Predicting Storm Surge

Storm surge is often the most devastating part of a hurricane. Mathematical models used to predict surge must incorporate the effects of winds, atmospheric pressure, tides, waves and river flows, as well as the geometry and topography of the coastal ocean and the adjacent floodplain. Equations from fluid dynamics describe the movement of water, but most often such huge systems of equations need to be solved by numerical analysis in order to better forecast where potential flooding will occur.

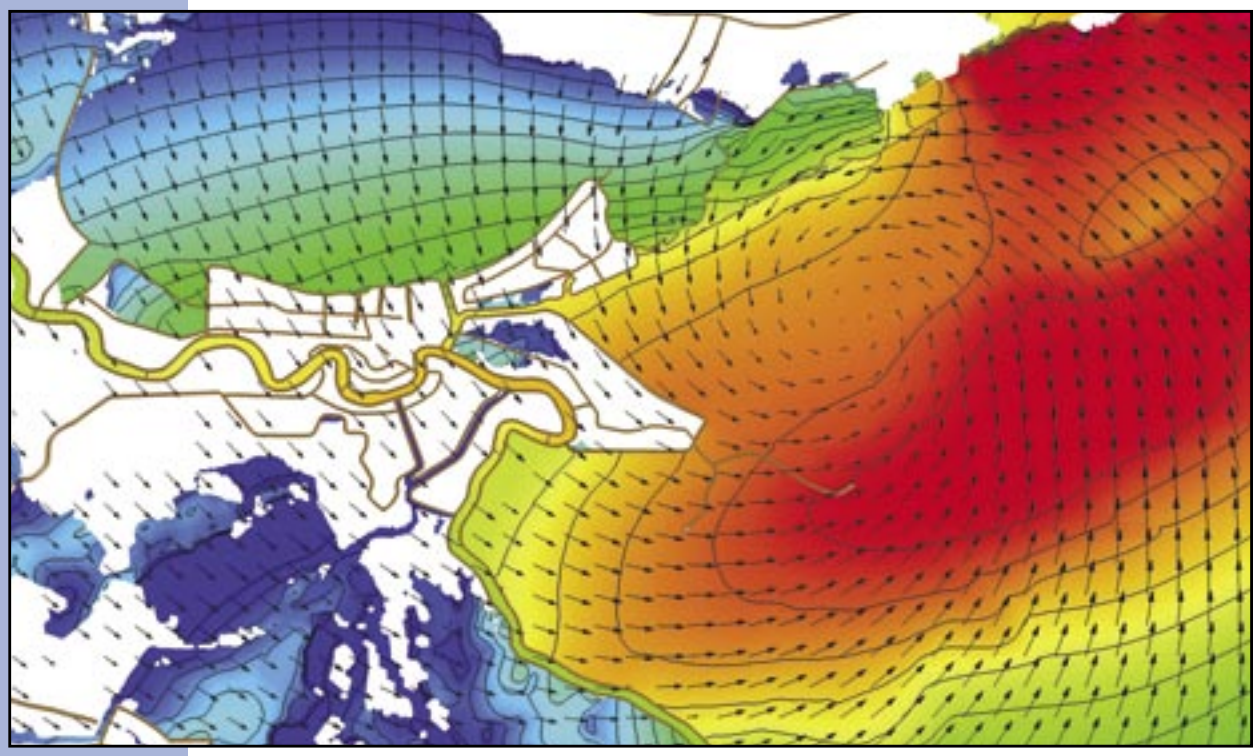

Image: Water surface elevation (blue is low, red is high) in the New Orleans area 9:00 a.m. 8/29/05 (arrows indicate wind velocity). Courtesy of Joannes J. Westerink.

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