



Open Invited Track Proposal on

## Modelling for supervision, fault diagnosis and prognosis of water systems

Organizers

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### Summary Statement

The impact of climate change, population growth and industrial development throughout the world has forced water managers to increase the efficiency of water resources. Management strategy based on control, diagnosis and prognosis of malfunctions plays a crucial role in improving such an efficiency. Regarding this challenge, it will not be enough to rely only on traditional approaches to solve the problem of control, diagnosis and prognosis. More advanced techniques are required for water systems since their characteristics are the following: complexity, large-scale, non-linearity, time-varying delays, several unknown inputs/outputs, interacting with human activities. Therefore, more advanced techniques need to be developed and utilized. Firstly, it is necessary to optimize the placement of sensors and actuators required for the control, diagnosis and prognosis. Later on, improved models are required to better understand and reproduce the dynamics of water systems. Finally, advanced techniques of supervision, fault diagnosis, prognosis and predictive maintenance can be implemented in order to guaranty the operating condition, promptly and continuously detect errors and abnormal events that guarantee the efficiency of the water management face to faults, components wear and uncertainties affecting the system.

The goal of this invited session is to present new advances in modelling for supervision, fault diagnosis and fault tolerant control approaches designed for water systems to maintain high levels of performance, reliability and longevity in their management.

This Open Invited Track is proposed in the framework of the IFAC TC 8.3 “Modelling and control of environmental systems”.

### Key dates

- **31 October 2019** - Draft manuscript submission
- **February 2020** - Notification to authors
- **31 March 2020** - Final paper submission deadline
- **12 -17 July 2020** - IFAC World Congress in Berlin

Invited session identification code: **2q1en**