

Gulf of Mexico 2015 Accomplishments

National Tsunami Hazard Mitigation Program

By:

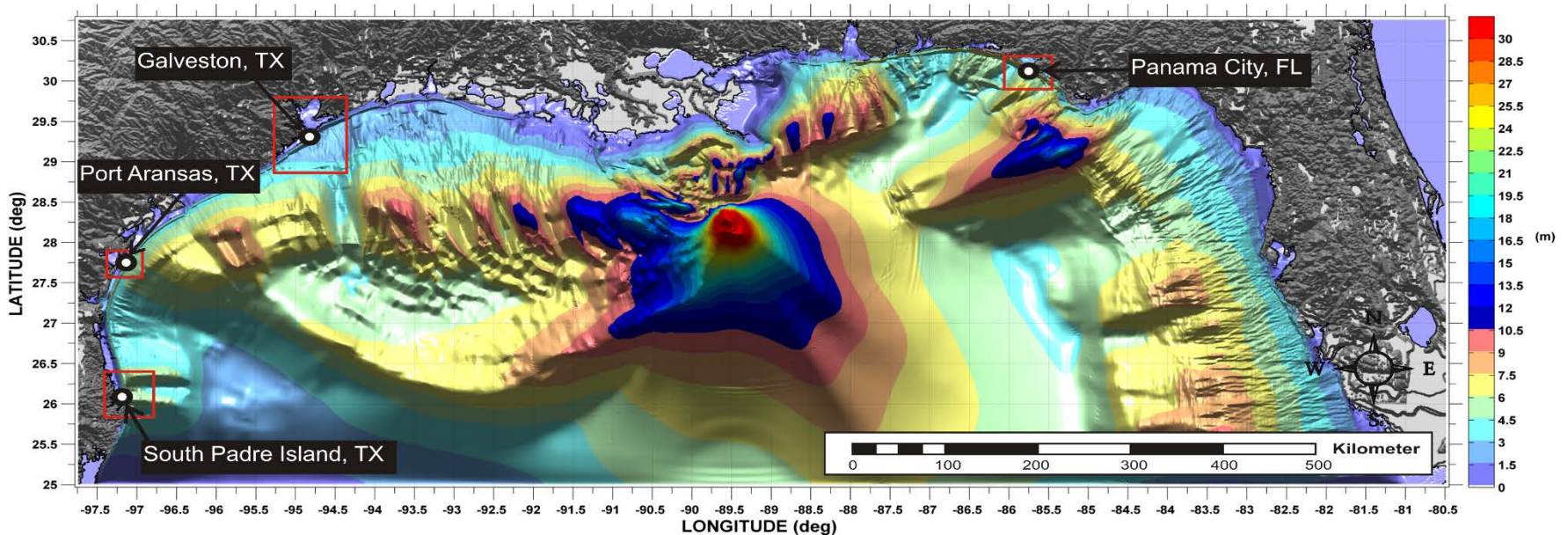
Dr. Juan Horrillo

&

Dr. Alyssa Manis-Pampell



Gulf of Mexico 2015 Accomplishments



BACKGROUND

Since FY08, the National Tsunami Hazard Mitigation Program (NTHMP) has provided grants to the Gulf of Mexico (GOM) states (through Texas A&M University at Galveston (TAMUG)) to identify the tsunami hazard to the Gulf Coast and mitigate its impact. Based on evidence of massive ancient landslides and continued emptying of sediments into the GOM mainly from the Mississippi River, a massive underwater landslide in the GOM is considered a potential hazard, although the probability of such an event is quite low.

Gulf of Mexico 2015 Accomplishments

1- Developed 4 landslide tsunami sources using a novel probabilistic approach. These sources, along with 3 identified historical sources, increase the number of potential tsunami scenarios within the GOM to 7, covering most of the northern GOM basin:

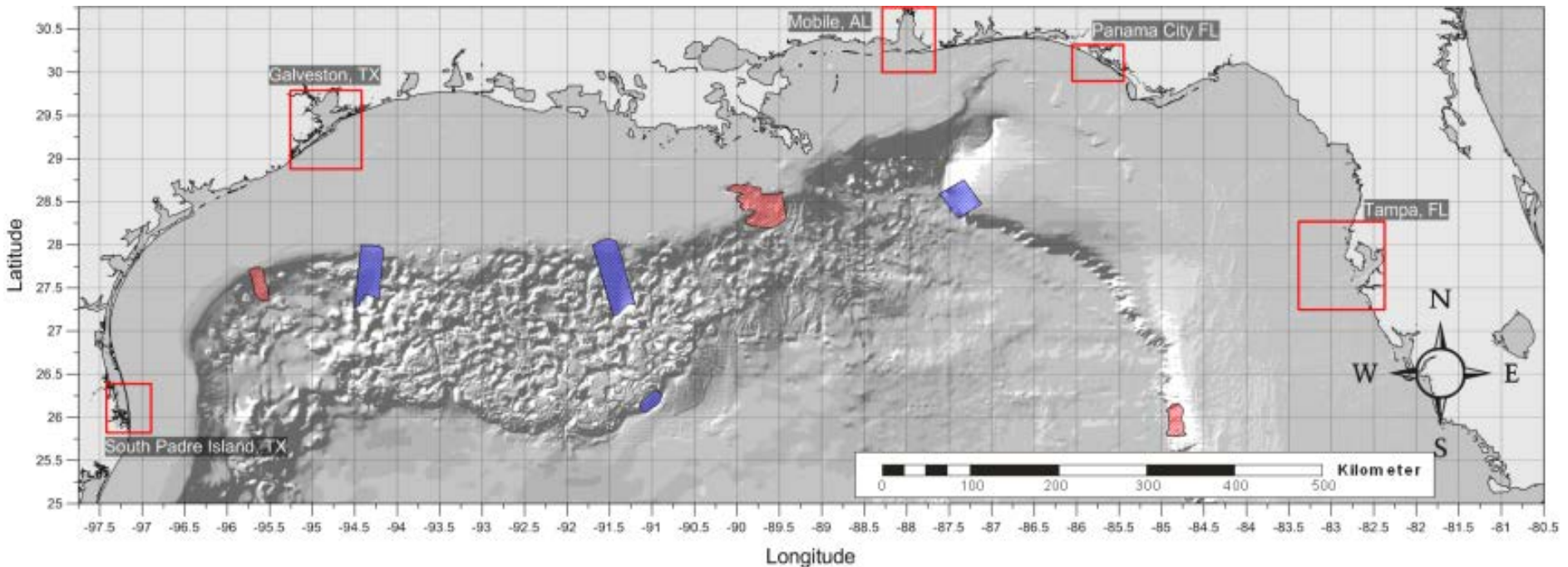
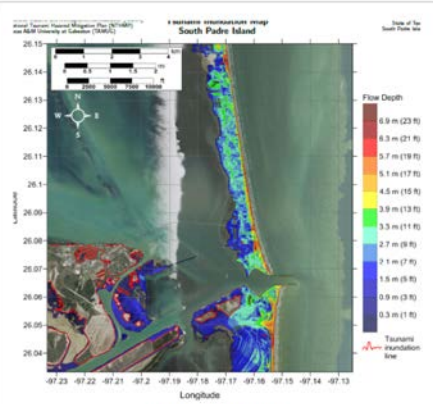


Figure 1. Northern GOM domain and bathymetry used to obtain detailed tsunami runup and inundation extent at five selected Gulf Coast communities. Hatched red regions: historical submarine landslides (3); hatched blue regions: probabilistic submarine landslides (4). Red rectangles along coastline indicate regions where tsunami inundation maps have been developed.

Gulf of Mexico 2015 Accomplishments

2- Developed maps of tsunami inundation (flow depth) for five communities along the GOM coast

South Padre Island TX



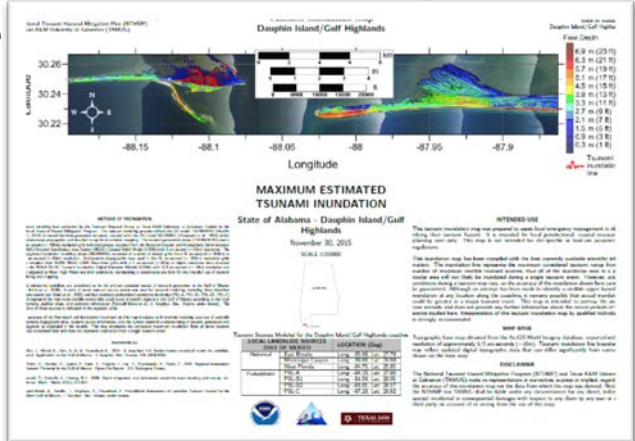
MAXIMUM ESTIMATED TSUNAMI INUNDATION
State of Texas - South Padre Island
November 30, 2015
SCALE 1:5000

INTENDED USE
This tsunami inundation map was prepared to assist in emergency management in identifying those areas that are potentially at risk from a tsunami. This map is not intended for use as a basis for any other purpose or application.

MAP BASE
This inundation map has been overlaid onto the latest available aerial photography. The map was created using a number of maximum credible tsunami wave heights that were modeled using a single tsunami wave height. Although an attempt has been made to use a realistic wave height, the model used only a single wave height. This model does not account for the effects of multiple waves or the effects of a tsunami wave train. The model also does not account for the effects of a tsunami wave train. The model also does not account for the effects of a tsunami wave train.

Coastal Features	LOCATION (deg)
Galveston Bay	29° 30' N, 94° 45' W
Galveston Island	29° 30' N, 94° 45' W
Galveston Bay	29° 30' N, 94° 45' W
Galveston Bay	29° 30' N, 94° 45' W
Galveston Bay	29° 30' N, 94° 45' W

Mobile, AL Region



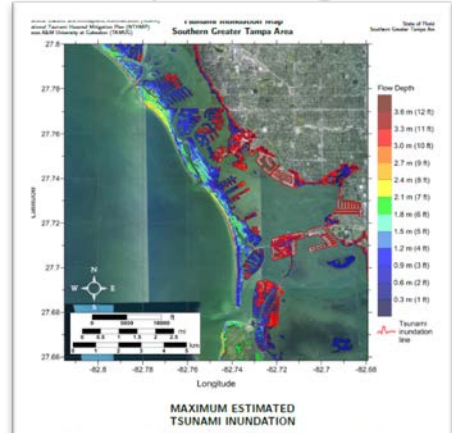
MAXIMUM ESTIMATED TSUNAMI INUNDATION
State of Alabama - Dauphin Island/Gulf Highlands
November 30, 2015
SCALE 1:5000

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Coastal Features	LOCATION (deg)
Dauphin Island	30° 20' N, 88° 10' W
Gulf Highlands	30° 20' N, 88° 10' W
Dauphin Island	30° 20' N, 88° 10' W
Gulf Highlands	30° 20' N, 88° 10' W

Tampa, FL region



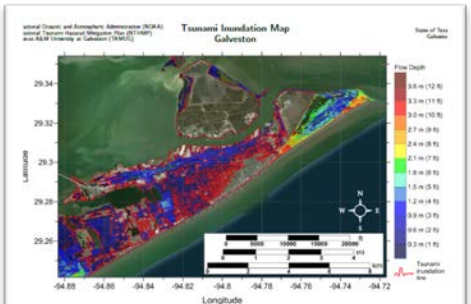
MAXIMUM ESTIMATED TSUNAMI INUNDATION
State of Florida - Southern Greater Tampa Area
November 30, 2015
SCALE 1:5000

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Coastal Features	LOCATION (deg)
Clearwater	28° 00' N, 82° 30' W
St. Petersburg	27° 45' N, 82° 45' W
Tampa Bay	27° 45' N, 82° 45' W
Tampa Bay	27° 45' N, 82° 45' W

Galveston TX



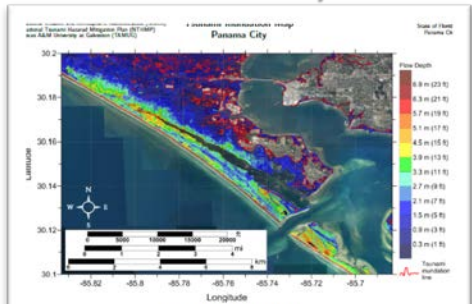
MAXIMUM ESTIMATED TSUNAMI INUNDATION
State of Texas - Galveston
November 30, 2015
SCALE 1:5000

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Coastal Features	LOCATION (deg)
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Galveston Island	29° 30' N, 94° 45' W
Galveston Bay	29° 30' N, 94° 45' W
Galveston Bay	29° 30' N, 94° 45' W

Panama City FL



MAXIMUM ESTIMATED TSUNAMI INUNDATION
State of Florida - Panama City
November 30, 2015
SCALE 1:5000

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Coastal Features	LOCATION (deg)
Panama City	30° 15' N, 87° 15' W
Panama City	30° 15' N, 87° 15' W
Panama City	30° 15' N, 87° 15' W
Panama City	30° 15' N, 87° 15' W

Gulf of Mexico 2015 Accomplishments

3- Executed a pilot study to determine the annual exceedance rates above certain tsunami inundation threshold levels for South Padre Island, TX:

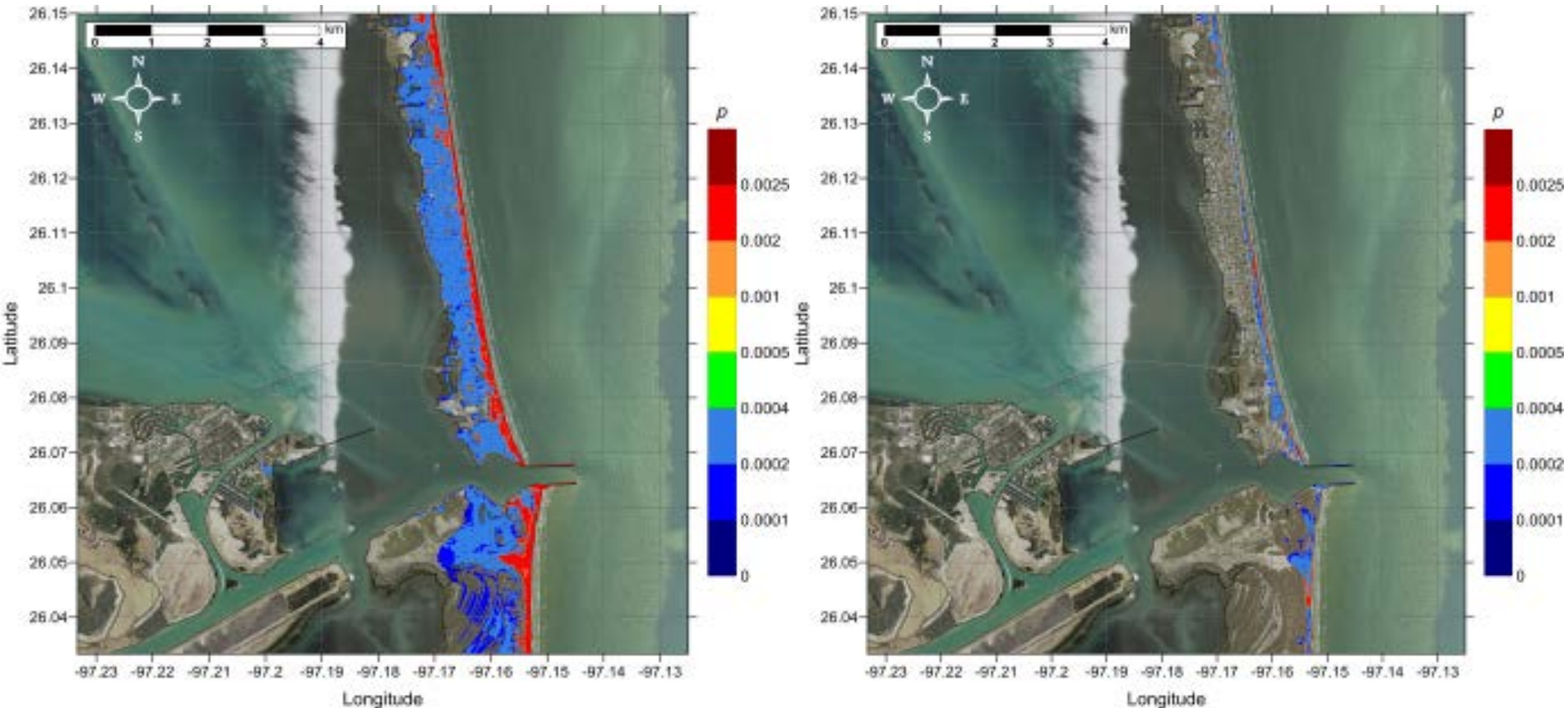


Figure 3. Probability of tsunami inundation exceeding 2m (~6.6ft) and 4m (~13.1ft), respectively, in South Padre Island, TX.

http://www.tamug.edu/Tsunami/Files/report_NTHMP_2015-final.pdf

END

Gulf of Mexico FY2016 Proposal

Project Name/Title:	Development of two (2) tsunami inundation maps in the GOM and updating Port Aransas, TX inundation maps with the full set of tsunami sources.
Project Dates:	September 1, 2016 – August 31, 2017
Recipient Institution:	Texas A&M University, Department of Ocean Engineering
Primary Contact name:	Dr. Juan J. Horrillo
Primary Contact Address:	200 Seawolf Parkway Galveston, TX 77554 Mailing Address: P.O. Box 1675 Galveston, TX 77553
Primary Contact Telephone Number:	(409)740-4465
Primary Contact Fax Number:	(409)741-7153
Primary Contact Email:	horrillj@tamug.edu
Project Website:	www.tamug.edu/tsunami/NTHMP/NTHMP.html

Gulf of Mexico FY2016 Proposal

Goals: The main objective of this project is to continue the development of inundation maps for the Gulf of Mexico (GOM) and updating these maps according to the NTHMP-MMS (Mapping and Modelling Subcommittee) Strategic Plan recommendations to keep our current GOM tsunami mitigation products up-to-date.

Deliverables:

TASK1- Two (2) additional tsunami inundation/maritime maps will be developed for Destin, FL as well as Santa Rosa County, FL in support of the county's determination to achieve TsunamiReady recognition.

TASK2- Updating existing inundation map for Port Aransas, TX (developed under award NA09NWS4670006 -Construction of inundation maps in the Gulf of Mexico-) to a second-generation version. Which will consider the new set of tsunami sources

TASK3- Continuing the effort from award NA14NWS4670049 to refine the methodology for temporal-low-order inundation maps for communities where inundation studies have not yet been assigned/executed or where little bathymetric and elevation data exists.

TASK4 and TASK5- Travel to the NTHMP annual meetings and Travel to the NTHMP Summer meetings