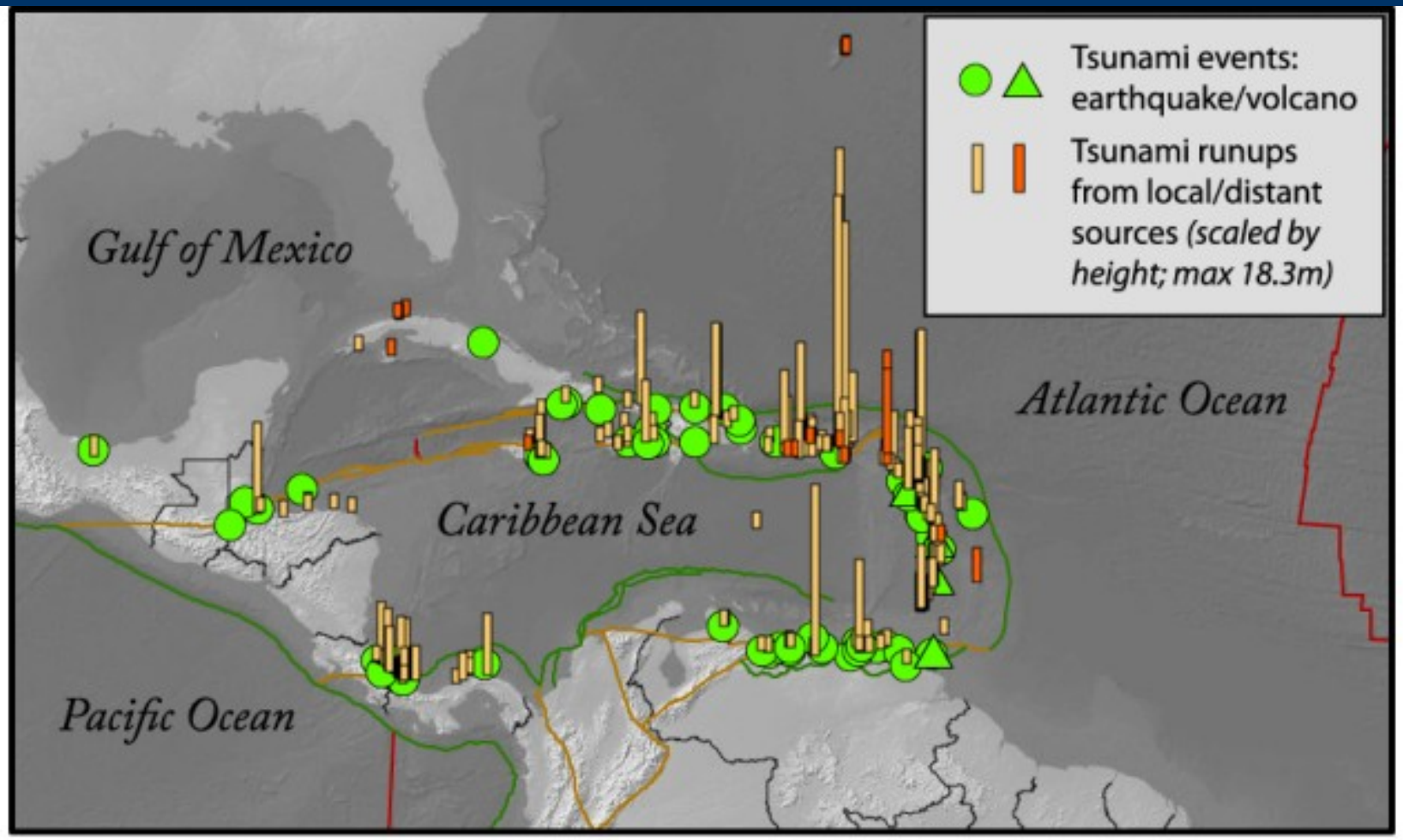
The ICG/CARIBE EWS

Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and adjacent Region

Christa G. von Hillebrandt, *Chair*
Sébastien Deroussi, *Vice Chair WG1*

Procedures in response to marine desaster
14th MESOAMERICAN & CARIBBEAN SEA HYDROGRAPHIC COMMISSION MEETING
Phillipsburg, St Maarten 9th to 13th December 2013

1500-2013 Tsunami Events in the Caribbean



Artwork by NGDC, Jessee Varner, NGD

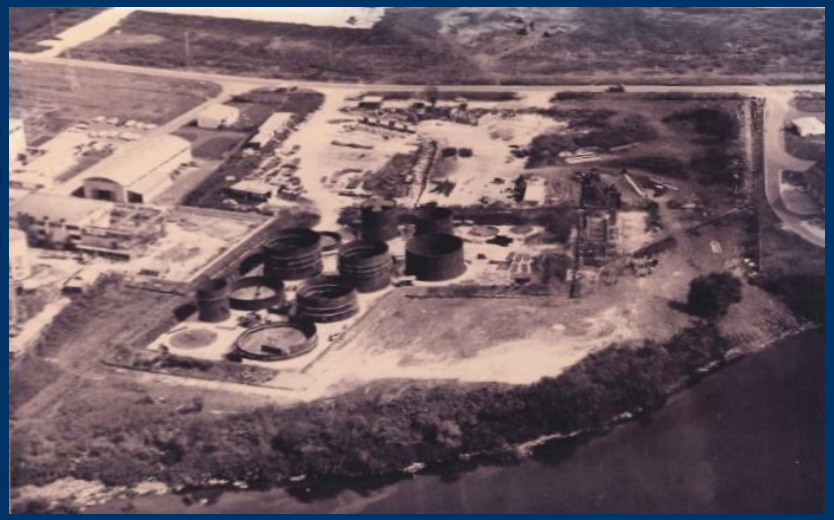
Over 75 Tsunamis have impacted the Caribbean in the past 500 years

Fatalities	Year	Location
300	1842	Haiti
1000	1853	Venezuela (possible that the deaths were due to earthquake)
30	1867	US Virgin Islands
100	1882	Panama
142	1918	Puerto Rico
1790	1946	Dominican Republic
75	1946	Dominican Republic
2	1991	Costa Rica
7	2010	Haiti
TOTAL: **3446**		

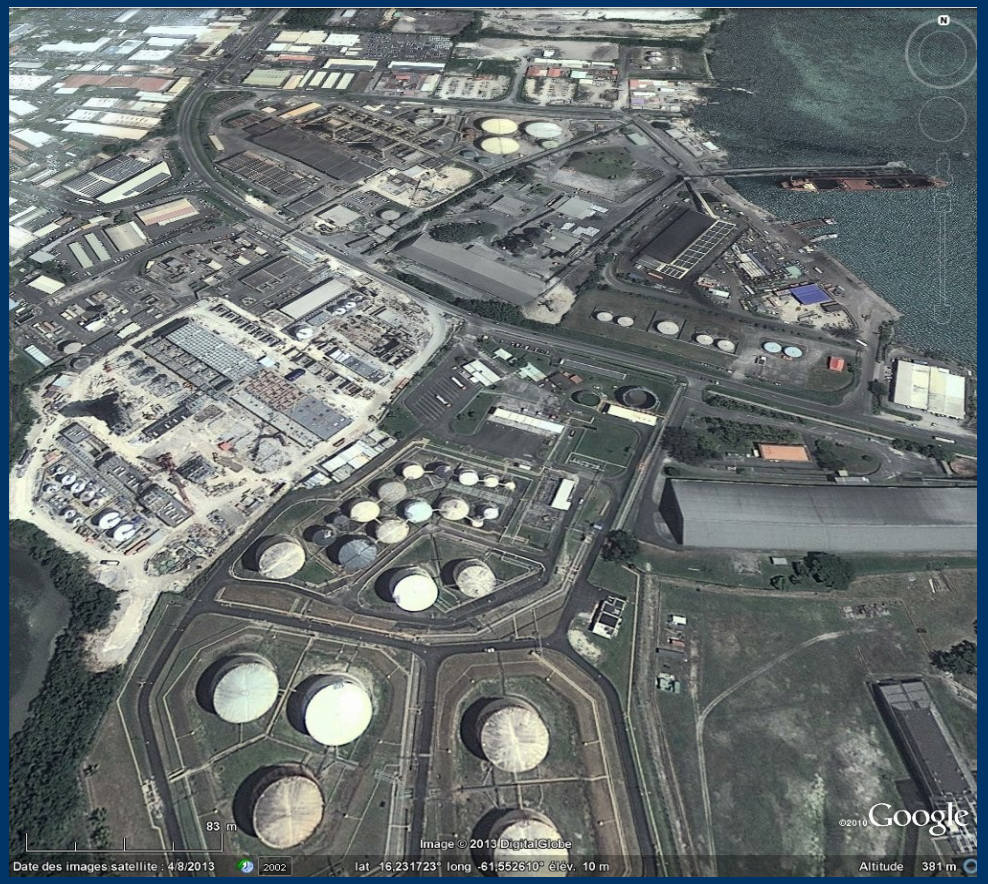
Human threat

Since 1946 there has been an explosive growth in population and tourism along our coast, at least 50,000 could be on the beaches in a single day and hundreds of thousand in the tsunami hazards zones.

Threat to Coastal Infrastructure and Harbours



Jarry, Guadeloupe 1970 (Sara)



Jarry, Guadeloupe august 2013 (google earth)

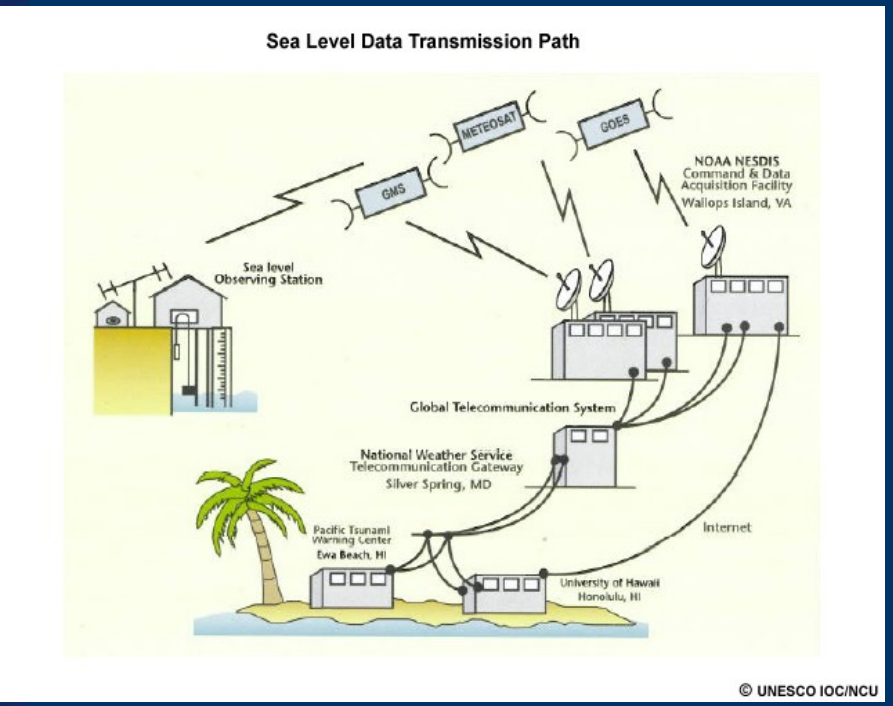
ICG CARIBE EWS

- 32 Member States and 16 territories in the Caribbean and Adjacent regions and 3 Observer States (Canada, Peru and Sri Lanka)
- Established in 2005
- Almost every MS/Territory has named corresponding Tsunami National Contact (coordination) and Tsunami Warning Focal Point (24 x 7 in country tsunami alerting responsibility)
- 8 Sessions have been held in Barbados, Venezuela, Panama, Martinique, Nicaragua, Dominican Republic, Curacao and Trinidad and Tobago
- Next session: May 13-15, 2014 St Thomas, United States Virgin Islands.

Working Groups and Task Teams

- **Working Groups**
  - Monitoring and Detection Systems, Warning Guidance
  - Hazard Assessment
  - *Tsunami Services (NEW, replaces Warning, Dissemination and Communication)*
  - Preparedness, Readiness and Resilience
- **Task Teams**
  - *Sea Level Network Capability Study (NEW)*
  - *Performance Based Recognition Program (NEW)*
  - CARIBE WAVE 14
  - PTWC Enhanced Product Implementation
  - *Warning Communication and Dissemination (NEW)*

Tsunami Warning System (upstream to NFP)



Seismometers data
- 1rst step
- 1rst message (loc + arrival times)

Tide gauges (+ DART) data
- 2nd step
- Follow up messages (updated arrival times and expected water height) until Cancellation is issued

- Seismometers network >>> Initial Warning Guidance
- Tide gauges network >>> Follow up messages and warning guidance

TSUAREG
PROGRAMME
INTERREG CARAÏBES

GUADELOUPE • GUYANE • MARTINIQUE • ST-BARTHELEMY • ST-MARTIN

Observatoirevolcanologique et sismologique de Martinique

Observatoirevolcanologique & sismologique de Guadeloupe

UWI

SEISMIC RESEARCH CENTRE
TRINIDAD & TOBAGO W.I.

METEO FRANCE
Toujours un temps d'avance

Conseil Général de la Martinique

SHOM

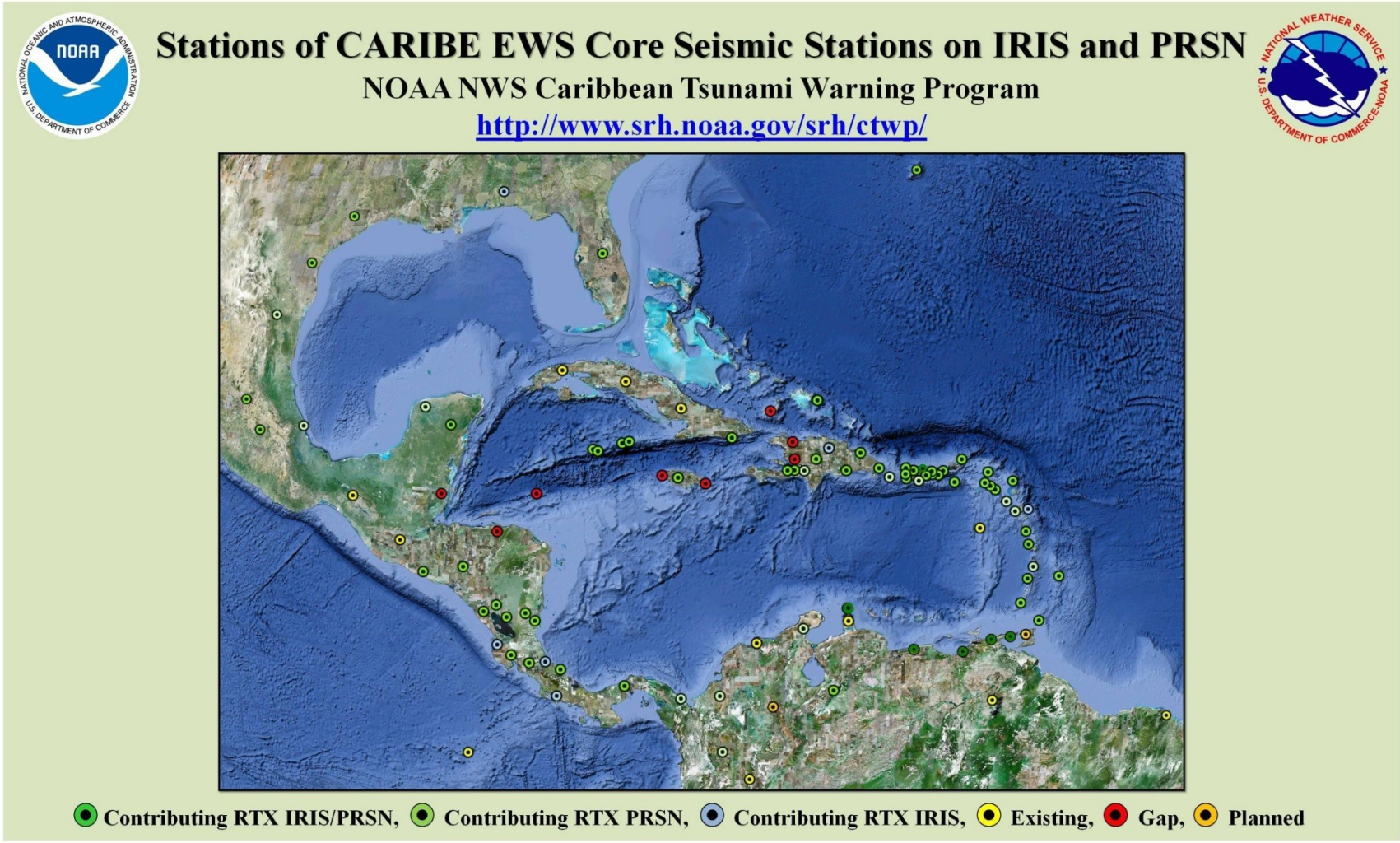
TSUAREG an example of integrated solution for downward alert at western indies scale

Antigua, Carriacou, Dominica, French Guyana, Guadeloupe, Martinique, St Lucia, Trinidad and Tobago

- Detection systems (seismic and sea-level stations)
- Training courses (organisation RNSO martinique 2013 and COMmit Guadeloupe 2012, training of operators (education and preparness, Nano, GPS, Sea level, SOP...))
- Informatics updates (Nano, Seiscomp3)
- Two years of SATCAR meetings (french national coordination)
- ...

Seismic Data Availability

86% (109/126) of Core CARIBE EWS Stations are contributing in real time

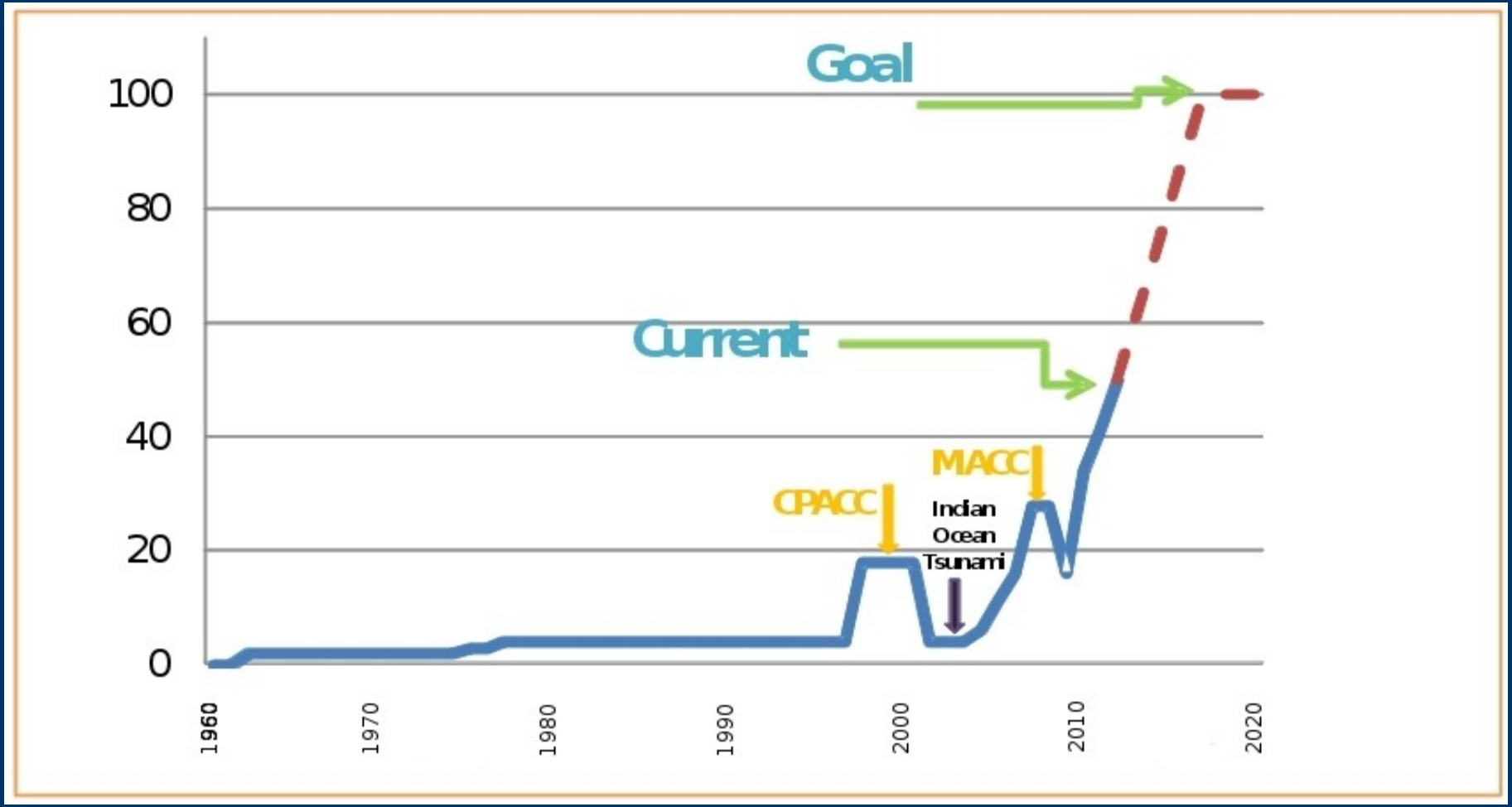


2013 Sea Level Data Availability in the Caribbean

100% (7/7) of the DART stations are installed

49% (56/114) of coastal sea level gauges are operational and transmitting most at least every 15 minutes

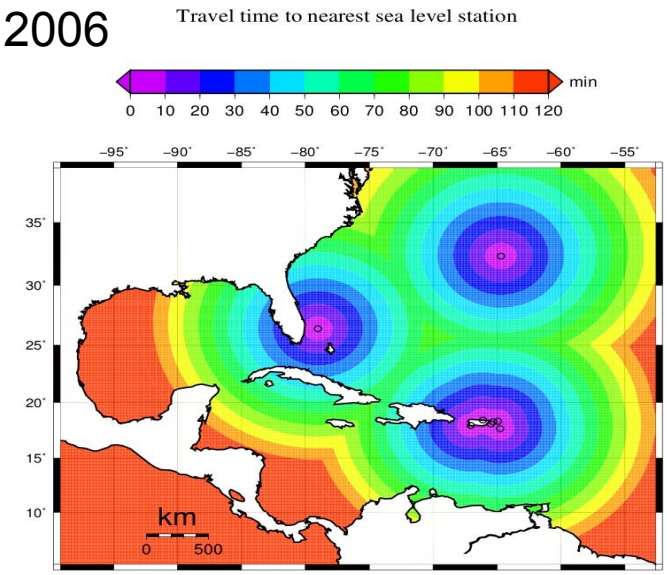
CARIBE EWS Coastal Sea Level Monitoring Stations Progression (1960-2020)



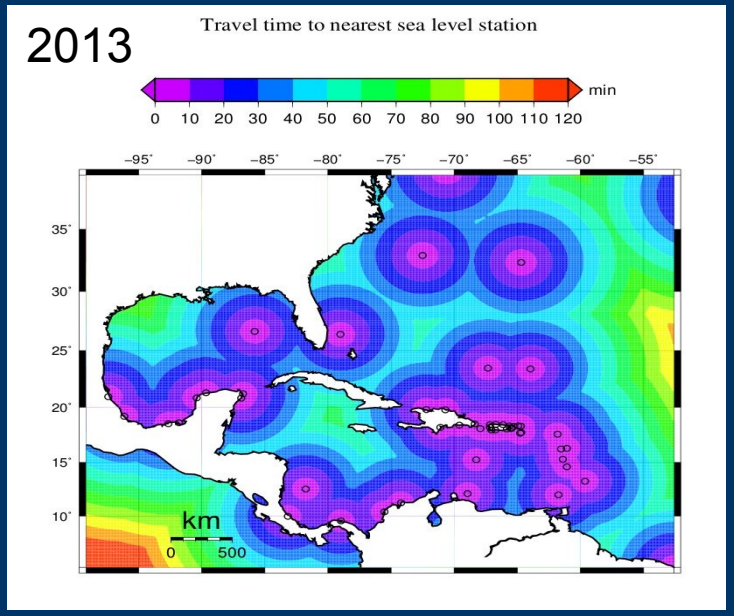
CPACC and MACC were Projects executed by the Caribbean Community Center for Climate Change

Travel time to nearest sea level station

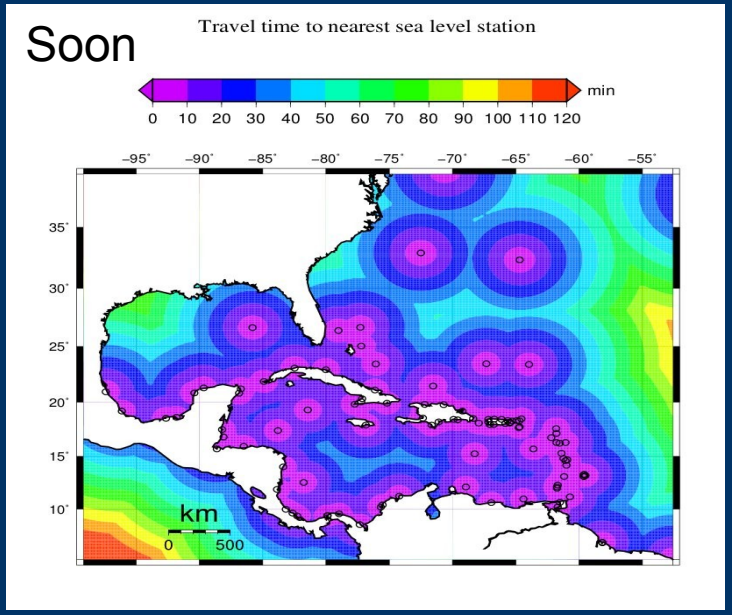
2006



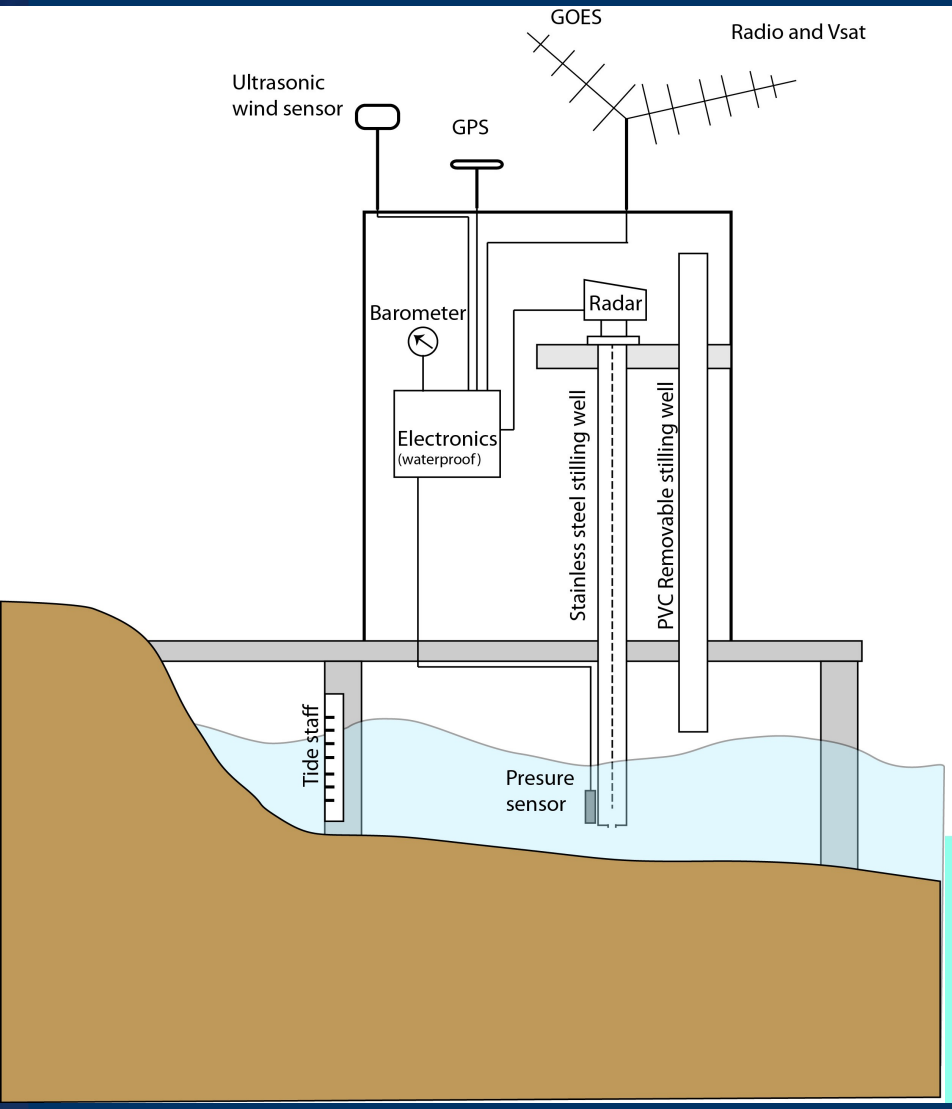
2013

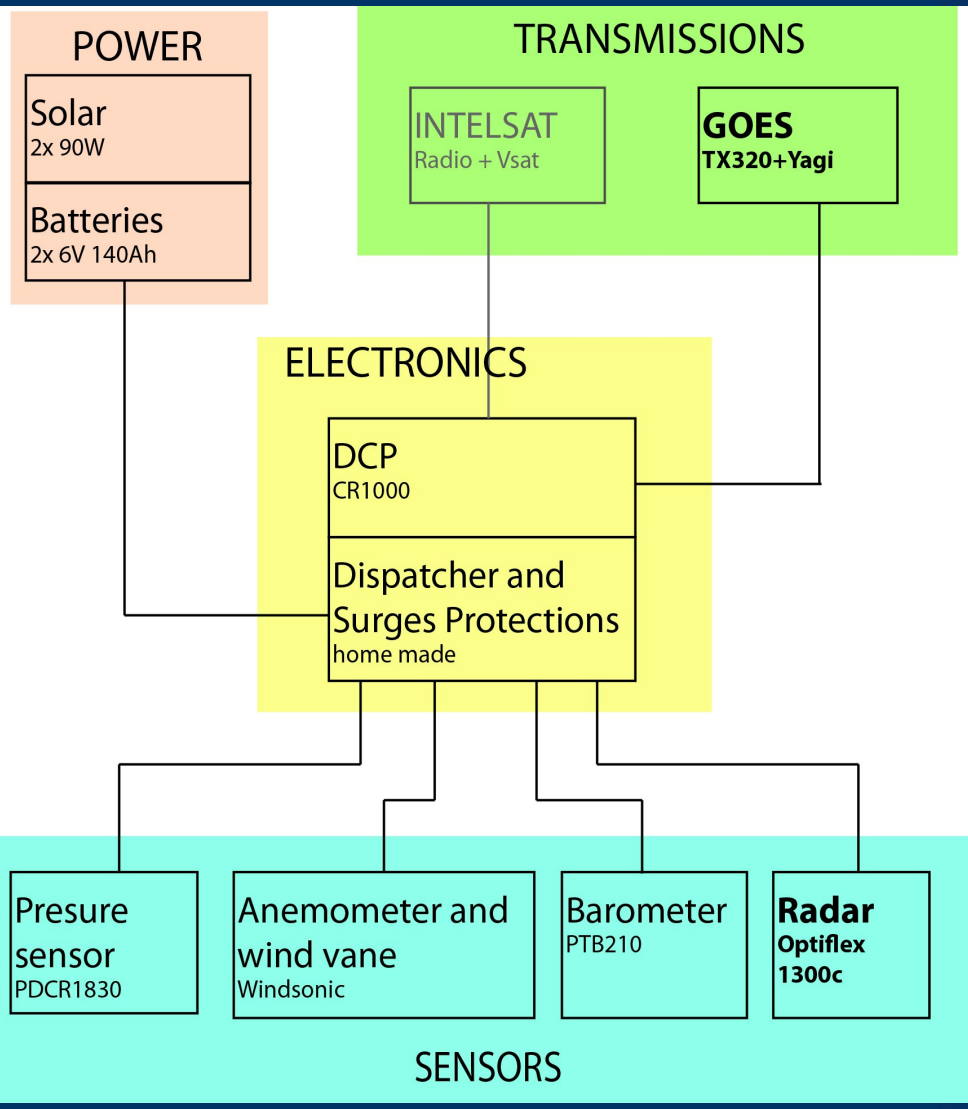


Soon



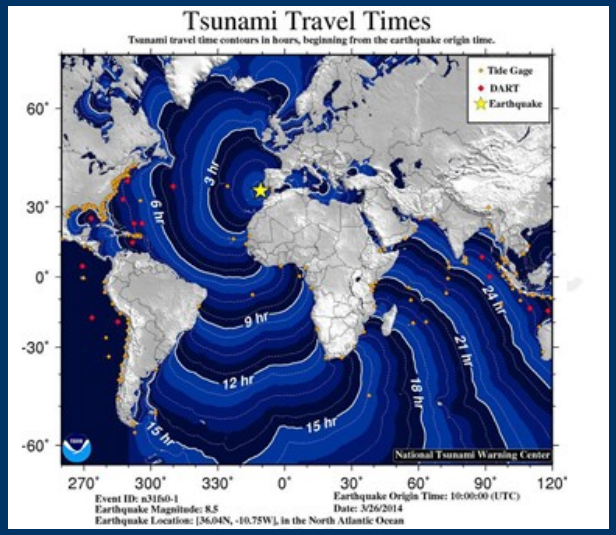
Schematic and diagram of a Sea Level Station Guadeloupe



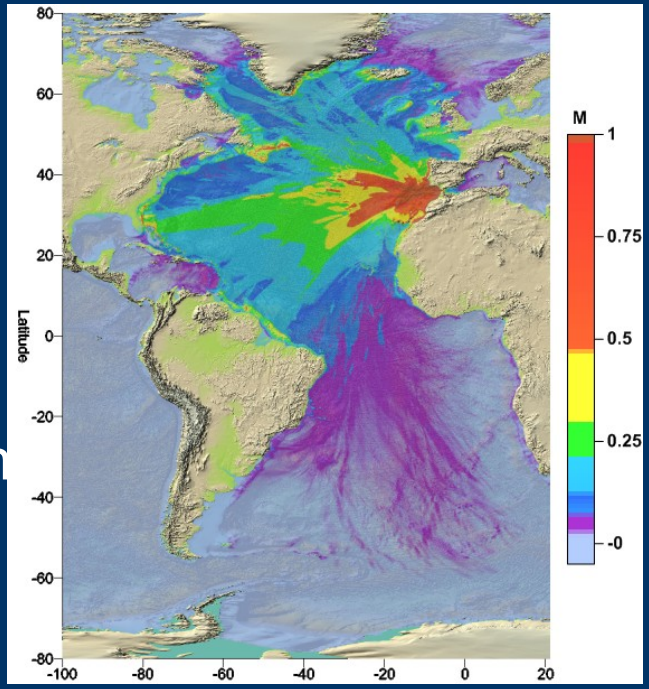


Tsunami Alerts are currently provided for Puerto Rico and the Virgin Islands by **NOAA NWS NTWC (Alaska)** and for the rest of the CARIBE EWS by **NOAA NWS PTWC (Hawaii).** In Feb. 2014 NWS established the **Caribbean Tsunami Warning Program** which supports enhanced monitoring, training and readiness. In Sept. 2013 the **Caribbean Tsunami Information Center** was established in Barbados.

CARIBE WAVE 2014



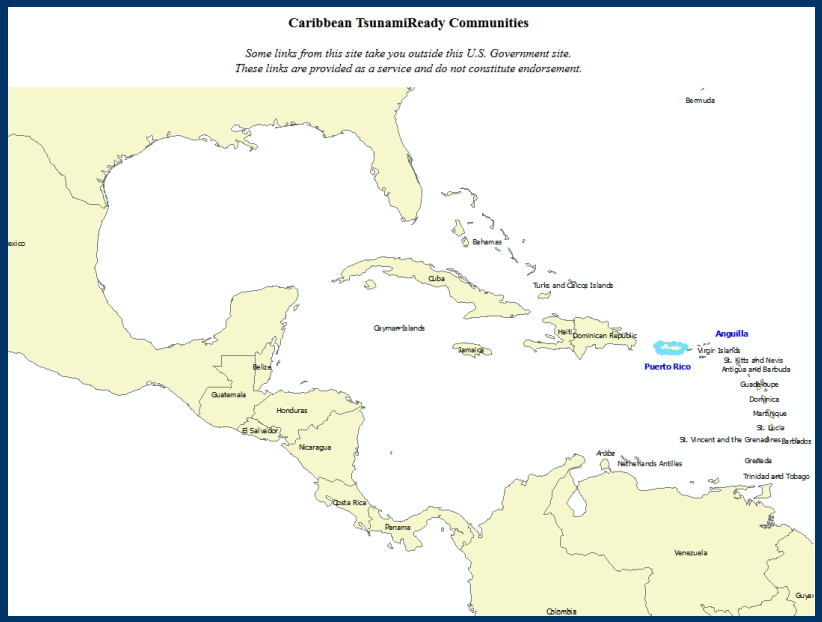
- 3rd CARIBE WAVE exercise
- Will be conducted EVERY year
- Next exercise is March 26, 2014
- 2 Sources: 1755 Lisbon and Gulf of Mexico
- Consulted with NEAMTWS and Portugal, re Scenario
- Products from NTWC and PTWC
- Continue to test Enhanced PTWC products for the region.
- Given the trans Atlantic nature, invite NEAMTWS to participate in the preparation and conduct of the exercise.



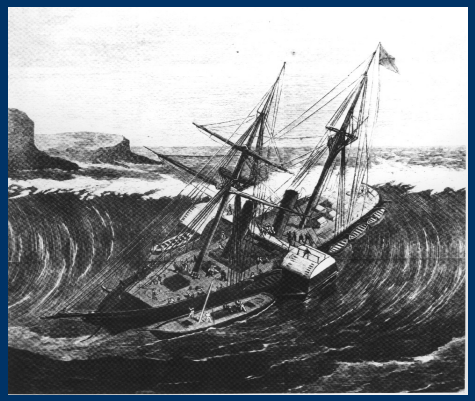
US NTWC Energy Forecast

Performance Based Recognition Program

- 94% of CARIBE EWS nations and territories have designated Tsunami Contact and Warning Focal points for the coordination and warning within their areas of responsibility.
- Currently there are **37 TsunamiReady™** communities in the Caribbean.
- A task team was established in 2013 to evaluate current community based programs and propose a program for adoption by the CARIBE EWS. Will have a recommendation for such a program for next ICG, May 2013.



Indeed significant advances have been made, but monumental tasks are still required to continue to strengthen the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions. Nevertheless, and despite the current challenging fiscal situations, in memory of the tens of thousands of lives that were lost and livelihoods that were disrupted by earthquake and tsunami disasters over the past years and knowing the 100's of thousands of lives and billions of dollars that could be lost when the next one strikes our region, the efforts must continue.



The ***infrequency of the tsunamis can't disarm us***, like was the case of the still recent tragic events of Indian Ocean and Haiti, the risk is just too high. Indeed, its full implementation will continue to require a multi-disciplinary and multi sector community of policy makers, emergency and disaster managers, educators and social and physical scientists engaged with the local stakeholders and ***supported by our governments and other donors***.

Thank you, Gracias, Merci, Dank…

Outreach and Training within CARIBE EWS

UNESCO IOC Tsunami Standard Operating Procedures Workshops (Lead: NOAA NWS ITIC Organization)

- *El Salvador, Feb. 2013*
- *Dominican Republic, Nov. 2013*
- *Barbados, Nov. 2013*
- *Mexico, 2014 (date to be finalized)*

GLOSS CARIBE EWS Sea Level Operator Training Courses (Lead: NOAA NWS Caribbean Tsunami Warning Program) :

- *Puerto Rico, Mayagüez, 2008*
- *Grenada, 2011*
- *Mexico, Merida, 2012*
- *Puerto Rico, 2014 (pending funding)*

Message from Chair of CARIBE EWS

Christa von Hillebrandt (NOAA NWS Caribbean Tsunami Warning Program, Mayaguez, PR)

There are undoubtedly opportunities for joint outreach and capacity building to address marine hazards to the maritime and hydrographic community of the wider Caribbean region and thus welcome the collaboration of the Meso American & Caribbean Sea Hydrographic Commission (MACHC) with CARIBE EWS and extends an invitation to MACHC to attend the ICG IX – May 13-15, St. Thomas, USVI