



Combining Bayesian Networks and Agent Based Modeling to develop a decision-support model in Vietnam

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Complexity and uncertainty in natural resources management have been focus themes in recent years. Within these debates, with the aim to define an approach feasible for water management practice, we are developing an integrated conceptual modeling framework for simulating decision-making processes of citizens, in our case in the Day river area, Vietnam. The model combines Bayesian Networks (BNs) and Agent-Based Modeling (ABM). BNs are able to combine both qualitative data from consultants / experts / stakeholders, and quantitative data from observations on different phenomena or outcomes from other models. Further strengths of BNs are that the relationship between variables in the system is presented in a graphical interface, and that components of uncertainty are explicitly related to their probabilistic dependencies. A disadvantage is that BNs cannot easily identify the feedback of agents in the system once changes appear. Hence, ABM was adopted to represent the reaction among stakeholders under changes. The modeling framework is developed as an attempt to gain better understanding about citizen's behavior and factors influencing their decisions in order to reduce uncertainty in the implementation of water management policy.