	**BBLAWN**	A comparison of population-based optimization techniques for water distribution system expansion & operation by: MORLEY Mark S., TRICARICO Carla
144	**BBLAWN**	WDS leakage management through pressure control and pipes rehabilitation using an optimization approach by: ROSHANI Ehsan, FILION Yves
204	**BBLAWN**	BBLAWN: A combined use of Best Management Practices and an optimization model based on a Pseudo-Genetic Algorithm by: IGLESIAS-REY Pedro L., MARTÍNEZ-SOLANO F. Javier, MORA MELIÁ Daniel, MARTÍNEZ-SOLANO P. Daniel
233	**BBLAWN**	A multi-step approach for optimal design and management of the C-Town pipe network model by: CREACO Enrico, ALVISI Stefano, FRANCHINI Marco
261	**BBLAWN**	Hierarchical decomposition of water distribution systems for background leakage assessment by: DIAO, K. GUIDOLIN, M., FU, G., FARMANI, R., BUTLER, D.
264	**BBLAWN**	A Simulation-optimization approach for reducing background leakage in water systems by: ECK Bradley J., ARANDIA Ernesto, NAOUM-SAWAYA Joe, WIRTH Fabian
273	**BBLAWN**	Battle of background leakage assessment for water networks (BBLAWN): an incremental savings approach by: TOLSON Bryan A., KHEDR Ayman
278	**BBLAWN**	An Energy Based Methodology Applied to C-Town by: Juan SALDARRIAGA*, Diego PÁEZ, Jessica BOHÓRQUEZ, Nicolás PÁEZ, Juan Pablo PARÍS, Daniela RINCÓN, Camilo SALCEDO, Daniel VALLEJO
282	**BBLAWN**	Guided evolutionary approaches for redesigning water distribution networks by: José P. MATOS, António J. MONTEIRO, Natércia MATIAS, Anton J. SCHLEISS
323	**BBLAWN**	Sequential multi-objective evolutionary algorithm for a real-world water distribution system design by: Farshid RAHMANI, Kourosh BEHZADIAN
334	**BBLAWN**	WaterNetGen HELPS C-Town by: Joaquim SOUSA, João MURANHO, Alfeu Sá MARQUES, Ricardo GOMES
335	**BBLAWN**	Background leakage assessment for BBLAWN by: Anatoli VASSILJEV, Tiit KOPPEL, Raido PUUST
415	**BBLAWN**	Evolutionary computation-based decision-making framework for designing water networks to minimize background leakage by: M. Ehsan SHAFIEE, Andrew BERGLUND, Emily Zechman BERGLUND, E. DOWNEY BRILL, Jr. G. MAHINTHAKUMAR
345	**BBLAWN**	Battle of Background Leakage Assessment for Water Networks Using Successive Linear Programing by: Eyal PRICE, Avi OSTFELD