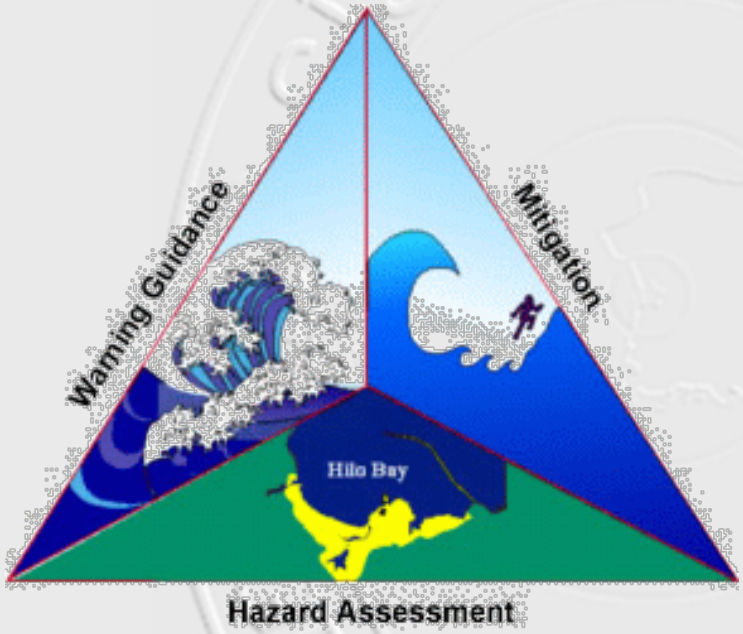
THE PUERTO RICO AND THE VIRGIN ISLANDS MMS/USGS "NEEDS"



Victor A. Huérfano

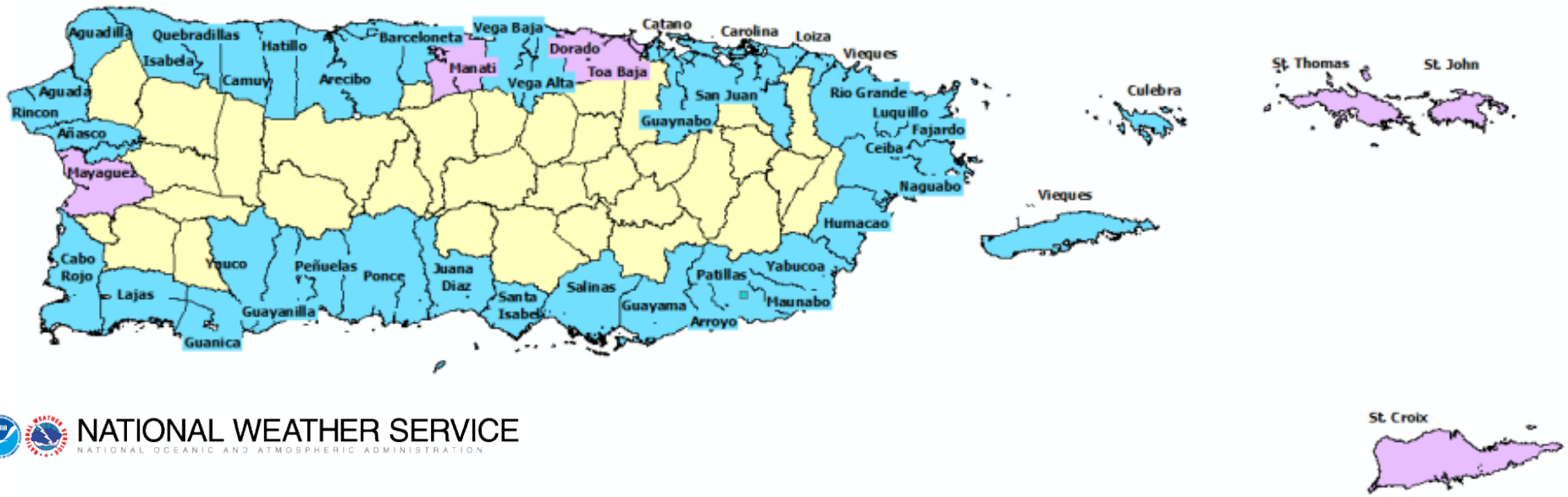
Roy Watlington

February/2016
Boulder, CO

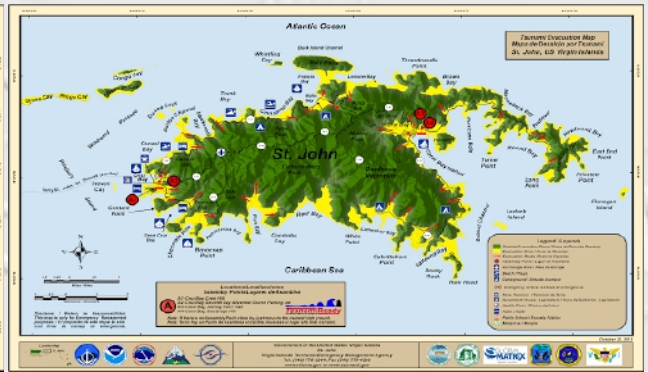
Background…

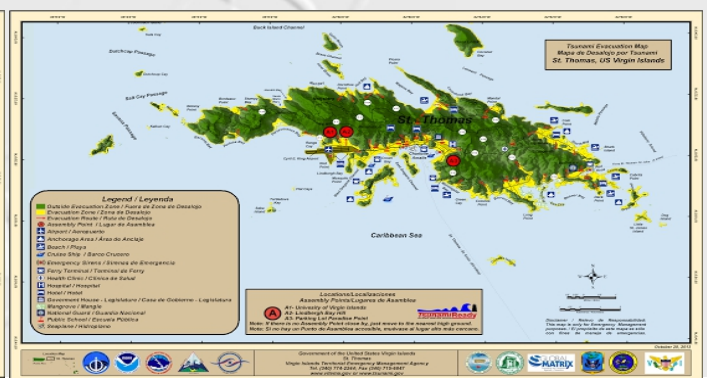
TsunamiReady® in Puerto Rico/U.S. Virgin Islands

47 TsunamiReady Communities*:
44 Municipios (Puerto Rico), 3 Islands (U.S. Virgin Islands)

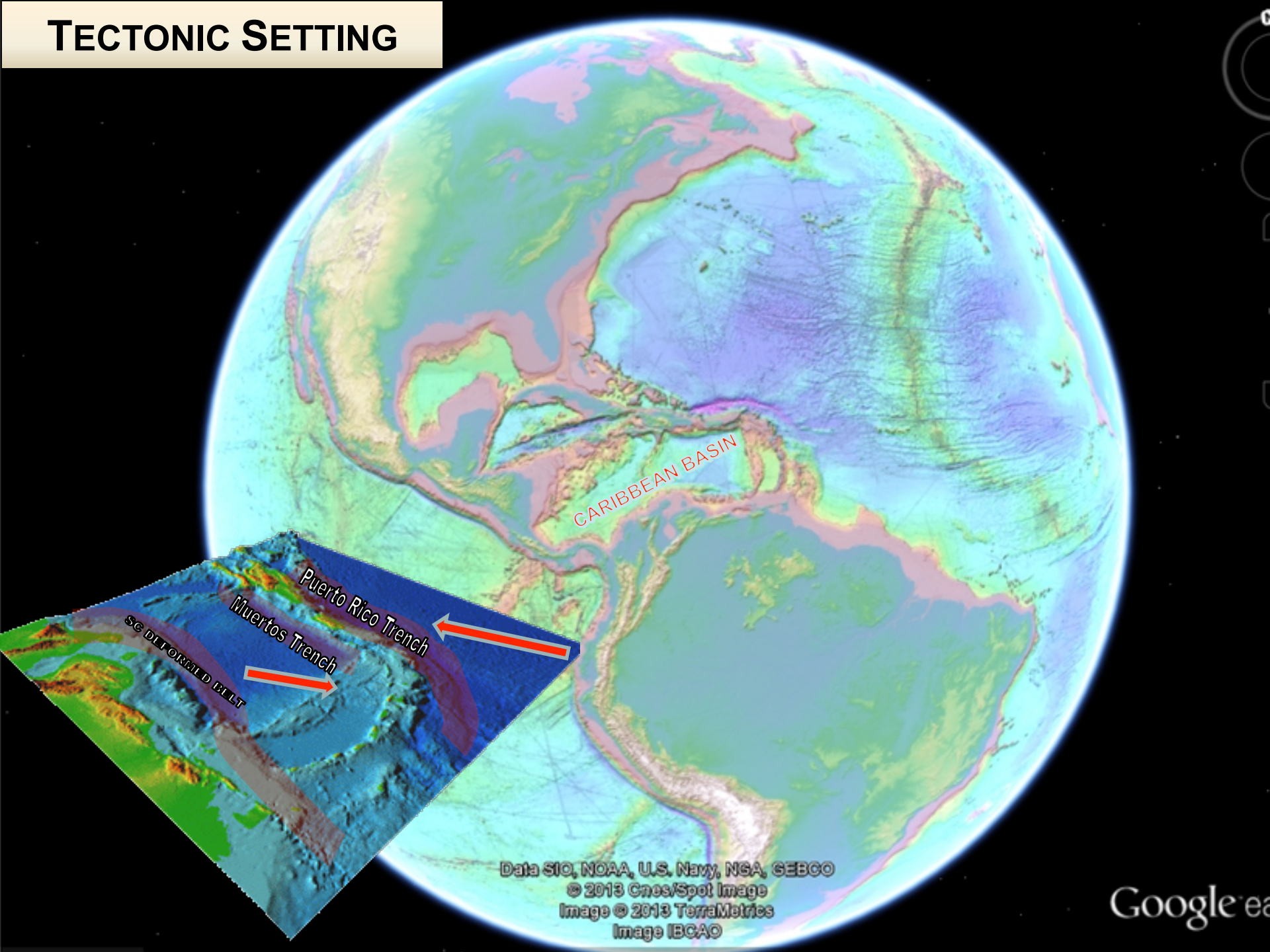


NATIONAL WEATHER SERVICE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

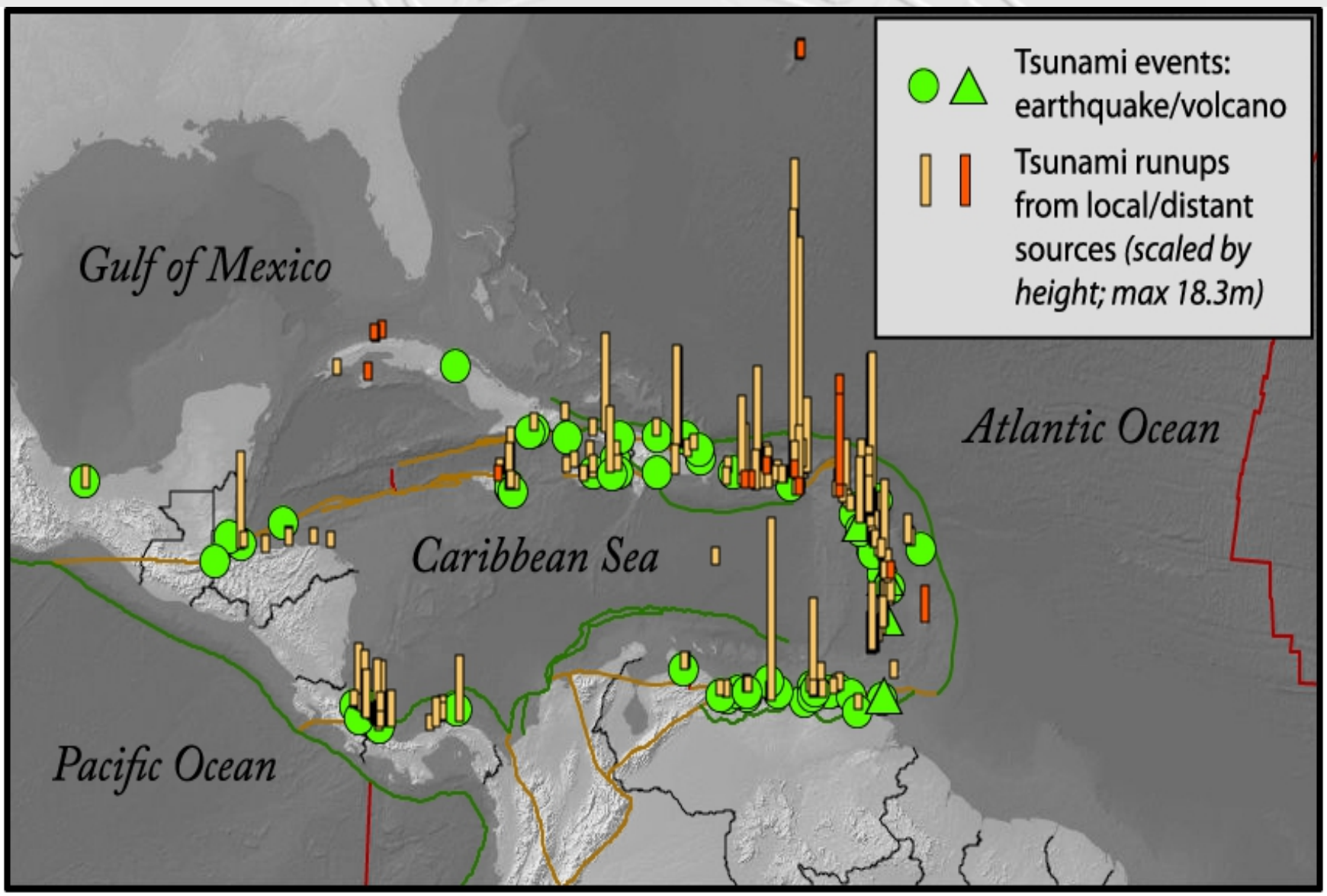


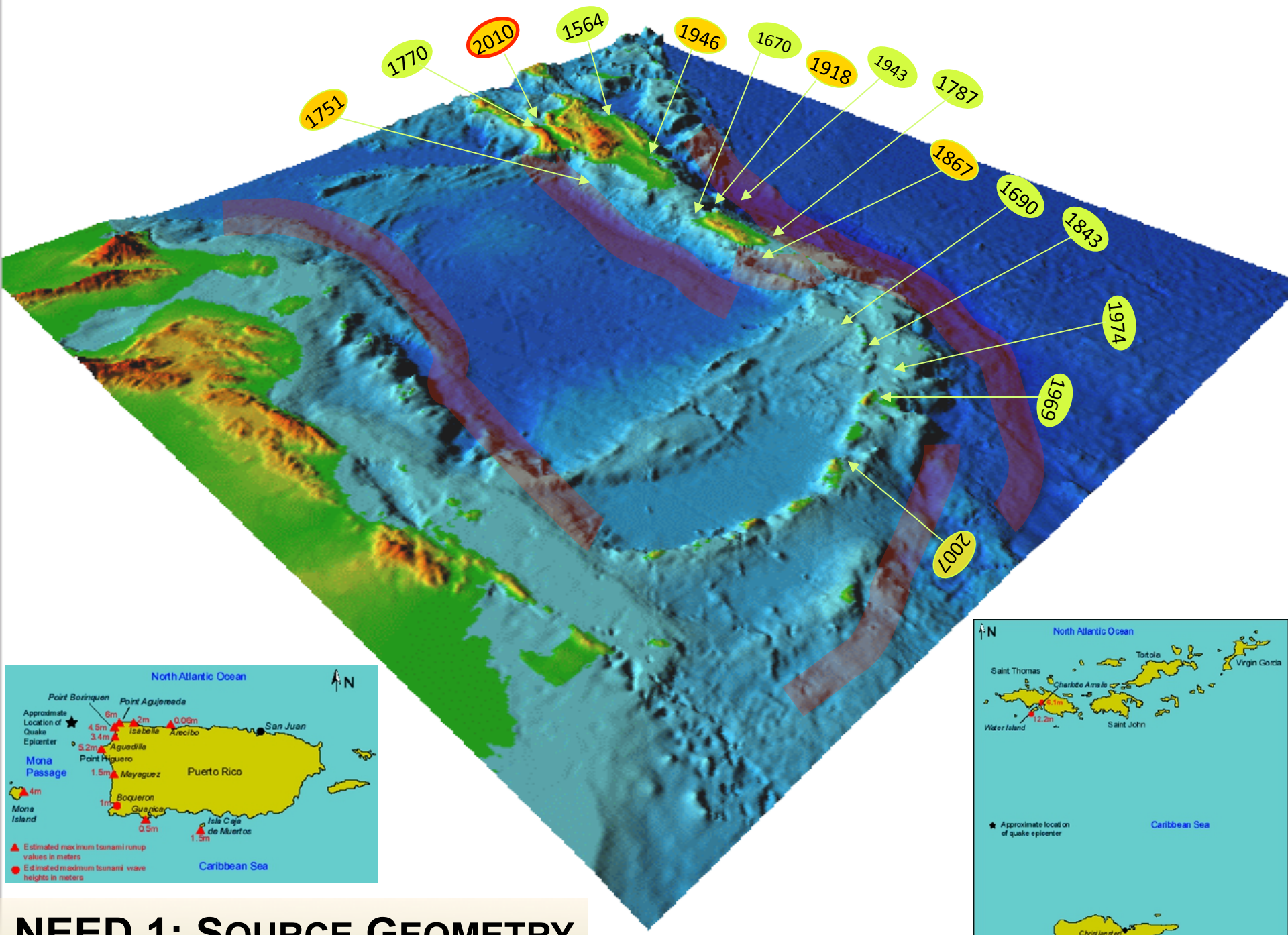


TECTONIC SETTING



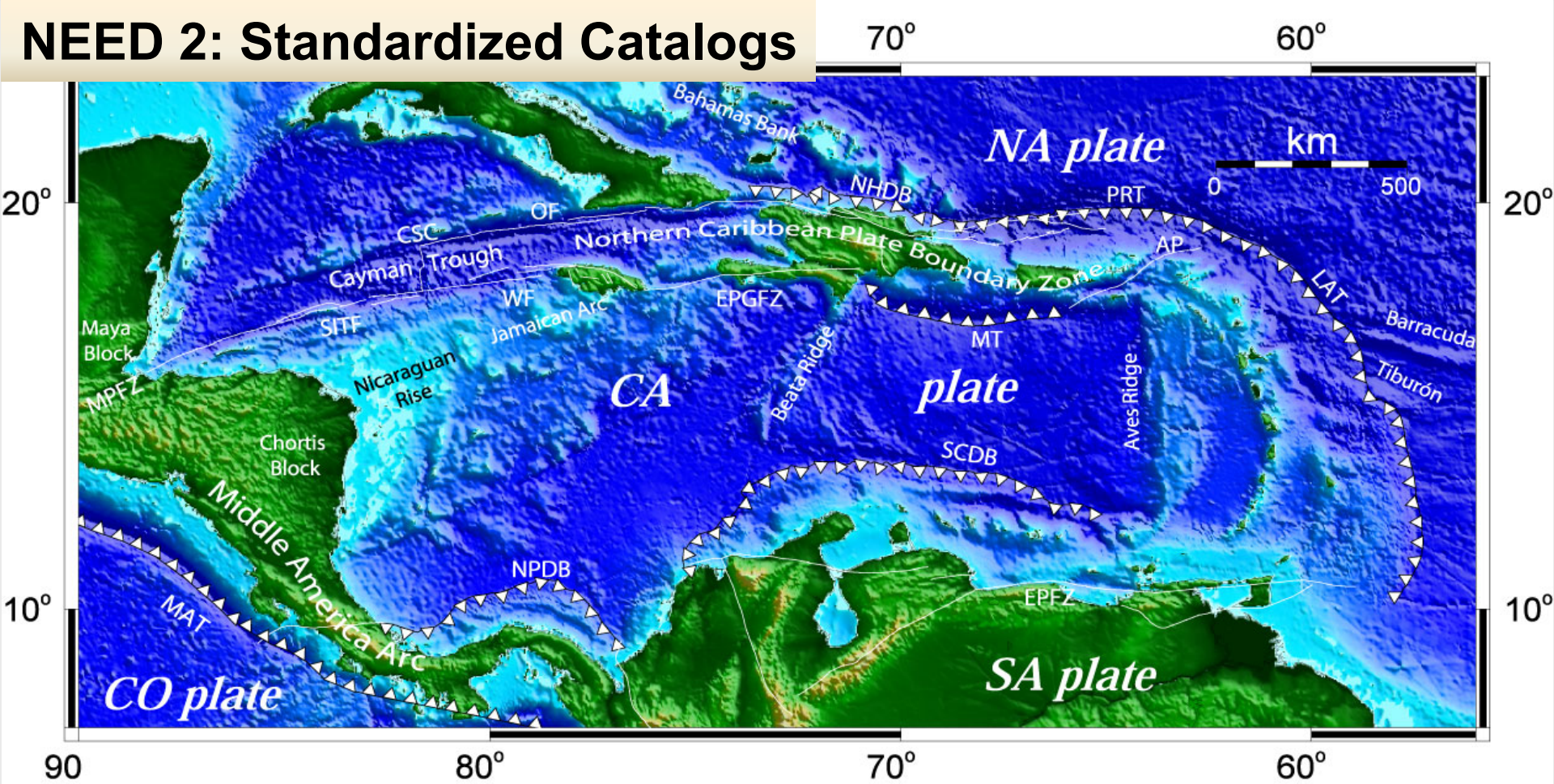
Historical Earthquakes and Tsunamis

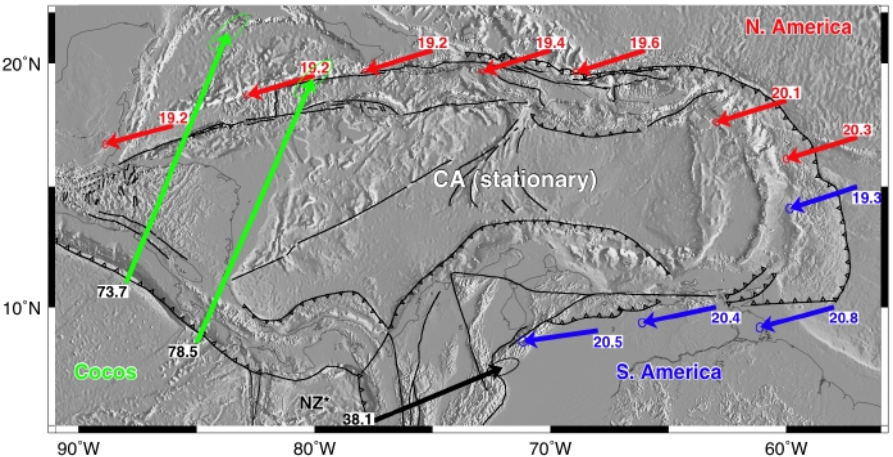


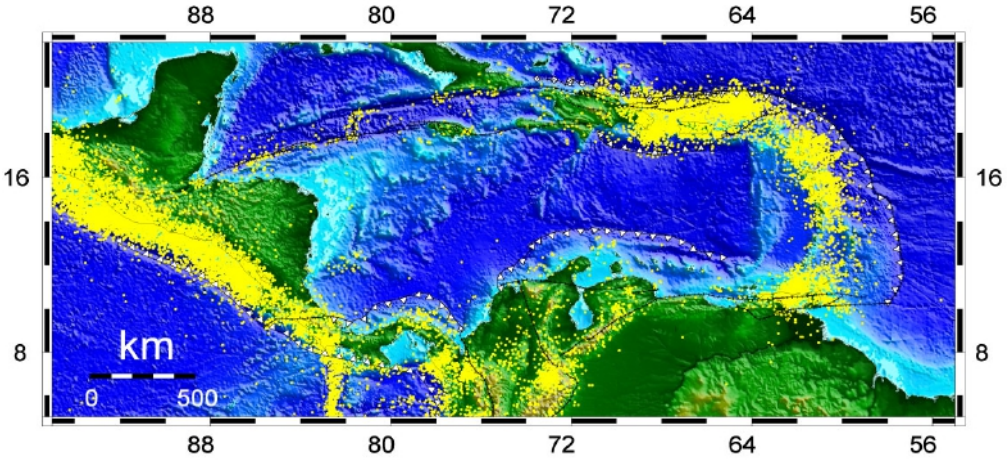


NEED 1: SOURCE GEOMETRY

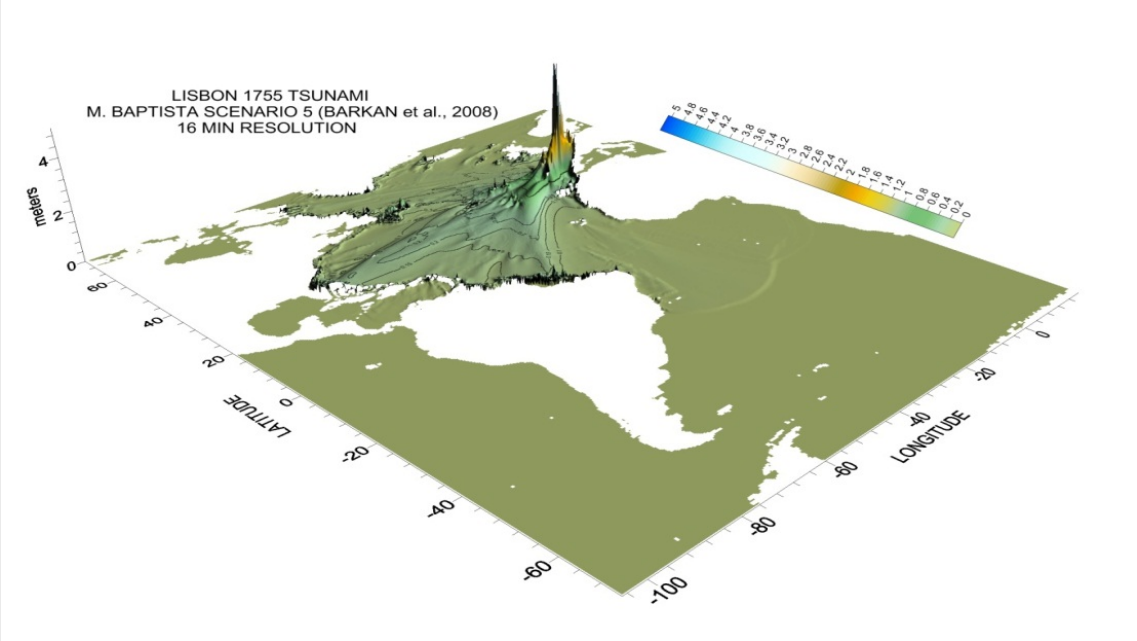
NEED 2: Standardized Catalogs

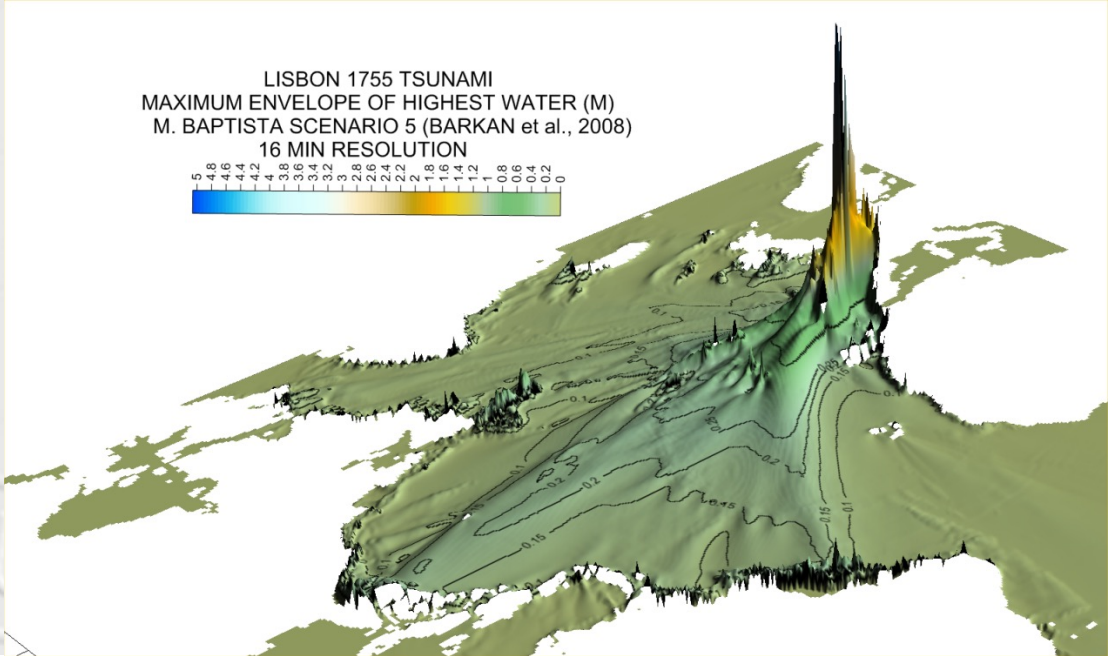




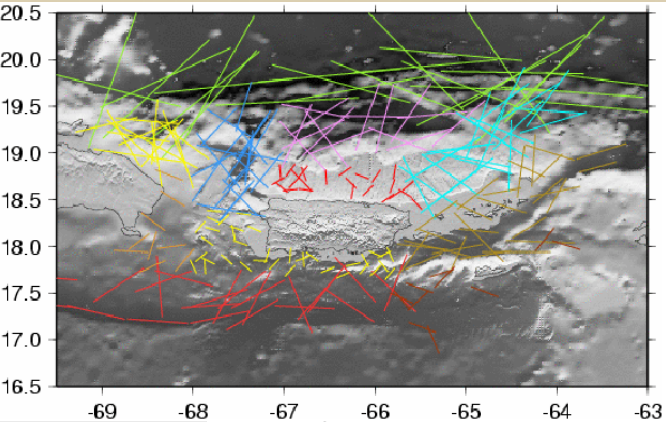


TELESEISMIC SOURCE SCENARIOS

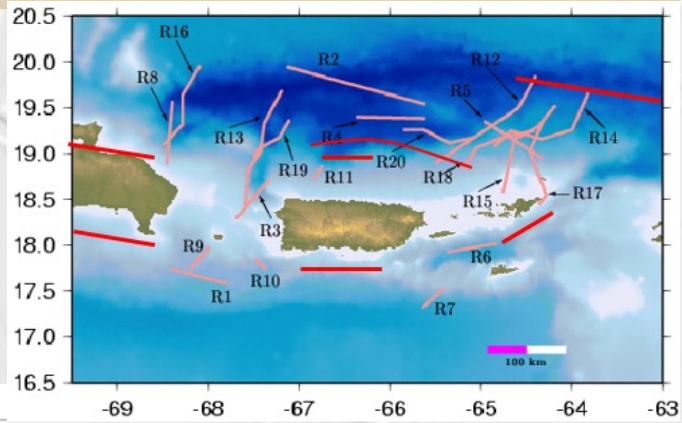


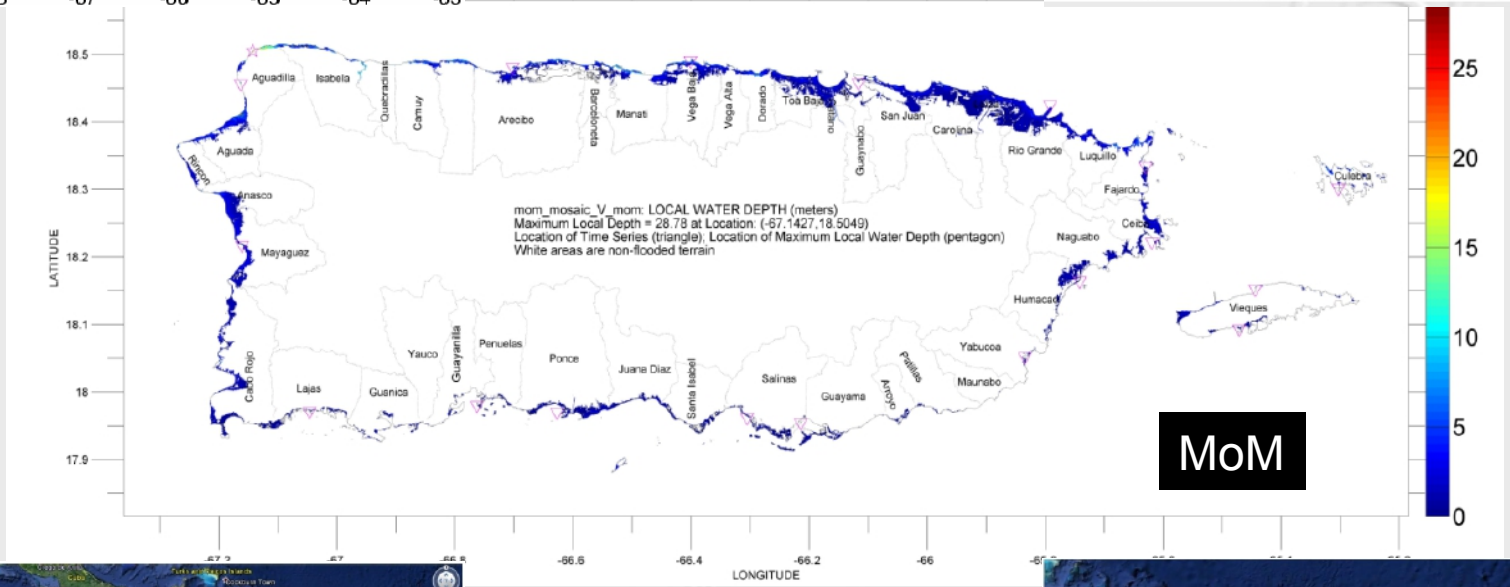


Tsunami Scenarios



LOCAL

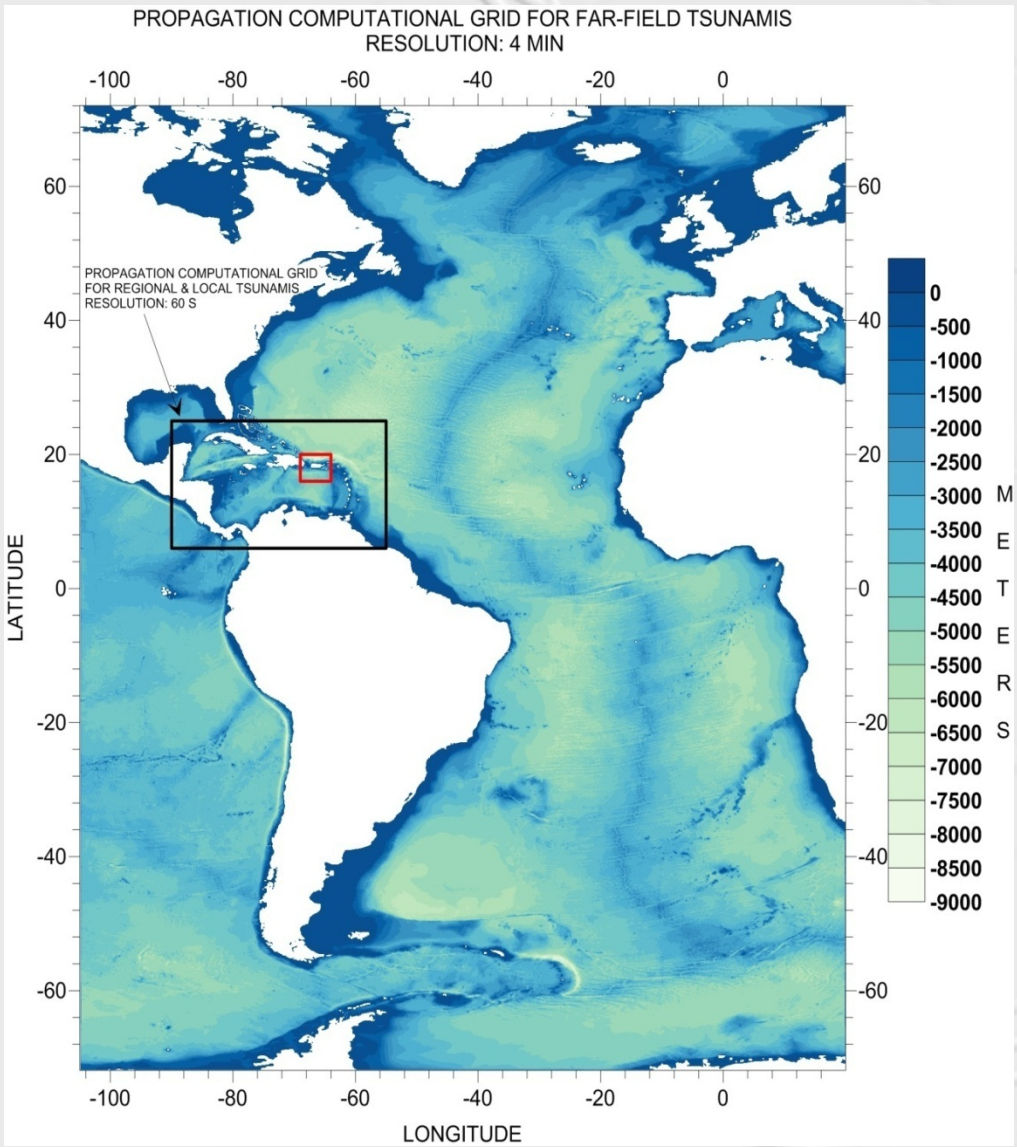


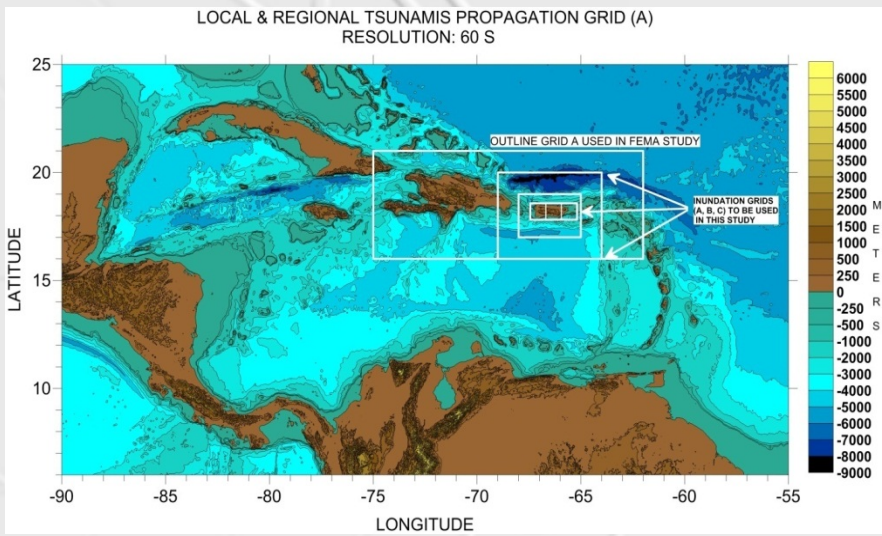


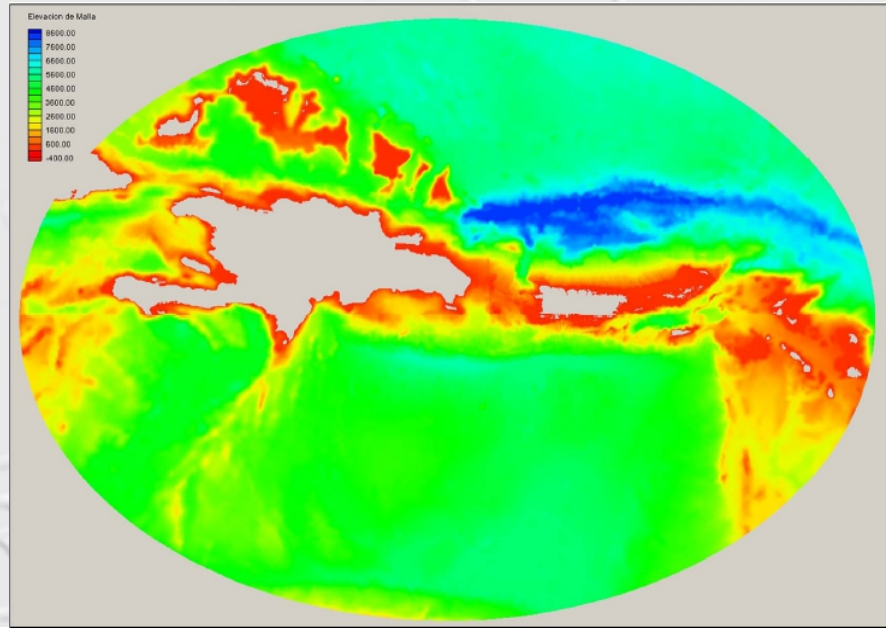
MoM

REGIONAL

NEED: 3 BATHYMETRIC DATA AND GRIDS







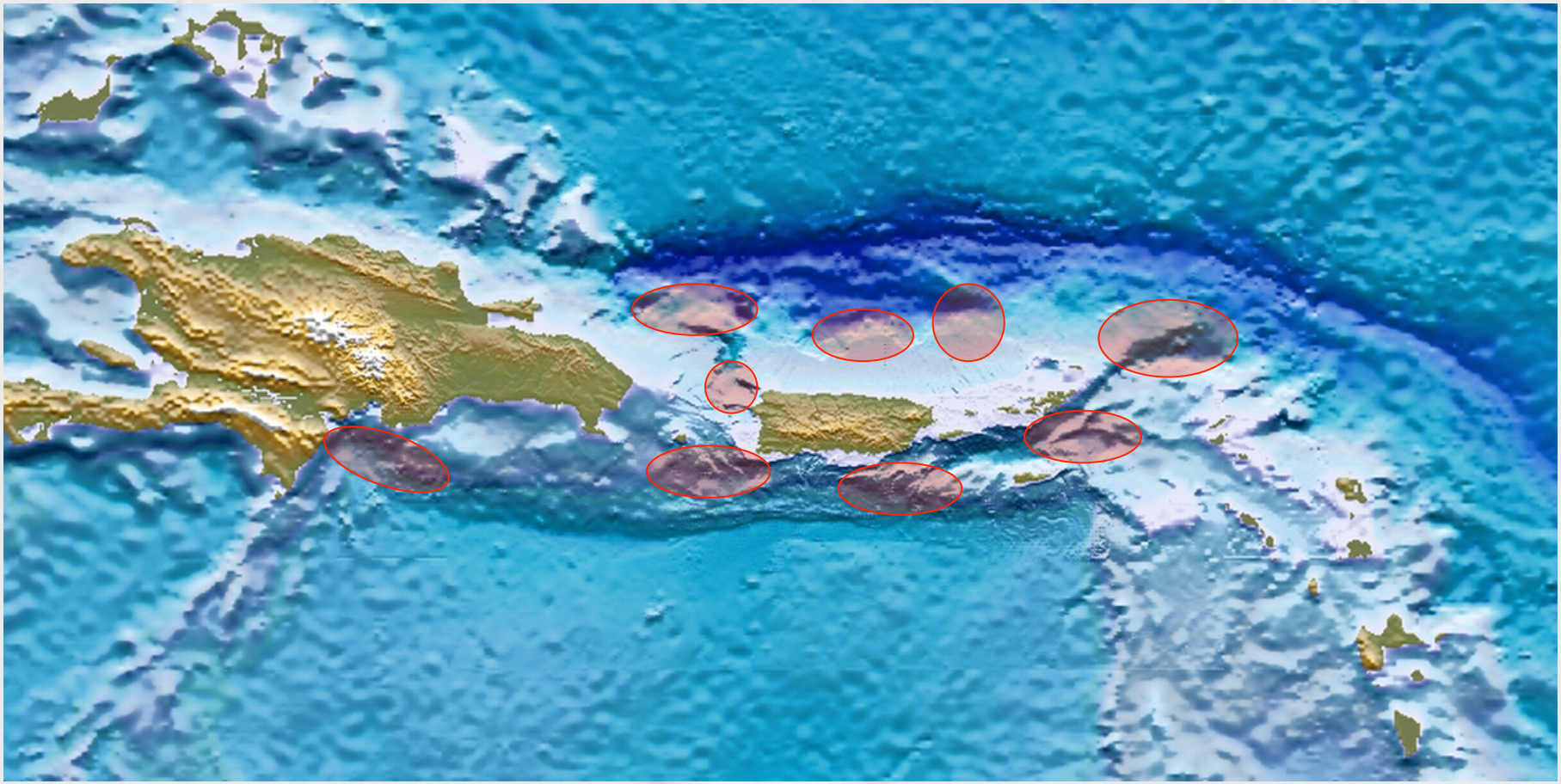
NEED 4: Probabilistic Landslide Tsunami Hazard Analysis

A new modeling approach using 3D-2D coupled methodology:

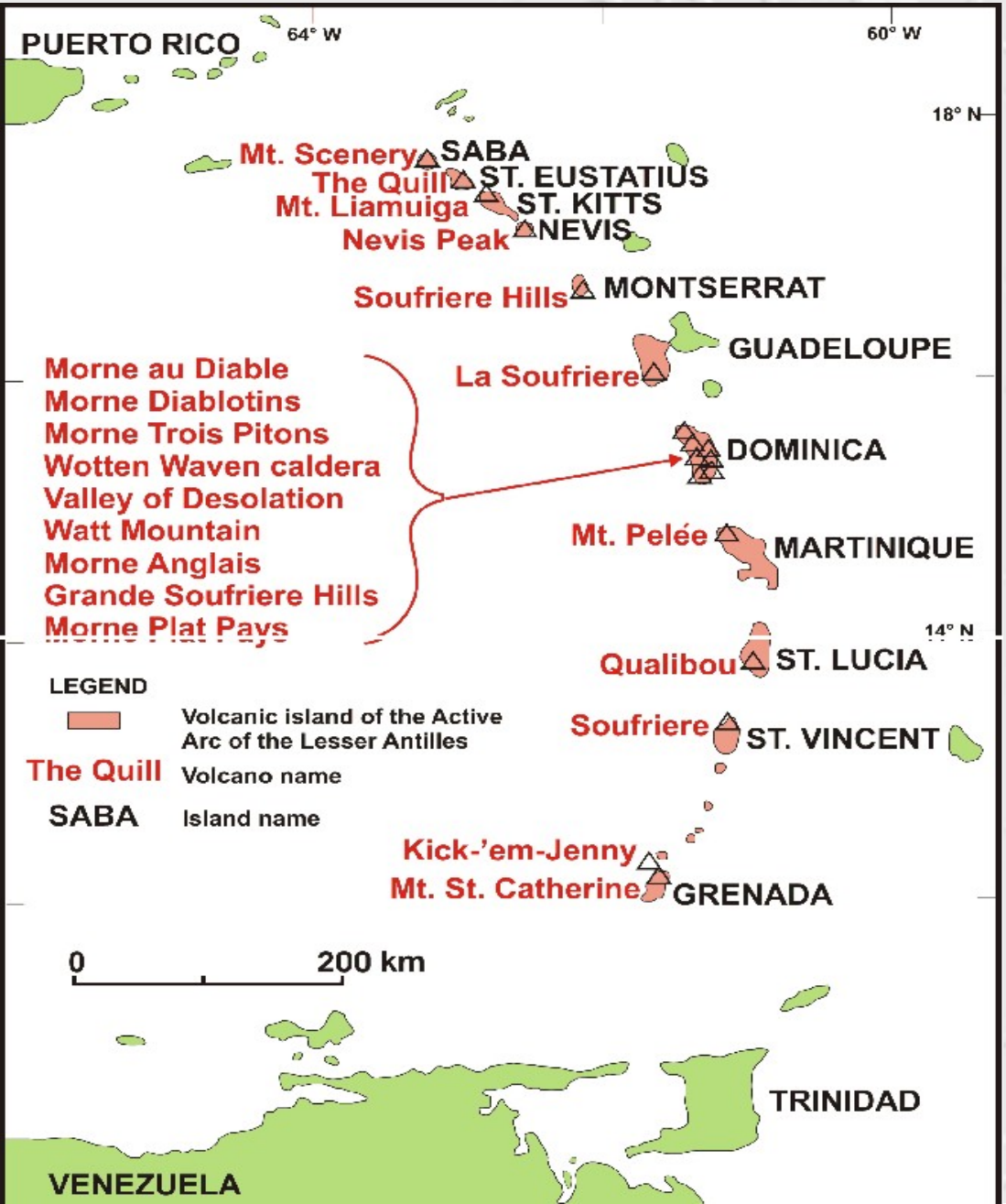
-TSUNAMI3D (submarine landslide generation)

-NEOWAVE (propagation and inundation)

-Higher bathymetry resolution (1 -1/3 arcsecond)

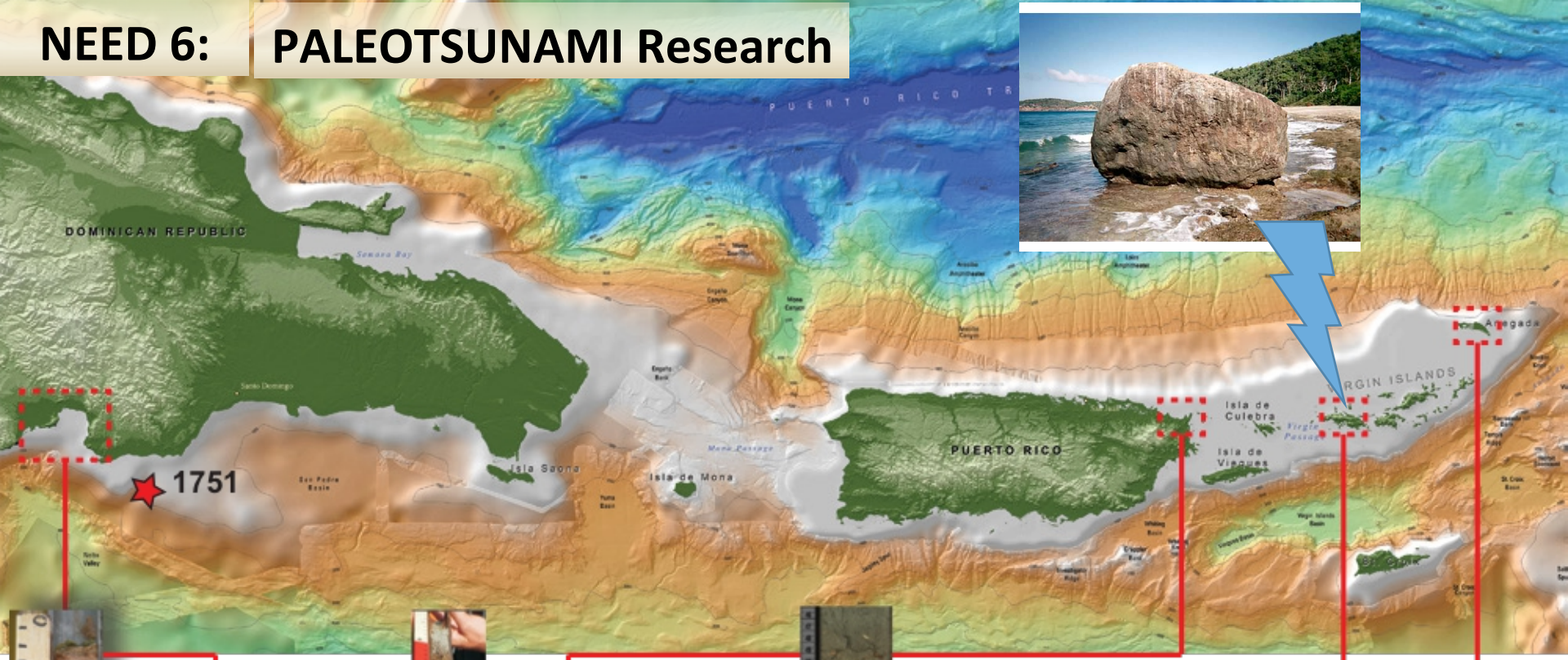


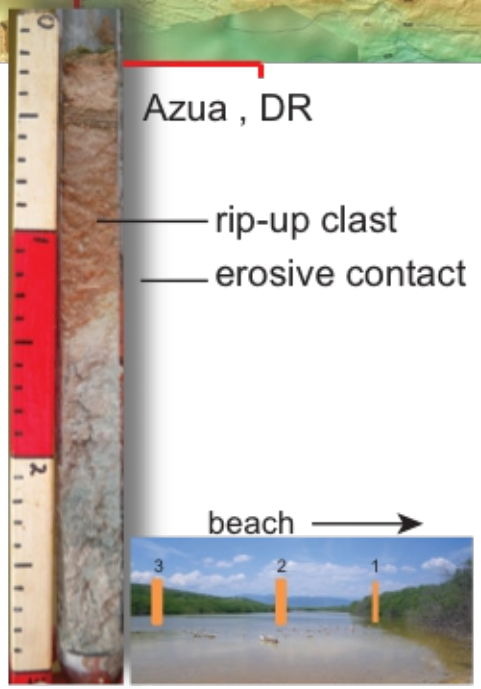
NEED 5: Tsunami – Volcanic Hazard

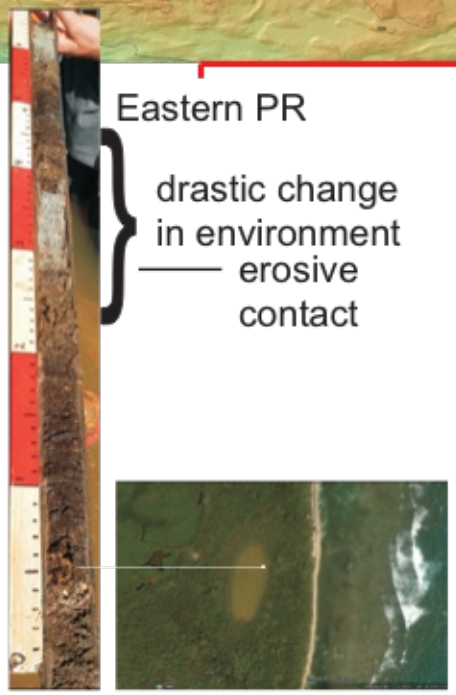


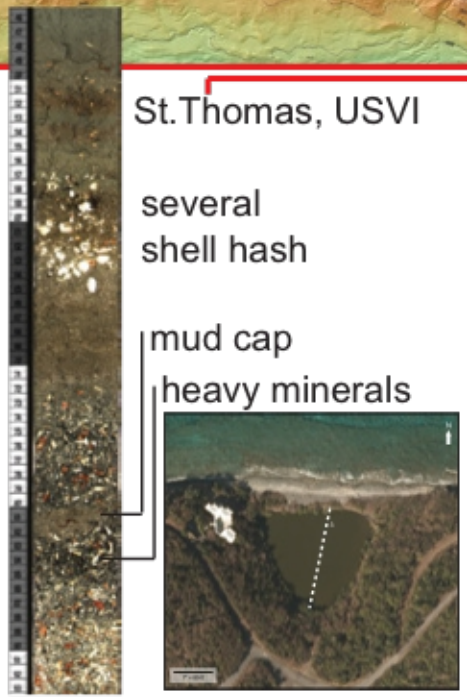
MONTSERRAT/Soufriere Hill Volcano

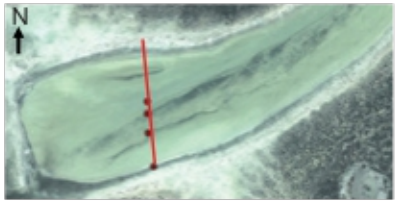
NEED 6: PALEOTSUNAMI Research







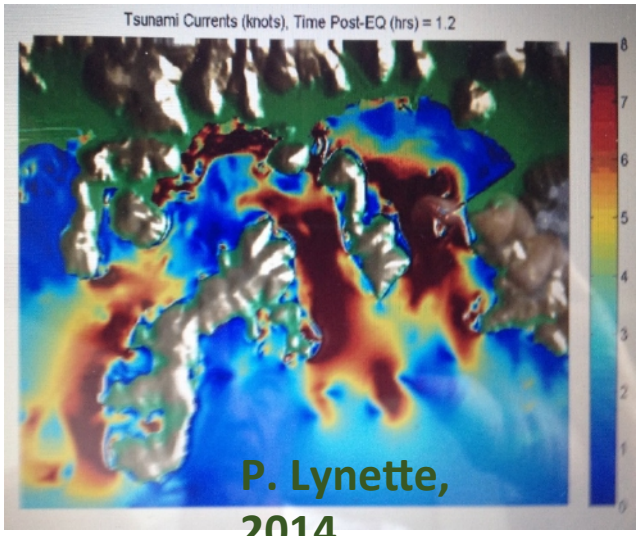




Short term PR/USVI needs

(With respect to tsunami sources)

- Continued interpretation of tsunami deposit record to assess the probability of tsunamis from anticipated regional sources that are not historically documented
- Establish if, in addition to being a source itself, does the PR Trench act afford some protection against incoming distant regional tsunamis?
- Establish the reliability of boulder deposits in identifying tsunami events in a region where strong hurricanes may just as well be implicated.



P. Lynette, 2014

(General needs):

- Understanding/planning for impacts of tsunami currents in heavily invested harbors
- Improving evacuation mapping facilitated by improved bathymetry for all modeling activities
- Waking/fleeing modeling and exercises for tsunamis from nearby sources
- Improving knowledge-based maritime tsunami preparedness.

Q & A