

Modeling in fluid mechanics, hydraulics, and hydrology, whether using digital tools or using scale models, has reached sufficient maturity to be in daily use by engineers for analysis and for communication. Increasingly complex cases can be handled thanks to ever more sophisticated tools and increasingly abundant computing power. The emerging environment populated with new generation of sensors, using cloud computing resources, is challenging the current practices of modelling and request innovation in methodology and concepts for a real integration into the decision-making processes.

With respect to these issues, a number of questions remain open: coupling of models, data acquisition & management, uncertainties, use of 3D CFD, models for complex phenomena and for large scale problems ... All those points will be addressed and discussed during SimHydro 2012.

203rd session of Scientific and Technical Committee

Following the first Simhydro conference, which was focused upon uncertainties and coupling in hydroinformatics and fluid modelling, the purpose of **SIMHYDRO 2012 is to enlarge the debate on the new** frontiers of simulation, with perspectives on the development of more data, of high performance computation, allowing to enrich the simulations and open the way to multiphysics, multiscale, methods, and better interaction with field or scale models data. Again, practitioners, stakeholders, researchers and engineers will be welcome to participate. Presentations of practical studies are encouraged.

English will be the conference language

Only Round Tables will be translated simultaneously

Scientific Committee:

Prof. Aronne Armanini (Trento University - IT)
Prof. J.L. Bertrand-Krajewski (INSA Lyon - FR)
Prof. D.M. Ingram (University of Edinburgh)
Dr. David Fortune (Micro Drainage - UK)
Prof. Serge Huberson (CNRS Poitiers - FR)
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Dr. Ben Rogers (University of Manchester - UK)
Prof. Dragan Savic (Exeter University - UK)



SIMHYDRO 2012

2nd International Conference



1st Announcement and call for abstracts

New trends in simulation Hydroinformatics and 3D modeling

Nice, FRANCE

12th – 14th September 2012.

Important deadlines:

Abstract submission: **October 31st, 2011**

Intention of participating in Round Tables: **January 30th, 2012**

Abstract submission notification: **January 30th, 2012**

Full paper submission : **April 13th, 2012**

Information on the conference updated on the following website:

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Organizing Committee:

Guy Caignaert (Arts et Métiers Paristech)
Jean Cunge (Expert)
Philippe Gourbesville (Polytech' Nice, *Chair of committee*)
Nicole Goutal (EDF)
Dominique Laurence (EDF)
Jean-Georges Philipps (SHF)
Didier Roult (CNR)
Patrick Sauvaget (SOGREAH)
Neda Sheibani (SHF)
Pierre-Louis Viollet (EDF)



www.simhydro.org



New trends in modeling for marine, river & urban hydraulics

What are the new trends in modeling today? Coupled models and their interaction with scale models. State of the art of current practice regarding new types of data eg sensors networks, real time data, laser technologies. Applicability of new technologies in risk managements systems

Coupling of models:

- Multiscale coupling
- Multiphysiques coupling
- Far & near-field coupling
- Interactions with scale models

Data & models:

How current practices are being modified by new types of data:

- Sensors networks, real-time data
- High density DEM, LIDAR and laser techniques
- Surface velocity measurements
- Progress in the use of data assimilation
- Applications to water and risk management systems

Uncertainties and probabilistic approaches:

- Models application domains, Multi model ensembles - Uncertainties identification and quantification, from data to results
- Post processors

The stakeholders and practitioners of simulation

One group of stakeholders are users of the results of modeling: decision-makers such as elected representatives, NGOs, investors, governments, local and central, and in general, citizens. Another group are those who run the models themselves, e.g. engineers carrying out feasibility studies, businesses, water-related service and utilities managers. With the help of models, can all the stakeholders understand each other? Do they use hydroinformatics technology? Do they have the means to dialog directly or indirectly with the model developers? Do the developers and researchers on the one hand, and the stakeholders on the other, know each other well enough to exchange information and clearly express concerns about the limits and the potential of the models?

ROUND TABLE 1: *New requirements for hydroinformatics*

- Project owners expressions

ROUND TABLE 2: *From simulation towards decision*

- Communication of data to stakeholders

What perspectives for the methods and tools future?

- Development of high performance computation (HPC)
- Integration frameworks for data & models
- Cloud computing
- Software & Expertise as a Service

3D CFD and applications

What is the state-of-the-art in research and development in the domain of numerical fluid mechanics? What numerical problems are only poorly solved or unsolved for more and more complex approaches such as 2D, 3D: the links between hydrodynamics, turbulent diffusion, transport phenomena? What is the state-of-the-art in multi-scale modeling and multi-physics modeling?

Hydraulic machinery:

- Choice of models

Flows in the near field of structures:

- Navier-Stokes models
- SPH and Lagrangian methods
- Free surface models

Models for complex phenomena:

- Air entrainment
- Multiphase flows
- Interactions between flow, sediments and structures

Models for large scale problems:

- Lakes, estuaries,.....

