

Enhancements and Extensions to the ADCIRC Prediction System Operational Awareness Dashboard Health Monitor

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SHORT DESCRIPTION

This Year 7 project will extend the previously developed Operational Awareness Dashboard (OAD) that monitors the health and status of ADCIRC Surge Guidance System (ASGS) activities being conducted across several HPC sites. The dashboard provides a real-time view of ASGS simulations and displays multiple, concurrent ASGS instances on different HPC resources. We will extend the OAD to collect and display more detailed information about ASGS/ADCIRC runtime parameters, including messages that allow rapid visualization of real-time ASGS results.

ABSTRACT

In CRC Y4-6, RENCI developed a messaging system for ASGS that allows for a broad perspective on ASGS system being run for tropical cyclones. ASGS was instrumented with the RabbitMQ system, and a web-based dashboard was built to allow real-time awareness of the various ASGS instances being run by different operators. This system is called the ASGS Operational Awareness Dashboard Health Monitor (OAD-HM). The OAD-HM was extensively tested during the 2019 and 2020 North Atlantic Hurricane seasons, particularly for hurricane Dorian. Particularly during Hurricanes Dorian (2019) and Laura, Sally, and Isaias (2020), at least 6 ASGS instances were running concurrently at different HPC sites, and with different ADCIRC grids (depending on end-user needs). Feedback from ASGS operators during and after the storm periods was positive in terms of the overall usefulness. It was easy to see what/where ASGS instances were running, and the basic state/progress of the main simulation components.

In Y6, we added a message type that transmits runtime details of the ASGS and ADCIRC configuration. This information is now displayed in the OAD-HM under the Run Properties tab. In Y7, we will use this new message type to display more information about ASGS instances, including basic visualizations of the main ADCIRC variables.