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Evaluating and managing environmental water regimes in a water-scarce and uncertain future

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ABSTRACT

1. While the number of environmental flows and water science programmes continues to grow across the globe, there remains a critical need to better balance water availability in support of human and ecological needs and to recognise the environment as a legitimate user of water. In water-stressed areas, this recognition has resulted in friction between water users in the public and private sectors. An opportunity exists for practitioners to be on the forefront of the science determining best practices for supporting environmental water regimes.
2. This Special Issue brings together a collection of environmental flows science and water management papers organised around three major themes: (1) method development and testing; (2) application case studies; and (3) efficacy evaluation. Contents of this Special Issue are intended to foster collaboration and broaden transferability of the information, technical tools, models and methods needed to support environmental water management programmes.
3. The technical sophistication of methods and modelling tools, while important to the advancement of environmental water science, may come at the expense of easily interpretable outcomes that positively influence management decisions. Researchers need to be more proactive in translating the results of advanced modelling methodologies into user-friendly tools and methods. This will allow stakeholders and water managers to proactively test alternative water allocation scenarios to help address growing human water demands in the face of droughts and changes in climatic patterns.
4. The application of environmental flows science and water management strategies cannot be done in isolation. Implementation involves a complex decision-making process that integrates ecological, hydrologic and social science across diverse multifaceted governance systems and requires active stakeholder involvement. Scientists and managers must strengthen partnerships at multiple scales to develop sensible science investment strategies so that collective knowledge can be translated into wise environmental water management decisions.

Full Text

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