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STE||AR group receives NSF grant to improve storm surge forecasting software

The Daily Reveille [LSU]

Students were notified of heavy rains and tornado warnings throughout the day Monday by official advisories, and a University group received a large grant to improve weathering the storm.

The University's Center for Computation and Technology and The STE||AR Group recently received a $3.2 million grant from the National Science Foundation for STORM, a project to update Advanced Circulation, a coastal modelling system, which is used to model the potential effects of hurricanes and other weather events in U.S. coastal areas.

The STORM project began in October 2014, and work on the program will last for the next four years.

The University teamed up with the University of Texas at Austin, the University of Notre Dame, the University of North Carolina and Louisiana Sea Grant for the project.

"In the event of a hurricane, national organizations issue advisories every six hours, ADCIRC takes that information, these storm paths, and calculates them into the model and calculates the storm surge predictions in different regions of the coast with fairly high resolution," said computer science adjunct assistant professor and CCT senior scientist Harmut Kaiser.

ADCIRC is used by organizations like the Coast Guard and the Department of Homeland Security to make decisions on managing emergency situations. Updating ADCIRC will give these organizations more precise information on the potential effects of winds, tides, waves and currents on large bodies of water and coastal regions faster, Kaiser said.

Kaiser said roughly $1 million of the NSF grant will go to The STE||AR Group, which contributes to the STORM project by providing their HPX computational library, a C++ runtime system that allows an application's features to run in larger computer systems.

STE||AR Group scientific program coordinator Adrian Serio said the other three universities are focused on the ADCIRC model itself and whether there might be a more effective way to model environmental phenomena.

The University will focus on determining how to run the program in larger computer systems so results can be retrieved faster.

"At LSU … [we want] to investigate if we can use modern computing resources, which are available here at LSU, and at other institutions, in a better way," Kaiser said. "Either [we] do more and get more results or [we] do the same thing but run [it] faster."

Mathematics junior Daniel Bourgeois joined The STE||AR Group at the beginning of the semester and works on writing algorithms for the HPX computational system that will eventually be used for the STORM project.

He said the main reason he decided to work with The STE||AR Group was to learn to collaborate with other people to create something useful through computer programming.

"The [STORM] project is definitely very useful because not only is it going to help emergency managers respond to storms, but it'll help engineers to run ADCIRC and make better design decisions [such as with building levees]," Bourgeois said.

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