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Abstract:

Almost all catastrophe (CAT) modeling today is based on statistical analysis of historical events. Some of this modeling is highly advanced – for example, most extant hurricane CAT models are based on a sophisticated bootstrapping of historical tropical cyclone tracks and intensity – but it all ultimately depends on the length and quality of this historical record and the assumption that the statistics are stationary. But for many weather-related hazards in much of the world, the historical record is woefully short and/or of poor quality, and the assumption of stationary statistics has been essentially obliterated by climate change that has already occurred. Given that climate change disproportionately affects the tails of risk distributions, it is likely that current estimates of the costliest potential events are far off the mark. For this reason, I advocate a fast migration toward physical modeling of weather-related risks and will discuss recent progress toward this goal. To transform the risk modeling industry, educational institutions need to quickly ramp up efforts to produce a new generation of graduates who are well versed in both physical modeling and the field of risk.