

Gulf of Mexico – Activities

Juan J Horrillo

Brad Baker

Wei Cheng

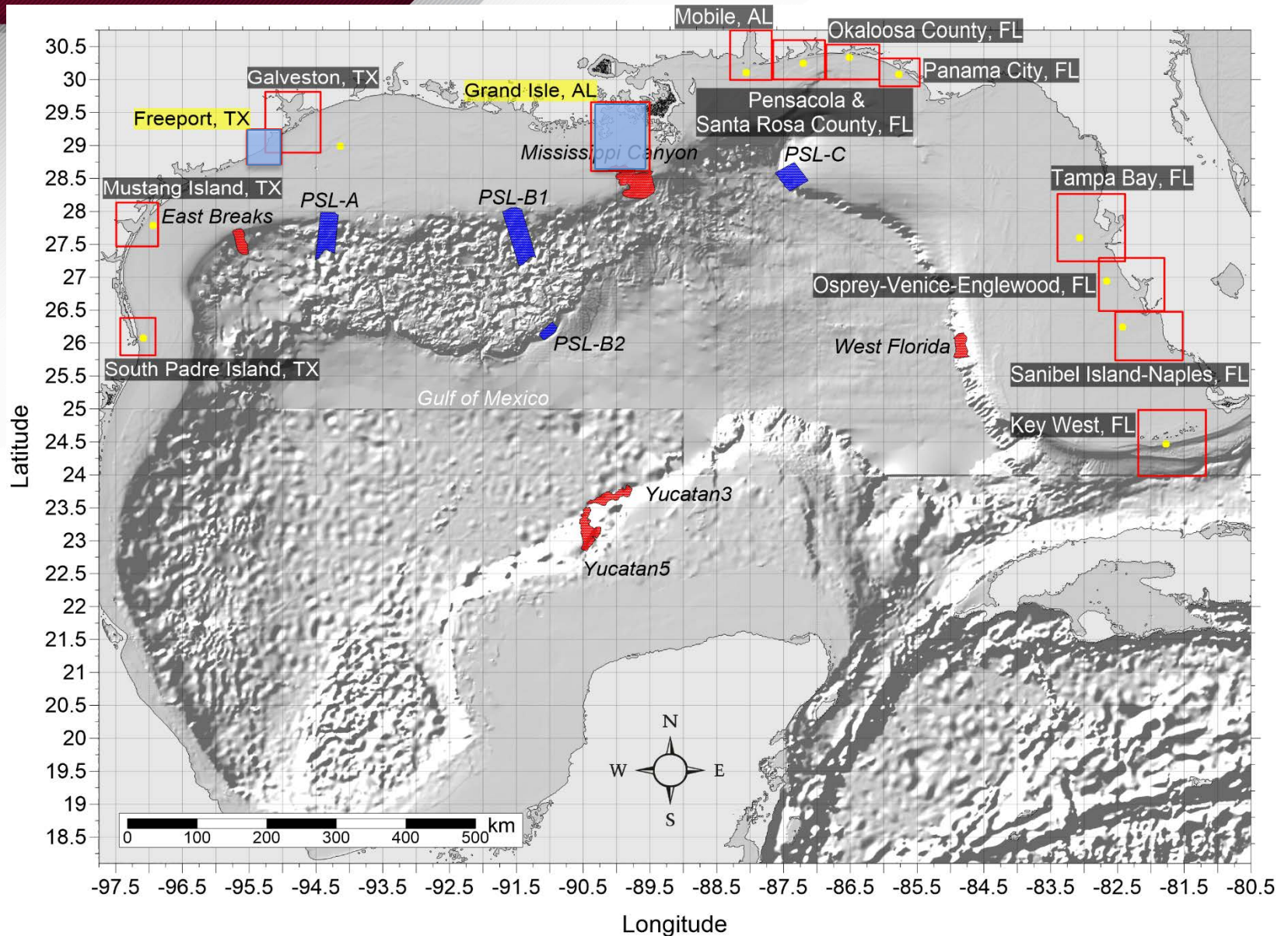
Richards Sunny and (PhD student)

Bill Knight

Salt Lake, UT

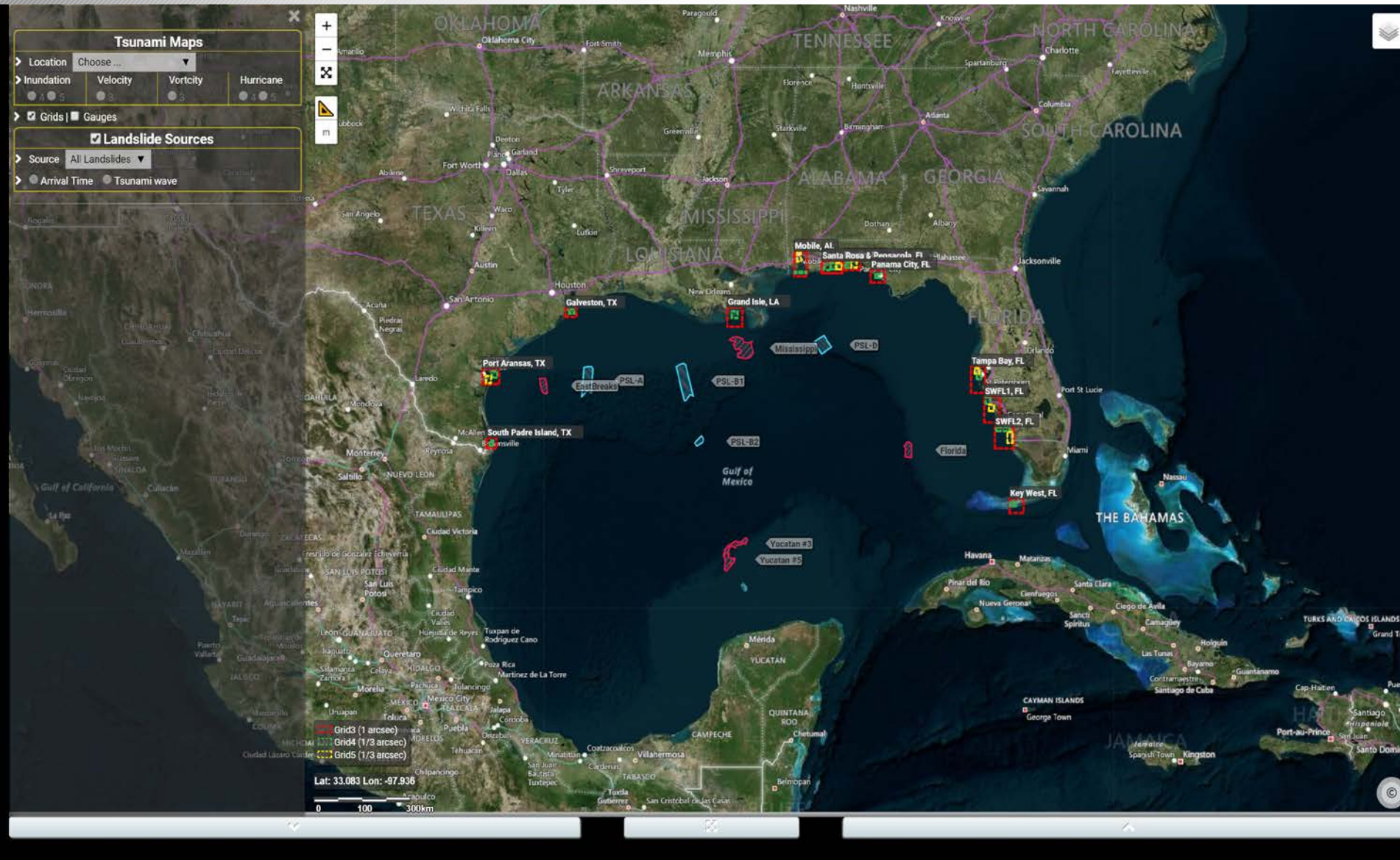
Aug, 2019

Tsunami Mapping Activity





GOM Tsunami Mapping

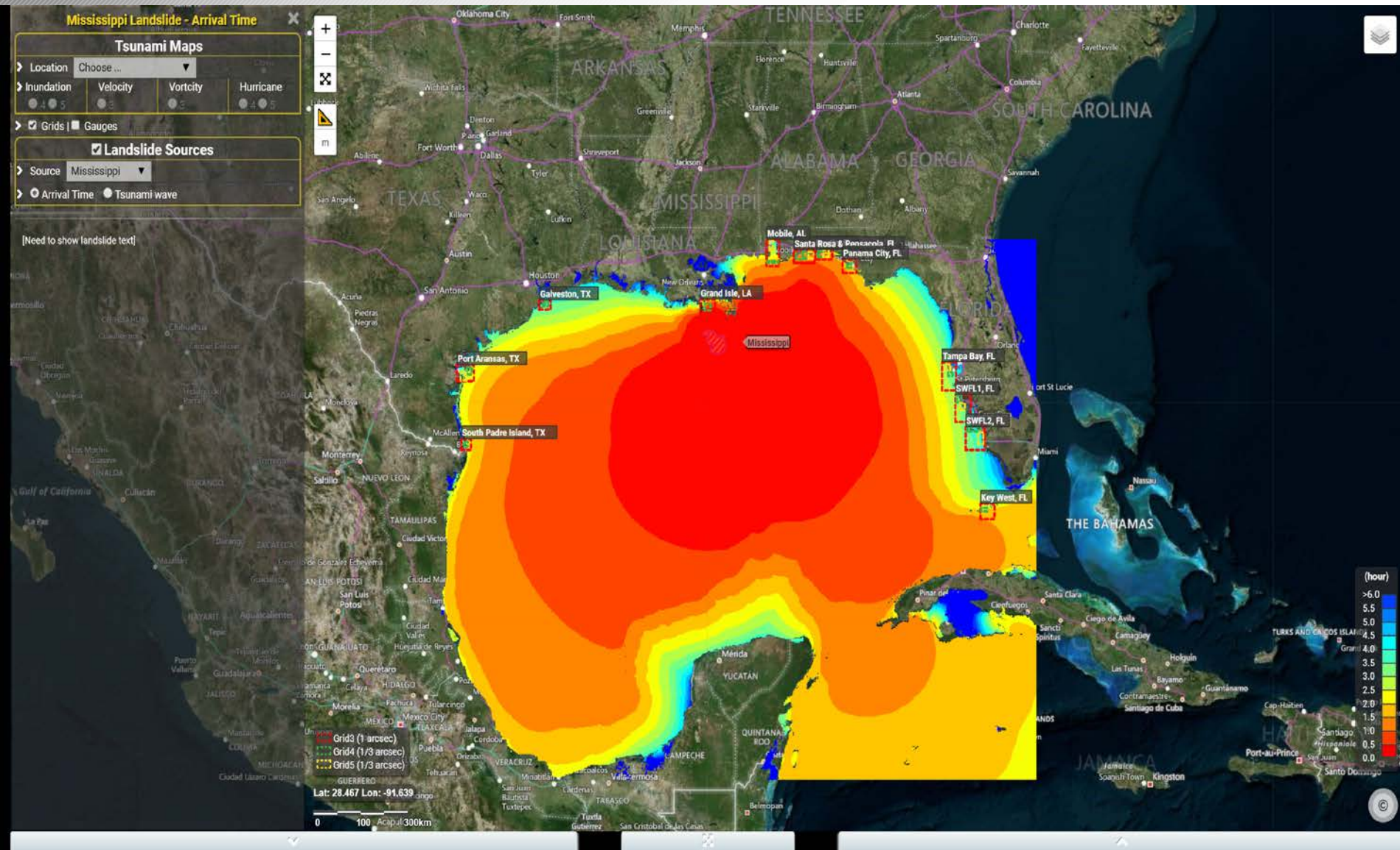


GOM Tsunami Mapping

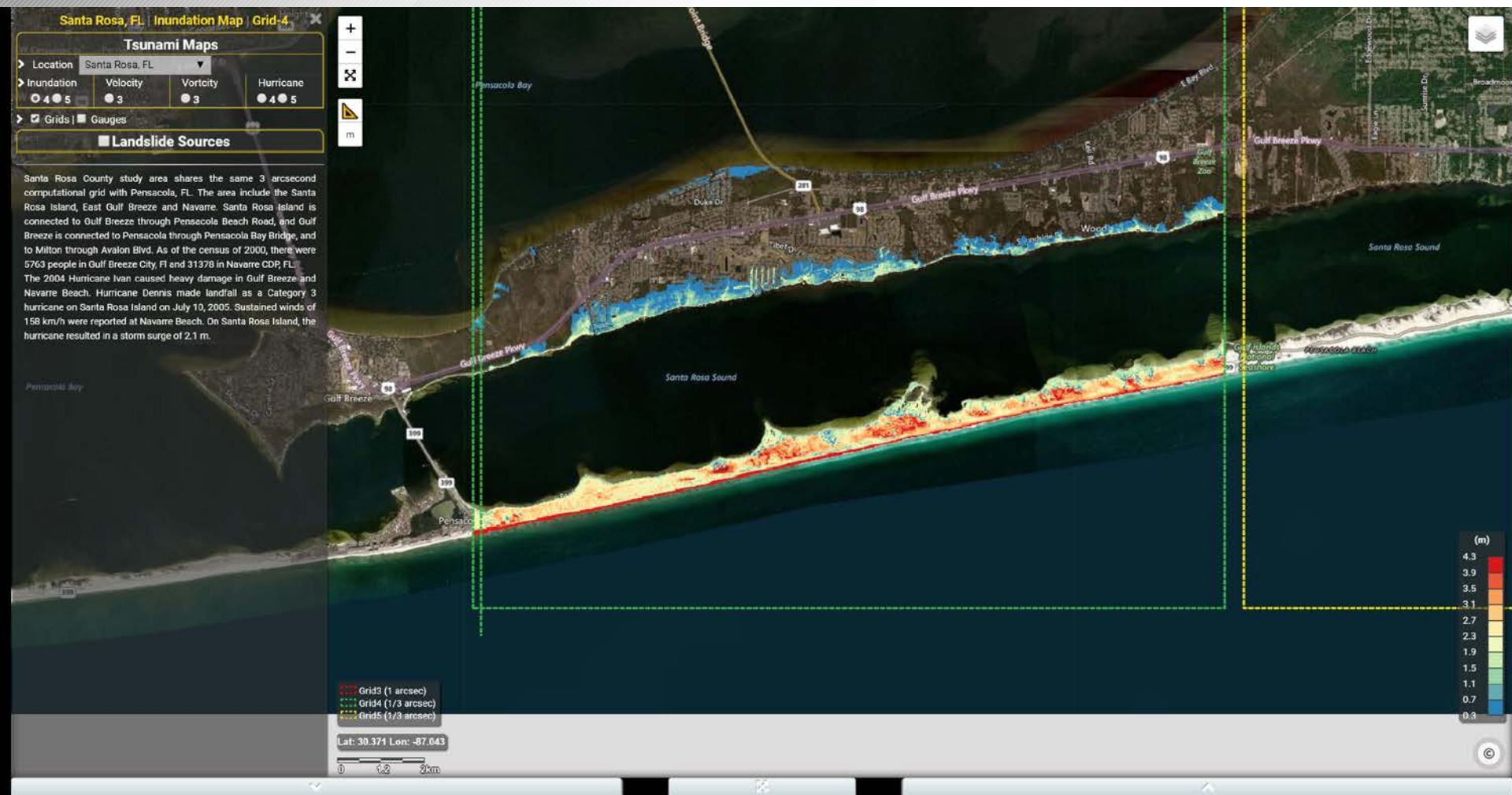




Mississippi Arrival Time

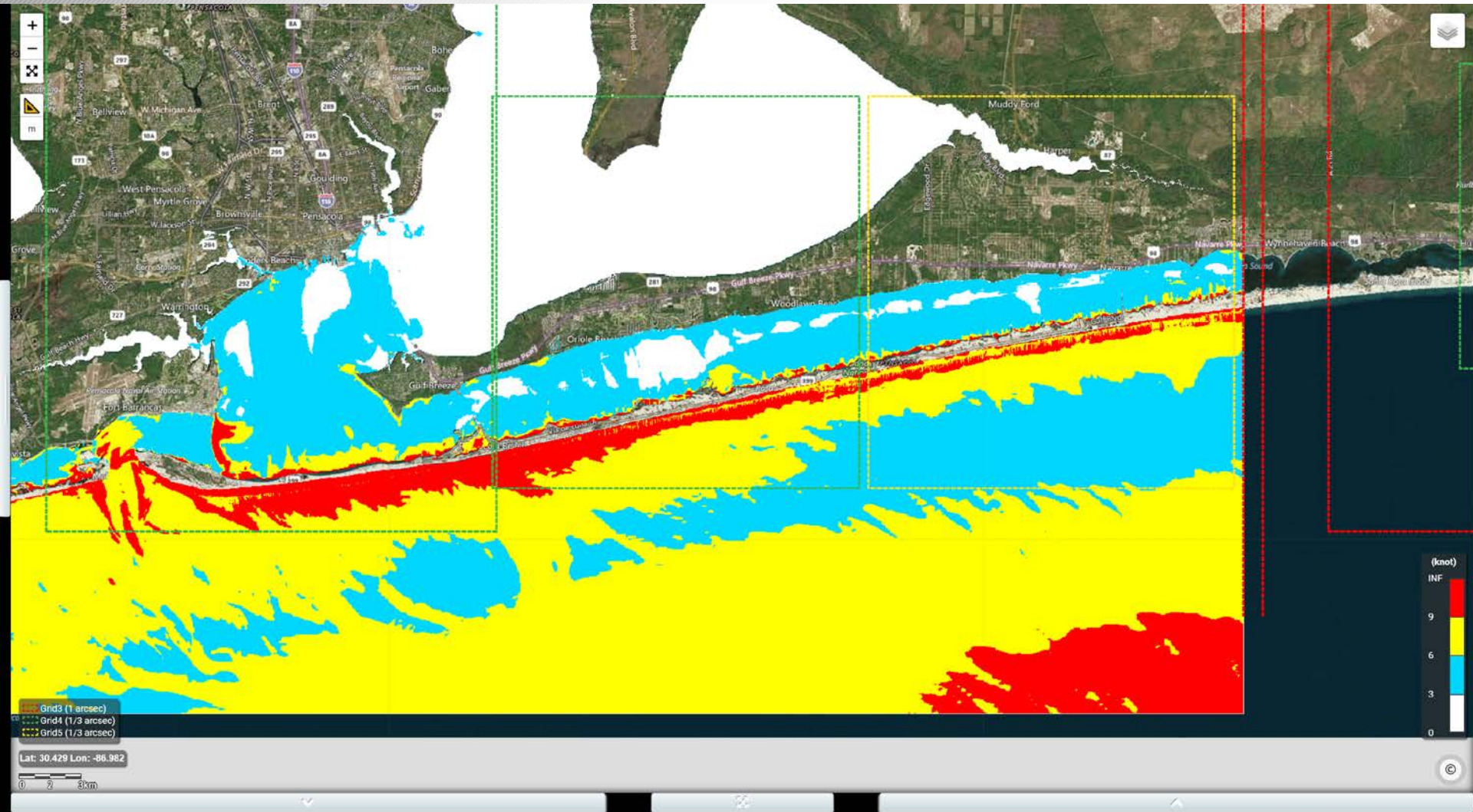


Santa Rosa County, FL Inundation Map

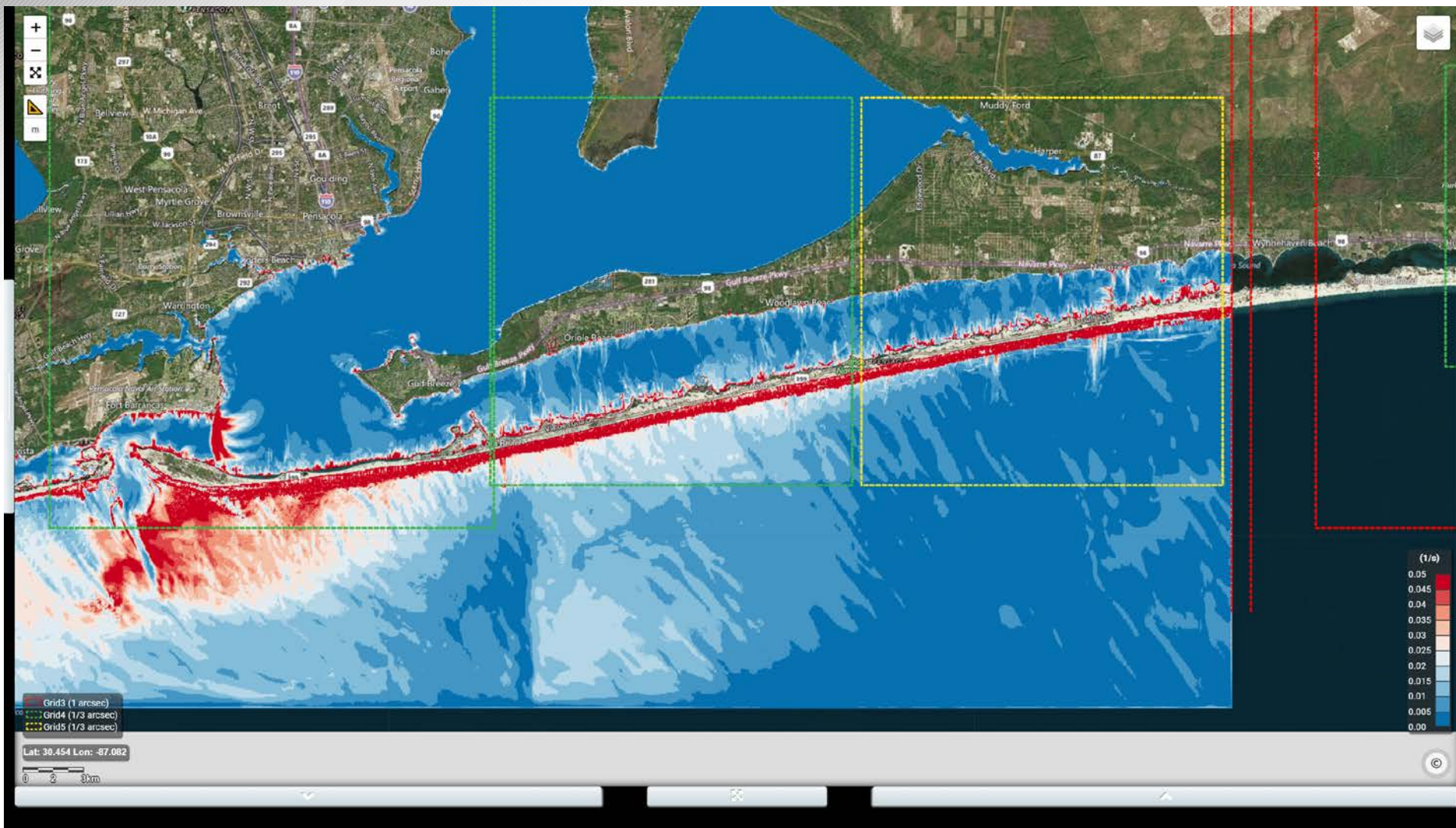




Santa Rosa County, FL Tsunami Damaging Current

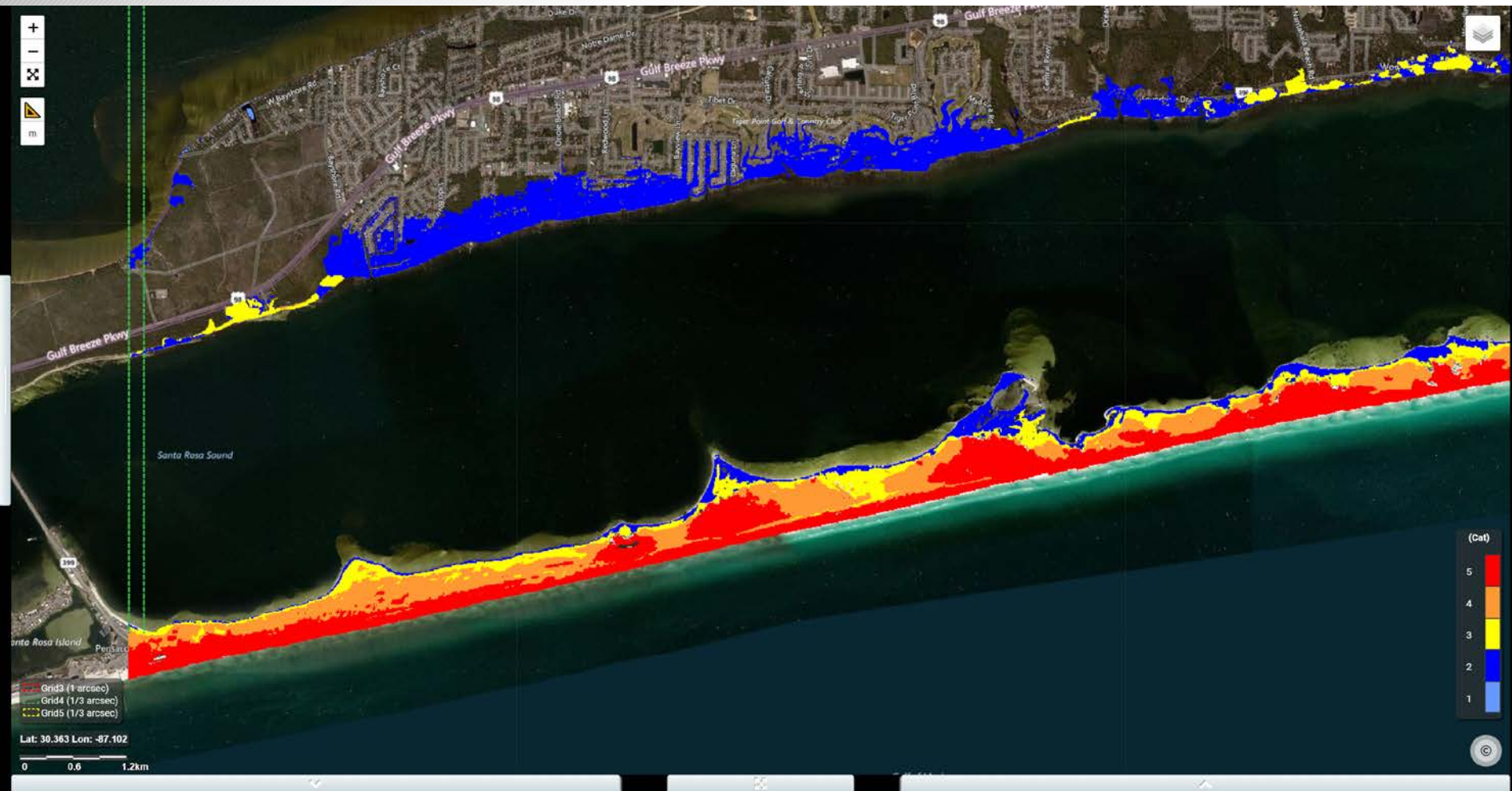


Santa Rosa County, FL Current-Vorticity





Santa Rosa County, FL Tsunami Inundation in term of Hurricane Cat



GOM METEOTSUNAMI ACTIVITY

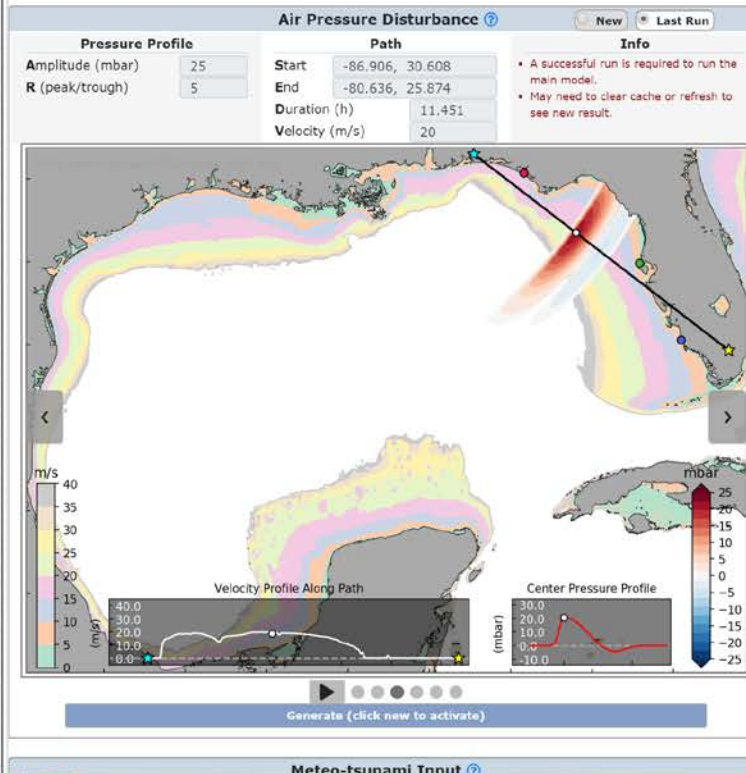
- Meteotsunamis are ubiquitous in the northeastern Gulf of Mexico and can be triggered by winter and summer extra-tropical storms and by tropical cyclones.
- A total of 15 to 25 meteotsunamis per year are observed in the western side of Florida, and on average, 1 to 3 meteotsunamis per year are $>0.5\text{m}$ ($\sim >2\text{feet}$).

	DATE	$\Delta\eta$ (m)	ΔP (hPa)	ΔU (m/s)	$\frac{\Delta P}{\Delta T}$ (hPa/s)	$\frac{\Delta U}{\Delta T}$ (m/s ²)
New Canal Station, LA	04/03/2017	0.5	0.85	11.6	1.18E-3	2.68E-2
Freshwater Canal Locks, LA	12/13/2015	0.82	2.0	5.8	1.85E-3	1.61E-2
Shell Beach, LA	03/19/2016	0.29	3.2	13.1	2.96E-3	1.22E-2
Bay Waveland Yacht Club, MS	02/15/2016	0.18	*	*	*	*
Dauphin Island, AL	04/03/2017	0.26	2.9	12.9	2.59E-3	8.65E-3
Pensacola, FL	04/03/2013	0.23	4.8	4.0	6.67E-3	4.44E-3
Panama City Beach, FL	03/28/2014	0.86	3.5	16.3	3.24E-3	1.64E-2
Panama City, FL	03/28/2014	0.34	3.5	11.5	3.24E-3	1.32E-2
Apalachicola, FL	04/14/2013	0.18	4.4	6.3	2.18E-3	5.57E-3
Cedar Key, FL	03/04/2012	0.25	1.6	5.7	4.44E-3	3.96E-3



Tsunami Model Cloud

Wave Tank Meteo-tsunami Gulf of Mexico Tsunami Maps About

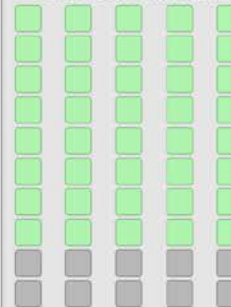


Howdy!
horrillj

- Registered on: 2018-06-25 20:27:29
 - Activated: YES
 - Number of runs: 39
 - Number of uploads: 2/20
-

System Resources

Updated on 1/27/2019, 10:33:06 PM



Air Pressure Disturbance ?

☐ New ☒ Last Run

Pressure Profile

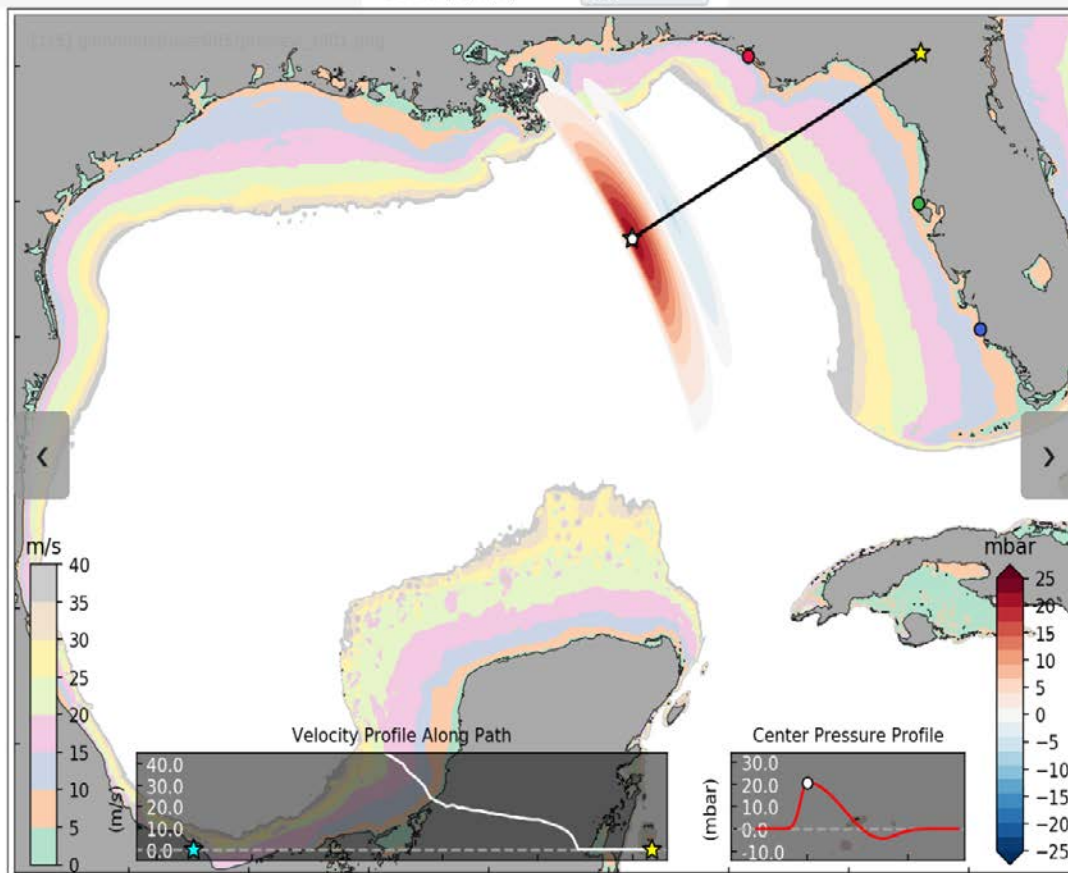
Amplitude (mbar)
R (peak/trough)

Path

Start
End
Duration (h)
Velocity (m/s)

Info

- A successful run is required to run the main model.
- May need to clear cache or refresh to see new result.



Generate (click new to activate)

Meteo-tsunami Input ?

Time

Tend (hour)

Gauge

Gauges are fixed at:

Info

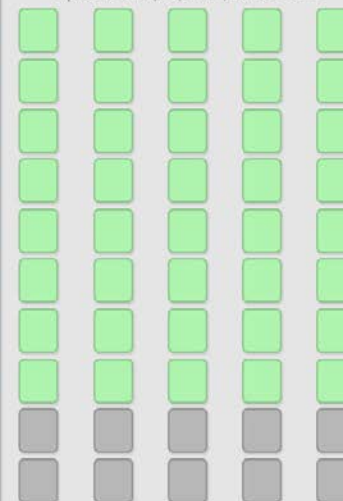
Howdy!
horrillj

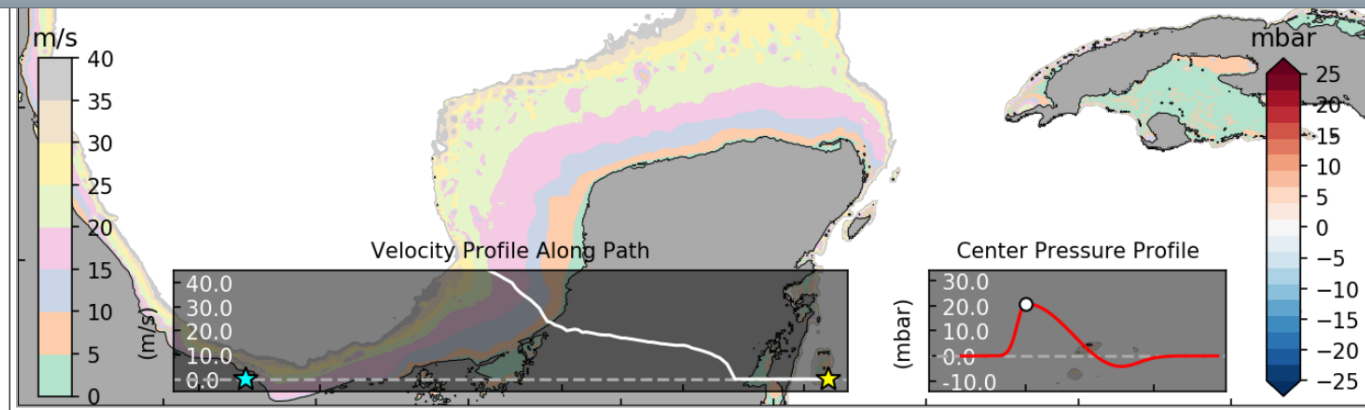
- Registered on: 2018-06-25 20:27:29
- Activated: YES
- Number of runs: 39
- Number of uploads: 2/20

Sign Out

System Resources

Updated on 1/27/2019, 9:33:43 PM





Meteo-tsunami Input ?

Time

Tend (hour)

No. of Plots

Δt of Plots (min)

Gauge

Gauges are fixed at:

- Panama City, FL
- Clearwater Beach, FL
- Naples, FL

Info

-
-

Run Meteo-tsunami

Model Progress

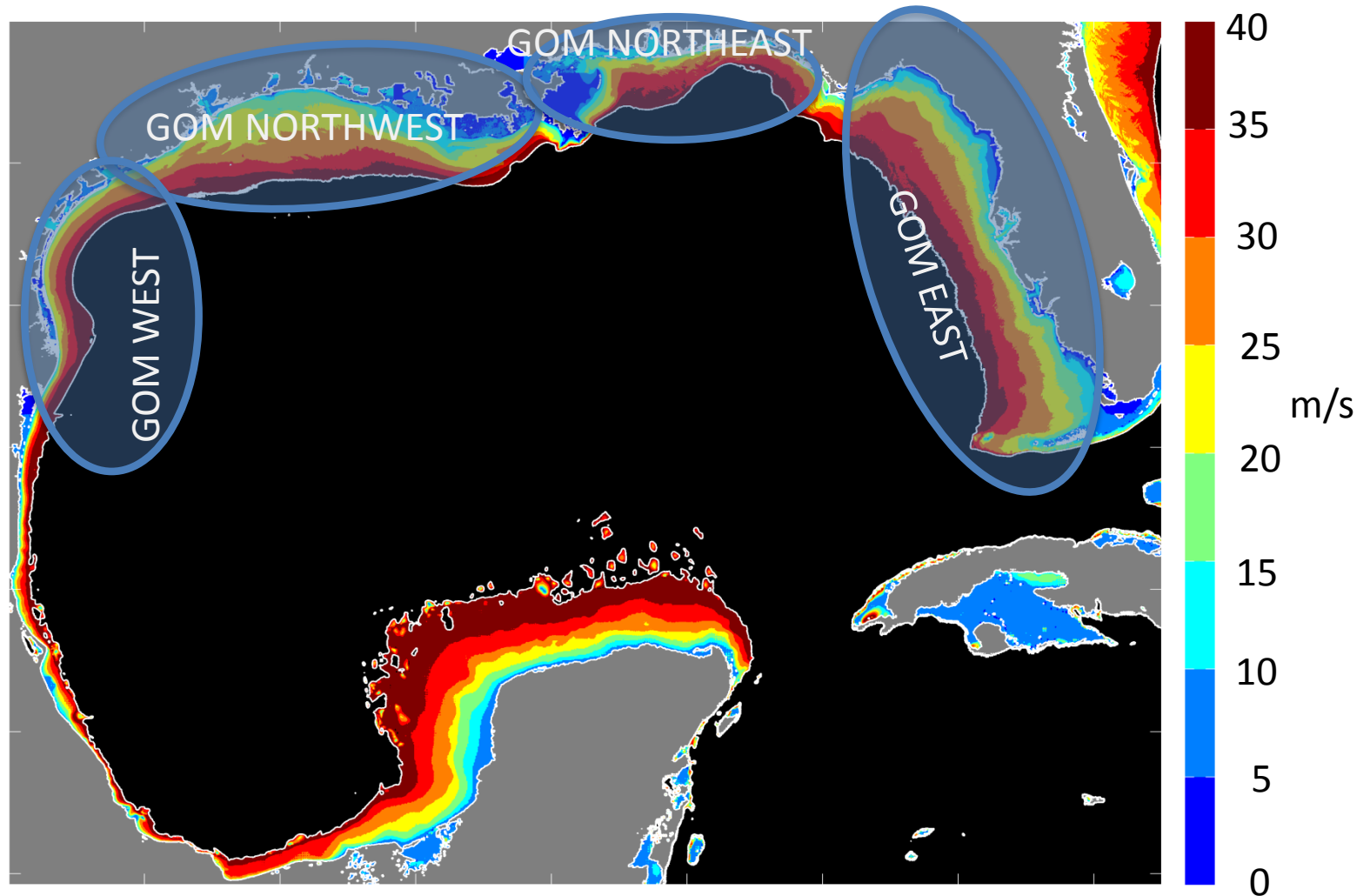
0%

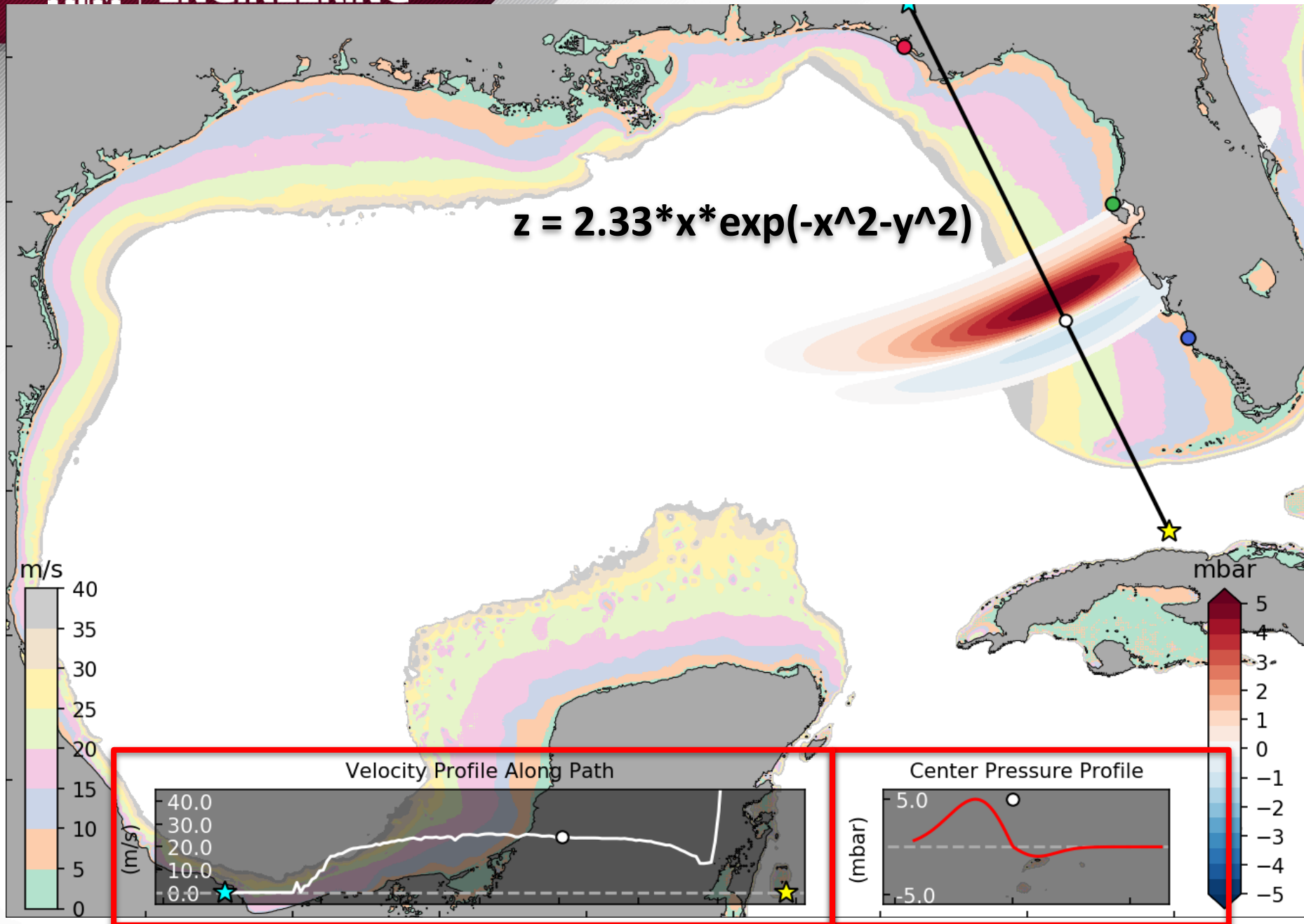
[Result Page](#)

Last successful run parameters:

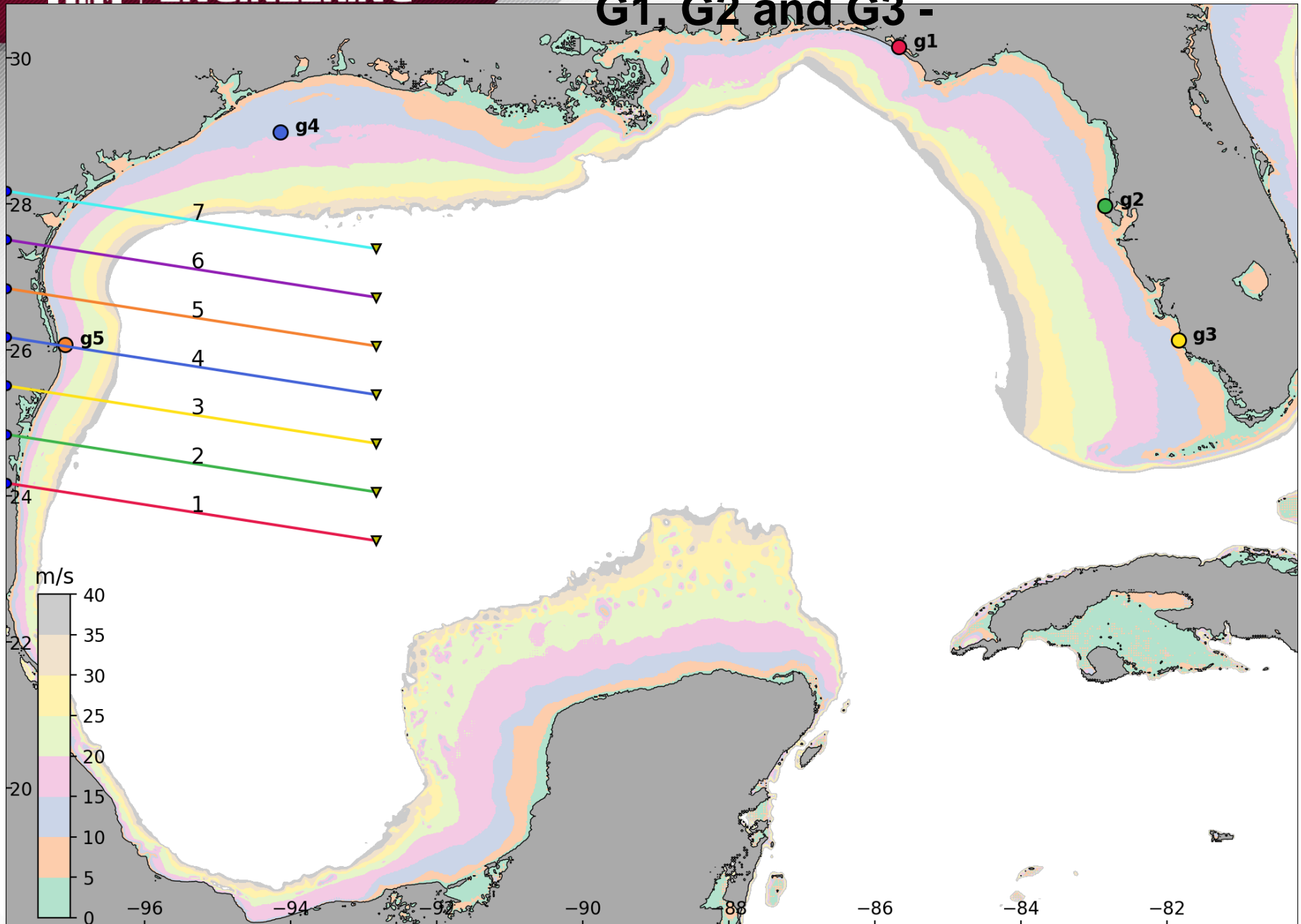
January 27, 2019 07:44:56 AM(UTC)|A=25|R=5|P0=-86.928, 30.697|P1=-80.724,
26.029|D=11.315|V=20|Tend=14|NPlots=70

Meteotsunami Generation Regions

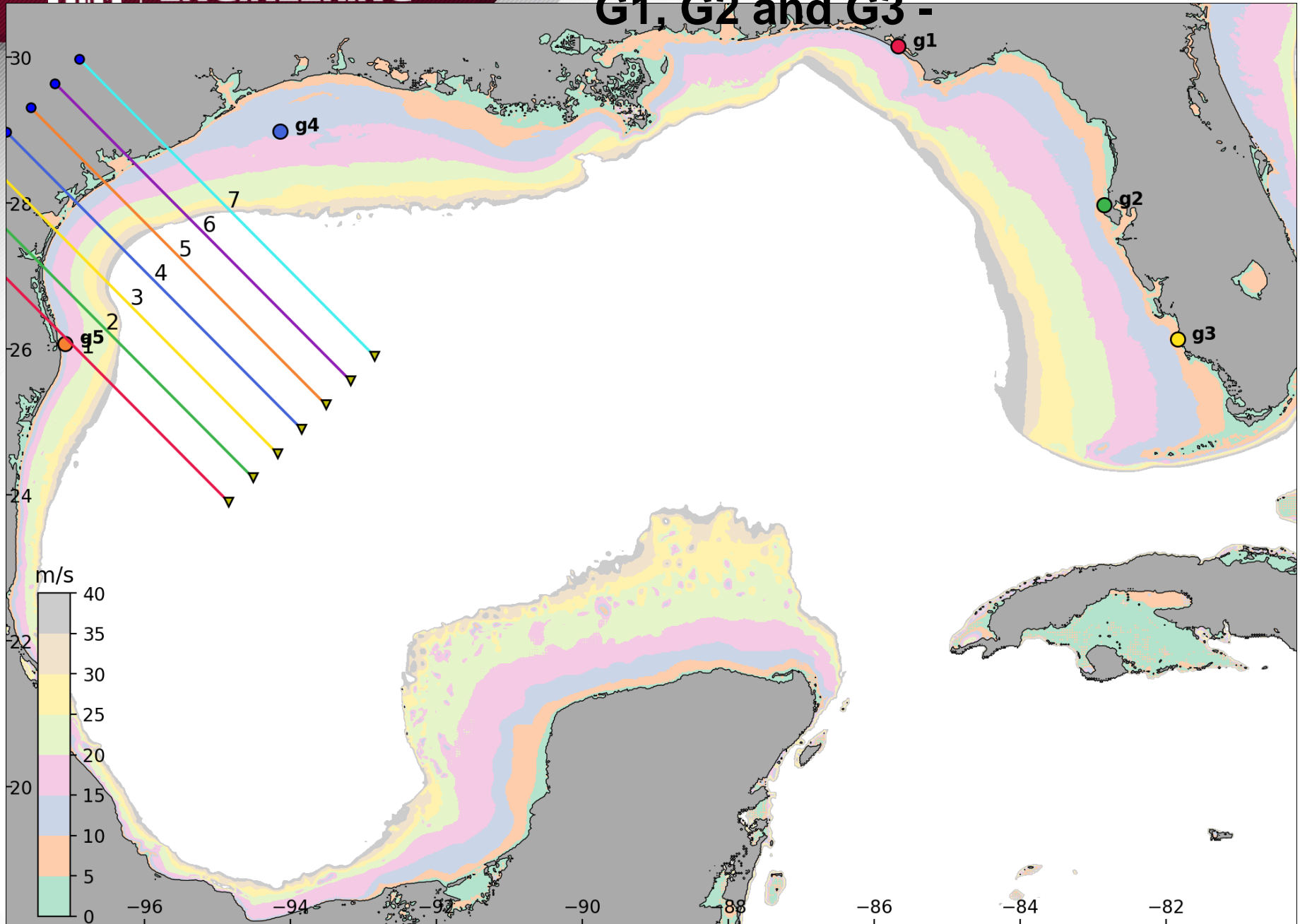




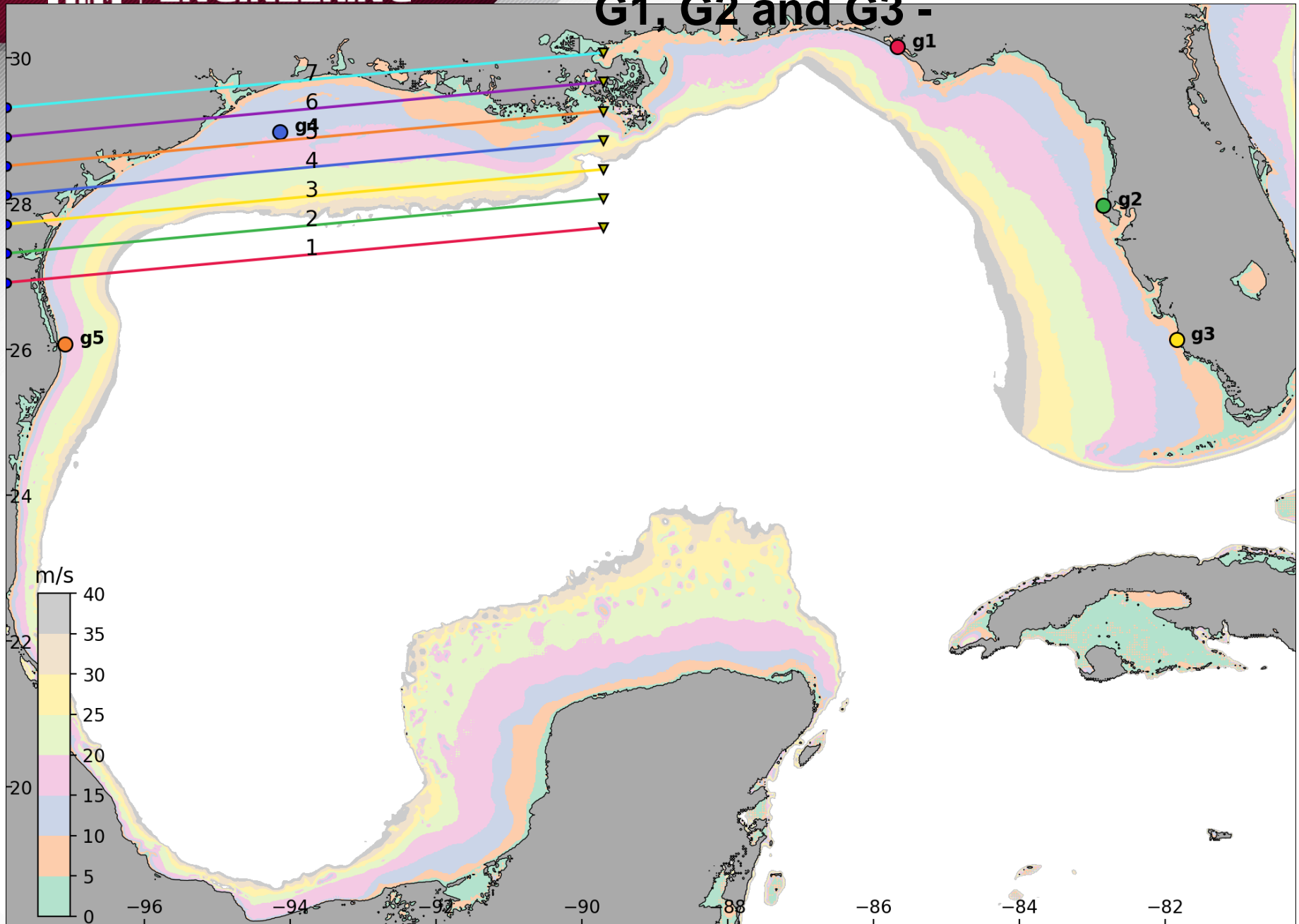
Meteotsunami CASES – Effect to G1, G2 and G3 -



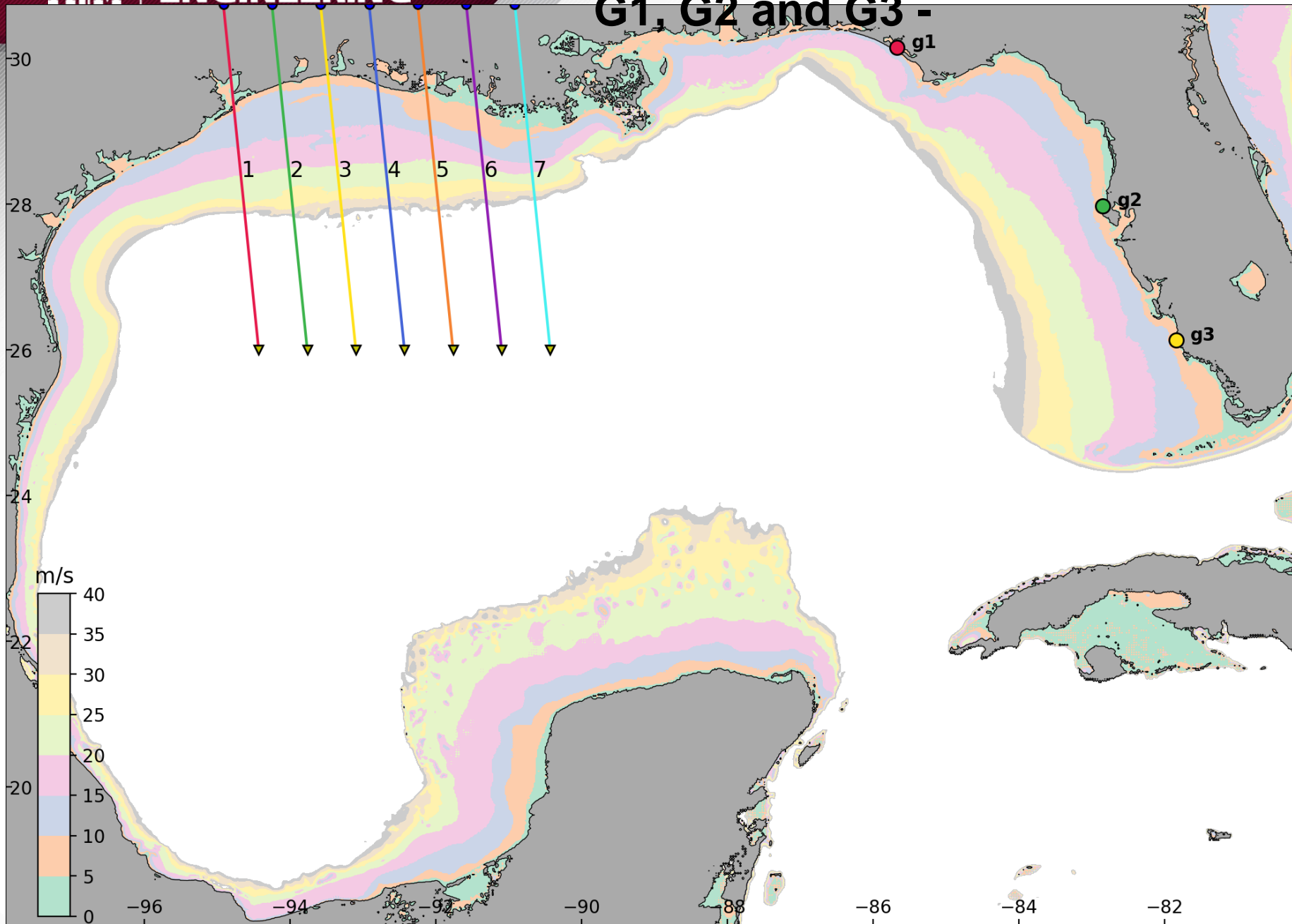
Meteotsunami CASES – Effect to G1, G2 and G3 -



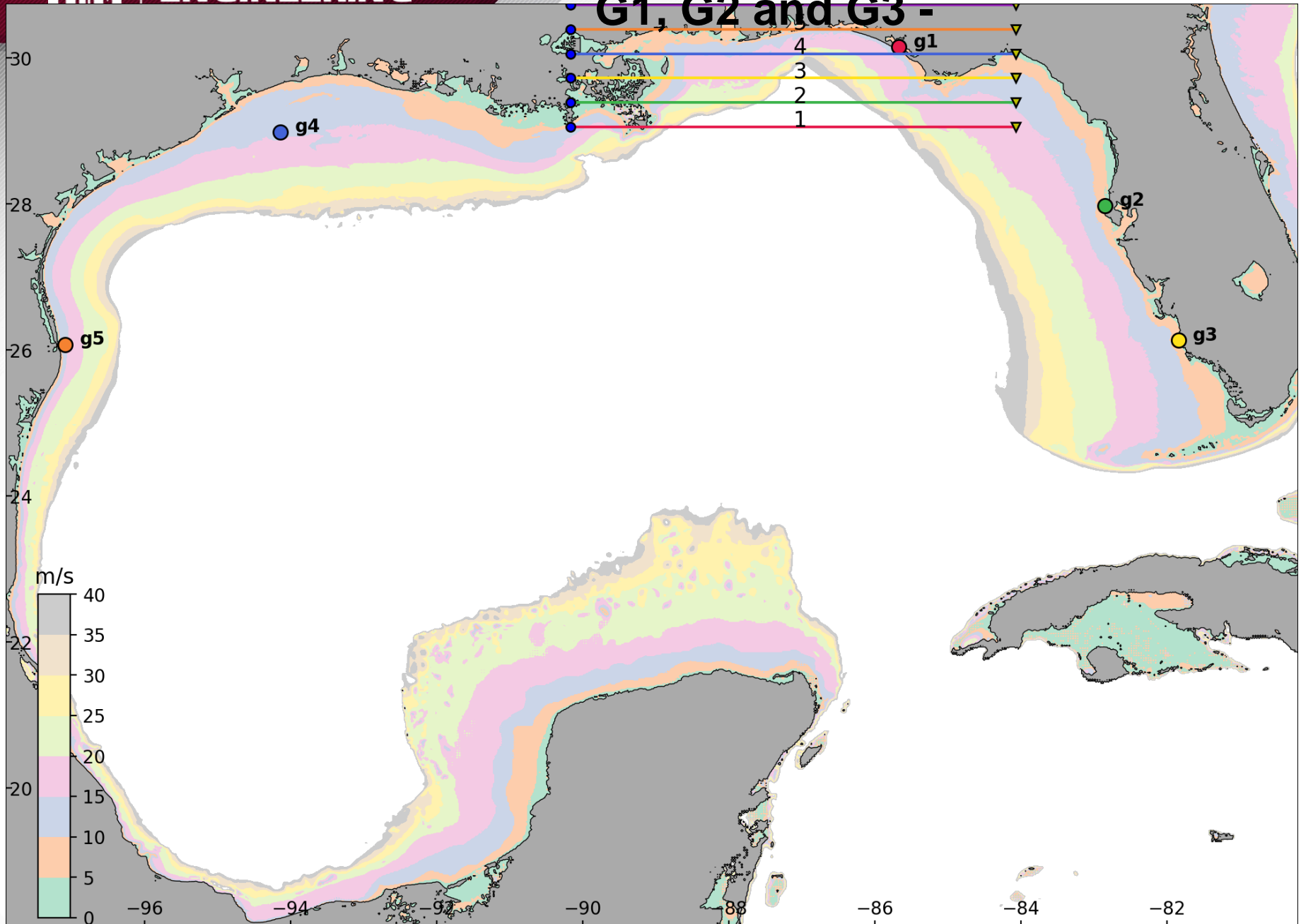
Meteotsunami CASES – Effect to G1, G2 and G3 -



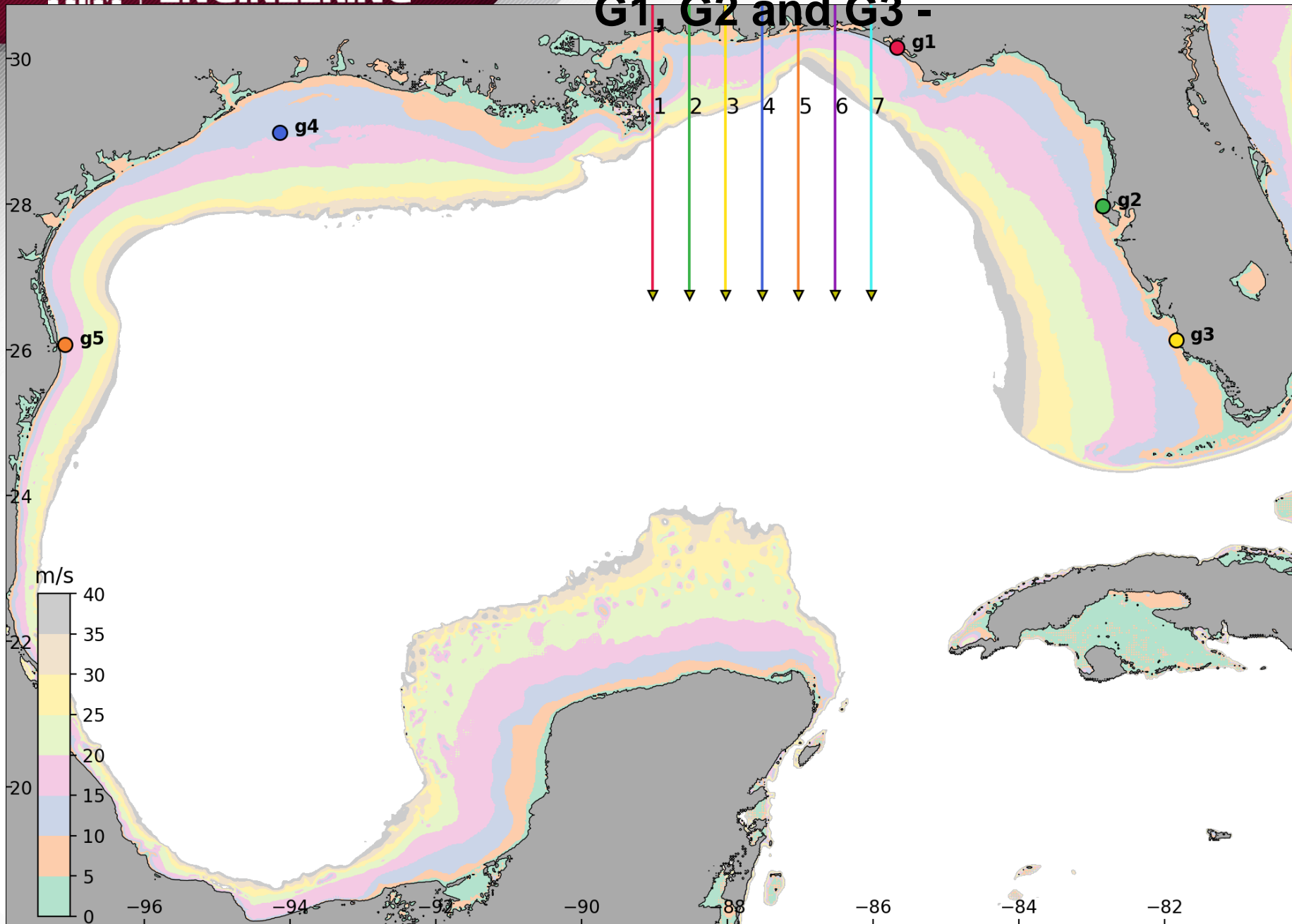
Meteotsunami CASES – Effect to G1, G2 and G3 -



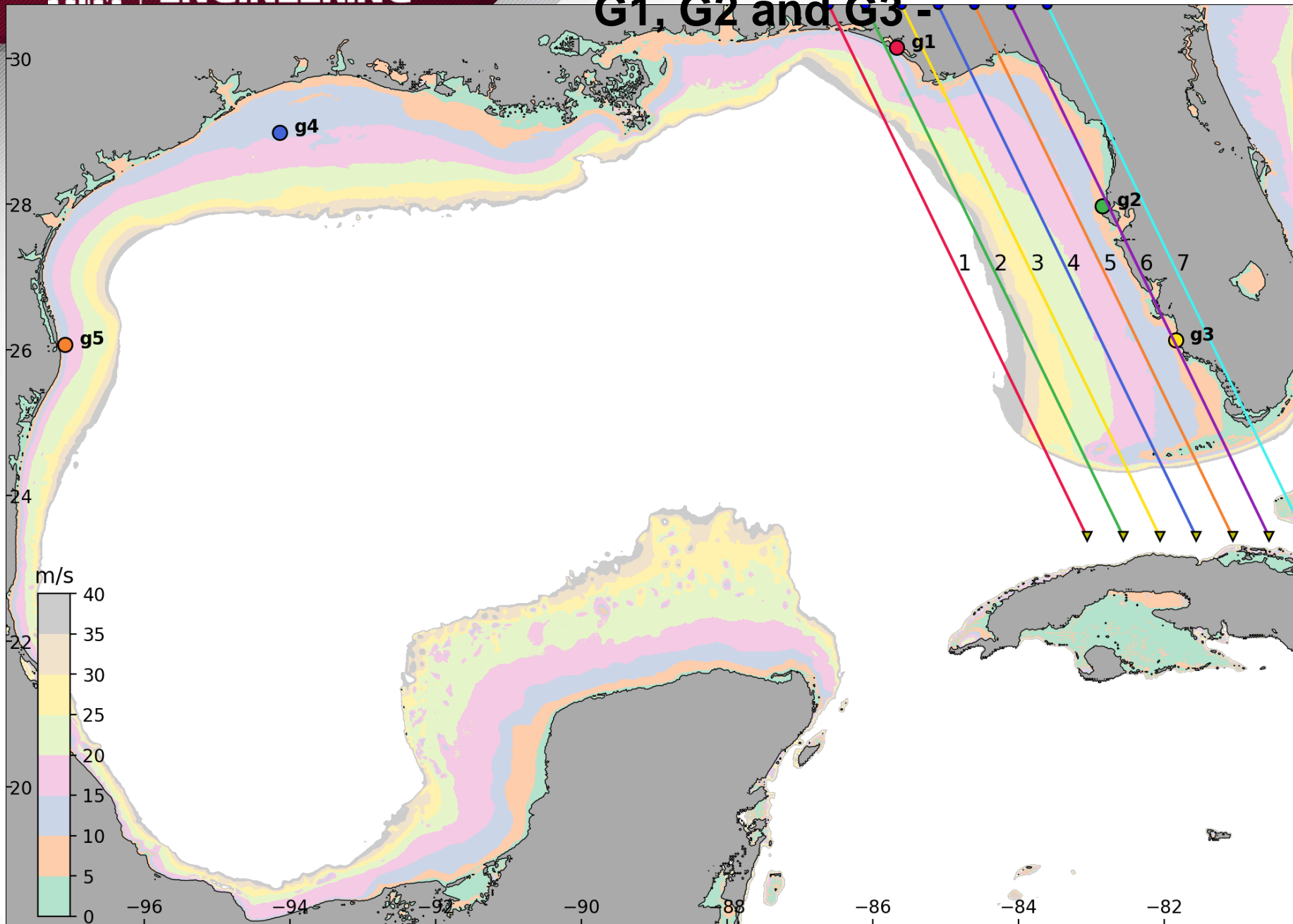
Meteotsunami CASES – Effect to G1, G2 and G3 -



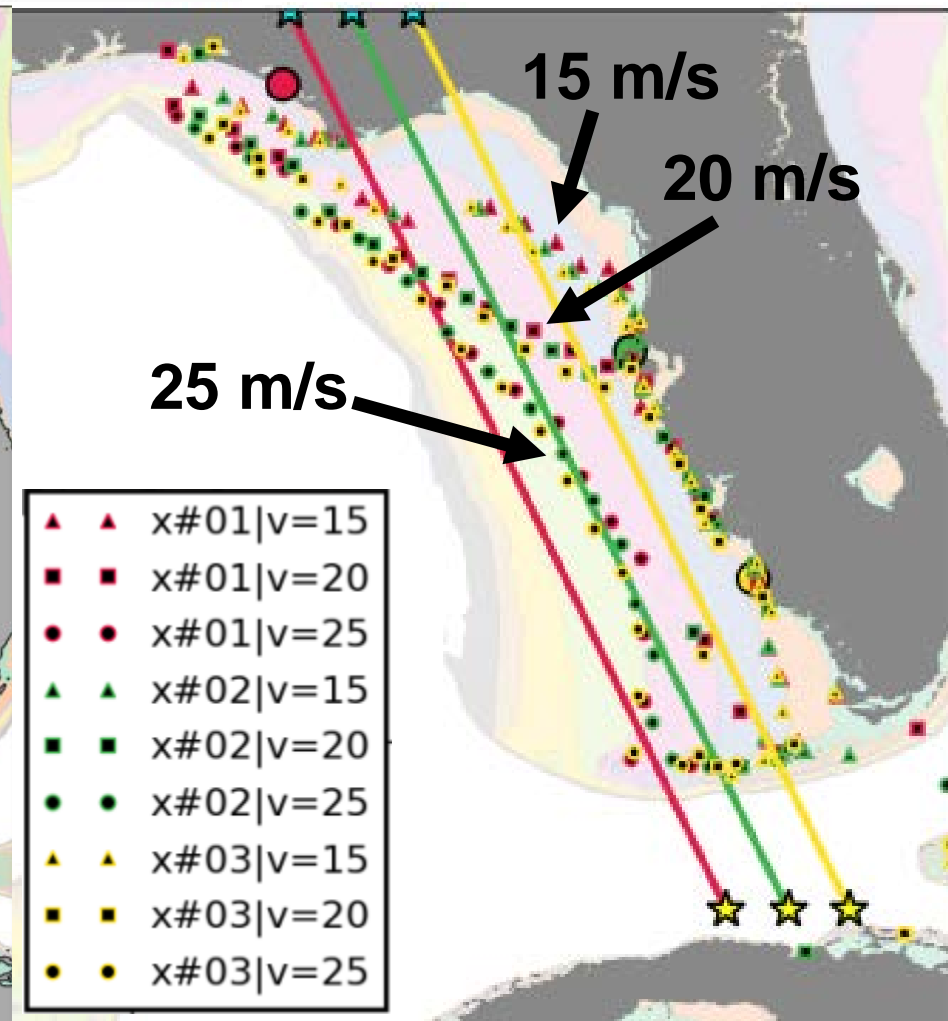
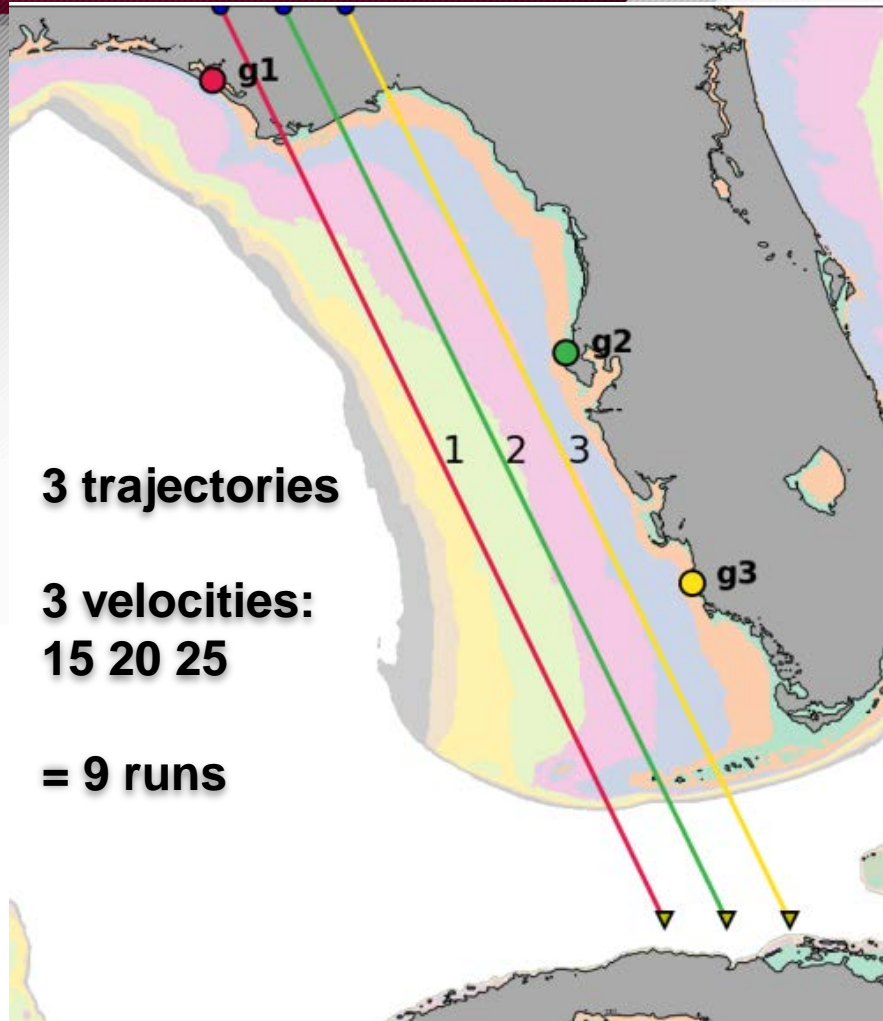
Meteotsunami CASES – Effect to G1, G2 and G3 -



Meteotsunami CASES – Effect to G1, G2 and G3 -



Meteotsunami 3 Trajectories Test Max. wave Tracking





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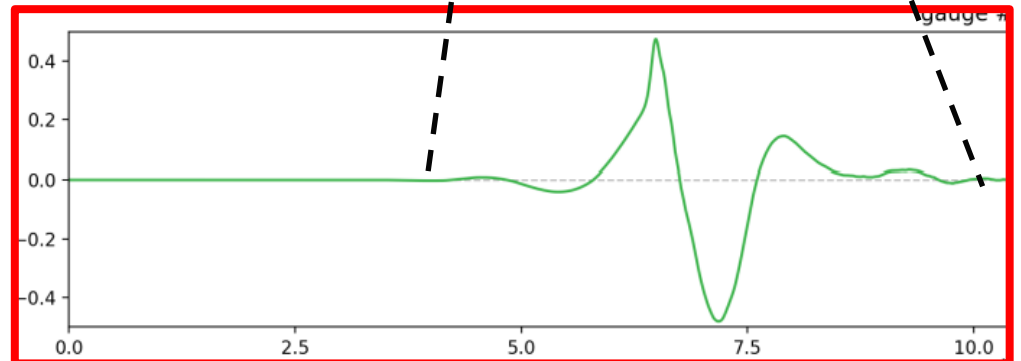
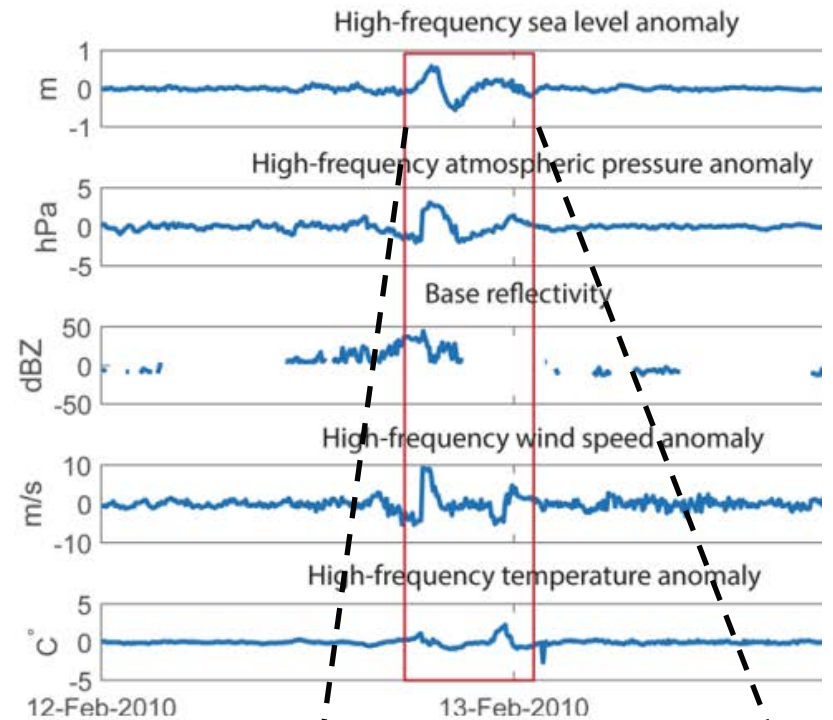
Meteotsunami, FEB 2010 FL. Free Surface



WINTER STORM: SQUALL ASSOCIATED WITH A MCS, 12th FEBRUARY 2010, REMANATS OF A BLIZZARD



Fig. 11, Olabarrieta (2017)





Meteotsunami Model – Harvey – $v=20$ m/s (movie)





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END