

Marrying Hydrological Modelling and Integrated Assessment for the needs of Water Resource Management

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Abstract This paper discusses the integration of hydrology with other disciplines using an Integrated Assessment (IA) and modelling approach to the management and allocation of water resources. Recent developments in the field of socio-hydrology aim to develop stronger relationships between hydrology and the human dimensions of Water Resource Management (WRM). This should build on an existing wealth of knowledge and experience of coupled human–water systems. To further strengthen this relationship and contribute to this broad body of knowledge, we propose a strong and durable “marriage” between IA and hydrology. The foundation of this marriage requires engagement with appropriate concepts, model structures, scales of analyses, performance evaluation and communication – and the associated tools and models that are needed for pragmatic deployment or operation. To gain insight into how this can be achieved, an IA case study in water allocation in the Lower Namoi catchment, NSW, Australia is presented.

Key words integrated assessment; integrated modelling; hydrology; social science; interdisciplinary; water resource management; Australia