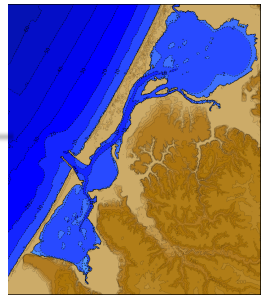
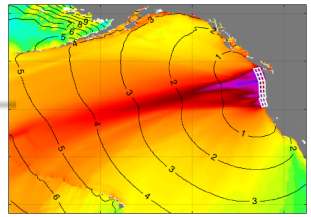
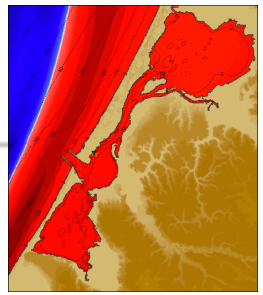
ComMIT Workflow

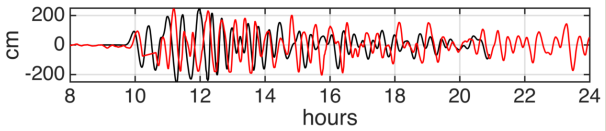
Bathymetry for the region is created at the scale of a port or harbor.





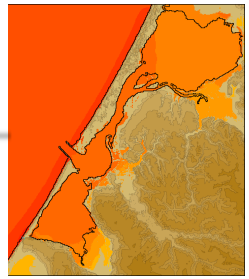
Inundation, or flooding, is forecast using models that are run with the selected tsunami source.





Model results are compared with data recorded by tide gauges for past tsunamis to check how well models are predicting tsunami impact.

Results from multiple model runs can be merged and exported to map-making tools.



References

González, F.I., V.V. Titov, H.O. Mofjeld, A. Venturato, S. Simmons, R. Hansen, R. Combellick, R. Eisner, D. Hoirup, B. Yanagi, S. Yong, M. Darienzo, G. Priest, G. Crawford, and T. Walsh (2005): Progress in NTHMP hazard assessment. Nat. Hazards, 35(1), Special Issue, U.S. National Tsunami Hazard Mitigation Program, 89–110.

Synolakis, C.E., E.N. Bernard, V.V. Titov, U. Kânoğlu, and F.I. González (2007): Standards, criteria, and procedures for NOAA evaluation of tsunami numerical models. NOAA Tech. Memo. OAR PMEL-135, NOAA/Pacific Marine Environmental Laboratory, Seattle, WA, 55 pp.

Titov, V.V., and C.E. Synolakis (1998): Numerical modeling of tidal wave runup. J. Waterw. Port Coastal Ocean Eng., 124(4), 157–171.

Titov, V.V., C. Moore, D.J.M. Greenslade, C. Pattiaratchi, R. Badal, C.E. Synolakis, and U. Kânoğlu. A new tool for inundation modeling: Community Modeling Interface for Tsunamis (ComMIT). Pure Appl. Geophys., 168(11), 2121–2131, doi:10.1007/s00024-011-0292-4 (2011).

Contact

For more information about ComMIT, to report bugs, or to request specific information on the use of ComMIT for hazard assessment leading to evacuation mapping and/or for ComMIT training, please visit the NOAA Center for Tsunami Research at:

http://nctr.pmel.noaa.gov/ComMIT

NOAA Center for Tsunami Research
nctr.pmel.noaa.gov

PMEL
Pacific Marine Environmental Laboratory

ComMIT

Community Model Interface for Tsunami

Tools for Development of Evacuation Maps from Tsunami Hazard Assessment

April 2019

ComMIT Overview

The Community Model Interface for Tsunami (ComMIT) was developed in response to a recommendation by the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System in December 2005. The vision was to provide global access to community-developed tsunami models for the exchange of modeling expertise, hazard assessment, mitigation, and tsunami forecasting capabilities initially between Indian Ocean Countries. Design and development focused on ease of use, portable technology, functionality, wide-scale accessibility, and results sharing, without disclosure of propriety bathymetry and topography data.

ComMIT addresses preparedness by enabling countries to "Assess their hazard beforehand, and prepare accordingly by developing evacuation maps to be accompanied by continuous and regular awareness campaigns." Developed specifically with user experience and functionality in mind, ComMIT provides the user with an effective way to generate modeling results in support of evacuation map development

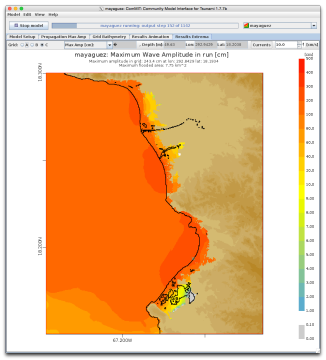
ComMIT is platform independent (i.e. runs with MS WINDOWS, MAC OS, and UNIX). The only requirements for use are adherence to a standard network Common Data Format (netCDF) and that input parameters be read from a simple text (ASCII) file. NetCDF provides access to open-source software for data analysis and model output presentation.

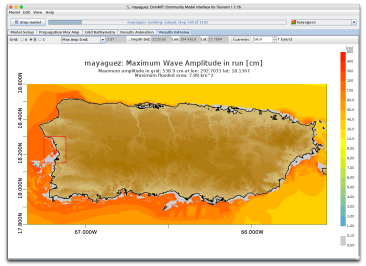
As of 2015, nearly 400 people from 57 nations have been trained to use ComMIT, providing a community of modelers using ComMIT to conduct new and updated hazard assessments for mitigation and education planning.

From 2015-2017, ComMIT was used for inundation modeling to support evacuation map development as part of the Tsunami Evacuation Maps, Plans, and Procedures Training Project (TEMPP) in Honduras and Central America, and in 2017-2018, ComMIT was taught as part of the TEMPP trainings for Indian Ocean countries.

Application of Modeling Results

Save options in ComMIT allow users to save and share maximum or minimum wave amplitude over time and maximum wave speeds. Animation of the full time-dependent model results can be shown if selected. Model output can be saved as ASCII, PNG, or GoogleEarth files.



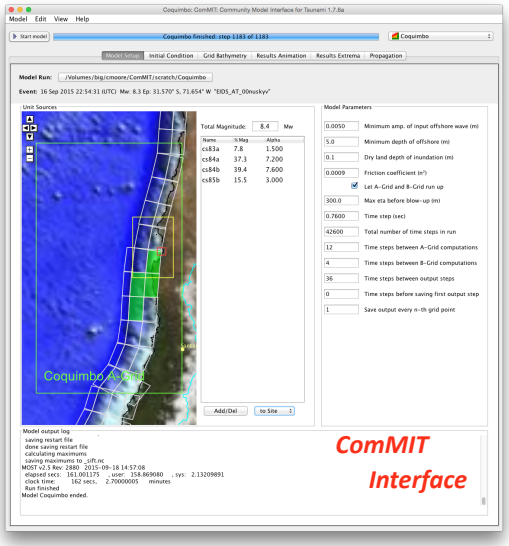


Example of graphical display of inundation at Mayaquez (left) and maximum wave amplitude.

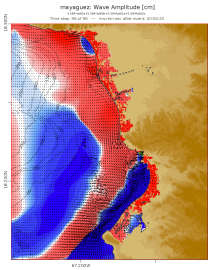
Evacuation map constructed for Mayaguez, Puerto Rico based on multiple tsunami source scenarios that were composited and buffered.

ComMIT Functionality

ComMIT provides users with a suite of capabilities and access to parameters and data needed to model tsunami impact along any coast. Tsunami models require: (1) seafloor and coastal topography; (2) initial and boundary conditions; and (3) run-specific model information, such as time-step, spatial resolution, and run length. Users can select these inputs, initiate tsunami model runs, and display results graphically for different models alone or in combination. Currently, ComMIT provides default access to Method of Splitting Tsunamis (MOST) numerical codes.



The ComMIT interface through which users select flooding model run inputs, initiate model runs, and choose from graphical



Example of wave amplitude at the final model run time step 96.