

12th International Conference on Computing and Control for the Water Industry, CCWI2013

Preface

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This volume contains almost all the papers presented at the 12th edition of the International Conference on “Computing and Control for the Water Industry. Information for Water Systems and Smart Cities (CCWI2013)” held in Perugia (Italy), September 2-4 2013. The texts have been reviewed by the International Scientific Committee made up of some of the most reputable worldwide researchers in the field of Urban Hydraulics today.

The conference was established in 1991 in the United Kingdom, with an agreement between several Universities which alternately hosted it, and became a well-established series of bi-annual meetings. An idea of the increasing success of the CCWI conferences is given in Fig. 1 where the number of papers published in the proceedings of the last nine editions is shown. CCWI2013 authors provenience (Fig. 2) confirms the European character of CCWI conferences, even if the contribution of the other continents is remarkable considering the reduction of funds to Universities and research centers and the economical crisis.

The 12th edition is the first time the conference has been hosted abroad and this is a source of pride and a challenge for the Italian community dealing with these themes. The conference coincided with an increased interest in the analysis, planning and management of urban water systems. This was demonstrated by the large number of presentations (more than 200), which was excellent considering the specificity of the field and the presence of so many young researchers. The 12th edition is also the first one where the papers have been published online – *Procedia Engineering* on the Elsevier site – with perpetual open access providing maximum impact.

The paradigms of information and communications technology are changing both society and the technical world, and at the same time urbanization is increasing globally. As a consequence, so smart cities are becoming increasingly more important in optimizing resources management through stakeholder involvement and the conservation of opportunities for future generations. Water resources and asset management are relevant issues in the smart city archetype, and the water industry is increasingly committed to playing a central role. Information technology applied to water issues, also known as hydro-informatics, is an intensely inter-disciplinary field, linking water and environmental problems with various computational modelling methods and fast-developing information and communications technology.

The conference has emphasized the integration between the more conventional themes of water system planning and information technology opportunities which offer design solutions and innovative models for the challenging problems of water system management in an urban perspective, a key concept for smart cities. This element has emphasized the need for close collaboration between senior and young scientists, software developers, specialists and

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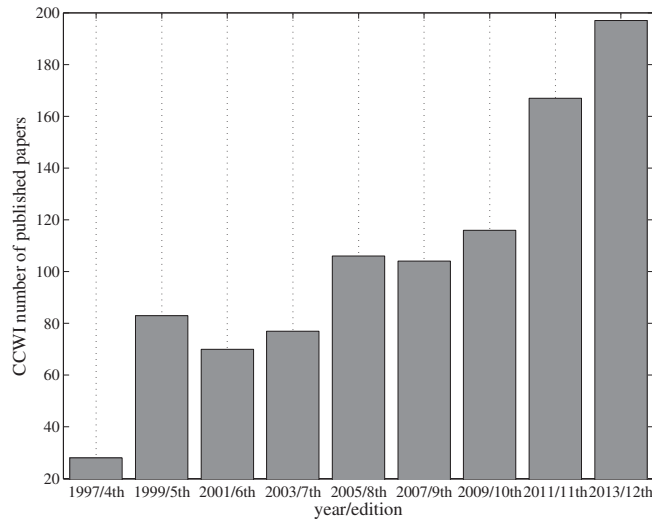


Fig. 1. Number of papers published in the proceedings of the last nine editions of CCWI conferences.

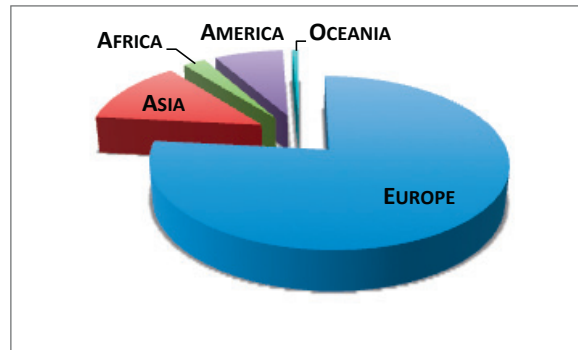


Fig. 2. CCWI2013 authors provenience.

stakeholders from public and private organizations. The conference has contributed towards the development of future key solutions sharing them with the participants who were present, from four continents and 36 different countries.

The main focus of the conference was on water supply and distribution, and urban drainage and sewerage systems, as used in the following areas: water engineering solutions for smart, liveable and sustainable cities; systems modelling, optimization and decision support; asset management and performance modelling; demand forecasting; leakage and energy management; innovative techniques for the diagnosis of pipe systems; real time monitoring and modelling, prediction control and data management; the impact of climate change on urban water management; sustainable urban water management; storm water control in urban areas including blue-green solutions; water and wastewater treatment modelling, optimization and control; water quality modelling including sediment and pollutant transport; advances in sensors, instrumentation and communications technology; data management including SCADA and GIS; security, reliability and resilience; case studies and practical applications; modelling tools for nearshore hydrodynamics.

An important contribution to the success of the event was given by the keynote lecturers: Joby Boxall of the University of Sheffield, Enrique Cabrera Marcet of the Universitat Politècnica de València, Mohamed S. Ghidaoui of the Hong Kong University of Science and Technology (this lecture was delivered by Bryan Karney), Zoran Kapelan of the University of Exeter, Bryan W. Karney of the University of Toronto, and Juan G. Saldarriaga Valderrama of the Universidad de los Andes. They gave brilliant, state-of-the-art lectures on some of the most important branches of



Fig. 3. *La Sala dei Notari* during the CCWI2013 opening session.

Urban Hydraulics, in the amazing Italian Renaissance setting of *La Sala dei Notari* in the centre of Perugia (Fig. 3): “What’s in the pipeline?” (J. Boxall), “Towards an energy labelling of pressurized water networks” (E. Cabrera), “Smart Water Systems (SWS): potentials and challenges” (M.S. Ghidaoui), “Advanced modelling for real-time management of smart water systems” (Z. Kapelan), “Energy accounting as an integrated and comprehensive spatial and temporal management tool for characterizing water supply system operation, performance and design” (B.W. Karney), and “Historical development of power use methods for WDS design and their evolution towards optimization metaheuristics” (J. G. Saldarriaga).

The contribution of the younger researchers was remarkable and the *Early Career Award* competition was very hard-fought with two tie breaking winners: Ina Vertommen of the University of Coimbra, and Robert Sitzenfrei of the University of Innsbruck.

We cannot overlook our debt of gratitude to our colleagues and friends of the *Centre for Water Systems* at the University of Exeter – Dragan Savic and Zoran Kapelan – for their constant support; to Marco Ferrante, Silvia Meniconi, Luigi Berardi, Daniele Laucelli, Alberto Campisano – co-editors of these proceedings – and Caterina Capponi who contributed to the event with invaluable expertise and boundless enthusiasm.

Before handing over to the papers themselves, something about their editing. We tried to fulfill Elsevier template requirements and we hope that the final result is satisfactory. Just for fun: before reviewing the papers, we could not guess how many ways the instruction *Author name* – at the top of each page starting from the second one – could be followed. Here below, as an example, the case of two author papers:

- *N. Tizio and N. Sempronio / Procedia...*
- *Tizio and Sempronio / Procedia...*
- *Tizio & Sempronio / Procedia...*
- *N. Tizio & N. Sempronio / Procedia...*
- *Tizio/ Procedia...*
- *N. Tizio / Procedia...*
- *Name Tizio and Name Sempronio / Procedia...*
- *Name Tizio & Name Sempronio / Procedia...*
- *Author name / Procedia...*

according to factorial (at the end we choose *Tizio and Sempronio / Procedia...*).

Finally we would like to once again thank the President of the Italian Republic, Giorgio Napolitano, for giving his huge patronage to this conference.

We greatly look forward to seeing you all in Leicester for the 13th edition of the CCWI conferences in 2015.