NATIONAL WEATHER SERVICE

# The NOAA COASTAL Act Program

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# Background

- On July 6, 2012, the President signed the Biggert-Waters Flood Insurance Reform Act, which incorporated legislation known as the **Consumer Option for an Alternative System to Allocate Losses (COASTAL) Act.**

- The COASTAL Act intends to help FEMA determine the extent to which wind vs. water damage in cases of “indeterminate losses” (or “slab cases”).

- A loss is indeterminate when little tangible evidence beyond a building’s foundation remains for the proper adjustment of insurance claims for homes totally destroyed by a tropical system (water damage is covered by NFIP; wind damage is covered by private insurers).

- This will enable a more timely claims adjustment process, by avoiding litigation over the cause of the damage.

# Background (cont'd)

- The COASTAL Act requires NOAA to produce detailed "post-storm assessments" following certain named tropical systems that impact the U.S. and its territories.
  - The assessments will be produced using a new NOAA hindcast model that indicates the strength and timing of damaging winds and water at a given location in the impact area.
  - The assessments must be submitted to FEMA within 90 days after DHS and NOAA deem a storm "reasonably constitutes a threat."
  - NOAA is required to make post-storm assessment results and obs from the storm available to the public via a new online database.
- The post-storm assessment output (assuming it meets 90% accuracy at the location in question) will then be incorporated in the COASTAL Formula (managed by FEMA). The formula will consider other non-geophysical data (e.g. structure data) to determine the extent to which water vs. wind contributed to the destruction (thereby determining the cost responsibility between NFIP and private home insurers).

# Coastal Wind and Water Event Database (CWWED)

- NOAA established Version 0.1 of the CWWED in July 2013, per the Act's requirements. CWWED v1.0 and GWS v1.0 were completed in 2019. It will be repository for the storm observations ("covered data") used in the NSEM.
- CWWED will transition from prototype to experimental status upon the completion of the NSEM.
- CWWED will also be the platform for retrieving post-storm assessment results (produced by the NSEM) for a given location in the area covered by the NSEM.
- Quality Control will be critical, given the application of data for legal purposes. CWWED will be a "federated database" in which data may or may not reside at the same physical location as the database core server (i.e. in most instances the database will operate by pointing to data in other databases).
- Will require data sharing and dissemination agreements with external partners in some cases.

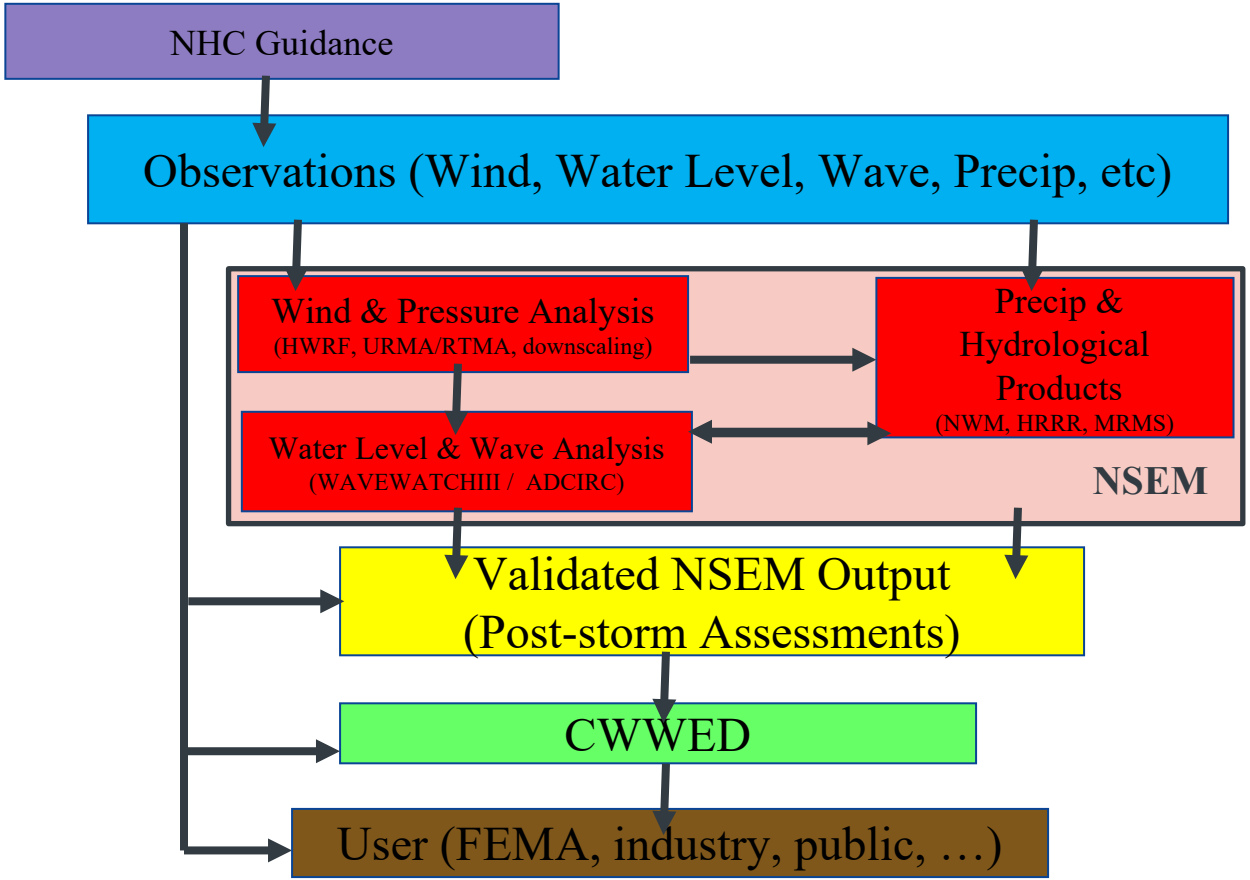
# Named Storm Event Model (NSEM)

- NSEM will be collection of separate, but interdependent, model products that provide time-dependent analyses of specific meteorological and hydrologic factors that contribute to indeterminate losses.
- The three main model product areas will be:
  - Storm Surge / Waves
  - Wind and Surface Pressure Analyses
  - Precipitation and Hydrologic

# Post-Storm Assessment Package

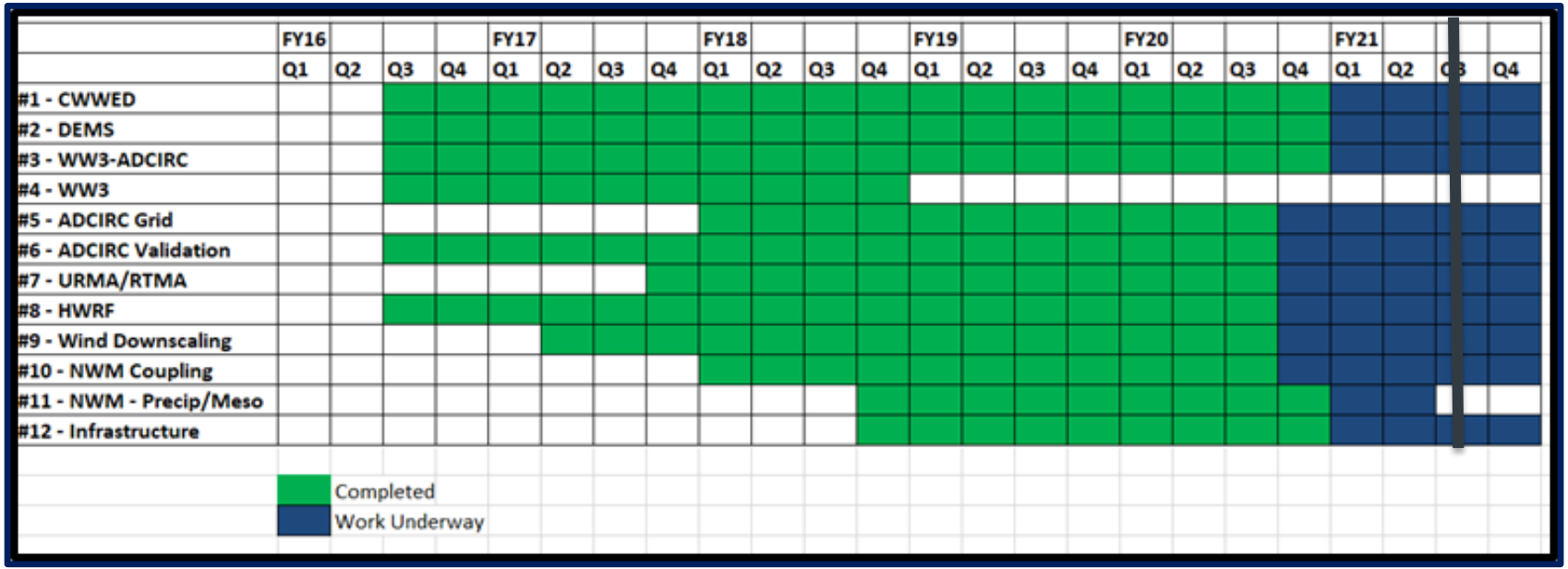
- Post-Storms Assessments will be in the form of gridded spatial and temporal output from the NSEM, which will include verification info for specific points on land within the realm of the assessment area.
- The Assessment data will be accessed via the CWWED.
- FEMA will be able to access the point-specific info for the purposes of inputting values into the COASTAL Formula for determining the cause(s) of damage for the indeterminate loss in question.
- NOAA developed a draft CONOPS that establishes realistic and cost-efficient activation procedures and timelines for Post-Storm Assessments.

# COASTAL Act Process




For Official Use Only – Pre-decisional information

# COASTAL Act NSEM/CWWED Timeline

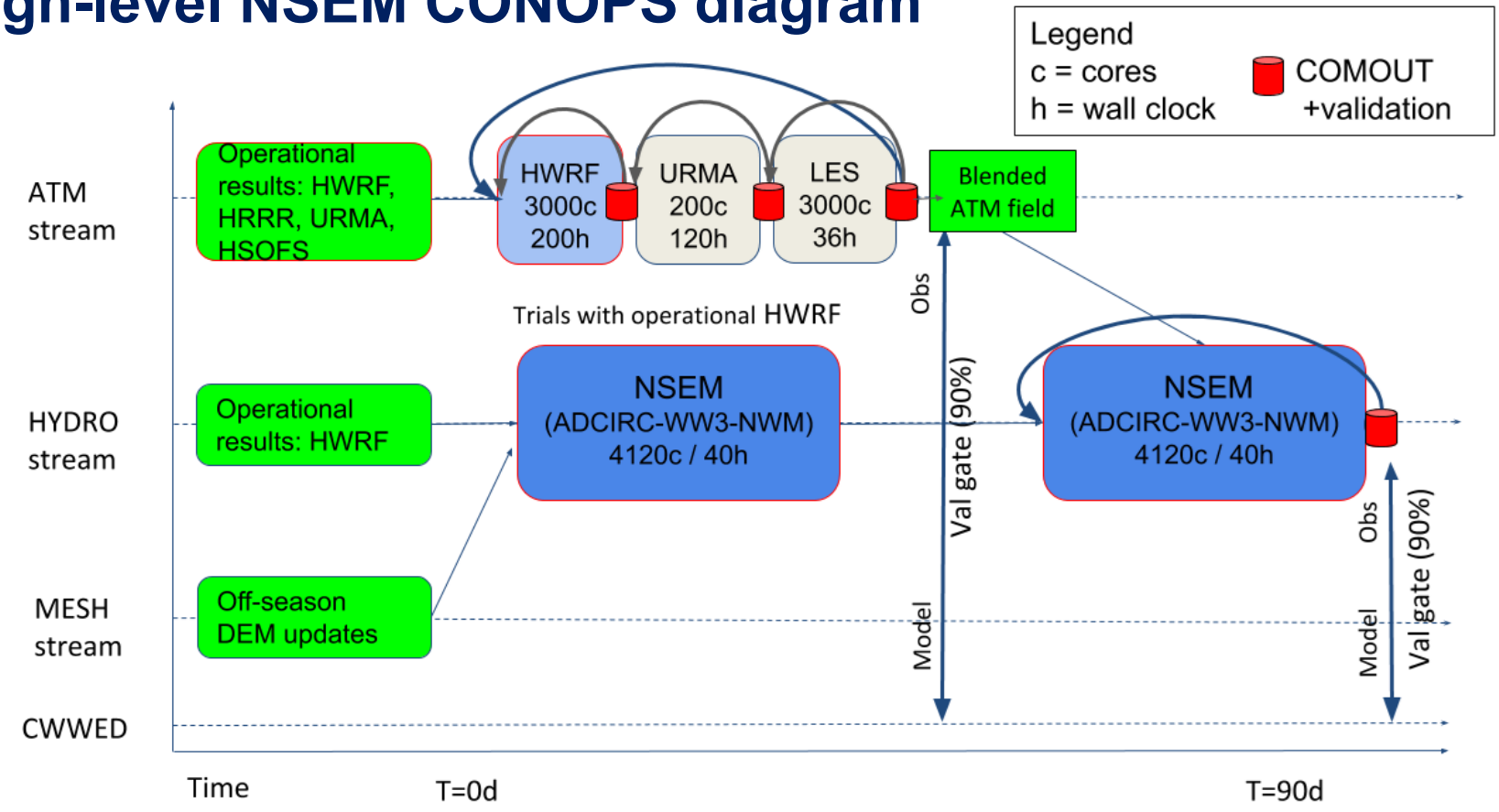



- **Several milestones delayed due to (a) 2019 government shutdown, (b) RDHPC data/code migration from Aug-Oct 2019, (c) WCOSS-2 Moritoriam**
- **The NSEM and CWWED will be completed in 2021, tested in 2022, and implemented in 2023.**

# 5 Year Accomplishments!!

- **CWWED v1.0** operating; **GWS interface v1.0** available in the dev environment
- Infrastructure developed for **two-way coupled WW3 – ADCIRC - NWM models**
- **90 - day workflow** implemented
- **High resolution WW3** code validated and checked into official repository
- **DEM**s generated for East and Gulf coasts, Lesser Antilles, Puerto Rico/Virgin Islands
- **NJ/DE DEM** integrated into **HSOFS grid**
- **HWRF land/sea mask** updated to resolve high resolution features
- **End-to-end** high resolution **wind analysis / downscaling interface** developed
- **15-min MRMS and HRRR QPE** products completed

# High-level NSEM CONOPS diagram



# CWWED

## Sandy

The following Post Storm Assessment (PSA) products; Mean Sea Level, Wave Height and Winds were created for the Atlantic and Gulf of Mexico coastal waters of the United States during the period of time that Hurricane Sandy formed in the central Caribbean on October 22, 2012. Sandy intensified into a hurricane as it tracked north across the Caribbean moved northeast of the United States until turning west toward the mid-Atlantic coast on October 28th.

Map Filters

- [x] Water Level Maximum
- [ ] Water Level
- [ ] Wave Height
- [x] Wind

Data Opacity

0.5

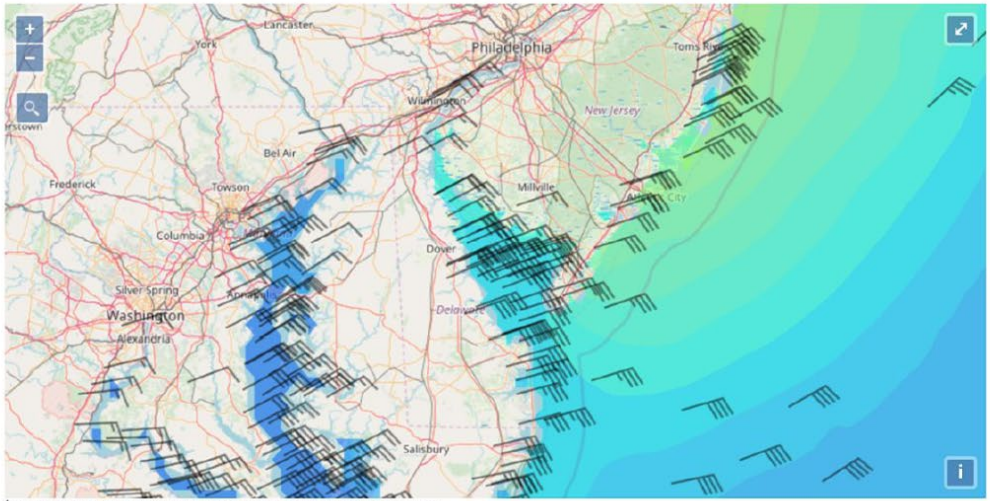
Date: 2012-10-29T09:00:00

Start: 2012-10-22T07:00:00
End: 2012-11-03T21:00:00

Legends

Water Level Maximum

-2.4 -1.5 -0.5 0.4 1.4 2.4 3.3 4.3 5.2 6.2 (m)

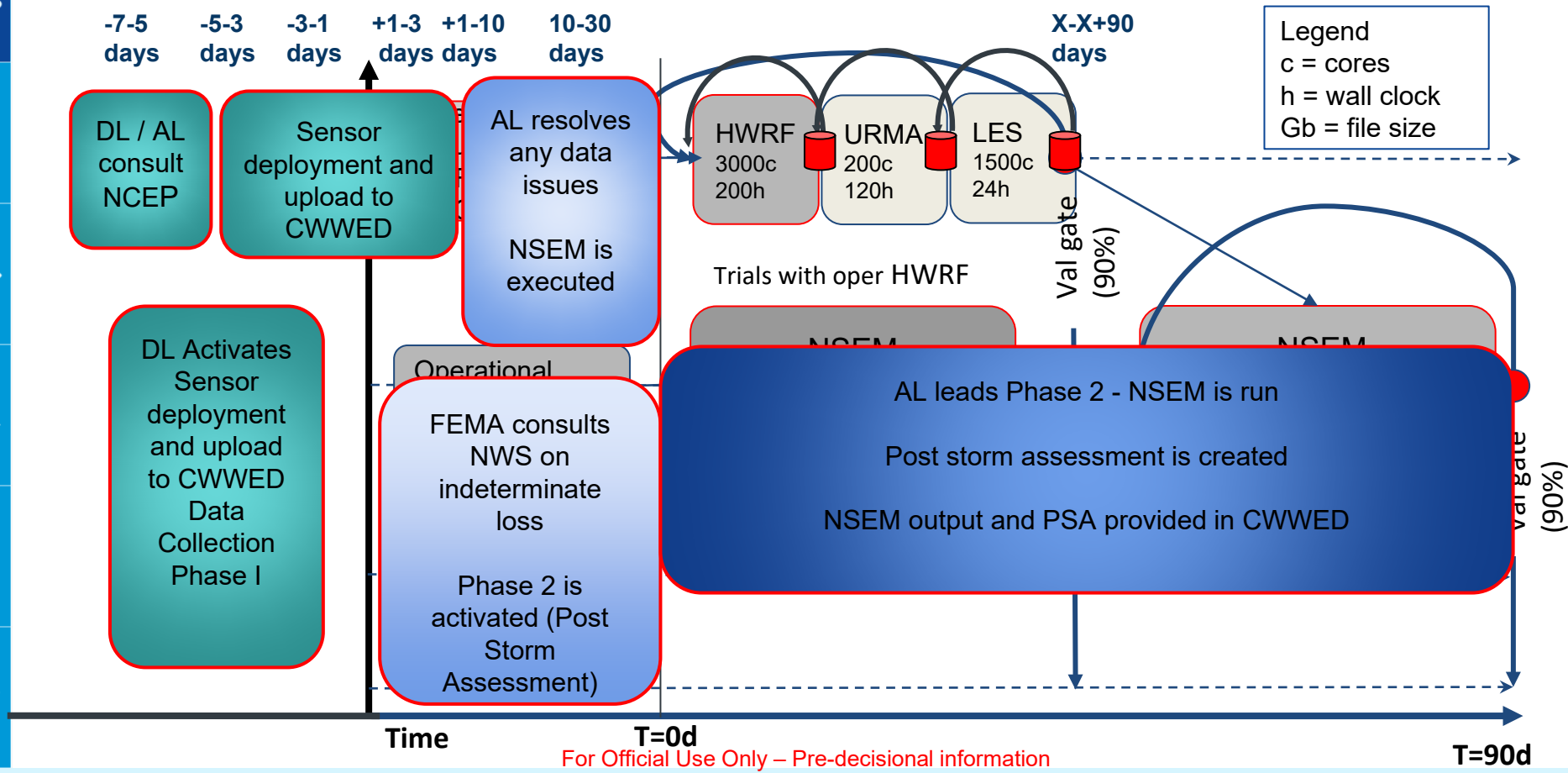



[1]Click on a map feature to see a time series graph for a specific location
[2]Hold *Shift* and drag to select a box to filter the data to download
[3]Hover to see feature information

# DRAFT NOAA CONOPS for Execution of a Post-Storm Assessment (July 2015) and DRAFT Annex to NPDIA

- **COO**, in consultation with **NCEP and Centers**, **NWS Deployment Lead (COO)**, and **NWS Assessment Lead (NHC)** determines a TC poses a surge/wind threat to a state/territory, using the criteria set forth in the NWS Directive (in development).
- **NWS Deployment Lead (COO)** activates the **Data Collection Phase (aka Phase I).** NOAA and OFCM coordinate deployment of available mobile sensors to the state/territory under threat, following the protocol established in the Annex. NWS begins dispersing funds to contracted mobile sensor operators, in accordance with the funding guidance set in the NWS Directive. NWS is the lead of the Collection Team. Active participation on the Collection Team requires each member to have a valid data agreement. The activation of the **Data Collection Phase** does not indicate that a post-storm assessment will be developed.
- **No later than 30 days after sustained winds of 39 miles per hour or greater began impacting a state/territory as a result of the TC in question, FEMA will notify NWS as to the existence of indeterminate losses in the state/territory.** The existence of at least **one indeterminate loss triggers the need for a post-storm assessment** for that particular state/territory **(aka Phase II).** NWS will have **90 days** from this point to certify a post-storm assessment for the state/territory in question, activated by the **NWS Assessment Lead (NHC)**.

# High-Level NOAA CONOPS Diagram for Post-Storm Assessment



# COASTAL Act Program Next Steps

- Establish data agreements with data providers
- Advance internal policy directives; Update Annex 2 to NPDIA
- NOAA/FEMA coordination on formula, 90% accuracy requirements, CWWED
- Anticipated progress on sub-projects:
  - **90% accuracy** – Continue validation work on all wind/wave/surge modeling components (spatially and temporally) toward achieving 90% accuracy
  - **CWWED** – Continue to test and refine CWWED/GWS v1.0; add covered data; complete data agreements
  - **DEMs** – Continue development on DEMs in targeted areas
  - **NWM-ADCIRC** – Two-way coupled inland/coastal inundation model system

# Thank you

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