Oregon State Office Building
800 NE Oregon Street
hosted by Oregon Department of Geology & Mineral Industries
Portland, OR 97232
Room 1E

28-30 January 2020

AGENDA

Tuesday 28 January (09:30 – 14:50)

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

1. Powell Center (USGS, 20 min) – Ongoing

- 3 workshops to date (initial, Alaska, Gulf/EastCoast)
- Proposing shift in schedule to address Cascadia sources in summer 2020.
- Workshop on Pacific sources moved to 2021.
- Broad discussion about PTHA (needs/problems). Usage... planning vs evacuation maps.
- Messaging of PTHA... PTHA useful for telling public/EM how likely something is
- MMS requesting NTHMP CC write a letter to ASCE requesting that ASCE provide underlying source information. Rick to draft letter and share with MMS than CC.

2. Tsunami Source Database (California, 20 min) – Database compilation complete.

- CA developed spreadsheet summarizing source database (spreadsheet form)
- primary work on determinist tsu DB complete. Page of definitions (MMS to review)
- CA to share with MMS for final look over/check. Rick to summarize possible next steps
 - o Should add'l info on existing DB be collected?
 - How should new and prob tsu srcs be collected and defined in the DB?
 What can MMS and NTHMP do with the tsu src DB?
 - Utlize consistent srcs between states
 - o Recommend min recurrent time for tsu srcs used in evac maps?
 - What is the long-term solution?
- CA to host or approach NCEI to host spreadsheet database. DB = summarizes (sources/modeling undertaken) information compiled to date for each state, point of contacts... This is a minimalistic level
- Initial NCEI costs to setup and host ~\$40k.
- Possibly could be expanded to include more information including source/deformation models etc.

3. Maritime Guidance (California, 30 min) – Mostly completed

- CA to share web link. MMS to review
- No longer funded task
- Keep in work plan but transition to MRPG to bring MES and others in for review.

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4. Post-tsunami field data teams and collection tools (MMS & ITIC, 30 min) - Ongoing

- Bruce/Laura provide overview of plans. Need for coordinated response, with protocols defined for post-disaster tsunamis surveys that could impact the US and its territories.
- Recognizes need for some kind of clearing house (CH) to make data available to people who need the data as quickly as possible
- No immediate need for MMS input.

5. Currents Modeling Criteria (MMS, 30 min) - Ongoing

• Guidance document to develop/summarize (Jon, Dmitry, Alex (WA), Nick) – borrow text liberally from MMS/MES currents workshop report

6. Landslide Modeling Guidance (East Coast, 30 min) - Ongoing

- Stephan provided an overview of work accomplished to-date.
- Proceedings for LS workshop: published and posted. Had 7 benchmarks and 14-15 models evaluated. Not all models ran all benchmarks.
- Reviewed and edited landslide guidance document. 95% complete
- Guidance document presently does not recommend a minimum number of benchmarks to evaluate... does not specify some acceptable error range. Stephen and Jim to complete
- Group recommended deleting references to Powell Center work until such time these results have been document either in a report or paper.
- Kirby/Grilli finalizing landslide modeling peer reviewed paper

7. Sediment Transport Guidance (East Coast, 30 min) - Ongoing

- Reviewed need for sediment transport benchmarking workshop
- Tsunamis cause large-scale modifications to exposed coastal shorelines during inundation events. In particular, currents can lead to large morphological changes in harbors and other navigational facilities, disrupting their use.
- Sediment transport models have been shown to be qualitatively accurate in a range of settings.
- Appears to be more quantitative data out there for benchmarking (e.g. various examples from the Sendai coast... Sugawara et al (2019)).
- Conversely, physical model data are not ideal for benchmarking since lab tests often employ time scales which are too short compared to the spatial scales used.
- Concept document circulated among SEDTRAN working group. Phased approach...
- Phase 1, focused on evaluating the efficacy of sediment transport models, data availability for benchmarking and overall approach.
- Phase 2, would be a second workshop that evaluates the actual models against benchmarked data.
- Review comments to Kirby by Jan 31.

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8. NCEI DEM Development (NCEI, 30-min) - Ongoing

- Identified priorities in Alaska, Washington and Oregon
- Dmitry noted they have developed a tool to edit DEMs on a point by point basis (in Matlab). Can be shared with people.
- MMS to still consider/evaluate future needs beyond CY2020
- Will discuss priorities further at the next MMS phone conference
- Group recommended that we reevaluate priorities by the middle of the year in order to make any necessary adjustments.

9. MeteoTsunami Guidance (Gulf Coast; Great Lakes, 30 min) - Ongoing

- Overview of MT guidance by Juan, with recommendations on data inputs, model simulations etc.
- GLs overview of MT hazard Heuristic modeling approach goal is to get to forecasting based on atmospheric conditions. Resolving wave height is well established... problem is currents as needs highly detailed (<3 m resolution) bathymetry. Appear to be having some success.
- Multiple fatalities in the GLs
- MT more common than led to believe, with identified cases from around the world. (mainly northern/southern latitudes... equatorial regions not so much)
- Possible future workshop needed on modeling/forecasting to move to the next level
- Juan to share with Philip and Chen for their review. Once this resolved, share with MMS for their review. Once approved by MMS, this will close out this task for now, until a future workshop is planned.

10. Mitigation & Recovery Planning Working Group (MRPWG) - In progress

- Provided overview of goals/objectives of WG
- Reviewed proposed work plan tasks.
- Recommended removing PTHA... part of MMS future annual work plan.

11. Mapping & Modeling Guidance Update (MMS, 30 min) – Ongoing

- To be discussed in a future phone call
- Will include discussion on friction usage (0 vs .025 vs .03 vs landscape)

12. Hazard Assessment Gap Analysis (JA, 30 min) – Ongoing

- This task was discussed in the joint MMS/MES session
- Jon provided an overview of status. Broad structure of the spreadsheet is complete. Looking to MMS and MES to finalize their respective sections
- Will solicit members of the work group to provide a final look over. A brief guidance document will also be produced to accompany the spreadsheet.

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13. <u>Proposal for MMS-endorsed projects in NTHMP Grant year 2020</u> <u>Brief 'around-the-room' description or list of planned NTHMP Grant Fy20</u> projects

- Sediment transport workshop
- Cascadia workshop
- California PTHA for Alaska

Wednesday 29 January - Lightning Briefs

Alaska

American Samoa

California

Thursday 30 January

East Coast

Hawaii

Oregon

Puerto Rico

Washington

Gulf Coast

USGS

NOAA – Great Lakes

NOAA – NCEI

Participants: C. Allen, D. Arcas, I. Sears, R. Wilson, D. Nicolsky, K. Stroker, K. Carignan, S. Grilli, S. Ross, M. Eblé, F. Cheung, D. Eungard

Agenda Items

Feedback on MMS-sponsored proposed Grant tasks
 No discussion. All sponsored proposals were submitted in State grant requests and leads are awaiting feedback.

2. DEM update and plan (K. Carignan)

NCEI has all they need for DEM development. The FY19 outer coast of Washington is in progress. LIDAR data are in hand and time to complete depends on how long it takes to update the existing tiles. After completing the outer coast of Washington, NCEI will start on FY20 priorities: Alaska sites, Oregon Umpqua River area, and for Washington, the Strait of Juan de Fuca. NCEI cautioned that the Strait of Juan de Fuca may not be completed before the end of FY20.

- C. Allen asked about no cost extensions given the situation with Covid-19 and that the Washington outer coast DEM is not yet ready.
- I. Sears thinks a no cost extension will be a reasonable ask when the time comes. For now, I. Sears and NWS is planning for no disruption to Grant awards and for overall success.

3. Powell Center Update (S. Ross)

The update focused on planning for the next, Cascadia, workshop. On 31 Jan after the close of the NTHMP subcommittee meetings in Portland, the Powell Center working group met with WA and OR to plan the Cascadia workshop. A list of potential invitees was drafted, and a few date options agreed upon. The week of 24 August is, as of now, looking to work for most respondents.

- D. Areas asked about the process for deciding on who to invite and suggested D. Melgar. He also requested that the list of invitees be shared.
- S. Ross clarified that the list is not yet final. Some invitees have not replied with availability and others have not yet been requested to participate. The final list will be shared but not sure about sharing a list before that.

In post-teleconference follow-up conversations, it was decided to broadly share the invitee list once finalized.

4. Landslide guidance document status (S. Grilli)

S. Grilli confirmed that the landslide guidance document is still pending completion. There have been no changes in status since the January subcommittee meetings in Portland when MMS members recommended some changes to the document, noted to be ~95% complete at the time. S. Grilli and J. Kirby want to ensure that the guidance document and journal manuscript align with one another so have decided to finish the paper first. The results section of the paper is primarily what remains.

Other Items

- 1. Gap analysis spreadsheet. J. Allan solicited a final round of input from folks and based on the input received, the tool is considered to be essentially done. J. Allan plans to have an accompanying guidance documented drafted within the next few weeks.
- 2. Letter to American Society of Civil Engineers (ASCE). NTHMP representatives from the five (5) states that ASCE 7, Chapter 6 applies to, developed a letter requesting that ASCE openly share the end-to-end process and modeling results in a timely fashion. I. Sears worked with J. Allan and R. Wilson to redraft the letter and it is now with G. Cooper for final review before going on to General Counsel for final approval.

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In response to interest expressed in getting a copy of the letter, it was decided that the final version approved by General Counsel would be made available.

Questions and Comments

D. Nicolsky suggested that next generation of maps should be done by individual states. Hawaii was cited and it was clarified that the next generation of maps are being done with funding from the State, separate from NTHMP.

F. Cheung seems to remember that there 10-m resolution is stipulated in ASCE 7 for states that have LIDAR. If data not available, requirement would be relaxed.

D. Eungard did not recall any resolution specified in the document.

Based on continued questions and a general lack of details in the ASCE 7, C. Allen suggested a MMS teleconference dedicated to ASCE requirements. It was further suggested to invite Ian Robertson to answer questions.

Action: J. Allan and M. Eblé to discuss a focused call on ASCE requirements and contact Ian Robertson for availability.

Participants: J. Allan; M. Eblé; I. Sears, J. Horillo; S. Ross; S. Grilli; F. Cheung; K. Stroker; C. Garrison-Laney; E. Lutu-McMoore; V. Huerfano; K. Gately; J. Kirby; R. Wilson.

Agenda Items

1. Powell Center Update (S. Ross)

The next Powell Center (Cascadia) meeting is scheduled for August 24-28, 2020. Powell Center has canceled meetings through July while August remains open. Currently working on a backup week scheduled for April 2021. Also waiting to hear about NTHMP/NOAA grants (e.g. AK requested funding in their grant proposal to help move the AK logic tree forward).

2. NTHMP Grants update (I. Sears)

Grant proposals have been reviewed by the review panel. Some states and territories have received feedback. Since then, the grant proposals have been approved by NWS leadership. Details on grant submissions forthcoming (will go out to states and territories on May 20th). Next step is to work on the RFA material needed for grants.gov. Drop-dead deadline is July 5th for the latter. Anticipating this information coming out ~first week of June.

3. MMS membership discussion (J. Allan)

Background: MMS chairs received an email request from an EC scientist (Dr. Simone Marras, tsu modeler) who is interested in becoming a non-voting member with the NTHMP and specifically with MMS; Dr. Marras shared her resume with MMS co-chairs, which has since been forwarded to NTHMP leadership. We have also reached out to Jim/Stephan/Ed Fratto for their input and have received some initial feedback. Looking for additional guidance from MMS on how we would like to proceed.

Stephan: We've had people like me who are working with EC states and who are not voting members (although I am a co-voting member with Jim) participate on a temporary basis while doing needed NTHMP work. Usually, such people have an NTHMP connection, but Dr. Marras has not been involved previously. That doesn't mean it wouldn't be helpful to have her. When we have held MMS related workshops, we have had people coming from many different organizations. But they were usually connected to some specific work task or activity (e.g landslide workshop).

The challenge is that there are probably dozens of people out there that could make a similar unsolicited request. Do we want that? Could become challenging if MMS membership grows significantly... becoming unwieldy.

Marie: Question for Ian. What are the terms/legal requirements? Can someone requesting membership be declined?

Ian: Have reviewed the tsunami law and the NTHMP/MMS terms of reference. My take is - it's open to interpretation, we can do what we want. The NTHMP meetings are open to the public... doesn't mean you'll be on our subcommittee.

Marie: could you follow up with NWS legal to make sure that the way the law is written we can/cannot refuse a membership request?

Jon: I share Stephan's concerns as to how this might be perceived. There's definite value in opening it up to more and more researchers, but it could quickly become unwieldy. Secondly, the work we do is inherently applied and tied to our respective state program needs.

Ian: a middle ground option. Assuming the status quo remains the same and Dr. Marras is not included as part of the MMS subcommittee right now, she could conceivably participate as guest, get to know us, understand the challenges we're facing, and contribute as needed. Maybe eventually bring her into the fold after an unofficial "is this something we both want" period.

Elinor: noted that the terms of reference are very specific on who's in there. People can participate without being a member. We don't want to open it up to anyone...

Marie: meetings are open to the public. Ian suggesting that she join us in public meetings (haven't had one for a while). Doesn't extend quite so well to telecons? Meeting agendas and call-in information are not advertised beyond the immediate group. The tricky part is that it's the EC, which is a consortium of states. Easier if it was a single state like OR or WA – just work with the people in your state.

Ian: terms of ref: limited to 12 reps (from 12 states/territories/regions). We could exclude someone. "Outside stake holders and can be invited to join us in discussions".

"states get to choose who the MMS and MES members are". Not the case for EC/GC. Those are appointed by NTHMP chair. Sounds like we have work to do. I'm hearing there's a lot of reservation to including additional members, in terms of management of the group. I'll follow up with what we can do.

Marie: balance is bringing in expertise without putting more demands on funding.

Action item for Ian: to follow up on Marie's request for legal clarification.

4. Landslide guidance document status (S. Grilli)

S. Grilli confirmed that the landslide guidance document is still pending completion. There have been no changes in status since the January subcommittee meetings in Portland when MMS members recommended some changes to the document, noted to be \sim 95% complete at the time. S. Grilli and J. Kirby want to ensure that the guidance document and journal manuscript align with one another so have decided to finish the paper first. The results section of the paper is primarily what remains.

5. DEM mapping (J.Allan/K. Stroker)

National Ocean Service (NOS) office in NOAA leads integrated coastal mapping team. The NOS have made a request to NOAA line offices to gather information for planning on where to do future bathy and LiDAR mapping. Purpose here has been to seek out guidance from NTHMP partners, to identify which areas need attention, and be strategic by focusing on future (5-10 years or longer) bathy needs. Information can be sent to Kelly as a shapefile or as boundary extents.

Jon: requests to date have been received from Alaska, Puerto Rico, and Washington.

Fai: Hawaii is ok having had decent bathy/lidar collected in 2013.

Rick: will evaluate for California... don't think there are any immediate needs.

Elinor: noted that she had provided an information request for American Samoa.

6. Mitigation Working Group (R. Wilson)

Not a lot of movement since our last meeting. The group is currently working on two documents:

• Tsunami debris management/guidance.

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• Corina and Amanda have been working on probabilistic vs deterministic discussion document.

Jon: a guidance doc for NTHMP use and/or others?

Rick: guidance on the uses of the two types of analyses/products and how to communicate that with the public. How they can be used and how they can be communicated?

7. Meteotsunami (J. Horillo)

Juan has circulated a draft guidance document with Drs. Philip Chou and Chin Wu. No feedback to date.

Jim: Juan has been working with Stephan and Jim by sharing his software and methodology for doing meteotsunami simulations. Working to adapt it for the EC. Will lead to a consistent framework between the two regions.

8. Gap Analysis (J. Allan)

Jon; incorporated one last round of edits. Thanks to CA, WA and AK for their respective input. Task is now complete. Will work with Ian to share it with the group.

Other Items

Rick: requested an update on the letter to ASCE?

Ian: Still being processed. Getting something on a letterhead is not a simple process. It's in my court, I'm working it, hopefully by end of this month, realize it's 5 months past when we wanted it. Is it still useful?

Marie/Jon: it still needs to go in.

Meeting adjourned at ~11:50 PST.

Participants: J. Allan; M. Eblé; D. Arcas; S. Ross; S. Grilli; F. Cheung; K. Stroker; K. Carrigan; C. Garrison-Laney; E. Lutu-McMoore; V. Huerfano; J. Kirby; R. Wilson; C. Allan; D. Eunguard;

Agenda Items

1. NCEI DEM Review (J.Allan/M.Eble)

The purpose of this discussion topic was to address the process for DEM selection and importantly the review loop timeline. The need is to avoid endless review loops when states and territories are reviewing completed DEMs from NCEI. Overall, NCEI is looking for a single POC to channel or review questions. J.Allan suggested that this should fall on the NTHMP science rep. Final review of a DEM released from NCEI should be undertaken quickly... ideally in < 4 weeks.

Broad discussion of the topic ensued. Several other issues came up including:

- whether states and territories should edit grids after a DEM has been completed and released by NCEI?
 - o Kelly S, Yes! Basically, there are no restrictions/limitations here as it is up to the NTHMP partner and modeler in order to meet their own needs.
- If states identify problem spots after a DEM has been released, what should they do?
 - There is no established process for this. However, the consensus is that states should clearly identify the problem area and what data have been used to correct the problem.
 Updated DEMs accompanied by an update summary could and likely should be provided to NCEI for archive and discovery.
- How do we send updates to NCEI? What about versioning? Documentation?
 - O Yes, to all of the above.

<u>Action item:</u> Establish a small working group to evaluate the process further and come up with some guidelines. Agreement. Working group volunteers include K. Carignan, K. Stroker, C. Allan, D.Nicolsky, D. Arcas, and J. Allan

2. DEM Resolution topic (D. Arcas)

When developing DEMs of a particular resolution, e.g. 1/3 arcsec, what proportion of the data in the DEM actually meets that resolution, compared with other areas (e.g. deep ocean), where there may be a paucity of data?

- Is there a minimum standard for data density that is used by NCEI when developing grids of varying resolution?
- How much interpolation occurs when developing DEMs, that reflect a wide range of resolutions?
- Since the MMS has defined standards for different grid types used in mapping and modeling (Types 1, 2, 3), should we further define the standards for data that need to meet a particular grid resolution?

Broad discussion. Recognized that this is a challenging topic and that as modelers we are often having to use whatever data we can find. In general, bathy/top lidar has improved our DEMs on land, where high resolution is needed. Nevertheless, large parts of the US (e.g. US territories and Alaska) still don't have sufficient data.

Topic was not fully resolved as we ran out of time. J.Allan suggested that this is a topic the DEM working group could perhaps evaluate further, in addition to the question of developing guidelines.

3. Landslide guidance (S. Grilli/J. Kirby)

The landslide guidance report has now been finalized. S. Grilli and J. Kirby provided a quick overview noting that the models that performed best account for dispersion. As with our mapping and

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modeling guidance, modelers wishing to simulate landslide generated tsunami need to satisfy the benchmark problems described in the report.

S. Grilli asked for clarification on what it would take to move information contained on their landslide website over to the NTHMP (i.e. NTHMP to host the model benchmark tests, background information and final report).

<u>Action item for J. Allan and M. Eble:</u> follow-up with I. Sears, L. Kozlosky and S. Grilli to see what could be done to implement this request.

<u>Action item for MMS:</u> J. Allan requested that the committee take a moment to review the final document. If no comments are returned within two weeks, the document will be considered final.

Other standing agenda topics were not covered as we ran out of time. Meeting adjourned at \sim 11:55 PST.

Participants:

J. Allan, C. Allen, D. Arcas, K.F. Cheung, A. Dolcimascolo, M. Eble, , C. Garrison-Laney, K. Gately, V. Heurfano, J. Horrillo, J. Kirby, D. Nicolsky, S. Ross, I. Sears, K. Stroker, R. Wilson, N. Wood, J. Villagomez

The meeting focused on annual MMS work plan elements, with updates and discussion on each separately. The status and discussions generated are summarized as follows:

The Tsunami Source Database

Status: Complete

R. Wilson reported that the effort to create a repository of sources to support state partners and the Powell Center working group's sources workshops is complete as originally planned. Although no additional funding has been requested, the database could be migrated to a permanent location and sources could be added in the future.

<u>Action item:</u> R. Wilson and J. Allan will work with I. Sears to move the database to the MMS reference materials web page on the NTHMP website

Maritime Guidance

Status: Ongoing

R. Wilson reported that this effort is focused on mitigation and recovery, with significant crossover with the MRWG. To that end, this task has mostly shifted to MRWG. Changes to the guidance document were presented during the January 2020 meeting. Consensus was formed to look into migrating the guidance to the NTHMP web site in the form of a story map that is planned for development. The task will remain part of the MMS work plan for one more year.

DEM development and archiving

Status: Ongoing

The process that includes quality control, updates, and version control of DEMs after NCEI completes and delivers them will be addressed by a working group that has been formed and expected to meet in the next few weeks.

Maritime Guidance

Status: Ongoing

A summary one pager based on the technical report compiled by P. Lynett will be completed and made available on the NTHMP web site as a companion to the Inundation modeling guidance developed and available.

Action item: R. Wilson will take the lead to develop a summary one pager, with assistance from J. Allan.

HAZUS Guidance

Status: Complete

J. Allan reported that Oregon published a comprehensive report that describes the HAZUS process for specific locations in Oregon.

<u>Action item</u>: J.Allan to develop a brief summary statement and work with I. Sears to make the report available on the NTHMP website.

Powell Center

Status: Ongoing

S. Ross reported that planning continues for an in-person workshop on Cascadia sources in early April. Plans could change given the uncertainty of the COVID timeline. S. Ross further reported that the Tsunami sources working group held a call with two other working groups addressing Cascadia to ensure

communication and coordination between groups. A second call may be scheduled in October, depending on availability of participants.

DEM Development

Status: ongoing

Washington State has done some in-house edits of DEMs that were delivered and found to have specific issues. The DEMs have been evaluated and are being used for modeling. Version control and archive will be the topic of a follow-up meeting, cited above under 'DEM development and archiving'.

NCEI is developing Alaska DEMs as requested for Anchorage and Upper Cook Inlet, Whittier, and Seldovia as well as a DEM update of the S. Central Oregon coast, that has not been started but planned for completion this year.

Action item: MMS partners encouraged to begin thinking about DEM development needs for CY 2020.

DEM Review & Editing Guidance

A working group has been established to define what elements will be addressed in a DEM review and editing guidance document after state partners take delivery of a given DEM. Quality control soon after completion and delivery, DEM updates, modifications, and version control will be outlined. The working group will explore the concept of DEM standards as raised by D. Arcas.

Gap Analysis

Status: Complete

The final version of the gap analysis spreadsheet was distributed some months ago and now partners are encouraged to populate the table.

Landslide Tsunami Modeling Guidance

Status: Complete

J.Kirby and S. Grilli sent out the final version of the landslide modeling guidance. There were no further edits as of the last meeting and the guidance and task is now considered to be completed. The document and all benchmark tests are temporarily available from a U Delaware website. The intent is to move all contents to the NTHMP website as a companion to the inundation modeling material.

<u>Action item:</u> J.Allan, J.Kirby and I.Sears will work together to figure out a plan that could include some combination of data stored on a github site, with the final guidance report on the MMS website.

Meteotsunami Guidelines

Status: Ongoing

J. Horrillo reported that the meteotsunami guidelines has been updated with edits provided by Great Lakes partners. J. Horrillo especially thanks E. Anderson for his contribution

This work is continuing with studies to characterize meteotsunamis on a city-by-city basis.

<u>Action item:</u> MMS to review the revised document. Comments back to Juan by Friday, October 2nd.

Sediment Transport Guidance

Status: ongoing

J. Kirby update: Did get funded as part of FY20 effort, starting this month (Sept 2020)

Will use the same working group who had expressed interest.

J. Kirby will schedule a meeting

Additional topics

C. Allen provided an update on the Tsunami Science Advisory Panel's first meeting. The panel was formed by NWS in fulfillment of terms of the Tsunami Warning and Education Reauthorization legislation and is tasked with reviewing the activities of NOAA. Panel members include: C. Allen, C.

Decker, P. Earle, C. Garrison-Laney. C. Madsen, M. Merrifield, D. Melgar, A. Mercado, R. Wilson, R. Lopes, and R. Wilson.

R. Wilson & R. Lopes are co-chairs

ASCE Letter

NTHMP partners continue to wait for a response from the ASCE 7 committee to a formal request for data and information sent by the NTHMP chair, Grant Cooper. The meeting discussion focused on how best to engage the committee and come to an agreement on the sharing of information critical to the efforts of individual states.

NTHMP MMS meeting 24 November 2020

Participants:

J. Allan, K. Carrigan, K.F. Cheung, P. Chu, A. Dolcimascolo, D. Eungard, C. Garrison-Laney, K. Gately, V. Huerfano, J. Horrillo, J. Kirby, E. Lutu-McMoore, S. Ross, I. Sears, K. Stroker, R. Wilson, R. Watlington.

Topics covered:

- 1. FY21 proposal development/MMS endorsements
- 2. DEM needs for FY21
- 3. DEM guidance (brief overview, Jon A)
- 4. DEM grid development/grid registration (Kelly C)
- 5. Meteotsunami guidance (completed, Juan H)
- 6. MMS guidance on mapping/modeling (various minor updates, All)

(1) FY21 proposal development/MMS endorsements

Three ideas were presented to the MMS that are being planned for inclusion in the FY2021 funding cycle. These include:

<u>Grilli, Horillo, Lynett</u> – Develop a guidance document (& matlab tools) that outlines the methodology for developing a landslide logic tree (LLT) that would span US States and Territories. Goal is to evaluate the branches of a LLT and possibly begin to populate portions of it where data is available. Such an effort would allow for the shift away from deterministic sources to probabilistic modeling. Recognize that branches and parameters will vary from region to region (needs to account for different sources and types e.g. sub-aerial and sub-aqueous landslides, volcanoes, seismicity etc.), such that there is no one size fits all. In addition to the guidance document, the team would aim to produce a peer-reviewed journal article.

Concept supported by MMS.

<u>Action item:</u> A white paper will be developed by Grilli, Horillo and Lynett over the next several weeks and circulated to the MMS for review and further discussion.

R. Wilson – Proposing a workshop on tsunami debris modeling; likely to fall under both MMS and MRWG. Initial thinking was that some lessons learned might evolve from the ongoing sediment transport working group. However, J. Kirby indicated probably not as the science is still not there. Based on this, the activity would focus on evaluating the science for modeling debris movement. A later workshop could then be developed to perform benchmarking to evaluate models.

Concept supported by MMS.

<u>Action item:</u> A white paper will be developed by R. Wilson over the next several weeks and circulated to the MMS for review and further discussion.

J. Kirby – Proposing a phase 2 workshop to extend on the initial phase 1 sediment transport workshop. Purpose of the 2nd workshop is to evaluate sediment transport model benchmarking, generate a technical report summarizing model results, outcomes and next steps. Consolidate the report into a peer-review article. Location TBD.

Concept supported by MMS.

Action item: This is an ongoing MMS supported activity.

(2) DEM Needs for CY21

East Coast

- J. Kirby interested in knowing status of DEMs from Cape Cod up through Gulf of Maine. Noted that this was not an immediate need but will be soon.
- K. Carrigan: noted lots of data out there with DEMs developed under the Coastal Act. However, data quality/availability decreases ~Gulf of Maine/Canada. Noted that they would like to see the model DEM extended north.
- J. Allan: suggested we include in the request for CY21 and re-evaluated further once all sites are assessed.

Washington

D. Eungard – Had requested DEM development for strait of JdF (~Neah Bay) to Port Townsend in CY20. High priority site for next year.

Oregon

J. Allan – Requesting DEM updates for the southern Oregon coast/Northern California. Planning on maritime modeling of Brookings Harbor area.

California

R. Wilson – Requesting DEM updates to south San Francisco bay, near the airport.

Puerto Rico

V. Huerfano – Had previously requested DEM updates to PR in CY20, but dependent on lidar availability. Noted January Mw6.4 earthquake had changed the geomorphology of parts of the coast. Have any of these changes been captured by new lidar or other means?

<u>Action item:</u> J. Allan to circulate the above requests to the group (along with DEM guidance doc) and seek any additional input.

(3) DEM Guidance

J. Allan: provided a brief overview of the DEM guidance document. Essentially complete for now. Components include process for requesting DEMs, DEM review loop and time frame, and archiving. Noted that when state/territory modelers make major modifications to DEMs after sign-off with NCEI, should wherever possible include appropriate documentation. Future topic for evaluation is what constitutes a 3 arc sec, 1/3 arc sec, or 1/9 arc sec grid (i.e. data density over what spatial area).

(4) Grid Development/Grid Registration

K. Carrigan – provided an overview of changes that are being rolled out at NCEI for grid development/grid registration; relates to development of new DEMs. So far this has been implemented on the East Coast where Coastal Act modelers had requested that new DEMs be cell registered. This is different from what has been done in the past.

Additional notes from Kelly: For NCEI DEMs, both cell and grid registered DEM values are derived by "averaging" of nearby elevation measurements. The only real difference between the two is the georeferencing of each individual DEM cell's footprint. When we create a DEM with exactly the same input West/East/South/North coordinates, the grid registered and cell registered cells will be offset from each other a half cell in both the N/S and E/W direction, and the grid registered DEM will have an extra row/column than the cell registered DEM. Since each DEM cell will cover different areas in space for each registration, the DEM values will be slightly different from one another. So neither grid or cell registered versions are more or less accurate when it comes to NCEI DEMs. However, it's when you convert between these DEM formats directly, i.e., convert a grid registered DEM directly to a cell registered DEM or vice versa, that introduces additional averaging and smooths the DEM.

Going forward, what does this mean for NTHMP modelers? – At the time of initial DEM development, the state/territory will specify their registration preference (i.e. cell reg or grid-cell reg) in order to meet their modeling software needs. What NCEI is trying to avoid is switching/shifting later as this creates errors that become significant in steeper terrain.

<u>Action item:</u> J. Allan will include some language about this in the DEM guidance document and will forward additional information from NCEI that describe these changes.

(5) MeteoTsunami Guidance

Task is now complete. Reviewed by Great Lakes MT scientists and J. Allan.

J. Kirby noted there is a little bit of confusion in the section dealing with the MT definition. Confusing statement over generating mechanisms versus amplification processes. Needs some clarification.

(6) Tsunami Modeling Inundation Guidance Documents Review

J.Allan – these documents need to be reevaluated every 5 years. This process was initiated in Jan 2019 but was never finalized by the MMS. Requested the group take a look at the documents over the next two weeks and will clean-up/finalize prior to for our next meeting scheduled for January 2021.

General discussion follows:

- R. Wilson: provided some edits/comments during the MMS meeting.
- J. Kirby: Concern over references to 90 m grids. Does anybody use that anymore?
- R. Wilson: Noted that CA had used these coarse grids previously, when working with forecast amplitudes provided by the TWC. However, these products were used for evac planning.
- J. Allan: Noted that the documents are orientated to tsunami inundation modeling. Previous versions had specifically referred to 90 m, 30 m, 10 m grids. Revised version now refers to model grids as "Type 1 (these are coarse aka >90 m grids), Type 2 (aka ~10 m grids), Type 3 (higher resolution <10 m grids)".
- J. Allan: Also noted that coarse (Type 1) grids are used in Alaska where good quality data is variable between communities.
- S. Grilli: One thing to consider you may have a coarse resolution DEM of \sim 90 m, but may still want to develop a tsunami grid with a finer resolution in order to better resolve the wave physics. Whenever possible... a minimum grid of \sim 30 to 50 m is preferable.
- K.F. Cheung: We should still keep 90 m resolution in our guidance. Noted that modeling they did suggest that the derived values are not that far off from ~10 m grid.
- J. Allan: So better to produce a finer model grid even if the DEM data resolution is not there?
- S. Grilli: You gain something in refining model grid. You gain accuracy in the waves themselves. Nearshore it may make a difference. S. Grilli to add a sentence to the document on this.
- J. Allan: Bullet point on adding new sources to the source DB developed by CA. Is this still valid?
- R. Wilson: The bullet reference in the document is fine as is. Main point is that the sources should be from MMS members. With respect to the 10-20% factor of safety addition. R. Wilson recommended that this statement should be kept vague (i.e. leave it up to mapper/modeler as they understand their model limitations best).
- J. Allan: Will take a stab at revising the language around this.

- J. Allan: Third section refers to adding an additional safety buffer (similar to the 10-20% concept discussed previously). Are there any guidelines for doing this?
- D. Eungard: Noted that geologic engineers typically use a factor of safety of 30%.
- R. Wilson: Best to keep it vague. People know their models the best. Perhaps add a statement that it be left to the mapper/modeler to decide whether to add an additional factor of safety (buffer). For example, would probably want to buffer a 90 m model compared with say a 5 m model.
- J. Allan: Finally, we provide specificity on model parameters. One parameter not mentioned is friction. Should it be explicitly described? For example, ASCE is using n=0.025. Oregon did not use a friction factor when modeling their inundation zones, but is using a variable n value that is dependent on the landscape in more recent modeling.
- S. Grilli: typically uses n=0.025 for friction, which is akin to coarse sand. We could include something on friction in the guidance indicating that it's good practice to use a minimum coefficient for friction. Years ago, his group evaluated the sensitivity of friction across the shelf and found that the modeling results were indeed sensitive to friction, especially across a broad shelf. Best to use site-specific data when available.

<u>Action item:</u> MMS to complete their review (use suggesting changes when making edits) of these documents over the next two weeks - <u>comments due by Dec 11th</u> after which changes will be finalized. The documents can be found here:

https://drive.google.com/drive/folders/1v1qVSNQAng7QzR90LtwIsr03vPrPX5kL?usp=sharing If you are unable to access the files, please contact Marie.

Other Business

- I. Sears: Reminder about the upcoming grants process, which is being streamlined. First round review typically completed by mid-Jan is going away and will be replaced by an abbreviated program review. Guidelines will be forthcoming soon. Purpose of this effort is to provide a broad overview of state/territory plans, from which they can in turn receive feedback from the review team. Proposals will be due ~ late Feb (as before). Also, trying to get final grant details posted sooner on grants.gov.
- I. Sears: NOAA leadership is now considering no travel in 2021 (at least through until September).
- J. Allan: Thanks to I. Sears for setting up gotomeeting. Nice to see everyone's faces.
- J. Allan: My co-chair role is due to expire in January 2021 (2-year rotations). Now is the time to begin thinking about who might be interested in stepping into this role.
- S. Ross: is the next MMS meeting January 19? Might be a conflict with a CA tsunami meeting.

Action item: J. Allan checked and next MMS meeting is scheduled for January 26th @ 11 am PST.