Perfect Extremes: Mapping the Global Interplay of Droughts and Floods in a Changing Climate

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Abstract:

The "Perfect Extremes" atlas arising from the PerfectSTORM project, researching the risk of cascading hazards of flooding after drought, focussing on hydro-social feedbacks. This atlas embodies a groundbreaking effort to visualize and understand the complex dynamics between drought and flood events across the globe, intensified by climate change. It synthesises art and science to explore the intricate relationships between these extreme events through an interdisciplinary approach, uniting experts in data visualisation, hydrology, and social sciences. The atlas aims to enhance understanding of these phenomena from a policy perspective, offering insights into effective risk management strategies and providing guidance for future resilience building. This work is pivotal in fostering a holistic understanding of hydrological extremes, crucial for developing informed, adaptive strategies that address both immediate and long-term climate-related challenges.

The atlas aims to elucidate the complex interplay between drought and flood events under the influence of climate change, using a global dataset of paired events. By integrating diverse data sources including academic publications, governmental and NGO reports, and news articles, this atlas will provide a comprehensive mapping and analysis of drought-to-flood occurrences worldwide. We adopt a mixed-methods approach, combining quantitative analyses of hydrological and social data with qualitative insights from narrative interviews and participatory story-telling workshops. This approach allows for a nuanced exploration of not only the physical processes but also the socio-economic impacts and adaptations associated with these extreme events. The theoretical framework is rooted in socio-ecological modelling, emphasising the dynamic interactions between human and hydrological systems.

The atlas dedication to the interconnectedness of drought and flood events is of paramount importance for multiple reasons. First, it addresses a critical gap in our understanding of how these extreme events are linked and exacerbated by climate change, offering a global perspective that is often missing in region-specific studies. Such an atlas not only illustrates the geographical distribution and frequency of these events but also delves into the complex hydro-social feedback loops that underpin them. By integrating empirical data with advanced modelling techniques, the atlas provides a robust foundation for predicting future scenarios and assessing potential risks. Furthermore, the atlas serves as an educational tool, raising awareness of the urgent need for integrated and proactive disaster risk management strategies that can mitigate the devastating impacts of such cascading natural disasters. In essence, the atlas is not just a repository of data but a catalyst for informed action and policy innovation in the face of global climate challenges.

References:

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