



## **Changes in Expected Financial Loss from Tropical Cyclones Arising from Observed Climatological Trends**

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Trends in tropical cyclone climatology are being observed, but their effect on future losses is yet to be determined. We establish a method for quantifying the changes to future financial losses from tropical cyclone damage to insurable property under a changing climate within the framework of established catastrophe models. Current catastrophe models consist of a large stochastic catalogue of events that have been simulated from the latest multi-decadal stationary climate record. In this way, they are designed to quantify the expected financial loss and its variability in any given year with the climatology used for calibration. Trends arising from a changing climate, for example the poleward migration of lifetime maximum intensity recently highlighted by Kossin et al [Nature, 509, 349-352], cannot therefore be analysed without modifications to existing catastrophe models.

In this study, we explore a general approach to the assessment of changes in financial loss due to trends in tropical cyclone behaviour using the poleward migration trend identified by Kossin et al as a specific test case. New catalogues are sub-sampled from larger existing ones using criteria that are based on observed climatological trends. Regions of increasing risk are then identified, which could help prioritise current efforts to mitigate risk.