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Factors Influencing Hurricane Surges along the Louisiana-Mississippi Coast

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The effects of recent hurricanes along U.S. Coastlines, along with expected future sea level rise and the potential for increased storm activity all point to a critical need for improved methods for estimating coastal hazards and associated risks. Many of the models used today to assess hazards and risk incorporate considerable empiricism in their formulation. Unfortunately, most of the empirical evidence is drawn from small to moderate storm events and cannot be effectively extrapolated to extreme storms such as Hurricane Katrina. This presentation will critique the state of the art in hurricane surge prediction, including the adequacy of numerical models, coefficients within these models, and the wind fields utilized to force them. Once the predictive system and its physical basis are introduced and discussed, a methodology will be described for utilizing information from such a system to estimate risk for coastal areas, including the effect of uncertainties in both the modeling system and storm climate,. Using the methodology introduced here, maps of estimated storm surge levels for selected recurrence intervals in the New Orleans area will be presented along with a comparison to some previously derived values to provide perspective.