

Systematic testing of an integrated systems model for coastal zone management using sensitivity and uncertainty analyses

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Abstract: Systematic testing of integrated systems models is extremely important but its difficulty is widely underestimated. The inherent complexity of the integrated systems models, the philosophical debate about the model validity and validation, the uncertainty in model inputs, parameters and future context and the scarcity of field data complicate model validation. This calls for a validation framework and procedures which can identify the strengths and weaknesses of the model with the available data from observations, the literature and experts' opinions. This paper presents such a framework and the respective procedure. Three tests, namely, Parameter-Verification, Behaviour-Anomaly and Policy-Sensitivity are selected to test a Rapid assessment Model for Coastal-zone Management (RaMCo). The Morris sensitivity analysis, a simple expert elicitation technique and Monte Carlo uncertainty analysis are used to facilitate these three tests. The usefulness of the procedure is demonstrated for two examples. © 2006.

Author Keywords: Coastal zone management; Decision support system; Expert elicitation; Integrated systems model; Sensitivity and uncertainty analyses; Sulawesi; Testing; Validation

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