

Meeting Title NTHMP Mapping and Modeling Subcommittee

Purpose MMS Project updates

Location: Winter Meeting, San Diego, CA

Date Mon, 28 January 2019

Participants J. Allan, D. Bausch, K. Fai Cheung, C. Forson, S. Grilli, , J. Horillo V. Huerfano, J. Kirby, M. Love, T. Moore, D. Nicolsky, E. Suleimani R. Wilson, .

Agenda (see page 4)

Introductions (Attendee list taken at start of meeting)

MMS 2018 Annual Workplan UPDATES

1. Tsunami source database discussion – Rick Wilson provided a review.
 - a. FY 18/19 (complete)
 - Source information captured into spreadsheet
 - Shared and used by USGS Powell Centre work group (finding commonalities) – historical data not a focus for this group.
 - b. FY 19/20 (in progress)
 - Description/definition of source parameters
 - Generate meta data for different model formats
 - Source dimensions with GIS/KML/figures
 - Permanent website for data
 - c. FY 19/20
 - Finalize database formats, definitions metadata, and attachments
 - Finalize and incorporate Powell Centre sources
 - Determine final location for data and assist transfer
- Agreement that the final database produced through this process should be editable, searchable, and with appropriate metadata.
- Powell Center meeting in May to define additional sources. Goal is to produce a research paper in summer 2020 summarizing all the data and findings from the series of workshops.
- Rick sought MMS endorsement for an FY19 task for CA that would involve working with the MMS to finalize the source database (e.g. excel spreadsheet). Seconded by Jon A. Vote passed with no objections.
- General discussion on definition of ‘worst case’ scenario. MMS concluded that because there are inconsistencies in the way this concept is used among the emergency management community, MMS should not define this with each state adopting their own preferred level of risk. Hence, this task was removed from the MMS work plan.

Action Item(s) - Ongoing.

2. Maritime Guidance – Rick Wilson provided update
 - a. FY 18/19
 - Guidance report – hazard assessment, response and preparedness/outreach material has been developed by MMS and is out there.
 - Finalize offshore safe (staging area) depths and related guidance for vessel evacuation developed and approved by NTHMP CC.
 - b. FY 19/20
 - Simplify guidance with less-prescriptive products in webpage format

- Links to partners, integrate mitigation and recovery planning products and guidelines both generic and harbor specific
- Website required for use of products by end-users/public
- c. FY 19/20 (requesting MMS endorsement)
 - Develop in-state work group to hold state-wide workshop to initiating/testing products/guidance
 - Discussed a web-based approach for sharing maritime guidance information, targeting different user groups (e.g. USCG, Commercial, Fisheries, Recreational).
 - Develop a maritime product web-site template for the use of other states, if interested.
- Broad discussion about simplifying the maritime guidance document.
- Discussion centered on developing appropriate guidance information and products that addresses the contrasting needs of maritime user groups (e.g. USCG, Commercial, Fisheries, Recreational), which could be provided through the WWW.
- Website review required by MES, MMS and WCS to ensure it fits needs. Perhaps two websites – one for internal (hidden) and one from public.
- CA planning to host a workshop for the maritime community (focused on larger ports) to better understand their needs.
- Liability concerns. Non prescriptive information and links to existing resources so that people can make better decisions, disclaimers and caveats should help as well
- NTHMP Maritime Outreach website may be better served by existing websites? NTHMP should focus on developing the information not linking it to users - that could be done by each state. Further discussion is required to determine best efforts for outreach to different target groups.
- Rick sought MMS endorsement for an FY19 task for CA that would involve developing web-based maritime content that could be integrated into the NTHMP web site, or adopted by NTHMP partners for displaying on their own web-site. The content would be based on the existing MMS maritime guidance document, while also integrating outcomes from various NTHMP partners that have made progress in this area. Vote passed with no objections. NOTE: the MES supported a similar discussion during their meeting and separately endorsed this effort.
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Action Item(s) - Ongoing.

3. Currents modeling criteria – MMS.

- Standard criteria for tsunami currents is challenging
- E.g., Users often request greater resolution for model outputs without realizing that there is a dependency on available data
- Model needs to be well-documented and when using multiple-models a sensitivity analysis could be undertaken
- Tsunami current benchmarking workshop identified that different models performed very differently but there is still more work to be done to resolve physics, resolution, etc.

Action Item(s) – Ongoing... continue to next year.

4. Update Mapping & Modeling Guidance - MMS.

- Refined text in various sections of the mapping and modeling guidance (e.g. additional factor of safety buffer).

Action Item(s) – Ongoing

5. Sediment Transport Guidance – Corina Forson.
- Sediment transport literature review compiled by WA and a word doc shared with the group.
 - Broad discussion on possible next steps. Consensus that the MMS needs to be working towards hosting a formal workshop to evaluate the role of sediment transport during tsunamis, and the accompanying feedback on inundation extents.
 - Challenge is that there are no data known of at this stage that could be used to benchmark sediment transport effects caused by tsunamis.
 - Future workshop would need to focus on better understanding of the causative processes and responses. A long-term goal is to find appropriate datasets that could be used for benchmark testing.
 - MMS to form work group to discuss sediment transport modeling research and begin planning towards a future workshop

Action Item(s) – MMS to continue discussions on topic leading to potentially hosting a tsunami sediment transport workshop ~FY20 timeframe.

6. Landslide modelling guidance – Jim Kirby.

- Hoping to have a guidance document completed by August 2019.

Action Item(s) - Ongoing.

7. Powell Center travel – MMS.

- Discussed next phase of Powell Center activities (Pacific sources focus).
- NTHMP state partners participating in the next phase to include travel request as part of FY19 funding cycle.
- Discussed schedule for Caribbean/Gulf/East Coast workshop.
- MMS endorsed travel to the Powell Center workshop for the involved state representatives.

Action Item(s) - Ongoing.

8. Meteotsunami project FY18 – Juan Horillo.

- In Gulf of Mexico (GOM) about 15-25 meteotsunami (MT) occur each year, 1-3 MT were >0.5m
- Created a web-based tool (tsunami model cloud) to change the meteorological effects based on incoming storm parameters to see about MT potential given a selected transect
- Stephan presented progress on MT work done – presented at AGU on East Coast MT hazard
- Detection- using high frequency radar to detect MT or possibly a landslide tsunami prior to wave arrival. Using this in B.C. now. May be a useful tool for detection across the states and also abroad (look into HF RADAR).

Action Item(s) - None taken.

9. DEM update from NCEI – Matthew Love.

- Finished two Alaska projects for NTHMP and Western WA, and Puerto Rico.
- Using new method-tiles which are easier to update and are easier to integrate with other tiles.
- COASTAL Act goal is to get all US coastline mapped (exception of Alaska which is special)
- Providing data to OCM for their web viewer

- Next NTHMP DEM priorities: we will postpone and make a list by the next teleconference (end of Feb.)
- Jon asked about updating existing DEMs- not reflected on new data just funding based.

Action Item(s) – MMS still needs to define priorities for next DEM priorities.

Other Business: Jon Allan discussed Oregon' ongoing work on application of Hazus to better understand risk assessments and planning. Noted that Oregon is in an ideal position to develop a guidance document on use and application of Hazus and data needs. Suggested this a potential future grant application requested in ~ FY20.

State Co-Chair Election:

Rick Wilson nominated Jon Allan

MMS members endorsed nomination.

The group thanked Dmitry for all his hard work and effort in leading the MMS over the past few years.

Next Meeting: To be scheduled

NTHMP Mapping & Modeling Subcommittee
16 July 2019 Teleconference

Participants: K. Carignan, A. Dolcimascolo, M. Eble, D. Eungard, C. Forson, C. Guard, S. Grilli, J. Horrillo, R. Lopes, E. Lutu-McMoore, D. Nicolsky, S. Ross, K. Stroker, R. Wilson, C. Wu

Meeting was opened with roll call, overview, and mention of the importance of maintaining a regular teleconference schedule.

First agenda item: August annual meeting agenda

M. Eble requested comments on the now posted draft agenda and made note that time during the August annual meeting will be tight as MMS will be providing the full NTHMP with updates on Annual workplan activities.

Discussion on NOAA data archive directive was started but deferred to later on the call.

S. Grilli asked about discussion time for USGS Powell Center Meetings, including a summary of the most recent meeting (Caribbean, East Coast, Gulf Coast) and discussion on probabilistic landslide approach.

M. Eble suggested discussion could be rolled into Agenda Item #9 (Powell Center Travel) and may also be part of Agenda item #1 (Source database). She encouraged everyone to come to the annual meeting prepared with updates on activities, including delays and issues.

S. Grilli: Discussion that includes probabilistic Landslide approach would be good too.

S. Ross: S. Grilli would lead Landslide discussion.

R. Lopes provided clarification on the timing of updates; partners will have 25-min blocks of time on Weds and half of Thur sessions. All members, including Federal, should come prepared to deliver updates on current and planned activities and discuss where collaboration is desired.

M. Eble adds that we don't anticipate presentations during Monday MMS meeting.

Agenda item #2 Required data archive and public discovery

C. Forson & D. Eungard noted general confusion on data archive directive and asked about now having to refer all questions to grants management.

M. Eble noted that there is confusion too among fed agencies who have to make their data discoverable and archived. There is no real consensus on what data are to be archived or from where data should be hosted. The lack of exact guidance may, in part be due to legal/FOIA concerns. There could be unintended legal consequences of one government entity giving explicit directions for archiving.

K. Stroker provided information about federal archiving at NCEI. Directive might be addressed with funding through grants. Problem lies when there's a specific request for direction.

Kelly C: the archive directive causes a lot of confusion. Seems like a lot of work that could be streamlined. Consistency in format would be very helpful as it is difficult for us (NCEI) to provide public access to data when it's in a variety of formats.

R. Lopes: NOAA's data management doesn't prescribe the way, just directs that you will make data available on closure of a grant. One of the options is to provide data to NCEI.

K. Carignan: NCEI's ability to archive depends on requirement-driven type of information and associated cost. A Net CDF catalog would be the least costly way to get data online quickly but this is not a great format for users. NTHMP specifications would be useful (ex: everyone wants data served from a map viewer).

M. Eble: Grant partners could satisfy archive directive by putting data on their website. Would there be cost for a grant partner to archive at NCEI?

K. Stroker: NCEI Protocol is that folks on the Data Stewardship side provide cost. NCEI continues to archive data from some university folks who have been archiving with us for decades but the practice of 'grandfathering in' is being looked at again as volume increases. K. Stroker suggests the question for everyone in general meeting as seems it has come up in other subcommittee working groups.

M Eble: the challenge of discussing broadly is that NWS folks have been told not to answer technical questions.

R. Lopes: Directive was a special awards condition placed on last, and this years' grants. NTHMP partners lean on L. Kozlosky, R. Lopes, and M. Angove to provide guidance but NOAA grants management now prohibits them from doing so.

M. Eble: Instead of guidance, discussion could lean towards costs and partner approaches. Question: Could NCEI get an example cost estimate?

R. Lopes: would like to hear from NTHMP partners on how much money should be taken off the top of the funding allocated for grants for this. There will be a trade-off that requires decision.

C. Forson: Storing locally vs NCEI should be a discussion point. So much information goes into a tsunami model, much of which is not useful to the public. Might be most useful to have an internal NTHMP discussion on what most states are archiving to form a consensus on consistency.

R. Lopes reiterates that no one will be available at the meeting to provide technical guidance on what "discoverable" really means.

He also clarifies that funds taken "off the top" are done from grant pool (ex. funds transferred to NCEI decrease the total amount before individual grantee distribution.

D. Nicolsky: Modeling needs to be reproducible so maybe consensus can be formed on keeping key components (DEMs, run files)

C. Forson advocates for this type of consistency among the states: a baseline of what the states and territories decide to archive.

M. Eble question of R. Lopes: could states hold a teleconference to discuss, outside of the meeting?

R. Lopes Answer: Apologizes that answers to technical questions cannot be provided.

Brainstorming:

R. Lopes: Maybe form a work group or team to explore then share results at a future meeting.

M. Eble: Maybe everyone could come up with a list of what is important to meet the directive.

R. Lopes: would involve colleagues from other subcommittees, so in the interest of time and collaboration, might be added to Tuesday morning agenda.

K. Stroker sees value in getting cost numbers from examples.

C. Forson and D. Eungard volunteer to provide examples

ACTION: C. Forson & D. Eungard (and A. Dolcimascolo) to provide K. Stroker with a list of potential maps and other products, size of package, type of access required

ACTION: D. Nicolsky to send K. Stroker with examples of key components to archive

ACTION: K. Stroker will pull together costs for each of the examples provided by C. Forson & D. Eungard and D. Nicolsky.

D. Nicolsky adds that NTHMP website links to individual state pages so could also link to data stored with NCEI.

R. Wilson is concerned that we as a body are complicating the data archive directive and advocates for simplicity. Is further concerned that more work than necessary is being identified.

M. Eble agrees but notes that some groups remain unsure as to how much they need to archive and make discoverable. What satisfies a management plan for one entity may not be the same as what satisfies the plan for another. There is a disparity in resources so some might want to explore using NCEI if they don't have the capability themselves.

R. Wilson sees a danger in complicating a data management plan given it is something that gets approved each year.

R. Lopes notes that R. Wilson's point is well taken. Every state and territory handles their data plan differently. It might, therefore, make the most sense to focus discussion on how each state is

handling their plan. More specifics can be discussed if needed, and expresses his agreement with R. Wilson that the plan doesn't need to be more complicated than it is.

ACTION: M. Eble will work with MES to add 'Data Management Plan Information Exchange and Needs' to agenda for joint meeting. (C. Forson and D. Nicolsky will still send K. Stroker examples to base cost estimates on.)

Other agenda additions or concerns?

- R. Wilson asks if there is anything specific that members should think about for agenda item 'Subcommittee Workload & Structure'.
- R. Lopes: 'Subcommittee Workload & Structure' will be discussed Thursday 1-5.
- D. Eungard requests that time be left for discussion on bullet 10.

K. Stroker asks about remote connectivity (will be participating in person but other staff will not)

R. Lopes can provide teleconferencing.

Meeting wrap-up

ANNUAL MEETING AGENDA

08:40 - 08:50 Agenda Overview

08:50 - 10:20 2019 Annual Work Plan

Overview

Item-by-Item documentation of status (Completed / Incomplete / In Progress...)

1. Tsunami Source Database (Lead: California)
2. Maritime Guidance (Lead: California)
3. Hazard Assessment Gap Analysis (MMS)
4. Currents Modeling Criteria (MMS)
5. Mapping & Modeling Guidance Update (MMS)
6. Sediment Transport Guidance (Lead: East Coast)

10:20 - 10:30 Break

10:30 - 12:00 2019 Annual Work Plan (Cont.)

7. HAZUS Guidance (MMS)
8. Landslide Modeling Guidance (Lead: East Coast)
9. Powell Center Travel (Lead: USGS)
10. NCEI DEM Development (Lead: NCEI)
11. MeteoTsunami Guidance (Lead: Gulf Coast)

12:00 – 1300 Lunch

13:00 – 14:00 Subcommittee Workload & Structure

14:00 - 14:20 Proposals for MMS-endorsed projects in NTHMP Grant year 2020.
Brief 'around-the-room' description or list of planned NTHMP Grant Fy20
projects

14:40 – 14:50 Wrap-up and Adjourn

Meeting Notes

Mapping and Modeling Subcommittee Meeting

Monday 19 August 2019 8:40-2:50

Location: Bennett Federal Building, Room 2402

125 State Street, Salt Lake City, Utah

08:40 - 08:50 Agenda Overview

08:50 - 10:05 2019 Annual Work Plan (1:15)

Overview

Item-by-Item documentation of status (Completed / Incomplete / In Progress...)

1. Tsunami Source Database (Lead: California) (15-min)
2. Maritime Guidance (Lead: California) (15)
3. Hazard Assessment Gap Analysis (MMS) (15)
4. Currents Modeling Criteria (MMS) (15)
5. Mapping & Modeling Guidance Update (MMS) (15)

10:05 - 10:15 Break

10:15 - 12:00 2019 Annual Work Plan (Cont.) 1:45

6. Sediment Transport Guidance (Lead: East Coast) (30-min)
7. *HAZUS Guidance (Oregon)- addressed later in proposals*
8. Landslide Modeling Guidance (Lead: East Coast) (15)
9. Powell Center (Lead: USGS) (15)
10. NCEI DEM Development (Lead: NCEI) (15)
11. MeteoTsunami Guidance (Lead: Gulf Coast) (15)

12:00 – 1300 Lunch

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14:40 – 14:50 Wrap-up and Adjourn

Powell Center Discussion - Stephanie Ross

Provided overview of Powell Center source meetings (3 to date). Each of the workshops brings experts to discuss developing approach for producing a suite of tsunami sources for use in tsunami evacuation and mitigation efforts.

First workshop (April 2018) focused on developing overall approach for developing PTHA sources, which is centered on first defining a logic tree of all sources, used to organize the earthquake (or landslide) source information and as input to the probabilistic assessment. Developed the initial parameter list for three cases for subduction zone fault earthquakes, for crystal fault earthquakes and for landslides. Goal was also to develop a list of potential participants for ensuing workshops, which are refined with each ensuing workshop. Report from the first workshop was completed and is now available.

Second workshop was on Alaska sources (October 2018). Report is underway with several sections already written. Those include sections on paleo seismic and paleo tsunami, evidence of recurrence, scaling laws, shallow slip, segmentation model, and how the results will be used. Timeline for completing this report is unclear due to everyone's schedule. Working on trying to Hong Kie Thio funding to do the PTHA portion.

Workshop three (May 2019) was on Caribbean sources and Eastern Gulf Coast sources. Report from that is in very early stages. Paper on landslide logic tree is being developed by Stephan Grilli and others

The fourth workshop is on Pacific sources excluding Alaska and Cascadia. Scheduled for Spring 2020. Currently trying to figure out what are the important sources that need to be looked at, and what can be accomplished in a week. Noted that the group originally thought Alaska was complicated... then East Coast/Gulf Coast/Caribbean workshop covered an even larger complex area, and now transitioning to the whole Pacific – challenging given scale and number of sources.

A separate Powell Center group is evaluating sources for the Cascadia subduction zone. A couple of exploratory workshops have already been held. This effort is being spearheaded by Lydia S, Rob Witter and Janet ?. Timeline for a future Cascadia source workshop is looking like FY 2021.

General discussion followed on Cascadia Rising and which source model could be used.

JA: noted that there has been some recent work by Kelin Wong and his students that provides refinements to the original Oregon Cascadia source models developed in 2009-2013. Evaluated a variety of scenarios (splay, buried rupture, and slip to trench). Splay yielded the most conservative results.

DEM Development - Kelly

Provided overview of NCEI role on DEM development. Group has been developing tsunami DEMs now for ~10 years focusing on those regions identified by the MMS to support modeling efforts. Current DEM development limited to about 4 grids/year, with the priority areas defined by the MMS.

Compile new bathy/topo each year from the research/obs community.

For calendar year 2019, focusing on three areas: Alaska (already completed), eastern Gulf Coast (Florida), WA outer coast and OR. WA is delayed because they are awaiting lidar to be fully processed. These new DEMs or DEM updates will be completed by the end of the year (may slip for WA coast due to data availability).

The Florida work is a collaboration with NOAA CSC (Coastal ACT) to develop a tiling scheme of DEMs for the US that can be more easily maintained and updated as needed. Basically, all of Florida has now been completed with this tiling scheme as well as Puerto Rico and US Virgin Islands. Scheduled for 2020 work on DEMs in the Florida Panhandle, Alabama, Mississippi, Chesapeake Bay, Louisiana and Texas.

Looking for guidance from MMS for new DEM development work for calendar year 2020. Areas that have previously expressed interest for new DEM development include Puerto Rico and Guam; both are dependent on new LIDAR data availability.

Requesting guidance from MMS for calendar year 2020 for new DEMs. MMS partner states need to be thinking about this now. Will discuss further at the next MMS meeting with the aim of defining the next group of areas for DEM development by December 2019.

Noted also that all data is available online and comes with a technical report.

General discussion ensued on the vertical datums available for the DEMs as WA had heard that NCEI would not be producing DEMs at MHW. Kelly confirmed MHW is still available and noted that they can convert to any datum as needed (straight forward process).

Source Database – Rick Wilson

Source Information				Evacuation Use	Logic Tree/PTHA Status and Use						Information Needs/Comments
Region	Source/Segment Name	Source Type	Source Discussed at Powell Center	Reliability of Source Characterization for Evacuation Planning (A=good, B=mod, C=low)	Basic Logic Tree Attributes Designated	Source Triggering/ Recurrence Information	Work Group Logic Tree Weighting	Completed Logic Tree - Info can be coded	Probabilistic Characterization - Outputs for slip distributions	Availability for Modeling/ Planning - Packing and comprehension by users	
Alaska/Aleutians	Prince William Sound	SZ	10/2018	A	10/2018	10/2018	10/2018	2020	2020	2020	PTHA logic trees from AECOM exist; USGS collecting additional paleo. info
Alaska/Aleutians	Kodiak	SZ	10/2018	A	10/2018	10/2018	10/2018	2020	2020	2020	PTHA logic trees from AECOM exist; USGS collecting additional paleo. info
Alaska/Aleutians	unsegmented rupture	SZ	10/2018	A	10/2018	10/2018	10/2018	2020	2020	2020	PTHA logic trees from AECOM exist; USGS collecting additional paleo. info
Alaska/Aleutians	Eastern Aleutians	SZ	10/2018	A	10/2018	10/2018	10/2018	2020	2020	2020	PTHA logic trees from AECOM exist; USGS collecting additional paleo. info
Alaska/Aleutians	Central Aleutians	SZ	10/2018	A	10/2018	10/2018	10/2018	2020	2020	2020	PTHA logic trees from AECOM exist; USGS collecting additional paleo. info
Alaska/Aleutians	Western Aleutians	SZ	10/2018	A	10/2018	10/2018	10/2018	2020	2020	2020	PTHA logic trees from AECOM exist; USGS collecting additional paleo. info
Cascadia	Southern Cascadia	SZ	TBD	B							OR has recurrence logic tree; PTHA logic trees from AECOM exist; work by other Powell group
Cascadia	Full Rupture	SZ	TBD	A							OR has recurrence logic tree; PTHA logic trees from AECOM exist; work by other Powell group
East Coast	Northern Region	LS	05/2019	B	05/2019	2020	2020	2021	2021	2021	East Coast to collect more information
East Coast	Southern Region	LS	05/2019	B	05/2019	2020	2020	2021	2021	2021	East Coast to collect more information
Gulf Coast	Western Region	LS	05/2019	B	05/2019	2020	2020	2021	2021	2021	Gulf Coast to collect more information
Gulf Coast	Eastern Region	LS	05/2019	B	05/2019	2020	2020	2021	2021	2021	Gulf Coast to collect more information
Puerto Rico/USVI	PR Trench	SZ	05/2019	B	05/2019	2020	2020	2021	2021	2021	PTHA logic trees from AECOM and AIR exist
Puerto Rico	Muerdos Trough	SZ	05/2019	C	05/2019	2020	2020	2021	2021	2021	PTHA logic trees from AECOM and AIR exist
Puerto Rico	landslide sources	LS	05/2019	C	05/2019	2020	2020	2021	2021	2021	
Puerto Rico	interplate faults	IPF	05/2019	C	05/2019	2020	2020	2021	2021	2021	PTHA logic trees from AECOM and AIR exist
East Atlantic	Cumbre Vieja	LS	05/2019	C	2020?	2020?	2021?	2021?	2021?	2021?	Discussed but not a primary focus of the Powell WG
East Atlantic	1755 Lisbon	SZ	05/2019	C	2020?	2020?	2021?	2021?	2021?	2021?	Discussed but not a primary focus of the Powell WG

CA has been working on compiling a source database now for a couple of years... focus has shifted slightly due to the Powell Center source workshops, where they are addressing a lot of the sources.

CA also focused on maritime planning.

Source database goal is to develop a spreadsheet/database to organize all sources (i.e. bring everybody into the same playing field) to see what everybody's using:

- to help with the accuracy and the consistency for each of our states and at the federal level.
- try to produce more consistency between states (Pacific/Gulf/Atlantic etc)

Work is continuing on the database/spreadsheet... currently in spreadsheet form. Hoping to include where applicable images, references, KML data, and any other geospatial information for those sources.

Focused on three different source types: subduction zones, crustal faults and landslides.

Developed suite of definitions (Rick to share). Would appreciate review from the MMS on the descriptions.

Hoping to eventually include metadata for everybody's source data.

Hoping to eventually include the probabilistic sources. Had initial discussions with Kelly and others about some other database system that could be used to integrate all these data.

General discussion on Cascadia sources...Oregon ran some 33 simulations, including south coast ruptures. These 33 were based on an initial larger suite of runs characterized using a logic tree approach.

Discussion on logic trees, Rick noted the basic logic tree attributes for a lot of the sources have been broadly agreed upon, including rankings of importance. Progress has been good for the Alaska solutions, East Coast, Gulf Coast and Caribbean.

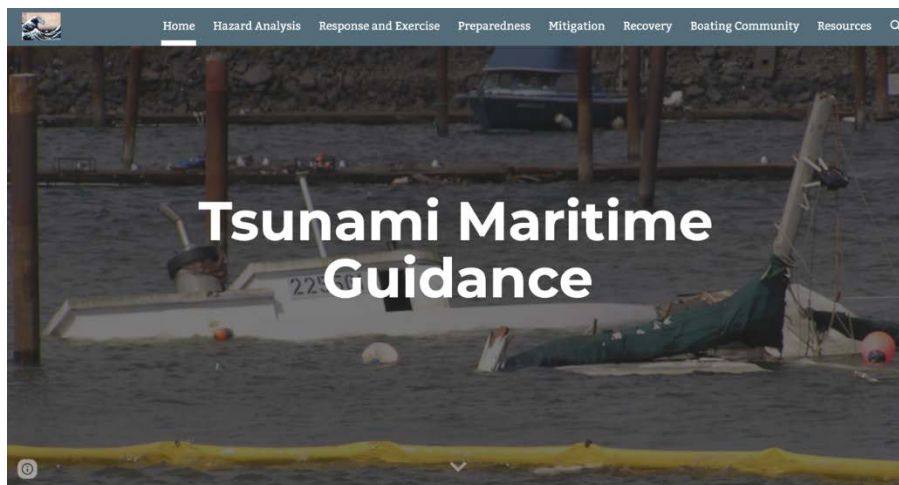
Noted that the last three columns of the source spreadsheet, reflects completed logictree, probabilistic characterization, and the availability of that information for modeling and planning.

Work on the source table is ongoing.

Still need to have a borad discussion about what event(s) to use for evacuation modeling...e.g. maximum of maximums, 10,000-yr event, 5000-yr or something else. Tied to risk

Noted that a broader discussion still needs to be had about eventually having some sort of product out of the Powell Center source database. Realistically, this about 3-5 years away... ie. Next steps.

Maritime Guidance & Criteria – Rick Wilson



Goal: Provide resources to maritime communities to plan and prepare for tsunami hazard posed to harbors, ports, and waterways that are socially and economically important.

Document about 1/2 - 2/3 complete. Decided to put a web site together. Primarily for EMS, harbor operators, and coast guard. Links to maritime products are included. Much of it is California based so far, but may expand to other states eventually.

There is a section of the web site for all vessel captains and recreational boaters. Whole web site is intended to be publicly available.

Maybe should change the tabs to be targeted to different types of users.

Website for the website is <https://sites.google.com/view/tsunami-maritime-guidance/home>

MMS members asked to review the site and provide comments to Rick.

Gap Spreadsheet – Jon Allan

HIGH LEVEL OVERVIEW													
	State	County	Community Name	Population in Tsunami Zone	TsunamiReady/TsunamiReady Tier II Recognition	TsunamiReady Expiration Date	Inundation Maps	Inundation Maps (additional info)	Evacuation map-brochure	Evacuation map-brochure (additional info)	HARBOR-SPECIFIC HAZARD MAPS	Mapped Coastline	DEM Status
INPUTS:	State	County name	Place name	# In TZ	Y (T1 or T2) / N	Date	None Proposed Underway Completed	Date completed: Type 1 / Type 2 / Type 3	None Proposed Underway Completed	Date completed: Type 1 / Type 2 / Type 3	NA None 2-response Playbook	Miles mapped	Version date: Type 1 / Type 2 / Type 3

This task was identified as a need several years ago. Rick and Dimitry developed an initial concept spreadsheet identifying various themes (e.g. brochures completed, TsunamiReady communities, maritime modeling completed, sources, sirens etc).

A concept spreadsheet was presented to MES/MMS recently at the San Diego meeting. Push back from a number of the EMs. Main concern was sensitivity about the types of information that was in the spreadsheet that could be shared, as well as confusion on terminology and parameters. Wanted a deeper dive into the overall goals of this exercise.

Outcome... established a 'Gap Analysis' working group to address these concerns. Formed earlier this year. Initial discussion focused on the purpose behind the types of information that could/should be shared. EMs expressed concern over how this information might be used and by whom... e.g. Congress, NOAA management, states etc.

Group agreed there was a need to develop effectively two products:

- 1) High level overview information that could assist NOAA. Info would be community based, focused on parameters like distance of coastline mapped, TsunamiReady communities, tsunami brochures etc. from which metrics could be extrapolated. Such info could be useful when developing proposals and demonstrating to NOAA specific needs.
- 2) State specific information that reflects a deeper dive into what is happening within each state/territory.

Consensus from the group on this approach. One concern that was raised with the overall approach was the level of effort required to populate the spreadsheet. For some, this may require a bit of effort initially to populate the spreadsheet. However, once completed the lift to maintain is low.

A modified spreadsheet has been developed consisting of 5 tabs: High level overview, Tsunami Warning, Education & Outreach, Mapping and Modeling. The first would provide generalized metrics on the status of tsunami prep that would be most relevant to NOAA. The remainder would be used by the states to track their own prep progress.

High level info included county/community names, population, TsunamiReady (Fundamental and Tier II, including dates), inundation maps, DEM quality (coarse to high res) used in the modeling, completed evacuation maps, maritime evacuation planning.

General discussion on defining terms used followed e.g. what is meant by community etc.

JA noted that guidance doc would accompany this that would provide some assistance.

Next three sections of the spreadsheet focused on state specific needs/interest.

Tsunami warning tab: focused only on sirens... whether they are operational, decommissioned, activated locally, activated centrally, etc.

Tsunami Planning tab: Needs quite a bit of work, especially guidance from MES. May include evacuation modeling, risk assessments, evacuation plans, California expressed interest in documenting numbers of tsunami evacuation signs, state regulatory lines, ASCE 2500 year line being developed for the west coast, recovery plans.

Tsunami Outreach tab: Needs guidance from MES. May include outreach events/activities (dates), workshops, exercises.

Tsunami Modeling tab: Needs quite a bit of work, especially guidance from MMS. Focused on sources, modeling status, sources, characteristics about distant vs local sources, landslides, historical data etc.

Sediment Transport Workshop Discussion – Stephan Grilli

Stephan: East coast has a lot of barrier islands. Will use FY19 funding for further east coast tsunami modeling. Erosion needs to be accounted for when modeling the inundation area. Ocean City and Atlantic City have been mapped. Sediment transport models used for determining coastal morphology change. Model can accommodate erodible and non-erodible areas. With erosion included inundation impacts are much greater. Plans to re-do the mapping taking sediment transport into account.

Possible workshop next year to discuss to develop best practices, and maybe a follow up workshop to discuss benchmarking. Need to get proposals in before December.

Modeling comparing subsidence vs non-subsidence? Yes, can be done. East coast has greater barrier islands vs west coast.

Timing: Working with Ed Fratto on 5-year plan. Will release models as they are developed.

Dmitry on phone: How do you take into account the nature of the type of sand? Stephan: Characteristics of the sand is taken into account. Sampling can add to the accuracy of the modeling.

Jon: Next step would be to put together a small group to determine next best steps.

Landslide Modeling Guidance (Lead: East Coast):

Stephan: Proceedings were developed from previous workshop. Would like to have documents hosted on the NTHMP web site. Guidelines are needed for landslide modeling such as benchmarking standards, i.e., dispersion. Best practices should also be followed to ensure the most accurate landslide modeling. Guidance to be circulated to the MMS for comment. Comments are to be provided by mid-September.

Mike: How do we get to an actual capability? Grilli: Outcome will be looked at probabilistically. Return periods and travel time. Kara: would need some kind of sensor system to detect landslide has occurred. Natural warning signs are sometimes the only clue.

MeteoTsunami Guidance (Lead: Gulf Coast):

Juan: Has developed a suite of mapping sources in the gulf. Inundation mapping is well established for several areas. Still in the early stages of developing meteotsunami modeling for the Gulf. Four regions identified in gulf that are subject to MTs. Kara: Can DART reading be incorporated? Juan: Yes but not significant.

Hurricane Harvey test cases were run. Philip: MTs during hurricanes are not significant compared to overall storm impacts.

MT modeling guidelines have been drafted. Philip: Climatology has been developed for Great Lakes and EC, and may be applied to gulf, but would need some tweaking.

Subcommittee Workload and Structures – General Discussion:

Corina: Why this initiative? MES looking to alleviate some workload within subcommittees.

Challenges: Schedule conflicts, funding constraints.

Hold NTHMP along with AGU? Maybe hold a workshop instead of the entire NTHMP on a non-tsunami day at AGU. (Rocky note: this is infeasible.)

Pacific Caucus similar to Island Caucus? Not enough leaders, time needed for additional caucus. Could be addressed by additional conference calls, etc. Could make things more split and could be dilutive. Any subgroup should be task-focused and not necessarily geographic.

1-year trial? Where should limited resources be applied?

Not enough people participating in non-face to face meetings initiatives.

Limited time for members to manage workload. Prioritize activities?

Too many activities can become unmanageable.

More open free-flowing meetings? Seemed to work well in San Diego meeting.

Additional local EM and NWS WCM participation beyond meeting invites? Funding off the top of NTHMP? (Rocky note: NOAA employees such as WCMs cannot use NOAA funds intended for state financial assistance.) Would reduce available funding to NTHMP partners.

NTHMP steep learning curve. Mentoring program? Could be complicated and expensive, but a page with introductory info. Primer, acronyms, etc.

Marie to put Google doc up for suggesting mode.

Proposals for MMS-endorsed projects in NTHMP Grant year 2020;

Brief 'around-the-room' description or list of planned NTHMP Grant FY20 projects.

Sediment Transport:

Workshop? Philip sediment transport modeling is very mature, would this be tsunami-specific?

Stephan: Yes, would be. First workshop would solicit input from outside entities and then set up a benchmarking workshop. Rick: Would be best to demonstrate the benefit to address the hazard.

Stephan: Would like to fund students and foreign experts. Stephan will set up a workgroup.

Maritime:

Rick: Maritime initiative would be about 10-15K additional funds.

No objections

HAZUS – Oregon:

Jonathan: Guidance document? Could be headed up by Jonathan. Would be about 20-40K.

Customer? Local communities.

SIMS – Washington:

General discussion about issue relating to the absence of SIMs for Puget Sound area. Critical need by WA EMs. Unclear who funds this development. Recommended that this be brought up with the NOAA leadership team as well as in discussions about advisory discussion on Tuesday.

Meeting Title NTHMP Mapping and Modeling Subcommittee

Purpose MMS Project updates

Location: Teleconference

Date Tues, 2 October 2019

Participants Jon Allan, Diego Arcas, K. Fai Cheung, Corina Forson, Daniel Eungard, Kara Gately, Stephan Grilli, Chip Guard, Juan Horillo, Jim Kirby, Stephanie Ross, Kelly Stroker, Kelly Carignan, Rick Wilson, Victor Huerfano, Carrie Garrison-Laney, Elizabeth Vanacore Maher

Introductions (Attendee list taken at start of meeting)

Agenda

1. DEM update + new DEM needs (All)
2. Sediment transport workshop discussion (All)
3. Others

DEM development Update plus CY20 needs (All):

Jon - reminded the group to begin thinking about DEM needs for CY2020.

Kelly C - provided a status update on ongoing activities. Noted that under the Coastal Act, DEM development is underway for multiple sites in the Gulf region and along the southern eastern seaboard.

Noted, that if conversions are needed, NCEI can help with that.

Tiles being developed for the Gulf, had been completed.

Other areas being worked on are along the Oregon and Washington coasts.

Corina – Mentioned that WA has just taken delivery of new lidar for the northern half of the outer coast. Hoping that these data can be integrated into the new WA DEM being developed for CY2019.

Jon – Any initial thoughts in terms of immediate sort of needs?

Victor – Requested assistance from NCEI with a version of lidar (DEM) that includes the built environment (buildings etc). Has a student working on modeling.

Kelly S will touch base with Victor to explore further.

Corina – mentioned that WA is interested in re-doing the SW WA outer coast. Noted that lidar is planned to be collected next year, such that timing wise it could be available late next year. Goal is to include newer data, plus extend modeling further up rivers.

Action Item(s) - Ongoing. MMS members to think about DEM needs for CY2020.

Sediment Transport Workshop Planning (All):

Jon – reminded the group of the need to keep moving forward with planning for an initial tsunami sediment transport workshop. A small working group was established at the SLC meeting but have yet to meet.

Stephen – Reminded the group of the proposed approach that is being discussed. Phase 1 would consist of an initial focused workshop on the state of the art for doing sediment transport modeling caused by tsunamis, where experts would be meet to explore topics such as the state of the art in modeling and in

benchmarking and what's available. Phase 2, would come much later and would be focused on actual model benchmarking.

Jon - Goal is to have this planning group then meet ASAP to begin scoping out Phase 1, since proposals for new work will take place in January.

Jim – noted that he and Stephan will be at a meeting together for 10 days in October, the plan would be to hash out some ideas then, and then meet with a broader planning group in late October (after the 25th). As a reminder the planning group consists of Jim, Stephan, Fai, Dmitry, Juan, Stephanie, Carrie and Diego; Jon to sit in.

Rocky – reminded the group about limitations for funding travel (non-federal government employees; federal government employees would have to fund their own travel. Cannot provide funding for international travel). Overall approach though for such a meeting would be the same as what's been implemented in the past.

Stephanie – noted that in order to get USGS participation, they need advance warning.

Jon – *Timeline for hosting such a meeting would be ~ January 2021 at the earliest.*

Action Item(s) - Ongoing. Jim/Stephan to work with Jon/Marie/Rocky to organize an initial planning meeting for late October.

Other Topics:

Landslide guidance document (Jim) – Jon reminded folks to review the document. Marie had sent a link to a google drive, where the document is stored:

<https://drive.google.com/open?id=1tau4GNTFraYEff8XdhuMjv-fbyxbiNfP>

- Task: Review the landslide guidance document by October 31.
- Jim – noted that there were several questions throughout the document needing answers... if you know the actual answers, please, please go ahead and share them.

Action Item(s) – MMS to review the Landslide Guidance document by October 31.

MeteoTsunami guidance document (Juan) – Work on the guidance document is mostly complete. Juan to discuss meteotsunami climatologies and guidance with Philip and Chin Wu next, refine the guidance document and then submit to MMS for review.

MMS Terms of Reference (Jon) – Jon gave a brief overview of a request from Rocky to review and update the MMS Terms of Reference. Jon and Marie to send the revised version to the MMS for their review. Responses needed by the end of the month.

Addendum: Document was sent to the MMS for review on Friday, October 4th. MMS co-chairs request a turnaround by no later than October 25th. CC members have been asked to vote by email on the document.

Action Item(s) – MMS to review the Terms of Reference document by October 25 and provide an email vote.

Other discussions -

Corina: asked Stephanie about any updates to the Powell Center workshop?

Stephanie: Continuing to work on it (weekly tag-ups). Reminded group of the forthcoming Pacific meeting (no date yet)... won't be considering Cascadia or Alaskan sources as part of this workshop.

Diego: Mentioned a source workshop coming up soon (November) for the Columbia Peru region, as part of the Pacific Tsunami Warning System. Bringing about 25 experts from the region as well as international experts to explore sources for the following areas: Colombia, Colombia, Ecuador.

Jon: Question on Pacific sources workshop. What is the plan for dealing with Cascadia and Alaska sources as a distant event for the Pacific area? How will that eventually be incorporated?

Stephanie: No clear plan right now.

Rick: Mentioned that they could potentially hold a future workshop to incorporate these results.

Stephanie: noted the separate Cascadia Powell Center workshop planning is ongoing. Hoping to have resolved sources ~2021. These data could then be incorporated into the Pacific Islands sources around then.

Jon: asked Rick about the status of the maritime guidance web page and the source database he has been developing.

Rick: Nothing has been accomplished since SLC.

Kelly S: Mentioned that NCEI is still a possibility to eventually store the source database that Rick has been collating...just not sure yet about next steps. Will need guidance from the group and especially Rick.

Rick: suggested that several folks involved in these activities should meet with Kelly to discuss further.

Next Meeting: To be scheduled

Meeting Title NTHMP Mapping and Modeling Subcommittee

Purpose MMS Project updates

Location: Teleconference

Date Tues, 12 November 2019

Participants Jon Allan, Marie Eble, Rocky Lopes, Diego Arcas, Kara Gately, Stephan Grilli, Chip Guard, Stephanie Ross, Kelly Stroker, Kelly Carignan, Rick Wilson, Dmitry Nicolsky.

Introductions (Attendee list taken at start of meeting)

Agenda

1. DEM update + new DEM needs (All)
2. Sediment transport workshop Update (All)
3. Winter meeting agenda topics (All)

DEM development Update plus CY20 needs (All):

J. Allan - reminded the group about DEM needs for CY2020.

D. Nicolsky – submitted a request on behalf of Alaska. Primary are of interest is the Anchorage region (strongly supported by the TWC as well) . Also interested in new DEMs for several other places, funding permitting.

J. Allan - suggested D. Nicolsky forward a map identifying a prioritized list of places of interest.

[The following was submitted after the meeting:

AL – Prioritized list includes: (1) three telescoping DEMs for Anchorage and upper Cook Inlet (8 and 8/3 arc-seconds and the 15m resolution); (2) Whittier (update to incorporate new lidar); (3) Gustavus (update to incorporate new lidar); (4) Cordova to include the airport (new LIDAR and IFSAR data are available).

WA – Prioritized list includes: (1) Strait of Juan de Fuca (between Neah Bay and Port Townsend); (2) SW Washington (2019 DEM boundary to Columbia River including inland upriver locations such as the Chehalis and Willapa rivers, and other major watersheds in the region); (3) South Puget Sound (~ the latitude of the northernmost tip of Carr and Case inlet to the southernmost tip of Eld and Budd inlet).]

Action Item(s) - MMS members to get back to MMS co-chairs on DEM needs for CY2020.

Sediment Transport Workshop Planning (All):

S. Grilli – S. Grilli and Jim met and discussed the overall approach. Plan is that this activity would consist of a phased approach. Phase 1 would focus on an initial workshop examining the state of the art for doing sediment transport modeling caused by tsunamis, field work, case studies, and in benchmarking. Phase 2 would come much later and would be focused on actual model benchmarking.

Next step: develop a draft work statement that would address this approach, which would be submitted as part of the FY20 round of partner grant proposals. Work statement to be produced by the end of the year and circulated to the Sediment transport working group. Work to be accomplished would include travel support (for outside experts from within US; international experts would have to fund own travel to US) for folks to meet (e.g. Galveston, TX), plus funds to cover the organizational aspects of hosting a workshop.

R. Lopes – suggested working with Ed Fratto for processing travel...cheaper due to lower indirect cost rates (10% compared with University IDC rates in excess of 50%. NOAA must recognize rates on negotiated indirect cost rate agreements and cannot do what the NAS does to limit which object classes are or are not subject to indirect rates).

R. Lopes – (added after meeting, as FYI) no funding from NOAA's NWS will be available to support anyone to attend the workshop, and Federal employees are prohibited from using grant funds. Please be aware of this in workshop planning, because unless an individual Fed can get travel support from his/her respective agency or funds travel out of his/her own pocket, that person cannot come. Travel funding from NOAA is more and more limited and getting worse.

S. Ross – reminded that in order to get USGS participation, they need advance warning. Especially important for organizing travel since Federal agencies are not supported by NTHMP travel.

S. Grilli – Timeline for hosting such a meeting would be ~ January 2021 at the earliest.

R. Wilson – Question about using sediment transport models for both land and water? Relevant for debris modeling in ports and harbors and elsewhere.

S. Grilli – Was not planning to look at transport modeling in the water.

[General discussion on this topic followed. Suggestion was that this should be at least discussed at the workshop since the issue is critically important and several folks who are already doing this would be already at the workshop]

Action Item(s) - Ongoing. Jim/S. Grilli to circulate a work statement in the next few weeks on their proposed approach.

Winter Meeting Agenda Topics (All):

J. Allan – Winter meeting is coming up (end of January 2020) and the MMS will have some face time. Currently, we are scheduled for the following: Jan 28th = 5.5 hours; Jan 29th = 5.5 hours; Jan 30th = ~6.5 hours. Need to start thinking about topics to be covered.

R. Lopes – noted a potential change to the schedule on Day 3, which would likely mean more MMS/MES time (already accounted for above) for committee meetings.

J. Allan – Proposed topics will follow the MMS work plans (i.e. respective leads will report back to the group). Suggested also the option of each NTHMP representative coming prepared for a lightning round series of presentations/updates (e.g. 2-3 key slides summarizing recent activities/hot topics), plus time for a quick (5 min) of Q&A.

[General support for doing the lightning round]

D. Arcas – suggested having a discussion/presentation on DEM resolution. For example, what is meant by a resolution of 1/3 arc sec... reality is that only a small area may be covered by spatially dense datasets leading to higher accuracy, while in other areas, the data may be spatially further apart and hence does not match the resolution specified. Many in NTHMP community (especially EMs) probably don't appreciate this.

K. Carignan and K. Stroker – noted that much of this is covered in the technical reports that accompany the DEMs. However, these reports are now not being consistently produced for every grid.

K. Stroker – suggested developing a short presentation on DEM resolution, which will be shared with the MMS/MES during their joint meeting.

R. Lopes – mentioned the need to allocate time for the new NTHMP Administrator to be introduced to the MMS – factor into schedule.

Action Item(s) - Ongoing. Kelly to work on a possible DEM resolution presentation, which could be presented in the joint MMS/MES session in Portland, OR on Jan 30th.

Other discussions -

This was R. Lopes's last meeting with the MMS. MMS appreciated everything R. Lopes has done for the NTHMP. We will miss you!