Risk in Water Resources Management (Proceedings of Symposium H03 held during IUGG2011 in Melbourne, Australia, July 2011) (IAHS Publ. 347, 2011). 159-164

Risk-based assessment of water availability in a changing climate

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Abstract Water availability assessment is a complex undertaking and is becoming more challenging given the uncertainty associated with climate change. It requires the evaluation of not only water supplies, but also of the competing water demands for socio-economic development and maintaining a healthy ecosystem. Both water supplies and water demands are subject to significant seasonal and annual variation, which is expected to be exacerbated by climate change. By analysing the time varying water supplies and water demands, water availability can be presented in terms of probability or in a risk-management context. The large uncertainty surrounding climate change, as well as future socio-economic and other developments can be dealt with by using scenario analysis that incorporates a wide range of future socio-economic and climate scenarios or possibilities. Such analysis allows the establishment of the relative change in risk to the water resources system (e.g. frequency of occurrence of shortages) as a result of climate change (scenarios) and the analysis of the impacts of adaptation measures on reducing such risk.

Key words water availability; climate variability; climate change; risk; climate adaptation