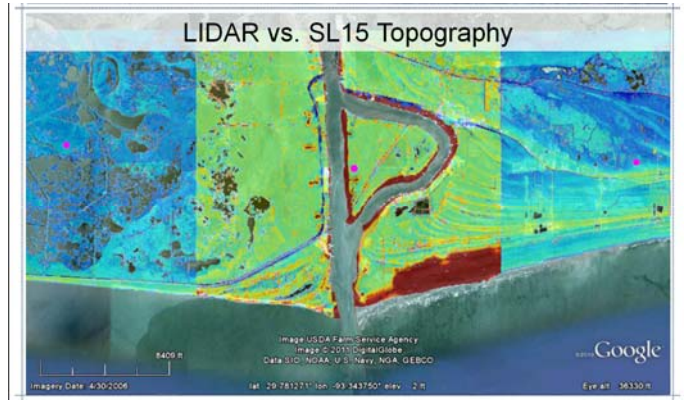


Flood Insurance Study Appeal for Cameron Parish, Louisiana

Project Characteristics:

- *Parish-Scale Review of Methodology Used to Determine Still Water Elevations*
- *Assessment of ADCIRC model validation with localized focus on Cameron Parish.*
- *ADCIRC Model Grid Assessment and Improvement*
- *Conducted Simulations with Improved Model to Demonstrate Improved Accuracy*
- *High Performance Computing*
- *Revision of DFIRMS*



Woods Hole Group provided ADCIRC modeling expertise to assist Lonnie G. Harper and Associates, Inc. in their appeal of the preliminary Digital Flood Insurance Rate Map (DFIRM) for Cameron Parish, Louisiana delivered in April 2008. The appeal comprised a review of the methodology used to determine Still Water Elevations (SWELs) for Southwest Louisiana, identification of scientific and technical deficiencies, correction of deficiencies, and development of a plan to re-compute SWELs.

The review revealed the ADCIRC model validation for the Southwest Louisiana Flood Insurance Study (FIS) was performed on a state-wide scale, and does not necessarily ensure model accuracy at the local scale. Model error was averaged over the entire state masking poor performance in certain areas. On average model accuracy was acceptable, but uniform accuracy was not guaranteed by the FIS methodology; particularly at the parish-wide scale where model results were applied to generate DFIRMs. To assess the model accuracy within Cameron Parish, Woods Hole Group compared water levels observed during Hurricane Rita with those computed by the ADCIRC model as part of the model validation for the FIS. The comparison showed significant systematic error in the computed water levels within Cameron Parish; an unacceptable level of error according to FEMA guidelines. Water levels were under-predicted at the shoreline and over-predicted farther inland with errors greater than 5 feet in some locations.

Parish-scale review of model validation indicated the model should be improved through a localized assessment of model topography and frictional parameterization. A detailed comparison of the ADCIRC model grid with the best available elevation data at the time of the FIS revealed significant discrepancies between the model and actual topography in Cameron Parish. Also, an evaluation of frictional parameterization in the model with a localized focus on Cameron parish revealed potential for improvement of model accuracy through the elimination of systematic errors.

Based on these discrepancies Woods Hole Group revised the ADCIRC model, conducted sensitivity tests with varying frictional parameters, and re-ran the hurricane Rita validation simulation to demonstrate that enhanced model calibration and improved topographic accuracy yielded improved model performance. The revised model was recommended for re-computing SWELs used to develop the Cameron Parish DFIRM.

The appeal led to issuance of a revised DFIRM for Cameron Parish, Louisiana.