

Interactive comment on “Knowledge-based approaches for river basin management” by P. Mikulecký et al.

Anonymous Referee #3

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The paper presented by Mikulecky and co-workers is a plea for the use of knowledge-based approaches for river basin management. The subject of the paper fits well to the topic of the special issue. The paper is made of two parts. The first part describes concepts and gives examples in the domain of knowledge-based systems, while the second part reports on an application to reservoir management in the case of river Uhlava (Czech republic). The general conclusion of the reviewer is that the paper is poorly organised. It should be considerably reworked before it could become a convincing demonstration.

A first part of the paper presents formerly developed concepts in the domain of knowledge life-cycle (by Wig, Meyer and Zack and others). These concepts are not easy to

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grasp, for a non-specialist reader, and moreover, the terminology changes along the paper. This is most likely due to the original concept developers themselves but the authors should clarify this, and better compare all concepts to each other. A major problem with this part of the paper is that it has no conclusion and no connection to the following part.

The second part of the paper presents applications of knowledge systems (expert systems) to “ water management ” (in facts two applications among five relate to forest fire management, there are dozens of published applications of expert systems to water management, better focused examples could have been chosen). They are based on decision trees, on modelling, an various system architecture an interfaces to users (for various purpose, knowledge retrieval, dissemination etc...). There objective can be forecast, diagnostic, control.... The lack of connection to the previously described concepts seriously impairs the relevance of this series of examples.

The last part of the paper describes the AQUIN project run with dispatchers of the Nyrsko reservoir in the Uhlava valley. The authors first analyse the knowledge life-cycle in the company (which seems poorly efficient indeed), and turn to the CommonKADS methodology to identify the problems, describe the tasks and build an ontology for the specific system under study. An uncomplete (at this stage) demonstrator was also developed to communicate with the company. But the authors do not describe the ontology (which is presented as the major output of the project) and do not describe the demonstrator.

The reader is much frustrated by this paper. He can learn that concepts have been developed in the knowledge-based systems area. He also can learn that something was done with various tools (CommonKADS, G2, CLIPS) to improve a non-optimal water management at the Nyrsko dam. But the reader cannot learn anything about the output of the projects.

HESS is not a journal specialised in knowledge-based systems, the authors should

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modify their scope and underline the application. The non-specialised reader wishes to have much more feed back about the potential of the tools for a given application (in this case reservoir management), and not that much about the methodologies or computer tools. In addition to the lack of clear/strong connections between the different parts of the paper, improving this specific point requires a broad reworking of the whole paper in order to fit to want can be expected by HESS readers.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 4, 1999, 2007.

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