Operational Awareness Dashboard for ADCIRC
Surge Guidance System

Brian Blanton
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RENCI
Y1-3: Multi-tiered ADCIRC-based storm surge and wave prediction system

- Brian Blanton, RENCI/UNC-Chapel Hill
- Jason Fleming, Seahorse Coastal Consulting
- Jess Smith, RENCI/UNC-Chapel Hill
- Rick Luettich, IMS/UNCCH, DHS-CRC
Y1-3: Probabilistic Hurricane Track Generation for Storm Surge Prediction
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Probabilistic Hurricane Track Generation for Storm Surge Prediction

- Jess Smith, RENCI/UNC
- Masters Thesis work
- Funded by DHS/CRC
- Defended Dec 2017
- Hired at RENCI to continue work
- Reported on at AMS 2017 and 2018
- Manuscript in preparation
Operational Awareness Dashboard for ADCIRC Surge Guidance System

It is **difficult** to know the status of each/all running ASGS systems

- Up/down
- Running/waiting on inputs
- Sitting in queue waiting on resources
Operational Awareness Dashboard for ADCIRC
Surge Guidance System
Anticipated Project Impact

(Direct) End-Users:
- Increased real-time awareness of all ASGS systems
- Increased ability to respond to warnings/alerts in the OAD
- Move ASGS simulations to other HPC resources
- More robust/fault-tolerant ADCIRC-based prediction system
- Marketing of activities to commercial end users
  - Increased confidence in products and ASGS as a *bona fide* forecasting operation system

(Indirect) End-Users:
- More reliable delivery of products to outlets (i.e., CERA systems)
- Increased confidence in products and ASGS as a *bona fide* forecasting operation system
Operational Awareness System Examples

- NOAA/NCEP Central Operations

- Operational Modeling Branch
  - https://www.nco.ncep.noaa.gov/omb/

- Compute NOAA/NCEP operational models for climate, weather, ocean, space and environmental hazard products

- Manage the flow of data and products
- Dozens of model runs per cycle
- Hundreds of pre/post operations per cycle
Operational Awareness System Examples

- **NOAA/NCEP Central Operations**

- Dozens of model runs per day
- Hundreds of pre/post operations
Who are the End Users?

• Airplane *passengers*?
  ➢ **NO**
  ➢ They are not making decisions based on overall situation
  ➢ Don’t know (and don’t WANT to know) everything going on in the airspace.
  ➢ But they clearly, have a (substantial) interest in the success of the operational awareness system.
  ➢ They are *stakeholders*, not *end users*.

• It’s the pilots, airports, controllers
  ➢ Because they DO make decisions based on the overall situation
  ➢ Their *awareness* comes from a “dashboard”
End User Engagement

• **ASGS Operators themselves**
  - Jason Fleming, SCC
  - Matt Bilskie, LSU
  - Brian Blanton, RENCI
  - Nate Dill, Ransom
  - Rick Luettich, UNC/IMS/CRC
  - Brett Estrade

• **Those fielding calls from broader End User community (USCG, FEMA, NHC, etc).**

• Specific interactions to date:
  - Constant communication/updates via Slack Channel
  - Specific, in-depth demonstrations to J. Fleming, R. Luettich
  - Feature additions and clarification of presented content

• Upcoming demonstration e-meeting for all operators (late April 2019)
Research Work and Accomplishments

- Software/technology project to develop a web viewer for ASGS outputs
- Technology implementation relatively straightforward (by software engineers/experts)
Research Work and Accomplishments

ASGS Operational Awareness Dashboard
Current NCEP cycle: 2019/03/19 12z
Local time: 11:30 am, UTC time: 15:30z

Good day, Brian Blanton.

ASGS Chat
2018/03/18 14:57:35 - Phil Owen says: Hey everyone, please do a cache refresh on your browser to get the latest updates.

Send
Research Work and Accomplishments

https://asgs-monitor.renci.org

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<th>HPC Resource</th>
<th>Event Count</th>
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<td>TACC</td>
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<td><strong>Total:</strong></td>
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2019 Database Event

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</tbody>
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Transition

1. OAD deployed for 2019 season via https://asgs-monitor.renci.org

2. Used extensively by operators, particularly for Dorian and Michael

The software infrastructure for OAD is available on GitHub repositories

- RabbitMQ/PostGres/Django implementation @ https://github.com/RENCI/ASGS_Web

- Messaging built in to ASGS @ https://github.com/jasonfleming/asgs
Y5 Activities

- Develop messaging to send cluster status/capacity/load
- Reconfigure dashboard to address operators’ feedback
- OA Dashboard for 2020 Hurricane Season

- Operator-driven data selection
- Several cluster-level variables
- Expected time to completion estimation
- Fewer buttons to click