

Gijón 2010

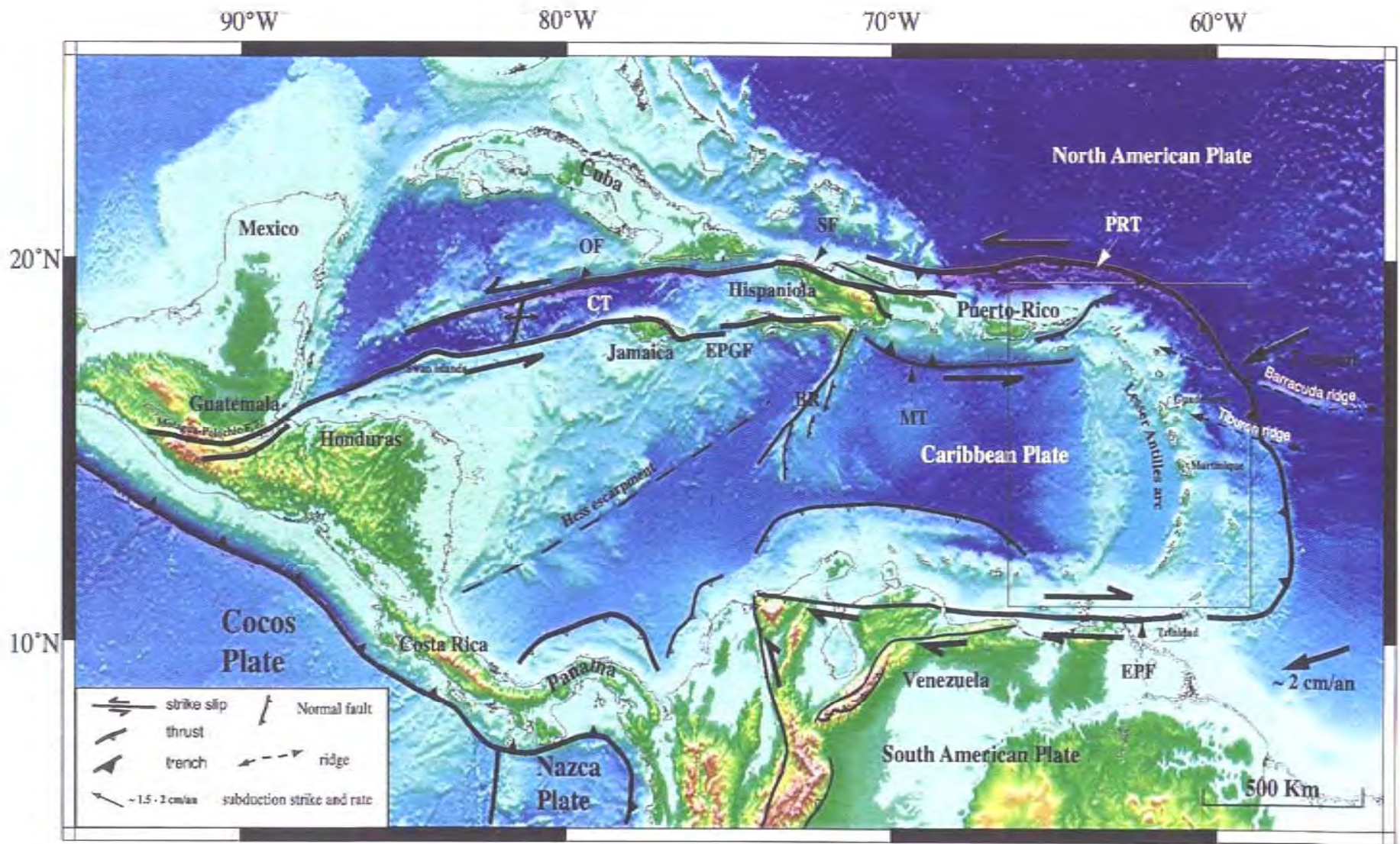


The tsunami effects forecast in the Caribbean basin

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Université des Antilles et de la Guyane
Pointe-à-Pitre, Guadeloupe (F.W.I.)

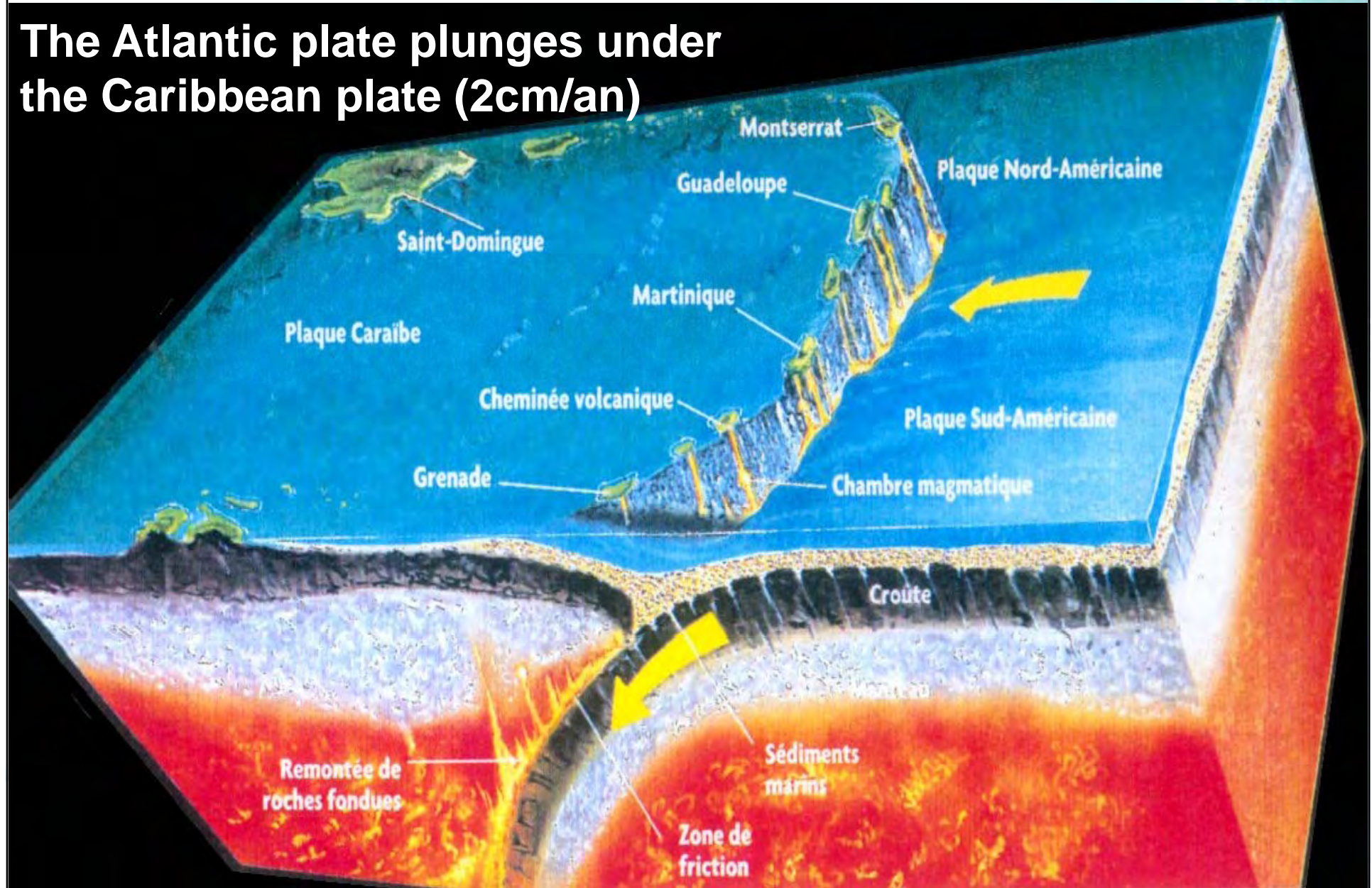


Caribbean Basin Geodynamics

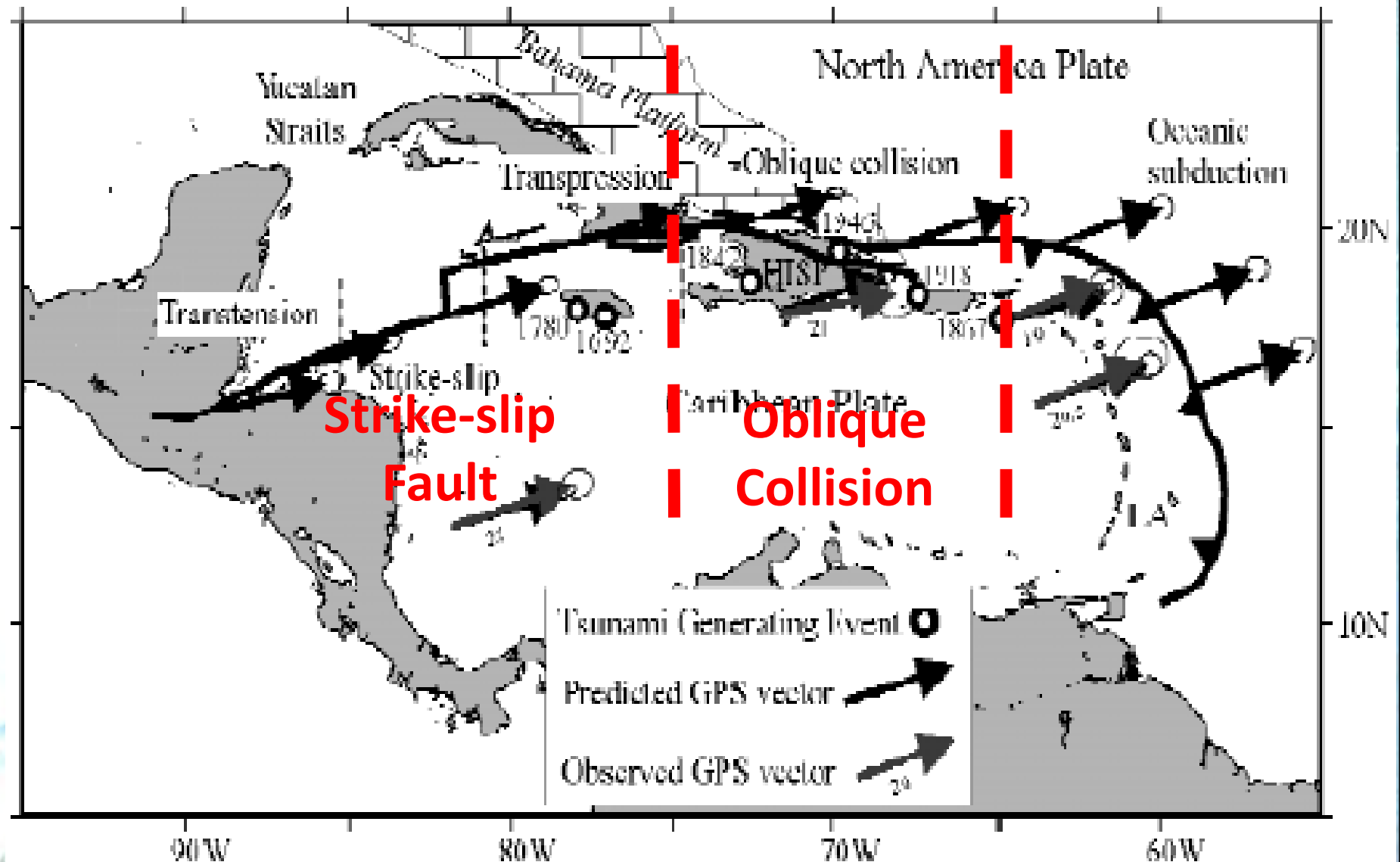


Subduction zone in the Eastern Arc

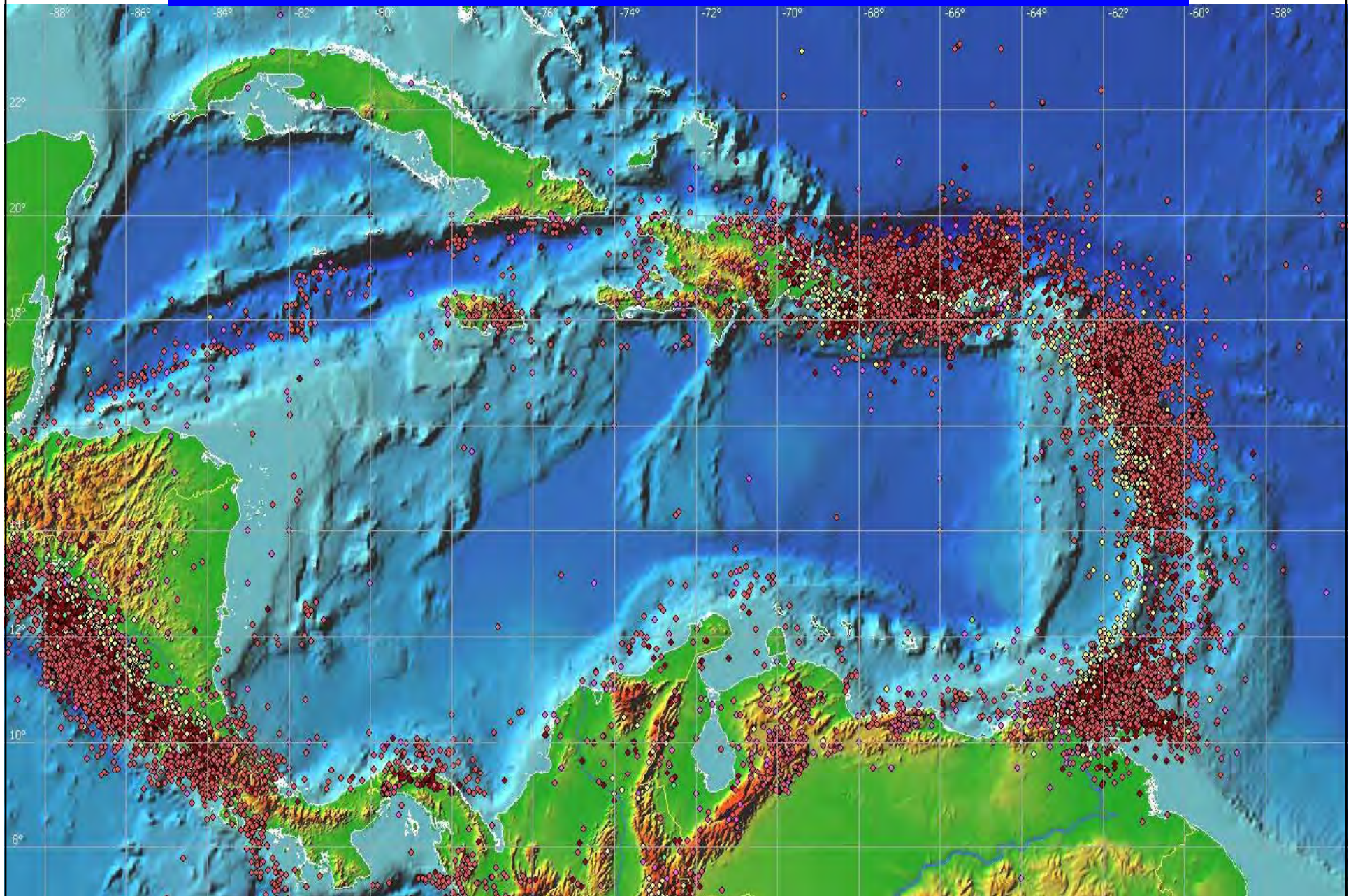
The Atlantic plate plunges under the Caribbean plate (2cm/an)



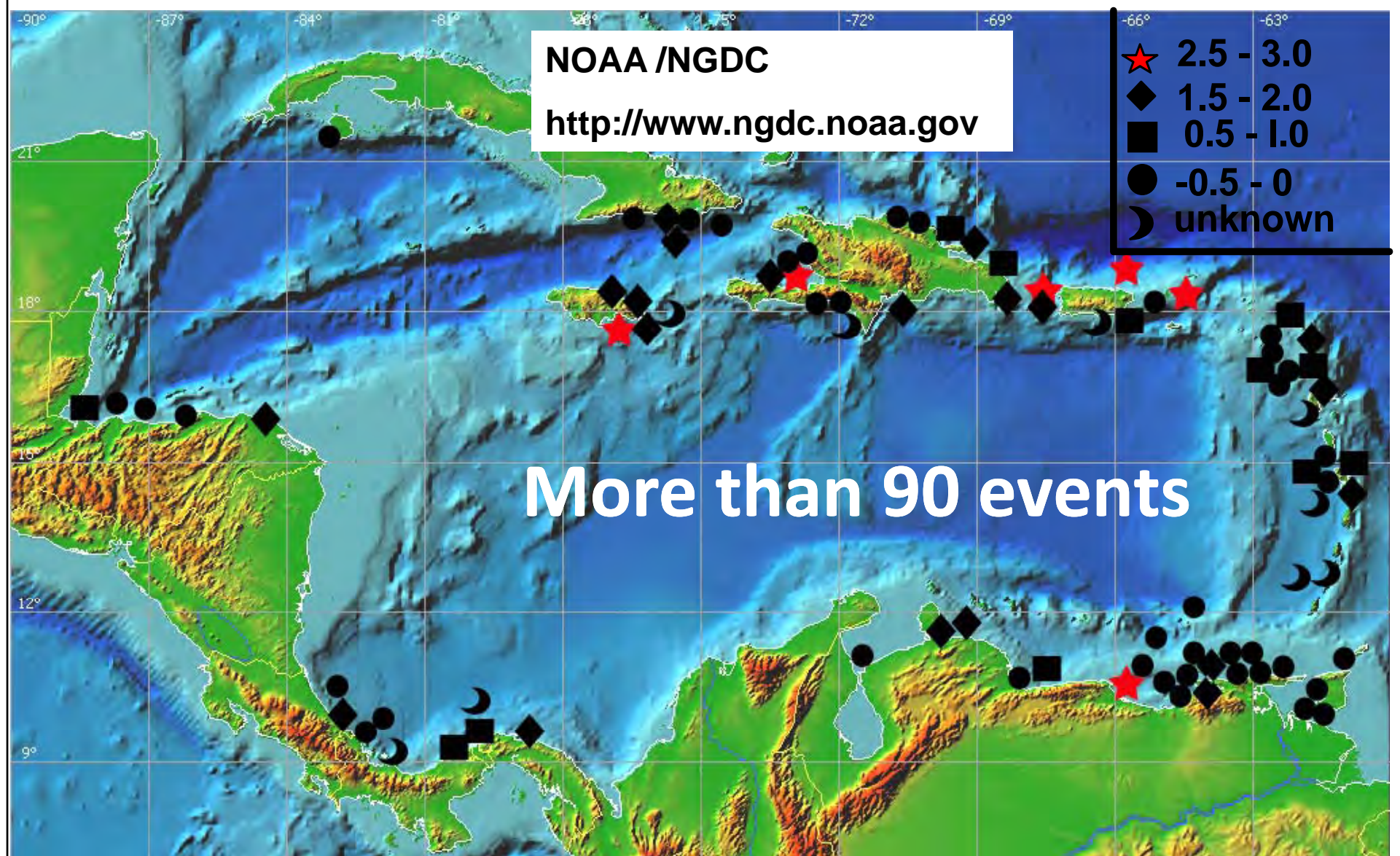
North plate Plaque Nord América-Caribbean

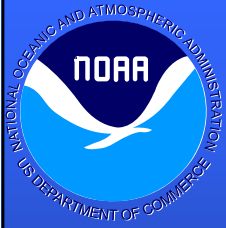


Seismicity in the Caribbean

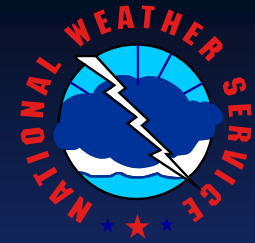


Historical Tsunami Distribution in the Caribbean : 1498 - 2010





Caribbean Tsunami Fatalities in the last 165 Years



Date	Place	Fatalities
1692	Jamaica	2000
1842	Haiti	300+
1853	Venezuela	600+
1867	Virgin Islands	23
1882	Panama	75+
1906	Jamaica	500
1918	Puerto Rico	140
1946	Dominican Republic(1)	1790
1946	Dominican Republic(2)	75
TOTAL		5503 +

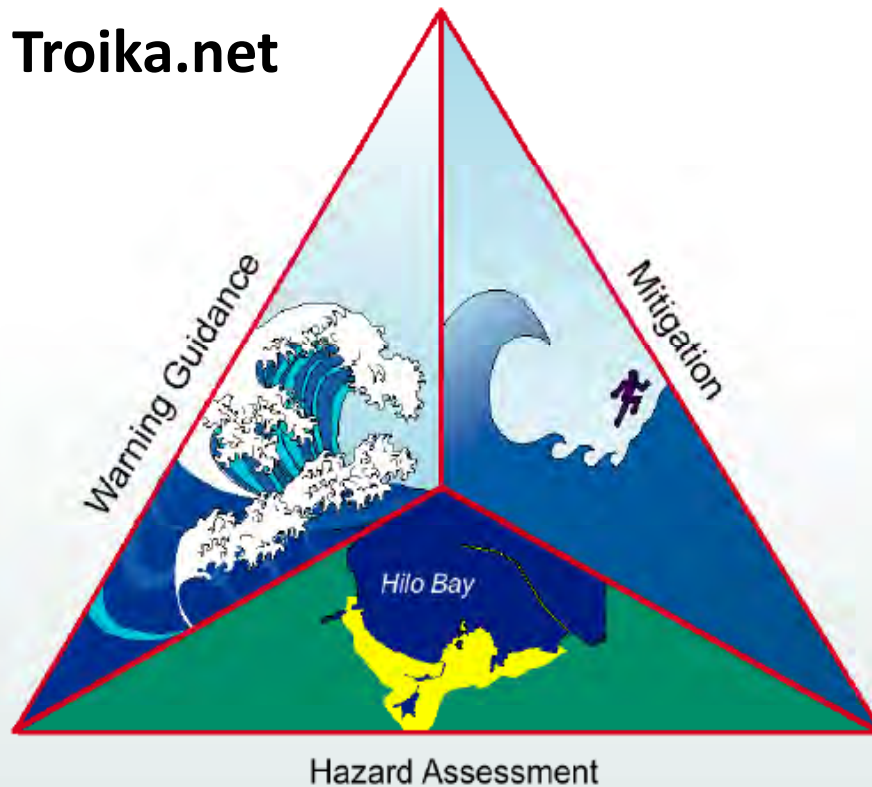
Statistics from *Caribbean Tsunamis, A 500-Year History from 1498-1998* by Karen Fay O'Loughlin and James F. Lander (ISBN 1-4020-1717-0 2003 edition) and *Tsunamis of the Eastern US*, NGDC, 2002 Science of Tsunami Hazards, vol 20, #3, pg 120

<http://www.srh.noaa.gov>

Lessons from Indian Ocean Tsunami and PTWC

Tsunami : Reduction of Impact through 3 Keys Actions

Troika.net



Caribbean Tsunami Warning System

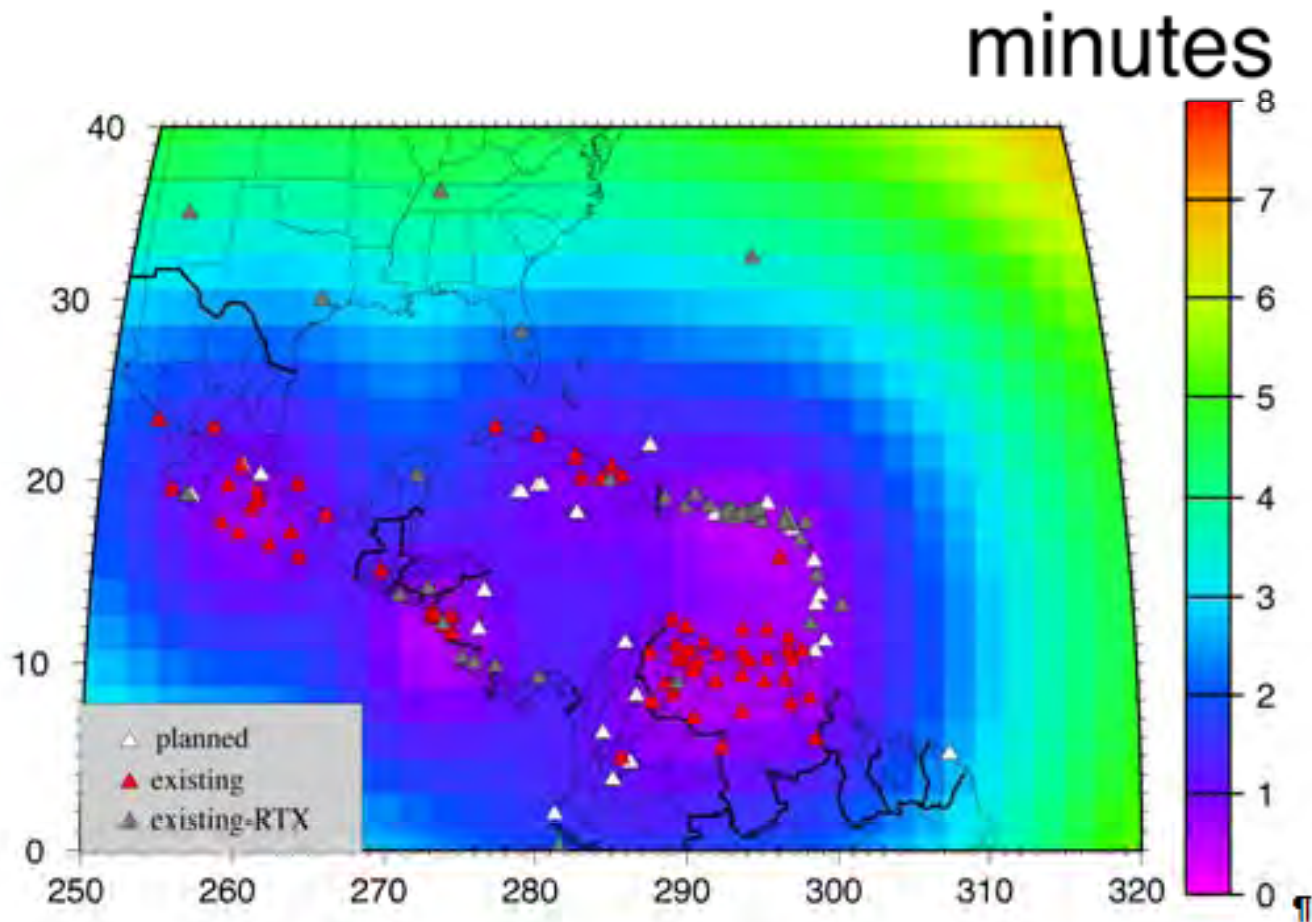
2006 in Barbados : Creation of the IOC Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions, ICG/CARIBE EWS (28 members state)

2010 : Fith session of the IOC-ICG/CARIBE EWS-V in Managua, Nicaragua, March 2010

Nearby the embodiment (2012) of the CARIBE EWS :

ICG/CARIBE EWS-V has adopted the creation of a Caribbean Tsunami Warning Program (CTWP) accommodated by Puerto Rico, before the the creation of a regional tsunami warning center

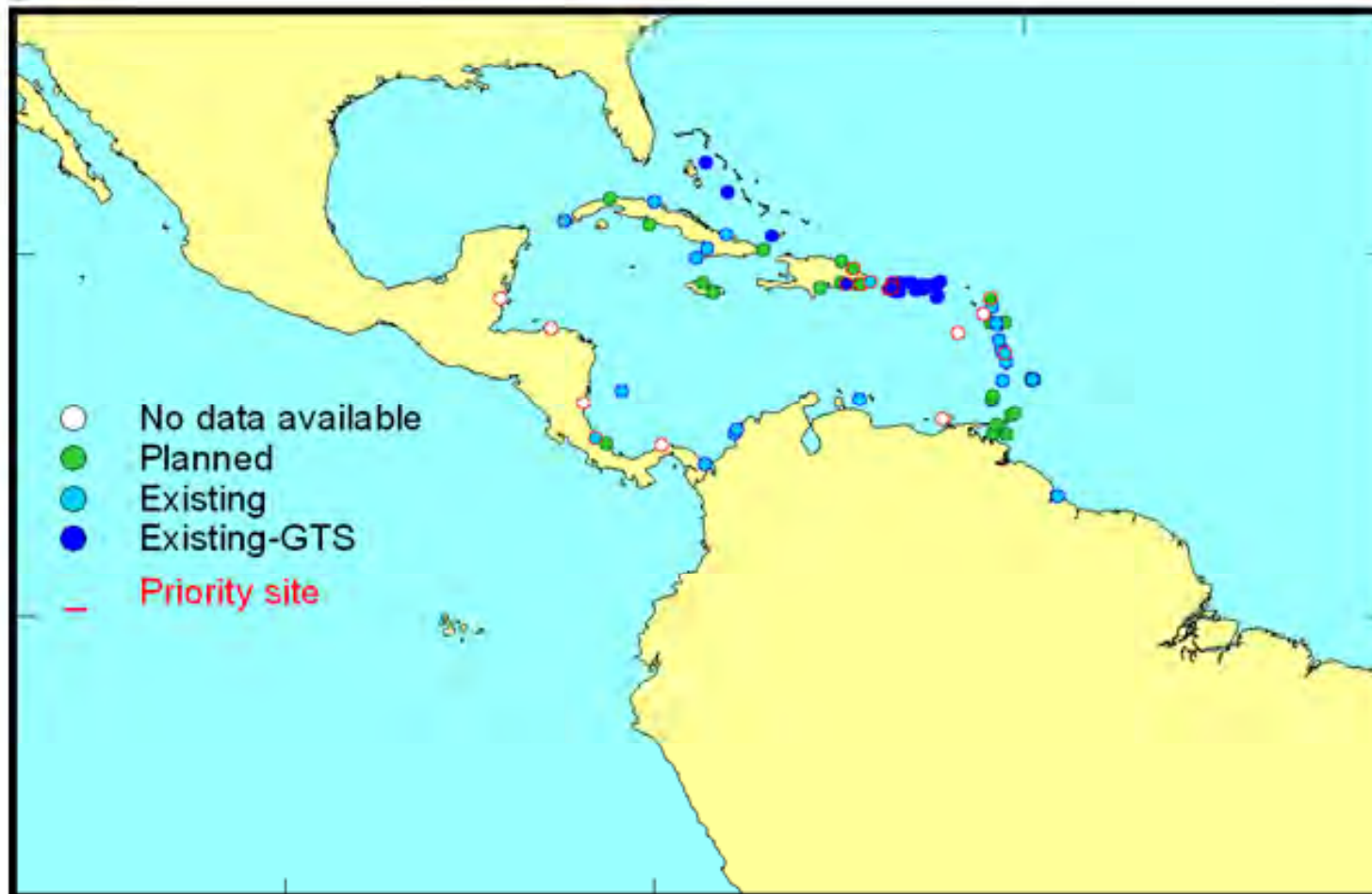
Strengthen of the caribbean seismological monitoring network



The map shows the improvement after adding planned and other Caribbean stations currently operational into the CTWS monitoring network. The Network detection time is reduced by 1-3.75 minutes throughout the region. ¶

Strengthen of the caribbean sea-level monitoring network

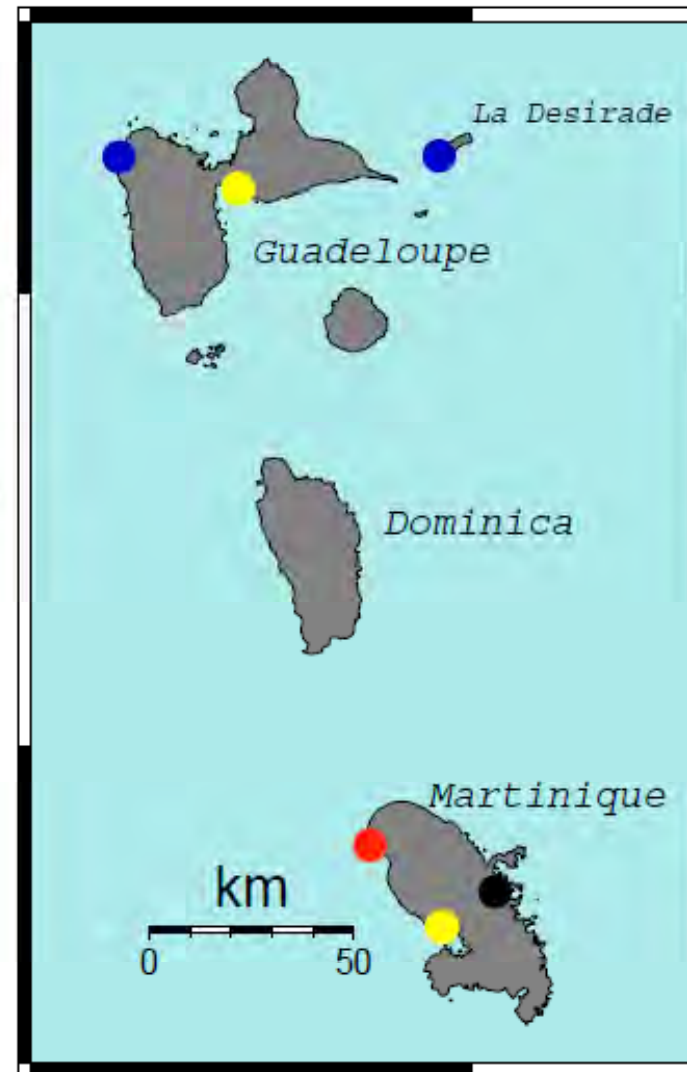
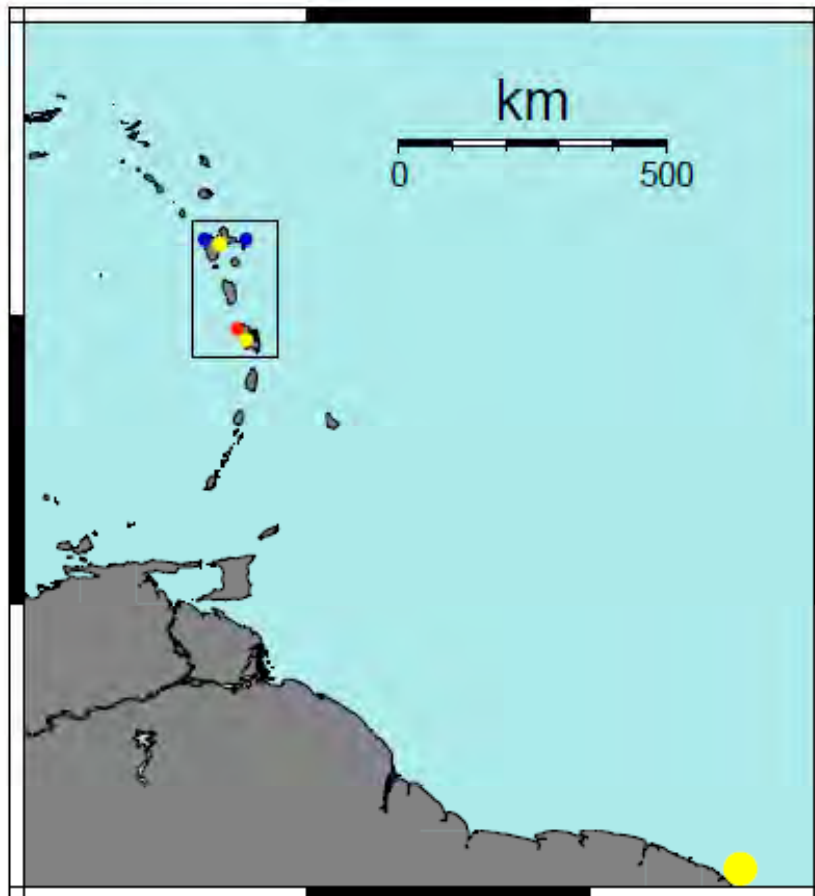
Harmonization of the network for a real time acquisition mode for all the stations



Contribution of F.W.I. (Martinique Guadeloupe)

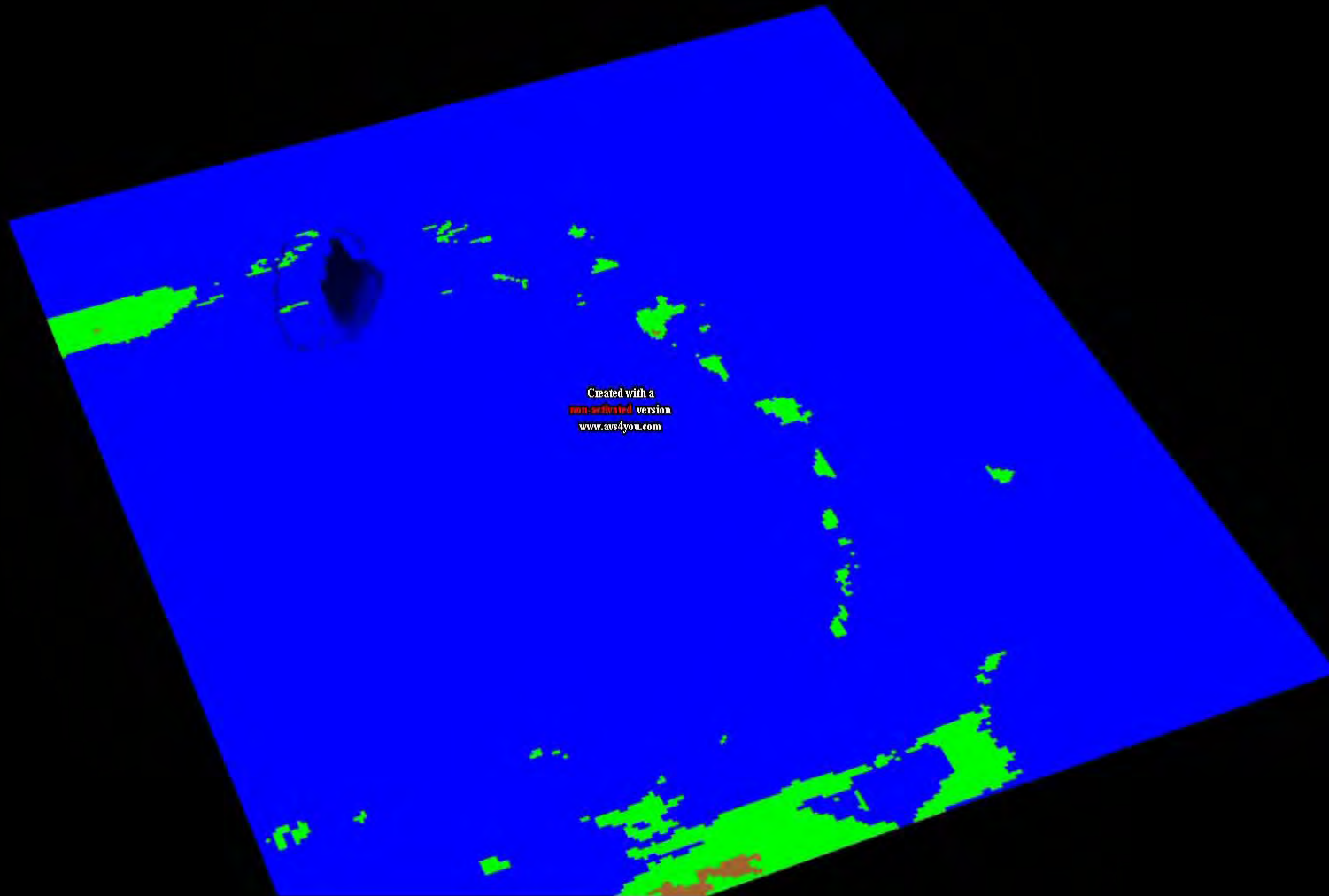
6 new sea-level DART stations funded by the European project INTERREG IV

- open/no xmit (planned 2011) – SHOM
- open/no xmit (planned 2011) – CGMA
- planned (2010) funded/no xmit (planned 2010) – IPGP
- planned 2011 – CGMA

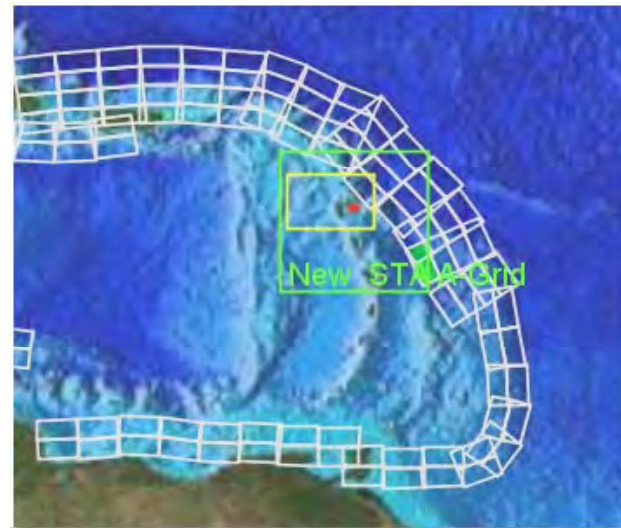
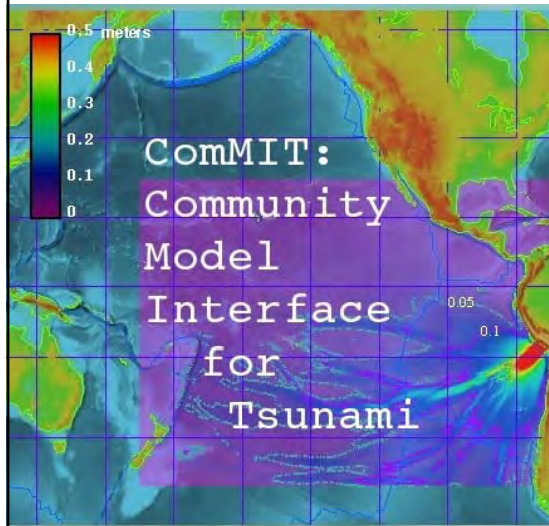


Hazard Assessment

1867 Virgin Tsunami with numerical model TUNAMI



Hazard Assessment

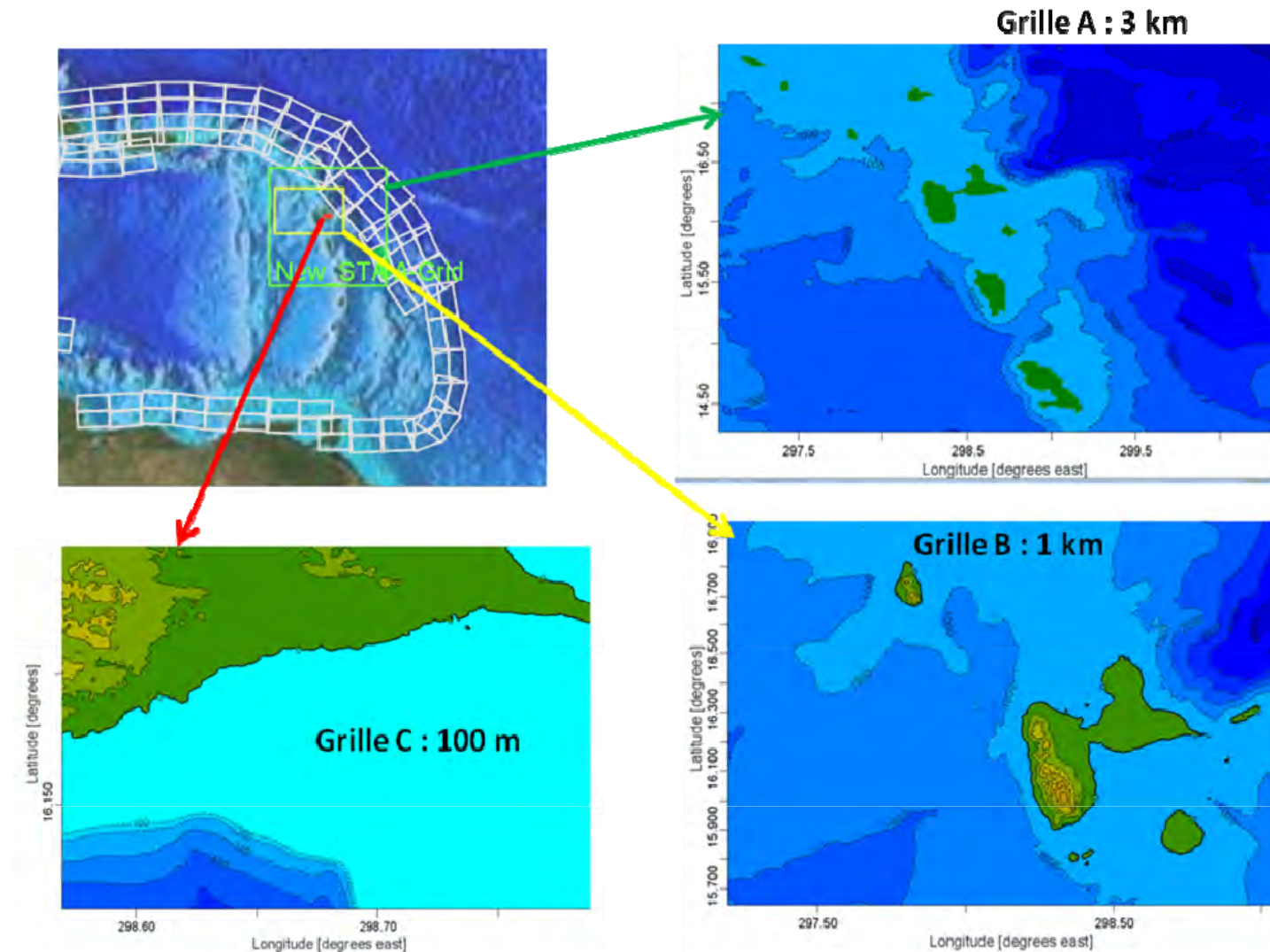


Numerical simulation of potential tsunamis from subduction zones

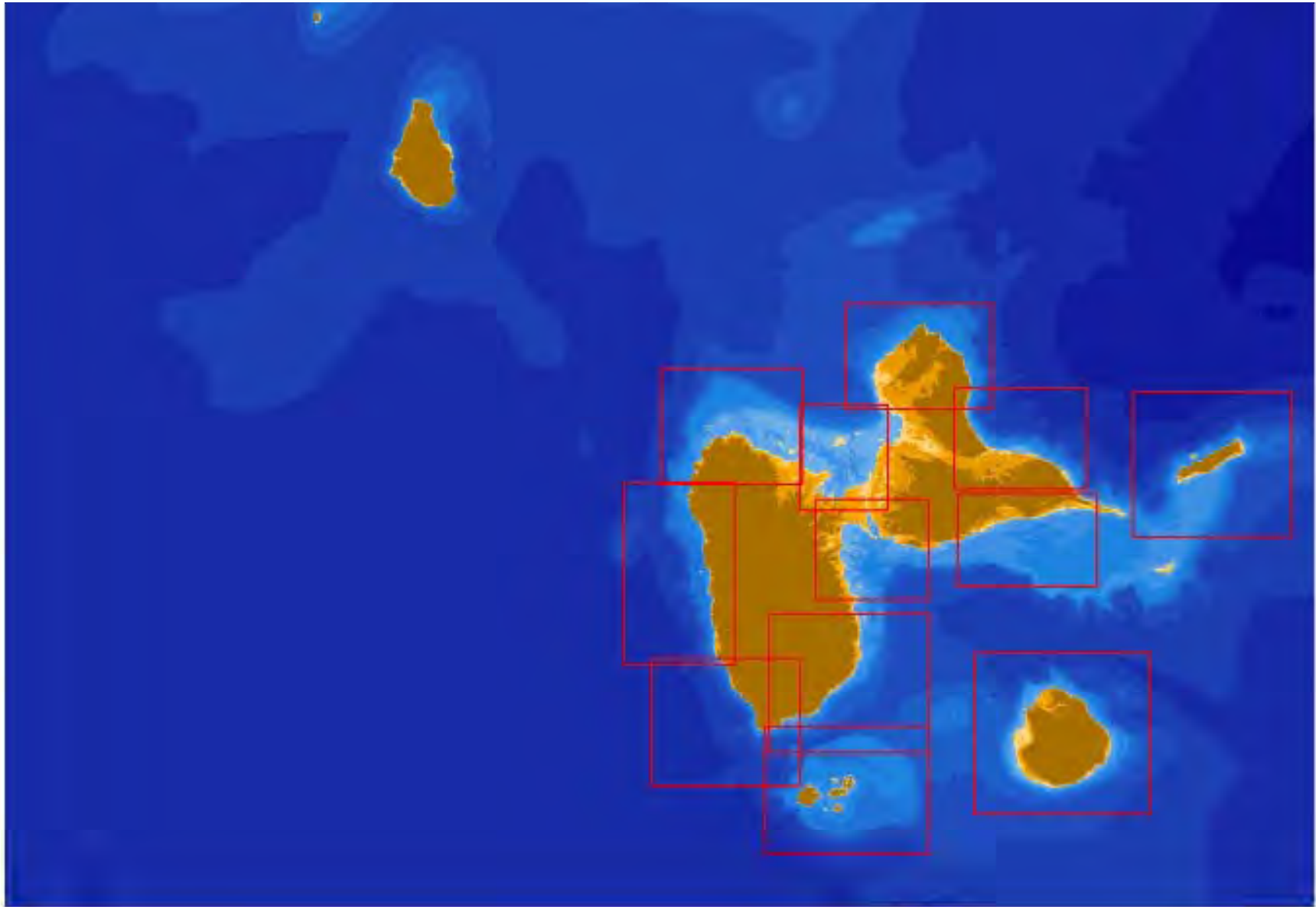
A Community Model Interface for Tsunami, ComMIT, has been developed and it is available for its use by IOC ICG /CARIBE EWS (Funding provided by USAID to NOAA/PMEL)

Examples of numerical simulation with ComMIT for Guadeloupe

Nested grids : A, B, C



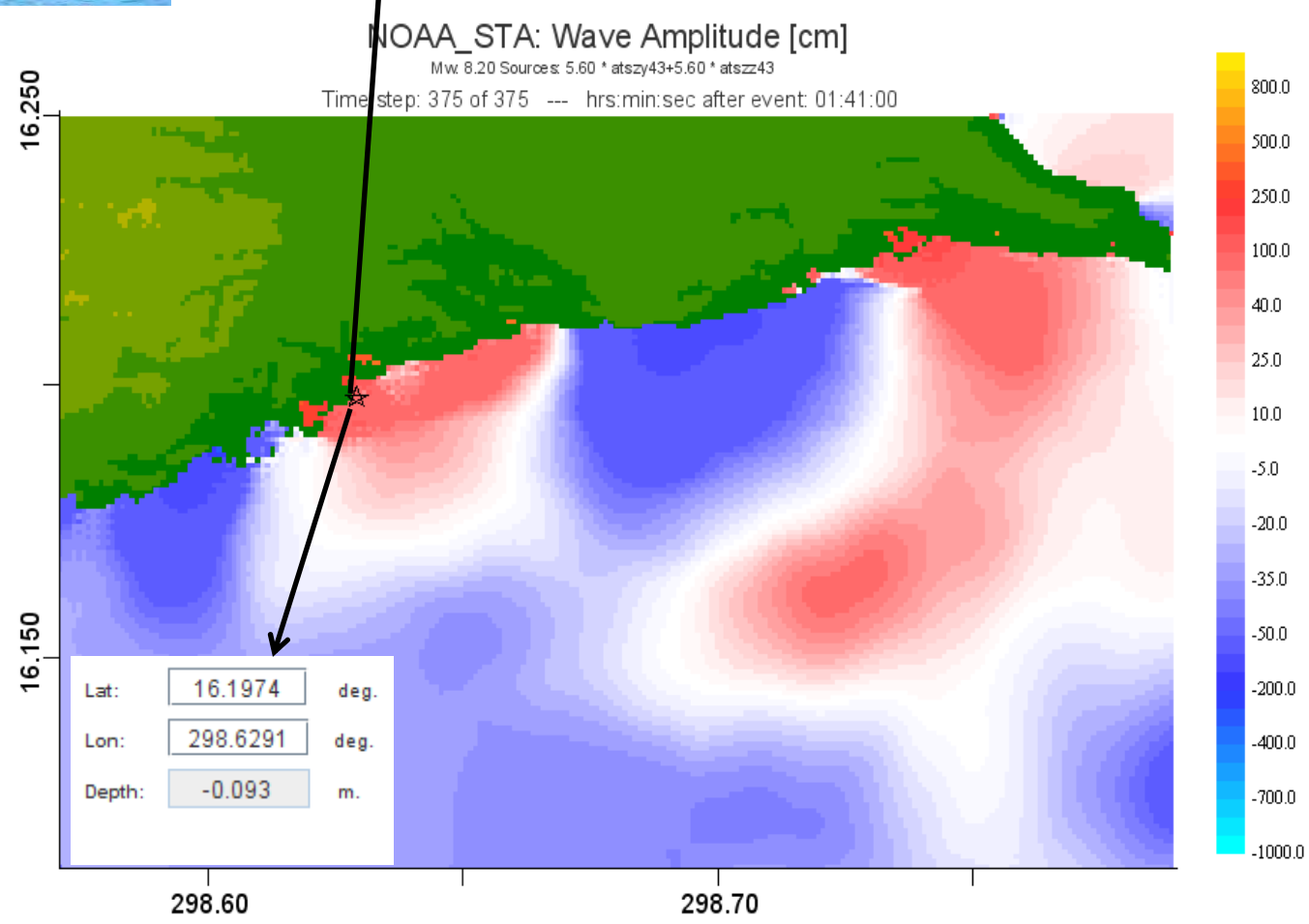
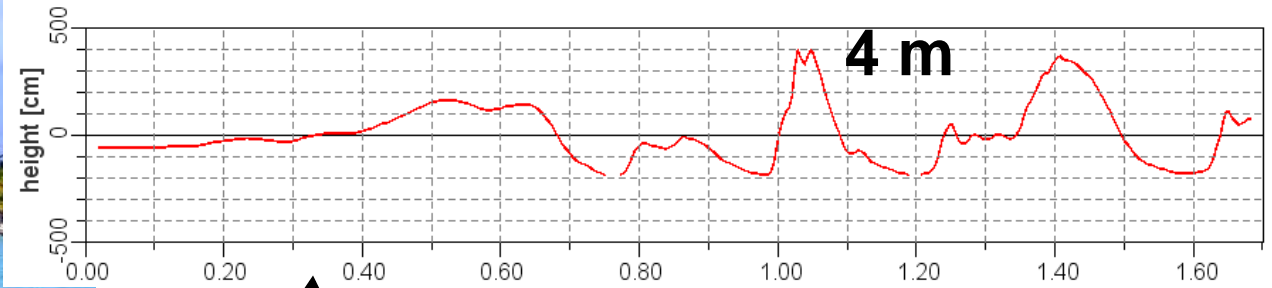
12 C grids around Guadeloupe





Beach of Sainte Anne

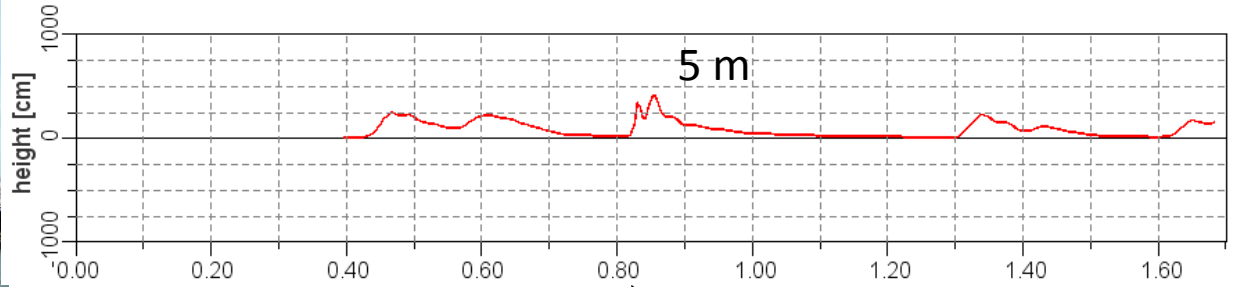
**Arrival time
25 mn**





Marina of St. François

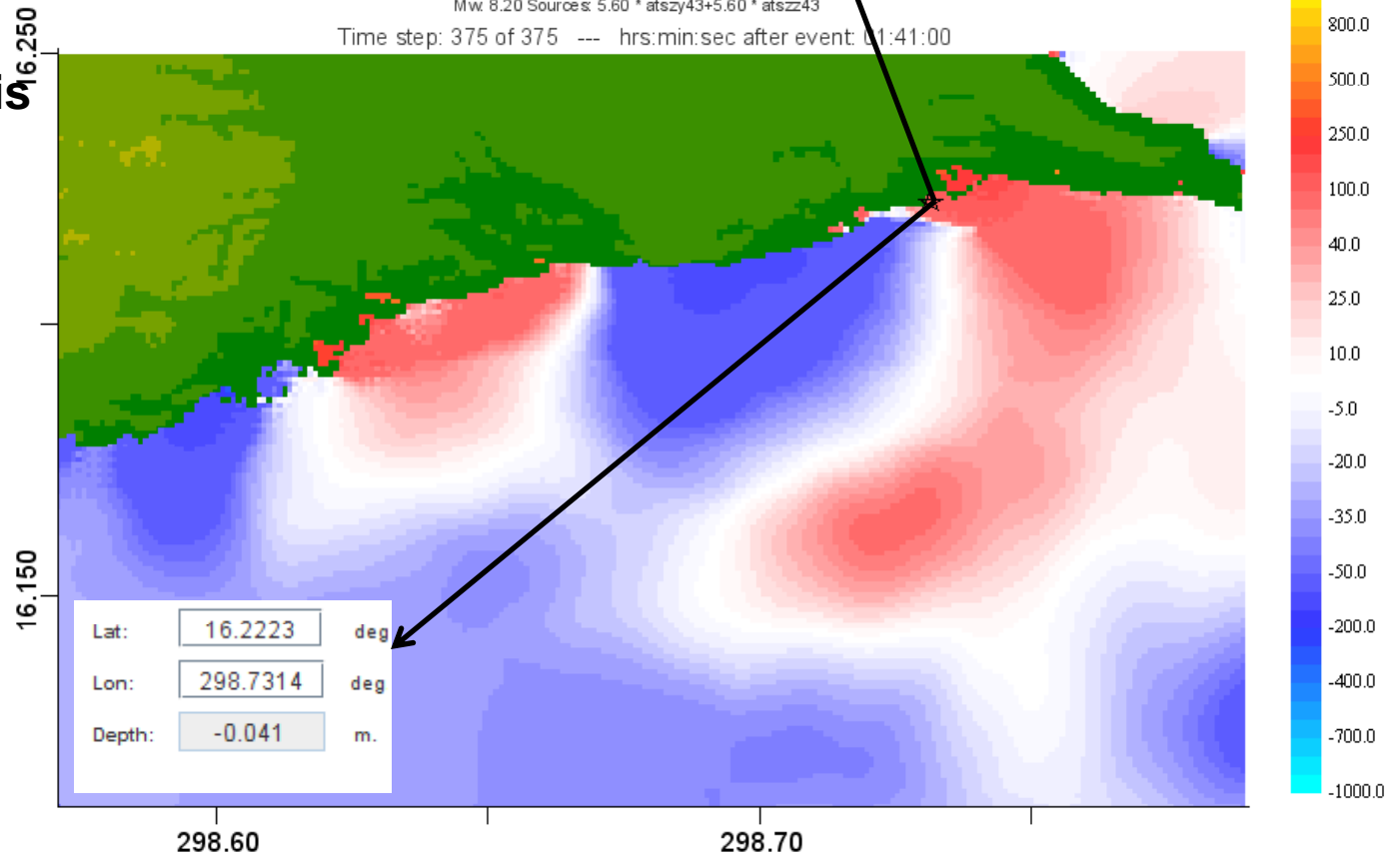
Arrival time
25 mn



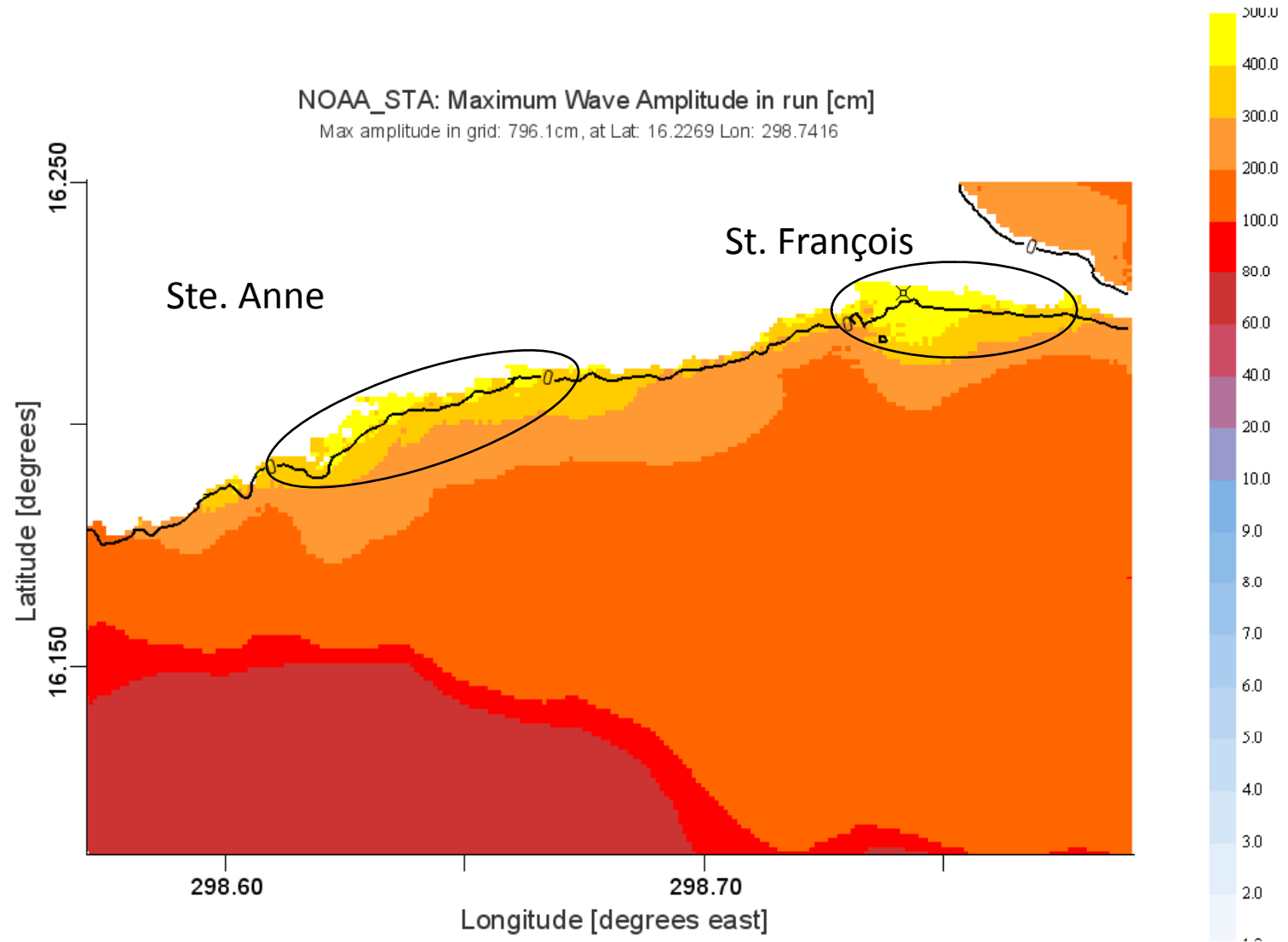
NOAA_STA: Wave Amplitude [cm]

Mw: 8.20 Sources: 5.60 * atszy43+5.60 * atsz43

Time step: 375 of 375 --- hrs:min:sec after event: 01:41:00



Inundation Zone in Ste. Anne – St. François



Hazard Assessment

A scientific Workshop Caribbean Wave I, was organised in Guadeloupe in December 2008, funded by Guadeloupe and UNESCO, with the participation of 15 Caribbean countries

A ComMIT Training Workshop for the member states is planned by the ICG/CARIBE in Mayaguez, United States, 23 - 27 August 2010

Hazard Assessment needs of more survey data

More survey data : bathymetry, sand deposits, interviews, paleo tsunami investigation, etc.

➔ More caribbean cooperation and International teams

Lidar campaigns (IGN for land cover and SHOM for shallow water) started this year in Guadeloupe and Martinique to obtain high resolution topography, coastlines and bathymetry (0-30m) (Funded by FEDER)

The extension of this project to the other islands of the Lesser Antilles is under study under the initiative of Guadeloupe (through a FEDER funding)

Migation

- **Inundation maps and evacuation routes (research works)**
- **Building codes**
- **Land use management practices**
- **« Multi Hazards » approach**

Migation

- **Puerto Rico Tsunami Ready Summit, May 10-14, 2010**

participation of local, national and Caribbean stakeholders. The Summit focused on empowering the local communities to become or strengthen their tsunami readiness and accelerate the number of municipalities that meet the TsunamiReady guidelines both in Puerto Rico and in the Caribbean.

- **Workshop CARIBE WAVE 2011 : Exercice of a tsunami simulation in the Caribbean**

Thank you for your attention