

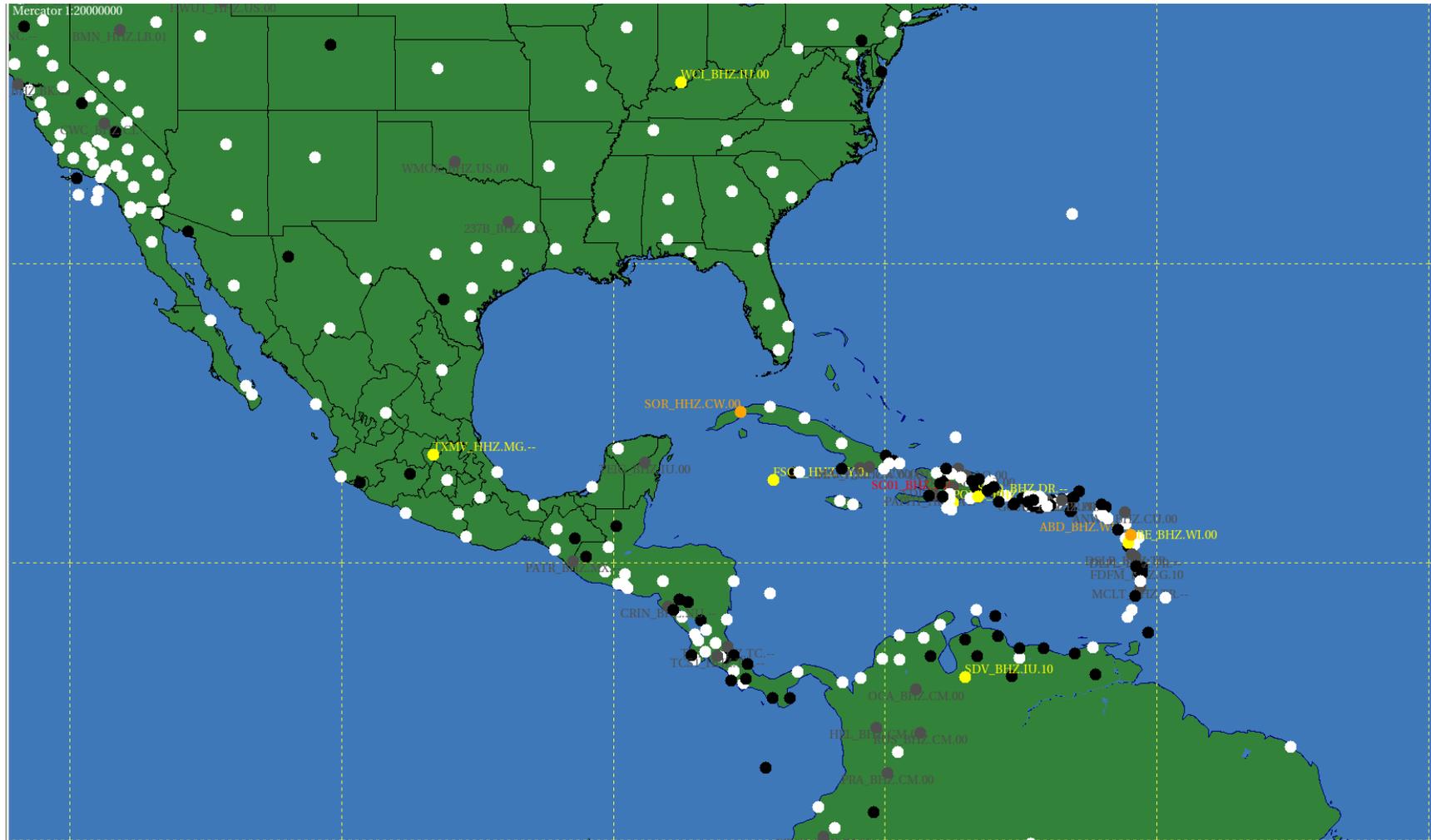


ICG/CARIBE-EWS-XVIII Meeting
Virtual
5-9 May, 2025

Tsunami Service Provider Report Pacific Tsunami Warning Center

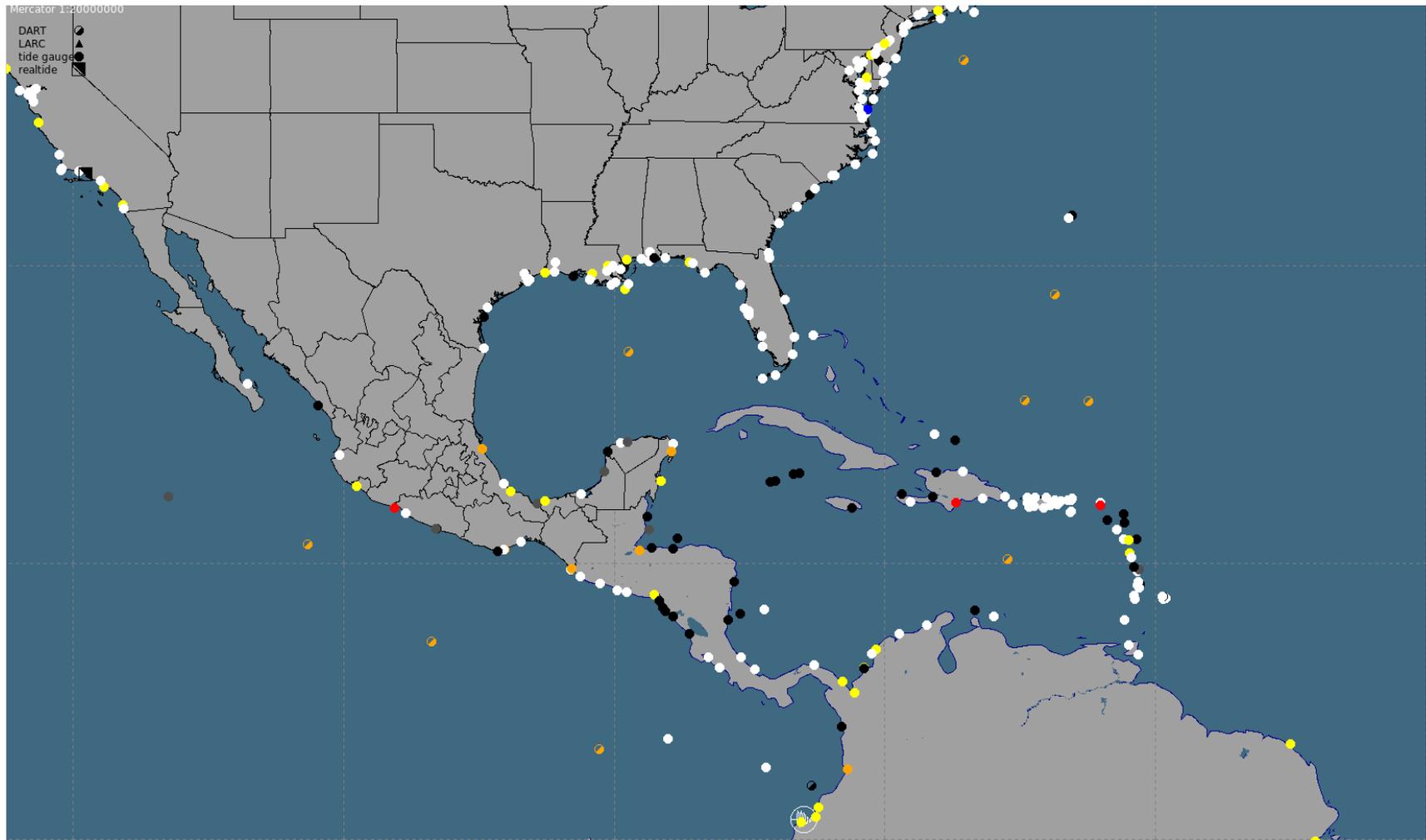
Charles McCreery, Director
NOAA Pacific Tsunami Warning Center
charles.mccreery@noaa.gov

Seismic Network: Actual – 05/05/25



STATION COLOR KEY: $t < 1$ min $1 < t < 5$ min $5 < t < 20$ min $20 < t < 60$ min $1 < t < 2$ hr $t > 2$ hr NO DATA

Sea Level Network: Actual – 05/05/25

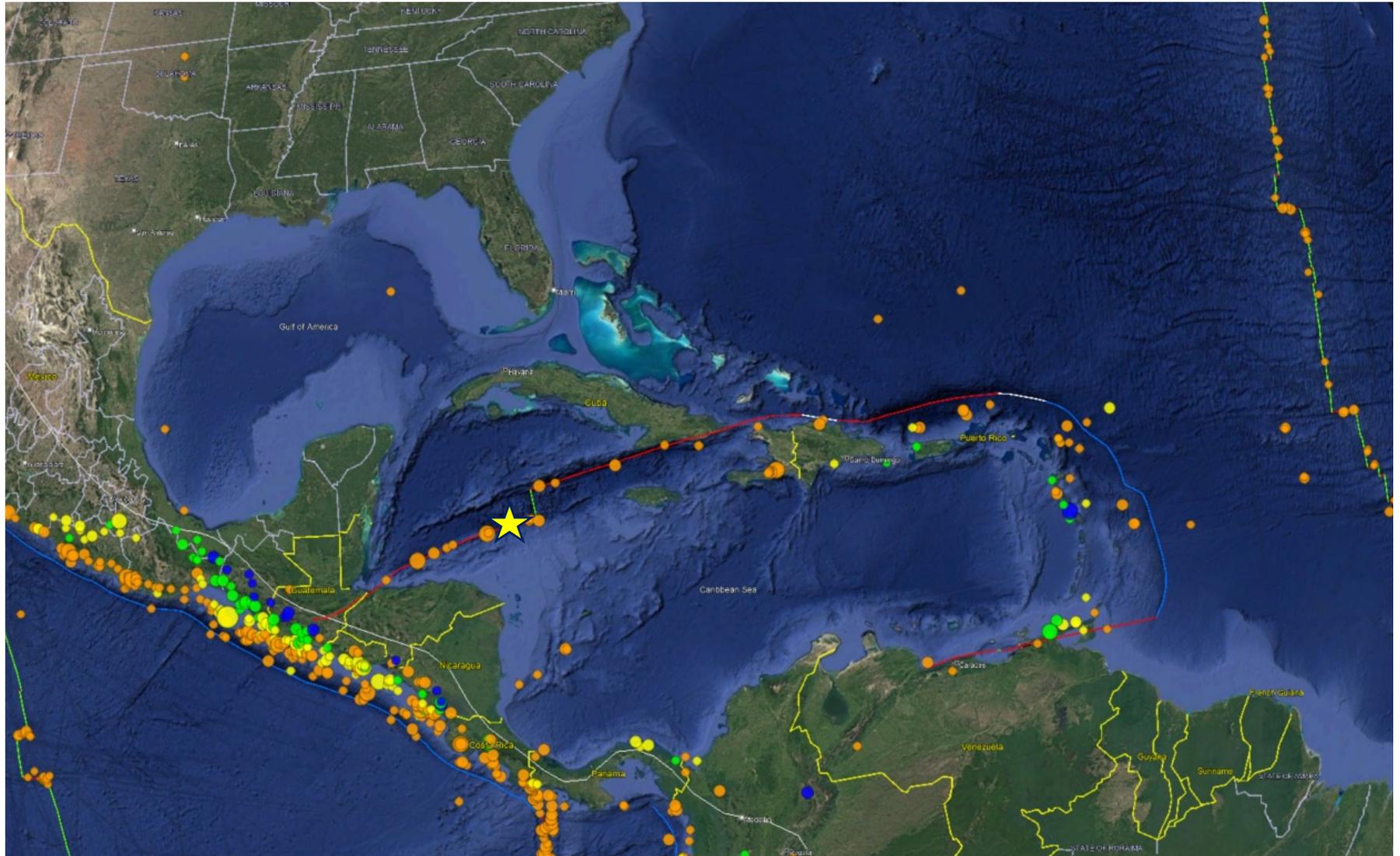


COLOR KEY: t < 10min 10min < t < 1hr 1hr < t < 7hr 7hr < t < 24hr 1d < t < 2d t > 2d NO DATA

5 Intersessional Events: 05/01/24 – 05/05/25

USGS EARTHQUAKE PARAMETERS				PTWC PRODUCTS		
Origin Time (UTC)	Location	Mw	Depth (km)	Type	#	Elapsed Time
02/08/2025 23:23:14	NORTH OF HONDURAS	7.6	10	THREAT	5	07:10
03/10/2025 02:33:15	JAN MAYEN ISLAND REGION	6.5	10	INFO	1	10:49
04/03/2025 14:09:30	REYKJANES RIDGE	6.9	10	INFO	1	21:09
05/02/2025 12:58:26	DRAKE PASSAGE	7.4	10	INFO	1	15:34
05/02/2025 17:59:08	DRAKE PASSAGE	6.4	8	INFO	1	12:52

Epicenter of 02/08/2025 23:23 UTC Mw 7.6 Earthquake

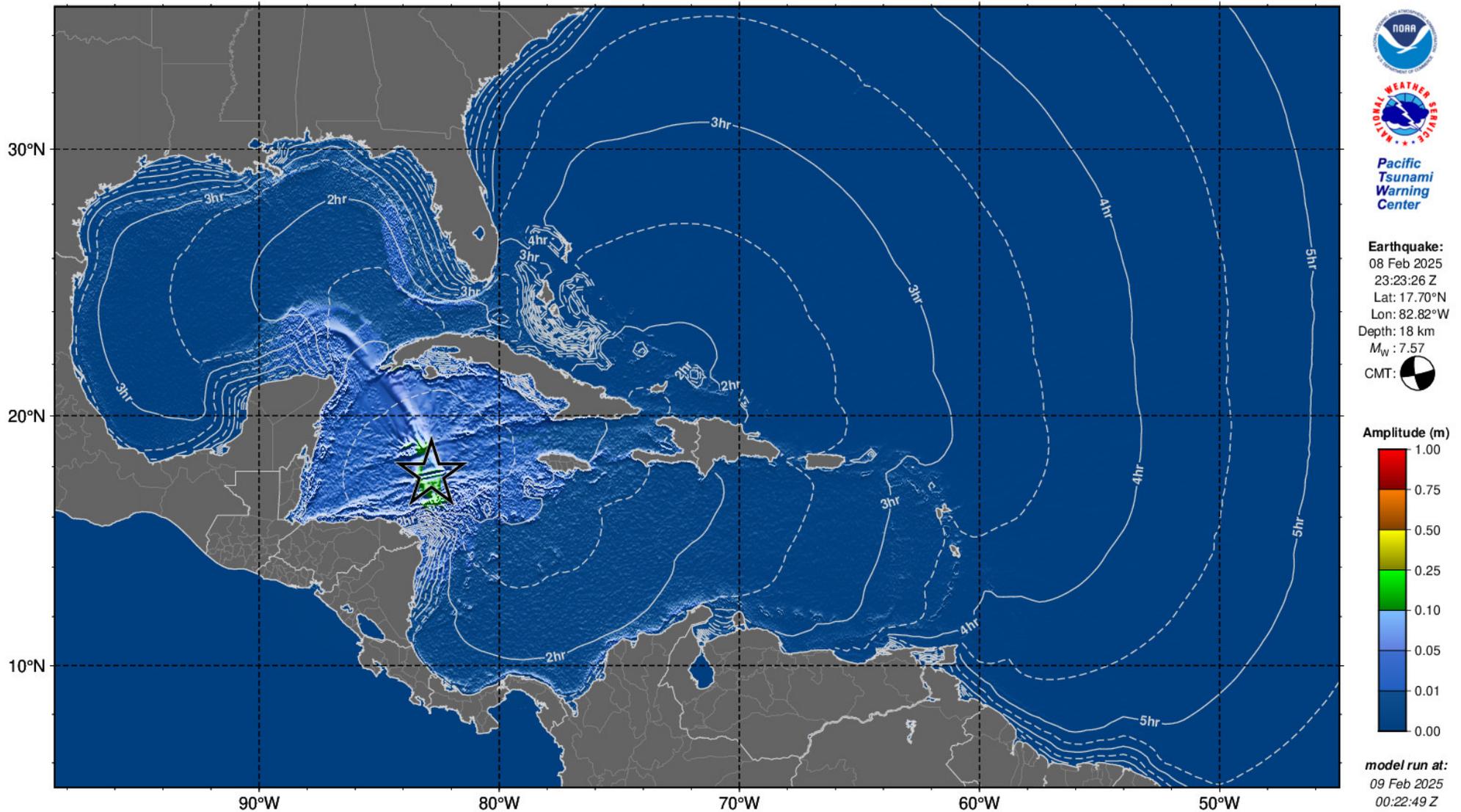


Abbreviated Event Timeline

Date	Time (UTC)	Elapsed Time	Event
02/08	23:23:15	00:00:00	Earthquake occurs
02/28	23:29:22	00:06:07	CARIBE-EWS Tsunami Threat Message #1 issued with the same parameters indicating a potential tsunami threat to areas within three hours tsunami travel time per procedures for an Mw of 8.0. That area includes the Cayman Islands, Jamaica, Cuba, Mexico, Honduras, Bahamas, Haiti, Turks and Caicos, San Andres and Providencia Islands, Belize, Dominican Republic, Colombia, Panama, Puerto Rico, Costa Rica, Aruba, Bonaire, Curacao, US Virgin Islands, British Virgin Islands, and Saba.
02/28	23:42:27	00:19:12	CARIBE-EWS Tsunami Threat Message #2 was issued lowering the earthquake magnitude to 7.6. This change modified the list of countries with a potential tsunami threat to those within 1000km of the epicenter. These were the Cayman Islands, Jamaica, Cuba, Mexico, Honduras, Bahamas, San Andres and Providencia Islands, Belize, Haiti, Costa Rica, Panama, Nicaragua, and Guatemala.
02/29	00:24:29	01:01:14	CARIBE-EWS Tsunami Threat Message #3 was issued. It included the RIFT forecast. Based on that run, the only countries having forecast coastal amplitudes above the minimum hazard amplitude of 0.3m were the Cayman Islands, Cuba, and Honduras. It was noted that no sea level readings were yet available to validate the forecast but that such data were expected in the next 30 minutes to an hour.
02/29	01:21:28	01:58:13	CARIBE-EWS Tsunami Threat Message #4 was issued. It included the same RIFT forecast and the sea level reading from Isla Mujeres. It noted that the threat would continue until additional sea level data were received to confirm the threat had passed.
02/29	02:00:57	02:37:42	CARIBE-EWS Final Tsunami Threat Message #5 was issued. It included an updated sea level reading from Isla Mujeres of 0.04m. It was noted that based on all sea level data the threat had now largely passed and that only additional minor sea level fluctuations might occur over the next few hours.

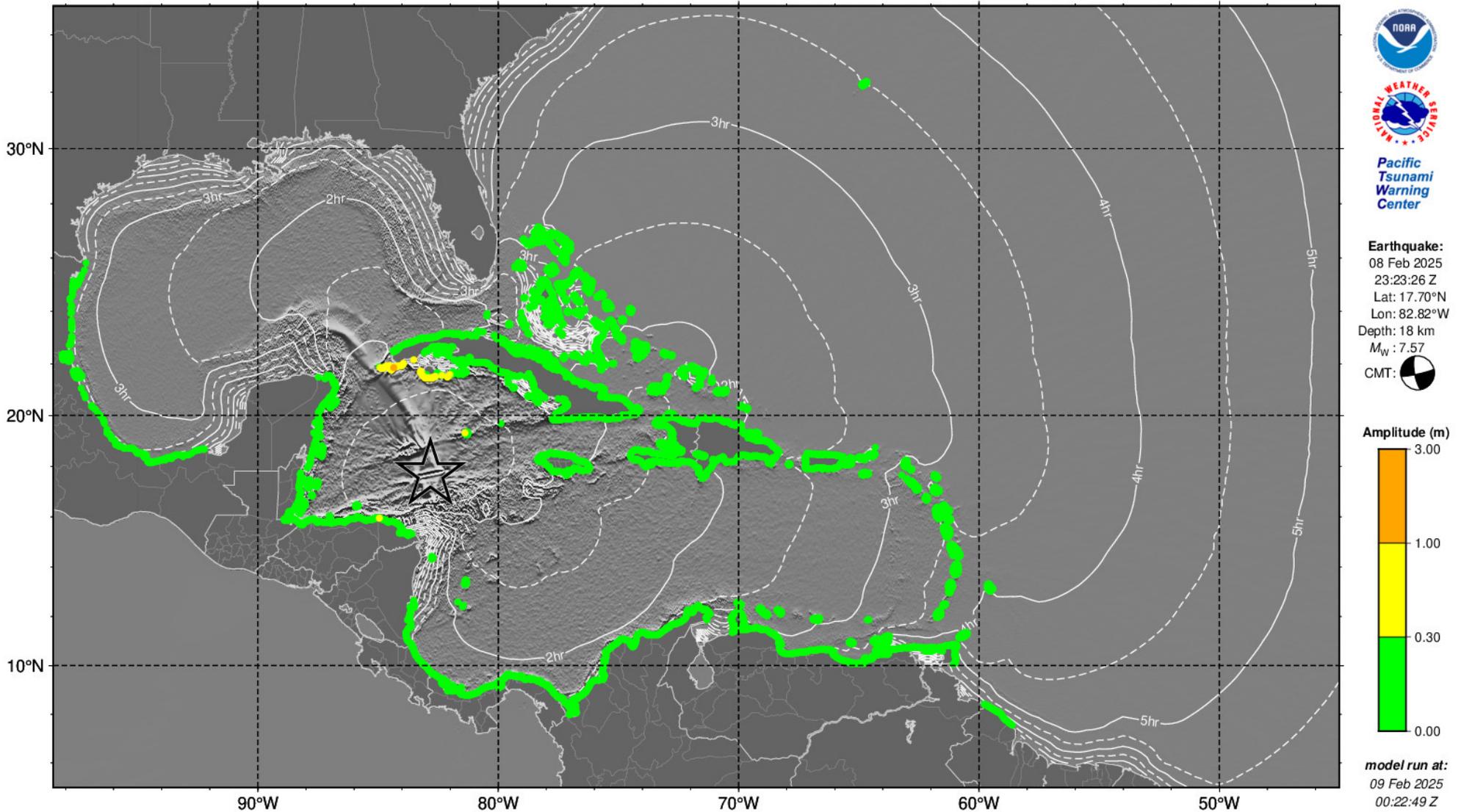
02/08/25 Cayman Islands Event

PTWC Energy Forecast



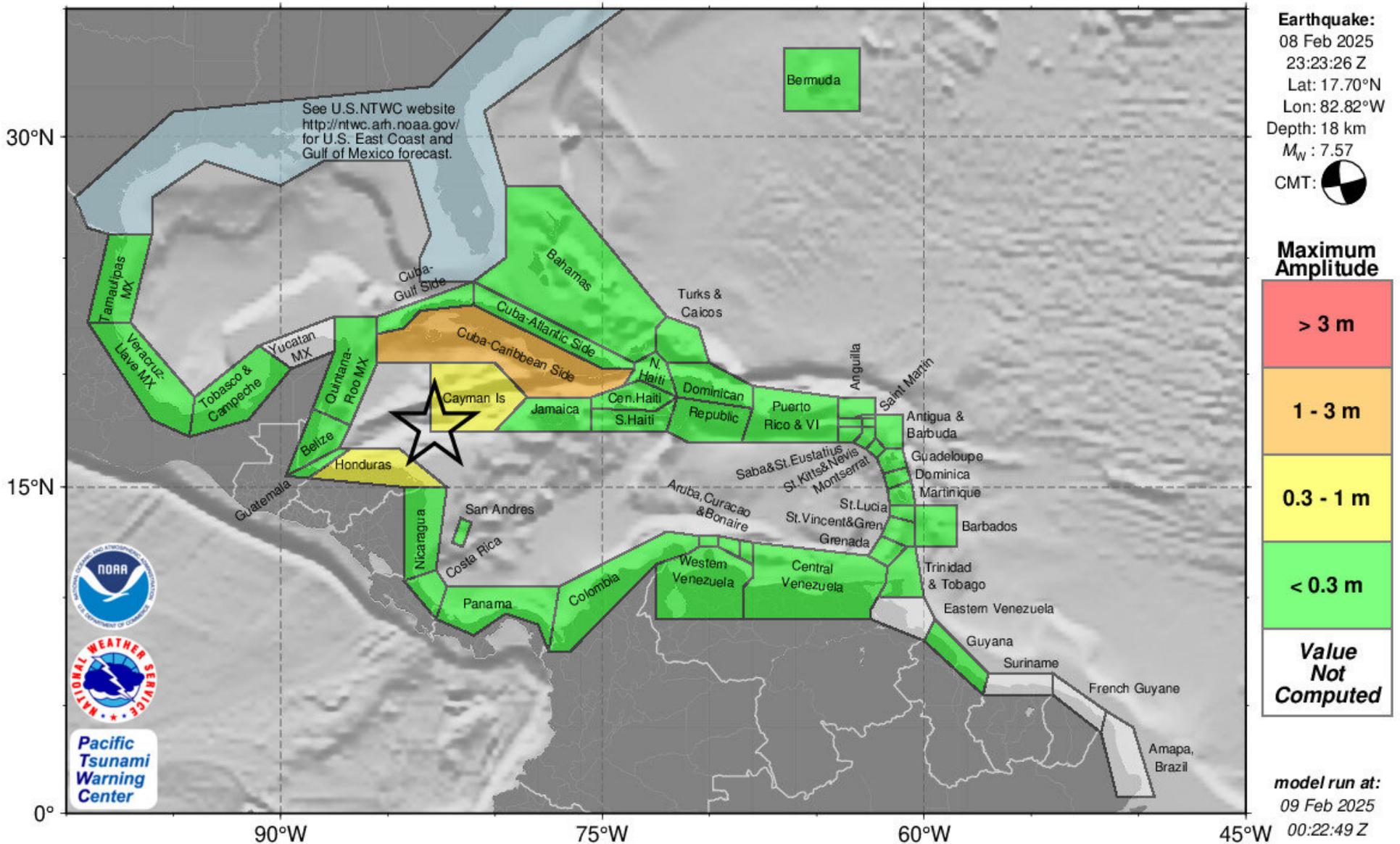
02/08/25 Cayman Islands Event

PTWC Coastal Forecast

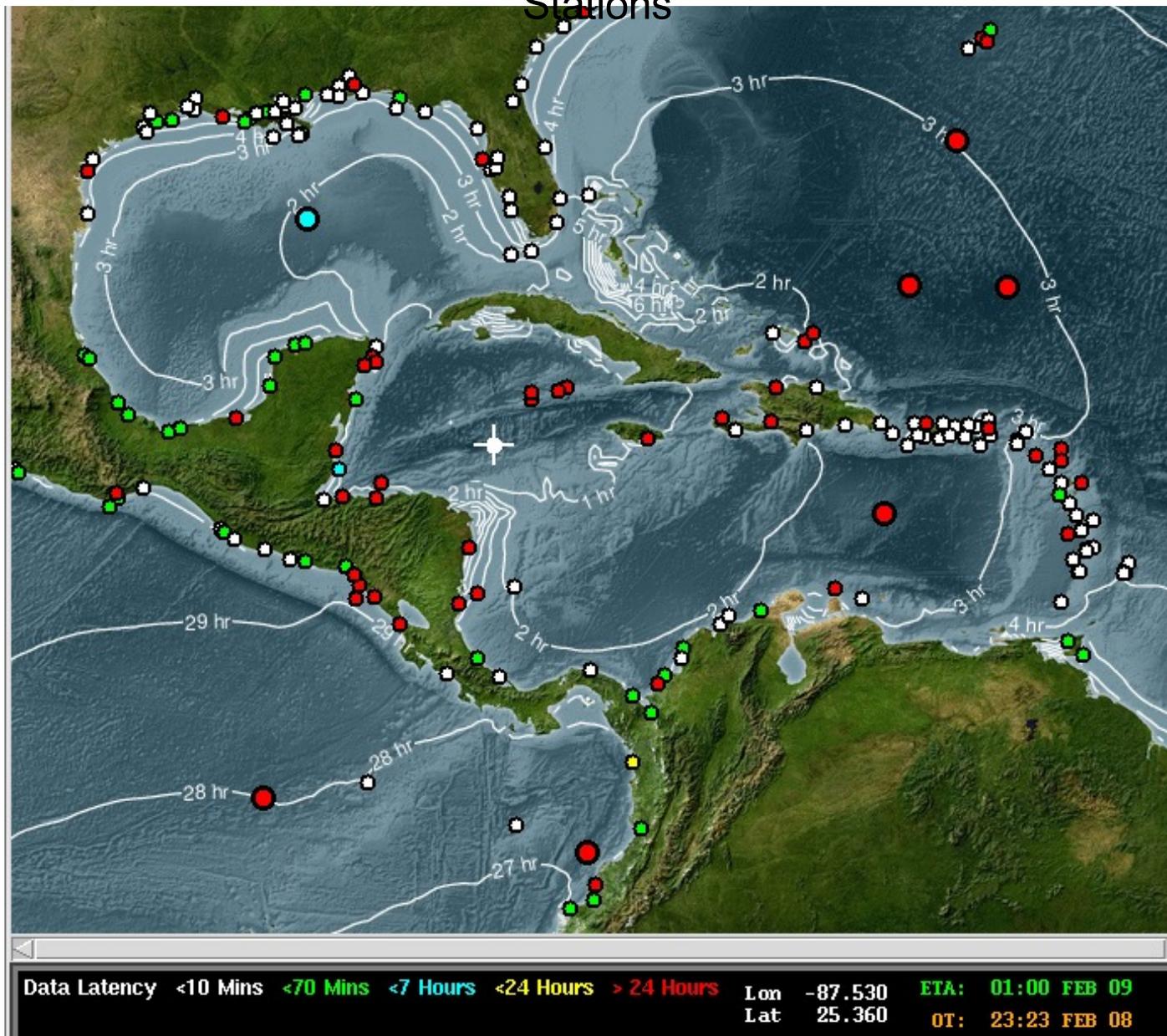


02/08/25 Cayman Islands Event

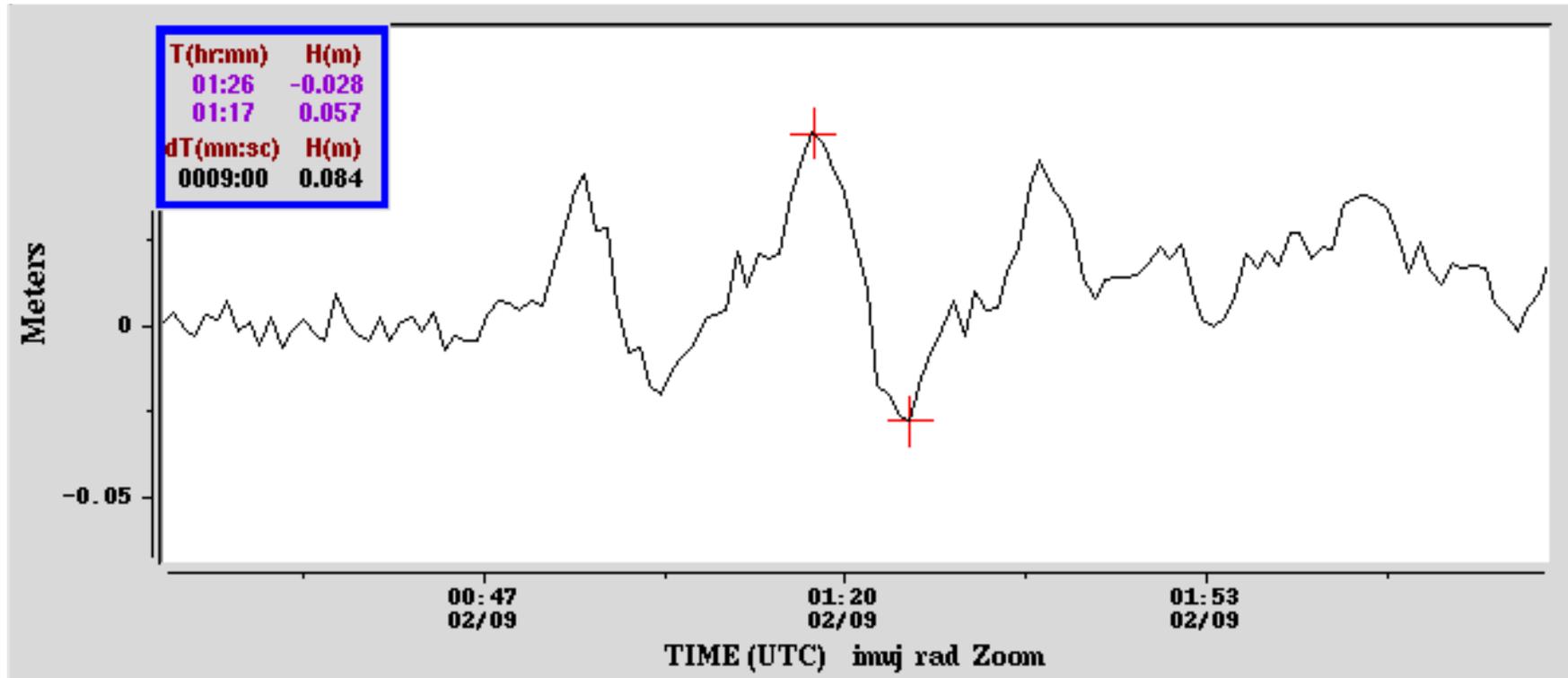
PTWC Forecast Polygons



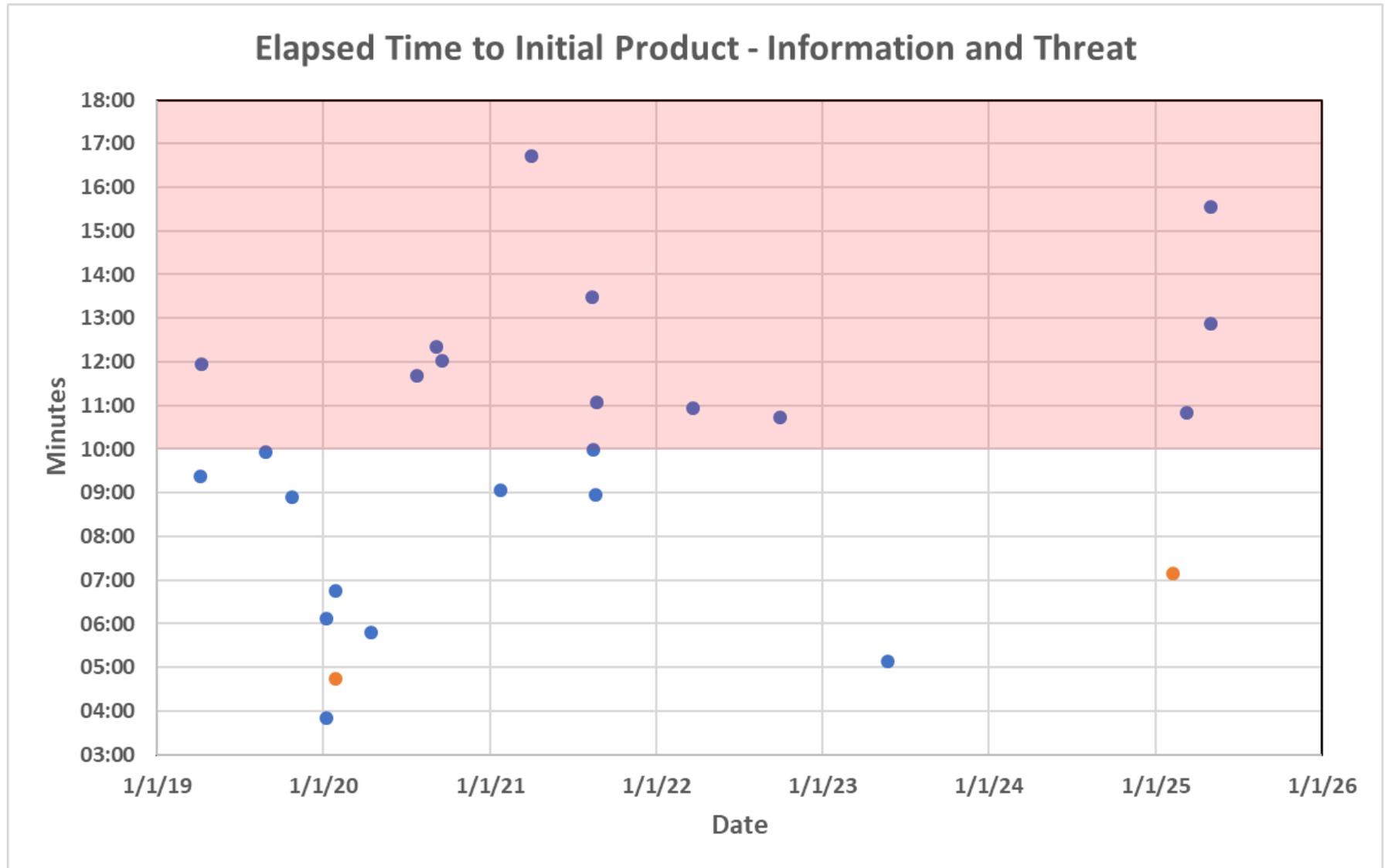
02/08/25 Cayman Islands Event – Epicenter, Tsunami Travel Times, and Sea Level Stations



Tsunami Waves from the gauge at Isla Mujeres, Mexico.
Maximum is 0.084m crest-to-trough or 0.042m amplitude



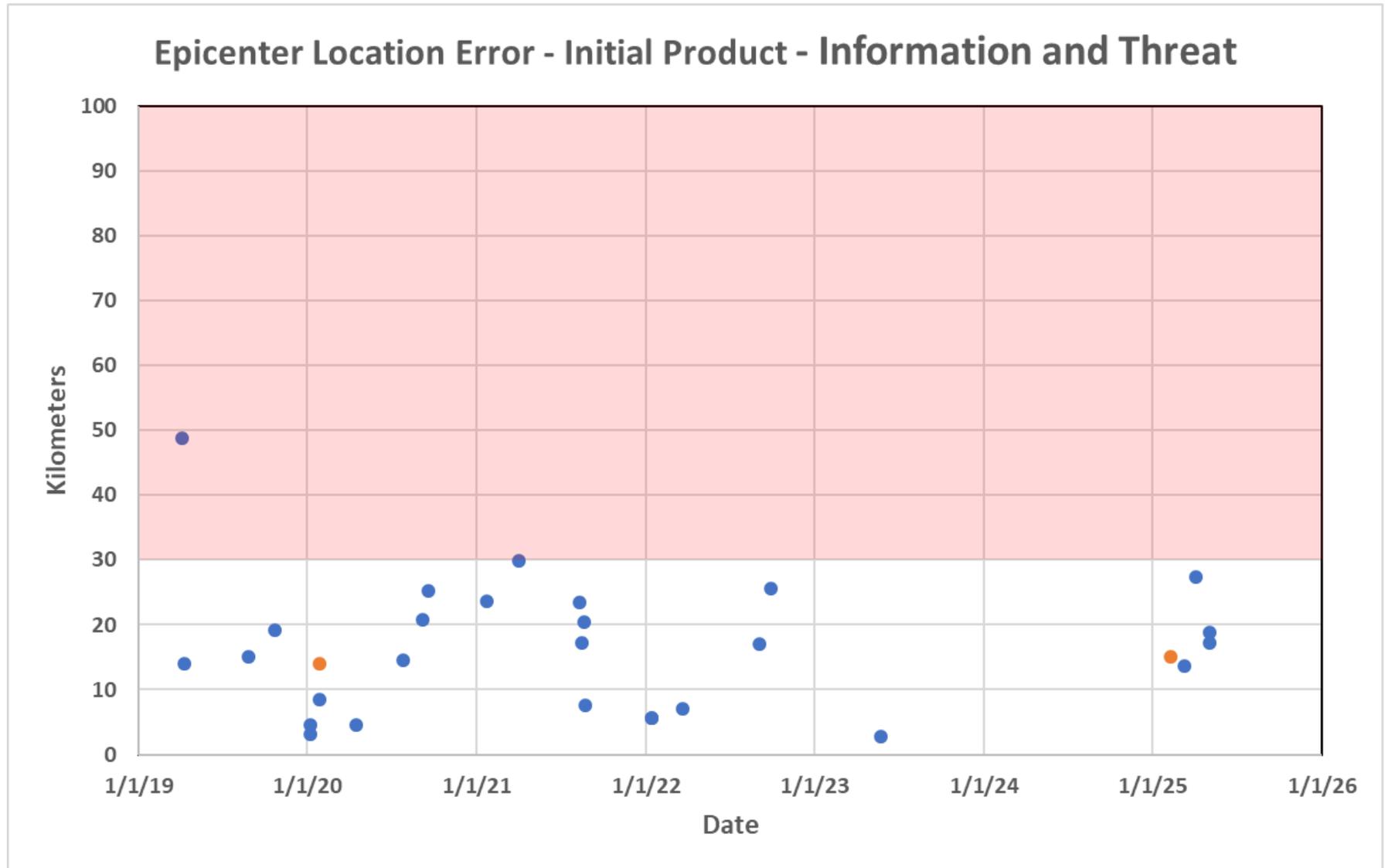
Elapsed Time to Initial Product - Since 2019



Blue dots are Information Statements

Orange dots are Threat Messages

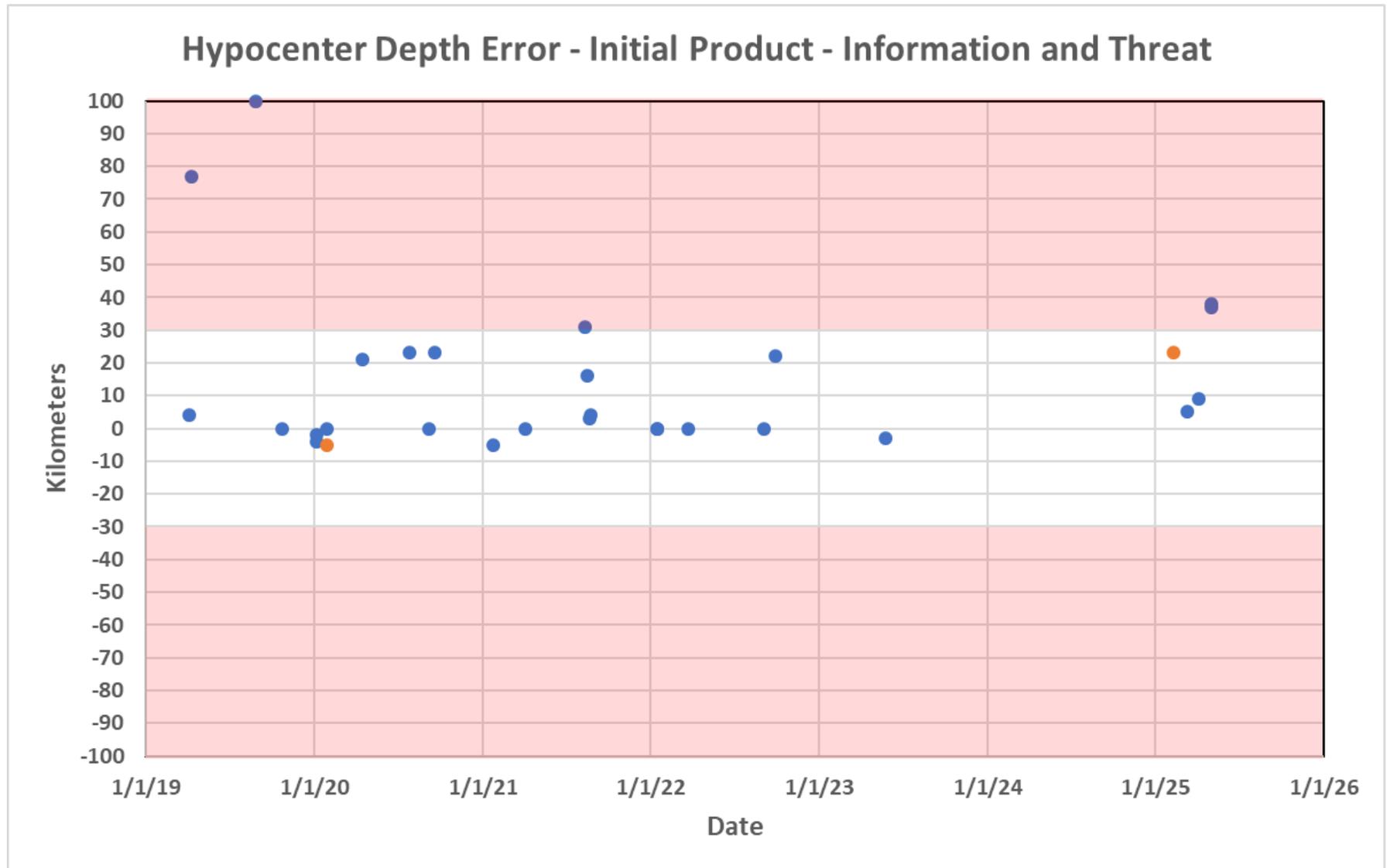
Epicer Location Performance - Since 2019



Blue dots are Information Statements

Orange dots are Threat Messages

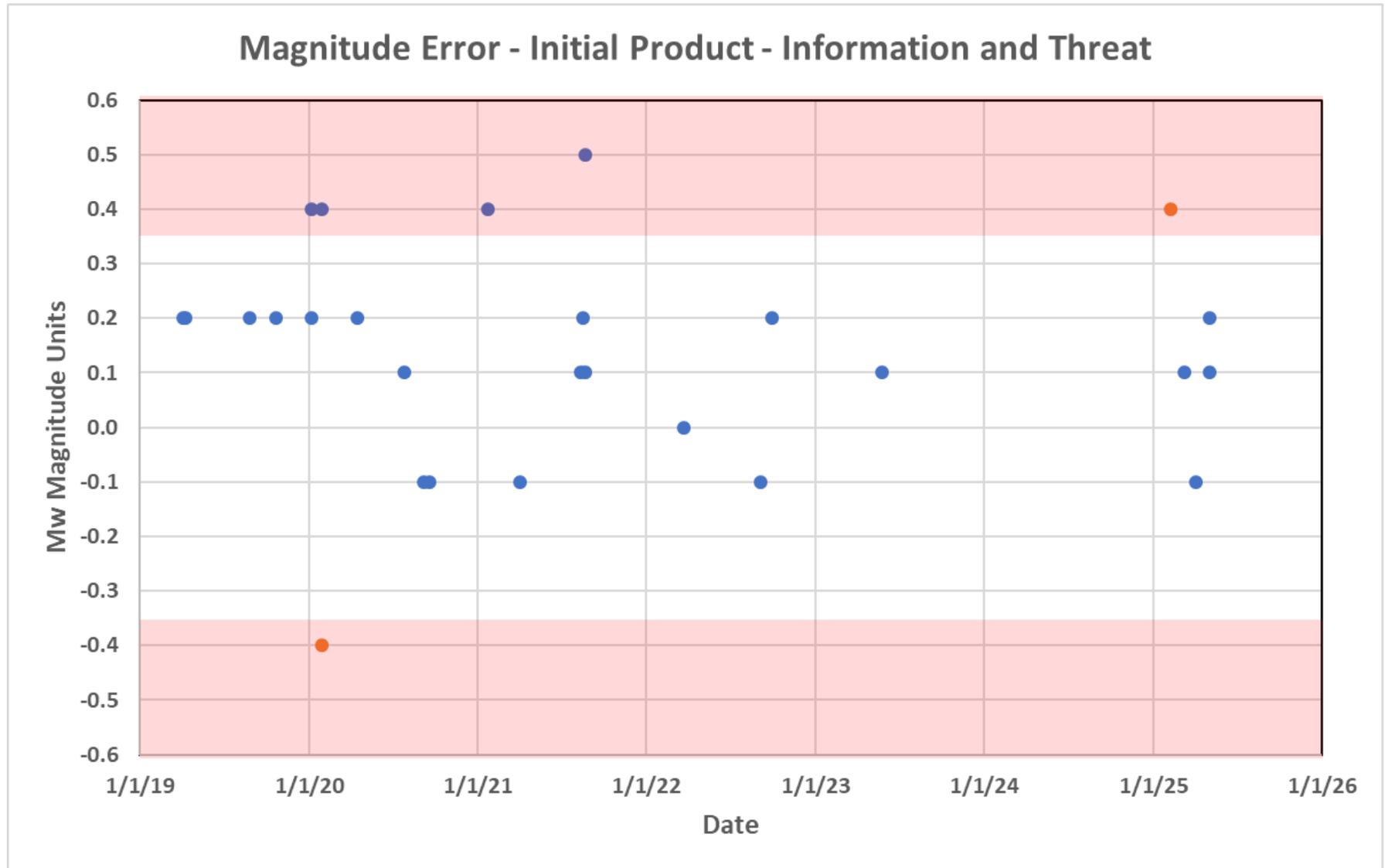
Depth Performance - Since 2019



Blue dots are Information Statements

Orange dots are Threat Messages

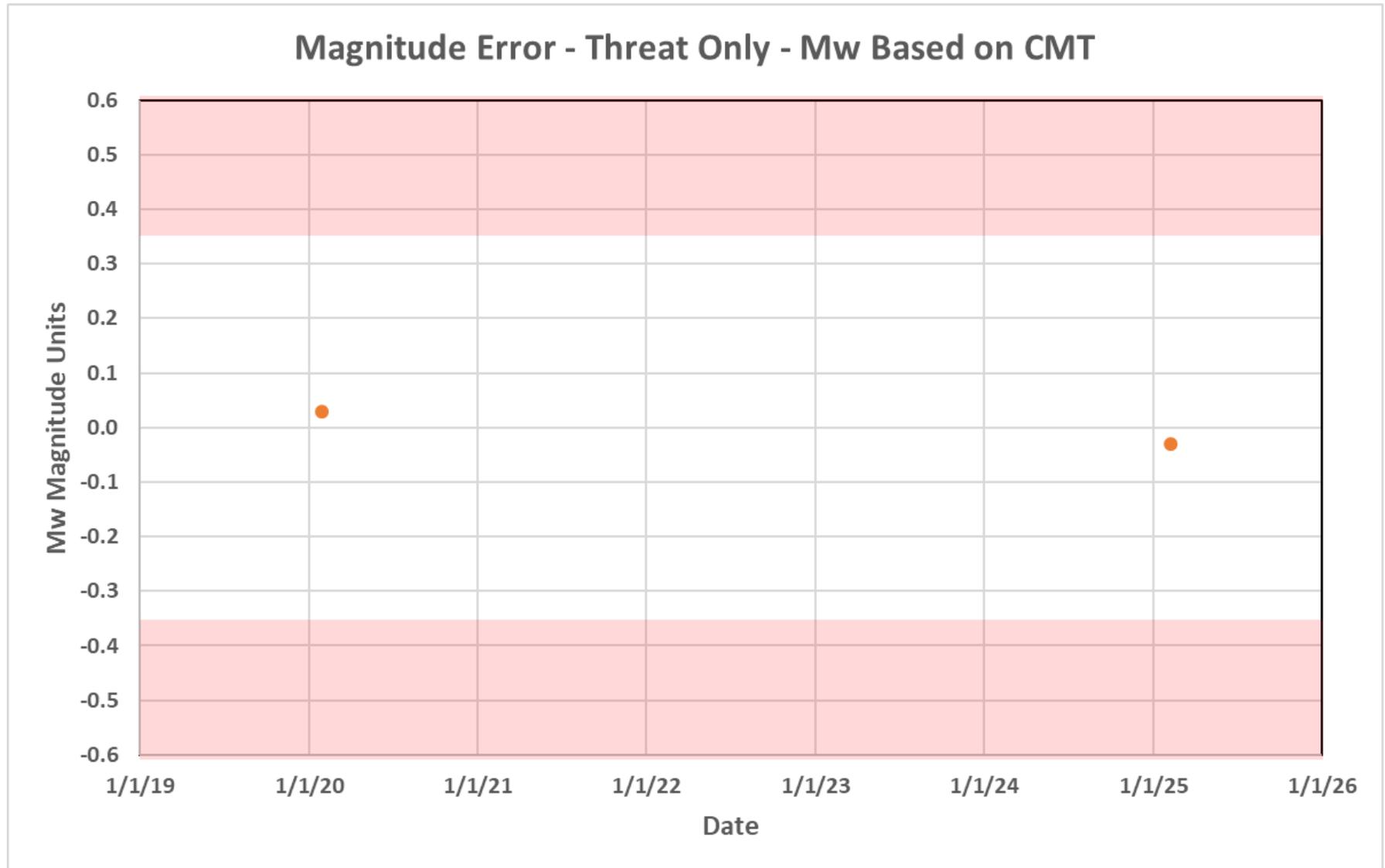
Magnitude Performance - Since 2019



Blue dots are Information Statements

Orange dots are Threat Messages

Forecast Magnitude Performance - Since 2019



Orange dots are Threat Messages

Proposed Update to PTWC Products

Briefed at ICG/CARIBE-EWS-XVII, reviewed by WG 3, and included in Updated User's Guide

- Convert all upper-case text to mixed-case text
- Alphabetize country/territory names listed in initial threat message
- Organize ETAs by country or territory
- Organize observations by country or territory
- Indicate type of marigram measurement made (crest-to-trough, mid-to-crest, mid-to-trough)

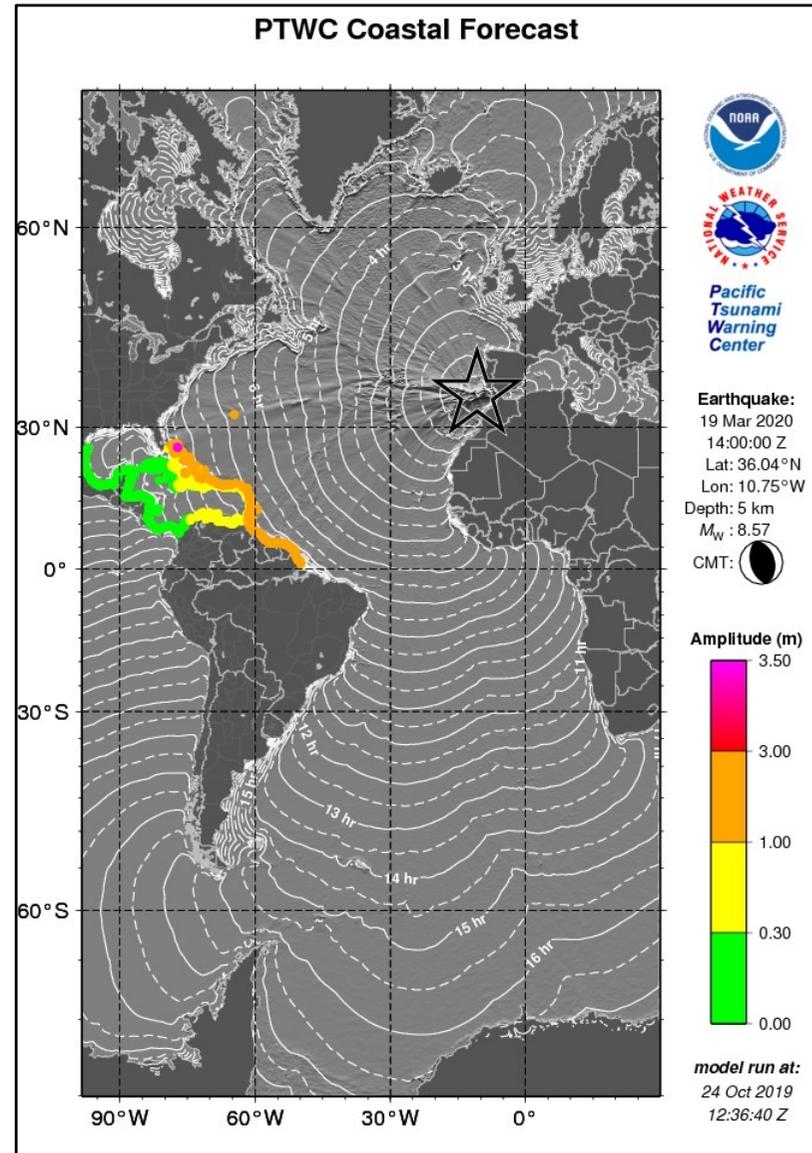
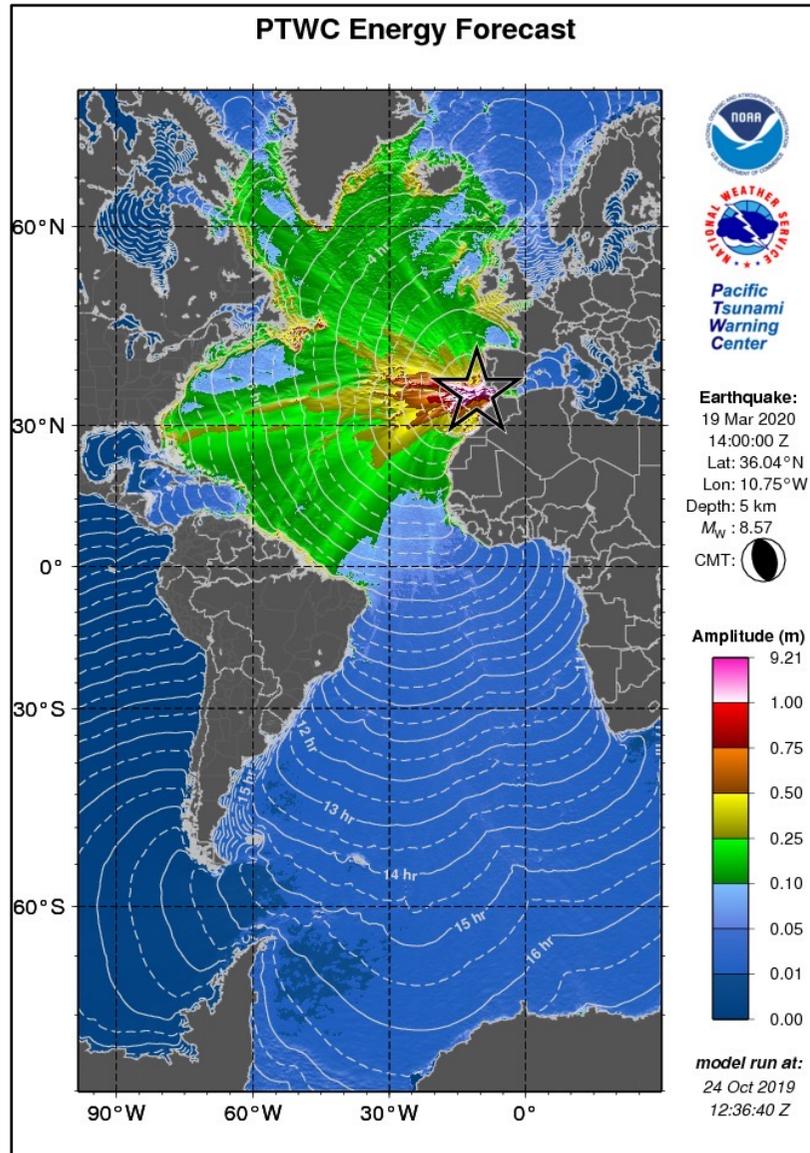
New, reviewed by WG 3, and included in Updated User's Guide

- Expanded coastal amplitudes map for Atlantic events
- Add clarifying language to key statements
- Note that forecast is for the duration of the event

Coming Soon

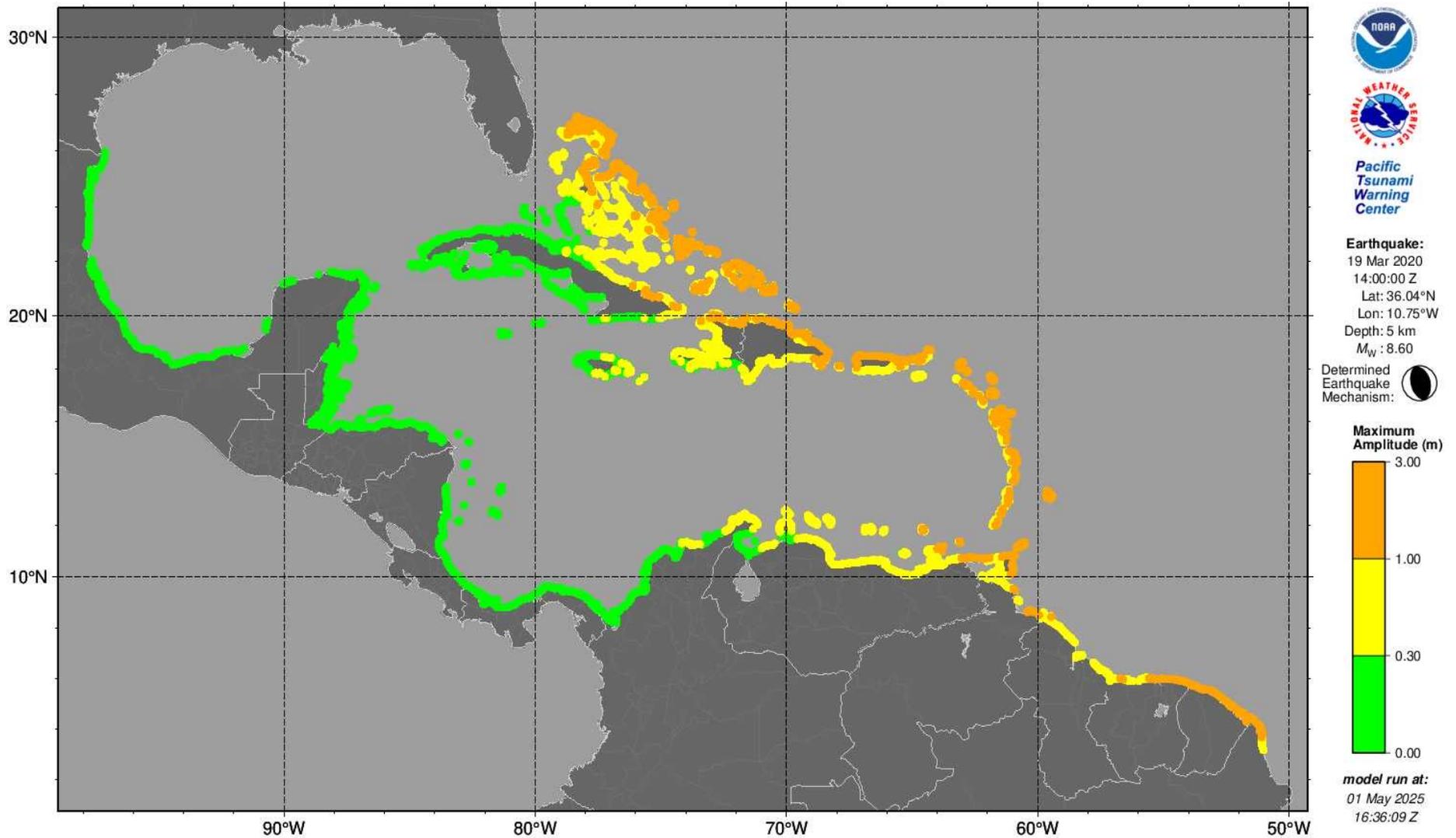
- Define pre-forecast potential threat areas by time-to-impact versus distance (e.g., first arrival within one hour, two hours, or three hours)

PTWC Graphical Products – Portugal Scenario Maps



Add Expanded Coastal Forecast Map for Atlantic Events

PTWC Coastal Forecast



Add Clarifying Language to Key Statements

* Based on all available data... there is no significant tsunami threat from this earthquake.

* Based on all available data... there is no significant tsunami threat from this earthquake **to coasts of the Caribbean and adjacent regions covered by this international product.**

* Based on all available data... hazardous tsunami waves are forecast for some coasts.

* Based on all available data... hazardous tsunami waves are forecast for some coasts **of the Caribbean and adjacent regions covered by this international product.**

* Based on all available data... the tsunami threat from this earthquake has passed and there is no further threat.

* Based on all available data... the tsunami threat from this earthquake has passed and there is no further threat **to coasts of the Caribbean and adjacent regions covered by this international product.**

Note that Forecast is for the Duration of the Event

CURRENT

TSUNAMI THREAT FORECAST

- * Tsunami waves reaching more than 3 meters above the tide level are possible along some coasts of

BAHAMAS

PROPOSED

TSUNAMI THREAT FORECAST

The following forecast tsunami amplitudes apply to the entire duration of the event. It is up to national authorities to decide on the appropriate levels of alert for their coasts throughout the event based upon all available information.

- * Tsunami waves reaching more than 3 meters above the tide level are possible along some coasts of

BAHAMAS

Update of Users' Guide to PTWC Products

Completed

- Includes description and example products with the previously proposed product changes
- Incorporate information from the 2006 Communication Plan and retires that Plan.
- It has been reviewed and approved by Working Group 3 with their recommended changes incorporated
- The draft updated Users' Guide is available for review by Member States as one of the ICG-CARIBE-EWS-XVIII documents

Pending ICG Consensus

- The Guide will be finalized and published after remaining edits by the Secretariat.
- Changes to the products described in the document will be implemented following a descriptive notification to Member States made 3 months in advance.

Communication Tests

- Routine unscheduled communication tests from PTWC with verification of message receipt from TWFPs and/or NTWCs help ensure that the system will work to save lives when an event occurs.
- PTWC intends to resume unscheduled communication tests on a regular basis.
- PTWC has been working with the Secretariat on a better method to conduct these tests with a simple electronic form for responding.
- Goals of the new process are:
 - Simplify the work for TWFPs and/or NTWCs to respond
 - Enable an automated compilation of results that can be published regularly to Member States for action if necessary – not just reported at annual ICG meetings
 - Routinely verify communications in a way that is similar to the situation of an actual event.

Response-Required Communication Tests

- In addition to the regularly-scheduled monthly PTWC communication tests issued by PTWC that only require a response if there are problems,
- PTWC will begin conducting regularly scheduled quarterly communication tests requiring a response via an online SurveyMonkey form.
- Results will be routinely reported to Working Group 3 and summarized for the ICG.
- These tests will start following a notification to Member States with the instructions for responding.



**UN-ANNOUNCED CARIBE-EWS COMMUNICATIONS TEST
FROM PTWC**

Please respond what **date and time (UTC)** you received the last communication test from the Pacific Tsunami Warning Center. Consider all the methods that apply. Thank you for your participation and helping us to maintain and improve the Regional Tsunami Early Warning System!

Por favor responda en qué **fecha y hora (UTC)** recibió la última prueba de comunicaciones del Centro de Alerta de Tsunamis del Pacífico. Considere todos los métodos que aplican.

¡Gracias por su participación y ayudarnos a mantener y mejorar el Sistema Regional de Alerta Temprana de Tsunamis!

* 1. Country

* 2. Email
Email Address

* 3. Tsunami Contact Point
 National Tsunami Warning Center (NTWC)
 Tsunami Warning Focal Point (TWFP)

* 4. Agency/Office

* 5. For each communication method that apply to your office/agency, report the date and time (UTC) when the test message was received.
Para cada método de comunicación que aplique a su oficina/agencia, reporte la fecha y hora (UTC) en que recibió el mensaje de prueba.

	Month/Mes	Day/Día	Hour/Hora	Minute/Minuto
Global Telecommunications System (GTS) / Sistema Global de Telecomunicaciones	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Aeronautical Fixed Telecommunications Network (AFTN) / Red de Telecomunicaciones Fijas Aeronáuticas	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Email / Correo Electrónico	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

6. Comments
Please notify if the test was unacceptably delayed or not received by one or more designated communication methods (for example an incorrect email address). In that case, please indicate which method(s) failed and the email of a person to correspond with regarding the problem.
Comentarios
Por favor notifique si la prueba se retrasó inaceptablemente o no se recibió mediante uno o más métodos de comunicación designados (por ejemplo, una dirección de correo electrónico incorrecta). En ese caso, indique qué método(s) falló y el correo electrónico de una persona con quien comunicarse sobre el problema.

Telefaxing of PTWC Products

- PTWC ceased telefaxing its text products as of April 1, 2025 in accordance with an IOC recommendation and following advance notification to Member States.

A Few Other Items of Note

- US TWCs are still working on implementation of GNSS data ingest and real-time GNSS
- Improve detection and alerting for non-seismically-generated tsunamis, particularly volcanoes (e.g., *VONUT method*)
- New design of the “tsunami.gov” website.
- New messaging software and development of a common analysis system for the US TWCs that will produce probabilistic forecasts. These will facilitate more seamless backup between PTWC and US NTWC
- Reorganization of two US TWCs under a common management structure for efficiency and increased capability (target 2027)
- Distribute an updated Users’ Guide for PTWC Products for the CARIBE-EWS that will incorporate information from the 2006 Communication Plan and then retire the Communication Plan.
- Maritime products for ships at sea – under development.

Maritime Products - Background

- Maritime tsunami products were requested of TSPs for all ocean basins through the TOWS-WG Task Team on Watch Operations by the IHO's World-Wide Navigational Warning System (WWNWS)
- Purpose is to aid NAVAREA Coordinators in advising ships at sea about potential tsunami hazards when ships are approaching ports
- General guidelines on the content and procedures for TSP implementation were constructed with input from the WWNWS.

Global Background

IOC Decision A-32/3.4.1

Warning and Mitigation Systems for Ocean Hazards

- **TOWS-WG Instructs** the regional Intergovernmental Coordination Groups (ICGs) to;
- TSPs in collaboration with NAVAREA operators of the International Hydrographic Organization (IHO) test the tsunami maritime safety products in 2023/24, with a view to operationally implementing them in 2024-2025

IOC/TOWS-WG-XVII DECISIONS AND RECOMMENDATIONS

- **The TOWS-WG Group recommended to Intergovernmental Coordination Groups (ICGs):**
- TSPs identified for each ICG to trial dissemination of maritime bulletins to respective NAVAREA operators in their Area of Service (AoS) in the second half of 2024 for full operational implementation in 2025;

21 Global NAVAREAS (unofficial)



Key Characteristics

- Maritime Message would be issued only when tsunami amplitudes are forecast to be 0.3m or larger along any CARIBE-EWS coast.
- Message will name the affected NAVAREAS and the adjacent countries or territories that have a forecast of 0.3m or greater.
- Messages only re-issued if the tsunami forecast changes.
- Final Maritime Message issued with final TSP product for the CARIBE-EWS.
- Content of the Maritime Messages was made very concise.
- Maritime Messages disseminated only by email to the affected NAVAREA Coordinators.

Sample TSP Threat Forecast (PTWS)

TEST... TSUNAMI THREAT FORECAST...UPDATED ...TEST

* THIS IS A TEST MESSAGE. TSUNAMI WAVES REACHING MORE THAN 3 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE ALONG SOME COASTS OF

EL SALVADOR... GUATEMALA... AND MEXICO.

* THIS IS A TEST MESSAGE. TSUNAMI WAVES REACHING 1 TO 3 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE ALONG SOME COASTS OF

ANTARCTICA... COSTA RICA... ECUADOR... AND NICARAGUA.

* THIS IS A TEST MESSAGE. TSUNAMI WAVES REACHING 0.3 TO 1 METERS ABOVE THE TIDE LEVEL ARE POSSIBLE FOR SOME COASTS OF

AMERICAN SAMOA... AUSTRALIA... CHILE... COLOMBIA... COOK ISLANDS... FIJI... FRENCH POLYNESIA... HAWAII... INDONESIA... JAPAN... KERMADEC ISLANDS... KIRIBATI... MARSHALL ISLANDS... NEW CALEDONIA... NEW ZEALAND... NIUE... NORTHWESTERN HAWAIIAN ISLANDS... PANAMA... PAPUA NEW GUINEA... PERU... PITCAIRN ISLANDS... SAMOA... SOLOMON ISLANDS... TOKELAU... TONGA... VANUATU... AND WALLIS AND

Updated Maritime Message

MARITIME TSUNAMI THREAT MESSAGE NUMBER 02
NWS PACIFIC TSUNAMI WARNING CENTER HONOLULU HI
1905 UTC TUE FEB 4 2025

THIS MESSAGE IS FOR NAVAREA X, NAVAREA XI, NAVAREA XII, NAVAREA XIV, NAVAREA XV, AND NAVAREA XVI.

A TSUNAMI THREAT IS OCCURRING.

A TSUNAMI WAS GENERATED BY AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.6 THAT OCCURRED NEAR THE COAST OF GUATEMALA AT 1844 UTC ON TUESDAY FEBRUARY 4 2025.

HAZARDOUS TSUNAMI WAVES ARE FORECAST FOR SOME COASTS OF AMERICAN SAMOA, ANTARCTICA, AUSTRALIA, CHILE, COLOMBIA, COOK ISLANDS, COSTA RICA, ECUADOR, EL SALVADOR, FIJI, FRENCH POLYNESIA, GUATEMALA, HAWAII, INDONESIA, JAPAN, KERMADEC ISLANDS, KIRIBATI, MARSHALL ISLANDS, MEXICO, NEW CALEDONIA, NEW ZEALAND, NICARAGUA, NIUE, NORTHWESTERN HAWAIIAN ISLANDS, PANAMA, PAPUA NEW GUINEA, PERU, PITCAIRN ISLANDS, SAMOA, SOLOMON ISLANDS, TOKELAU, TONGA, VANUATU, AND WALLIS AND FUTUNA.

Final Maritime Message

MARITIME TSUNAMI THREAT MESSAGE NUMBER 03
NWS PACIFIC TSUNAMI WARNING CENTER HONOLULU HI
1525 UTC TUE FEB 5 2025

THIS MESSAGE IS FOR NAVAREA X, NAVAREA XI, NAVAREA XII, NAVAREA XIV, NAVAREA XV, AND NAVAREA XVI.

THE TSUNAMI THREAT HAS NOW LARGELY PASSED.

THE TSUNAMI THREAT FROM AN EARTHQUAKE WITH A PRELIMINARY MAGNITUDE OF 8.6 THAT OCCURRED NEAR THE COAST OF GUATEMALA AT 1844 UTC ON TUESDAY FEBRUARY 4 2025 HAS NOW LARGELY PASSED.

HOWEVER, SHIPS APPROACHING THE COAST SHOULD STILL CONSULT LOCAL AUTHORITIES REGARDING LOCAL CONDITIONS AND ADVICES.

ICG Decision

- Approve the PTWC implementation of maritime products for WWNWS NAVAREA Coordinators
- Set a start date for the implementation that is a few months from now to allow time for some final software changes with testing, and for PTWC staff training (maybe November 1, 2025, after the September 2025 WWNWS Meeting).

Other Activities

Ongoing unification between PTWC and USNTWC for efficiencies and seamless backup:

- Common analysis system (seismic, sea-level, forecasting, more)
- Common product generation and dissemination software
- New website

New Techniques in View

- GNSS for more rapid and detailed earthquake characterization
- SMART Cables
- Ionosphere – Total Electron Count
- Acoustic-Gravity Waves



Thank You

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