



CreativeDrought: Transdisciplinary approach to drought preparedness and local water management

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Transformative interdisciplinary methods and tools are required to address crucial water-related challenges facing societies in the Anthropocene. Droughts are costly environmental hazards with severe socio-economic and environmental impacts, and are expected to increase in their frequency and severity worldwide in the future. Thus it is important to help build resilience to future droughts, however, this cannot rely solely on forecasting and scientific understanding; social and cultural information and perspectives need to be included. The CreativeDrought project, conducted in rural South Africa, took a transdisciplinary approach by combining hydrological modelling and social science narrative methods with the aim to increase drought preparedness and resilience through community participatory workshops. We used a hydrological model based on local data to generate different future drought scenarios for the village of Folovhodwe. We used a narrative approach to draw upon people's imagination and make it easier to consider the future. The simulated data from these scenarios were translated into workshop storylines by the CreativeDrought team. During the workshops, these storylines were used as the starting point for discussions about the impacts of future droughts on the participants and their community, and ways to prepare for it.

We had success in allowing participants to create future drought narratives as well as exchange stories and ideas, encouraging intergenerational and cross-sectoral exchange. Despite the difficulties that communities often have engaging with the future (e.g. fatalistic perspectives), we found that participants were able to actively engage with discussions about the future using this interdisciplinary methodology, a process which is necessary for better preparation and adaptation to future droughts. Understanding people's experiences of drought through time gave a contextualised understanding of the challenges that the community has faced, such as past and current barriers to preparation and adaptation to drought, and old practices that had been lost. The model was needed to make the scenarios and storylines relevant and set in a local context to enable participants to connect easily with the information and engage in the discussions and tasks of the workshops.

Here we reflect on the processes, findings and lessons learnt from the CreativeDrought project, building on the three main themes:

- i) Co-production of knowledge: including the language barriers experienced working in the local language, understanding of communication preferences and norms, and working with the community to incorporate local knowledge;
- ii) Interdisciplinary collaborations: including the advantages and lessons learnt from interdisciplinary collaboration, such as the vocabulary differences between physical and social sciences;
- iii) Real-world challenges of studying hydrology: including the use of scientific terminology, modelling limitations, working in a data-limited region, and developing time-limited workshops.

Methodologies using the understandings from both the physical and social sciences applied locally can help to promote discussion about future situations, showing the potential for this approach elsewhere, but it is important to reflect upon lessons learnt for future interdisciplinary research.