Christopher W. Moore

Curriculum Vitae

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Education

M.S. 1996 Physical Oceanography, University of Washington, Seattle
B.A. 1992 Physics, University of California, Santa Cruz

Professional Experience

2012-present: Physical Oceanographer, NOAA Pacific Marine Environmental Lab

- Tsunami modeling, research, hazard assessment
- Tsunami forecast systems development
- Scientific data analysis and management

1998-2012: Research Scientist, Joint Institute for the Study of the Atmosphere and Ocean

- Regional-scale ocean modeling and coupling to atmosphere models
- Geographic Information Systems (GIS) development
- Scientific visualization and data management systems

1997-1998: Research Scientist, Washington State Department of Ecology

- water-quality monitoring in Puget Sound and Willapa Bay
- tidal analysis and modeling

1992-1997: Research Assistant, University of Washington

Recent Projects

U.S. Virgin Islands tsunami hazard assessment: GPU-based modeling of tsunami inundation using the HySEA-Tsunami and Method of Splitting Tsunamis (MOST) models.

Analysis and publication of long-term data assimilated from deep-water tsunami buoys during the 2004 Indian Ocean tsunami (see 2017 publication citation, below).

Created a new desktop application, the Tsunami Coastal Assessment Tool (TsuCAT), utilizing the operational NOAA Propagation Database to rapidly assess the tsunami impact of seismic sources of any magnitude and location worldwide (https://nctr.pmel.noaa.gov/TsuCAT).

Taught over 26 Community Model Interface for Tsunami (ComMIT) tsunami modeling workshops worldwide, training 430 people from 68 countries, most recently in Grenada as part of the ITIC Tsunami Evacuation Maps, Plans & Procedures (TEMPP) program.

Research Techniques

Numerical modeling:

- developer and user of several tsunami models, including NOAA's operational inundation model, MOST, the HySEA-Tsunami model, and COULWAVE
- familiar with supercomputer cluster environment: MPI and OpenMP parallelization techniques, debugging tools, and C, C++, FORTRAN-90, and Java
- model coupling (e.g., WRF to ROMS) using MPH and the Model Coupling Toolkit (developed at Argnonne National Labs)
- designed and wrote various 2-D non-hydrostatic models in convection studies using Matlab and Python

Data analysis and systems development:

- Time series analysis using spectral techniques, tide-period harmonics, wavelet transforms.
- GIS application development, including ESRI API, GeoTools, custom map-server applications.
- Serving geospatial data using OpenDAP/DODS and custom java servlets
- Developed the Community Model Interface for Tsunami (ComMIT) a model framework for running the MOST model.

Field experience

- Oceanographic research cruises to the Chukchi Sea (on US Coast Guard Icebreaker Polar Star), the Bahamas (on various small craft), and the Washington coast (on the NOAA Ship McArthur).
- Data collection and post-processing: CTD hydrographic casts, chemical sampling, multibeam SONAR, post-tsunami survey work, sediment coring
- SCUBA research certification, including current meter deployment and recovery in Willapa Bay and Grey's Harbor, WA and Coos Bay, OR.

Recent Publications

Rabinovich, A.B., V.V. Titov, C.W. Moore, and M.C. Eblé (2017): The 2004 Sumatra tsunami in the southeastern Pacific Ocean: New global insight from observations and modeling. J. Geophys. Res., 122, 7992–8019, doi: 10.1002/2017JC013078.

Tang, L., V.V. Titov, C. Moore, and Y. Wei (2016): Real-time Assessment of the 16 September 2015 Chile Tsunami and Implications for Near-Field Forecast, Pure and Applied Geophysics, DOI: 10.1007/s00024-015-1226-3.

Titov, V., C. Moore, M. Spillane, Y. Wei, E. Gica, and H. Zhou (2016): Tsunami Hazard Assessment on Wave Generation, Propagation, and Inundation Modeling for the US East Coast. In U.S. Nuclear Regulatory Commission, NUREG.

Gica, E., V.V. Titov, C. Moore, and Y. Wei (2015): Tsunami simulation using sources inferred from various measurement data: Implications for the model forecast. Pure Appl. Geophys., Mar 2015, Vol. 172, Issue 3-4, pp 773-789, doi: 10.1007/s00024-014-0979-4.

Dall'Osso, F., D. Dominey-Howes, C. Moore, S. Summerhayes, and G. Withycombe (2014): The exposure of Sydney (Australia) to earthquake-generated tsunamis, storms and sea level rise: a probabilistic multi-hazard approach. Sci. Rep., 4, 7401, doi: 10.1038/srep07401. [HTML Article]

Greenslade, D.J.M., A. Annunziato, A. Babeyko, D. Burbidge, E. Ellguth, N. Horspool, T. Srinivasa Kumar, Ch. Patanjali Kumar, C. Moore, N. Rakowsky, T. Riedlinger, A. Ruangrassamee, P. Srivihok, and V.V. Titov (2014): An assessment of the diversity in scenario-based tsunami forecasts for the Indian Ocean. Cont. Shelf Res., 79, doi: 10.1016/j.csr.2013.06.001, 36–45.

Kânoğlu, U., Titov, V.V., Aydın, B., Moore, C. , Stefanakis, T.S., Zhou, H., , Spillane, M. and Synolakis, C.E., (2013): Focusing of long waves with finite crest over constant depth , Proceedings of the Royal Society, Series A, http://dx.doi.org/10.1098/rspa.2013.0015, Published Feb 27, 2013. (Animation and Press & News links)

Tang, L., V.V. Titov, E. Bernard, Y. Wei, C. Chamberlin, J.C. Newman, H. Mofjeld, D. Arcas, M. Eble, C. Moore, B. Uslu, C. Pells, M.C. Spillane, L.M. Wright, and E. Gica (2012): Direct energy estimation of the 2011 Japan tsunami using deep-ocean pressure measurements. J. Geophys. Res., 117, C08008, doi: 10.1029/2011JC007635.

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

Zhou, H., C. Moore, Y. Wei, and V. V. Titov (2011): A nested-grid Boussinesq-type approach to modeling dispersive propagation and runup of landslide-generated tsunami. Nat. Hazards Earth Sys. Sci., 11(10), doi: 10.5194/nhess-11-2677-2011, 2677–2697.