Panel 7: Extreme Storm Surges for Coastal Areas

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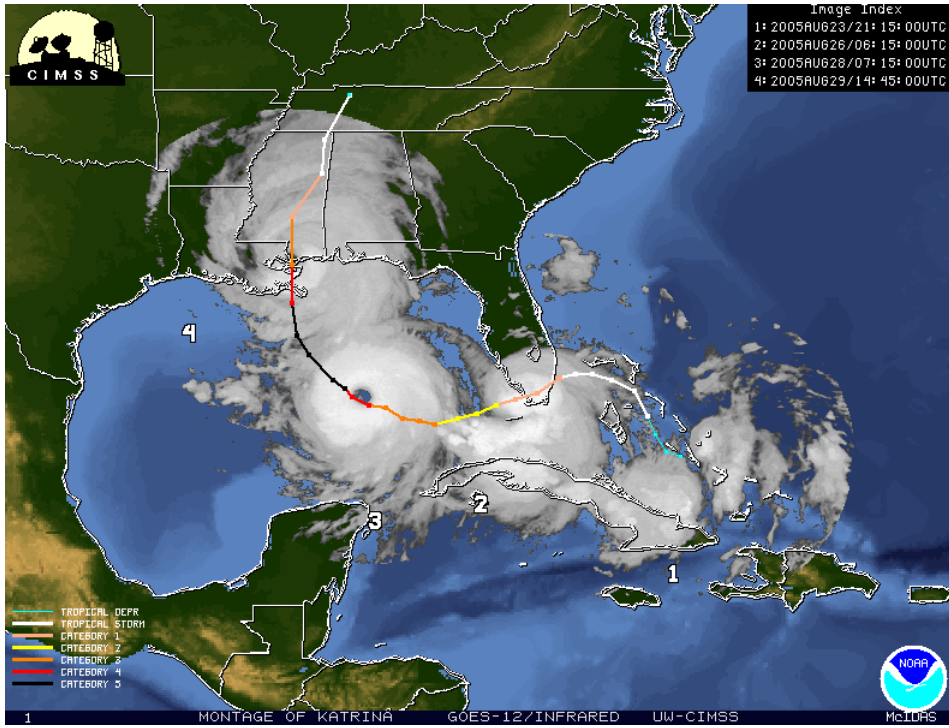
Overview:

Surges and their probabilities are very complex in time and space

A diverse group is needed to develop the right tools to estimate these via <u>good physics</u> and <u>good numerical tools</u> and <u>good statistics</u>



"A model should be as simple as possible … but no simpler"

A. Einstein

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Similar to tsunamis, exact surge values depend on many different factors. To drive surge models, wind fields with extremely large numbers of degrees of freedom were developed but could not be used probabilistically.

As a first step, a concerted effort was spent on quantifying error sources in modeling and on developing a set of parameters which could permit accurate hurricane surge predictions and while still being small enough to allow the development of an appropriate multivariate probability distribution function

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Accuracy for a single event with IPET prediction system, including objective friction specification with "best" winds

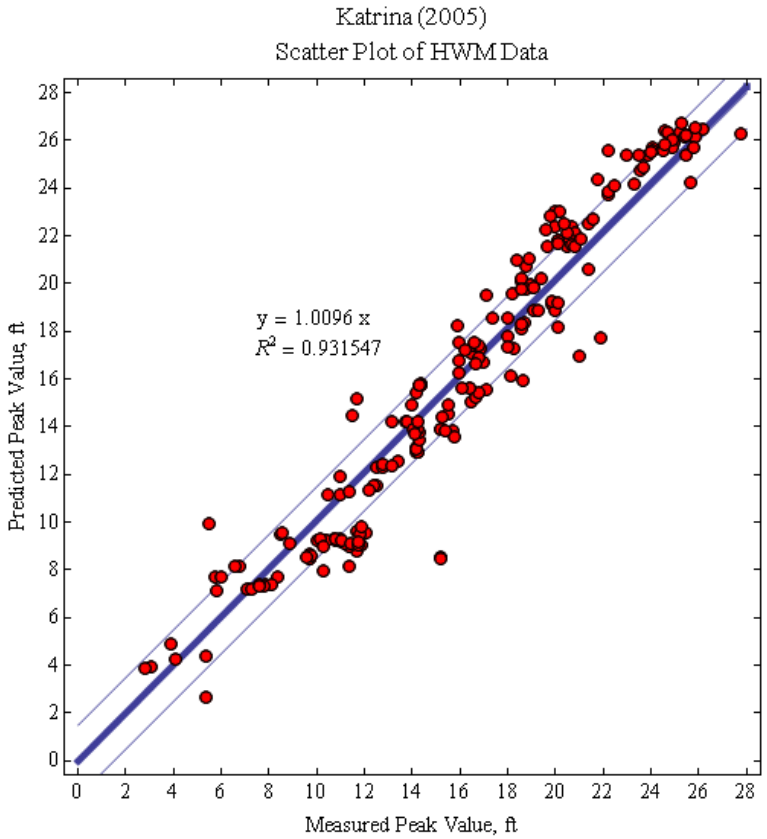

Figure 5: Comparison of observed USACE High Water Marks (HWM) for Hurricane Katrina and the simulation using the H*WIND/IOKA wind fields. The red points are the values at the recorded USACE HWMs. Thin blue lines display a 1:1 correlation as well as 1.5 ft variance on each side.

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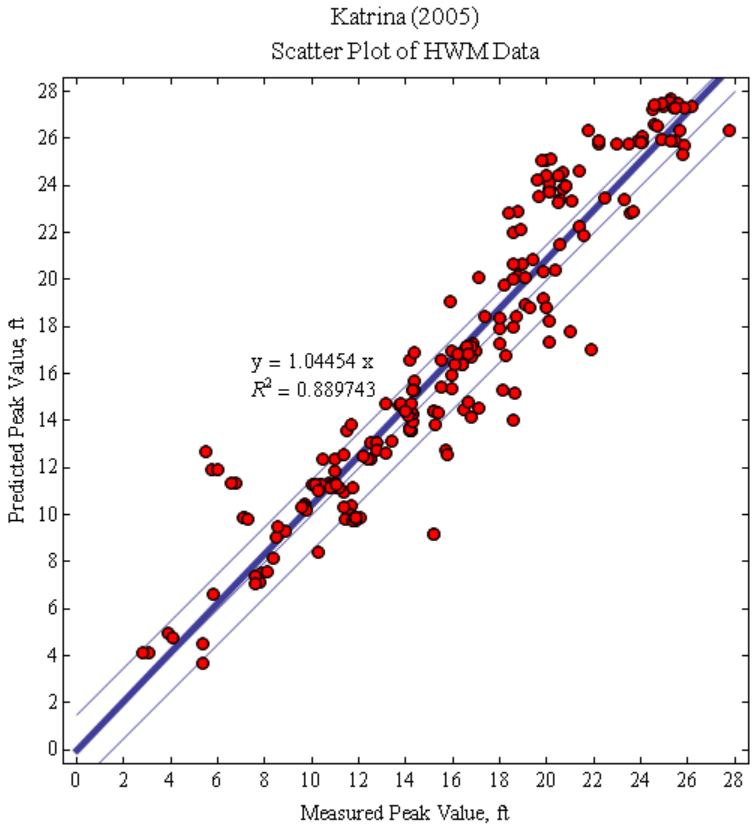
Accuracy for a single event with IPET prediction system, including objective friction specification with parametric winds



Comparison of observed USACE HWMs for Hurricane Katrina and the simulation using the PBL wind fields. at the recorded USACE HWMs. Thin blue lines display a 1:1 correlation as well as 1.5 ft variance on each side.