

## Welcome to the third issue of the *Journal of Hydroinformatics*

Hydroinformatics is the study of the flows of knowledge and data related to the flow of water and all that it transports, together with interactions with both the natural and artificial environments. Hydraulics, understood as the study of flows of water is accordingly central to hydroinformatics. Without hydraulics, no hydroinformatics!

In addition to hydraulics and hydrology, hydroinformatics draws upon such a range of enabling technologies that it is even impractical to enumerate these here. Hydroinformatics has recourse to the latest IT developments in the fields of artificial intelligence (including knowledge-based systems, machine learning, evolutionary algorithms and artificial neural networks), artificial life, cellular and finite-state automata and other, previously unrelated, sciences and technologies.

The first issue of the *Journal of Hydroinformatics* of the new millennium is entirely devoted to one of those emerging IT paradigms: data mining and knowledge discovery. It is common knowledge that we live in the times of information overflow. In view of that, means for data collection, storage, retrieval and distribution have never been so advanced as they are today. However, while

advances in data storage and retrieval continue at an unprecedented rate, the same cannot be said about advances in knowledge extraction from data. Without such advances, however, there is a substantial risk of missing what the data has most to offer.

The third issue presents several approaches to the process of 'distilling' useful information from data. The paper by Minns examines hydroinformatics-style data mining and portrays several technical paradigms and their applications. Zaldivar *et al.* describe chaos theory in great detail and also demonstrate its application to the forecasting problem. The paper by Lees outlines data mechanistic approaches originating from nonlinear transfer function. Finally, Babovic and Keijzer introduce genetic programming in its standard and augmented form, as well as describing an application in the process of scientific knowledge discovery.

Enjoy reading.

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