



Efficient Methods for Storm Surge Hazard/Risk Estimation

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This presentation begins with a synopsis of the methodology for risk estimation used by the Interagency Performance Task Force (IPET) in its forensic study of Hurricane Katrina. It then analyzes various physical processes contributing to hurricane-surge flooding hazards along the central Gulf of Mexico and discusses sources of error inherent in the estimation of each, including a brief discussion of the effects of climatic variability and long-term coastal evolution. Next, the combined effects of hurricane forcing (winds, waves, and water levels) and river stages on surge levels within selected areas in the vicinity of New Orleans are examined using results generated by a high-resolution numerical coupled storm surge and wind wave model (ADCIRC - STWAVE). These results, combined with probabilistic estimation methods for coincident waves and water levels, are used as the basis for quantifying the probabilities of potential levee failures within our study area. This methodology is then utilized to examine the potential of changes in the levee system to impact risks in the vicinity of such alterations. A common thread that emerges from these analyses is that, when the risk in one area is lowered by a new barrier or diversion, the risk in another area is typically raised. For this reason, it is extremely important, when considering possible changes to a flood protection system, that a system-wide perspective be maintained in examining the total impacts of such planned changes.