Assessing and Mitigating Hurricane Risk in a Changing Environment

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Abstract

Hurricanes, with their strong winds, heavy rainfall, and storm surges, cause much damage and loss of life worldwide. The impact 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. We develop an integrated framework to analyze hurricane hazard risk in a changing environment. In this talk, we focus on hurricane storm surge risk. We present an integrated dynamic risk analysis for flooding task (iDraft) framework to assess coastal flood risk at the city or regional scale, considering integrated dynamic effects of storm climatology change, sea-level rise, and coastal development. We also perform probabilistic cost-benefit analyses for various flood risk mitigation strategies (e.g., elevating houses and building barriers).