

# *The University of Texas Marine Science Institute*

EST. 1941

research | education | public outreach



# Discovery Starts Here

*from Polar Oceans to Tropical Seas*



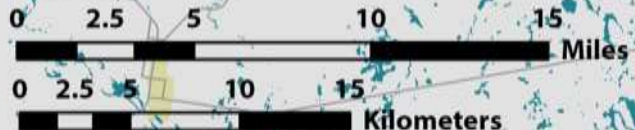
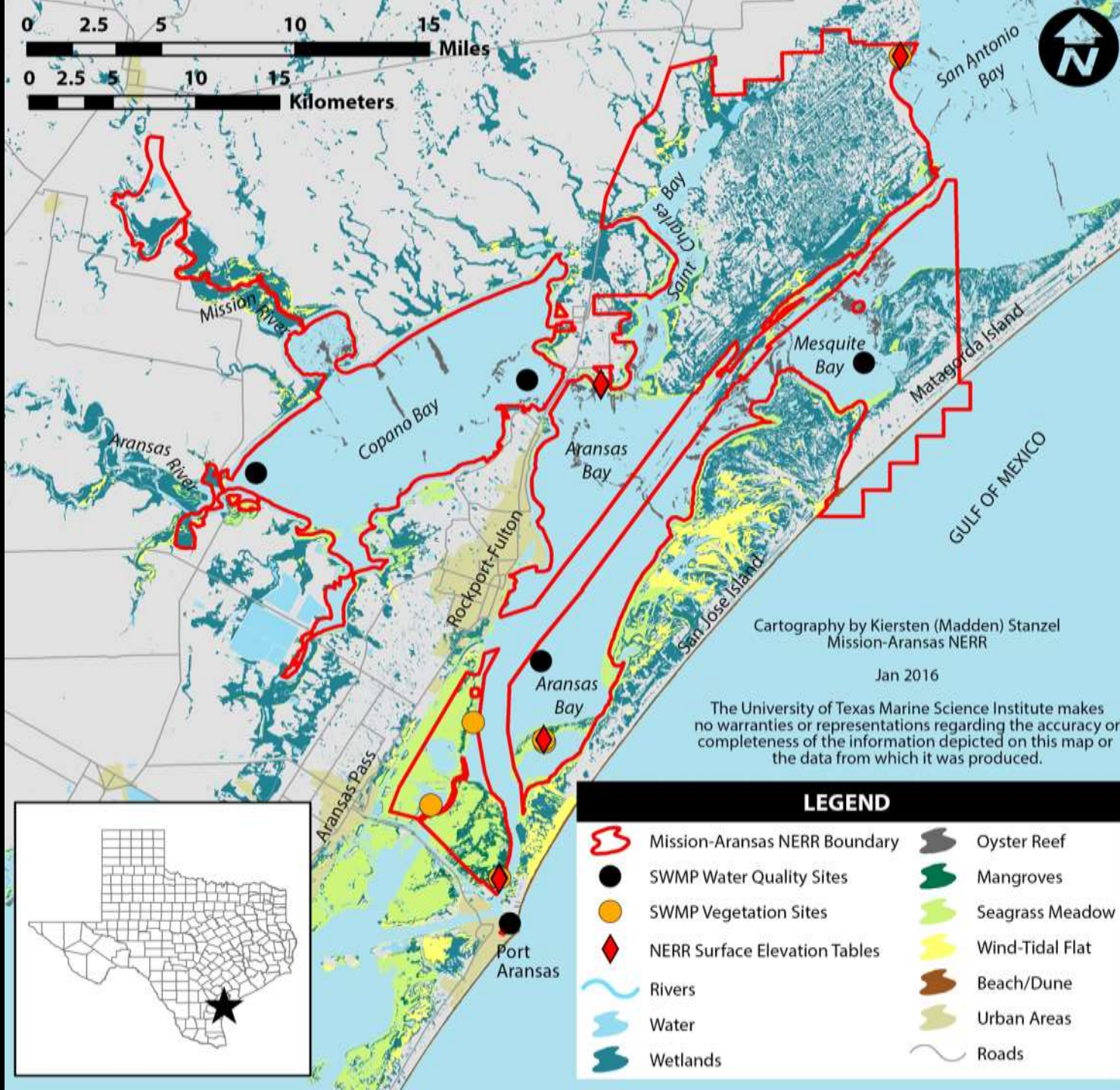


***The University of Texas College of Natural Sciences (largest in the US) recognized our faculty as bringing in the most funding for sponsored research for all of the 14 departments***



**9:1**





Cartography by Kiersten (Madden) Stanzel  
 Mission-Aransas NERR  
 Jan 2016

The University of Texas Marine Science Institute makes no warranties or representations regarding the accuracy or completeness of the information depicted on this map or the data from which it was produced.



LEGEND			
	Mission-Aransas NERR Boundary		Oyster Reef
	SWMP Water Quality Sites		Mangroves
	SWMP Vegetation Sites		Seagrass Meadow
	NERR Surface Elevation Tables		Wind-Tidal Flat
	Rivers		Beach/Dune
	Water		Urban Areas
	Wetlands		Roads

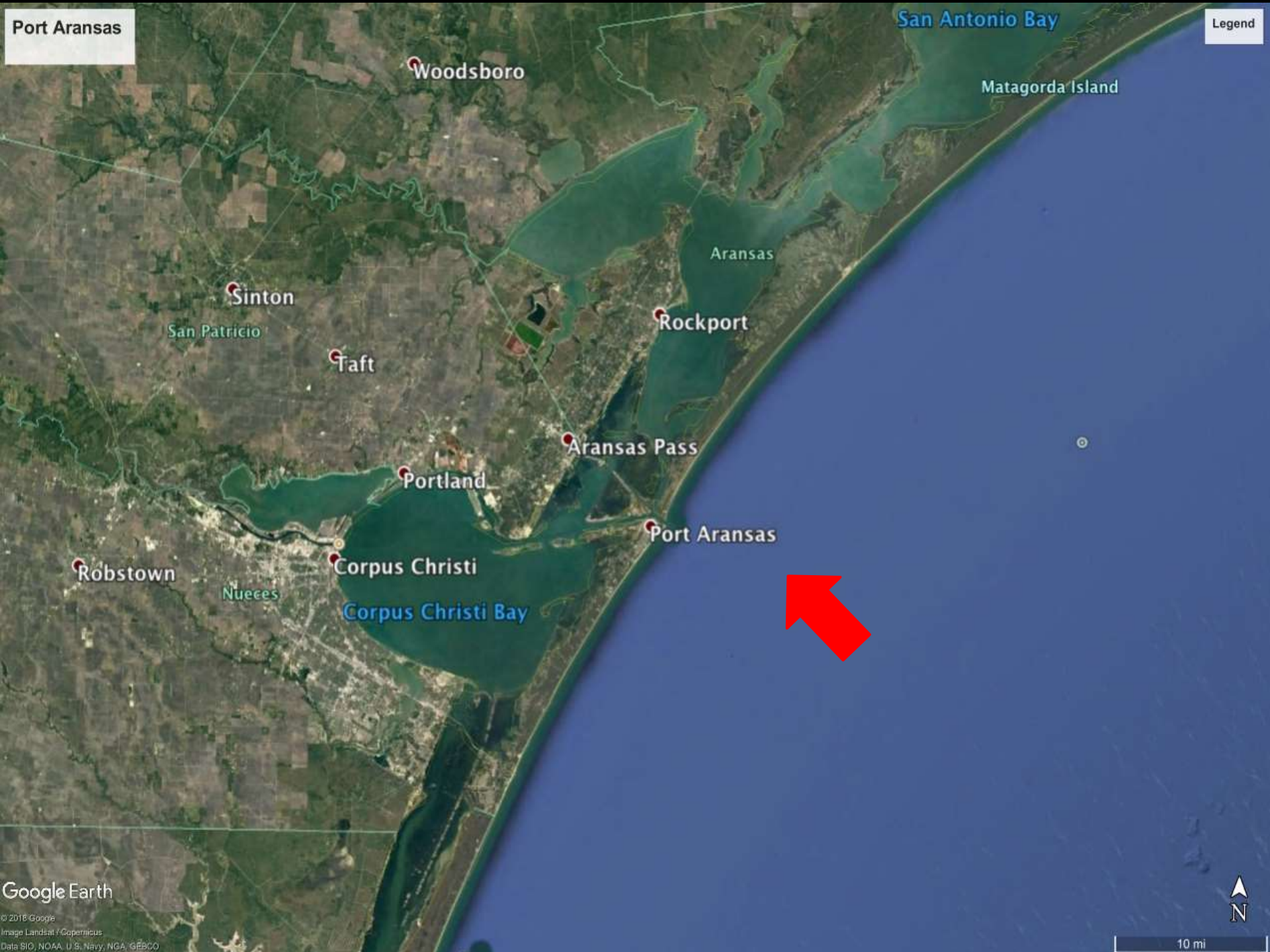
# Port Aransas and UTMSI

Write a description for your map.

**Legend**

- Port Aransas





Port Aransas

Legend

San Antonio Bay

Woodsboro

Matagorda Island

Aransas

Sinton

San Patricio

Rockport

Taft

Aransas Pass

Portland

Port Aransas

Robstown

Nueces

Corpus Christi

Corpus Christi Bay

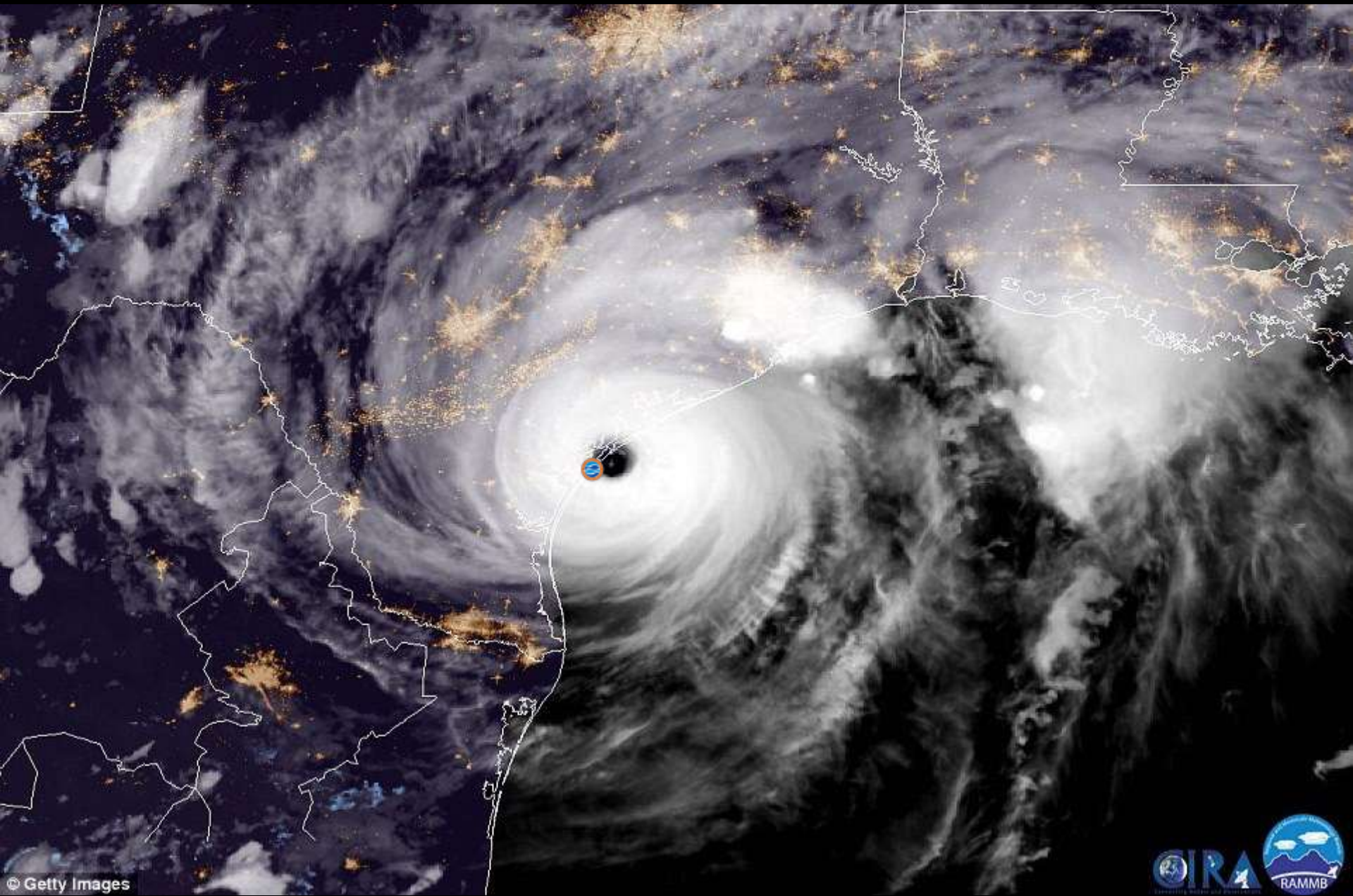
Google Earth

© 2018 Google  
Image Landsat / Copernicus  
Data: BIO, NOAA, U.S. Navy, NGA, GEBCO



10 mi

# Hurricane Harvey, August 25, 2017 8:00 p.m.





# Hurricane Harvey Impacts

72 acre Channel View Drive Campus







# Hurricane Harvey Impacts

10 acre Port Street Campus





# Hurricane Harvey Impacts

Relocated 80% of Faculty, Students and Staff  
to Texas A&M University-Corpus Christi





# Hurricane Harvey Impacts

Bay Education Center in Rockport  
3,300 acre conservation easement on Fennessey Ranch  
Sampling infrastructure in the Mission-Aransas estuary





# Hurricane Harvey Impacts

Replacing roofing for 40 buildings =  
approximately 3 football fields of roofing





# Hurricane Harvey Impacts

No physical structure survived untouched





## PREPARATION

### Premonition of imminent disaster ?

“This is the story of Isaac and his time in America, the last turning of the centuries, when the hubris of men led them to believe they could disregard even nature itself.”

— Erik Larson, *Isaac's Storm: A Man, a Time, and the Deadliest Hurricane in History*

So, how were we prepared, and was it enough!



# Annual Safety and Hurricane Planning Meeting



## Topics:

Hurricane Season Preparation  
Laboratory Safety  
Fire Safety  
Campus Security & Safety

## Purpose:

Safety Awareness  
Vulnerability Awareness  
Threat Awareness  
Preparation  
Response  
Recovery  
Retrospective



# Annual Safety and Hurricane Planning Meeting



## Speakers:

Director  
Facilities Manager  
Laboratory Safety Officer  
MSI Security Supervisor  
UTPD Officer

## Invited, preceded by Campus Walk-through:

Port Aransas Police Chief  
Port Aransas Fire Chief  
Port Aransas EMS Chief  
Port Aransas Emergency  
Management Director

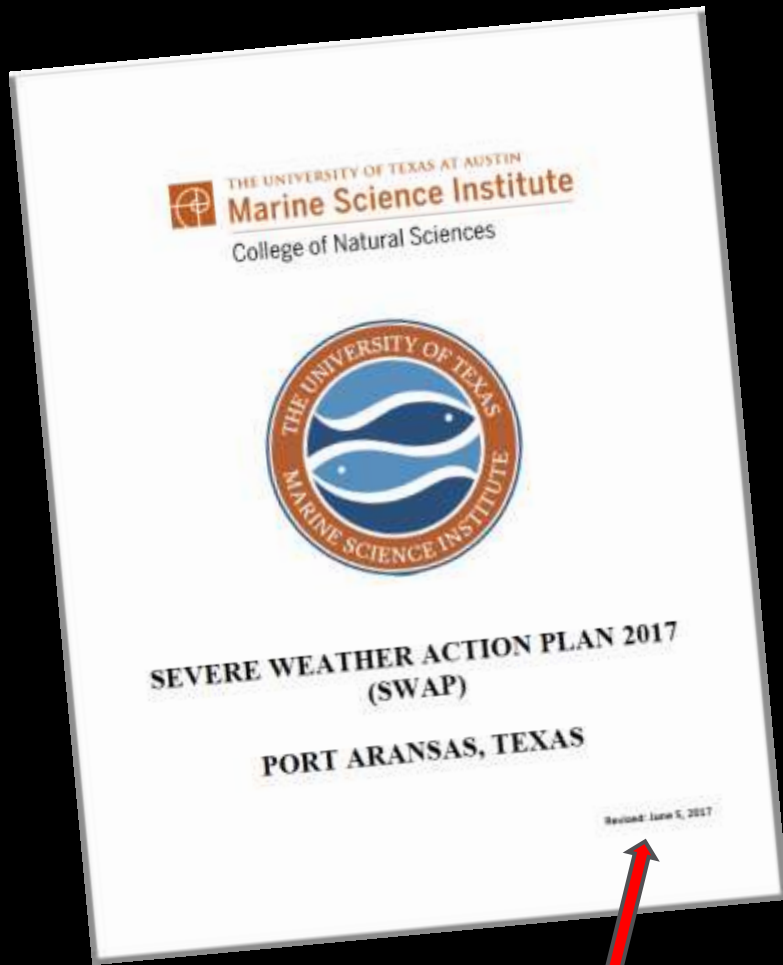
First Responders familiarization with campus and all it contains is important!





# SEVERE WEATHER ACTION PLAN (SWAP)

## Preparation for the Worst, People First



Revised June 5, 2017

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# PHASING PREPARATIONS

**Phase I** signals SWAP early preparations for impending severe weather and may be initiated in one of two ways, by the Director, or his/her designee, or automatically when a **Tropical Storm/Hurricane Watch** is declared. ....

**Phase II** SWAP Phase II will be declared when evacuation notification is imminent or tropical storm force winds are projected to reach UTMSI within 72 hours or more if conditions dictate, such as the **issuance of a Tropical Storm/Hurricane Warning** covering Port Aransas. ....

## **Specific Activities assigned to:**

- Undergraduate and Graduate Students
- Administration Office Personnel
- Information Technology Personnel
- Faculty and Scientific Staff
- Facility Maintenance and Grounds Staff
- Marine Operations Staff
- Custodial Staff
- Security Staff



# Phase I - Specific Tasking for Undergraduate Students, Graduate Students & Postdocs

*1. Identify student teams of 2 to 4 individuals that live in proximity of one another, to assist each other in preparation of one apartment at a time when SWAP Phase II is initiated.*

*2. Assemble Go-Bags (i.e. personal items needed for 2 weeks travel including any medication), fuel personal vehicles and check vehicle operating status (e.g. tire pressure, oil, battery), have emergency cash. Begin developing evacuation plans to travel in groups if possible.*

*3. Back up all computers in apartments, cottages, houses on portable computer drives and prepare to secure in waterproof enclosures. Each student is responsible for the safety and security of their own back-up drive(s). Avoid the need for transporting hard copies of documents/files by digitizing and routinely saving to computers in advance.*

*4. Ensure that all potentially hazardous items, e.g. cleaning solvents and chemicals in apartments, cottages, houses are secured in cabinets (elevated cabinets for ground floor units). No hazardous materials should be located in floor cabinets in ground floor units.*

*5. Remove all loose items from desktops, tables, countertops and open shelves and store in drawers or cabinets and waterproof container bins.*

*6. Report to faculty advisors at MSI to assist with Phase I preparation of offices and laboratories, complete individual or group evacuation plans, verify evacuation plans and contact information to faculty advisor, and review re-entry procedures for Port Aransas and MSI laboratories and offices. Individual evacuation plans and contact information provided at this stage will supersede information on file at administration.*



# Phase II - Specific Tasking for Undergraduate Students, Graduate Students & Postdocs

Tasks in Blue are new lessons learned additions

- 1. Disperse in pre-established teams to prepare apartments/cottages/houses.*
- 2. Congregate all furnishings and securely cover in sheet-plastic to protect from water penetration of the housing unit. An emergency box with plastic and tape will be supplied in each unit.*
- 3. Back up all computers in apartments, cottages, houses on portable computer drives and secure in waterproof enclosures. Each student is responsible for the safety and security of their own back-up drive(s).*
- 4. Take photographs of the items in your office drawers and cabinets.*
- 5. Lock or tape shut all easily opened drawers and cabinet doors. Make sure you take the key with you.*
- 6. Report to faculty advisors at MSI to continue emergency preparation of offices and laboratories.*
- 7. Affirm your evacuation plans with your faculty advisor.*
- 8. Secure your go-bag for evacuation including all personal items from your office/laboratory.*



## RESPONSE

### Positives:

- Severe Weather Action Plan was well executed
- Personnel evacuated (with few exceptions) 24 hours before storm landfall
- No personnel injuries reported
- Emergency communication system was effective
- UT-System and UT-Austin was and is engaged
- Disaster clean-up response implemented within days
- Advisory Council and donors helped immensely to help students and staff

### Shortfalls:

- Campus emergency generator power systems failed – remain at risk
- Planning for, and information about, temporary student housing inadequate
- Planning for, and information about, temporary laboratory space inadequate
- Procedures for timely emergency financial aid to students, staff and faculty inadequate



# Initial Response

- Account for Students, Faculty, Staff
- Re-establish Campus Security
- Initiate Debris Clean-up, Seal the Leaks
- Identify Priorities – Critical Needs
- Delegate Roles Internally
- Begin Damage Assessment
- Align Administrative System Support
- Identify Funding Sources to Rebuild





# Initial Response

UT-SYSTEM  
CHANCELLOR  
ORM  
OGC  
UTPD



UT-AUSTIN  
PRESIDENT  
CFO  
UTPD  
PMCS  
EHS

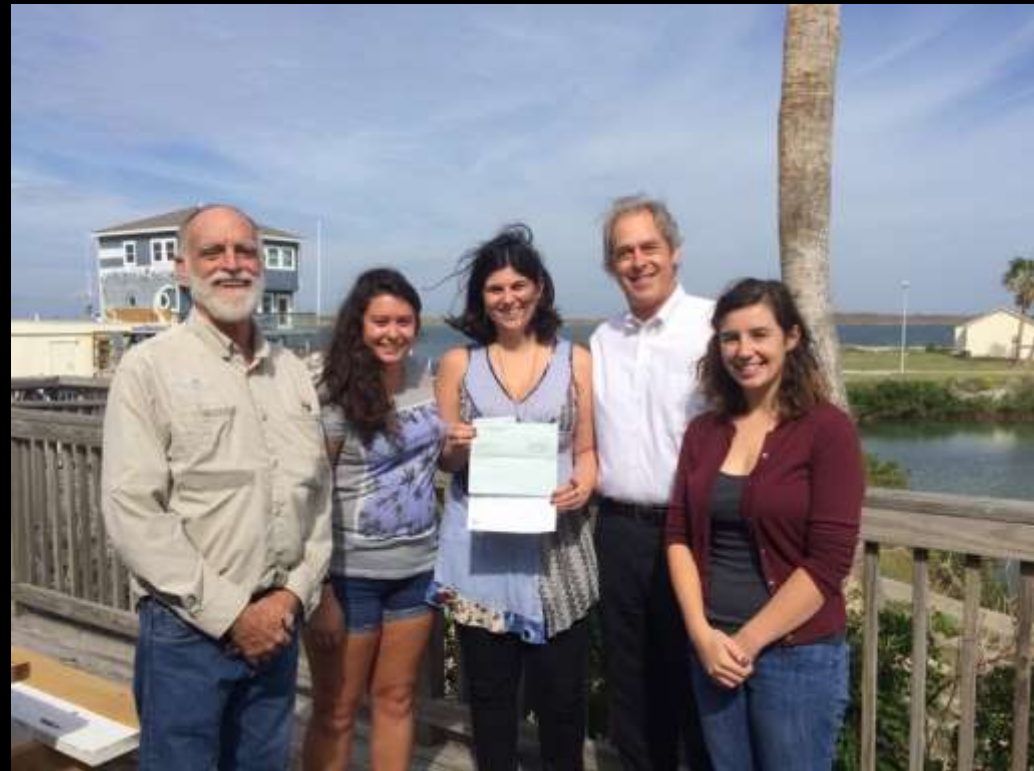
Chancellor Bill McRaven, Representative Todd Hunter, Senator Lois Kolkhorst





# Response

***Student and staff housing was severely impacted***  
**Generous support from Marine Science Advisory Council Members, HornRaiser donors and Corpus Christi Mayor's Hurricane Harvey Fund**







# Response Continue Mission



**Thank you to TAMU-CC and all  
of our Volunteers and Donors**



**80% of Faculty and Students Relocated to TAMU-CC - Classes Continued!**

TAMU-CC HRI





## **Response – Continue Mission**

**R/V Katy and small boat fleet survived and boat basin minimally damaged**

**Despite the loss of laboratories and offices, faculty and students prepared proposals and were awarded \$350K RAPID grants from National Science Foundation for study of hurricane impacts to seagrass and bay systems**



Laboratory contents moved to auditorium



Hurricane damage to seagrass meadows



# Response – Continue Mission

## *The Amos Rehabilitation Keep*

**Generous support from International Wildlife Foundation, Greater Good, Harvey Weil Award, and International Fund for Animal Welfare**

**Volunteer Help with Clean up and Repair**



Rehabilitated Sea Turtle Release after Storm



## RECOVERY

*Out of adversity comes opportunity*  
*- Benjamin Franklin*



# Recovery

*There's always more than one #1 priority!*



*Develop Repair/Rebuild Plans and Priorities  
Align Admin, Finance, A&E and Contractor Support  
Exploit Opportunities for Hardening - Resilience*

**Exploit Opportunities to Rebuild Faster through Provisions of Federal & State Disaster Declaration**

**Recovery from Disaster is not Business as Usual**





# Mission Recovery

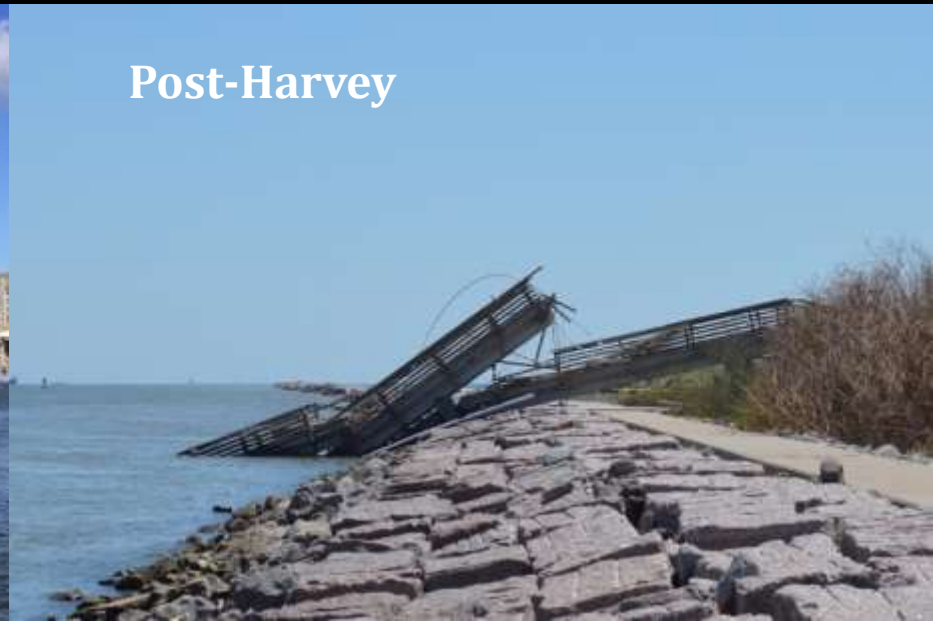
- **Destroyed research pier and two bay stations served national mission needs**
- **National Oceanic and Atmospheric Administration Responds with Help**
- **Scientific Equipment Manufacturers Responds with Help**
- **Network of Peer Institutions and Mission-Related Programs Responds with Help**



Pre-Harvey



Post-Harvey





# Lessons Learned - Recovery

- *Continue essential mission – keep people busy*
- *Delegate staff duties as much as possible to help with recovery*
- *Employ support network; assure everyone is on same page*
- *Don't underestimate the amount of time to document damages, track funding resources, develop quotes and supervise repairs*
- *Be flexible; adapt, improvise, solve*



*August 29, 2017*



*February 20, 2018*



[www.utmsi.utexas.edu](http://www.utmsi.utexas.edu)

[www.missionaransas.org](http://www.missionaransas.org)

[www.scienceandthesea.org](http://www.scienceandthesea.org)

**Discovery Starts Here**