

## PTWC/ITIC Visits (part of the overall meeting)

Option 1: Monday, July 22nd.

Option 2: Friday, July 26th.

Depending on an individual's travel plans, travelers could choose either of these options to visit and tour the IRC on Ford Island in Honolulu, HI. Primary purpose was for a tour of the Pacific Tsunami Warning Center (PTWC) and International Tsunami Information Center (ITIC). About half of the group attended one of these optional dates, getting an overview of the PTWC Operations Floor, meeting the on-duty staff, and discussing the opportunities and challenges faced by this Center, as well as a briefing about what operations look like at these centers. A similar tour extended across the hallway with ITIC, getting an overview of the common work and investments the ITIC makes in the education and outreach of tsunami awareness across the Pacific and the Caribbean. A special thanks goes to Chip McCreery, Laura Kong, Tammy Fukuji, and Ray Tanabe for facilitating these tours and welcoming the NTHMP visitors.



*Pictured Left: Visiting the ITIC and the Tsunami Wave Demonstration;  
Pictured Right: Chip McCreery explaining operations at PTWC  
(Courtesy of Anthony Picasso, Geohazard Mitigation Coordinator, State of Alaska)*



Visiting the Operations Area at PTWC (Courtesy of Anthony Picasso, Geohazard Mitigation Coordinator, State of Alaska)

## Day 1

- Culture Briefing at the American Samoa Department of Homeland Security
- Ava Ceremony and Welcome (Leone Cultural Center)
- NOAA Ocean Science Center (Pago Pago, AS) - Group Meeting and Items of Discussion Below

## Island Caucus:

Theme: Share challenges and best practices across the islands

Caucus Panel:

Guam - Chip

Puerto Rico - Christa, Liz

Alaska - Elena

Hawaii - Fai Cheung

American Samoa - Elinor

CNMI - Mario

### Question1:

**Logistics and limited and high turnover rates of human resources are unique to Islands. How do these impact the tsunami program and how have you overcome these challenges? What types of creative (outside the box) solutions have you and your communities employed to assist in tsunami preparedness?**

- Chip - executing in the 1 yr time frame to get and then spend the money, especially when you are doing modeling. End up trying to execute a 1 yr program in 6 months. Logistics 8k miles from mainland, don't have access to resources, require contacts with shipping companies. No way we can get big tsunami sirens out here. If you did find a location to put a siren, you have to go through a long process to get

approval and execute. More sensible to use mobile sirens (they are cheaper as well) and easier to take care of maintenance.

- Mario - Encourage folks to not be afraid to reach out from other states and territories, such as WA EM.
- Puerto Rico - US VI had to fix sirens and their techs went out with company techs, leading to capacity building on the local level and logistical issues. Most people in the islands are doing many jobs, not just one job. It is worth highlighting this since you don't have the human capacity in numbers. Islands are special with that dedication.
- Hawaii DHSEM - Two grants re-homed under NTHMP.
- Hawaii - Training new staff that come in isn't as big of a challenge as dealing with contracting issues. Can take ½ year or more, then only have two months to finish the work.
- Chip - Modelling got dropped a large amount of money since a decision was made to change models. Fai is mainly committed to modeling in HI. No cost extension is often needed to be used for the grants process.
- Stephen - experiences the same problem with modeling and trying to find the right person and retain them can be difficult. Funding cuts can lead to loss of expertise then you have to start over and a 2 yr performance period for a 1 yr grant would solve a lot of problems.
- Fai - No cost extension. Guam gets \$ Sep 1st, then I get a contract 6 months later, and by the time I get the money I only have 3 months to do work before the end of the year. It isn't enough time.
- Dave Snider - I think everyone knows what is needed in all states/territories. We don't have the capacity. If we know the need, do we have to keep going through this short funding cycle process? Why do we have to go through this process if the only holdup is the funding. Can we keep the long ongoing list of the needs?
- Maximilian - If we had successful contracts, MOAs, etc. Once you get the OK for the application in May for the \$ amount, the official award is accepted in Aug. Two years of funds. Let's talk about this. It makes more sense
- Elena - coastal communities remote. First year I did modeling and mapping. Then in the 2nd year a report is published and visits the coastal community to explain, map and do all outreach at schools, EM's, and public. May-Sep impossible to travel due to subsistence. Work is done in the winter but then weather and can make it difficult to get to communities. Also, working with various tribes requires different challenges and takes time. Two year grant would be perfect.

### **Question 2:**

**How effective has the implementation of TsunamiReady been in becoming more prepared and resilient to tsunamis?**

- Christa - 49 TsunamiReady communities in PR and USVI. Would not have been possible to get TsunamiReady in these communities without NTHMP. NWS WCM can't keep up with the workload of TsunamiReady, so this needs to be coordinated with other EM and other agencies to keep up in the 4 yr recycle period. TsunamiReady is tracked. If it weren't for NTHMP, these communities would not be TsunamiReady. Extremely effective to educate people about where to go and what to do. UNESCO IOC TsunamiReady program was established due to the success in PR.
- PR - Communities own the TsunamiReady program, We used the collective impact model not really in the official sense.
- Christa - Effort to have equivalent requirements to have TsunamiReady and UNESCO be the same. This is a work in progress.
- Chip - Funding for NTHMP hasn't increased [sic] since the beginning. Buying power has greatly diminished. Communities now have to pay for their own signs.

### **Question 3:**

**Given that many of the territories have similar needs and challenges, what joint effort of project would you propose for the Island Caucus to develop?**



- PR - island caucus good at community education. We can be used as a best practice for other areas
- Elena - How do you convince the population of the threat? In AK communities with elders from the 1964 quake, it is much easier. Other communities with high hazards but no recent event to remember. I use scare tactics to get people.
- Stephen - If people can see what the impacts would be from a tsunami, this type of visualization makes it more realistic.
- Elinor - we love our stories and I am very confident we are really good at engaging our community. We just have that "Va" sacred space. One challenge is how to put those practices together into a written form so others could use these strategies. We must rely on our social scientists
- Maximilian - we were scaring everyone and it wasn't effective until we gave them the steps they needed to take. Simulations are the single most important factor to get people's attention and understand the threat of a tsunami

#### **Question 4:**

**What kind of training is needed on the science and hazard of earthquakes and tsunamis? What do PTWC products mean and how do you use them, what are they and what are they NOT?**

**What are some tools available to support the mission, in both the emergency management side and the NWS WSO/WFO side? Assuming yes: how many persons, when, where - come to PTWC, or we come to them, how to fund**

- Liz - Training in the Caribbean and done by the IOC, not using NTHMP funding. Use the PTWC, I tend to use the international products more than the PTWC
- Elinor - We do a lot of the outreach and training locally with our local counterparts. People's understanding of the different warning levels and what actions to take. The outreach and training has to be a frequent thing that happens. Our 2009 tsunami was 15 years ago and younger students don't remember it, so we do a lot of continued education. It was shown that our outreach was key to saving lives. Our EM's wear so many different hats and the NWS office focuses on many hazards, so we and our partners sometimes don't have the capacity to do all the outreach we want to.
- Christa - Would it be a good idea for the island caucus to determine what type of training program they need and also review the different PTWC products? Also recognize the high turnover and how we overcome this?
- Chip - We need to share the broader ideas and structure of the training across the pacific and other regions.

## **NRI Team Updates**

Facilitator: Annie Sheehan

- Brief intro to the program and the NRI
  - The Natural Hazards Risk Assessment Program aims to operationalize science and hazard data into data-driven decision making.
  - The National Risk Index (National Risk Index for Natural Hazards | FEMA.gov) is an online tool that informs users of their risk to 18 different natural hazards at the Census tract and county levels. The tool incorporates social vulnerability and community resilience as well as expected annual losses to calculate risk.
- Overview of the tsunami update including methods
  - This data update will fulfill Goal 1, which is calculating expected annual loss to buildings and population for the Pacific Coast, Pacific Territories, Caribbean Territories, Alaska, and Hawai'i.
    - Future data updates will:



- Expand analysis to the East Coast and Gulf of Mexico, as well as incorporating emerging methods to estimate risk to transient and non-residential populations and risk to populations from distant and regional source events.
- Updates for newly identified tsunami inundation data, including landslide or other tsunami triggers.
- Overview of Hazus level analyses and their differences (see PowerPoint)
- The NRI team met with NTHMP in 2023 to present initial methods, and has since completed the following steps to standardize and annualize losses using state hazard data:
  - 1. Preprocessed and standardized state hazard data
  - 2. Capital Stock/Building Loss: Combined state hazard data with non-randomized National Structure Inventory building data in Hazus, and ran a Level 1, Level 2, or Level 3 analysis depending on data availability
  - 3. Population Loss: Leveraged USGS evacuation study data that uses a 10-minute departure delay for local sources, and at this time only considering permanent residents due to data availability. Each person who was unable to evacuate in time is considered a fatality.
  - 4. Annualized loss data using the Riemann Sums method at the Census block level.
- The NRI team has since met with each state/territory tsunami SMEs individually to review results.
- Presentation of preliminary results, mainly focusing on calibration analyses our team has conducted on the building and the population loss and analyzing results from a regional perspective.
  - Results are subject to change upon additional state and territory feedback.
  - The preliminary USGS evacuation study shows the number of permanent residents who would not be able to evacuate a local tsunami event at a 0-, 5-, and 10- minute departure delay. This information can be extremely helpful in the prioritization of resources. For example, if number of people who cannot evacuate decrease dramatically as the departure delay decreases, perhaps outreach and education is the best investment. On the other hand, if the number of people who cannot evacuate don't decrease very much as the departure delay increases, perhaps a vertical evacuation structure is the best investment.
    - The Pacific territories provide a good example of how outreach and education could save lives, as with only a 5-minute improvement in departure delay, many lives can be saved.
    - Washington provides a good example of how a vertical evacuation structure could save lives, as even with a 0-minute departure delay, many people will still die.
  - With this tsunami update, losses from the current NRI will increase dramatically.
- Next steps, including a plan for technical documentation review, what our team plans to update in the next release, and how and what we plan to update going forward.
  - The NRI team has a few loose ends to solve but are well on their way to finalizing results and preparing a first draft of the technical report. The hope is to send a draft out for review by the end of September. However, there are a few dependencies with receiving hazard data that may delay the draft.
  - Immediate next steps include incorporating additional US Virgin Islands hazard data to include the Anegada Passage, exploring incorporating landslide data in Alaska, exploring using historical casualty data to inform Hawai'iian population loss, and meeting with CA, OR, and WA on the calibration of their population loss results. The NRI team is looking to update data in early 2025 in the application.
    - Update 8/5/24: FEMA met with CA, OR, and WA and identified a potential solution to better align WA losses across the Pacific coast by adding proxy 1000 CSZ data generated using comparable Oregon ratios.

- Longer term next steps include analyzing tsunami risk for the East Coast and Gulf Coast, including additional USGS evacuation study data, including additional hazard and/or recurrence data for states and territories.
- A few topics were identified for additional research within the tsunami community including the development of national probabilistic tsunami data, landslide and volcanic tsunami hazard and recurrence data, national marine and harbor facility exposure data and methods, methods to better account for transient populations, and methods to better account for distant-source tsunami population loss.

## Day 2

### MMS

- NCEI DEM Priorities (Co-Chair Lead; 15 minutes)
  - Capacity for 2 DEMs
- [Maritime Guidance Document Final Update CA/OR/WA/ Co-chairs](#); 10 minutes)
- Powell Center Update (USGS Lead; 15 minutes)
- Wave Arrival Tiger Team Brief Out (Washington Lead; 10 minutes) - Alex
  - Develop a technical document that contains standardized tsunami arrival time definitions (e.g., initial arrival [positive and negative], first significant drawdown, first advisory-level wave, first warning-level wave, maximum crest, maximum trough, etc.), examples of potential products/figures that can be produced from modeling, and procedures for how to store output data (e.g., netCDF, tif, etc.)
    - Can utilize arrival time contours, temporal speed hotspots, etc.
    - Present working document at the upcoming summer meeting
      - Completion goal: November 2024?
      - Next step to share with IOC leadership and request review of definitions to be incorporated into the 2025 IOC glossary update (February 2025?)
        - Vote on definitions at the NTHMP Winter Meeting (under the assumption that this schedule fits into IOC timeline)
  - Generate and host a working GitHub arrival time code repository for various NTHMP partner modeling software packages.
    - Can also include examples of products created.
  - [Wave arrival questions FAQ - Google Docs](#)
  - <https://pubs.oregon.gov/dogami/fs/cascadia-planning-for-em-and-public.pdf>
- ASCE Code Changes + Model Validation (Washington Lead; 10 minutes)
- Landslide PTHA update (East Coast/Gulf Coast; 10 minutes)
- MMS Public Relations (Co-Chair Lead; 15 minutes)
- MMS input for Collaborative Efforts Forum

## MES

- **Presentations**
- MES Co-Chairs: Nic and Regina's terms will end by next (Winter) meeting (First and Second Vice Chairs); replacements will be needed. New Chair will be Todd Becker. Please consider volunteering!
- Partner Briefings:
  - CA (Yvette): See presentation.
    - Q: Have any studies been done on sign placement effectiveness & efficiency? Yvette: SF Public Works provided guidance.
    - Will be looking at new thermoplastic signage durability (Blue Line).
    - "Tsunami Hazard Area" maps include both modeled inundation and evacuation areas (one map).
    - Workshops are mostly funded by NTHMP. There are some local funds, too.
  - Puerto Rico/USVI (Christa): See presentation.
    - Q: Is there cost-sharing? 10%; rest is NTHMP.
    - Q: How does USVI handle cost-sharing? Contact Regina (email) for info on this.
    - Partner agencies do all the work. WCM's role is mainly administrative.
  - Alaska: See presentation.
    - Q: What are the challenges of Barry Arm? More info on this to come.
    - Q: Re: workshops, how much followup is there (training, etc.)? Small communities get high priority – they need the resources more than large communities.
    - Comment (Dave S.): States/territories need to support each other.
  - American Samoa: Slides were not available for presentation (Action: get a copy if possible).
    - The 2009 Tsunami completely changed the mindset of the population.
    - Cost to install each siren: \$25K (up from \$10K).
    - Everything funded by NTHMP (A.S. government does not have funding for this).
    - Outreach: target the young.
    - Currently "Tsunami Resilient". Working toward TsunamiReady.
    - Teach people to move when an earthquake occurs – do not wait for the warning/sirens.
    - Q: Are cell phones used for warning dissemination? Not automated; some messages (earthquake, evacuation) can be pushed manually by IPAWS (DHS). Use manual alert methods (ringing of bells, megaphones, etc.).
  - CNMI: See presentation.
    - Public schools are a major outreach partner.
    - Cost to install 4 sirens: \$600K.
    - Mobile sirens are a good alternative.
    - Emphasize the importance of walking to avoid injury during evacuation (not running).
    - Tsunami information cards (similar to playing cards) are an effective form of outreach material.
    - Comment (Yvette): TsunamiZone.org has lots of sharable materials.
    - Comment (Maximilian): WA state also has materials to share on (web site).
  - Guam: See presentation.
  - Hawaii: See presentation.
    - Just released a childrens' book on tsunami preparedness.
    - FY25: Top priority is to get all sirens operational. Tsunami ambassadors and drills are secondary priorities.
  - Oregon: See presentation.
    - Planning road show for Tsunami Debris training.
    - Starting to look at vertical evacuation where most needed.
    - OR does not have a centralized siren network due to costs and coastal geography, but there are some local sirens.
    - OR relies on other alert methods, e.g. WEA, ORAlert (Everbridge-based).



- Washington: See presentation.
  - Participation in Pacifex was highly beneficial.
- FEMA (Region 9): See presentation. Region 10 slides were not available.
  - Alert systems to be included in hazard mitigation funding.
  - Contact Kara Jacobacci with any questions.
- ITIC: See presentation.
- NTWC: See presentation.
  - Began using Slack (NWS Chat) during Pacifex.
  - Pre-event exercise cadence needed.
  - If NTWC's help is needed with TsunamiReady efforts, contact Dave Snider. Will work with federal and state partners as needed.
- Work Plan updates: See MES Work Plan.

## WCS

### Co-chairs:

- Maximilian Dixon, Washington State Emergency Management Division,
  - Chip McCreery, Pacific Tsunami Warning Center,
  - Dave Snider, National Tsunami Warning Center
1. (:05) Introductions
  2. (:10) TWC Updates (Chip/Dave)
    - a. (:10) ATOMS Warning Center update (Dave, Chip)
    - b. (:10) Tsunami.gov contract update (Dave)
    - c. i) And other dissemination and communication-related updates:
    - d. (1) NWSConnect
    - e. (2) Weather.gov 2.0
  3. (:20) WA EMD Deep Dive -update (NTHMP grant project) (Ethan)
  4. (:05) NWS Social Science Project (Dave)
  5. (:20) What's the process for NTWC / PTWC/ NWS tsunami alerting changes?
    - a. The WCS will help improve U.S. tsunami warning system effectiveness by providing NTHMP partners a means to exchange experiences and discuss improvements related to operational product dissemination.
    - b. WCS members will formulate and agree to actions and recommendations regarding components of the tsunami warning system such as warning center products, warning procedures, message dissemination, system exercises, and Emergency Alert System activation.
    - c. The WCS will execute strategies as assigned in the NTHMP Strategic Plan, and activities as assigned by the NTHMP Coordinating Committee.
  6. (:10) Wave Arrival discussion/ update: Team request for WCS (Ethan)
    - a. WAVE Arrival Tiger Team - Alex
      - i. Propose the following "forecasted arrival time" definition options to the WCS and recommend including the selected definition in future tsunami bulletin messages under the "Forecast of Tsunami Activity" header prior to listed arrival times.
      - ii. Simple: "Forecast times refer to the first rise or fall of water levels, which may not represent the arrival of the largest wave. All times are estimates" (preferred Tiger Team selection).
      - iii. More detailed: "Estimated times of arrival -eta- of the initial tsunami wave for places within alert areas are given below. All forecasted times refer to the first rise or fall of water levels, which may not represent the arrival of the largest wave. Actual times may differ. A tsunami is a series of waves and the time between waves can be five minutes to one hour."
      - iv. Request sequence of NTWC and PTWC bulletins for the same event
      - v. Identify inconsistencies regarding reporting tsunami arrival times.
      - vi. Tie into the current ongoing social science study.
      - vii. Wave arrival questions FAQ - Google Docs
      - viii. <https://pubs.oregon.gov/dogami/fs/cascadia-planning-for-em-and-public.pdf>
  7. (:10) Pacifex24 -update
  8. Looking ahead:
    - a. a) Shake Out: Thu, Oct 17
    - b. b) World Tsunami Awareness Day (and Election Day): Tue, Nov 05
    - c. c) LANTEX: Thu, Nov 07
    - d. d) Other state or national exercises?
  9. New Business

Unless there's extra time, Parking lot for next quarterly discussion:

- a) What Partner support cycles do we need at Centers for Partners?
- b) Quarterly discussion topics:
  - i) Grant proposals that impact WCS activities (?) bring this up later for a quarterly

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## Coordinating Committee Agenda

### Attendees:

- o NOAA Representatives: Christa & Chris Moore
- o FEMA: Kara (Wendy’s Proxy), Andrew absent
- o USGS: Stephanie Ross & Nate Wood
- o AK: Elena & Anthony
- o AS: Jolene & Elinor
- o CA: Yvette & Rick (virtual)
- o CNMI: Chip & Mario
- o Guam: Chip & Stephen
- o HI: Fai & Skylar
- o OR: Althea & Jon
- o PR: Liz for Victor & Wilda
- o WA: Maximilian & Alex
- o USVI: Absent
- o East Coast: Stephan G.
- o Gulf Coast: Absent (Stephan G. representing)

### MES TsunamiReady Tiger Team Recommendations: (Nic)

- Provide NWS TsunamiReady Program with MES TsunamiReady Recommendations; and
- Voted to endorse of MES TsunamiReady Recommendations
- ACTION: Sarah will share recommendations with Ray to send upwards to NWS

### Wave Arrival Tiger Team (Alex)

- Brief Out
  - o WCS vote was tabled for next meeting
  - o Need to discuss the wave alert for current products
  - o MES needed for an educational plan to be developed, possibly via arcgis Story Map
  - o Need more information about the drawdown messaging
  - o Will include this in the work plan discussion
  - o Bi-monthly meetings continue, and will work on additional code and documentation needed on current work.

### TsulInfo (Sarah)

- How to we make this more equitable, where WA doesn’t have the biggest responsibility
  - o WA is only funding this through FY24, so we have 1 year to rework
  - o Multiple suggestions of spreading the needed money across the states/territories for more collaborative work vs all on WA and their budget.
  - o Look for new dissemination methods, such as blog platforms like Wordpress, Temblor, similar to the earthquake blog. We could also use training/resources in HOW we write our content to be more accessible



- Need an overall assessment to evaluate the content, intended audience and stakeholders, and garner more participation across the program
- TsulInfo editorial board
  - Examine requirements, promotional activity, accessibility (future to tsunami.gov as a possible host)
  - Social Media presence is needed
  - Do we need to make the TsulInfo Editorial Board into a Work Group, or do we need a Communications Work Group?
- Utilize the information in an annual report (Jon Allan volunteered to collect the information this year) and to promote our work to garner more funding.
- Corina & Sarah are starting a monthly newsletter from the NWS program side - this will not compete with or take the place of TsulInfo, though we hope to help promote TsulInfo

### Winter (or Combined) NTHMP Meeting

- Travel inequity is more impactful for the islands and Alaska where travel is more time consuming and more expensive, so our in-person meeting locations need to consider ease of travel and costs.
- Several partners had to remove NTHMP meeting travel from their FY24 budget, so need a virtual option
- Overall consensus is to have quarterly CC virtual meetings and 1 in-person meeting
  - **Potential locations:**
    - **Alaska:** Due to costs, consider March-May time frame, but work around other scheduled meetings like SSA (April 14-18)
      - From Kara Jacobacci:
        - Facility Option: <https://maps.app.goo.gl/qst2Y2fEtfcpbc3E7> - 102 and 104 combined seat like 120 people. [Atwood Bldg - Leasing - Division of Facilities Services || Alaska Department of Transportation & Public Facilities](#)
        - These are the two sets of lodging/per diem rates for Anchorage:
 

ANCHORAGE	05/01-08/31	279	116	67	29	424
ANCHORAGE	09/01-04/30	229	116	67	29	374
    - **Seattle:** While still on the west coast, which has been a common theme for many of the previous, more recent meetings, Seattle has the staffing and facilities to host
    - **Washington DC:** 3rd potential option but available due to NWS HQ locations
    - Noted that we need people in person doing the logistics/legwork
    - Most winter meetings have discussions about the Grants process. Since this meeting is later, we will start the individual partner presentations in November/December and generally start grants much earlier than in 2024.

## Day 3

Department of Homeland Security

### Collaborative Forum

Facilitators: Greg & Sarah

#### Primary Questions:

- Are we aware of each group's work plan? Can we review or comment on those work plans?
- Do we know where there may be overlap and the potential for collaboration?
- How are we able to discover strengths across the various groups that can be applied to the program and its mission?

- How are the work plans being created?
- Is our current structure helping or hindering our collaborative efforts?
- Collaborative work vs state/territory/individual group work.

Moving forward, we will be more proactive with subcommittee meetings and recognizing potential overlap in tasks. Will also introduce (or re-introduce after a long gap) quarterly meetings with Sarah & co-chairs to help better understand the work happening and anticipate challenges to be addressed in a more collaborative way.

#### Grant Budget Concerns

- Using that \$ to improve the entire warning process from the NWS, benefitting all partners in all areas.
- Can't foresee the budgets for future years, but encourage to work with local legislatures and congress
- Look into 2-year grant cycle vs 1 year (performance period).