



Global flood risk: the role of ENSO

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The economic consequences of flooding are huge, as exemplified by recent major floods in Thailand and Pakistan. Moreover, economic flood risks are increasing around the world. Whilst much research is being carried out to assess how this may be related to socioeconomic development (increased exposure to floods) or climate change (increased hazard), the role of interannual climate variability is poorly understood. To address these issues, we assessed and mapped the impacts of large scale interannual climate variability on both flood risk (in terms of expected annual economic damages) and flood hazard at the global scale. In this contribution, we assess El Niño Southern Oscillation's (ENSO) impact on global flood risk, and discuss implications for key stakeholders. The research involves a model chain coupling the results of a hydrological model, inundation model, and flood damage model.

We found clear and significant differences in annual expected economic damage between El Niño (EN) years and non-EN years, and between La Niña (LN) and non-LN years. Moreover, we find strong correlations between ENSO and annual floods in rivers all around the world. In many regions, the strength of these relationships is greater than those between the ENSO indices and mean annual flows. The application of these results to short and medium term disaster contingency planning, and to prioritizing adaptation financing in most "at risk" regions, is being investigated through ongoing dialogue and collaboration with a range of international stakeholders.