

CreativeDrought: An interdisciplinary approach to building resilience to drought

Sally Rangelcroft (1), Anne Van Loon (1), Melanie Rohse (1), Rosie Day (1), Stephen Birkinshaw (2), and Eugine Makaya (3)

(1) School of Geography, Earth and Environmental Sciences, University of Birmingham, Birmingham, UK, (2) School of Civil Engineering and Geosciences, Newcastle University, Newcastle, UK, (3) Civil and Water Engineering, National University of Science and Technology, Bulawayo, Zimbabwe

Drought events cause severe water and food insecurities in many developing countries where resilience to natural hazards and change is low due to a number of reasons (including poverty, social and political inequality, and limited access to information). Furthermore, with climate change and increasing pressures from population and societal change, populations are expected to experience future droughts outside of their historic range. Integrated water resources management is an established tool combining natural science, engineering and management to help address drought and associated impacts. However, it often lacks a strong social and cultural aspect, leading to poor implementation on the ground. For a more holistic approach to building resilience to future drought, a stronger interdisciplinary approach is required which can incorporate the local cultural context and perspectives into drought and water management, and communicate information effectively to communities.

In this pilot project 'CreativeDrought', we use a novel interdisciplinary approach aimed at building resilience to future drought in rural Africa by combining hydrological modelling with rich local information and engaging communicative approaches from social sciences. The work is conducted through a series of steps in which we i) engage with local rural communities to collect narratives on drought experiences; ii) generate hydrological modelling scenarios based on IPCC projections, existing data and the collected narratives; iii) feed these back to the local community to gather their responses to these scenarios; iv) iteratively adapt them to obtain hypothetical future drought scenarios; v) engage the community with the scenarios to formulate new future drought narratives; and vi) use this new data to enhance local water resource management.

Here we present some of the indigenous knowledge gathered through narratives and the hydrological modelling scenarios for a rural community in Southern Africa. We use this local knowledge to develop the hypothetical future scenarios with a hydrological model (SHETRAN), with an iterative process to build trust in the tool. Through workshops, the communities can then use their own experiences, the modelling scenarios and climate analogies to experiment with stories about future drought events and possible effective ways of responding to them. This interdisciplinary approach allows the local community to extrapolate their narrated, experienced droughts from outside their historic range and into their projected range. These workshops will find innovative and effective ways to communicate science and information to the rural population. In this co-creation process of using creative experimentation based on narratives and scenario hydrological modelling, we develop new ways of adapting to drought and building resilience. This approach to increasing resilience is regarded as robust because it uses scientific methods, but is also culturally embedded and bottom-up.