

Shifting from modelling changes in climate to better understanding risks to achieving desired outcomes

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Abstract: Hydroclimate risk assessments generally consist of so called “top-down” approaches that are dominated by climate science considerations – how to best represent changes in climate and how to best propagate these changes to changes in hydrometeorological variables. However, while this approach produces a consistent set of future changes in certain hydro-meteorological variables, these are often disconnected from the critical changes that cause system stress or failure, which is the information needed to enable decision-makers to understand the risks to the systems they are trying to design, operate or manage. This has resulted in decision paralysis and a lack of much needed climate action. In order to address this issue, we need to shift from a focus on climate science to a focus on desired outcomes and decisions, and what potential changes in climate are critical to causing system stress and failure in an uncertain future. These so called “bottom-up” approaches start with understanding system vulnerabilities and the climate attributes that are most likely to affect these, before developing bespoke climate scenarios that are able to ascertain how “close” systems are to failure and what changes in climate are required to cause this failure. This presentation makes the case for a shift from focusing on modelling changes in climate to better understanding system risks in a climate affected future and outlines a way forward for achieving this.

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