

# NTHMP Warning Coordination Subcommittee Meeting Notes

Wednesday, January 29, 2014; 8:00am-noon

Menlo Park, CA

Attending co-Chairs: Althea Rizzo, Chip McCreery, and Paul Whitmore

## Attendees:

Adulbeau Akapo	American Samoa
Vinne Atofau	American Samoa
Pilar Carbullido	Guam
Aimee Devaris	NOAA-NWS-AR
Marie Eble	NOAA-PMEL
Ed Fratto	NESEC
Ann Gravier	Alaska
Chris Gregg	E. Tennessee State
Juan Horillo	Texas A&M
Victor Huerfano	PRSN
Logan Johnson	NOAA-NWS-WFO Monterey
Elton Lewis	US Virgin Islands
Rocky Lopes	NOAA-NWS-OCWWS
Jeff Lorens	NOAA-NWS-WR
Chip McCreery	NOAA-PTWC
Sue McLean	NOAA-NGDC
Kevin Miller	California
Dmitry Nicolsky	Alaska
Erv Petty	Alaska
Cindi Preller	NOAA-NWS-AR
George Priest	Oregon
Wilfredo Ramos	Puerto Rico
Patrick Reid	American Samoa
Kevin Richards	Hawaii
Althea Rizzo	Oregon
Stephanie Ross	USGS-Menlo Park
John Schelling	Washington
Vasily Titov	NOAA-PMEL
Brent Tompkins	Canada-EC MSC
Faletoa Ulufale	American Samoa
Justin Van Es	US Navy-JTWC
Christa von Hillebrandt	NOAA-CTWP
Brynne Walker	Washington
Tim Walsh	Washington
Roy Watlington	US Virgin Islands
Rick Wilson	California

- Action Item Review – Whitmore
  - Whitmore reviewed last year's actions. All complete except determination of whether or not the NWS Spotter program could be leveraged to help tsunami observer programs,

- **ACTION:** *Determine more details on the possibility of supporting NTHMP observer networks in a similar fashion as Spotter networks.*
  - *What constitutes training?*
  - *What keeps the list active?*
  - *Look at what Hawaii and California are doing with their tsunami observer networks.*
  - *Need to be included in a separate directive?*
- Tsunami information statement criteria dropped from M5 to M4.5 for everywhere except the Aleutian Islands.
  - Schelling stated this has been very helpful in Washington.
- EAS Activation for Advisories: working group implementation plan – Rizzo
  - Rizzo summarized Task Team’s achievements to date and next steps to implement solution.
  - Tsunami is a different animal as far as the public perception of advisory in that it can be life threatening.
  - Local Area Emergency Code (LAE) EAS code to be used to issue tsunami advisories on EAS – only where local coordinating groups approve its use. WCMs or state reps. would have to take it to the local EAS boards for implementation.
  - Use of this code is not mandatory.
  - Von Hillebrandt indicated the TSW (tsunami warning) EAS code is used to activate tsunami advisories on EAS and NWR in Puerto Rico/ USVI.
  - The LAE code is planned for testing in the northern California March live code test.
  - There is broadcaster concern in Washington requiring delicate conversations between EMs and Broadcasters.
  - The code is pre-existing in NOAA Weather Radio consoles.
  - The TV crawler would include ‘Local Area Emergency’.
  - Tompkins stated Canada (east and west) is coding the Tsunami Advisories as ‘Warnings’ for their network and will be operational in June.
  - **ACTION:** *Brief WCS on lessons learned from LAE test in March, 2014*
    - *Can this be tested in Alaska as well?*
    - *Are receivers set up for LAE automatically?*
  - **ACTION:** *Add BC (Environment Canada) to EAS for Advisory Team.*
- TWC Products:
  - PTWC International product update – McCreery
    - McCreery summarized planned improvements for PTWC domestic and international messages and graphical products.
    - A separate product suite for each PTWC domestic location will be regionally specific; consistency will be maintained from region to region as far as message content.
    - American Samoa has challenges for domestic product implementation:
      - No seismic data in America Samoa. (1 station in Samoa; 1 water level station in Pago Pago).
      - Curving source zone.
      - Domestic text products will include the Advisory alert (not available in international products).
        - Advisories will be issued initially for M 6.6 to M 6.8.
    - Guam/CNMI domestic products will be implemented after the planned March, 2014 American Samoa delivery.
    - Caribbean product issues will be addressed in May IOC meeting.

- International Caribbean has only TIS and Watch; no Advisory or warning.
  - For new Pacific international products, no alert levels will be used; only forecast heights at coastal locations.
    - October 1, 2014 target date for international Pacific changes.
    - Output from forecast models will control products and will reduce over-warning.
    - Text, KML, and graphical products are included in new suite.
- Major Warning Level of Alert - Should we have one? – Discussion
  - Whitmore described that the present state of tsunami forecasting is outpacing how alerts are delivered and carried out by emergency management organizations.
  - There are several options to deliver more fine-grained information and tailor evacuations better than they are now.
  - This session was included so that guidance can be provided to NTWC in how to carry out any product changes that could lead to more tailored evacuations at the community level.
  - One option is to start a new level of alert (Major Warning) when the height is expected to be over 3m. This would provide an explicit alert level to places where major impacts are expected and differentiate them from areas with a more moderate impact.
  - Miller stated a height bar graphic on geographic output would be very helpful to EMs.
  - Rizzo stated Oregon is against splitting warning levels into major warning and warning.
  - Puerto Rico is concerned about an accurate early magnitude evaluation and how that could lead to underestimated alert levels.
    - Infrastructure to public is thin.
    - Learn from hurricanes and meteorology as far as conservatism.
    - People expect caution, this is good.
    - How will this impact the media? How will they interpret it?
    - The media is really a huge problem.
    - Keep it simple. Impact maps are awesome.
  - Lorens supports simple text products which help focus on near-field high impact area complimented by graphical supplements showing zonation.
  - Alaska agrees and stated there is still Warning vs. Advisory threshold confusion.
  - Nicolsky expressed concern that the forecasts based strictly on seismic information may under-estimate threat due to associated landslides.
    - Whitmore stated that for near field alerts, the NTWC would always be conservative and not reduce alert level based on forecasts generated from seismic data only as secondary local effects or underestimation of tsunami source is too likely. Detailed impact products will be issued AFTER forecasts are scaled by DART and/or tide gage observations.
  - Titov stated that PMEL would share in developing products.
    - Possibly 2 groups of products. Specialized for decision makers and EMs.
    - There is a wealth of information that may not be appropriate for public and how do we translate this into useful guidance.
    - The accuracy is known to us; the public might not understand.
    - Supports an approach for transparent interpretation.
    - Ideas on the table right now are good and necessary.
    - Binary decision imbedded into decision tree. Flooding or no flooding? This is the simple question with a variety of local solutions.



- NOAA Social Science study recommendations for tsunami messages – Gregg
  - Gregg described the outcome of his two-year study of TWC message content.
  - A focus group approach was used to obtain customer input. This was qualitative versus quantitative and can be subjective.
  - A Tsunami Warning Message metric was developed. Evidence-based factors on ‘how people respond’ were also used to revise prototype message.
  - Format, content, and style of messages must conform to WMO standard.
  - Only domestic messages were examined: layout, content, and specificity.
  - Content will include impacts, recommended actions, and updates. The messages must distinguish between impacts and recommended actions.
  - Personalization of the message is good and raises believability and trust.
  - Issues:
    - Text-to-speech applications of text messages.
    - Translation.
  - Basic structure has seven standardized sections, including observations, forecasts, and audience.
  - **ACTION:** *Integrate Gregg’s message recommendations into TWC example products and provide to WCS for review.*
  
- Complex coast team briefing and recs. – Preller
  - Preller summarized findings and recommendations from the Complex Coast Team which was assembled after last year’s meeting to investigate better ways to handle alerts for coastal areas with non-linear geometries.
  - Challenge: What portions of the coast do messages apply to? In several cases, there is more than one “coast”.
  - Customize message based on specific geographical areas.
  - Pacific broken into seven subsections. List each zone in the message and state what level of alert is for each.
  - Inside passage of AK is a big unknown as to predicted tsunami behavior.
  - Consider putting inside passage areas to Advisory (related to FIPS codes).
  - BC is handled with pseudo-codes which map to BC weather zones.
  - Breakpoints in the middle of a city or water body are not desirable.
  - Columbia River zone may be merged north or south.
  - **ACTION:** *Integrate Complex Coast team recs. into sample products from above Action and include in WCS message review.*
  
- Spanish Messages – Whitmore
  - Whitmore summarized the status of the NTWC experimental Spanish messages for the Atlantic.
  - Issued since September as experimental.
  - Are they worthwhile to PR/VI? Puerto Rico indicates yes and USVI agrees as they have a significant Spanish language community.
  - McCreery mentioned that PTWC halted Spanish messaging due to inability to customize during an event.
    - PTWC customers opted to keep it in English so that they receive all the information.
    - Pre-canned statements at NTWC lessen the necessity to interactively add information.

- Not an issue so far.
    - Added information will only be English.
  - West coast states would also like to implement Spanish in Pacific messages.
    - Something is better than nothing for the Spanish population.
    - Tuhoku tsunami alert had challenges for that population.
  - There may be dialect issues between Atlantic and Pacific translations.
  - **ACTION:** *Convert experimental Spanish NTWC products for the Atlantic to Operational.*
  - **ACTION:** *Create experimental Spanish NTWC products for the Pacific.*
- Forecast points provided in messages – Whitmore
    - Whitmore reviewed locations added to NTWC WMO-format messages since the last meeting based on state requests.
    - Several have been added. BC locations are presently limited and will be expanded following inclusion of new BC DEM into forecast models.
    - Puget Sound points left out to not induce confusion as typically they are not threatened.
    - Two east coast Canada sites were also added, as well as several in Puerto Rico, USVI, and BVI.
- Post-warning effectiveness survey update – Schelling
    - Washington has implemented the survey through its web site. This can be used by NTHMP to conduct surveys following US warning level events.
    - Statistical evaluation and reports are easy to generate from the survey.
    - Survey was previously used 3 times in 2011 on a NOAA site.
      - Alaska numbers skewed by non-warned area responses.
      - Can it be customized to be pushed only to warned areas?
      - Non-warned areas should have still received a notification.
      - Form takes this into account and skips questions if community was not in warning or advisory.
    - Will be up to state EMs to distribute to affected communities.
- Exercises and Comms. Tests:
    - 2014: CaribeWave/Lantex/Pacifex/Alaska Shield/SAFRR – Whitmore/vonH/Preller
      - CaribeWave is a Portugal event.
      - Lantex is a Gulf of Mexico landslide.
      - Pacifex is the SAFRR Alaska Peninsula scenario.
      - Alaska Shield is based on the 1964 Alaska earthquake and tsunami.
      - All will be held March 26 or 27, 2014.
      - No live products issued besides the kick-off messages.
      - Caribewave impacts the east coast with an advisory level.
    - 2015 international Pacific exercise to be conducted by PTWC.
      - Probably in February.
      - 2015 is the 50<sup>th</sup> anniversary of the PTWS.
      - PTWC will host the inter-governmental meeting at Ford Island.
    - **ACTION:** *Set dates and scenarios for 2015 national exercises.*
      - *Continue to coordinate with IOC for CaribeWave exercises.*
    - **ACTION:** *Create handbooks for 2015 national exercises.*
    - Schelling described the June 2016 FEMA Cascadia regional response exercise.
      - Kick off meeting 19 February.

- Northcom support and DOD involvement - hoping to be similar to Alaska Shield.
  - Looking for volunteers to help facilitate.
  - Pacific-wide is preferable.
- Communications Tests:
  - Live Code northern California EAS/NWR test on March 26, 2014.
    - Testing sirens and LAE as well.
    - WEA was hoped to be tested, but will not be tested as testing protocol for WEA is not yet set.
      - WEA is expected to go live January 31, 2014.
      - NWS Service Change Notice will be issued soon.
      - **ACTION:** *Forward Service Change Notice to WCS regarding WEA activation for tsunamis as soon as issued.*
  - Live Code EAS test in PR/USVI in conjunction with CaribWave on March 26, 2014.
  - Live Code EAS test in Alaska on March 27, 2014 will kick off Alaska Shield and be regionalized to the southern coast.
- Prioritization of WCS Strategic Plan tasks – Rizzo
  - Rizzo extracted WCS tasks from strategic plan to prioritize for tsunami program.
  - Understandable TWC products.
    - This was identified as a Priority 1 Task.
    - Schelling: Gregg's work supports this. Can we tie his delivery for this milestone? Does the survey satisfy an on-going assessment? Use the survey results.
    - Internal reviews are constant and on-going.
    - Gregg suggested that academia can be used to help with routine survey tasks. There are students who can crunch data. Free labor. Future analysis is very possible.
    - McCreery questioned if the survey be customized?
    - Devaris explained that any changes must be approved through OMB.
    - Richards supported the WCS doing its own survey to evaluate messages as changes are considered.
    - Graphical products should be included as a sub group of this milestone.
  - Conduct annual exercises and test response plans.
    - This item was identified as a Priority 2 task.
    - Tests happen annually. Is that sufficient?
    - This has been done annually for the last 5 years.
    - HI tests twice a year separate from the national tests.
    - New TsunamiReady policy includes annual exercise requirement.
    - Broader spectrum to multi-hazard encourages community involvement.
    - Recovery exercise will recognize critical players.
    - Oregon has spring break during the Tsunami Preparedness Week. National exercises can be performed at other times.
    - Washington recovery plans can be included to address resilience.
      - Develop a recovery exercise table top using real events.
      - Forward to MES.
    - USGS SAFRR addresses economic impacts.
    - California yes on the recovery exercise table top development.
    - American Samoa indicated that recovery has many components and several stakeholders; i.e., significant challenges.
  - Update post event survey.

- This item was identified as a Priority 3 task; though is already complete.
  - **ACTION:** *Clean-up prioritization of WCS NTHMP Strategic Plan actions and provide to NTHMP Administrator.*
- Operational Tsunami Warning System training opportunities – Whitmore
  - Whitmore provided an overview for operational TWS training.
  - COMET on-line tsunami courses.
    - About 15,000 people have taken these courses
    - **ACTION:** *Work with NWS Tsunami Program and COMET to determine feasibility of updating modules.*
  - ITIC/FEMA Course – One offering in the Pacific Islands this year; USVI expecting offerings as well.
  - WCM training at NTWC – should it be rejuvenated?
    - Yes stated from west coast states who indicated it was very beneficial.
    - Lopes offered to take care of group travel.
    - **ACTION:** *Investigate possibility of rejuvenating the NTWC Tsunami Warning System training and arrange 2014 training if possible.*
  - Whitmore stated visits from TWC/ITIC for training are feasible if requested.
- TWC IT Modernization Project update – McCreery
  - McCreery provided an update on the status of the TWC IT Modernization project.
  - It took years to develop requirements.
  - Contracting 2 phases.
    - Phase 1 prototype from 2 vendors.
    - Phase 2 awarded to ERT/Raytheon/ISTI in September, 2013.
  - Two-year project scheduled to end in October, 2015.
  - Project is based on NWS AWIPS2 architecture.
    - This should expedite maintenance and leverage NWS resources.
  - TWC will still be developing applications that are vetted through external O&M and testing prior to operational implementation.
  - Both centers will be compatible and be able to back-up seamlessly.
- NWS Customer Satisfaction Survey update – Whitmore
  - Whitmore summarized results from the 2013 NWS customer satisfaction survey which includes public satisfaction of the Tsunami Warning System.
  - Overall satisfaction level of 86 out of 100 based on about 15,000 responses which is the same as the tornado warning program.
- Meteotsunami Alerts – How to Proceed? – Whitmore
  - Whitmore summarized the meteotsunami threat for the US east coast, the NOAA meteotsunami research grant, the June 2013 meteotsunami, and the feasibility of providing meteotsunami alerts.
  - Mainly an East Coast issue due to the extensive continental shelf.
  - Three large east coast events since 1992.
  - NOAA Meteotsunami grant stopped after one year which led to identification of causative forces for several small meteotsunamis on the east coast between 2006 and 2012.
  - This study put TWCs in a good position to evaluate the 2013 event.
  - Fratto indicated the June 2013 event garnered a large amount of press and interest

- NESEC submitted a letter to NTWC which requested forecasting for such events.
  - There are two efforts in the Mediterranean which provide alerts:
    - Balaeric Islands base a general forecast on synoptic conditions.
    - Croatia has an experimental real-time air-pressure monitoring system and associated processing to forecast meteotsunamis.
  - Can NWS provide these alerts?
    - Whitmore stated NTWC is continuing analysis of the phenomena and is intending to put together a straw-man procedure this year.
    - Devaris stated the NWS Ocean Prediction Center should be leveraged.
    - Weather and Storm Prediction Centers may be able to provide supporting roles.
  - **ACTION:** *Meteotsunami warning – NWS to look at possibilities; report on way forward at next meeting.*
- Inclusion of US Coast Guard in WCS – discussions.
    - Whitmore discussed primary NTWC customers.
    - Four main groups: WFOs, state EOCs, military, and US Coast Guard.
    - All are involved with WCS except US Coast Guard.
    - USCG has identified tsunami POCs for the Pacific and the Atlantic.
    - All agreed to include USCG in future WCS activities.
    - **ACTION:** *Include USCG in future WCS activities and add to Terms of Reference.*
  - PR/VI Procedures
    - Whitmore discussed the Puerto Rico/USVI response criteria.
    - Due to low probability of a tsunami being generated by earthquakes in the 6.5 to 7.0 range, should the threshold be raised to 7.1 like other similar tectonic regimes?
      - Historic probability of events in 6.5 to 7.0 range to trigger significant tsunami (>0.5m) is less than 1%.
      - Worldwide since 1980 the probability is about 2%.
      - Since 1900, 6 quakes have occurred in the PT/USVI area-of-responsibility and none have generated a tsunami.
      - Need to keep landslide events in mind.
    - Lewis and Ramos indicated there is consensus amongst all partners to make change.
    - Confusion was caused during the recent M6.4 quake when the USGS updated it to M6.5 and then later back again.
    - Also, confusion was induced due to a statement from the WFO which combined conflicting information in TWC messages.
    - **ACTION:** *Re-consider modification of PR/VI thresholds and implement changes as necessary.*