



CPRA Operations: Preparation for Hurricane Season

CPRA Operations Division
May 19, 2021

committed to our coast

Emergency Management

Responsible for flood protection infrastructure and integrated coastal protection projects across the Louisiana Coastal Area

Hazards that have the potential to affect CPRA operations and infrastructure include:

- **Hurricanes**
- **Flooding and High Water Events**
- **Large Scale Coastal Oil Spills or HazMat Incidents**



Emergency Management

CPRA – Prior to an Event

- Maintains an Emergency Operations Plan (EOP) which outlines CPRA's pre- and post-storm activities
- Coordinates with the United States Army Corps of Engineers (USACE) and the local levee districts within the Coastal Area
- Maintains a list of Levee District items:
 - Emergency Contacts
 - EOPs
 - Flood Fight inventories, supplies and equipment to support emergency response
- Levee Information Management System (LIMS)
 - Monitor closing of gates in advance of an event
- Plan executions of gate closures by monitoring gage readings and coordinating for ADCIRC modeling



Emergency Management

CPRA – During an Event

- Provides staff and capability to support the State's Emergency Operations Center (EOC). CPRA staffs the EOC's Emergency Support Function (ESF) 3b infrastructure desk
- Coordinates with local, State, and Federal entities including Parish Governments, Levee Boards, and other jurisdictions in Louisiana's Coastal Area
 - Local requests are made when the requesting jurisdiction has exhausted all resources and no longer has the capability to support themselves. ALL REQUESTS MUST GO THROUGH WEB EOC
 - Requests generally involve maintaining the integrity of levee and flood control infrastructure in order to save lives and protect property
 - CPRA relies on emergency contracts through the Office of State Purchasing to procure temporary flood protection measures, dewatering support, etc.

Emergency Management

CPRA – Following an Event

- Performs Damage Assessments:
 - Inspects levee, flood protection, and integrated coastal protection projects throughout coastal Louisiana to protect lives and property as well as to ensure continued suitability of service
- Coordinates inspections with the appropriate local and Federal authorities
- Where issues are found, makes requests to the USACE for Federal assistance





Coastal Protection and Restoration Authority

Keys to Tropical Storm Operations:

- Hurricane and Storm Damage Risk Reduction System (HSDRRS)
- Levee Information Management System (LIMS)
- Hurricane Gage Monitoring System (HGMS)
- ADCIRC Surge Guidance System (ASGS)
- Compound Flood Inundation Guidance System (CFIGS)

These tools are intended to help guide CPRA and the levee districts with the necessary information to make operational decisions on coastal floodgate closures as a tropical storm approaches landfall. These operational tools are not intended for evacuation purposes – for this we use the National Weather Service and Local Authorities.

Levee Information Management System (LIMS)

- Log closure structure operations
- Store closure structure info/attributes
- Create closure structure status reports
- Display closure structure status graphically
- Link to document library
 - Contact Directory
 - EOP Manuals
 - Statewide Emergency Contracts
 - Local Flood Fight Asset Inventory
- Public access – separate portal shows map / gate list with status

The screenshot displays the CPRA LIMS web application. At the top, the CPRA logo and name are visible. A navigation bar includes links for Home, Events, Levee Gates, Reports, and DBA. A user is logged in as jeremy.fall@la.gov. The main heading reads "Welcome to LIMS - Levee Information Management System". Below this, a paragraph explains that LIMS allows specified internal staff in the CPRA Operations Division and specified external flood/storm protection system staff the ability to change and check flood/storm protection system gate status, lookup gate attribution information, and produce reports on gate history through various custom query options. A note states that the site is password protected and access and roles are controlled by CPRA Operations Division staff. A button labeled "Access a full featured spatial viewer for flood protection here." is present. Below this, a map shows the location of various flood protection systems, with red squares indicating closed gates and green squares indicating open gates. The map includes labels for locations such as Montz, Norco, Hahnville, River Ridge, New Orleans, Meraux, Boutte, Westwego, Woodlawn, and Jean Lafitte. A legend at the bottom right of the map indicates that red squares represent closed gates, green squares represent open gates, and green lines represent flood protection systems. Below the map, a section titled "Document Links" provides links to the Flood Protection Contact Directory, Emergency Operating Procedures Manuals, Statewide Emergency Contracts, and Local Flood Fight Asset Inventory. At the bottom of the page, there is a decorative silhouette of a coastal scene with a boat, trees, and buildings.

Levee Information Management System (LIMS)

- New report feature shows changes in gate status by project, levee district, and period of time

LIMS Levee Gate Status Change Report

FilterExport Gate Status Change Report (Excel)Export Gate Status Change Report (PDF)

Project:

LAKE PONTCHARTRAIN & VICINITY

Operating Agency:

OLD (Orleans Levee District)

From Date:

06/06/2020 09:54 AM

To Date:

06/08/2020 09:55 AM

Selected criteria applied successfully.

ResetFilter

FLOODGATE STATUS CHANGE REPORT

START DATE & TIME: 06/06/2020 09:54 AM

END DATE & TIME: 06/08/2020 09:55 AM

PROJECT	Operating Agency	STATUS CHANGED TO	
		CLOSED	OPENED
LAKE PONTCHARTRAIN & VICINITY		19	0
	OLD (Orleans Levee District)	19	0
LAKE PONTCHARTRAIN & VICINITY SEABROOK LPV-IHNC-01		5	0
	OLD (Orleans Levee District)	5	0
LAKE PONTCHARTRAIN & VICINITY, IHNC SURGE BARRIER, LPV-IHNC-02		2	0
	OLD (Orleans Levee District)	2	0
Grand Total		26	0

Levee Information Management System (LIMS)

- New report feature shows rollup of gate status by project and/or levee district at a given time

691 GATES

LIMS Levee Gate Status Report

Project:
Operating Agency:

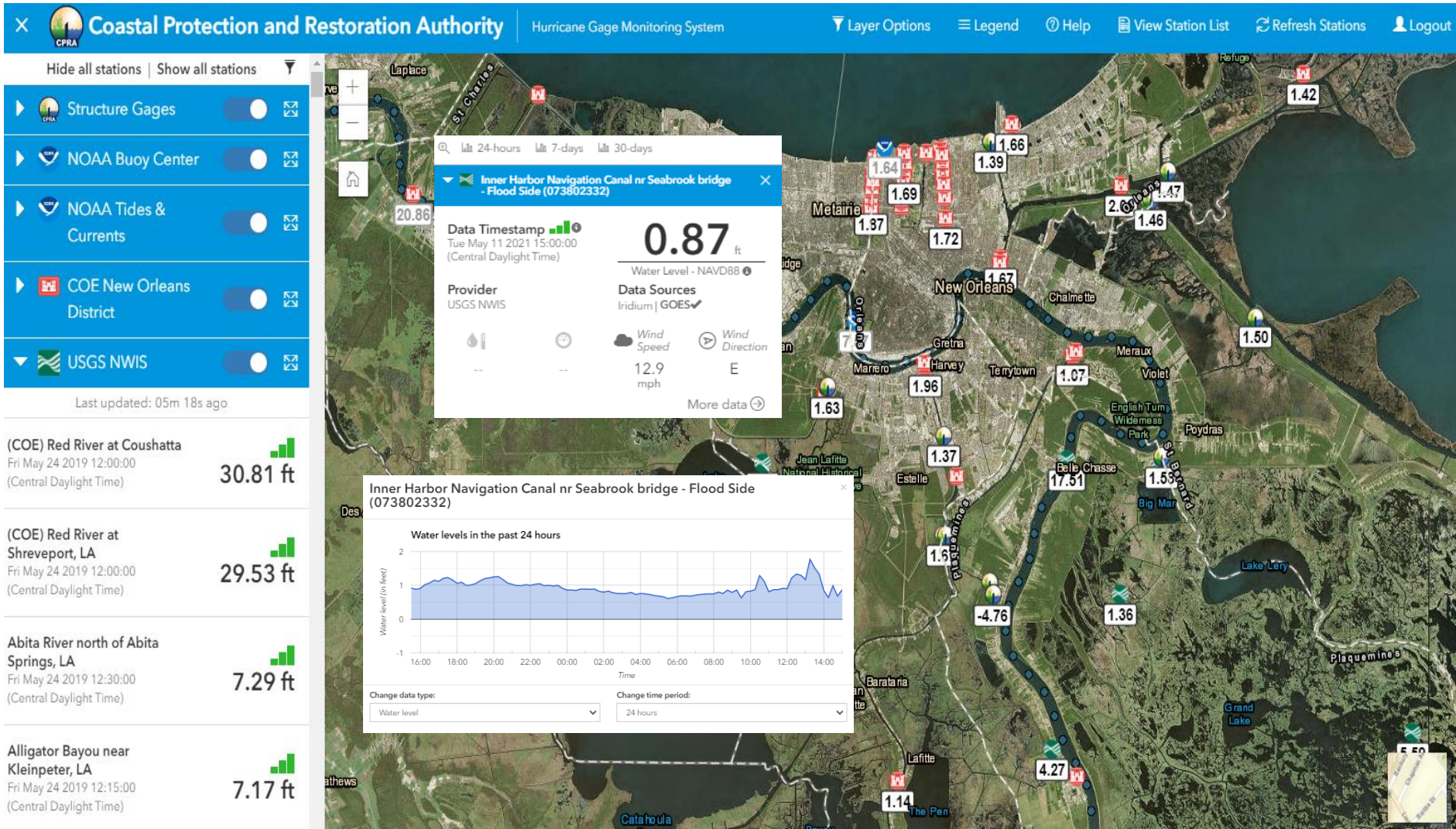
Request Date:

FLOODGATE STATUS REPORT				
5/11/2021 9:53 AM				
PROJECT	Operating Agency	DEFAULT STATUS CLOSED	STATUS CLOSED	STATUS OPEN
LAKE PONTCHARTRAIN & VICINITY		75	64	131
	EJLD (East Jefferson Levee District)	8	4	9
	LBBLD (Lake Borgne Basin Levee District)	0	0	19
	OLD (Orleans Levee District)	62	55	101
	PLD (Pontchartrain Levee District)	5	5	2
LAKE PONTCHARTRAIN & VICINITY SEABROOK LPV-IHNC-01		1	0	5
	OLD (Orleans Levee District)	1	0	5
LAKE PONTCHARTRAIN & VICINITY, IHNC SURGE BARRIER, LPV-IHNC-02		0	1	2
	OLD (Orleans Levee District)	0	1	2
LAROSE TO GOLDEN MEADOW - FLOOD PROTECTION		0	0	5
	SLLD (South Lafourche Levee District)	0	0	5
MORGANZA TO THE GULF		0	1	10
	TLCD (Terrebonne Levee and Conservation District)	0	1	10
MS RIVER & TRIBUTARIES (MR&T)		45	58	237
	ABLD (Atchafalaya Basin Levee District)	6	7	33
	ALD (Algiers Levee District)	0	0	2
	LBBLD (Lake Borgne Basin Levee District)	0	0	9
	OLD (Orleans Levee District)	30	38	100
	SMLD (Saint Mary Levee District)	7	7	66
	SMP (St. Mary Parish)	0	2	0
	TLCD (Terrebonne Levee and Conservation District)	0	0	5
	USACE (United States Army Corps of Engineers)	1	3	5
	WJLD (West Jefferson Levee District)	1	1	17
NEW ORLEANS TO VENICE		0	1	2
	PPG (Plaquemines Parish Government)	0	1	2
NON-FEDERAL LEVEES		6	11	23
	LAILD (Lafitte Area Independent Levee District)	2	7	4
	LBBLD (Lake Borgne Basin Levee District)	1	1	9
	OLD (Orleans Levee District)	1	0	4
	PPG (Plaquemines Parish Government)	0	0	2
	SMP DD2 (St. Mary Parish Gravity Drainage District #2)	0	1	0
	TLCD (Terrebonne Levee and Conservation District)	2	2	4
PERMANENT CANAL CLOSURES AND PUMP STATIONS		0	0	5
	OLD (Orleans Levee District)	0	0	5
WEST BANK & VICINITY		24	23	112
	PPG (Plaquemines Parish Government)	6	5	32
	SCP (St. Charles Parish)	0	0	6
	WJLD (West Jefferson Levee District)	18	18	74
Grand Total		151	159	532

Report Run Date 05/11/2021

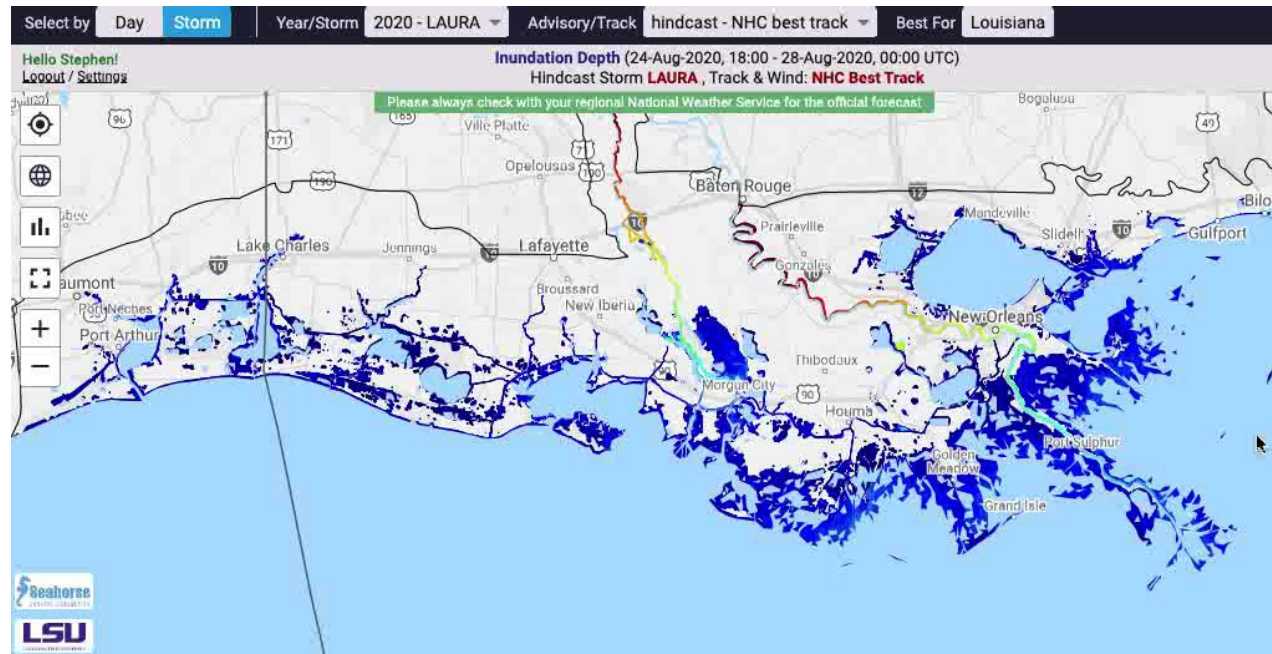
Hurricane Gage Monitoring System (HGMS)

Water-level gage data from USACE, USGS, NOAA and Iridium shown spatially



ADCIRC Surge Guidance System (ASGS)

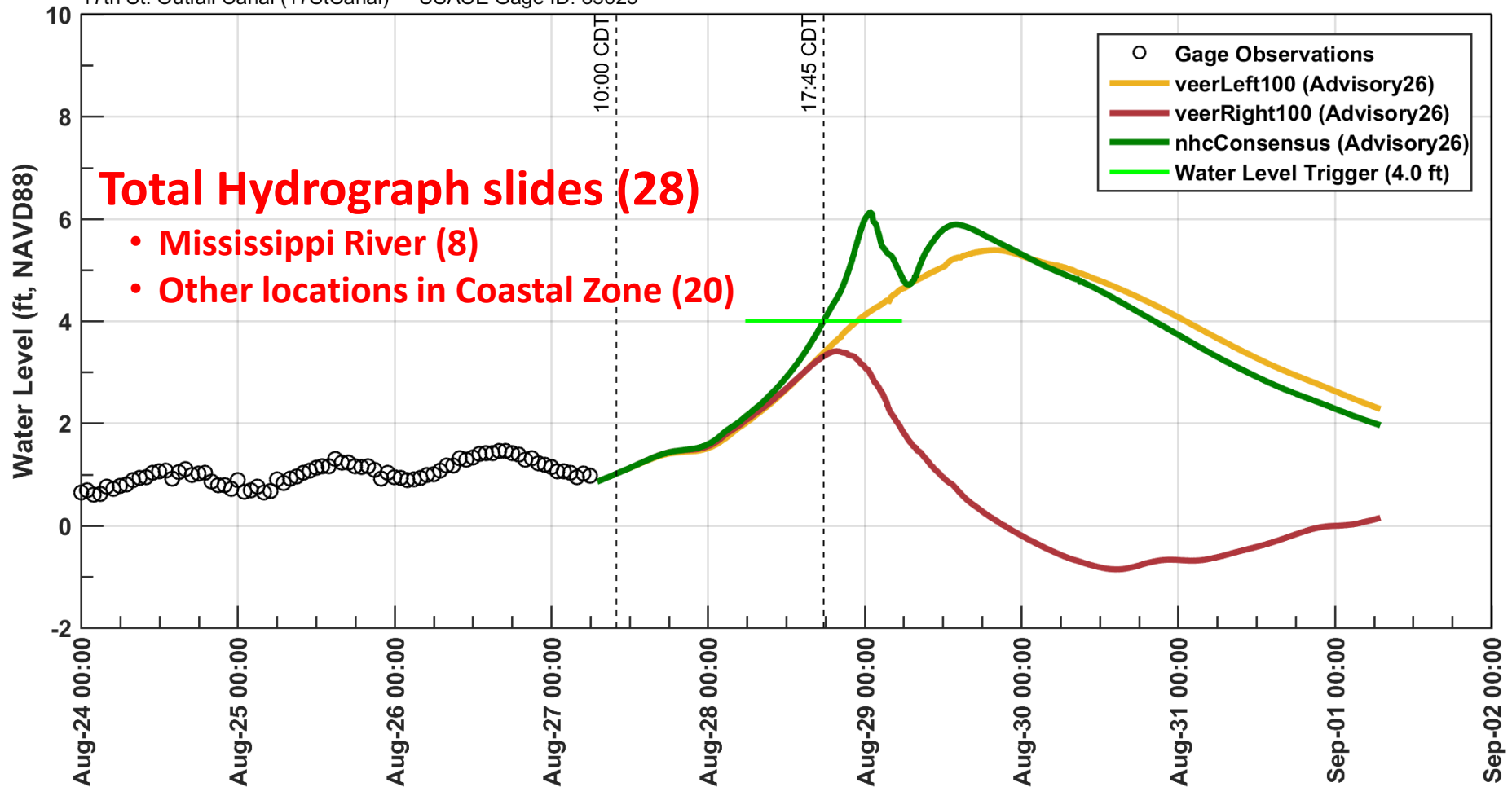
- CPRA works with LSU's Center for Coastal Resiliency (CCR) team which includes Scimaritan's Dr. Jason Fleming to implement and maintain the ADCIRC Surge Guidance System (ASGS) for the modeling of storm surge for hurricanes and tropical events.
- ASGS model output provides CPRA and the levee districts with water elevation forecasts to assist with operational decisions on coastal floodgate closures as a tropical storm approaches
- ADCIRC grid is updated each year with the latest bathymetric and topographic data
- ASGS is tested and validated using historical storm data.
- Automated forecast system is maintained in ready-mode during hurricane season



Example Hydrograph:

Permanent Canal Closures and Pumps (PCCP-01)

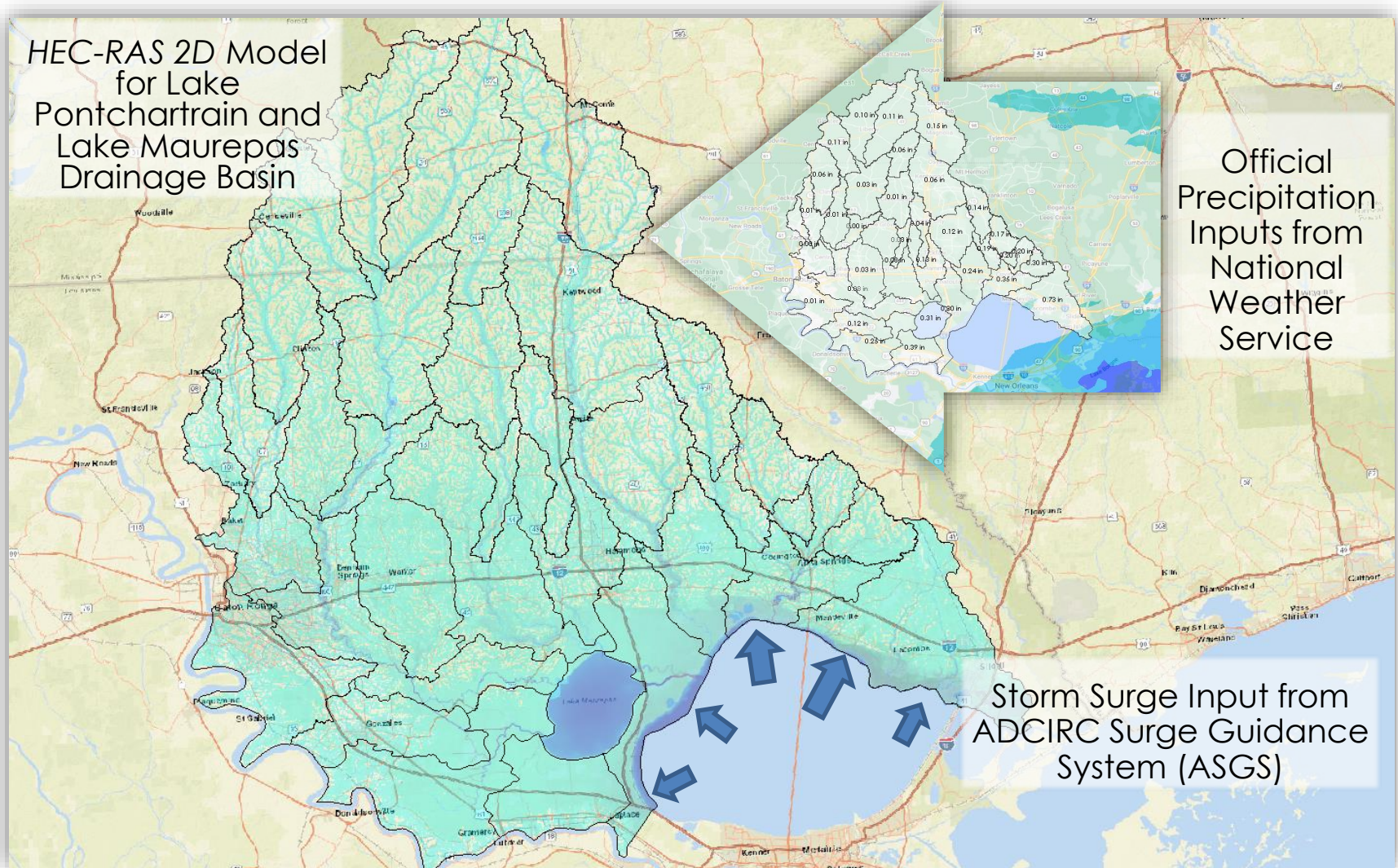
Storm: ISAAC - Advisory: 26 Issued on 08-27 10:00 CDT - grid: LA_v19j-WithUpperAtch_chk
17th St. Outfall Canal (17StCanal) - USACE Gage ID: 85625



For Operational Use Only – Refer to NWS for evacuation-related forecasts

Compound Flood Inundation Guidance System (CFIGS)

The CFIGS system provides guidance on flooding due to the combined influences of storm surge and precipitation and will be operational for the upcoming 2021 Hurricane Season.



Compound Flood Inundation Guidance System (CFIGS)

CFIGS Flood Hazard Layer Generation

Integrating new flood hazard layer into CERA based on lessons learned from the 2020 Hurricane Season.

Lessons Learned:
Difficult to identify the areas of highest risk based solely on inundation mapping

The new flood hazard layer was developed to quickly identify areas during an event with a high risk of structural flooding

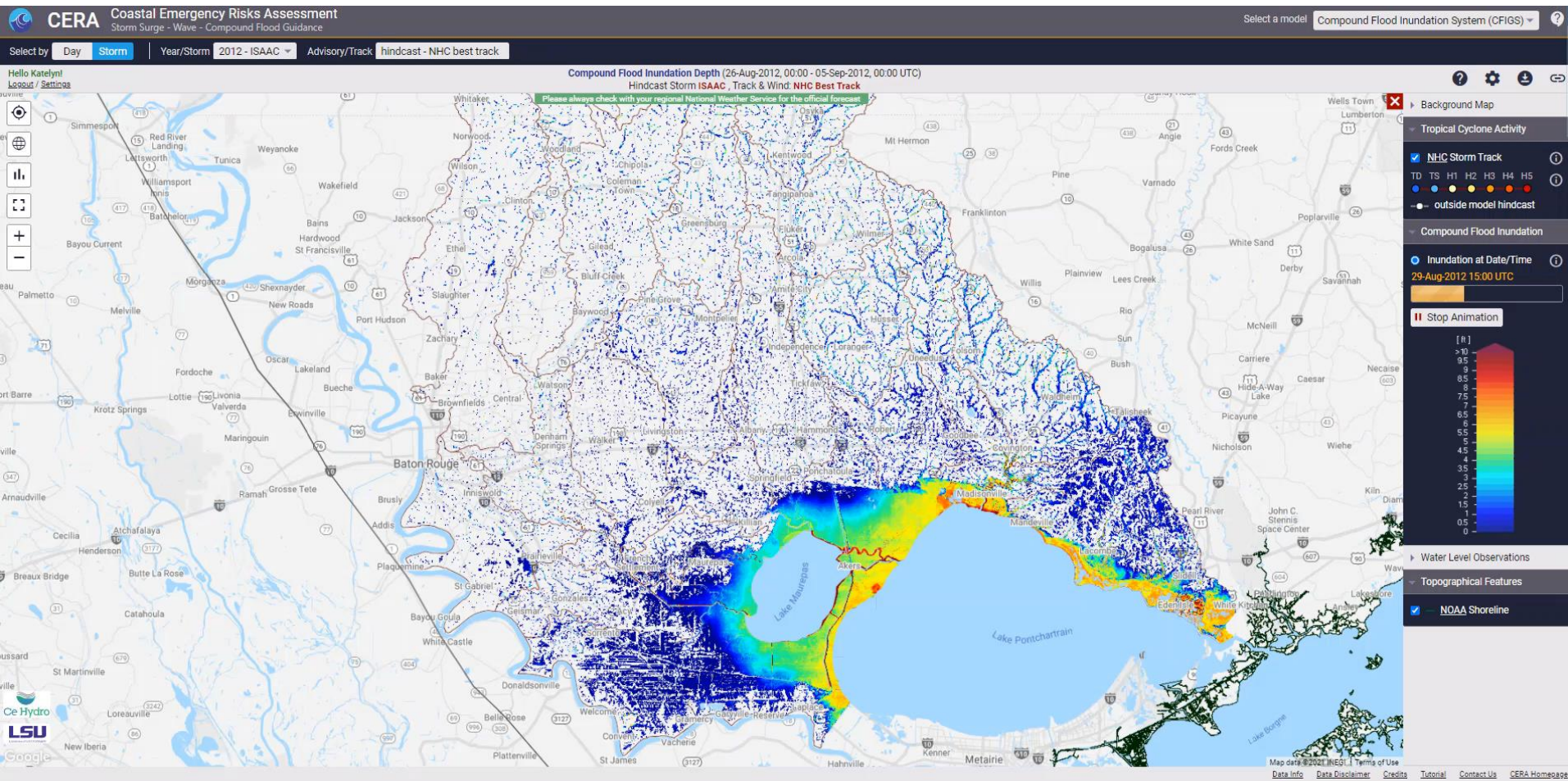
The layer is generated by:

Developing digitized Base Flood Elevation Layer (1%)
(static layer)

Utilizing the Max Water Surface Elevation generated during an event
(generated during every run)

The difference produces a layer in real time which will show areas with highest risk of structure flooding
AUGUST 2016 Event – test case

Compound Flood Inundation Guidance System (CFIGS)



- Inundation Animation (depth of water above ground)
- Hydrographs for water level comparison to model prediction – 50 stations from USGS, USACE, and NWS

CERA Interface

Frequently Used Sites

- **CPRA CIMS** <https://cims.coastal.louisiana.gov>,
(login required for HGMS and LIMS Private)
 - **HGMS**: Navigate to Protection > HGMS Private > Map Viewer. Displays water level and meteorological data for CPRA, USACE, USGS, and NOAA gages.
 - **LIMS**: Navigate to Protection >
 - Select “LIMS Gate Status”, which is the publicly-accessible open/closed status of gates/closures.
 - Select “LIMS Private”, allows levee districts/authorities to change gate/closure status to open/closed.
 - **CERA** <https://cera.coastalrisk.live/>
 - ADCIRC visualization
 - CFIGS – visualize compound flooding between Baton Rouge to Slidell
 - **Rivergages website:**
www.rivergages.com; backup resource for checking water levels on GOES network; source for pulling data to other sites e.g. CIMS HGMS.
- CIMS – Coastal Information Management System
 - HGMS – Hurricane Gage Monitoring System
 - LIMS – Levee Information Management System
 - CERA – Coastal Emergency Risks Assessment
 - CFIGS – Compound Flood Inundation Guidance System
 - GOES – Geostationary Operational Environmental Satellite



Questions?



committed to **our coast**

Backup slides



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Hydrograph slides

IHNC Surge Barrier East (IHNC-02)

Seabrook Complex (IHNC-01)

Outfall 17th St London Ave Orleans Ave

Lake Pontchartrain at Lakefront Airport

Rigolets near Lake Pontchartrain

Lake Pontchartrain at Mandeville

Bayou Dupre Sector Gate (LPV-144)

Caernarvon Canal Sector Gate

GIWW at West Closure Complex (WBV-90)

Harvey Canal at Boomtown Casino

Barataria Waterway at Lafitte

Bayou Segnette Closure (WBV-16.2)

Bayou Verret / W. Tie-In Sector Gate (WBV-72/74)

Hero Canal Stop-Log Gate (WBV-09b)

MS River at Empire Floodgate

Barataria Pass at Grand Isle

Houma Navigation Canal

GIWW at Bayou Sale

Bayou Boeuf at Railroad Bridge

Lower Atchafalaya River at Morgan City

Calcasieu River at Cameron

MS River at Venice; RM 10-11

MS River at Empire Lock (NOV-14); RM 29-30

MS River at West Point a la Hache; RM 48-49

MS River at Alliance; RM 62-63

MS River at Carrollton; RM 102-103

MS River at Bonnet Carre Spillway N; RM 129-130

MS River at Reserve; RM 138-139

Total Hydrograph slides (28)

- Mississippi River (8)
- Other locations in Coastal Zone (20)

Note:

- **HSDRRS Complex Structures in Bold (11)**
- *MS River gages in Italics*