

Hurricane Hazards and Risk in a Changing Climate

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Abstract

Hurricanes cause much damage and loss of life worldwide. The impacts of these storms may worsen in the coming decades because of rapid coastal development coupled with sea-level rise and possibly increasing hurricane activity due to climate change. Here we present a holistic framework of modeling hurricane hazards and risk in a changing climate. First, we introduce a new probabilistic hurricane model that can be used to generate large numbers of synthetic storms with physically correlated characteristics under projected climate conditions. Second, we discuss about hurricane wind, rainfall, and surge hazard modeling and the coupling with the hurricane model to estimate individual and compound hazard probabilities in a changing climate. Then, we discuss about the modeling of hurricane impact on infrastructure systems, particularly hurricane-blackout-heatwave compound risk.