

**National Tsunami Hazard Mitigation Program (NTHMP) Mapping and Modeling Subcommittee (MMS) Meeting Draft Notes** Oregon Department of Geology & Mineral Industries  
800 NE Oregon Street, Portland, OR 97232

**Monday 30 January 2017**

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**08:00 – 08:15 Coffee Social**

**08:15 – 08:30 Overview of agenda, review previous MMS meeting notes/outcomes**

**08:30 – 09:30 MMS-related outcomes from 2013-2017 NTHMP Strategic Plan Publication, use, and implications of Currents Benchmarking Report** (see PPT)

**Input to FEMA HAZUS model**

(Marie) Yong Wei provided paper – data to FEMA about inundation extents

State partners have also provided input: GIS from HI, WA - ASCII grids, CA – extent of 1964 flooding, PR – shape files

OR work with FEMA: doing beta testing for new tsunami HAZUS model, Tillamook country, inventory data being fed into their models, done as contractors – pushing it out to the HAZUS user groups.

Washington – Greys Harbor Pilot Project

(Kara) There is a need for a clearing house of this GIS data for other user groups, FEMA, FAA, EMs, Tview, etc

**Post Tsunami Protocol** – CA & HI published a paper, worked with Laura K. and ITIC

Pilot project in PR with Herman Fritz, some sort of agreement to mobilize and measure after the fact

(Juan) We have equipment for post survey, hand held GPS measurement instrument can be used for vertical measurements (Dmitry) Are these used for regular storm season too? (Juan) Good info from Galveston storm, EMs there have them – they also measure inundation, atmospheric pressure.

(Dmitry) is there any connection between your and Ricks work. No.

WA - Been in touch with NASA on using pilots post event surveys. 10s of thousands of dollars to purchase, large scale view – such as used for agriculture.

OR – smaller scale drone view. Also looking into drones with lidar capability... (OR, CA too)

Off topic:

(OR – Jon) Does that mean that the models that have been benchmarked need to be revisited at some point?

(Jim) If you change the model substantially you should run through a new test.

**Model benchmarking:** have document from Pat – with recommendations about thresholds

- (Rick) We need to look back and see how we turn the recommendations into procedures for MMS
- Need to create the best product available (Marie) and represent the uncertainty (Kara)
- Use of ensembles? Use of partnering with states where a single model did well? (Boussinesq models did well)

(Jon) Talking about models doing well, we need to be mindful that bathymetry WILL change. Eddies change. 10-30 m resolutions had lots of variance.

(Rick) Take this and put into guidance document... did the binning approach because of issues with preciseness, and then circled eddies areas. Been working with AK and OR on producing similar types of maps.

**Archive for the Benchmarks** at NGDC - for Inundation, Currents, & Landslide workshops

(Jim) NSF program (design safe interface)? [Designsafe-ci.org](http://Designsafe-ci.org)

(Rick) Is this temporary? Is it private?

(Jim) Is this storage or platform for new stuff? (Juan) MATLAB script and everything? Yes.

Yes, we do WANT modeler results. (send out email in advance to make sure okay with modelers)

**\*\*\*Path forward: Try to utilize NCEI for storage archive**

Kelly is the point of contact for NCEI and MMS will investigate possibilities for secure, long term storage of Benchmark problems, the associated data, and modeler results

State partner point-of-contacts for the three MMS led workshops are as follows:

(Rick) -> tsunami currents (Jim) -> for landslide (Juan & Kara) -> Inundation

**Ensure all NTHMP inundations maps meet guidelines**

MMS has not updated anything from the 2014 Inundation guidelines... an ongoing process, but was not recently necessary

American Samoa and Guam still maybe not on GIS, otherwise requirement is good. Kara to work with states and keep ensuring data is available and current, and also looks into possibilities for a single website where all GIS data can be easily pulled. Nation-wide GIS overlay is missing.

## **Support Hazards...**

Are all models shared? MOST is not shared – though available through ComMIT, and available to anyone who wants one, just email Marie.

**Develop inundation maps** – ASCE7 now... OR has done this several times over, in compliance, but still feel more needs done. (Rick) How's the progress coming along for inundation mapping in the Virgin Islands - they are moving along, TBD (AK) 50% (American Samoa) 100%

Other updates include:

- CA - Modeling resolution was 30m and 90m in 2009; did modeling at 10 meters to compare, but found no need for an update
- AK - Kodiak was modeled with a 1964 type scenario in 2002, now using SAFFR type scenario
- GoM - Increased mapping to include three additional landslide sources
- HI – updated to 10 m resolution
- WA – larger source scenario (L1 – made current evacuation procedures no longer conservative, haven't been published), used better bathy/topo
- (OR) Multiple scenarios in two communities using HR LIDAR data
- (PR) Multiple scenarios on new HR DEM
- (Jim) we still on 1<sup>st</sup> generation, but have done some work looking at 10 meter versus 30 m – didn't see much difference (Grilli) So far we have only used bare DEMs, new DEMs will make a big difference. For bare DEMs not a hug difference between 10 and 30 m.

So far, states do not need to update to 30m resolution inundation maps. However, moving forward... it is noted that higher resolution may be more necessary for input on interior waterways, as well as navigation hazards and input to HAZUS, for example, 10 meter resolution is pretty necessary for good modeling in narrow islands, sand bars, etc.

## **Develop Inundation zones for communities with no HR resolution**

Maritime: see PPT (Rick)

- Draft guidance for Mapping and Modelling – being consistent as possible with output
- Benchmarking is complete.
- Develop prototypes for high hazard areas, guidance for harbor master, GoM has done, AS not yet
- 25% milestone being worked towards for 2017
- We need to work with MES on this... to determine what each state territory wants to go forward with, need feedback from EMs

## **09:30 – 09:50 Kirby report out on Landslide Modeling Benchmark Workshop (see PPT)**

Timeline: All modelers asked to provide additional information within 4 months, expecting a 1 year process for results summary – technical report, and paper. Many good presentations, all of which are posted on workshop website.

Summary of Benchmark Problems (BPs) #2, 4, 7:

- #2: solid slide 3D
- #4: granular slide 3D
- #7: field case: AK 1964 Valdez (two separate slides)

All workshop BPs will be moved to NTHMP website after finalizing and review

Looking at variability between models in inundation lines

Workshop Lessons and further actions:

- BPs were biased towards dispersive models...
  - If modeling on a large scale – you NEED to use a dispersive model
  - possibly non-dispersive models are still useful for run-up behind the slide in submarine cases
- Is a detailed description of slide rheology needed for tsunami runup, period, etc??
- More effort in getting data for candidate field cases for further benchmark testing

(Jon) field data has way more information concerning the rheology... how much of this detail can be brought into the model? ...moving forward?

(Grilli) Tann will make a good subaerial BP

Still need an underwater...

(Kara) We could use the same survey team that goes out to study post-tsunami events, they could be mobilized for landslide event... and then the team of geologists could be mobilized later using RAPID NSF funding (like Lynett did) etc.

(Jon) can any of the data come from LIDAR or satellite

(Grilli) HR radar could be helpful for capturing wave height data

(Rick) From Pat's talk at Workshop, uncertainties are HUGE in source characterization – are much greater in the model uncertainty

## **10:00 – 11:00 NTHMP Review Team Session (see upcoming notes from NTHMP reviewers)**

Job of the review panel: To inform NTHMP when they develop next strategic plan.

The following are questions provided by the NTHMP review panel. Feel free to follow up with the reviewers with you input.

1. The Tsunami Warning and Education Act (33 U.S.C. §3201, et. Seq., [P.L. 109-479]) has not been replaced or updated since its original passage in 2006. Some language in the Act is outdated and the budget authorizations have expired. What are the implications to the NTHMP as a body

regarding the status of TWEA and failure of Congress to pass updated legislation and budget authorizations? (Two attempts to update TWEA in 2016 by Congress did not pass.)

2. What are the strengths of the state/territory/federal partnerships?
3. What are the weaknesses of these partnerships?
4. Is there an appropriate distribution of roles and responsibilities between federal and state/territory partners?
5. Is the program achieving its goals?
6. Have the NTHMP really developed products that are actually creating a foundation for change and preparedness in the community
7. Please list any suggestions which would be beneficial to the management and outcomes of the NTHMP.
8. What has been the long-term impact of NTHMP Grants which have been appropriated by Congress for NOAA/NWS to provide since 2008 of about \$6M per year? What would be the impact to the NTHMP if these grants were reduced or eliminated?
9. How has the subcommittee structure of the NTHMP worked? What worked well, what has not? What changes may be recommended regarding subcommittees?
10. Other questions as may come up during dialogue with NTHMP members.

Discussion ended before all questions could be addressed. (More time to complete dialogue with Reviewers and the MMS was provided on January 31. ..ed/RL)

### **11:00 – 11:45 Benchmarking of (3) models (intention of use expressed by MMS members) \***

Note: allocated time for each is 10-min presentation & 5-min Q&A

#### **11:00 – 11:15 HySEA (EDANYA Group) – see presentation for details**

(Grilli)- last table – summary results table, looked like the runups were maybe higher than other NTHMP models, (A) some yes, others no, could be resolution differences, hard to say without looking farther into it.

- Please email further questions directly to modeler.

#### **11:15 – 11:30 Cliffs (Tolkova) – see presentation for details**

(Chip) Okoshiri, why so high

- Please email further questions directly to modeler.

#### **11:30 – 11:45 NHWAVE (Kirby) 11:45 – 12:00 – see presentation**

- Please email further questions directly to modeler.

### **BREAK 12:00 –13:00 Working lunch: Products discussion with WCS & MES**

*Some topics deferred until later combined meeting with MES*

~~1. Sharing of products and links to products~~

## 2. Cross-state and federal tsunami inundation lines comparison

Hawaii is moving to a two-tier evacuation method. The evacuation lines have been requested by PTWC for use in operations with SIFTView and Kara will be ensuring they are implemented appropriately. There is also a request for all the states to provide their inundation and/or evacuation lines in GIS format for the TView project – states to provide to Kara. However, as inundation forecasts have not been disseminated before, the states want to ensure that MOST inundation forecasts are accurate and do not want them going to EMs through Tview until they have been vetted. MMS would like to see SIFT inundation forecasts shown with the sources used for state inundation lines. Sources would need to be provided, (please send sources to Kara). Possibly a good case scenario would be the playbooks... can the TWCs using SIFT forecasting match how the playbooks would be invoked?

**Path Forward / Evaluation Team:** Kara\*, Rick, Jon, Dmitry, Chip, Marie\*\* to follow through with definitive project details and work plan

(\*Kara - project lead, and to follow up with all state partners to receive Inundation and/or evacuation lines in GIS format plus send SIFT Operational Testing and Evaluation (OT&E) results from 2012 which include an inundation comparison study.

(\*\*Marie - to send SIFT SIM reports as available)

## ~~3. Incorporation of pedestrian evacuation into products~~

### 4. DEM plans & prioritization

**DEMs, (Kelly)** Tiled map for Key, FL... the first tiled map plot for NTHMP DEMs (Jim) can we get Bellingham Bay to the North by Sept. (yes) (Jon) moving forward how many states use NCEI for DEM development... OR and HI develop their own, but there is definitely benefits for using NCEI... consistency

## **13:00 – 14:00 Modeling Activities**

### **1. Potential multi-state mapping/modeling projects (see above)**

### **2. Buffering of tsunami inundation lines (mainly info request)**

How do we deal with this? 20% buffer ... by distance and location...

(Tim) The modelling is buffered - So you don't need a buffer zone. The evacuation maps do not need an uncertainty represented.

(Jon)

Good discussion –

(Tim) have a multi-state project - two different molders model a location using the same grid, do Jim and Dmitry will look at this idea for more information on how to implement

### **3. Tsunami sources database and Global Tsunami Model group**

This is a pending activity, looking how to proceed forward.

**14:00 – 14:30 Wrap-up; Science Exchange meeting date**

Meeting is scheduled on July 31-August 4. The location is to be selected such that participants from the USGS could come.

**Election of State Co-chair** - Dmitry Nicolsky was elected for a second two-year term – congratulations Dmitry!

**Kirby presentation** – “Does morphological adjustment during tsunami inundation increase levels of hazard?” – see presentation.

**Adjourn**

MMS: 11 May 2017 teleconference

Participants: Jon Allan, Kelly Carignan, Kwok Fai Cheung, Marie Eble, Kara Gately, Chip Guard, Rocky Lopes, Dmitry Nicolsky, Stephanie Ross

16 May 2017 teleconference #2

Participants: Rocky Lopes, Dmitry Nicolsky, Marie Eble, Juan Horrillo, Corina Forson, Elinor Lutu-McMoore, Stephan Grilli, Victor Huerfano, Kelly Stroker

#### AGENDA

1. Powell Center Proposal
2. 2018 DEMs
3. Grants allowable activities working group
4. Strategic Plan
5. Landslide Benchmark workshop update

#### [1. Powell Center Proposal.](#)

Update provided by Stephanie.

Powell Center proposal was submitted with 4 co-pi's: Stephanie, Rick, Dmitry, and Marie.

The Center received 41 proposals, of which they funded four (4) new ones and two (2) partial.

Our proposal was one of those partially funded as follows:

- One fellow (Kenny Ryan) and 3 workshops funded. We are responsible for funding the 4th workshop.
- Workshop funding is for travel for up to 15 people per workshop.

Four (4) Workshops planned as follows:

#1 Develop framework and process

#s 2-4 Regionally focused source determination

Workshops are 4 days; funding for 15 people, no restrictions.

Rocky: What travel costs are covered?

Stephanie: Entire travel cost (airfare, per diem, hotel) are covered.

Proposal period of performance: two federal fiscal years: FY18 & FY19

Jon: Is there a more condensed document to share with the group to get an idea of effort?



Stephanie: Will share proposal; will also send out a list of potential participants generated by co-PIs for all MMS members to review.

Marie: Clarifies that the 15 participants are not set for all workshops. There can be a different group of 15 participants in each workshop.

**Action Item:** Stephanie to send out the list of participants generated put together by co-PIs.

Dmitry: Clarifies that we are looking for comments on names on list and suggestions of new names.

Rocky: The summer face-to-face meeting is a great opportunity to discuss and settle participants.

Stephanie: We really need to set first workshop before the summer meeting so that we maximize choices of weeks to reserve. Others will be selecting weeks online so we don't want to wait too long.

Rocky: Physical location of Powell Center? Is it a USGS facility?

Stephanie: Center is a USGS facility located in Fort Collins, CO. The purpose is to support focused and goal-oriented efforts. For this reason, it is important to try to keep participants to 15 and important to have a well-articulated outcome.

Rocky: What is the roll of the Fellow?

Stephanie: Kenny Ryan has a background in related work and would look at simple to complex propagation models to see what level of detail matters.

## 2. 2018 NTHMP DEMs

Discussion led by Kelly Carignan

FY17: north of Florida Keys for Juan; WA/Bellingham Bay for Tim & Frank; Puerto Rico for Victor; Bristol Bay for Dmitry

Dmitry: Curious about update to NOS survey input?

Kelly Carignan remembers the effort but it was Kelly Stroker who collated and submitted input so, no update.

For 2018 DEMs, we should get a general list together and Kelly C will investigate data sources and advise.

Dmitry: Are there overlaps with PMEL DEMs?

Marie: There are no longer PMEL DEMs. After construction of 75 nested model grids for inundation at TWC prioritized sites, DEM list is a NOAA list determined by the two TWCs. The emphasis over the past two years has been international locations such as: Galapagos, Easter Island, Raro Tonga, Marquesas, Tahiti

Chip: Is there LIDAR data available?

Kelly: Not a lot, some for Tahiti provided by France

Chip: Guam, CNMI?

Dmitry: Are the same development standards applied to the NOAA DEMs as the NTHMP DEMs?

Kelly C: All DEMs are constructed to the same specifications with best available data. Data at Island locations are sparser or are more difficult to obtain.

**Action Item:** States requested to send respective wish list locations to Dmitry & Marie to summarize and then forward to Kelly C & Kelly S.

### 3. Grants Allowable activities working group

MMS was asked to nominate an MMS member to represent MMS interests on an "Allowable Grant Activities Work Group" to work with Rocky this summer. The results of this Work Group's recommendations will be provided to the Coordinating Committee for review and recommendation to NOAA/NWS for inclusion in the FY18 NTHMP Grant Guidance.

Dmitry emphasizes that this is an important activity that should receive attention by all members.

Marie said that Jon Allan was nominated to serve.

Jon Allan: Happy to participate and will seek input from all MMS members.

Jon was appointed as the MMS representative to this Work Group.

Composition of working group

- Federal representatives: Rocky & Tamra
- Islands: Two names have been floated; awaiting determination by Island Caucus
- Warning Coordination Subcommittee: TBD (Althea proposed but workload concerns and desire for representation of other states means Paul and other WCS members will solicit others)

- MMS: Jon Allan
- MES: Kevin Miller nominated but no confirmation yet

#### 4. Strategic Plan

MMS representatives for the NTHMP Strategic Planning Work Group include Juan, Rick, and Corina.

Rick's list was attached in the email with teleconference call-in and agenda. MMS should consider carefully efforts to be accounted for.

Rocky: Mentions a Strategic Planning worksheet and requests that, for consistency among all three subcommittees, the worksheet be used with focus on MMS relevant activities in TWERA legislation. Summary table is provided on NTHMP website.

The NTHMP external review that was conducted in January 2017 will be submitted in June. Review results will provide additional direction.

MMS should plan some time during summer meeting to look at inputs derived from legislation as well as Rick's list, External NTHMP Review, and MMS' work in reviewing the current Strategic Plan and what will be carried forward into the next Strategic Plan.

Rocky: Clarifies location of worksheet on NTHMP web site. Suggestion is to take a look at worksheet as well as other inputs for consideration.

The worksheet and links to "other inputs" can be found in one place – in the "Read-Aheads" section on the NTHMP website summer meeting page:

<http://nws.weather.gov/nthmp/2017mesmms/index.html>

Rocky brings attention to workplan milestones column. This is new – all subcommittees are requested to develop an Annual Work Plan and this is where annual milestones are set toward meeting long-term Strategic Plan outputs. Should have linkage indicated on the worksheet.

Jon & Marie: Agree that items in Rick's list could be migrated to worksheet.

**Action Item:** Each MMS member requested to look over Rick's list as a starting point.

#### 5. Landslide Benchmark Workshop update

Update pending as neither Jim nor Stephan were available for today's call.

16 May 2017 follow-up teleconference:

Update provided by Stephan Grilli

Significant demands on Jim Kirby and Stephan's time are lessening so they will focus on continuing with compilation of model results and preparation of a workshop proceedings in consultation with Phil Liu and MMS members. A peer-reviewed publication along the same lines as that led by Patrick Lynette to publish the results of the Currents Benchmark workshop is planned. Jim and Stephan envision meeting all timelines that they established for this project.