Special Issue Reprint

Monitoring, Modelling and Management of Water Quality

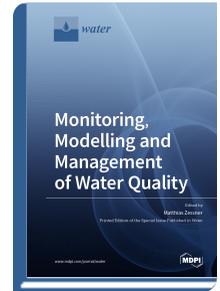Edited By:
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Different types of pressures, such as nutrients, micropollutants, microbes, nanoparticles, microplastics, or antibiotic-resistant genes, endanger the quality of water bodies. Evidence-based pollution control needs to be built on the three basic elements of water governance: Monitoring, modeling, and management. Monitoring sets the empirical basis by providing space- and time-dependent information on substance concentrations and loads, as well as driving boundary conditions for assessing water quality trends, water quality statuses, and providing necessary information for the calibration and validation of models. Modeling needs proper system understanding and helps to derive information for times and locations where no monitoring is done or possible. Possible applications are risk assessments for exceedance of quality standards, assessment of regionalized relevance of sources and pathways of pollution, effectiveness of measures, bundles of measures or policies, and assessment of future developments as scenarios or forecasts. Management relies on this information and translates it in a socioeconomic context into specific plans for implementation. Evaluation of success of management plans again includes well-defined monitoring strategies. This book provides an important overview in this context.

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