How HEALTHY is the GULF of MEXICO?

What HRI is doing to assure it

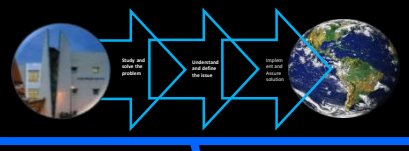
Harte Research Institute for Gulf of Mexico Studies

Texas A&M University
Corpus Christi

Important events in the history of HRI…

Ed Harte Gift
$46M

HRI MODEL IN PLACE



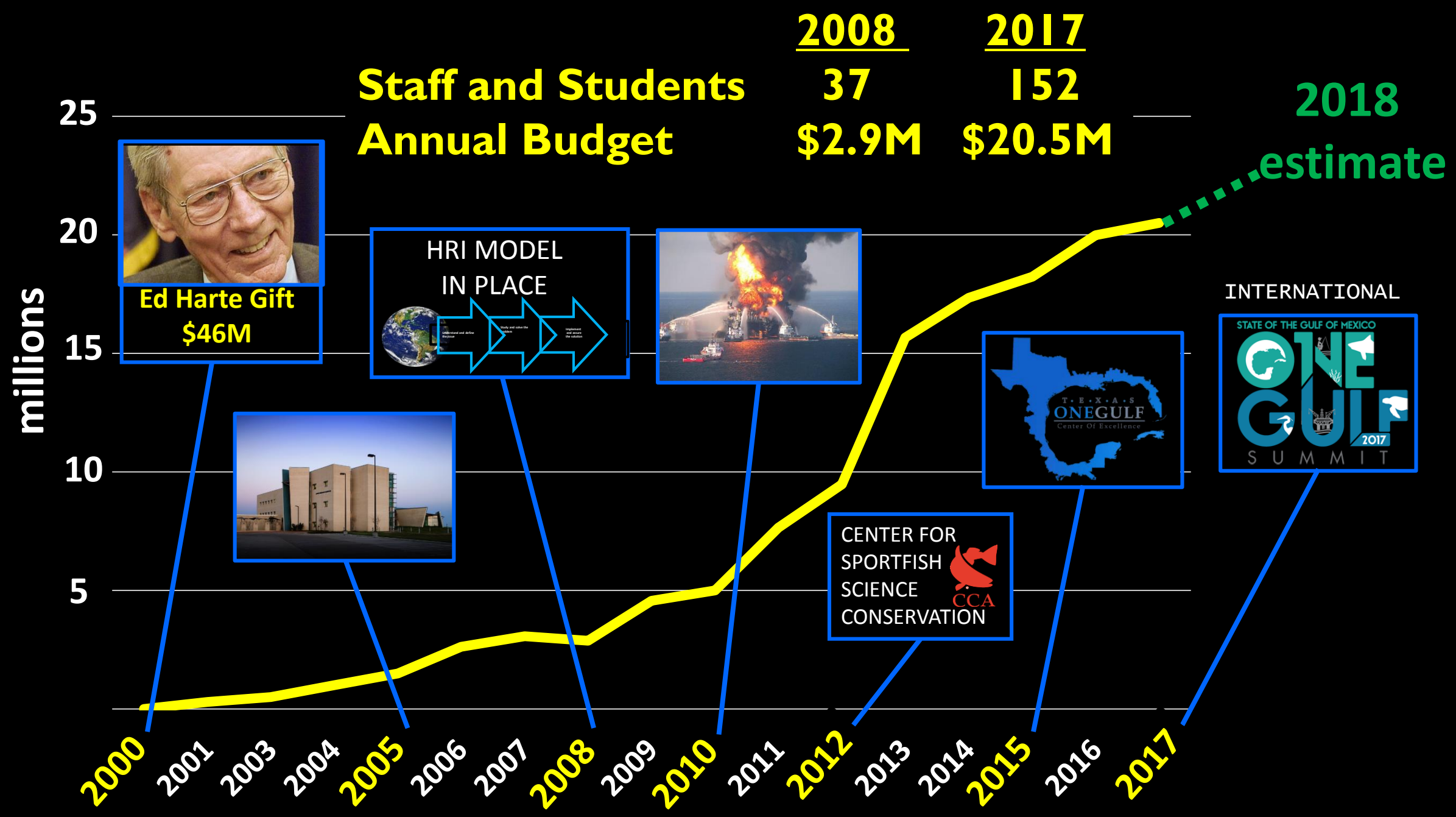
CENTER FOR
SPORTFISH
SCIENCE &
CONSERVATION
CCA

TEXAS ONEGULF Center Of Excellence

INTERNATIONAL

STATE OF THE GULF OF MEXICO ONE GULF 2017 SUMMIT

2000 2001 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017


2008
2017
Staff and Students
37
152
Annual Budget
$2.9M
$20.5M
2018
estimate
25
20
15
10
5
millions
Ed Harte Gift
$46M
HRI MODEL
IN PLACE
CENTER FOR
SPORTFISH
SCIENCE
CONSERVATION
CCA
T·E·X·A·S
ONEGULF
Center Of Excellence
INTERNATIONAL
STATE OF THE GULF OF MEXICO
ONE GULF
2017
SUMMIT
2000
2001
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017

HRI Model – Science-driven solutions to Gulf of Mexico problems

Stakeholder Engagement

Understand and define the issue

Partner Engagement

Study and solve the problem

Community Engagement

Implement and assure the solution

Most Academics stop here

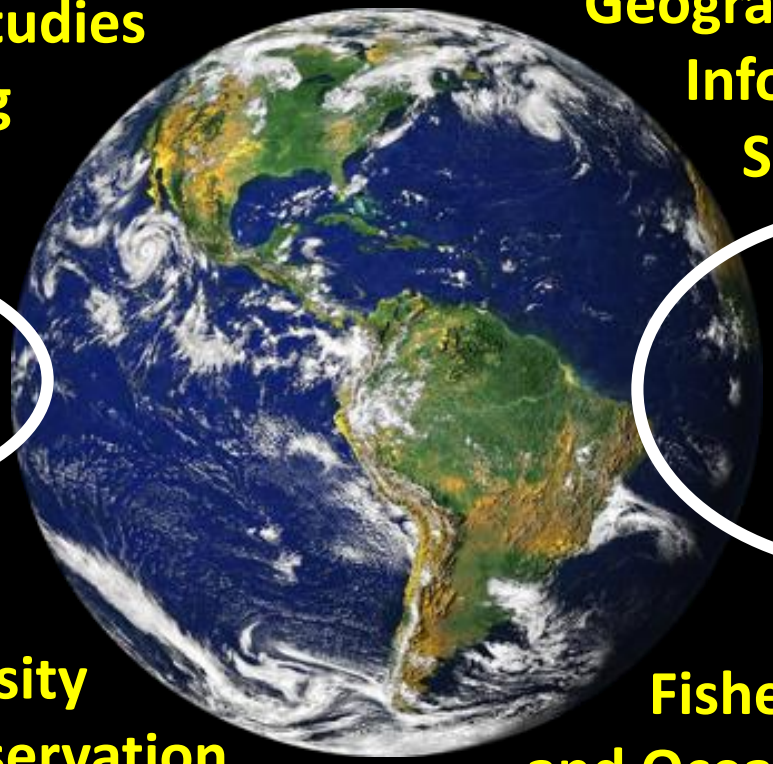
Directed Research *by design*

Transdisciplinary *by nature*

Six Endowed Chairs

Ecosystem Studies
And Modeling

Geographical
Information
Science



Socio
Economics

Marine
Policy
and Law

Biodiversity
and Conservation
Science

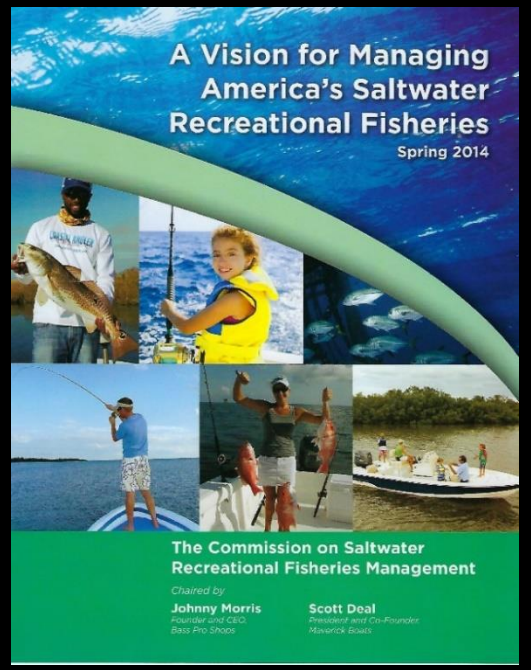
Fisheries
and Ocean Health

Engaged with Stakeholders *by choice*

Dr. David Yoskowitz – One year assignment as NOAA Senior Economic Advisor

Dr. Greg Stunz – appointed by two Texas Governors and Sec. of Commerce to Gulf Fisheries Management Council

Dr. Larry McKinney – Chair of National Commission on Recreational Fisheries Policy



International *in scope*

Dr. Nuno Simões
UNAM- Sisal

Dr. Patricia Díaz
University Havana
Center for Marine Science

TAMUCC is the only University in the USA with international chairs from both Mexico and Cuba

HRI has formal academic and research agreements with many institutions in Mexico and Cuba

Our VISION

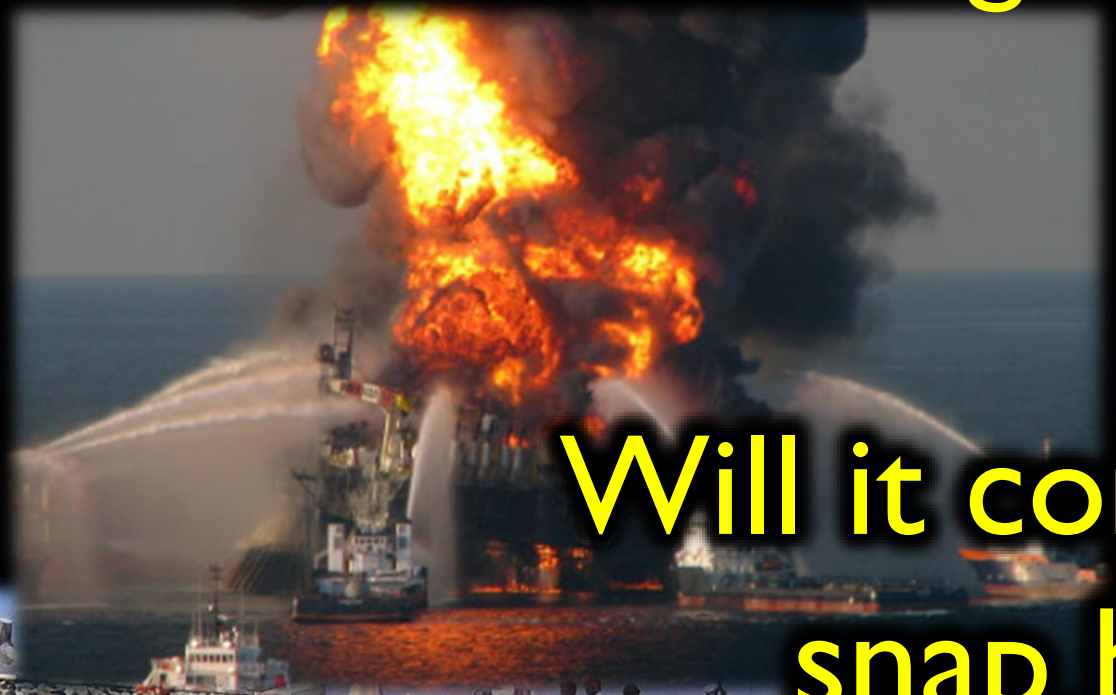
A Gulf of Mexico that is ecologically and economically sustainable

An Ecologically and Economically Sustainable Gulf is

Resilient

Nature has made the Gulf resilient

We are stretching the rubber band...



Will it continue to snap back?

The *HRI Model is designed to answer that question and to act on it…*

Stakeholder Engagement

Understand and define the issue

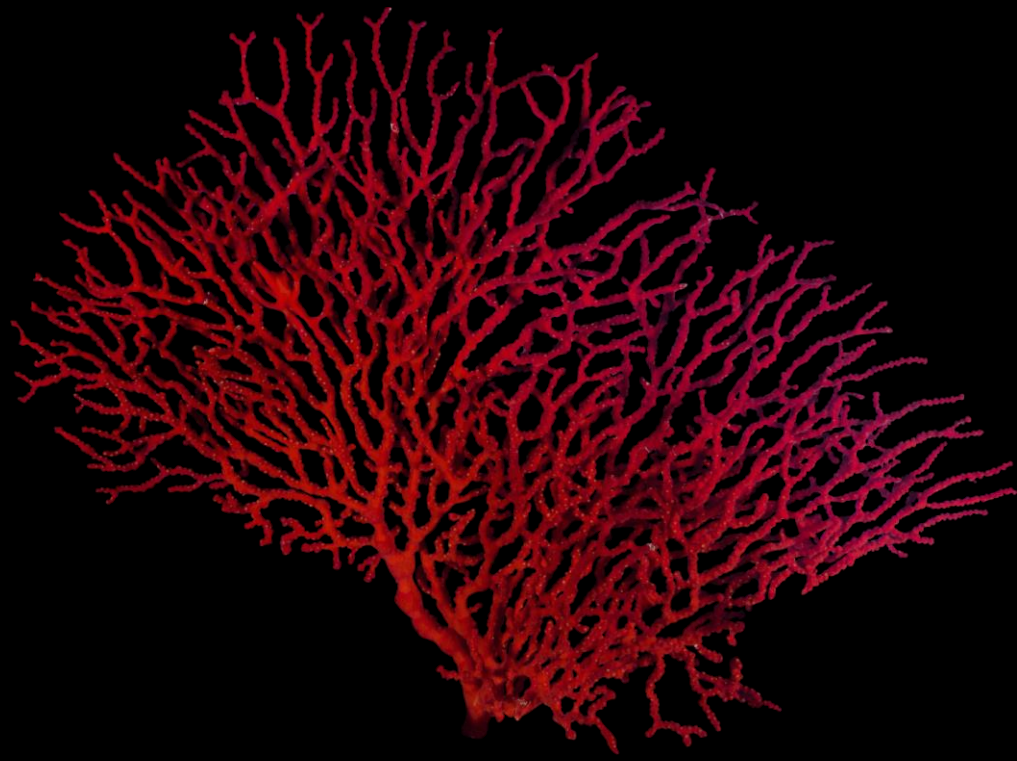
Partner Engagement

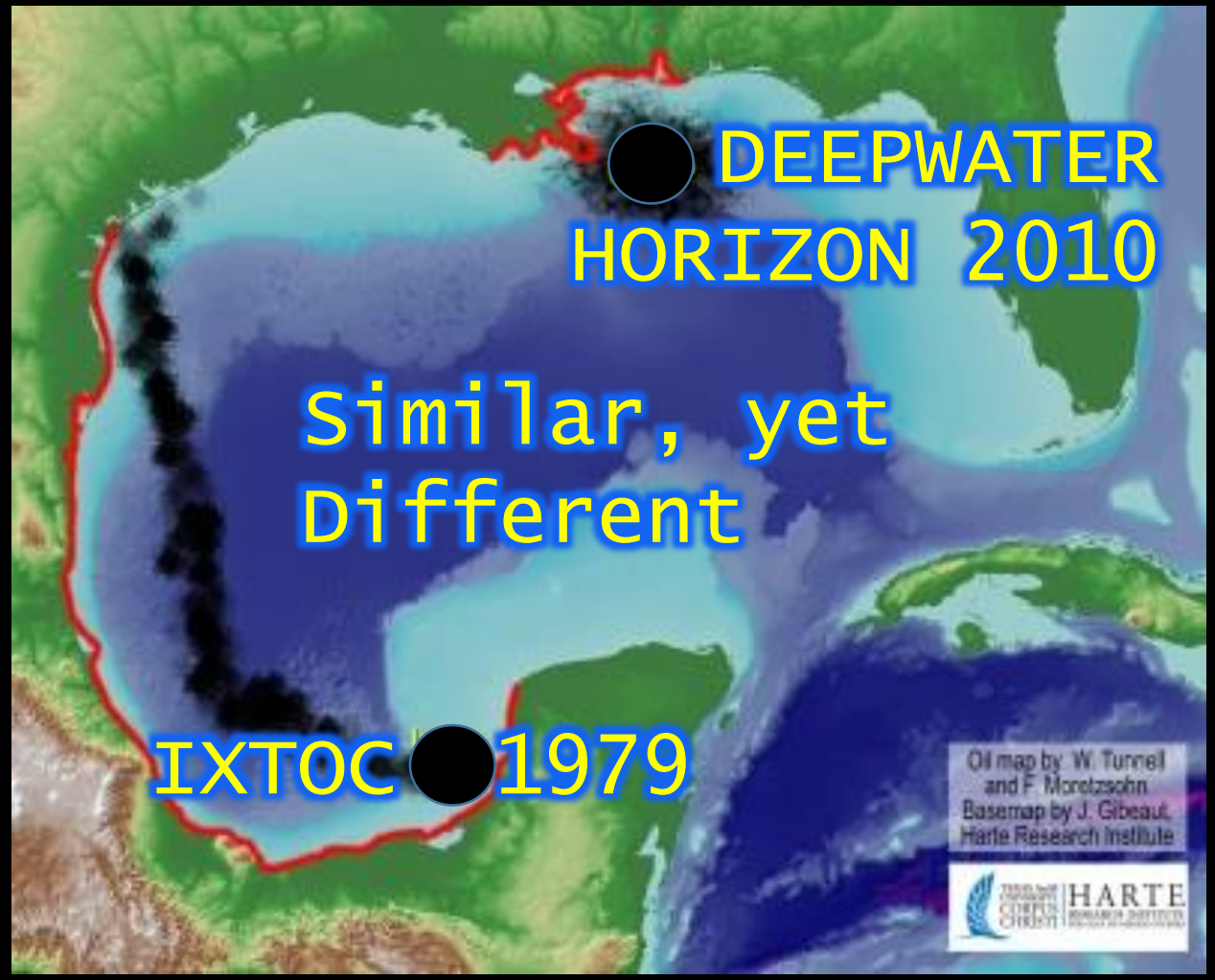
Study and solve the problem

Community Engagement

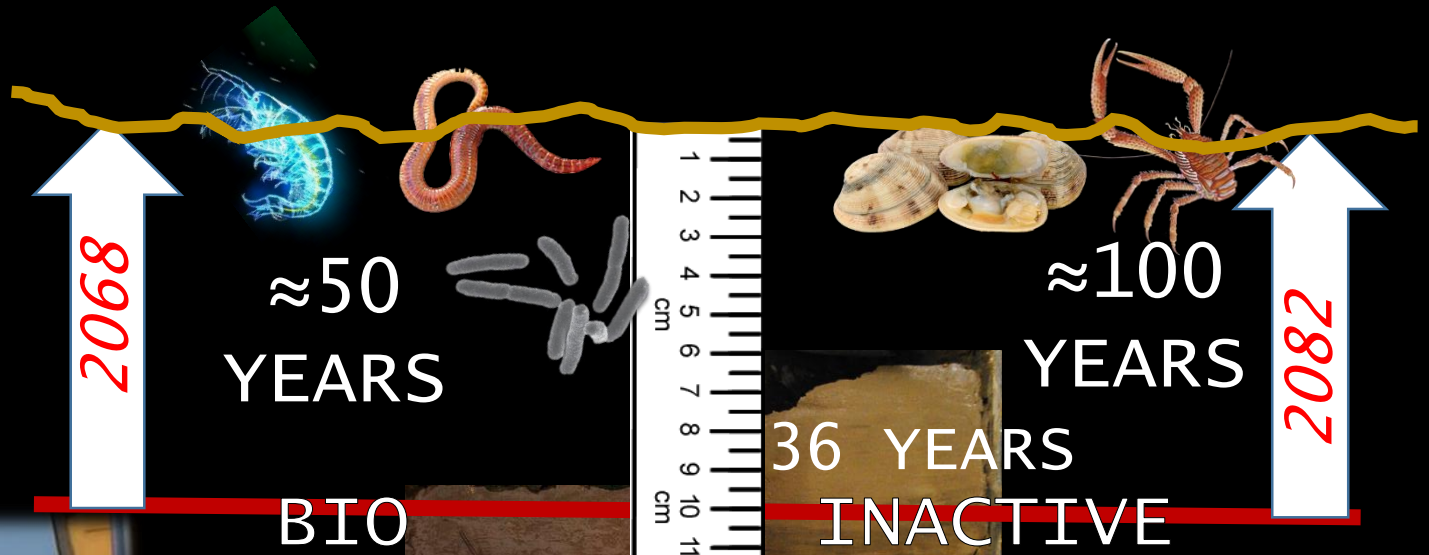
Implement and assure the solution

Recover from disturbance





Could we predict DWH's future by looking at the past: IXTOC?



DWH core

IXTOC core

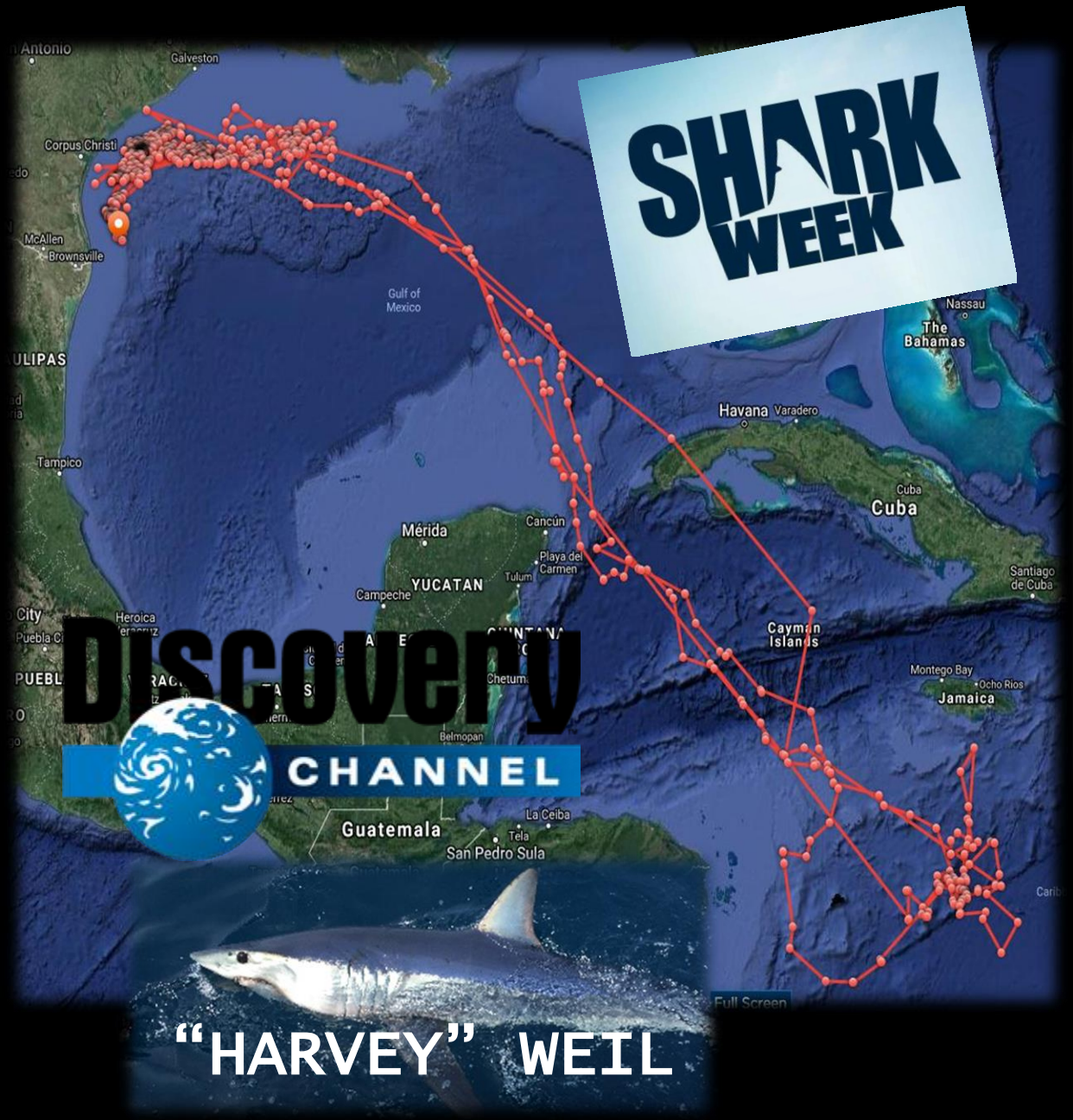
10 cm = 3.9 in.

Resist ongoing pressures

OVERFISHING

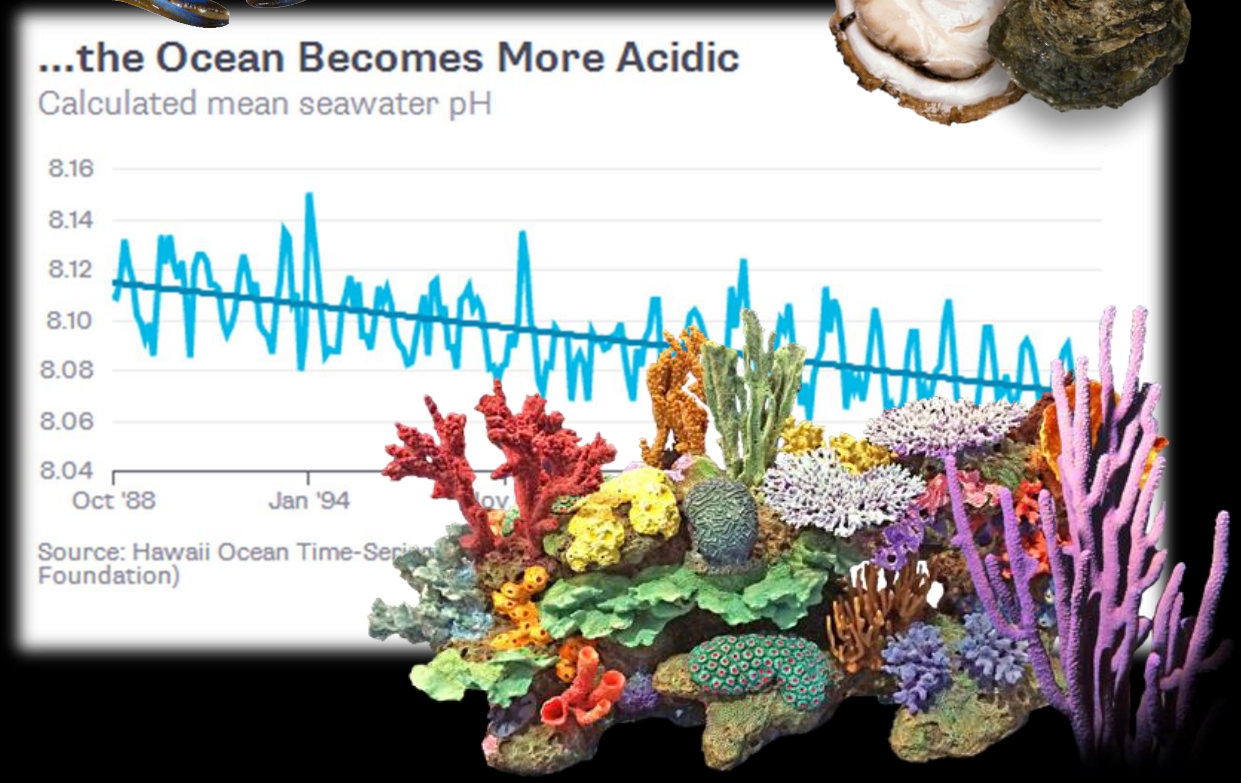
HABITAT LOSS

SINK YOUR SHUCKS



Adapt to change

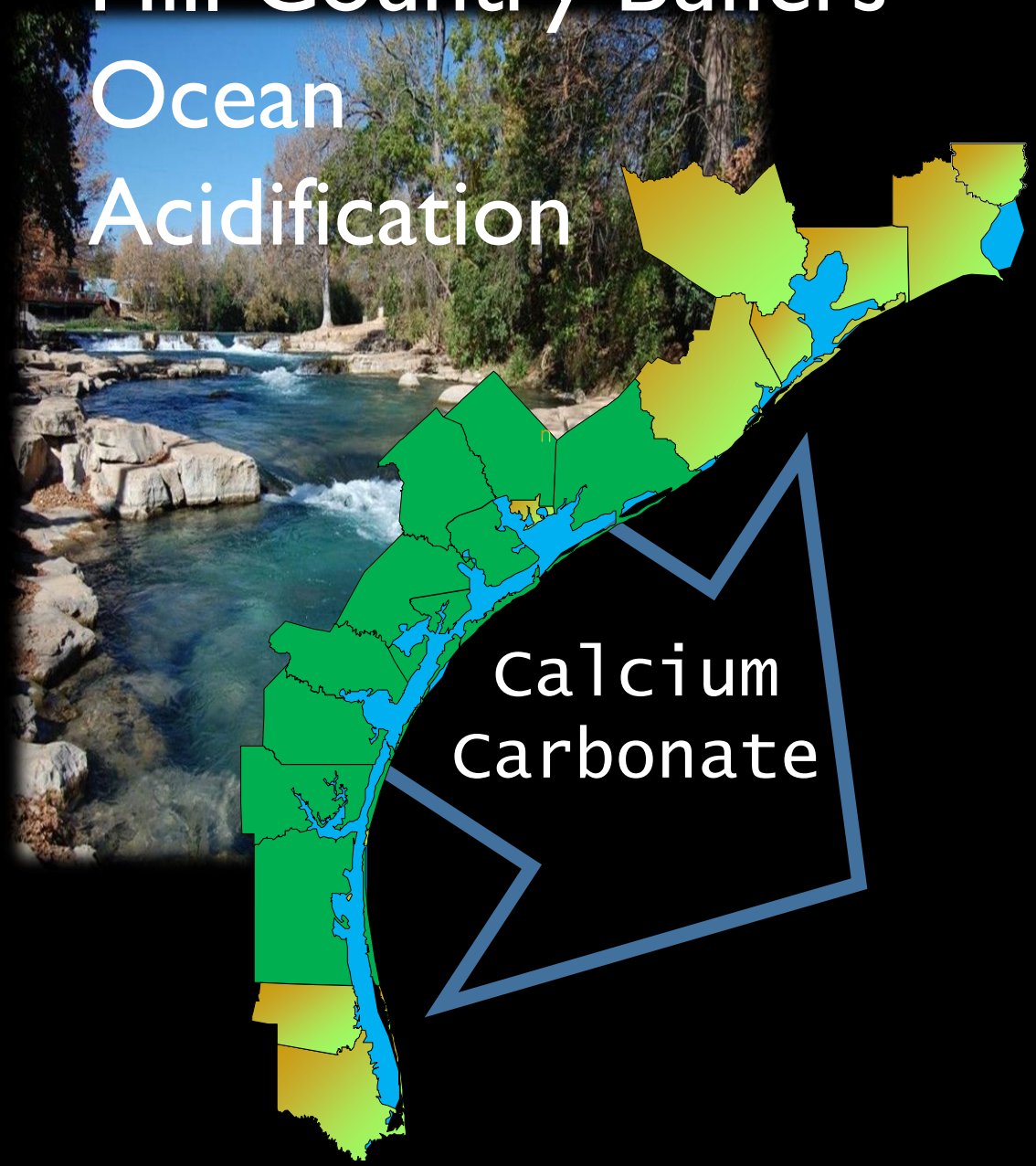
Diminished inflows to Estuaries

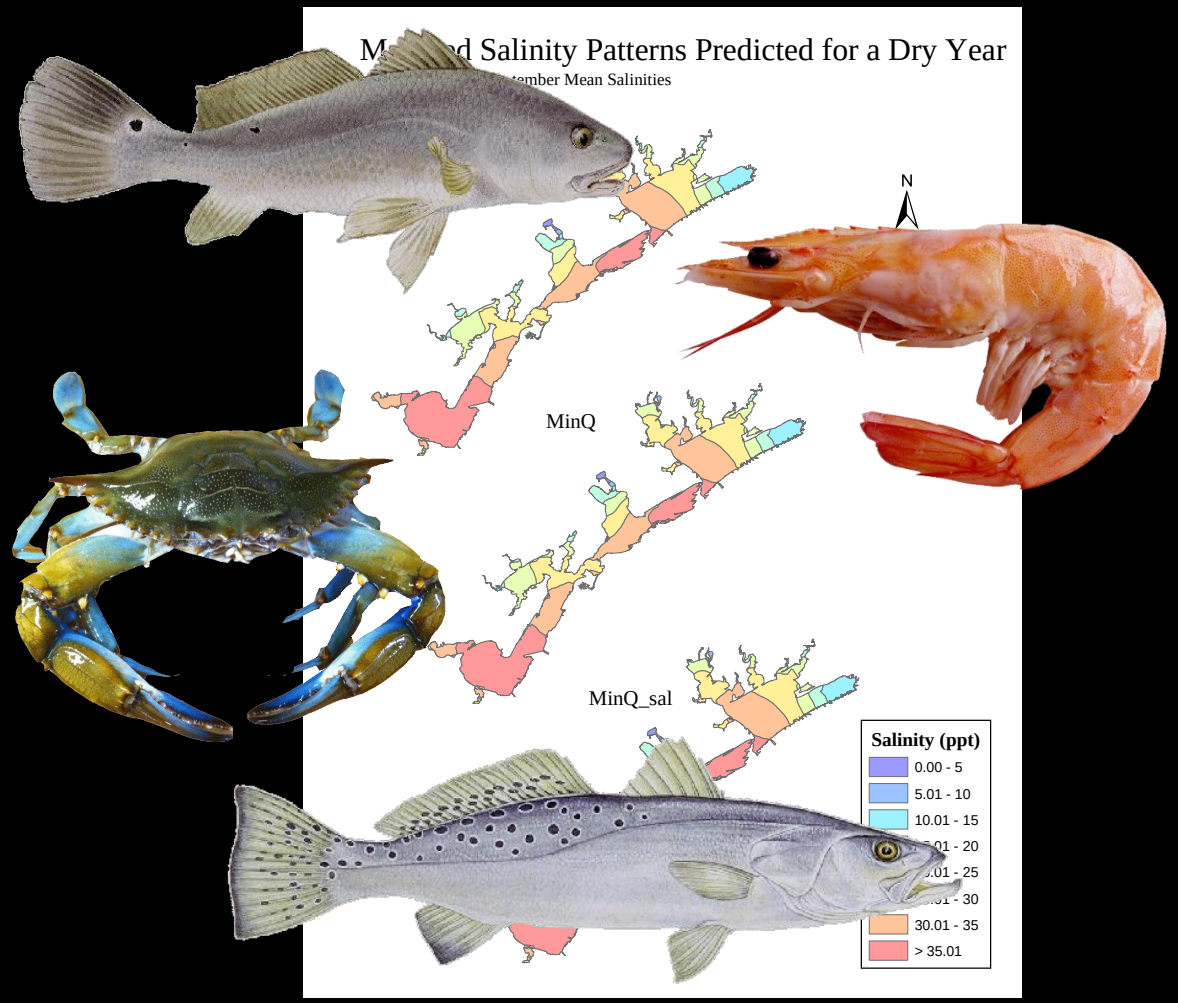


Ocean Acidification

Hill Country Buffers

Ocean Acidification





Focused Flows

Buffering Droughts

Mitchell Mathis Program in Environmental Water Economics

The Meadows Foundation
Serving the People of Texas

The Meadows Center for Water and the Environment
Texas State University

Texas A&M University Corpus Christi | HARTE Research Institute for Gulf of Mexico Studies

Texas A&M University Corpus Christi

The Cynthia & George Mitchell Foundation

Texas State University

Everyone wants a "healthy" Gulf of Mexico

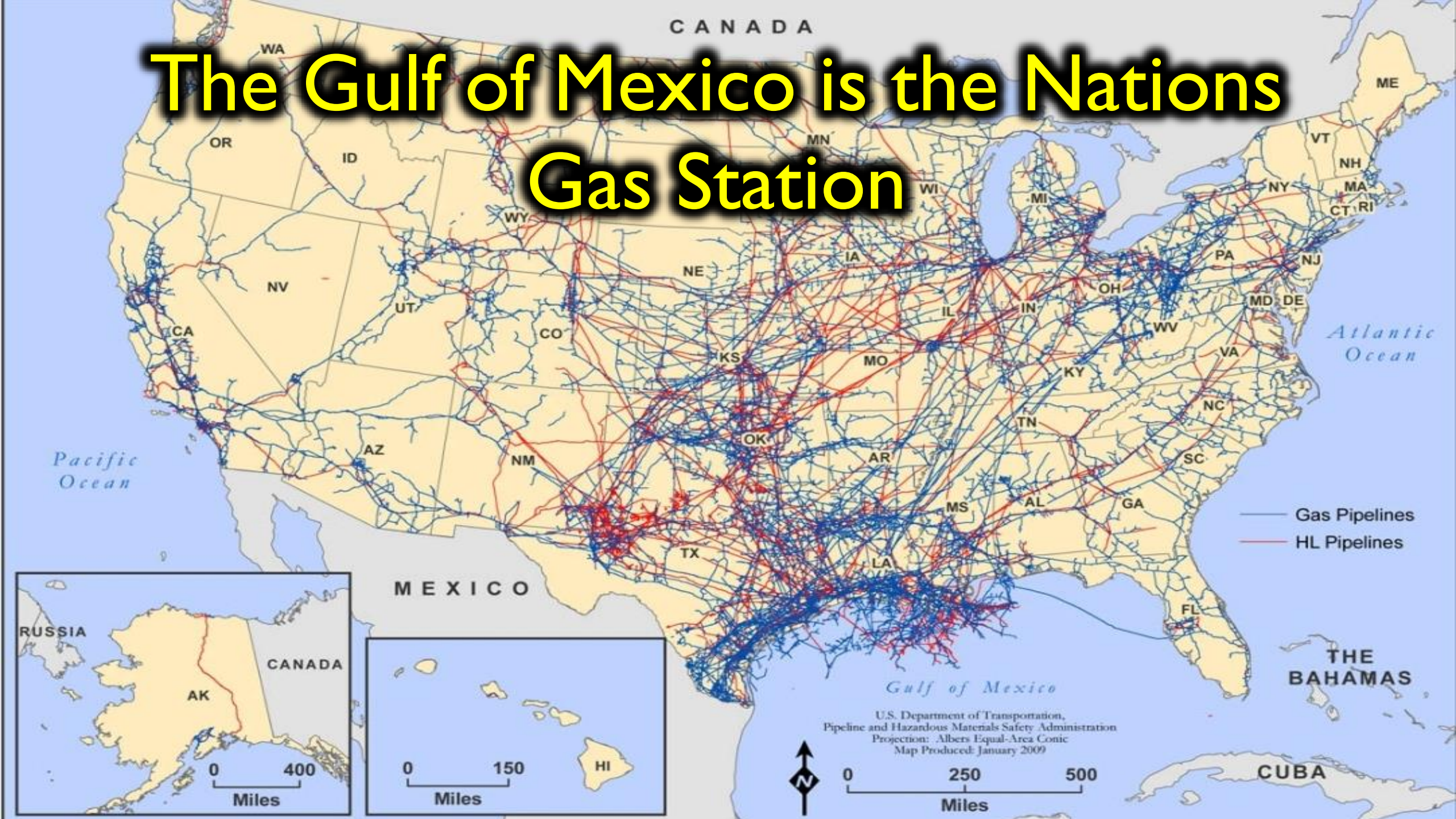
At the same time, we demand a lot of it…

The Gulf of Mexico is the Nation's Fish Market and Fishing Hole

1.4 billion pounds of seafood

44% of USA recreational fishing

The Gulf of Mexico is the Nations Gas Station



The Gulf of Mexico is the Nations most diverse Marine Ecosystem


The Gulf of Mexico is the Nations Highway
13 of the USA's 25 largest ports are in the Gulf of Mexico
Killeen
Temple
College Station
Austin
Conroe
Beaumont
Houston
San Antonio
LOUISIANA
New Orleans
Mobile
Pensacola
Tallahassee
Jacksonville
Gainesville
Ocala
Orlando
Tampa
FLORIDA
Corpus Christi
Nuevo Laredo
Reynosa
Matamoros
Monterrey
Ciudad Victoria
Ciudad Valles
Poza Rica
San Juan del Río
Ciudad de México
Xalapa Enríquez
Puebla
Cuauhtémoc
Córdoba
PUEBLA
Mérida
Cancún
Pinar del Río
Artemisa
Nueva Gerona
Villahermosa

The Gulf of Mexico is the Nations Favorite Coast

Population 21 million
+109% since 1970

Twice USA (52%) growth

The Gulf of Mexico is the Nation's Playground

South Padre Island Birding and Nature Center

ANNUAL TOURISM ECONOMIC IMPACT: $45 BILLION

we expect the Gulf to deliver all of these benefits

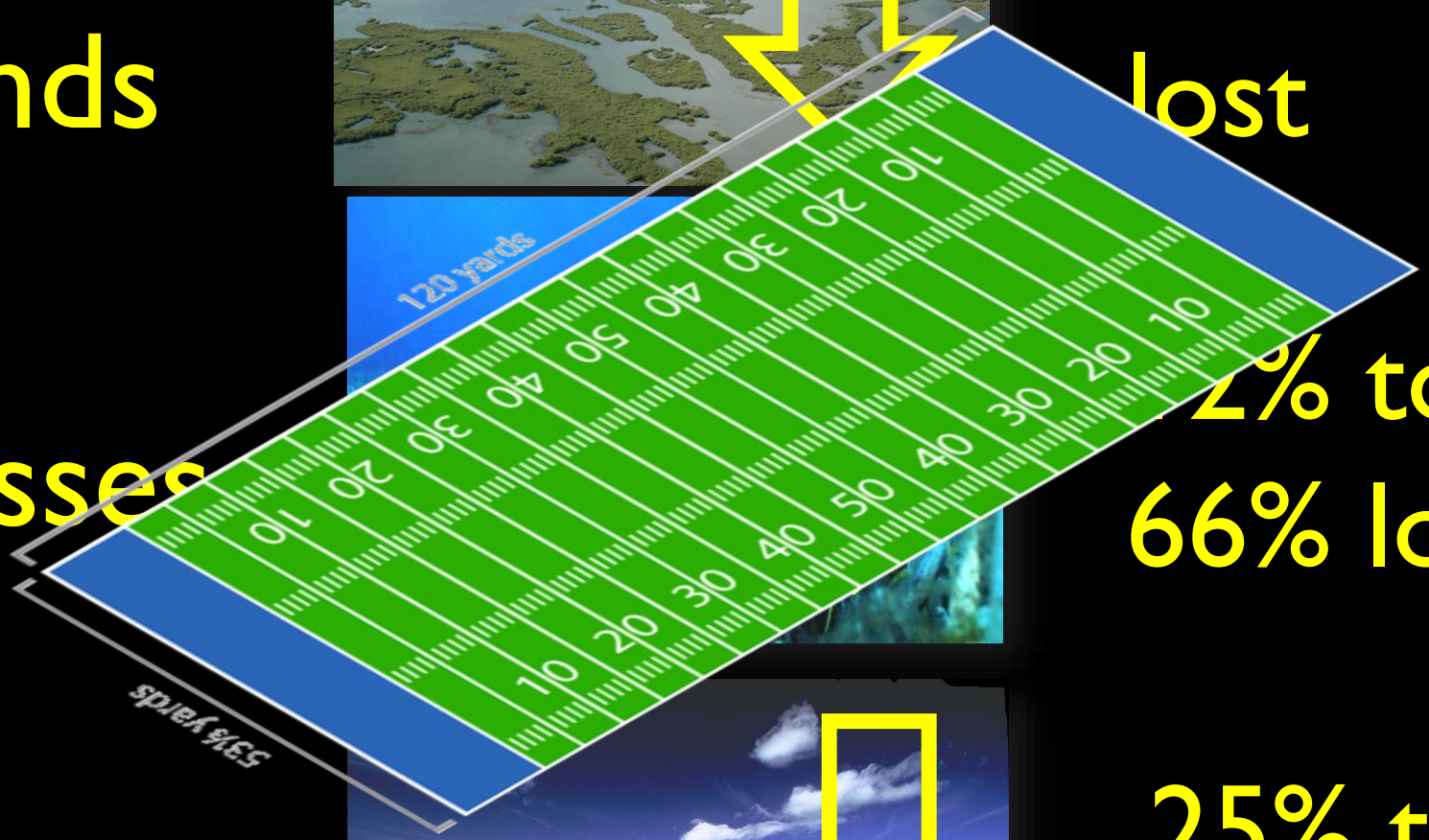
and...

We expect the Gulf to bounce back from whatever we do to it to secure those benefits

Gulf Wetlands

50% lost

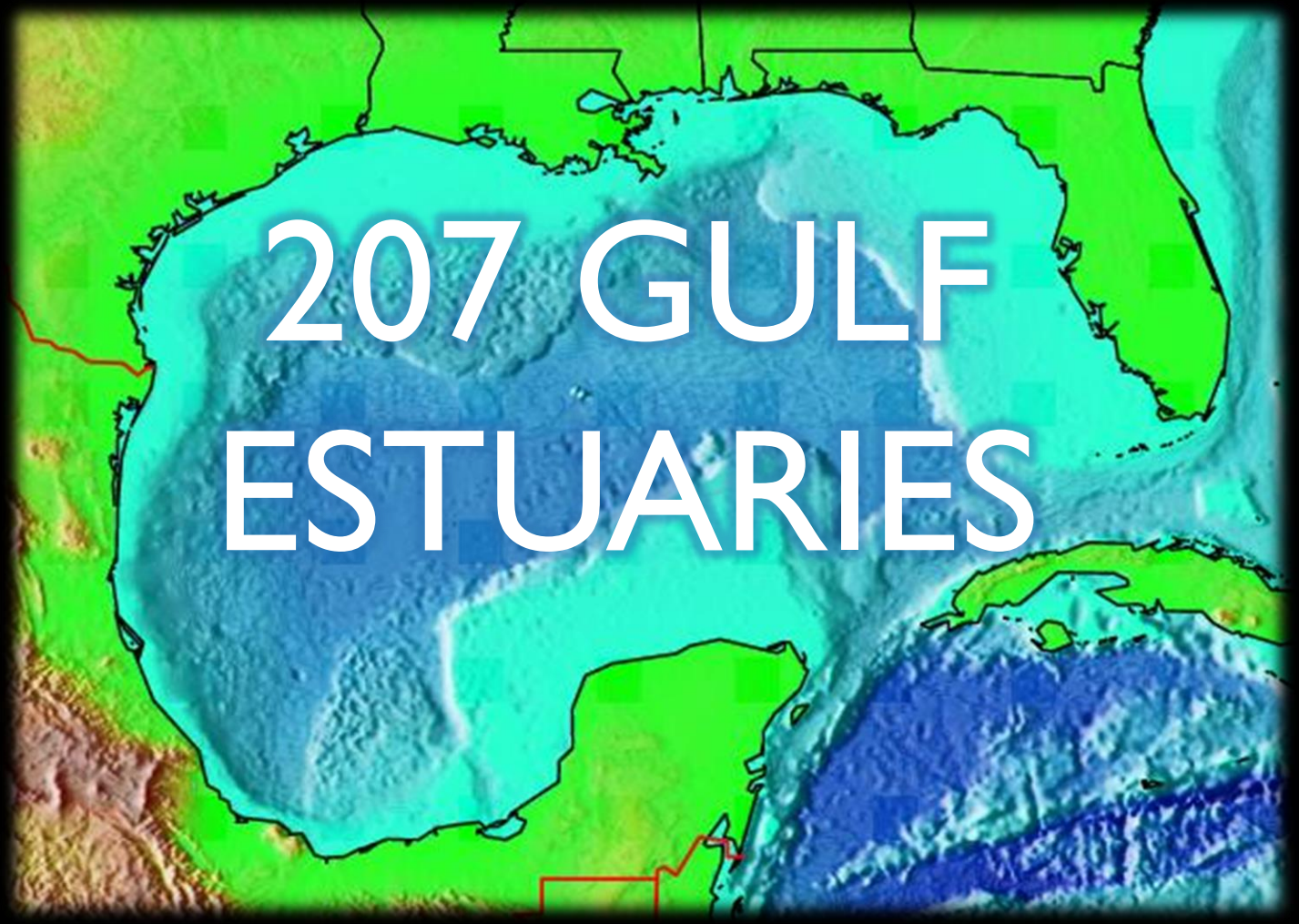
Gulf Seagrasses

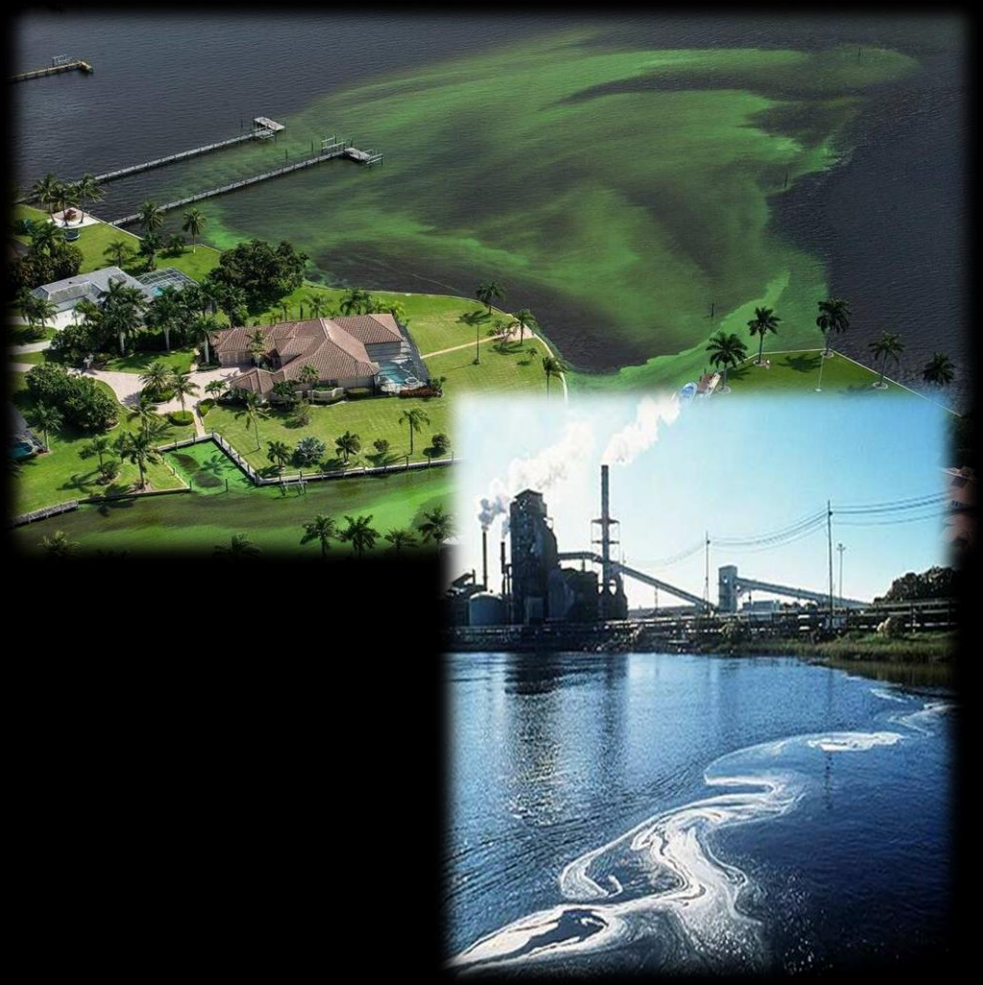


2% to 66% lost

Gulf Mangroves

25% to 33% lost





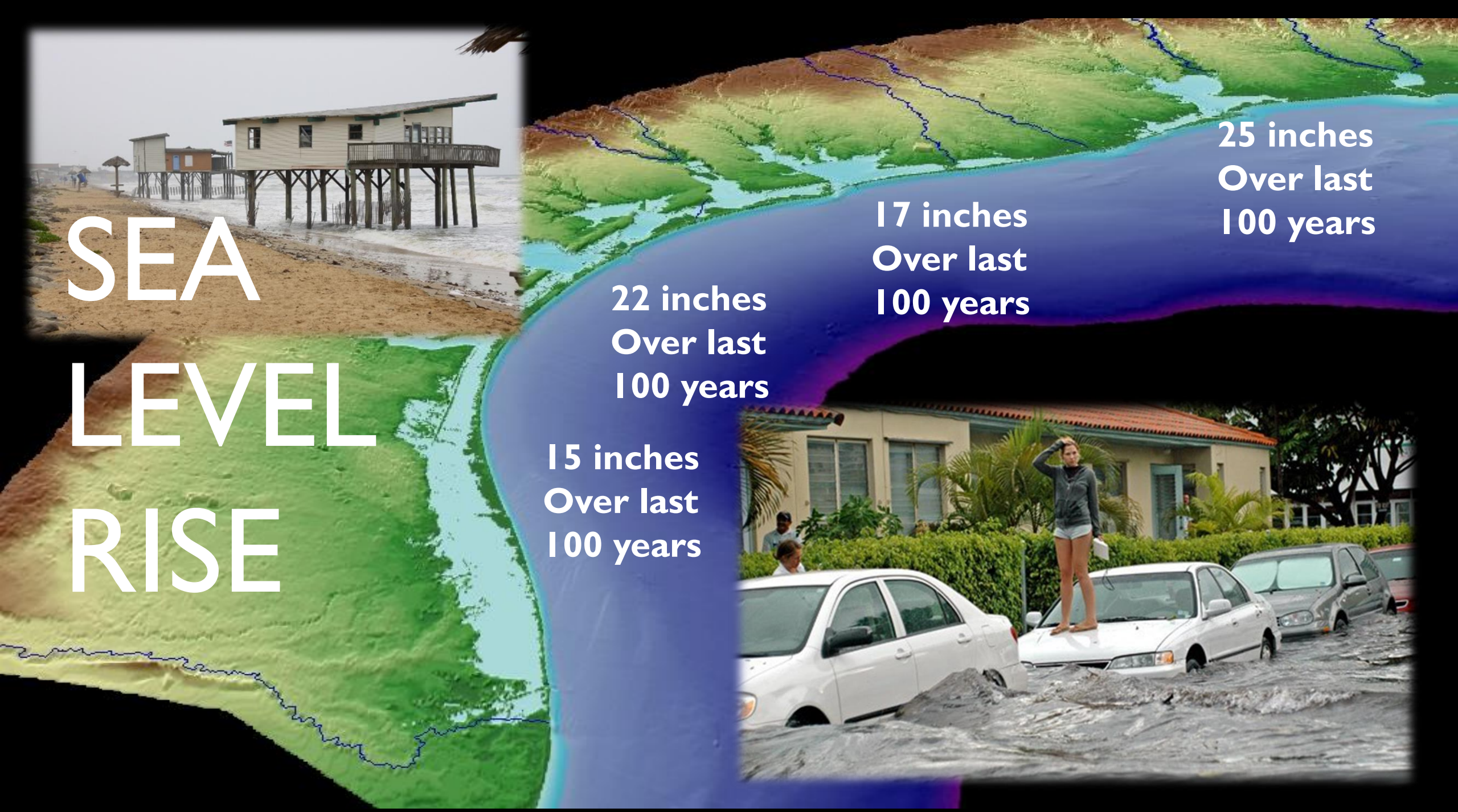
Gulf of Mexico Estuarine areas considered threatened 39% (+)

The Future ain't what it used to be

Yogi Berra, circa 1974

Everyone is entitled to their own opinions, but not their own facts….

The coast is drying out
The oceans are warming
The sea level is rising
The oceans are becoming more acidic

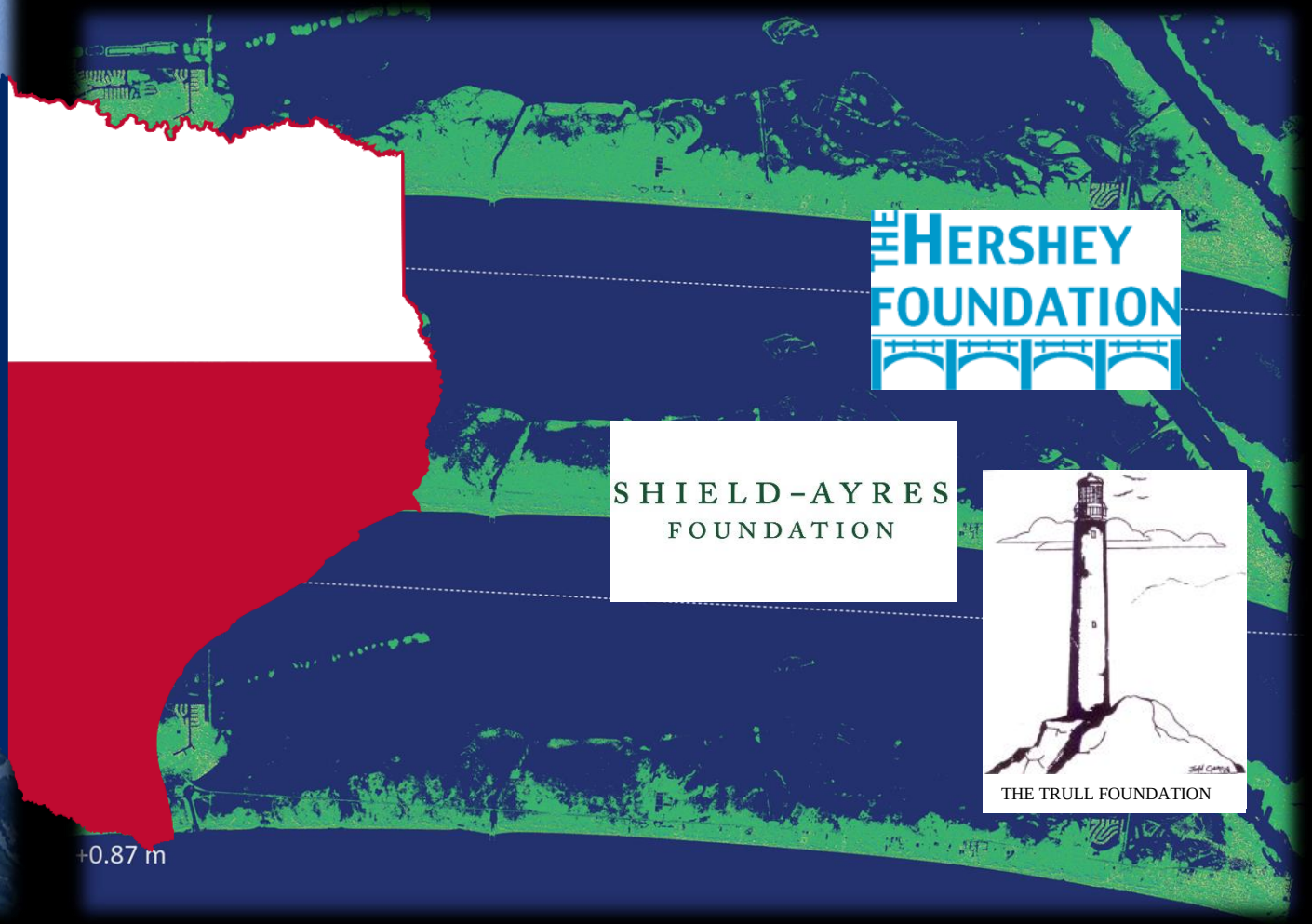

SEA
LEVEL
RISE
15 inches
Over last
100 years
22 inches
Over last
100 years
17 inches
Over last
100 years
25 inches
Over last
100 years

A Sea Level Rise Plan for Texas

HOUSTON ENDOWMENT

The Meadows Foundation
Serving the People of Texas

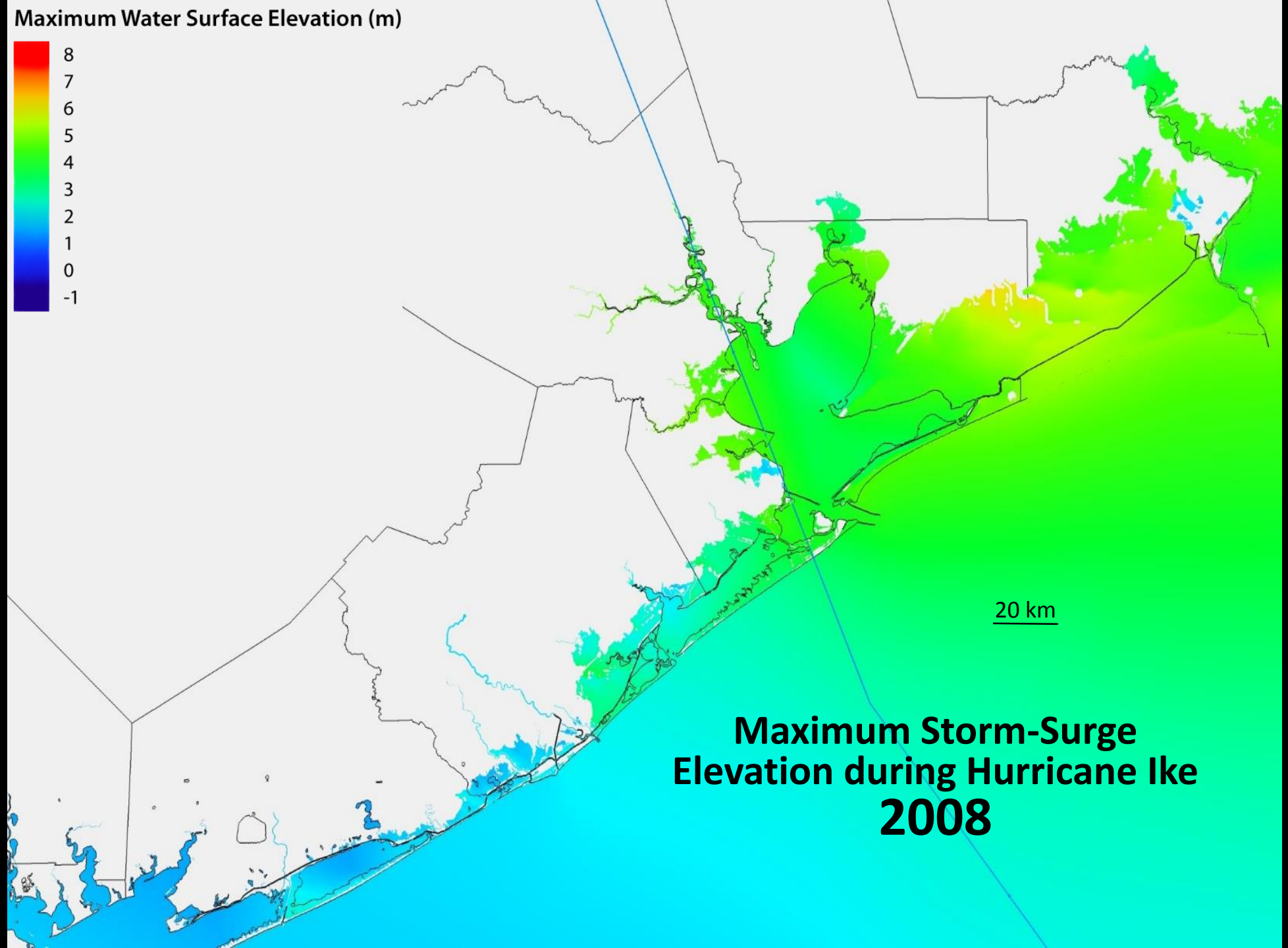
TEXAS GENERAL LAND OFFICE
ESTABLISHED 1836

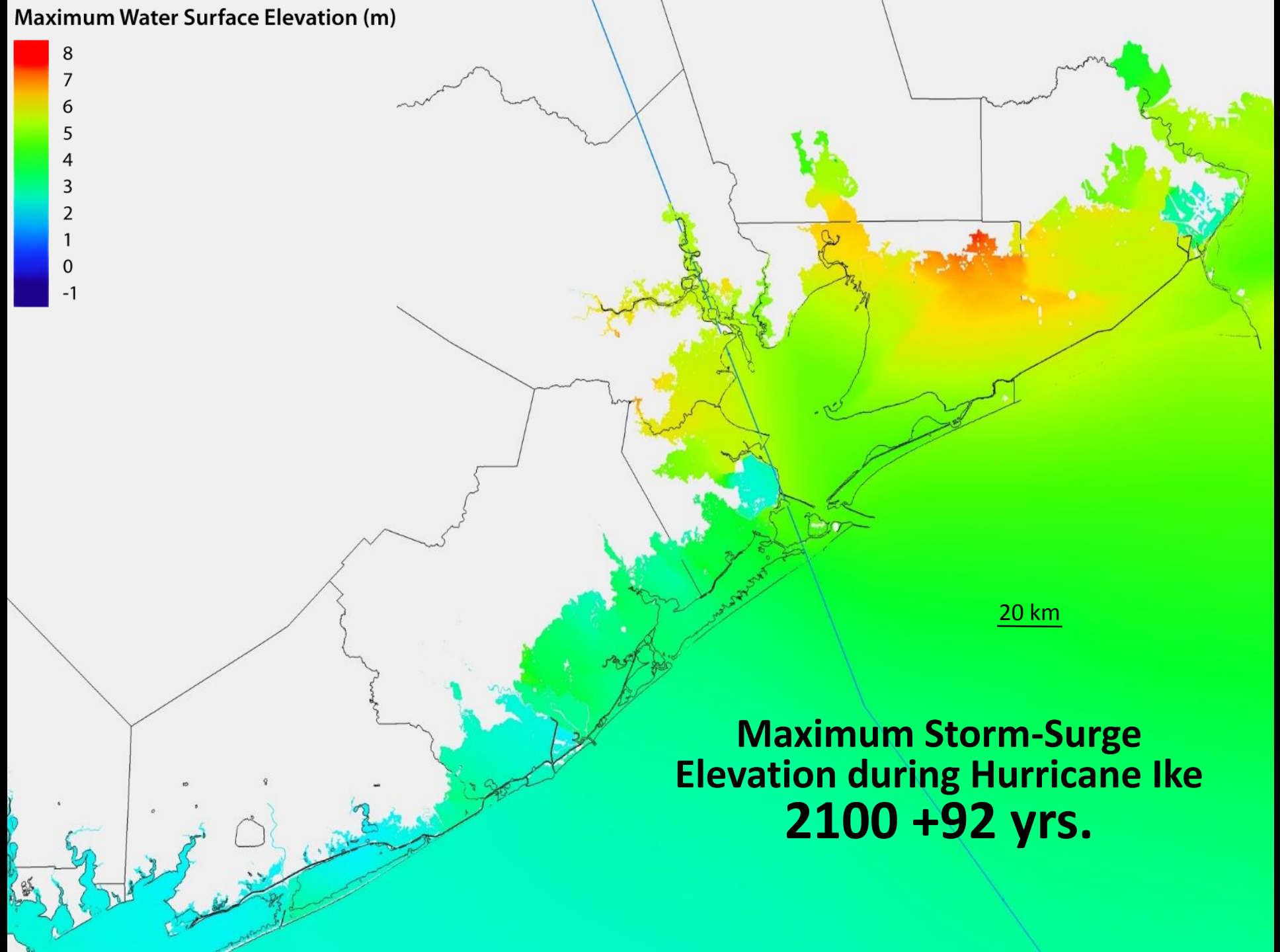


THE HERSHEY FOUNDATION

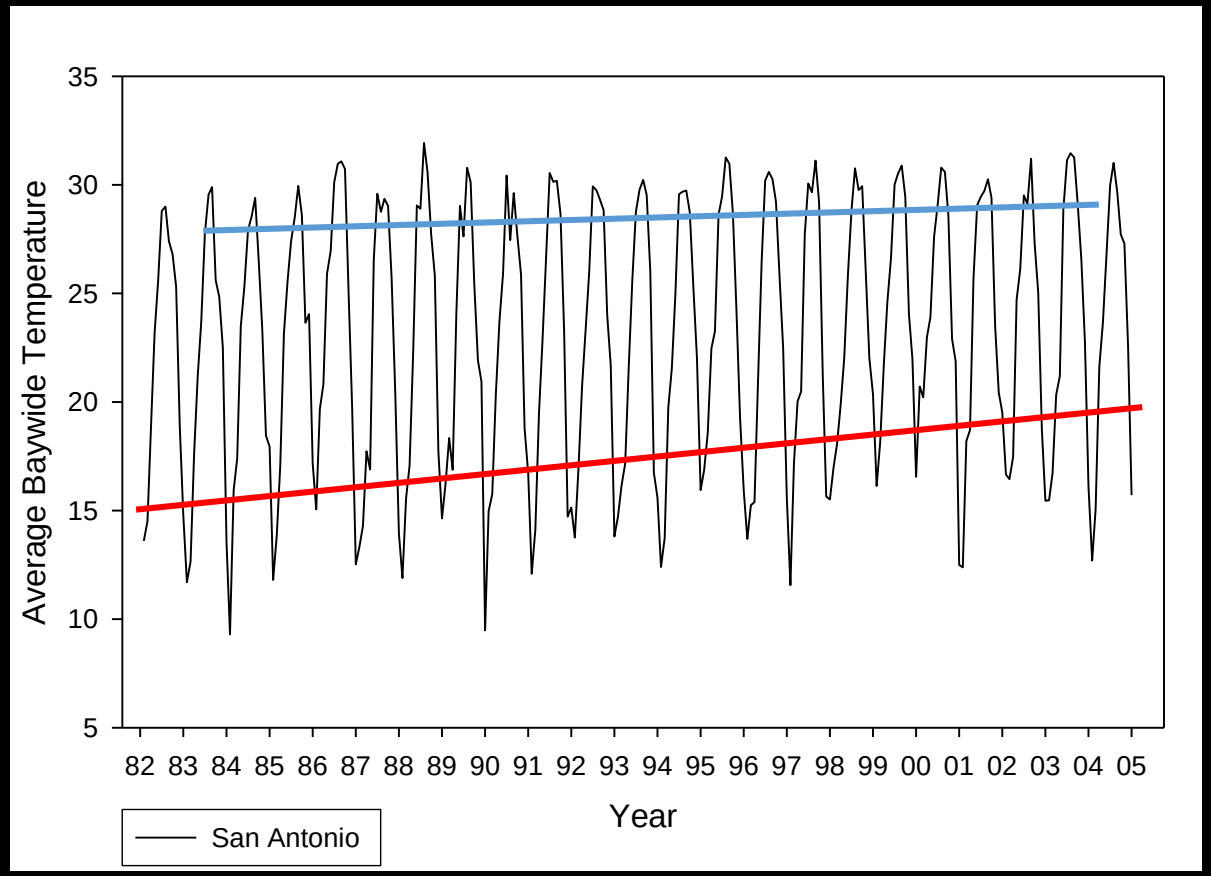
SHIELD-AYRES FOUNDATION

THE TRULL FOUNDATION


Maximum Water Surface Elevation (m)
8
7
6
5
4
3
2
1
0
-1
20 km
Maximum Storm-Surge
Elevation during Hurricane Ike
2008


Maximum Water Surface Elevation (m)
8
7
6
5
4
3
2
1
0
-1
20 km
Maximum Storm-Surge Elevation during Hurricane Ike
2100 +92 yrs.

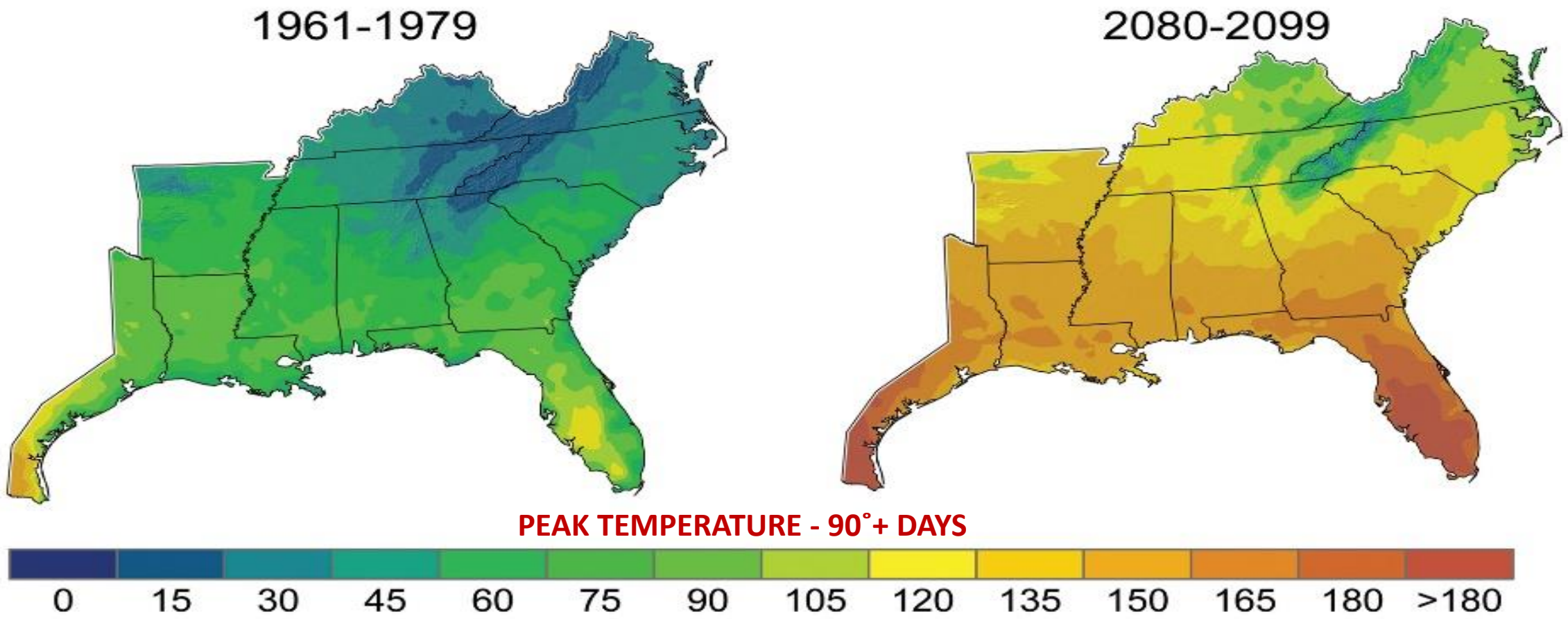
The sea is not the only thing rising…



This is happening now

Summer water temperatures in Texas coastal waters have increased

Winter water temperatures have warmed more significantly

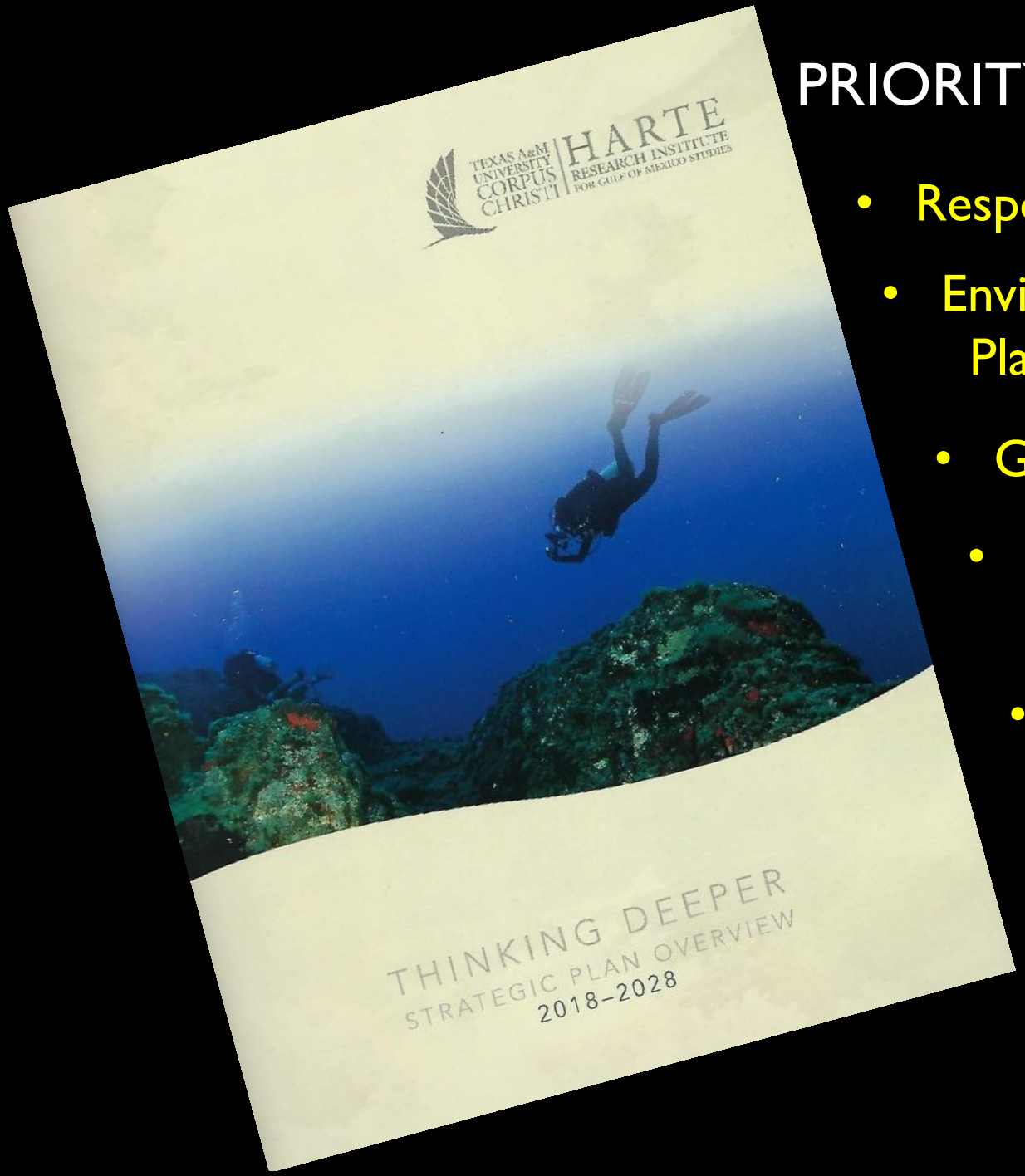


By end of century coastal Texas and Florida will see
≈165 days of 90˚+
(nearly six months) ˚

An increase in winter temperatures of only <u>two to four degrees</u> and mangroves will replace 100% of all salt marshes in Texas and 95% in Louisiana

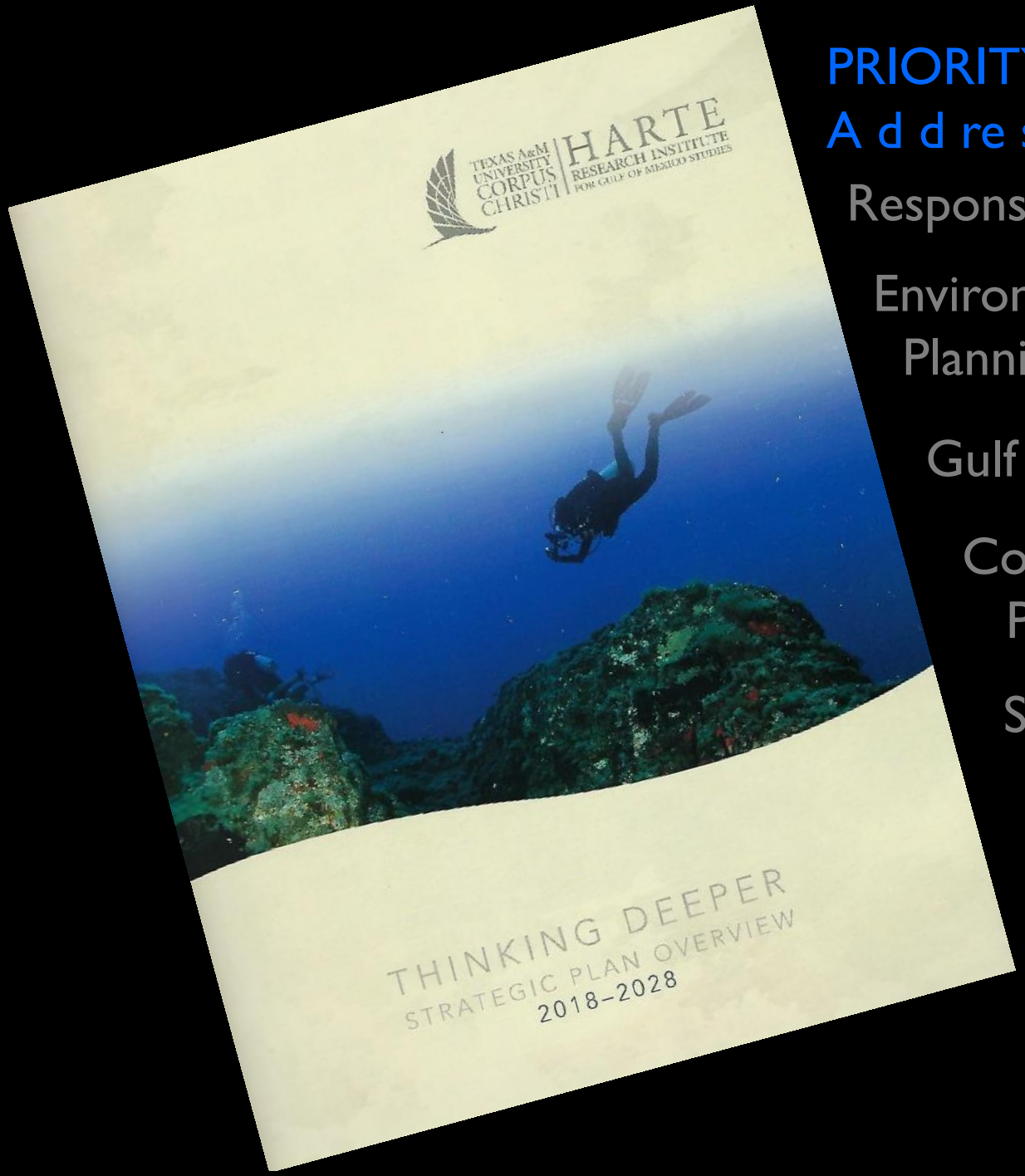

If Texas
becomes Florida…


I am not sure what
Florida will look like…



PRIORITY: Addressing Gulf of Mexico Issues

- Responsive and Objective Science Engagement
- Environmental Water Incorporated into Water Planning, Development, and Management
- Gulf Health Index
- Consistent International Environmental Policy for the Gulf of Mexico
- Smart Growth for Coastal Communities
- Sustainable Recreational Fisheries Model
- Gulf Knowledge Base



PRIORITY PROJECTS
Addressing Gulf Problems

Responsive and Objective Science Engagement

Environmental Water Incorporated into Water Planning, Development, and Management

Gulf Health Index

Consistent International Environmental Policy for the Gulf of Mexico

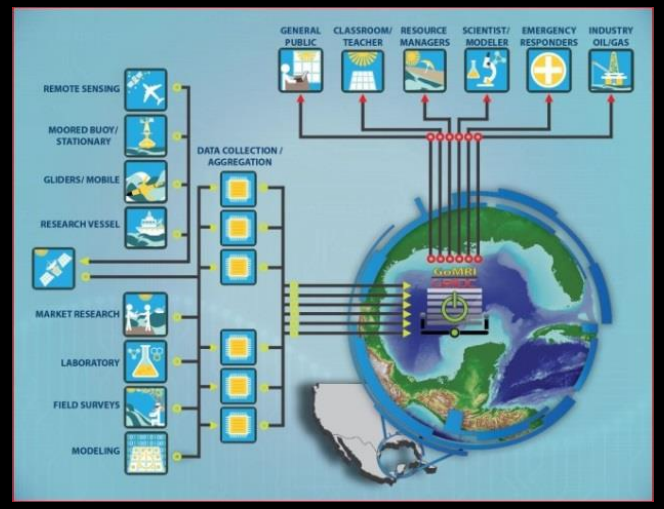
Smart Growth for Coastal Communities

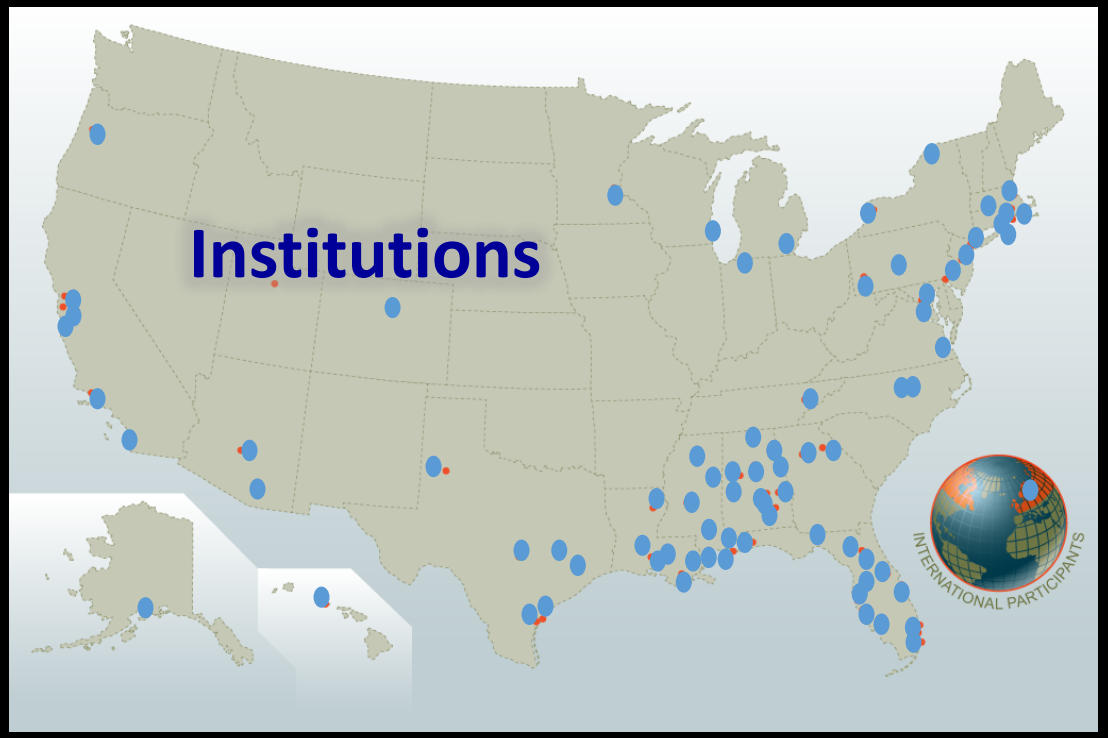
Sustainable Recreational Fisheries Model

- Gulf Knowledge Base

GRIIDC – Gulf Research Initiative Information and Data Cooperative (GRIIDC)

The largest ever network of Gulf scientists and Institutions sharing data

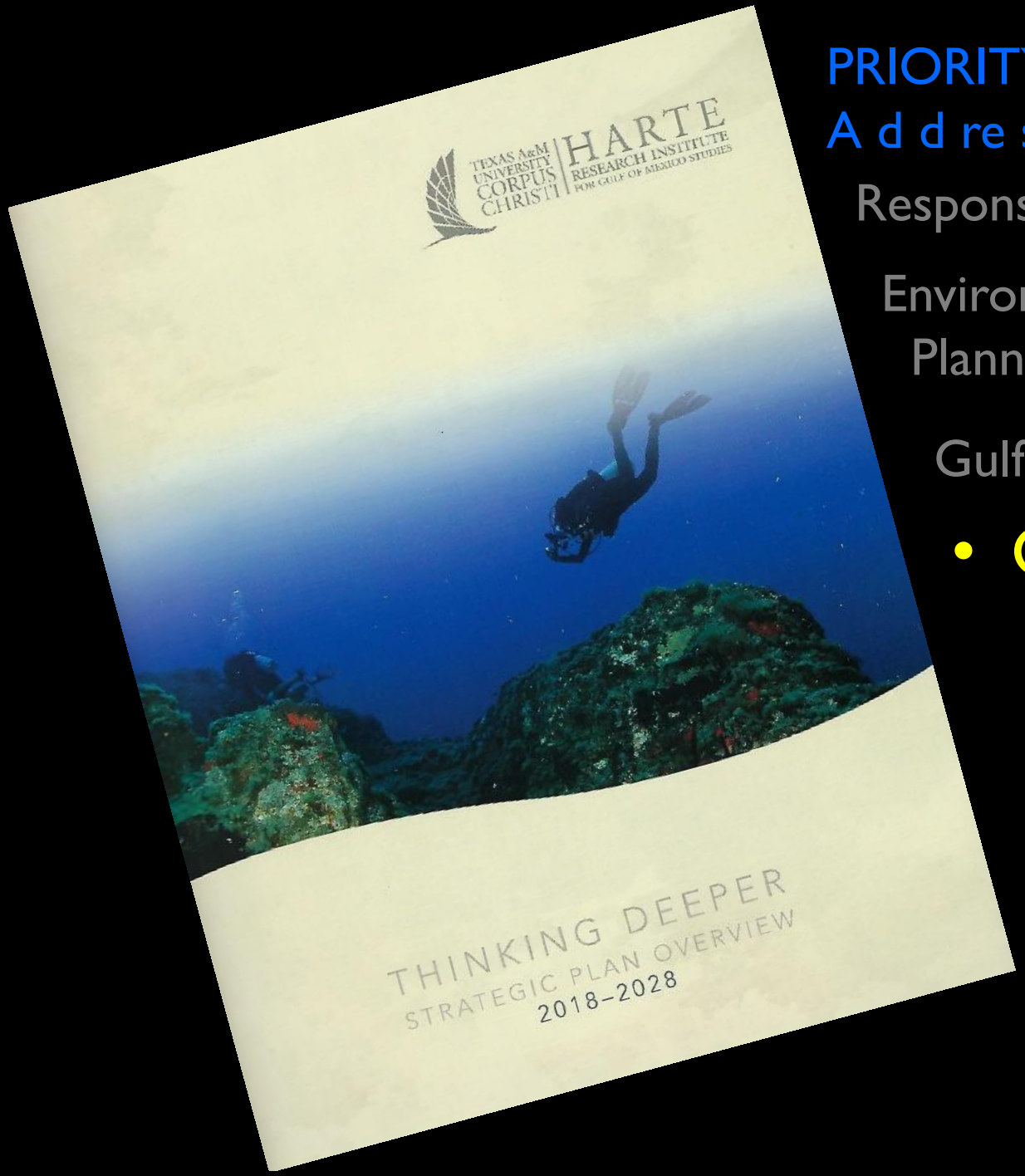




2653 RESEARCHERS

280 INSTITUTIONS

2024 DATASETS



PRIORITY PROJECTS
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Sustainable Recreational Fisheries Model

Gulf Knowledge Base

STATE OF THE GULF OF MEXICO

ONE GULF 2017

SUMMIT

GOM-WIR

Gulf of Mexico Workshop on International Research 2017

400 Gulf Leaders
Working for a
Common Cause

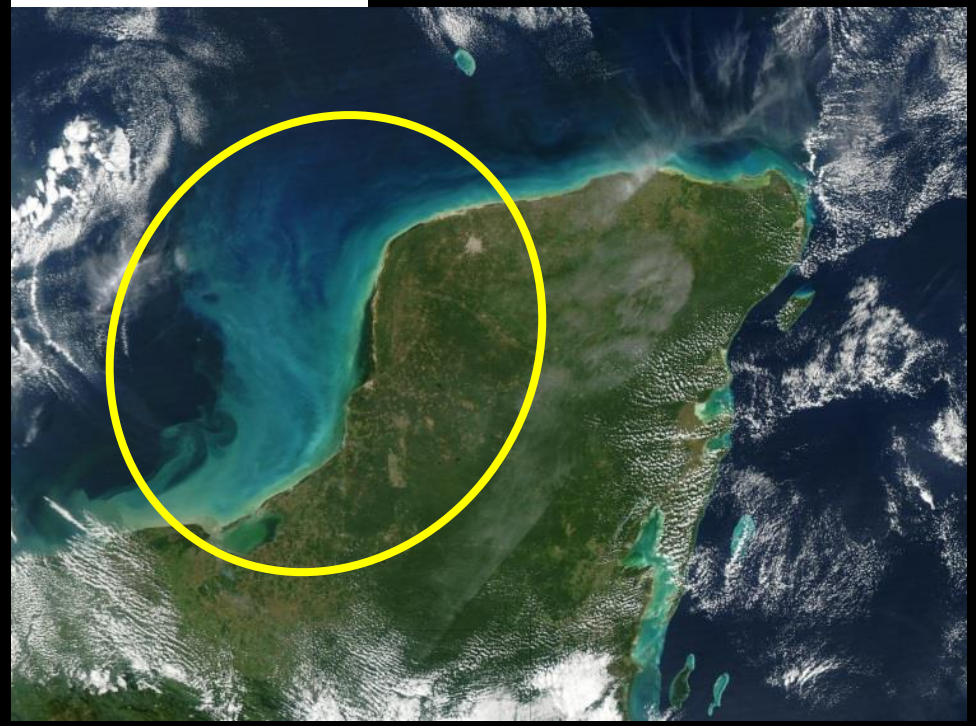
160+ Gulf scientists
For the first time finding
common priorities

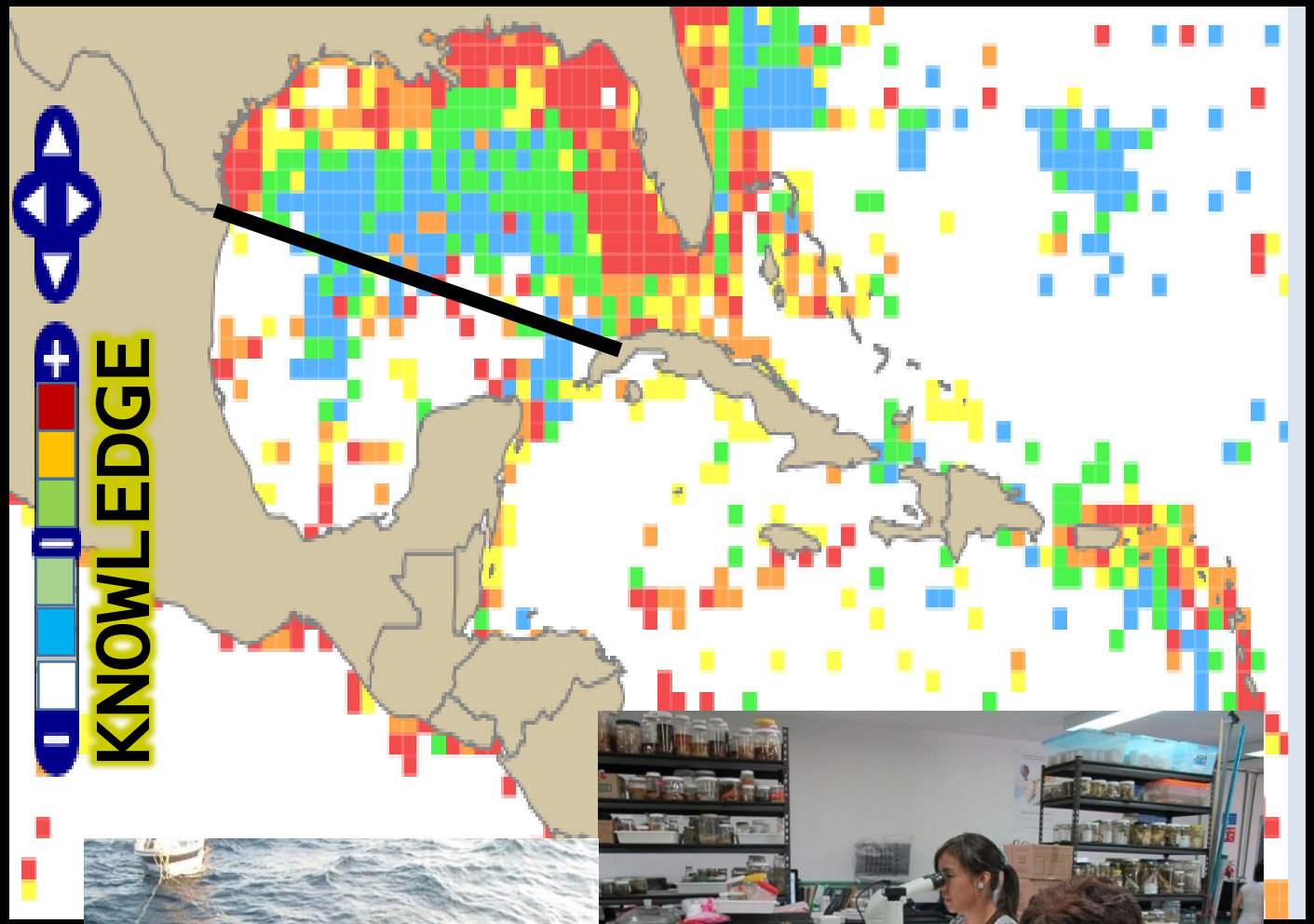
Biodiversity of the Southern Gulf

UNAM-Sisal

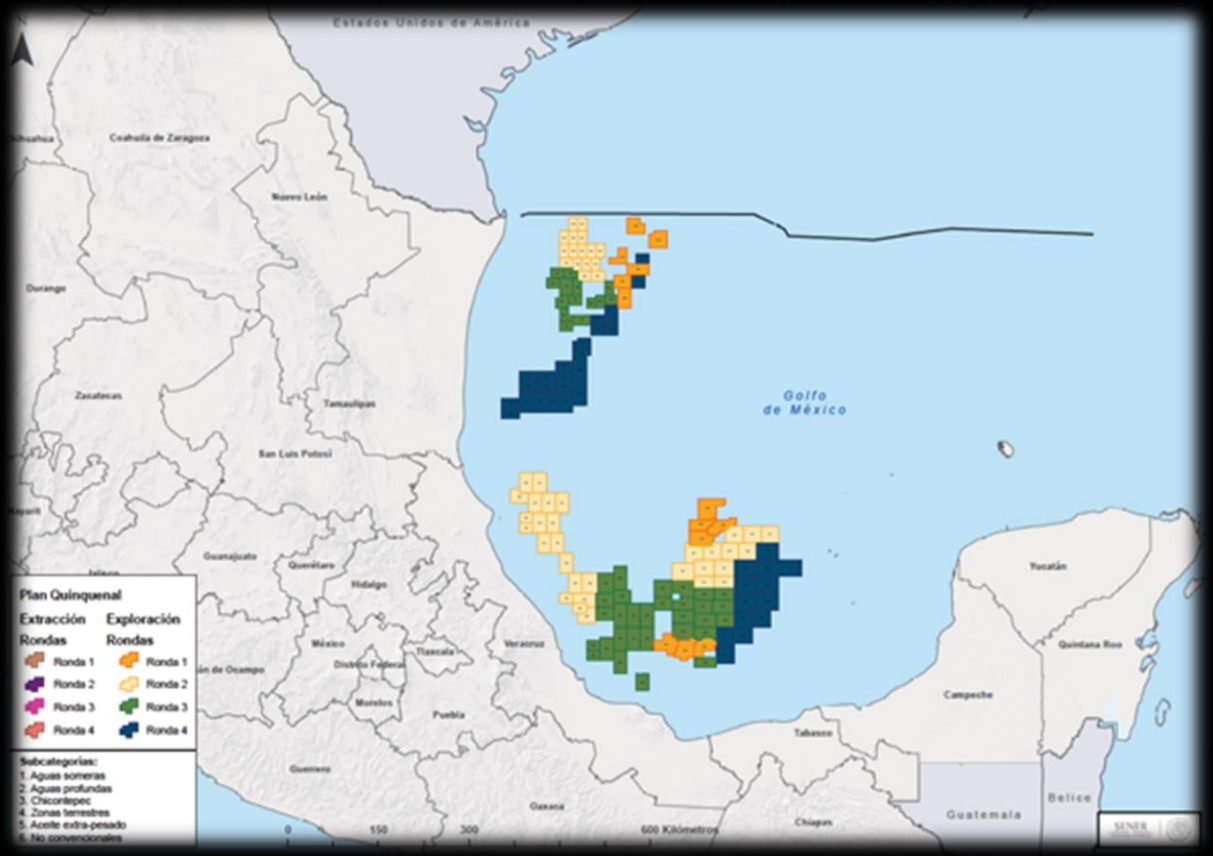
CONABIO

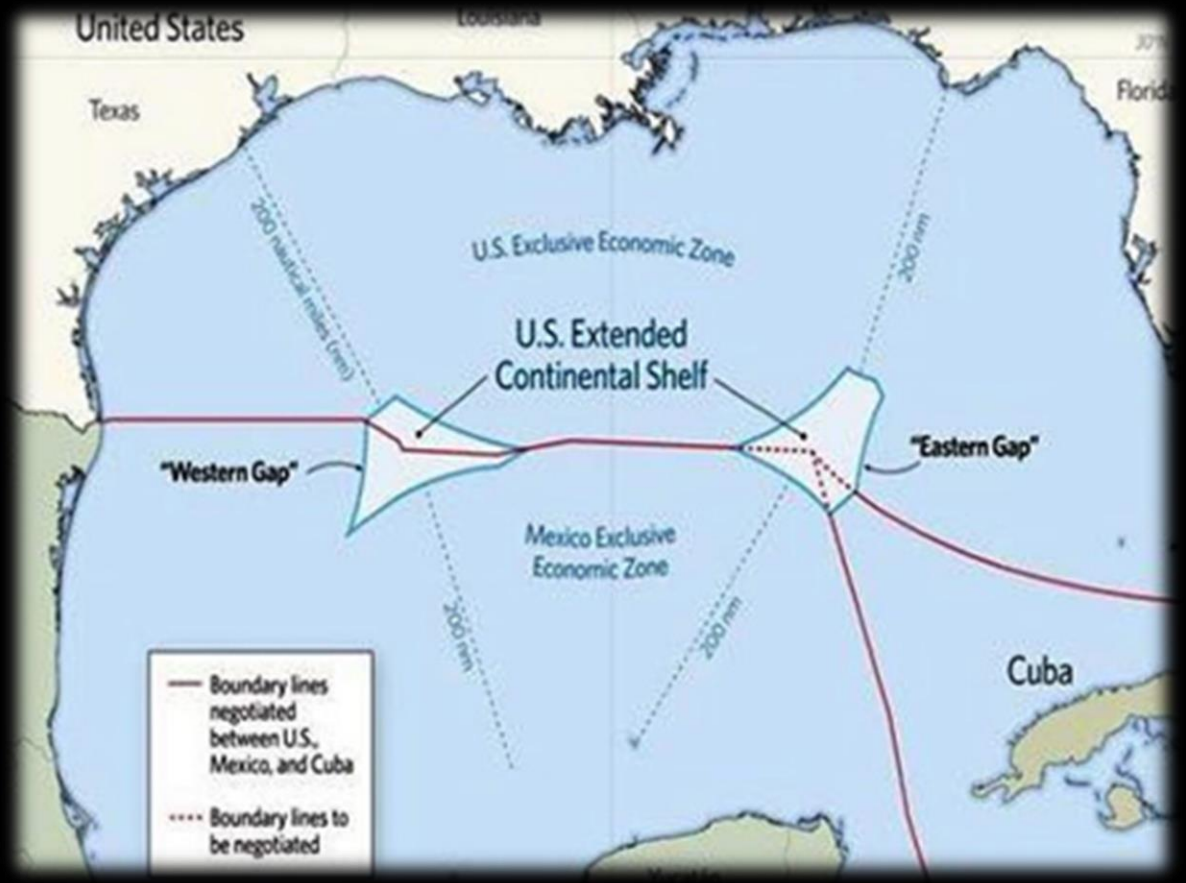
BDMY
BioDiversidad Marina de Yucatán





Mexico reforms oil and gas development to allow for foreign partnerships.





Treaty agreement to develop oil and gas in joint USA/Mexico waters

PRIORITY PROJECTS
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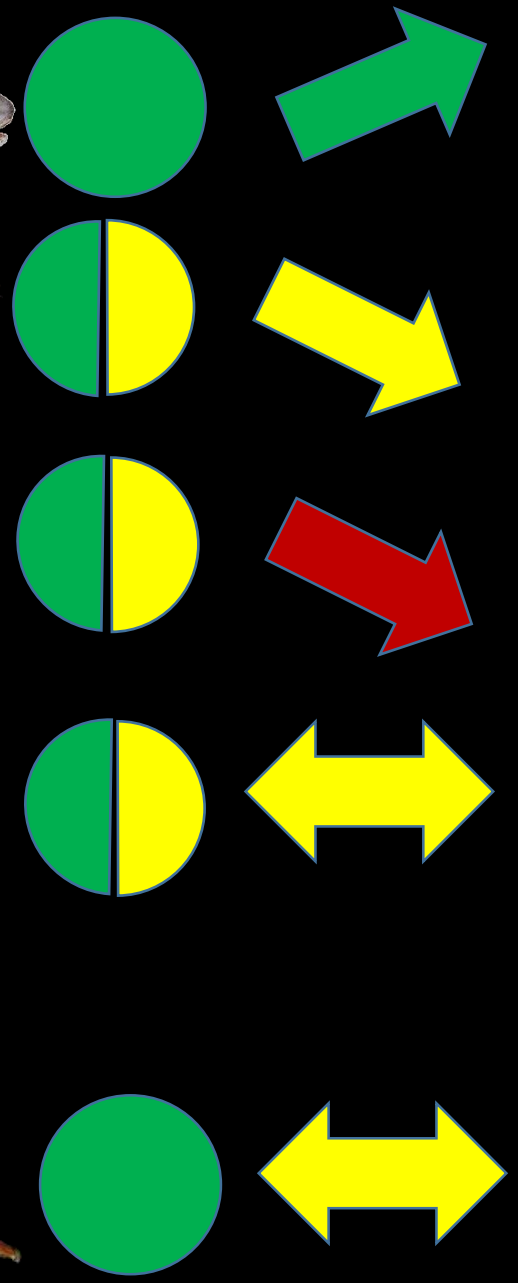
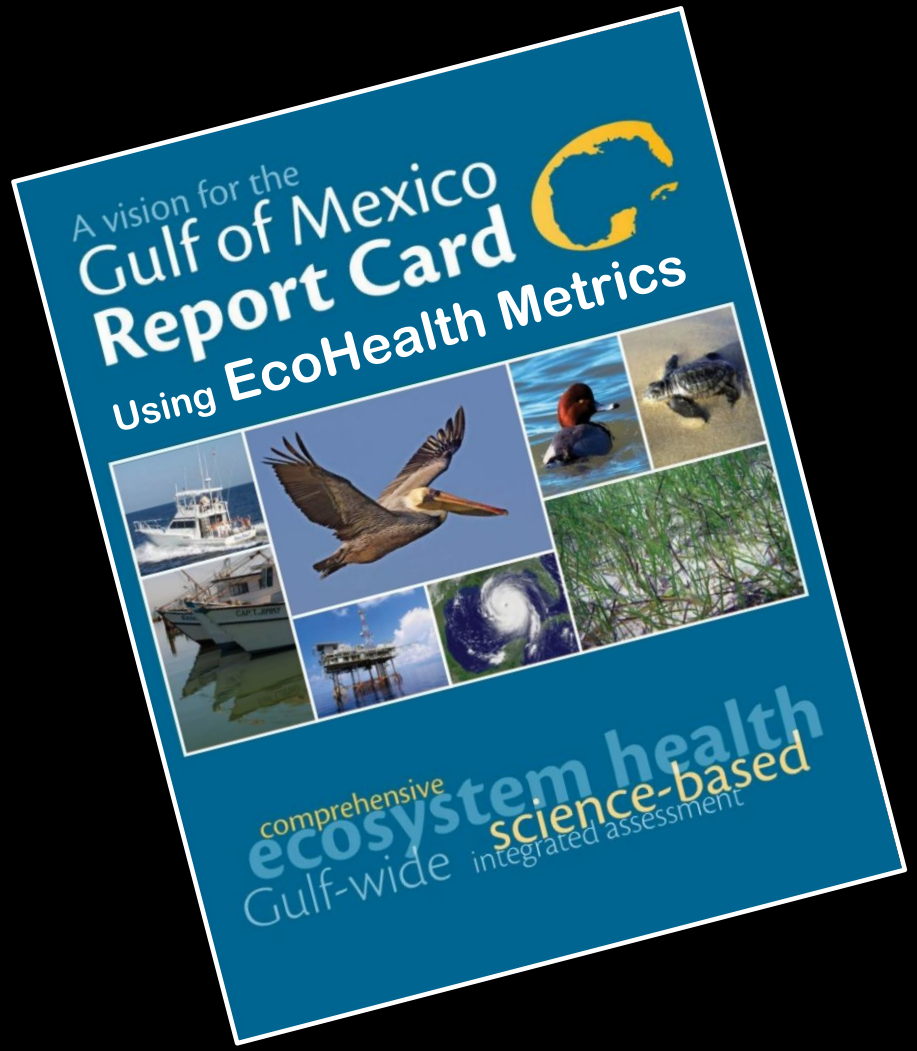


Water Quality

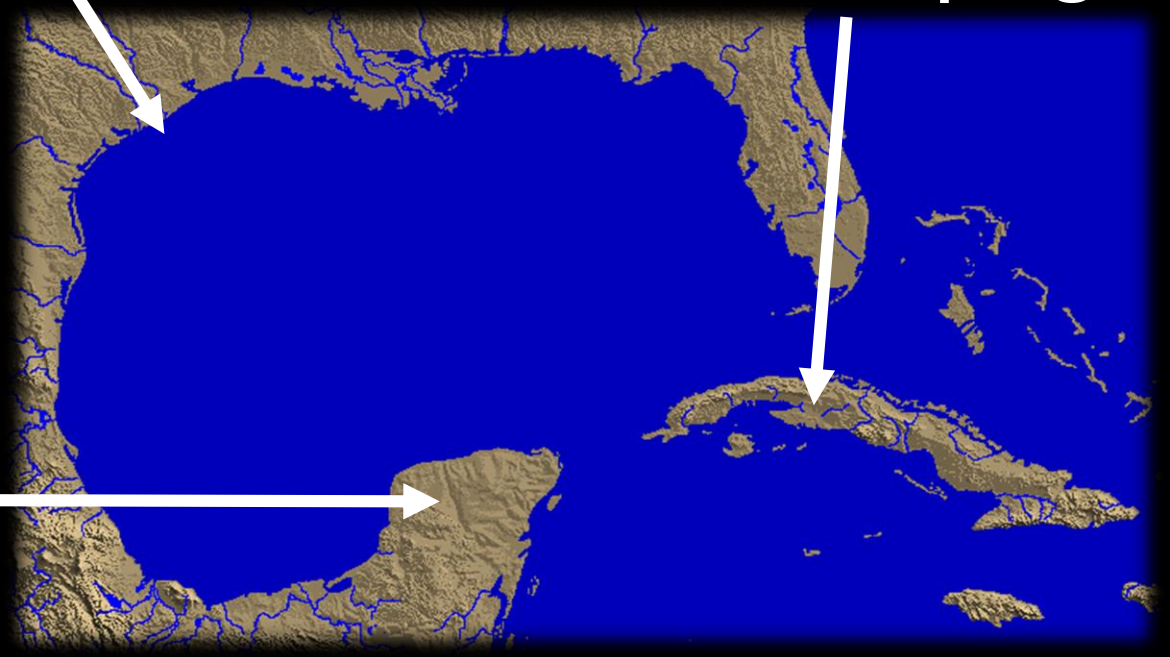
774,000 acres of Texas bays (52%)

Impaired for primary use (under review)



A Texas Gulf Prototype due in the Spring

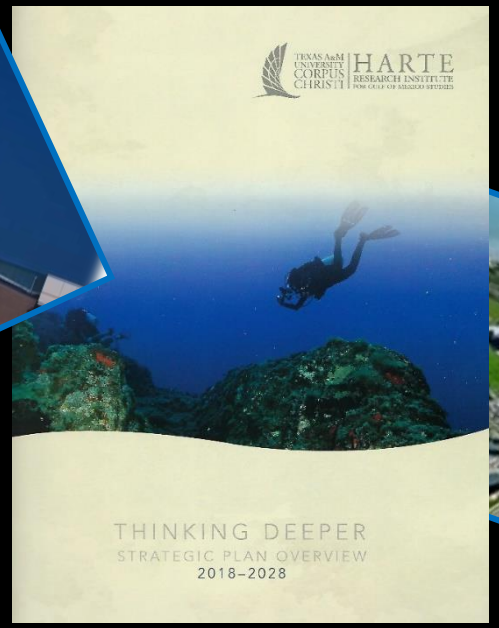
A Cuban Prototype is developing



A Mexican Prototype (Yucatan) is completed

As part of the TAMUCC Capital Campaign, HRI will add a third center

The Center for Environment and Economy (CEE)



SEAFOOD SAFETY

COASTAL RESLIENCE

AQUACULTURE

RESTORATION SCIENCE


© Jesse Cancelmo
seaQuest


The Gulf of Mexico is a sea
of contrast where the
environment and economy
both coexist and contend


A place where the unusual is common
FunTimesHad


It is a place of
incomparable
beauty…


It is a place of
incomparable
beauty…


It is a place of
incomparable
beauty…


Worthy of our best efforts to conserve
Both now, and…


For those to come…


Thank you