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NTHMP Grant Semi-Annual Progress Report

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NOAA Grant Award Number: NA17NWS4670010

Period of performance (start date to end date of entire grant):   September 1, 2017 – August 31, 2019

Award reporting period (date range):   September 1, 2017 – February 28, 2018

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Date of this report: March 2X, 2018

Instructions: add rows to the table below as needed to complete reporting on all tasks awarded. Fill in all cells within the table. Make sure that task titles match the current Project Narrative for this grant.

Task #	Task title	Progress made during this reporting period	Challenges and successes	% of total task completed
1	Development of estimates of tsunami return periods	Collaboration developed with Greg Dusek and colleagues at NWS, who have developed a climatology of meteo-tsunami events for the US	Establishing collaboration with NWS is an important step which gives us access to an already developed climatology. Our challenge beyond this is to	

		East Coast based on observation of individual events at multiple tide gauges. Our approach will be to correlate these events with weather data, develop pressure and wind sources, and verify reproduction of events as further model validation.	establish a consistent link between observed results and forcing mechanisms determined from weather records. This could aid in development of better detection and warning procedures.	
		The Monte Carlo Simulations (MCS) applied by Grilli et al. (2009) to provide first estimates of SMF tsunami return periods along the US East Coast (USEC) were only using empirical estimates of tsunami propagation and coastal impact. A new Mild Slope Equation (MSE) model (developed by Cecioni and Bellotti, 2010) was evaluated for use in the MCS and validated during FY16 based on the NTHMP landslide workshop benchmarks. This MSE model is being implemented as a fast solver into the MCS model, to provide more realistic estimates of expected coastal inundation along the USEC for SMF tsunamis of relevant return periods to emergency managers (e.g., 100 to 1000		20%

		years).		
		Carrying out this task will also involve generating a new (large) database of more accurate bathymetry and sediment data on the shelf and along cross-shore transects used in the MCS, than that used a decade ago in the original analysis of Grilli et al. (2009).		
		Finally, similar to Grilli et al. (2009), the validation of the new MCS results will be done against the most recent USGS field data for distributions of SMF failures along the USEC. We are expecting to acquire this data as an outcome of the upcoming Powell Center workshops on tsunami sources.		
2	Simulation and evaluation of meteo-tsunami hazard	The model FUNWAVE-TVD has been adapted to meteo-tsunami generation, making use of an already-existing ship-wave generation procedure based on an applied surface pressure. The model can represent events including squall lines, cyclonic storms, and moving pressure jumps.	Overlaps the description above. We are presently still trying to add to the list of cases for which accuracy of model performance has been verified	30%

		Previous calculations for the June 13, 2013 event are being extended to examine coastal run-up and harbor excitation. Results for June 13, 2013 event were reported by Woodruff et al (2018)	
3			

References

Grilli, S.T., Taylor, O.-D. S., Baxter, D.P. and S. Maretzki 2009. Probabilistic approach for determining submarine landslide tsunami hazard along the upper East Coast of the United States. *Marine Geology*, **264**(1-2), 74-97, doi:10.1016/j.margeo.2009.02.010.

Cecioni, C, and Bellotti, G. 2010. Modeling tsunamis generated by submerged landslides using depth integrated equations. *Applied Ocean Research*, **32**(3), 343-350.

Woodruff, I., Kirby, J. T. and Shi, F., 2018, "Evaluating model sensitivities in simulations of the June 13, 2013 U. S. East Coast meteotsunami", *Ocean Sciences 2018*, Abstract PO34A-2202, Portland, Fe

During this reporting period, was any budget reprogramming required for this award? If so…

 a. Date reprogramming approved by NWS Tsunami Program Office:
 b. Date approved by NOAA Grants Office:

 c. Describe where funds were moved and why:

General comments from recipient about progress during this reporting period: