

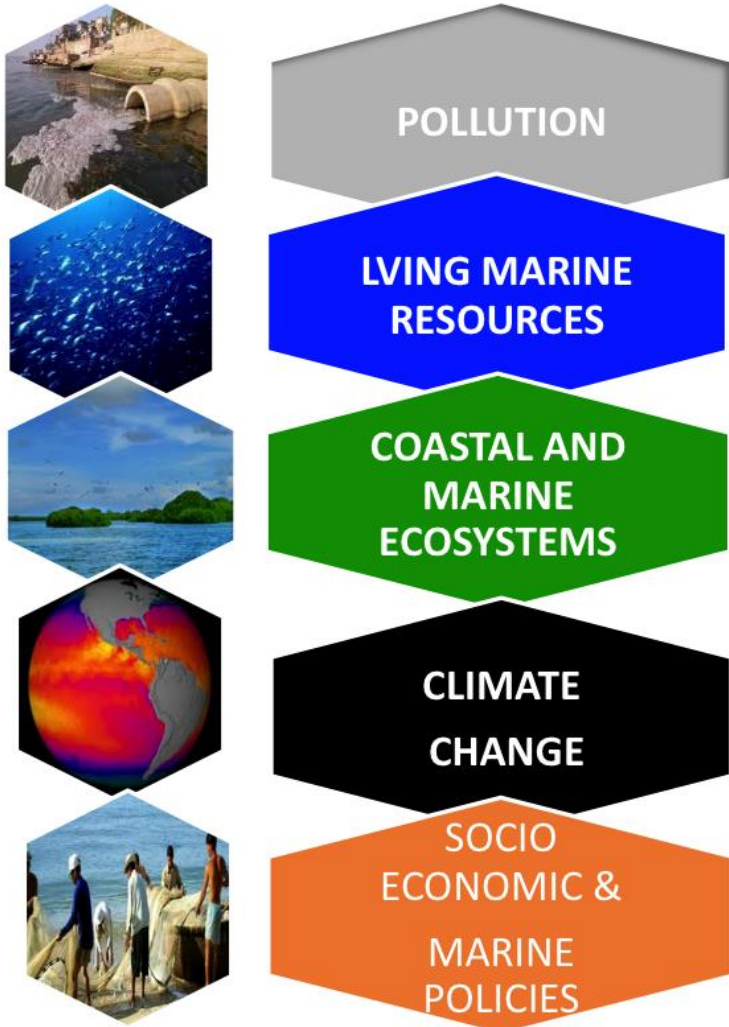




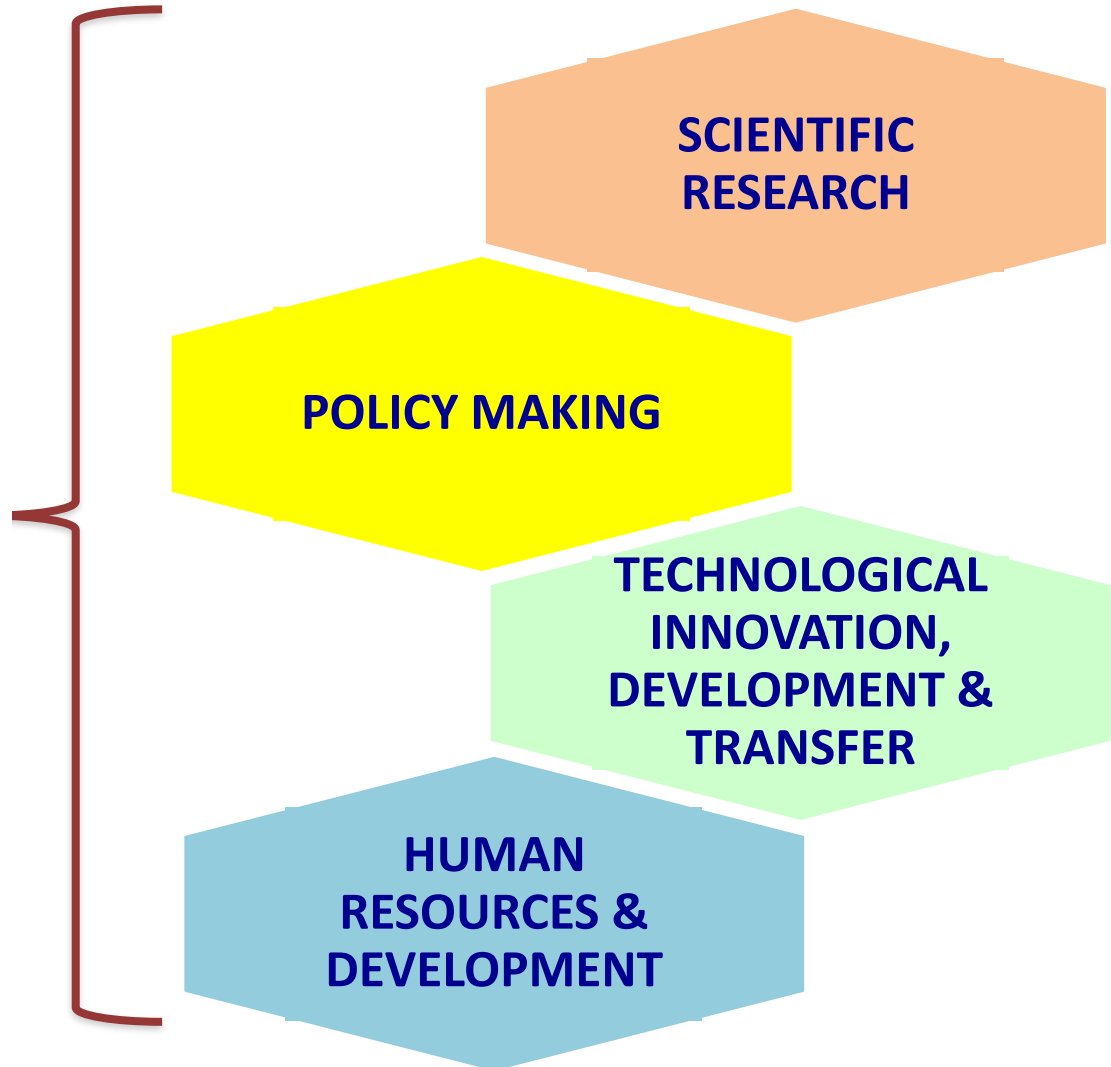


Priority issues and strategic components

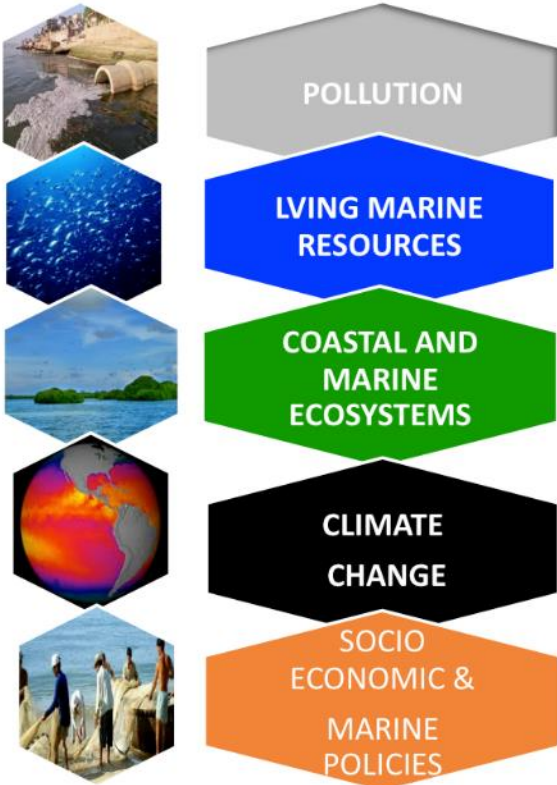
PRIORITY ISSUES



STRATEGIC COMPONENTS



Collaboration focused on five priority issues to:



1. Conduct joint research MEX US Cuba in the Gulf
 - ✓ Base line development
 - ✓ Physical oceanography and biodiversity
2. Restore Coastal and Marine Ecosystems
 - ✓ Mangrove restoration
 - ✓ Blue carbon assessment in wetlands
3. Monitor Marine Ecosystems
 - ✓ Gulf deep waters, coastal and ocean observing system development
 - ✓ High frequency radars, glider technology development and oceanic buoys
4. Assess and reduce pollution
 - ✓ Oil, gas, hypoxia, harmful algal blooms
5. Propose climate change adaptation models
 - ✓ Local models for sea level rise & flooding
 - ✓ Models and assessment of coastal erosion
 - ✓ Enhance coastal communities resilience

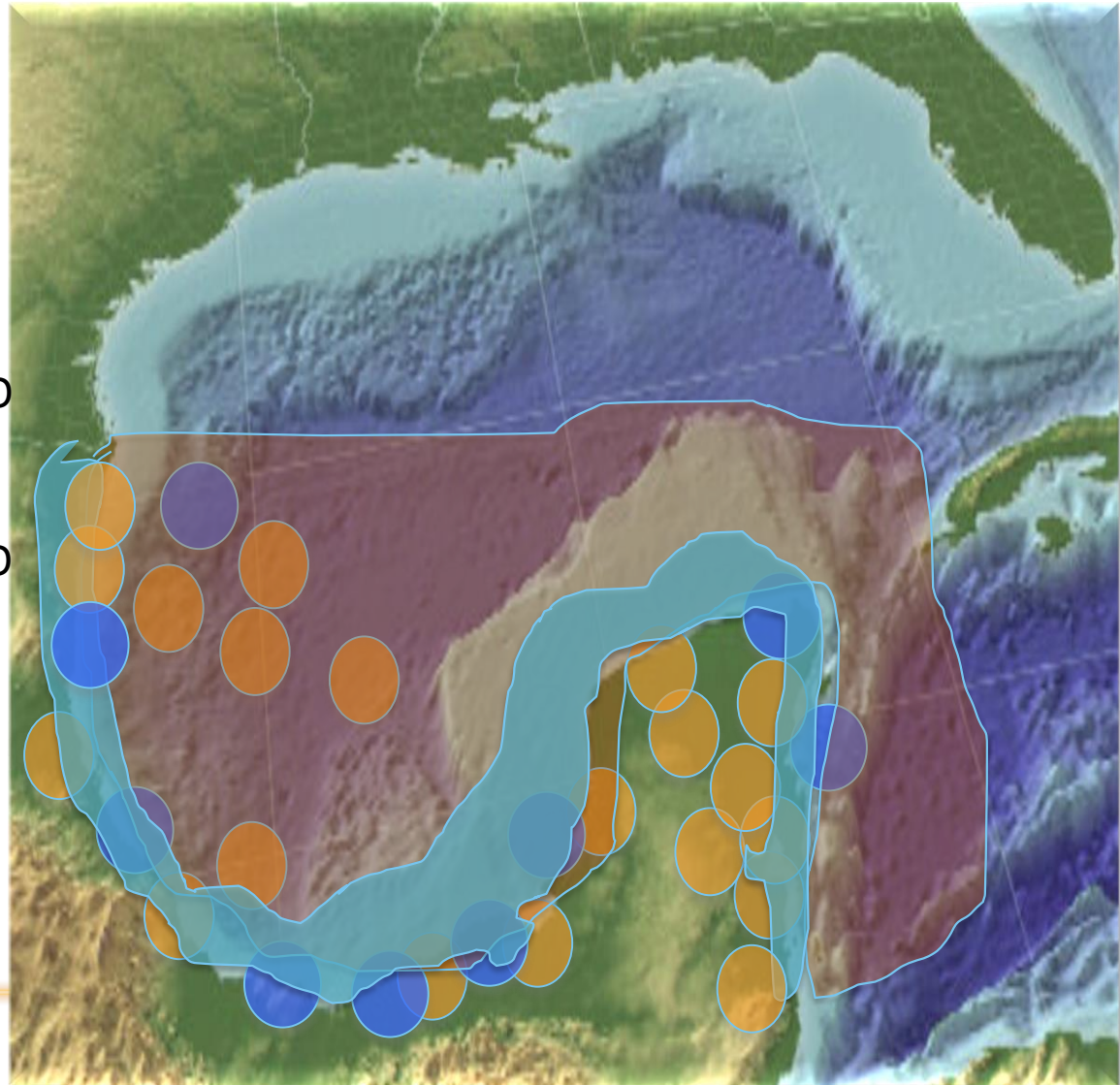
Oceanographic Research Activities of CiiMAR's members

ACADEMIC

- 1) UAT
- 2) CICATA IPN
- 3) IPN
- 4) UAMI
- 5) UABC
- 6) CENDO
- 7) II-UNAM
- 8) ECOSUR
- 9) CINVESTAV
- 10) UAC
- 11) UV
- 12) EPOMEX
- 13) UNACAR
- 14) UJAT
- 15) CICESE
- 16) UNAM ICML

FEDERAL

- 1) SCT
- 1) IMT
- 2) AEM
- 2) SEMARNAT
- 1) CONABIO
- 2) IMTA
- 3) SEMAR
- 1) CONACIO
- 4) IMP



Oceanographic Research Activities of CiiMAR's members

TOPIC

1) Physical:

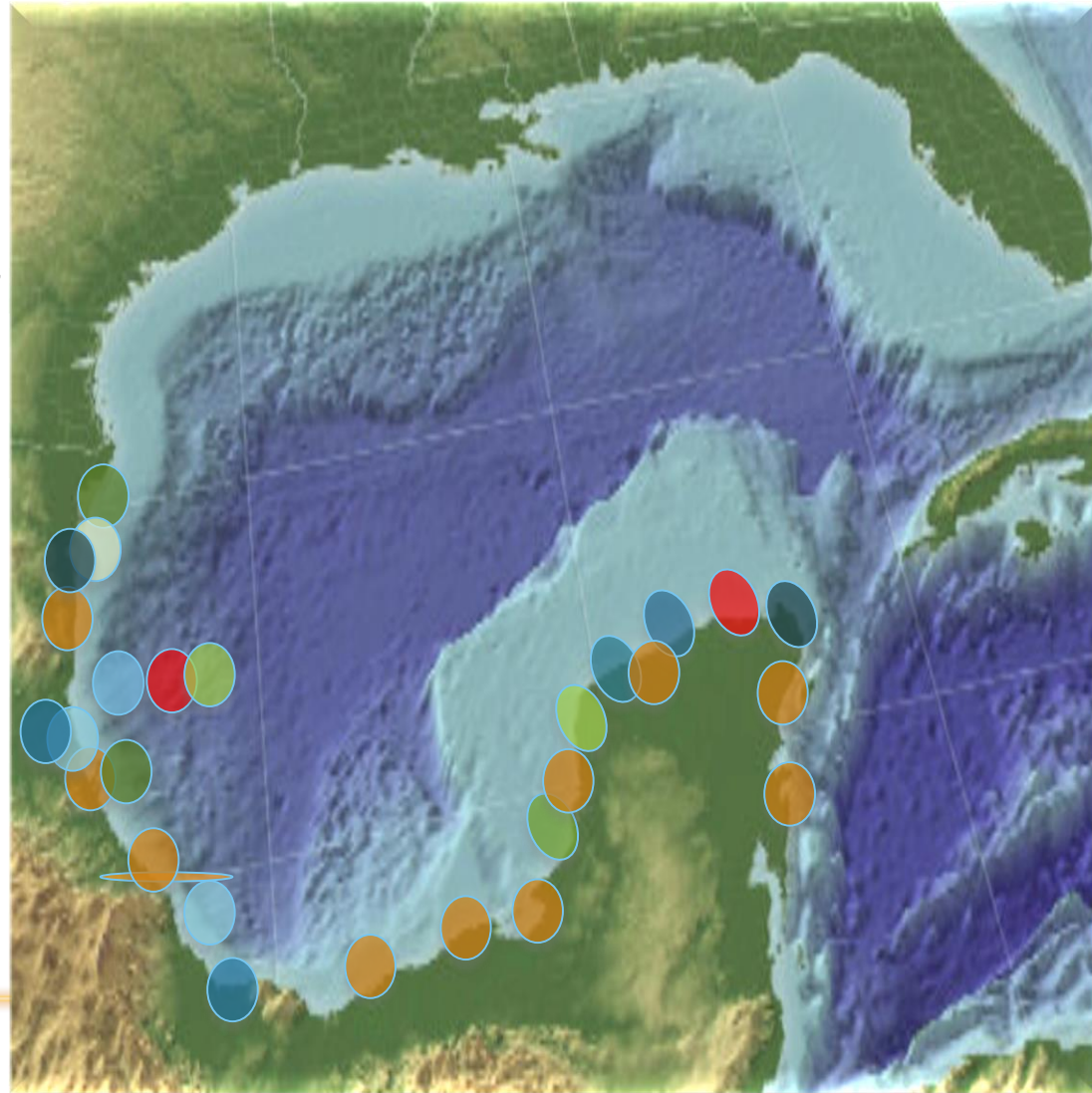
- Mean water level (sea level rise)
- Waves (tides, tsunami, wind)
- Currents (meso-scale, eddies, coastal, litoral)
- Atmospheric (wind, pressure, precipitation, heat & carbon fluxes)
- Sediment transport
- Flooding
- Etc.

2) Environmental:

- Hypoxia
- Pollution
- Water quality
- Habitat
- Hydrography (temperature, salinity, density)
- Etc.

3) Socio-economics and Governance

- Human health
- Etc.





Mexico National Oceanographic Data Center (CENDO)

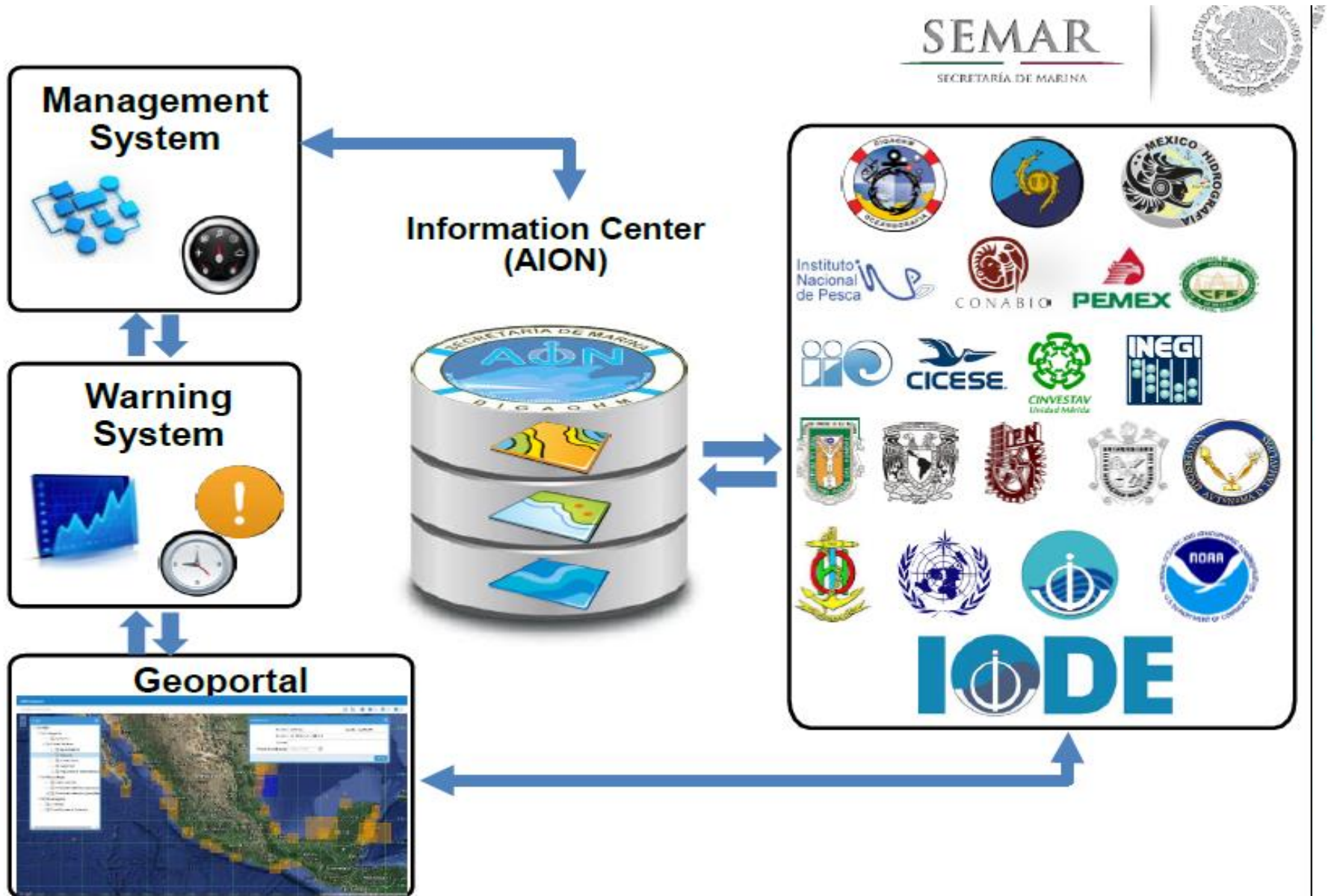


Consortio de Instituciones de Investigación Marina del Golfo de México y del Caribe



Aportan Datos e Información Oceanográficos a las BD Mundiales

National Ocean Data Integration



Yucatan State Coast

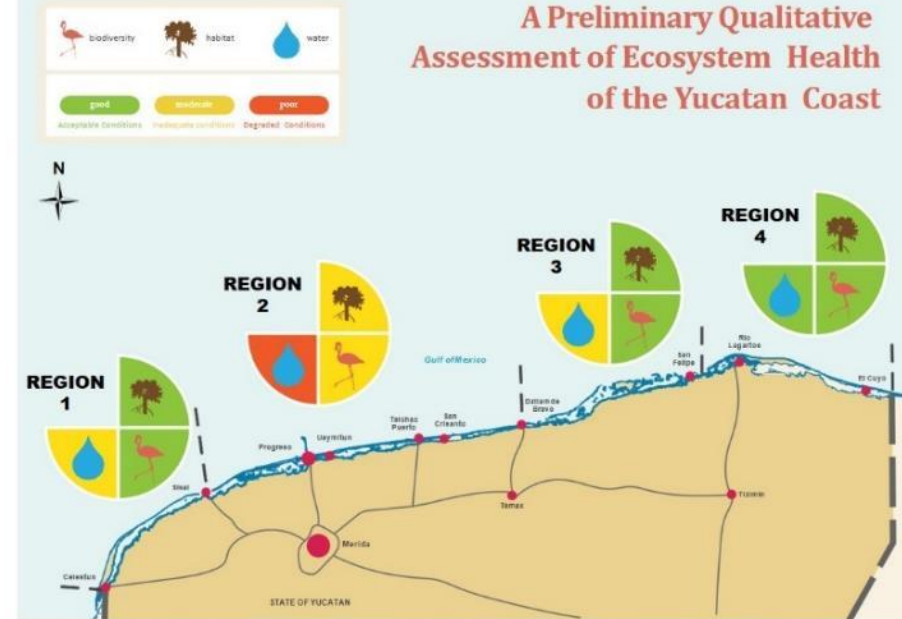
A framework for developing a report card



Workshop Provides Preliminary Scores

On 4-5 August 2016, a Report Card Workshop at the National Coastal Resilience Laboratory in Sisal assembled stakeholders and scientists interested in the sustainability of coastal resources in Yucatan, and to begin the process of creating a report card. The focus was on the coastal municipalities of the State of Yucatan, from el Cuyo to Celestun, and was further divided into four regions according to hydrogeological data. Participants first identified the key values or resources of and the greatest threats or drivers to the sustainable processes in the area. A series of indicators were then integrated into a 3-level qualitative score (good/moderate/poor) for (i) Water Quality, (ii) Biodiversity, and (iii) Habitat. As a preliminary workshop exercise and based solely on their collective expert knowledge, qualitative scores were assigned to each region.

A Preliminary Qualitative Assessment of Ecosystem Health of the Yucatan Coast



Based on the expert opinion of participants while at the Workshop, the objective of this qualitative assessment exercise, as shown on the map above, was to advance the discussion of creating a data-based report card.

By having an overview of the report card process and assigning qualitative assessment scores, the Workshop participants were able to envision the future quantitative report card, and recognize where challenges may lie ahead. These might include: to develop different or additional environmental indicators or thresholds as needed; seek input from additional stakeholders with specific areas of expertise; locate new sources for gaps in data.

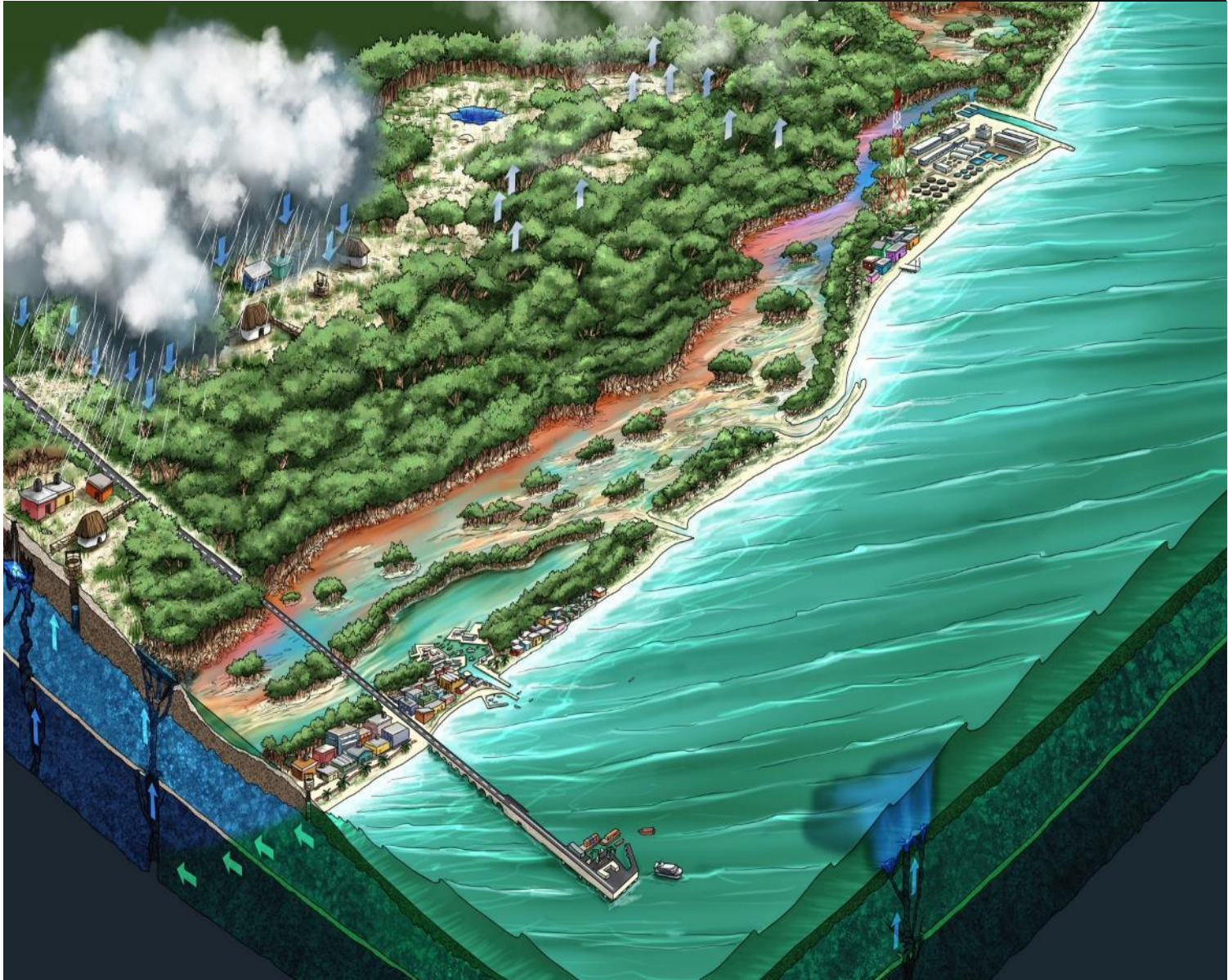


Coastal Processes and Engineering Lab & National Coastal Resilience Laboratory



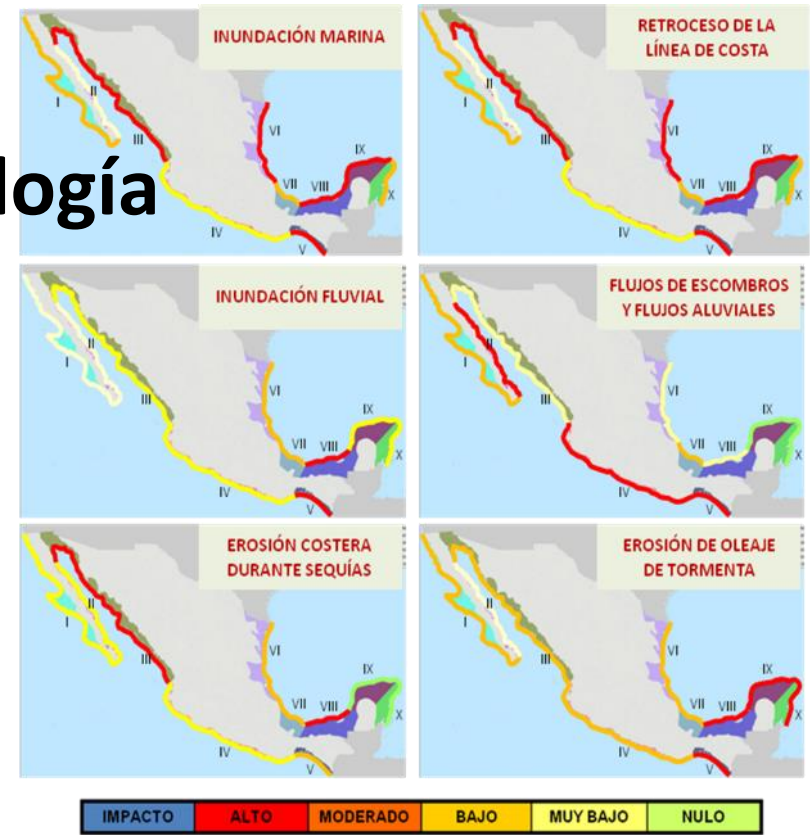
LIPC
LABORATORIO DE INGENIERÍA
Y PROCESOS COSTEROS
UNAM

Laboratorio Nacional
de Resiliencia Costera

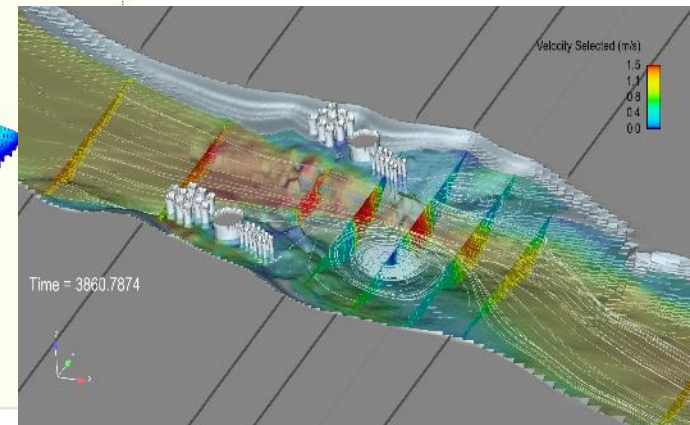
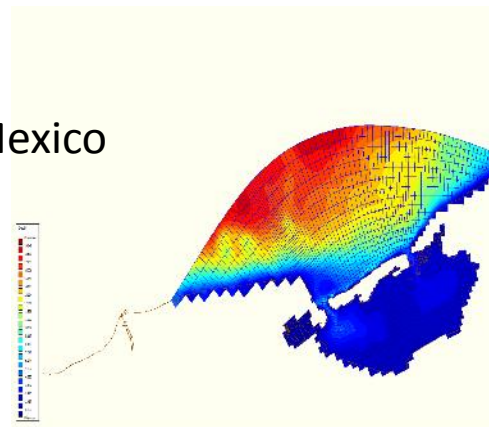


Instituto Mexicano de Tecnología del Agua (IMTA)

- Coastal risks
 - Coastal erosion
 - Subsidence of the coastal plains
 - Water quality
- Climate change
 - Sea level rise
 - Temperature and precipitación escenarios
- Numerical modeling
 - Coastal modeling
 - Regional climate modeling



Recovery of 1984-1989 Gulf of Mexico
Historical CTD data.



Oceanographic Research Activities of CiiMAR's members

CONTINUOUS MONITORING

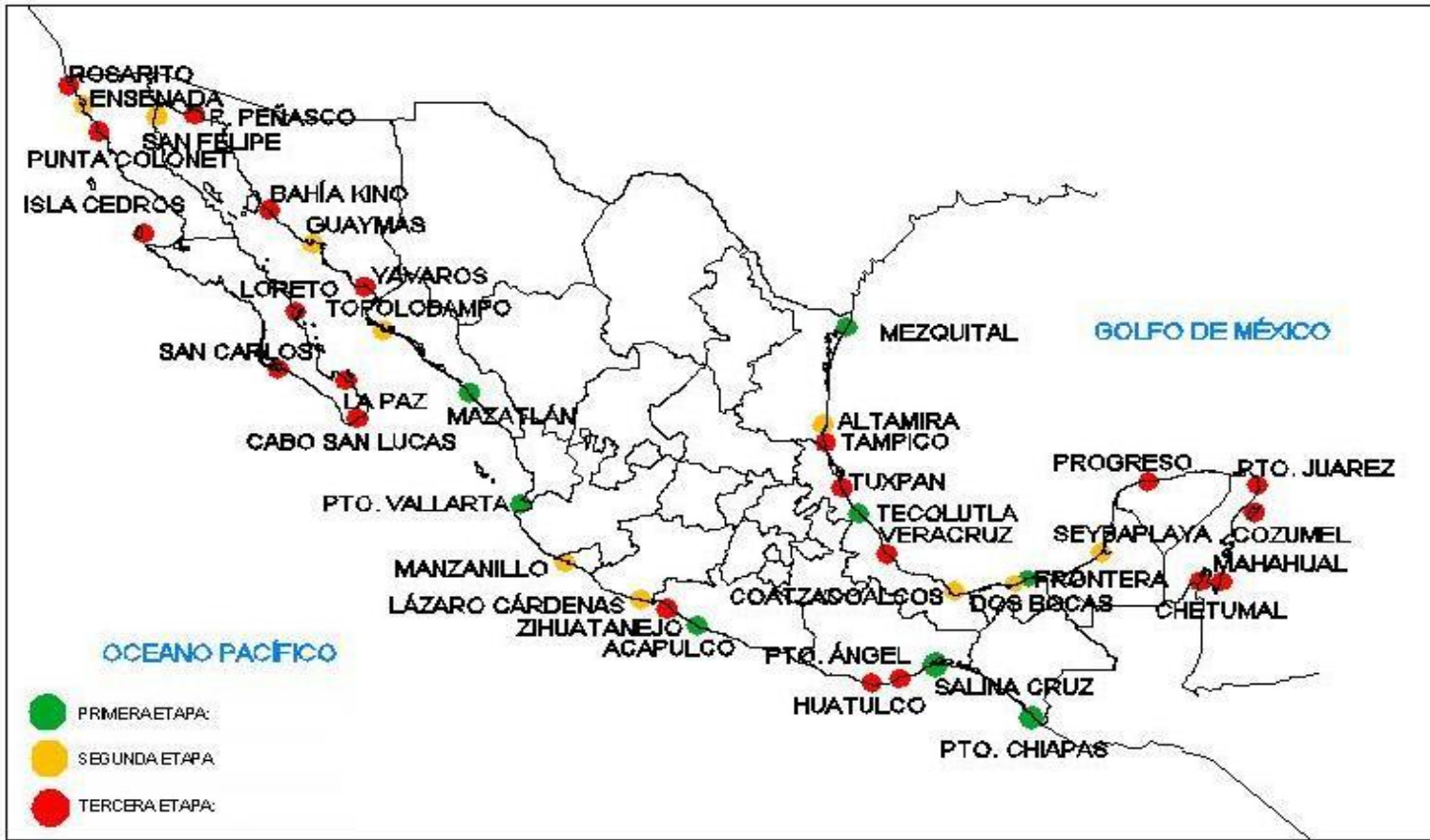
TIDAL STATIONS



IMT FACILITIES

Laboratory of Calibration of Oceanographic Equipment

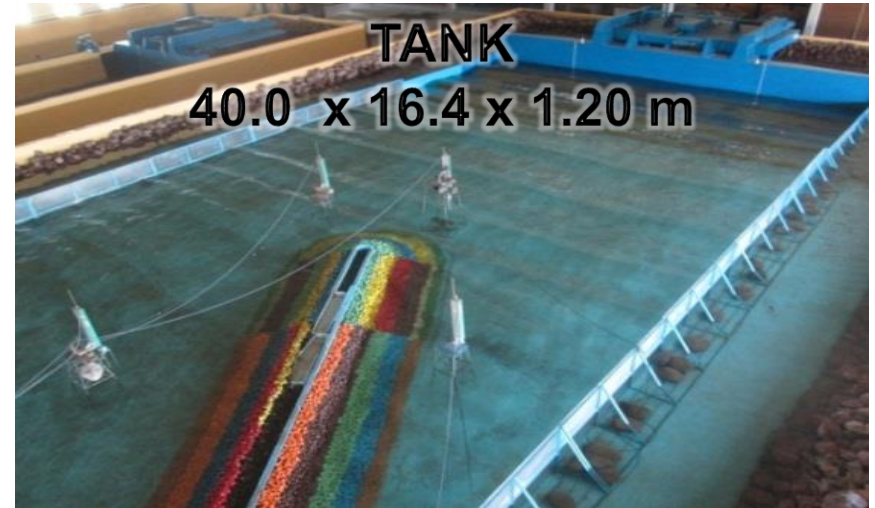
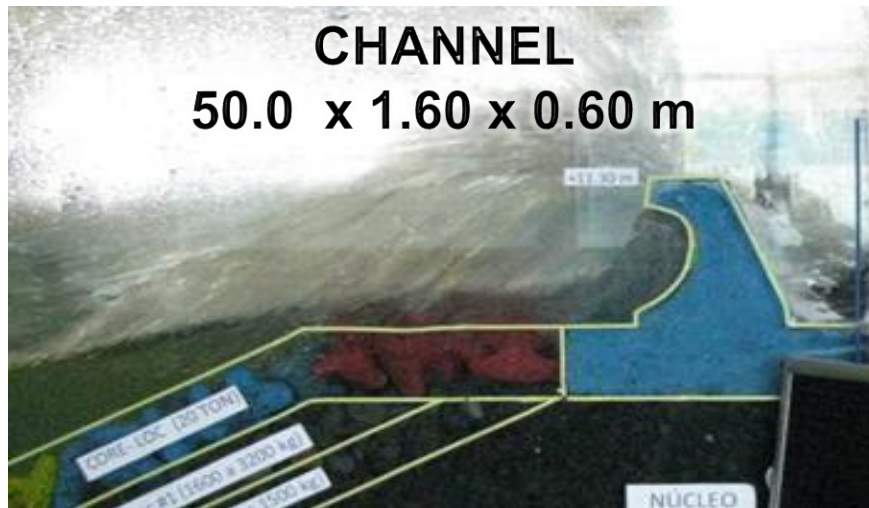
Manage the National Network of Oceanographic and Weather Stations



IMT FACILITIES

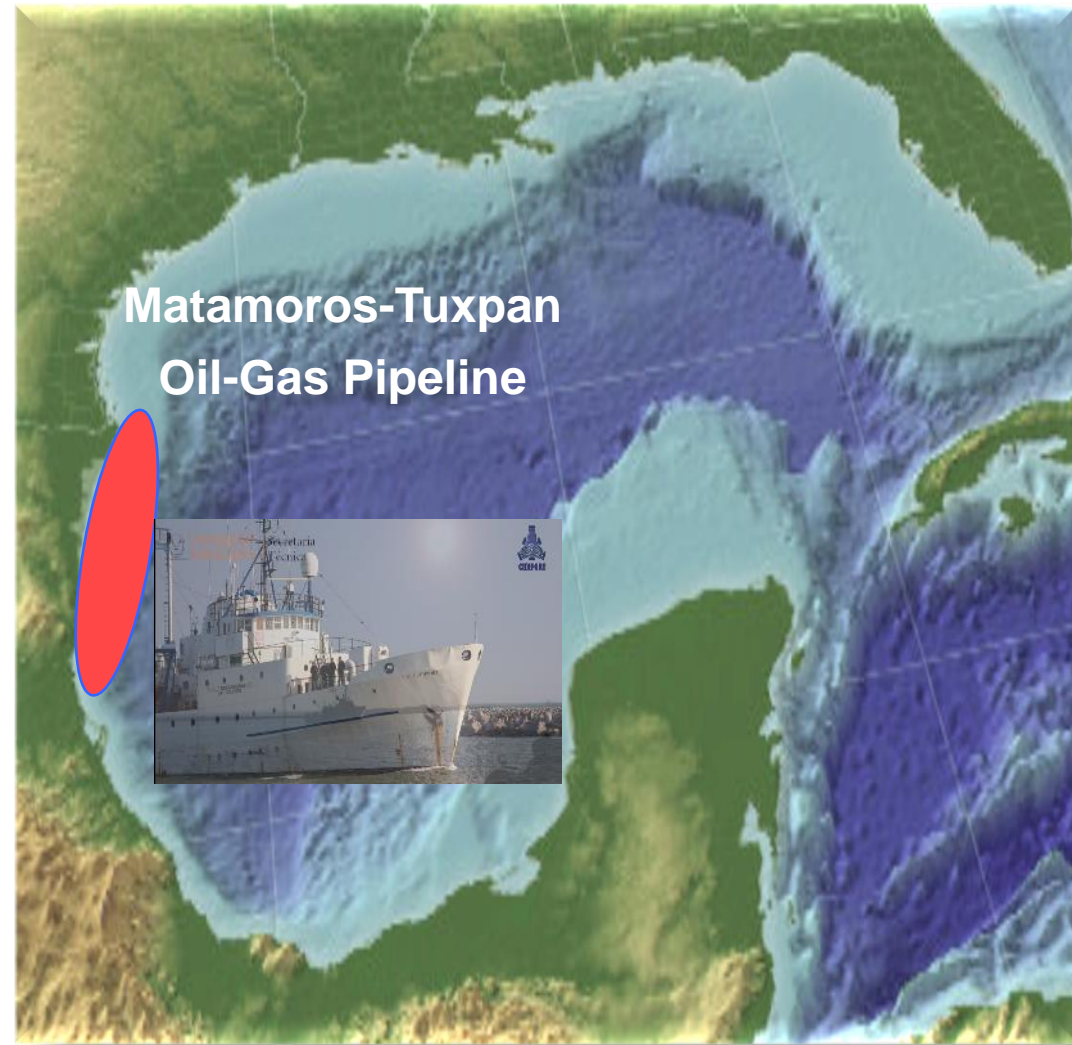
Laboratory of Hydraulics and Coastal Engineering

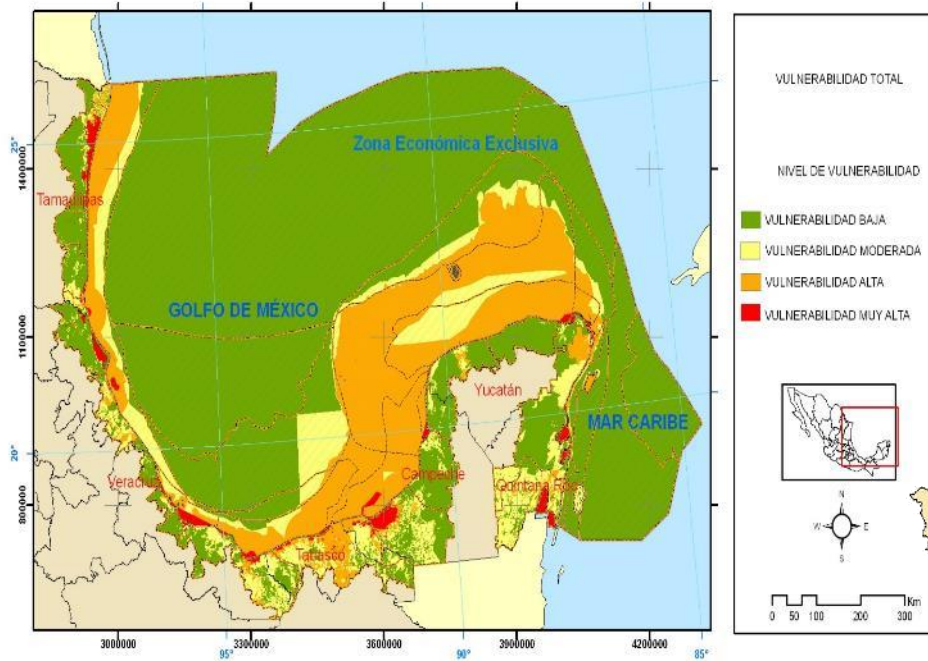
Physical Simulations with Irregular Waves Generator



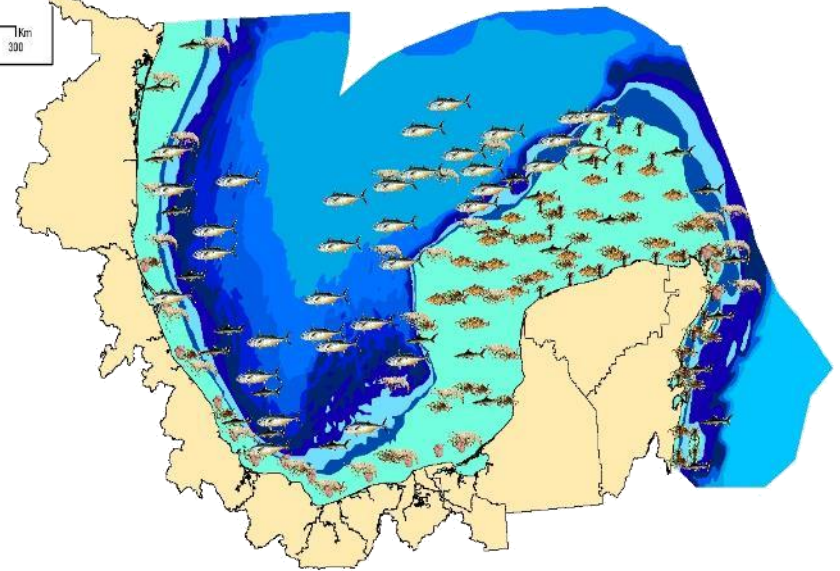


- Hydrodynamic and Biogeochemical Modelling
- Sand and Coastal Dynamics
- Wind-Wave Modelling
- Dispersion of Contaminants
- Diagnostics of Riverine-Coastal Hydrometeorological Risks





Mapa de vulnerabilidad total para el Golfo de México y Mar Caribe dentro del proceso de su ordenamiento ecológico. CIDIPORT, 2008

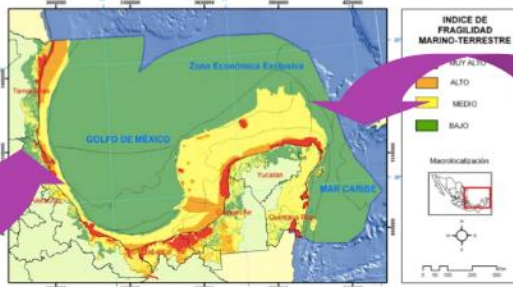


Representación esquemática de distribución de especies marinas con valor comercial en el Golfo de México y Mar Caribe para los estado costero de México. CIDIPORT, 2008

LAND AND SEA USE PLANNING PROCESS

Fragility Index

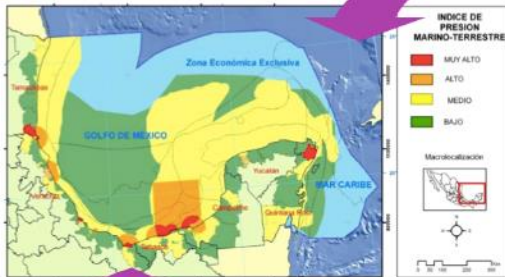
- Geomorphology
- Vegetation
- Climate
- Precipitation
- Slope



- Coral Reefs
- Islands
- Coastal areas
- Batimetry
- Current intensity

Pressure Index

- Primary Sector**
 - Agriculture, fisheries and livestock
- Secondary Sector**
 - Oil production activities and energy production
- Tertiary Sector**
 - Services, harbor storage facilities and oil distribution, Tourism Activities & Maritime transportation.

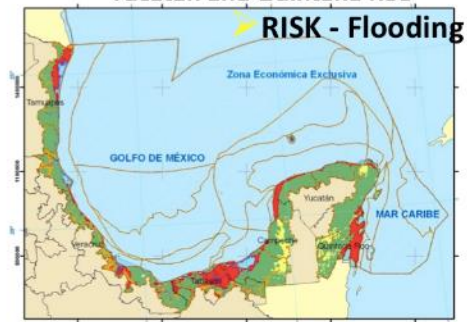
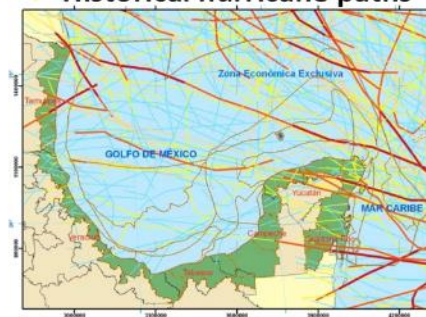


- Main River Runoff
- Fisheries overexploitation
- Degradation processes
- Ports and (

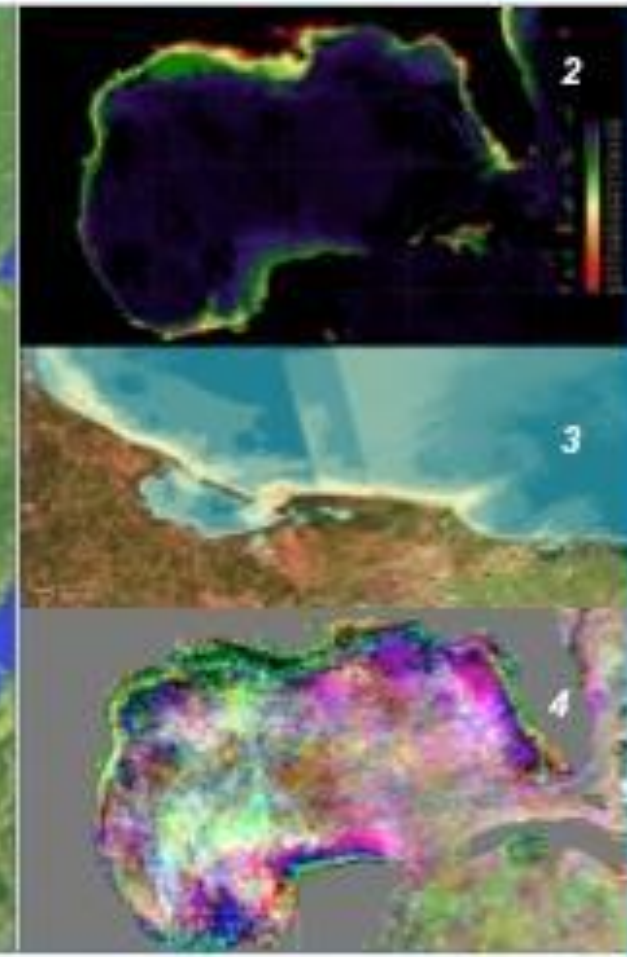
Most threatened regions (sea level rise)

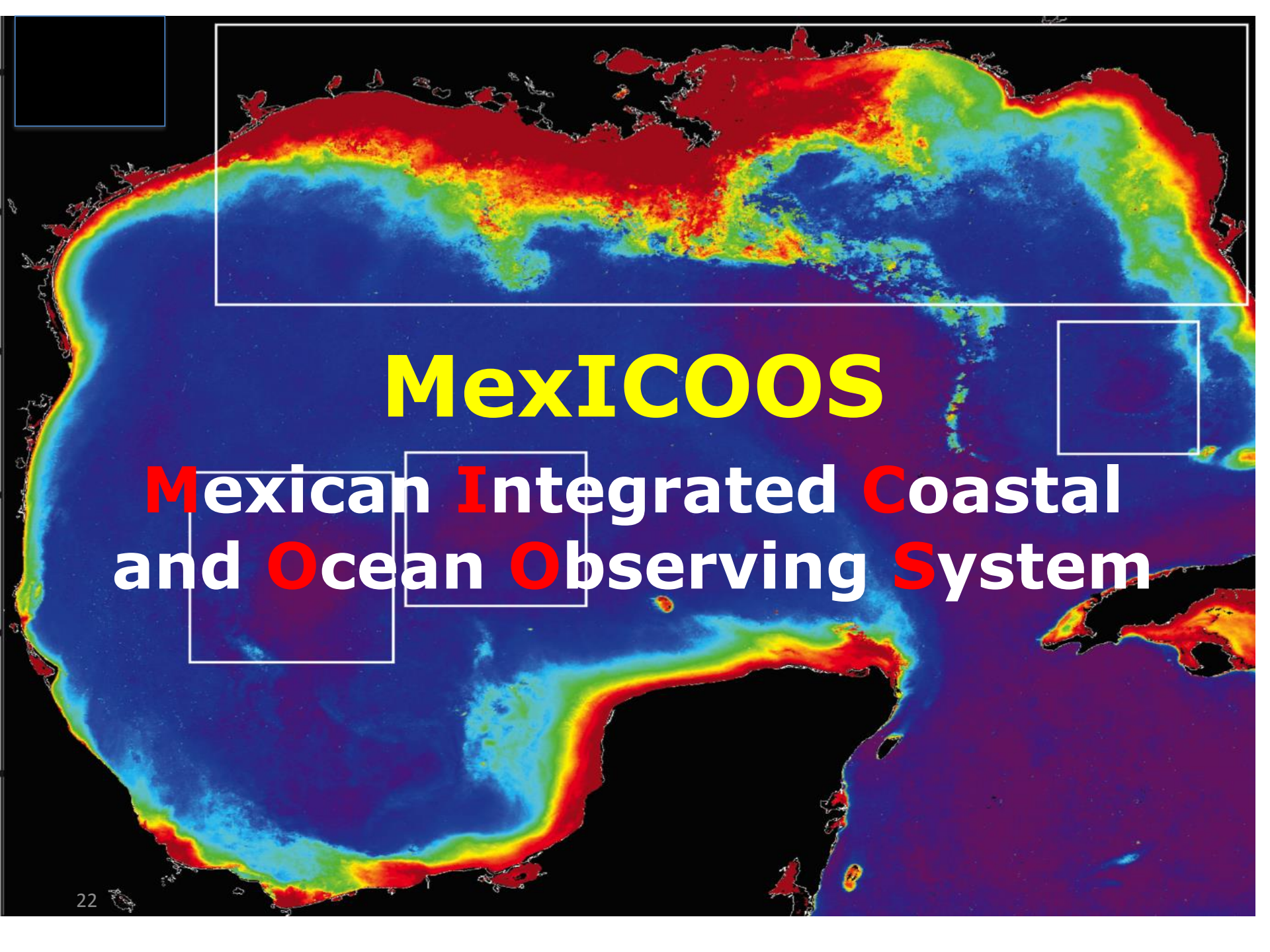
- Northern areas of Tamaulipas
- Southern tip of Veracruz
- Deltaic plain Grijalva-Usumacinta system in Tabasco, and
- Coastal areas of Campeche, Yucatan and Quintana Roo

Historical hurricane paths



1. Image of the Grijalva-Usumacinta Watershed 2. MODIS derived Chlorophyll a image for May 2009 3. Turbidity index applied to Landsat 8 imagery 4. Amplitude image from seasonal trend





MexICOOOS

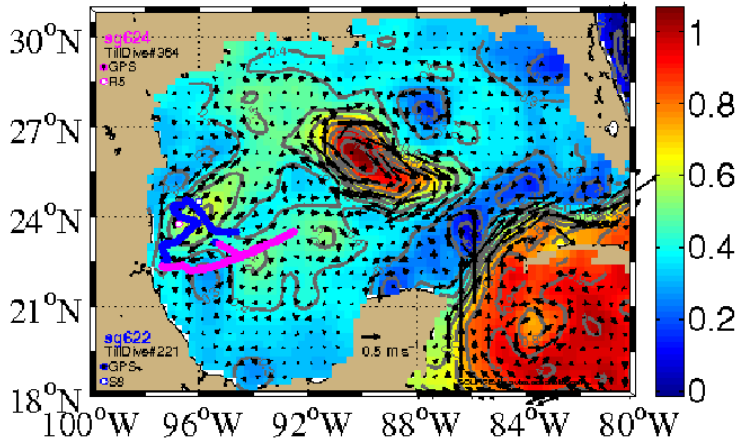
Mexican **I**ntegrated **C**oastal
and **O**cean **O**bserving **S**ystem

Use of 2 Kongsberg Sea Gliders in Mexico

Marco Ulloa (CICATA-IPN)

deployed in deep waters of the south coast of Tamaulipas to follow the evolution of mesoscale eddies released from the loop current.

AVISO MADT 25/7/2016



« -1 Day -1 Hour 2017-03-27 21:00:00 -07:00 from UTC +1 Hour +1 Day »

[Bookmark View](#)

Control Panel

[UTC](#): 2017-03-28 19:18:27

[Local](#): 2017-03-28 12:18:27

Resolutions

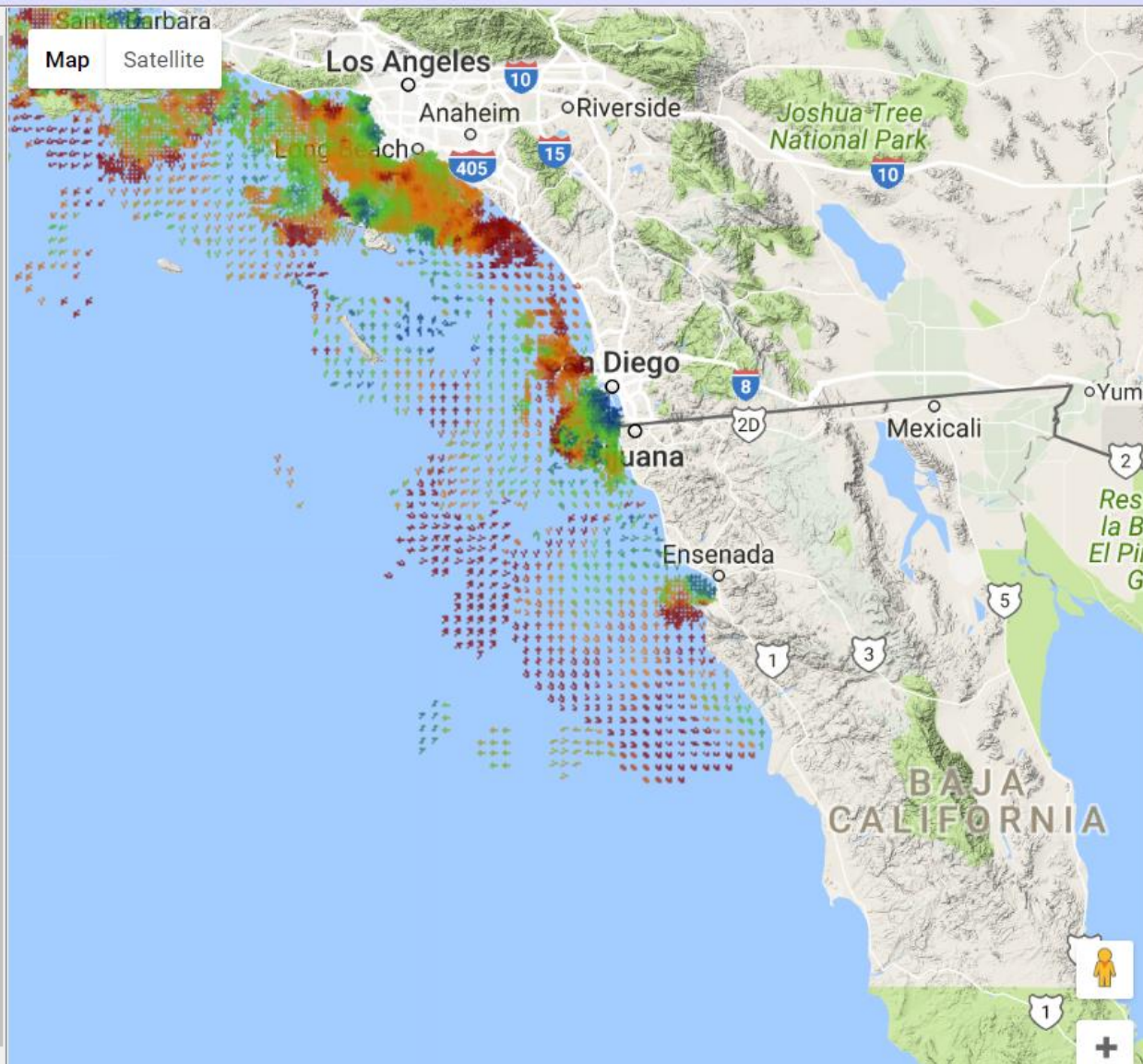
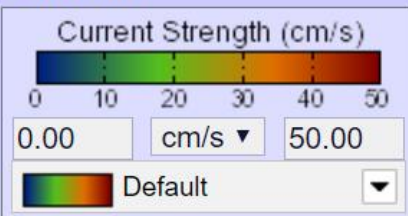
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500m	<input type="checkbox"/>	<input type="checkbox"/>
1km	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2km	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6km	<input checked="" type="checkbox"/>	<input type="checkbox"/>

* Vector size is not visually consistent between resolutions.

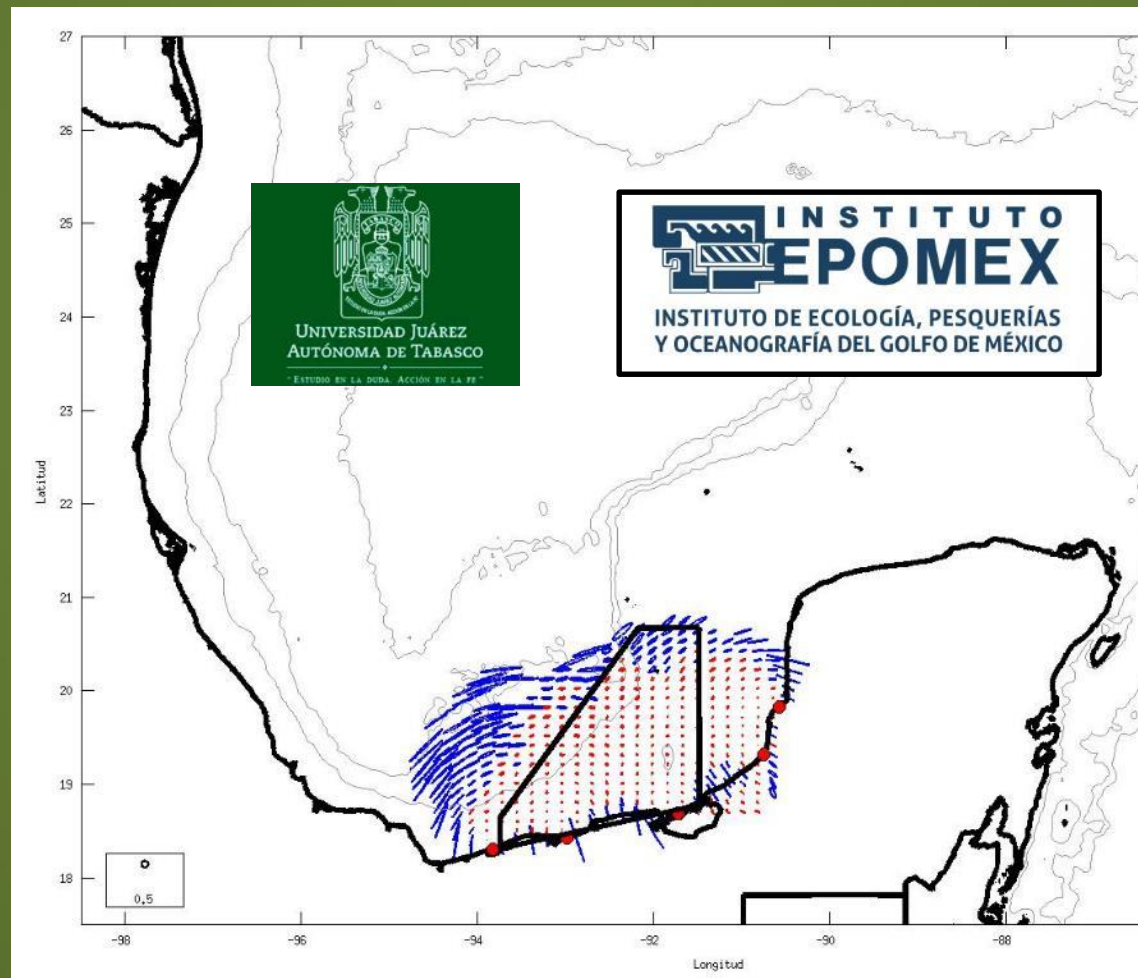
Overlays

- Station Placemarks
- So-Cal Oil Platforms
- Deepwater Horizon

Colorbar

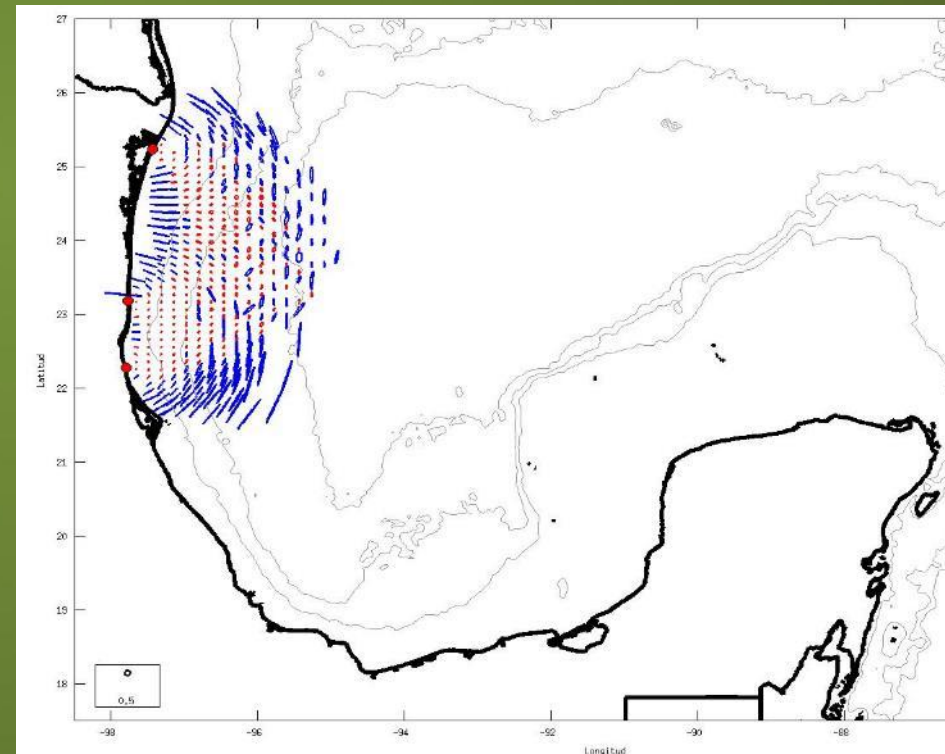
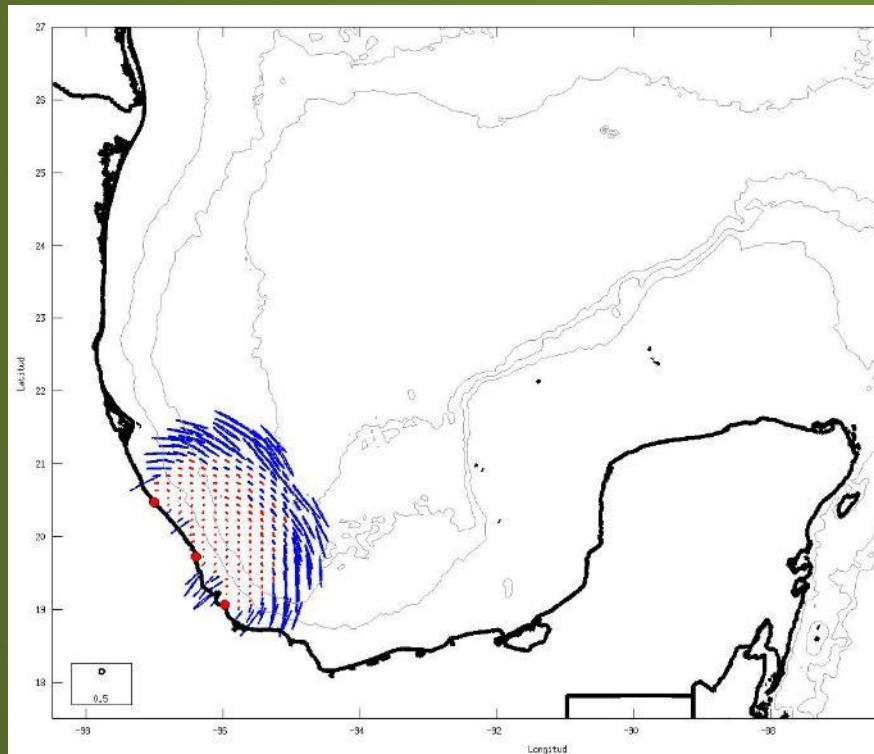


Durante el mes de **mayo** se instalarán los primeros 3 sitios de HFR, en el estado de **Campeche** en colaboración con EPOMEX-UAC (Universidad Autónoma de Campeche)
Durante los meses de **julio-agosto**, se instalarán dos sitios más en el estado de **Tabasco** en colaboración con la UJAT (Universidad Juárez Autónoma de Tabasco).

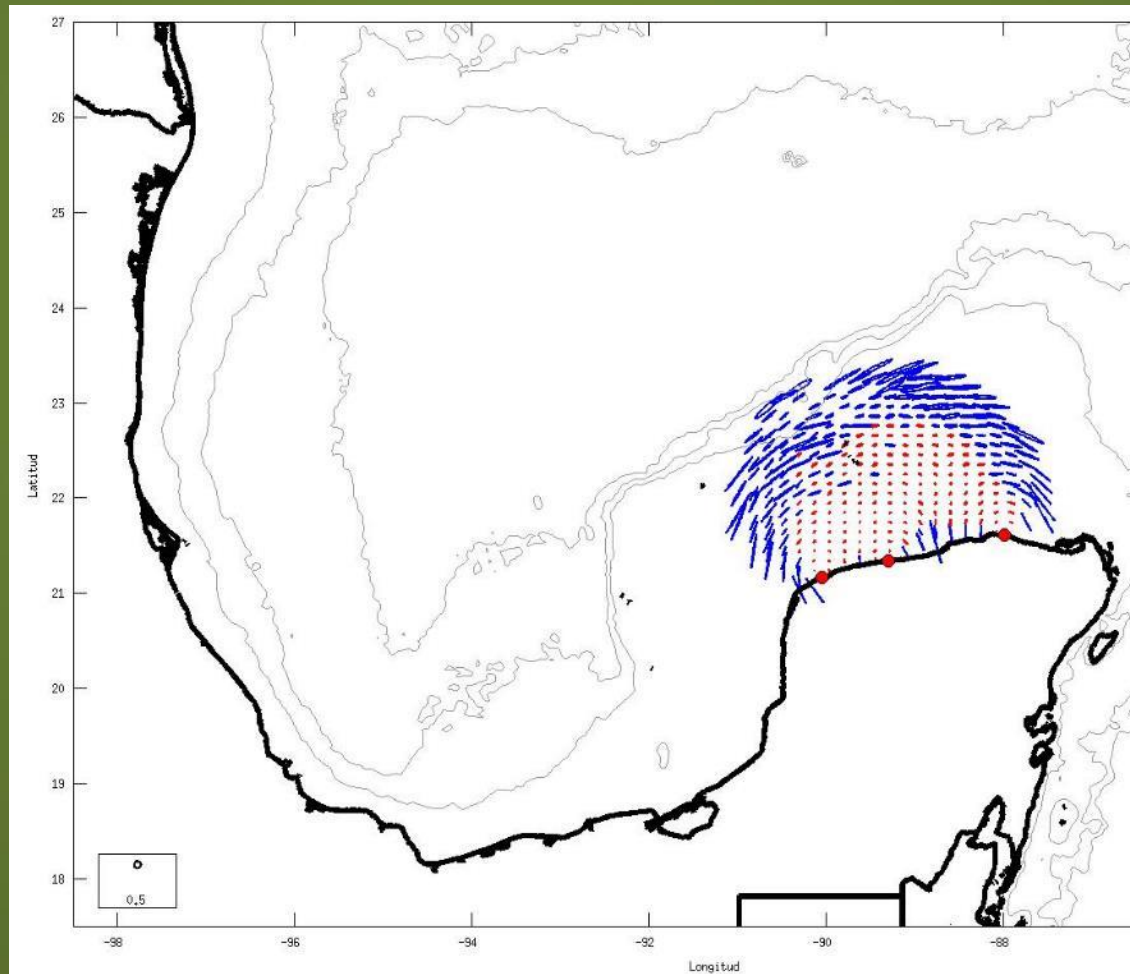


La figura muestra la cobertura esperada para las mediciones de corrientes.

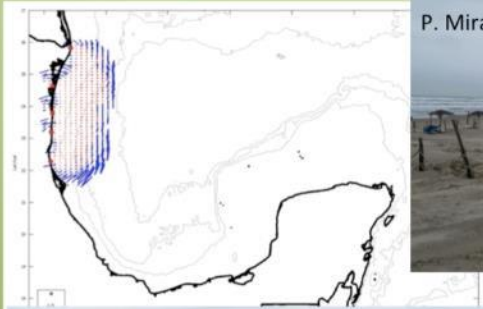
Durante los meses de **octubre-diciembre** se instalaran los HFR, del estado de **Veracruz** en colaboración con la UV (Universidad Veracruzana), así como también los sitios correspondientes al estado de **Tamaulipas** en colaboración con el CICATA-IPN



Durante inicios del 2018, se procederá con la instalación del estado de Yucatán en colaboración con el LIB-PC de la UNAM



LA RED DE TAMAULIPAS (SIMULACIÓN DE LA COBERTURA ESPERADA)



P. Mira Mar (SEMAR)

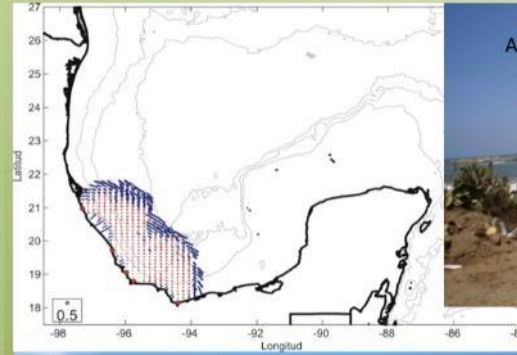


- P. Mira Mar
- Rancho nuevo
- Mezquital (CONAMP)
- P. Bagdad (SEMAR)



Rancho Nuevo (CONAMP)

LA RED DE VERACRUZ (SIMULACIÓN DE LA COBERTURA ESPERADA)

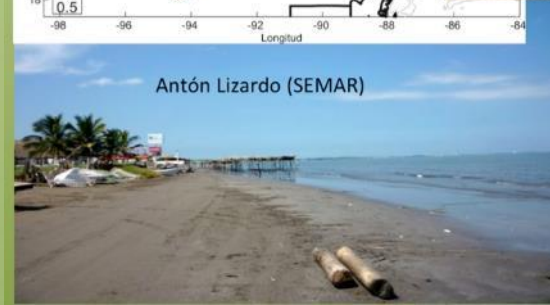


Alvarado (ITSAV)



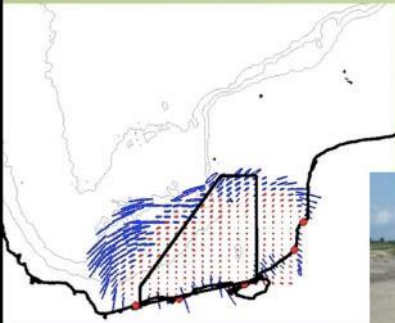
Universidad Veracruzana

Antón Lizardo (SEMAR)



- Coatzacoalcos (SEMAR)
- Alvarado
- Antón Lizardo
- Laguna Verde
- Tuxpan

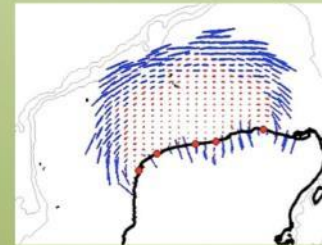
LA RED DE TABASCO Y CAMPECHE (SIMULACIÓN DE LA COBERTURA ESPERADA)



- Sánchez Magallanes
- Jalapita
- Cd. Carmen (UNACAR)
- Sabancuy
- Campeche



LA RED DE YUCATÁN (SIMULACIÓN DE LA COBERTURA ESPERADA)

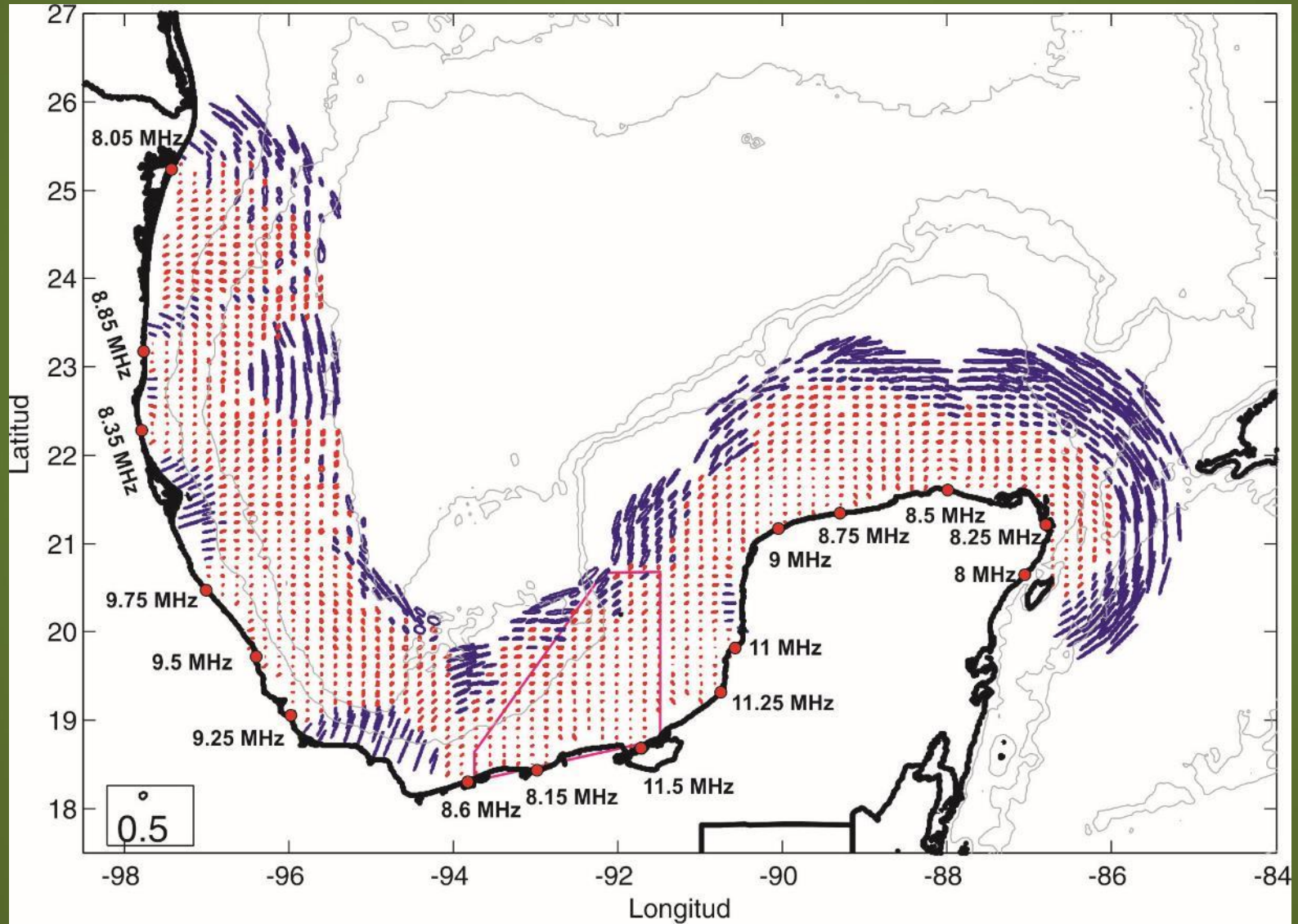


Celestum (CONAMP)



- Celestum
- Sisal (LIPC)
- San Felipe
- Telchac
- Dzilam







International collaboration to link oceanographic processes and marine resources of the Caribbean Sea and Gulf of Mexico

Laura Carrillo¹, J. T. Lamkin², E. M. Johns³, L. Vásquez-Yeomans², F. Sosa-Cordero¹, E. Malca², R. H. Smith³, T. Gerard², R. Laiz⁴

¹ El Colegio de la Frontera Sur, ²NOAA National Marine Fisheries Service, Southeast Fisheries Science Center, ³ NOAA Atlantic Oceanographic and Meteorological Laboratory, ⁴ Instituto Español de Oceanografía

Fourth State of the Gulf of Mexico Summit and the first Gulf of Mexico Workshop on International Research

Houston, Texas, USA March 26-30, 2017



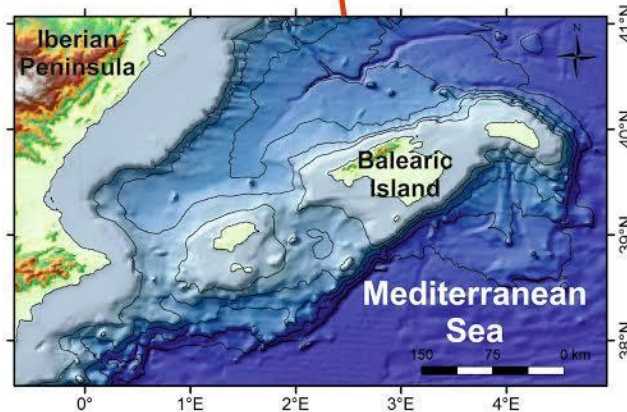
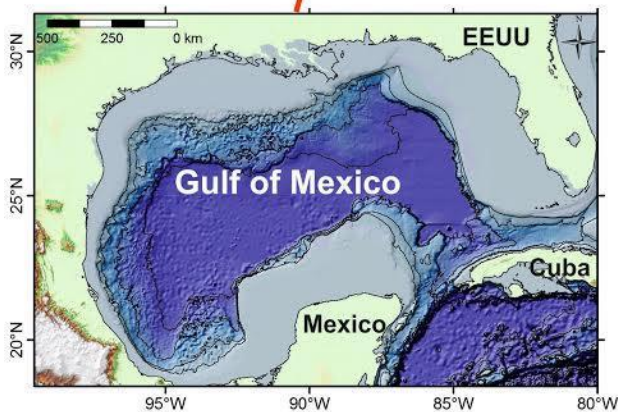
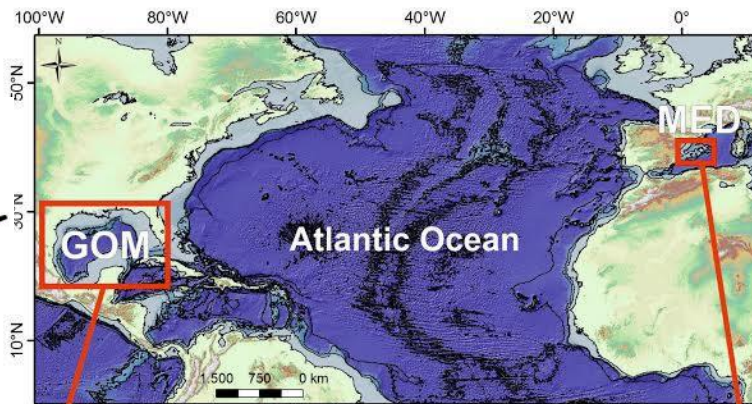
CONACYT



ECOLATUN: Comparative trophic **ECO**logy of **LAR**vae of Atlantic bluefin **TUN**a (*Thunnus thynnus*) from NW Mediterranean and Gulf of Mexico spawning areas

- International collaboration (Spain-USA-Mexico): IEO (Spanish Oceanographic Institute), NOAA, ECOSUR (EL COLEGIO DE LA FRONTERA SUR, México)

Bluefin tuna larvae collaborative surveys



INSTITUTO
ESPAÑOL DE
OCEANOGRAFÍA



- ECOLATUN - project



INSTITUTO
ESPAÑOL DE
OCEANOGRAFÍA



NOAA
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
U.S. DEPARTMENT OF COMMERCE



ECOSUR



GOBIERNO
DE ESPAÑA
MINISTERIO
DE ECONOMÍA
Y COMPETITIVIDAD

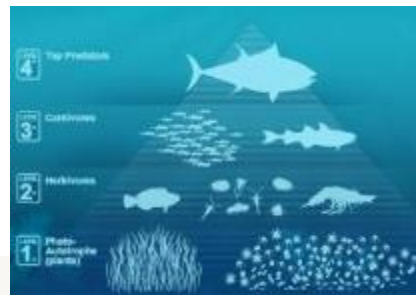
GLOBAL OBJETIVE

Characterize the Atlantic Bluefin Tuna larval trophodynamics and assess its influence on larval growth and predator-prey interactions with other top predator larvae, *from a comparative ecosystem approach of their main spawning regions, the GOM and MED, which show contrasting environmental conditions.*

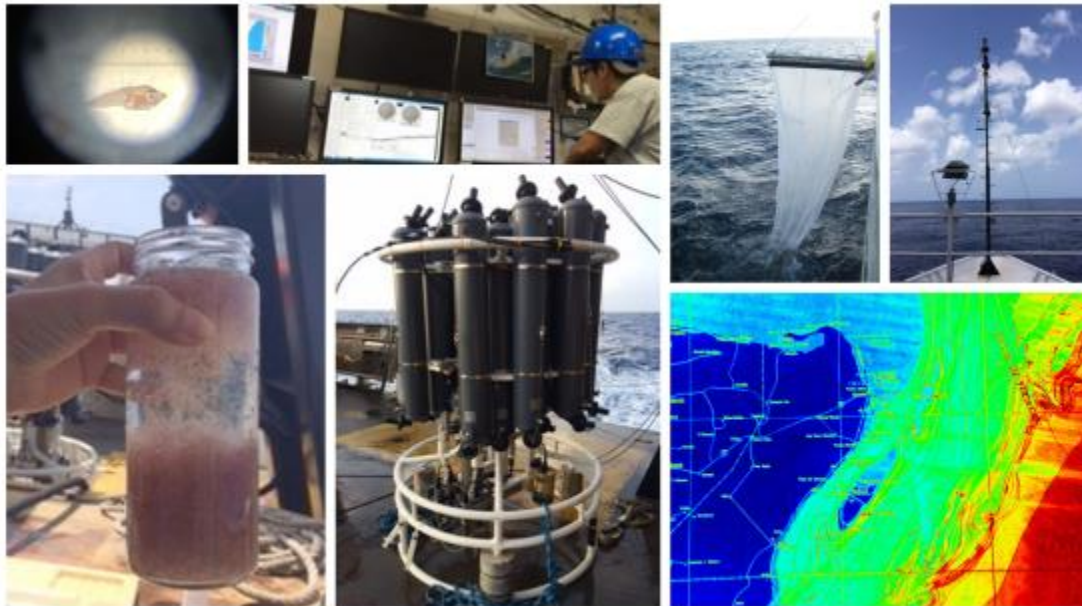
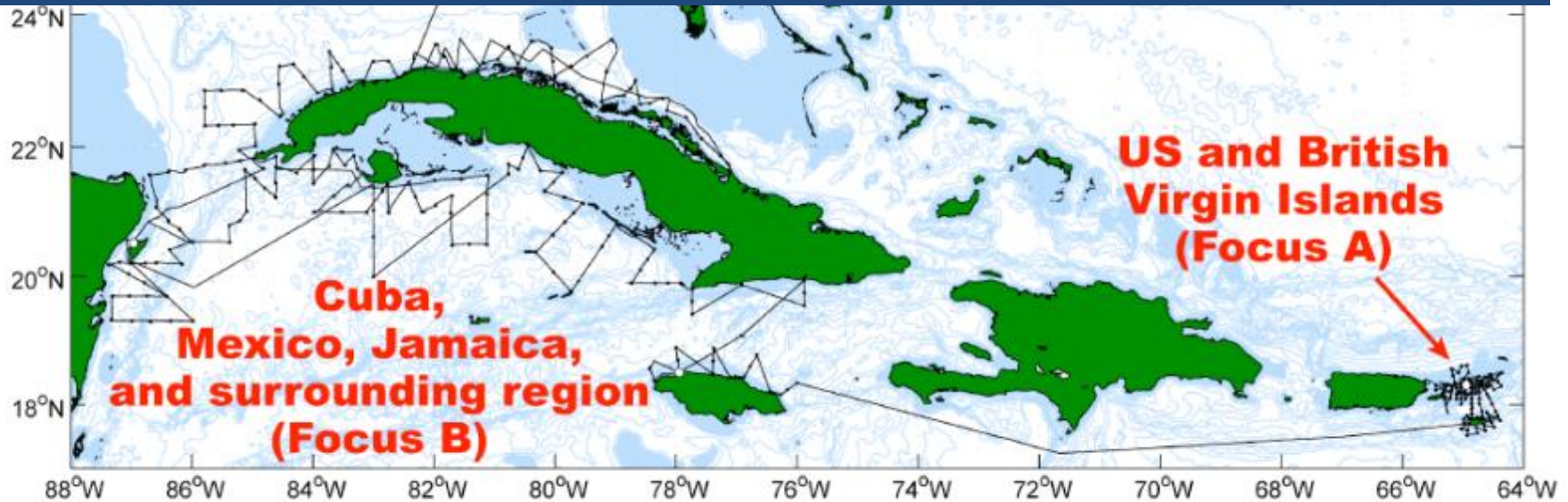
O4. Oceanographic features characterization. Comparative ABFT spawning ecosystem trophodynamics and related hydro-biological processes from the MED and the GOM regions.

The proposed objectives of this action include analyses of:

- 1) ABFT population genetic structure.
- 2) Bulk stable isotope analysis (SIA).
- 3) compound specific stable isotope of field-caught ABFT larvae (CSIA).
- 4) Otolith microstructure.
- 5) GH gene expression.
- 6) The environmental variables and the larval fish community will also be studied.



Oceanographic campaigns



**2015 and 2016
Oceanographic cruise:
USA-MEX-CUBA-SPAIN**





Water Resources
Reduce Pollution

Education &
Research

Ocean and Coastal
Observing Systems

Economic and
Productive
Sectors

Climate Change
Coastal Resilience,
disaster relief and
Human Health

Ecosystems and
Marine
Resources

GOVS. FEDERAL
STATE
MEX - US

GOMSA
Gulf States
Accord

ALIANZA ESTADOS
MEX - US

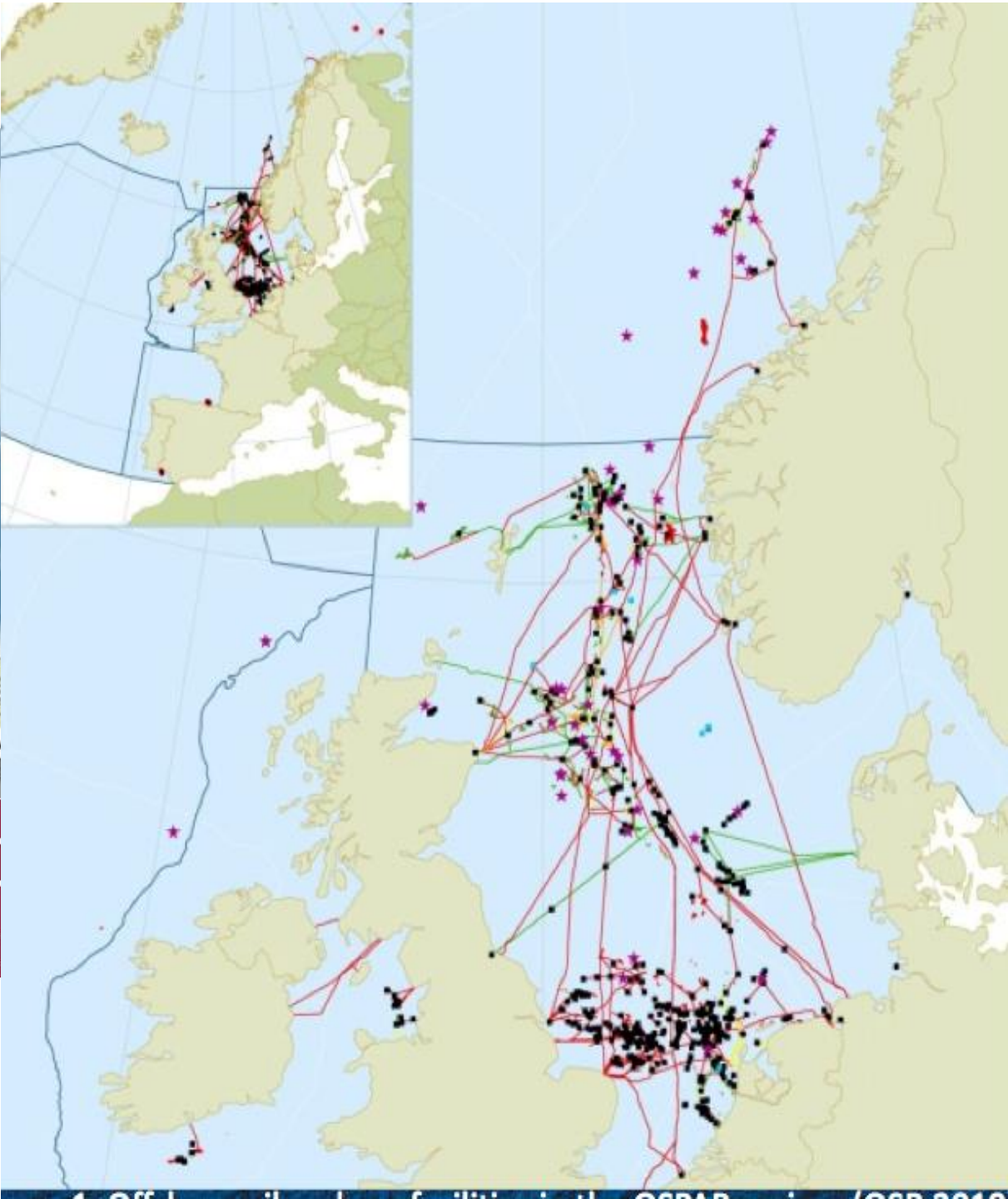
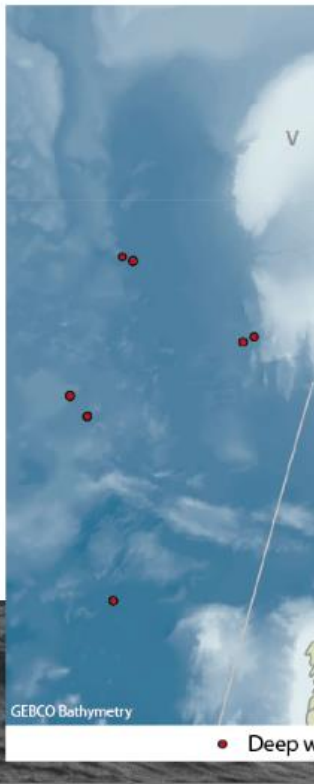


SCI RESEARCH
CONSORTIA
CIIMAR in MEX
GOMURC in US



SOCIEDAD CIVIL
MEX - US

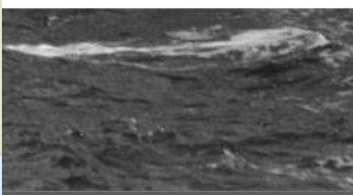
Gulf of Mexico INTERIM COMMISSION



dumped in the OSPAR maritime

activity Dumped (PBq)

2,12
0,35
0,0002
0,0002
0,34
0,03
4,42
35,1



Historic Radioact

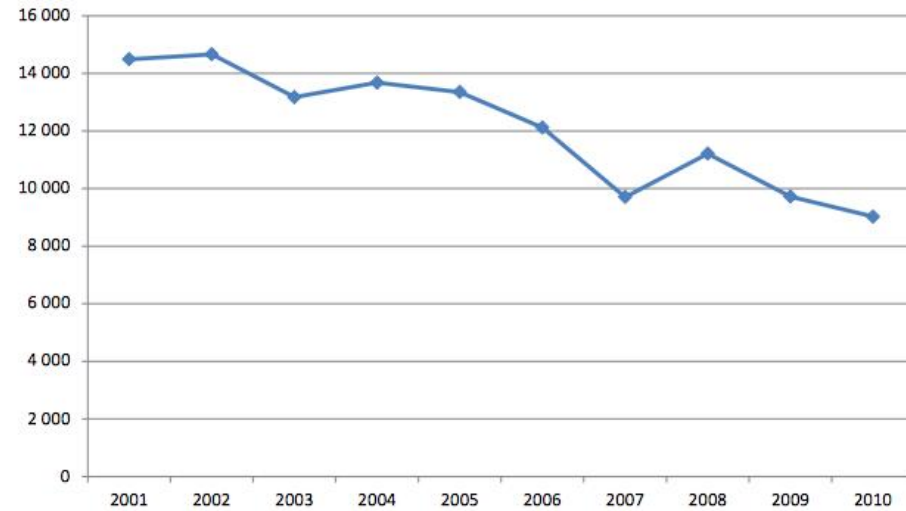
RSC16/1

OSPAR COMMISSION

Recommendation for a Risk-based Approach to the Management of Produced Water Discharges from Offshore Installations (RBA Recommendation) and associated Guidelines. The risk-based approach is a method of prioritising mitigation actions on those discharges and substances that pose the greatest risk to the environment.



Figure 1. Oil discharged in displacement and produced water (T)



What has been done so far?

OSPAR has adopted a wide range of programmes and measures to reduce pollution from all phases of offshore oil and gas activities. These include measures to reduce the amount of oil discharged in produced water (OSPAR Recommendation 2001/1) and measures to control the use and discharges of offshore chemicals (OSPAR Harmonised Mandatory Control System).

