

Challenges in attributing change in Australian natural hazards

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Abstract: Natural hazards such as floods, droughts, wildfires and heatwaves lead to societal impacts such as loss of life, damage to infrastructure, reduced agricultural productivity and ecological degradation. These hazards result from a combination of interacting physical processes that express across a wide range of spatial and temporal scales, and are indicated by climate and weather variables such as rainfall, temperature, pressure and wind. The diverse set of interacting physical processes that can cause changes in the occurrence and/or magnitude of a natural hazard can make the attribution of change to one or several causes extremely challenging. Using recent research on Australian floods as a case study, this presentation describes some of these challenges. Apparent contradictions between alternative datasets and studies are identified, and possible explanations are suggested. Ultimately, we argue that our understanding and modelling capability for how weather and climate processes lead to natural hazards is limited by both data availability and process understanding, and a focused community effort is required to better understand how the magnitude and/or occurrence of natural hazards has changed in the past, and what this augurs for the future.