

Integrated approaches for water resources management: examples from France

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Abstract Integrated water resources management (IWRM) implies a multidisciplinary approach to consider all aspects of the water cycle, including surface water and groundwater, but also socio-economic activities and the cultural context. There is a variety of approaches, methodologies and tools that could be used to support IWRM. The choice must be made according to the context, the objectives, the scale of the problem to tackle and the degree of precision that is needed. This paper presents two different modelling approaches which were adopted to construct tools dedicated to integrated water resource management. In the first case study, located in the west Paris area, France, a model including an optimisation component was proposed to find the best operational exploitation of groundwater and surface water with minimal cost. In the second example, a numerical tool, SimAGE, was developed to explore water management scenarios at the catchment scale and to assess their environmental and economic impacts.

Key words integrated water resource management; hydro-economic assessment; numerical and mathematical modelling; decision support tools; SimAGE; La Réunion