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Filling in the Gaps: Consistently detecting previously unidentified extreme weather event impacts

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Existing databases for extreme weather events such as floods, heavy rainfall events, or droughts are heavily reliant on authorities and weather services manually entering details about the occurrence of an event. This reliance has led to a massive geographical imbalance in the likelihood of extreme weather events being recorded, with a vast number of events especially in the developing world remaining unrecorded. With continuing climate change, a lack of systematic extreme weather accounting in developing countries can lead to a substantial misallocation of funds for adaptation measures. To address this imbalance, in this pilot study we combine socio-economic data with climate and geographic data and use several machine-learning algorithms as well as traditional (spatial) econometric tools to predict the occurrence of extreme weather events and their impacts in the absence of information from manual records. Our preliminary results indicate that machine-learning approaches for the detection of the impacts of extreme weather could be a crucial tool in establishing a coherent global disaster record system. Such systems could also play a role in discussions around future Loss and Damages.