Kyle T. Mandli

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Research Interests

Computational mathematics with applications to **coastal floods** and other **geophysical hazards**. Includes numerical methods for hyperbolic PDEs, high performance computing, and software development practices in scientific and engineering software.

Education

University of Washington *Ph.D. Applied Mathematics* — *Oct 2004 – August 2011*

Thesis: "Finite Volume Methods for the Multilayer Shallow Water Equations with Applications to Storm Surges" (Advisor: Randall J. LeVeque)

University of Washington *M.S. Applied Mathematics* — *Oct 2004 – June 2005*

University of Wisconsin *B.S. Applied Mathematics, Engineering and Physics* — *Sept 2000 – May 2004*

Positions

CGD Lab — **NSF NCAR**
Scientist IV — *Jan 2025– Present*

Flatiron Institute - Center for Computational Mathematics — **Simons Foundation**
Research Scientist — *Oct 2023 – Dec 2024*

Applied Physics and Applied Mathematics Department — **Columbia University**
Research Scientist — *July 2023 - Sept 2023*
Associate Professor — *July 2019 – June 2023*
Assistant Professor — *July 2014 – June 2019*

Institute for Computational and Engineering Science — **University of Texas**
Research Associate — *Sept 2013 - Aug 2014*
JTO Fellow — *Sept 2012 - Sept 2013*
ICES Postdoctoral Research Fellow — *Sept 2011 - Sept 2012*

Applied Mathematics Department — *University of Washington*
Research/Teaching Assistant — *Oct 2004 – Aug 2011*

Publications

Open Source Software

- **PyClaw** - A scalable, nonlinear wave propagation solver in Python.
- **GeoClaw** - A Clawpack based shallow flow solver employing adaptive mesh refinement.
- **Clawpack** - Conservation Laws Package, a nonlinear wave propagation solver.
- **Numerical Methods Course Notes** - Open source teaching materials developed as interactive Jupyter notebooks for teaching numerical methods courses.

Google Scholar

Citations	2060
h-index	23
i10-index	36

Submitted and Preprints

[S1] Yuki Miura, Kyle T. Mandli, and George Deodatis. "Modeling Storm Surges with a Bounded Probability Distribution". 2024.

[S2] Donsub Rim and Kyle T Mandli. "Model reduction of a parametrized scalar hyperbolic conservation law using displacement interpolation". May 2018. URL: https://arxiv.org/abs/1805.05938.

[S3] Avi Schwarzschild and Kyle T Mandli. "An Implementation of Adaptive Mesh Refinement for Shallow Water Equations". Mar. 2018. URL: https://arxiv.org/abs/1803.01450.

Journal Articles

[J1] Ebrahim Hamidi et al. "Coupling Coastal and Hydrologic Models through Next Generation National Water Model Framework". In: *Journal of Hydrologic Engineering* 30.2 (2025). ISSN: 1084-0699. DOI: 10.1061/jhyeff.heeng-6343.

[J2] Mona Hemmati et al. "Assessment of Caribbean Coastal Hazard Posed by Tropical Cyclones". In: *Journal of Applied Meteorology and Climatology* (2025). DOI: 10.1175/jamc-d-24-0138.1.

[J3] Catherine R. Jeffries et al. "Impacts of barrier-island breaching on mainland flooding during storm events applied to Moriches, New York". In: *Natural Hazards and Earth System Sciences* 25.9 (2025), pp. 3125–3139. DOI: 10.5194/nhess-25-3125-2025.

[J4] Julie Maldonado et al. "Tapestries of Knowledge: Using Convergence Science to Weave Indigenous Science and Wisdom with other Scientific Approaches to Climate Challenges". In: *Bulletin of the American Meteorological Society* (2025).

[J5] Yuki Miura et al. "Coastal storm-induced flooding risk of the New York City subway amid climate change". In: *Transportation Research Part D: Transport and Environment* 149 (2025), p. 104974. ISSN: 1361-9209. DOI: 10.1016/j.trd.2025.104974.

[J6] Ali Sarhadi et al. "Climate Change Contributions to Increasing Compound Flooding Risk in New York City". In: *Bulletin of the American Meteorological Society* 105.2 (2024), E337–E356. ISSN: 0003-0007. DOI: 10.1175/bams-d-23-0177.1.

[J7] Steven W.H. Hoagland et al. "Advances in Morphodynamic Modeling of Coastal Barriers: A Review". In: *Journal of Waterway, Port, Coastal, and Ocean Engineering* 149.5 (2023), p. 03123001. ISSN: 0733-950X. DOI: 10.1061/jwped5.wweng-1825.

[J8] Donsub Rim, Benjamin Peherstorfer, and Kyle T. Mandli. "Manifold Approximations via Transported Subspaces: Model Reduction for Transport-Dominated Problems". In: *SIAM Journal on Scientific Computing* 45.1 (2023), A170–A199. ISSN: 1064-8275. DOI: 10.1137/20m1316998.

[J9] Yingcai Zheng et al. "Episodic Magma Hammers for the 15 January 2022 Cataclysmic Eruption of Hunga Tonga-Hunga Ha'apai". In: *Geophysical Research Letters* 50.8 (2023). ISSN: 0094-8276. DOI: 10.1029/2023gl102763.

[J10] Anamaria Bukvic et al. "Advancing Interdisciplinary and Convergent Science for Communities: Lessons Learned through the NCAR Early-Career Faculty Innovator Program". In: *Bulletin of the American Meteorological Society* 103.11 (2022), E2513–E2532. ISSN: 0003-0007. DOI: 10.1175/bams-d-21-0265.1.

[J11] Taher Chegini et al. "A Novel Framework for Parametric Analysis of Coastal Transition Zone Modeling". In: *JAWRA Journal of the American Water Resources Association* 58.1 (2022), pp. 86–103. ISSN: 1093-474X. DOI: 10.1111/1752-1688.12983.

[J12] Donovan Finn et al. "Moving from interdisciplinary to convergent research across geoscience and social sciences: challenges and strategies". In: *Environmental Research Letters* 17.6 (2022), p. 061002. DOI: 10.1088/1748-9326/ac7409.

[J13] David F. Muñoz et al. "Inter-Model Comparison of Delft3D-FM and 2D HEC-RAS for Total Water Level Prediction in Coastal to Inland Transition Zones". In: *JAWRA Journal of the American Water Resources Association* 58.1 (2022), pp. 34–49. ISSN: 1093-474X. DOI: 10.1111/1752-1688.12952.

[J14] Dongxiao Yin et al. "Extreme Water Level Simulation and Component Analysis in Delaware Estuary during Hurricane Isabel". In: *JAWRA Journal of the American Water Resources Association* 58.1 (2022), pp. 19–33. ISSN: 1093-474X. DOI: 10.1111/1752-1688.12947.

[J15] David A. Yuen et al. "Under the surface: Pressure-induced planetary-scale waves, volcanic lightning, and gaseous clouds caused by the submarine eruption of Hunga Tonga-Hunga Ha'apai volcano". In: *Earthquake Research Advances* 2.3 (2022), p. 100134. ISSN: 2772-4670. DOI: 10.1016/j.eqrea.2022.100134.

[J16] Colton J. Conroy, Kyle T. Mandli, and Ethan J. Kubatko. "Numerical Considerations for Quantifying Air–Water Turbulence with Moment Field Equations". In: *Water Waves* 3.2 (2021), pp. 319–354. ISSN: 2523-367X. DOI: 10.1007/s42286-021-00048-y.

[J17] Colton J. Conroy, Kyle T. Mandli, and Ethan J. Kubatko. "Quantifying air–water turbulence with moment field equations". In: *Journal of Fluid Mechanics* 917 (2021), A39. ISSN: 0022-1120. DOI: 10.1017/jfm.2021.242.

[J18] Md. Rezuanul Islam et al. "A new tropical cyclone surge index incorporating the effects of coastal geometry, bathymetry and storm information". In: *Scientific Reports* 11.1 (2021), p. 16747. DOI: 10.1038/s41598-021-95825-7.

[J19] Jiao Li and Kyle T Mandli. "An h-Box Method for Shallow Water Equations Including Barriers". In: *SIAM Journal on Scientific Computing* 43.2 (2021), B431–B454. ISSN: 1064-8275. DOI: 10.1137/19m128363x.

[J20] Ehab Meselhe et al. "Continental Scale Heterogeneous Channel Flow Routing Strategy for Operational Forecasting Models". In: *JAWRA Journal of the American Water Resources Association* 57.2 (2021), pp. 209–221. ISSN: 1093-474X. DOI: 10.1111/1752-1688.12847.

[J21] Yuki Miura, Kyle T Mandli, and George Deodatis. "High-Speed GIS-Based Simulation of Storm Surge–Induced Flooding Accounting for Sea Level Rise". In: *Natural Hazards Review* 22.3 (2021). ISSN: 1527-6988. DOI: 10.1061/(asce)nh.1527-6996.0000465.

[J22] Yuki Miura et al. "A methodological framework for determining an optimal coastal protection strategy against storm surges and sea level rise". In: *Natural Hazards* 107.2 (2021), pp. 1821–1843. ISSN: 0921-030X. DOI: 10.1007/s11069-021-04661-5.

[J23] Yuki Miura et al. "Optimization of Coastal Protections in the Presence of Climate Change". In: *Frontiers in Climate* 3 (2021), p. 613293. DOI: 10.3389/fclim.2021.613293.

[J24] Simone Marras and Kyle T. Mandli. "Modeling and Simulation of Tsunami Impact: A Short Review of Recent Advances and Future Challenges". In: *Geosciences* 11.1 (2020), p. 5. DOI: 10.3390/geosciences11010005.

[J25] Adam H. Sobel et al. "Tropical cyclone hazard to Mumbai in the recent historical climate". In: *Monthly Weather Review* 147.7 (2019), pp. 2355–2366. ISSN: 0027-0644. DOI: 10.1175/mwr-d-18-0419.1.

[J26] Colton J. Conroy et al. "hp discontinuous Galerkin methods for parametric, wind-driven water wave models". In: *Advances in Water Resources* 119 (Sept. 2018), pp. 70–83. ISSN: 0309-1708. DOI: 10.1016/j.advwatres.2018.04.008. URL: https://www.sciencedirect.com/science/article/pii/S0309170817306474.

[J27] Umesh K. Haritashya et al. "Evolution and Controls of Large Glacial Lakes in the Nepal Himalaya". In: *Remote Sensing* 10.5 (2018), p. 798. DOI: 10.3390/rs10050798.

[J28] Pushkar Kumar Jain et al. "Dynamically adaptive data-driven simulation of extreme hydrological flows". In: *Ocean Modelling* 122.Estuar. Coasts 38 1 2015 (Jan. 2018), pp. 85–103. ISSN: 1463-5003. DOI: 10.1016/j.ocemod.2017.12.004.

[J29] Maria Navarro et al. "Surrogate-based parameter inference in debris flow model". In: *Computational Geosciences* 22.6 (Aug. 2018), pp. 1447–1463. ISSN: 1420-0597. DOI: 10.1007/s10596-018-9765-1.

[J30] Donsub Rim and Kyle T. Mandli. "Displacement Interpolation Using Monotone Rearrangement". In: *SIAM/ASA Journal on Uncertainty Quantification* 6.4 (Nov. 2018), pp. 1503–1531. DOI: 10.1137/18m1168315. eprint: 1712.04028. URL: https://epubs.siam.org/doi/abs/10.1137/18M1168315.

[J31] Loïc Giraldi et al. "Bayesian inference of earthquake parameters from buoy data using a polynomial chaos-based surrogate". In: *Computational Geosciences* 21.4 (Apr. 2017), pp. 683–699. ISSN: 1420-0597. DOI: 10.1007/s10596-017-9646-z. URL: https://link.springer.com/article/10.1007%5C%2Fs10596-017-9646-z.

[J32] Ihab Sraj et al. "Quantifying uncertainties in fault slip distribution during the Tōhoku tsunami using polynomial chaos". In: *Ocean Dynamics* 67.12 (2017), pp. 1535–1551. ISSN: 1616-7341. DOI: 10.1007/s10236-017-1105-9. eprint: 1607.07414.

[J33] Kyle T Mandli et al. "Clawpack: building an open source ecosystem for solving hyperbolic PDEs". In: *PeerJ Computer Science* 2.3 (Aug. 2016), e68. DOI: 10.7717/peerj-cs.68. URL: https://peerj.com/articles/cs-68/?td=wk.

[J34] Thomas Höllt et al. "Visualizing uncertainties in a storm surge ensemble data assimilation and forecasting system". In: *Natural Hazards* 77.1 (Jan. 2015), pp. 317–336. ISSN: 0921-030X. DOI: 10.1007/s11069-015-1596-y. URL: http://link.springer.com/article/10.1007/s11069-015-1596-y.

[J35] Kyle T. Mandli and Clint N. Dawson. "Adaptive mesh refinement for storm surge". In: *Ocean Modelling* 75 (2014), pp. 36–50. ISSN: 1463-5003. DOI: 10.1016/j.ocemod.2014.01.002. eprint: 1401.5744.

[J36] Ihab Sraj et al. "Uncertainty quantification and inference of Manning's friction coefficients using DART buoy data during the Tōhoku tsunami". In: *Ocean Modelling* 83 (2014), pp. 82–97. ISSN: 1463-5003. DOI: 10.1016/j.ocemod.2014.09.001. URL: http://www.sciencedirect.com/science/article/pii/S1463500314001322.

[J37] Kyle T. Mandli. "A numerical method for the two layer shallow water equations with dry states". In: *Ocean Modelling* 72 (2013), pp. 80–91. ISSN: 1463-5003. DOI: 10.1016/j.ocemod.2013.08.001. eprint: 1308.1905. URL: http://www.sciencedirect.com/science/article/pii/S1463500313001212.

[J38] David I. Ketcheson et al. "PyClaw: Accessible, Extensible, Scalable Tools for Wave Propagation Problems". In: *SIAM Journal on Scientific Computing* 34.4 (Nov. 2012), pp. C210–C231. ISSN: 1064-8275. DOI: 10.1137/110856976. eprint: 1111.6583.

[J39] Marsha J. Berger et al. "The GeoClaw software for depth-averaged flows with adaptive refinement". In: *Advances in Water Resources* 34.9 (2011), pp. 1195–1206. ISSN: 0309-1708. DOI: 10.1016/j.advwatres.2011.02.016. eprint: 1008.0455. URL: http://www.sciencedirect.com/science/article/pii/S0309170811000480.

Conference Proceedings

[C1] Chaulio R Ferreira, Kyle T Mandli, and Michael Bader. "Vectorization of Riemann solvers for the single- and multi-layer shallow water equations". In: International Conference on High Performance Computing Simulation. 2018. DOI: 10.1109/hpcs.2018.00073. URL: https://ieeexplore.ieee.org/abstract/document/8514378.

[C2] Yipeng Huang et al. "Hybrid analog-digital solution of nonlinear partial differential equations". In: the 50th Annual IEEE/ACM International Symposium. Oct. 2017, pp. 665–678. ISBN: 978-1-4503-4952-9. DOI: 10.1145/3123939.3124550.

[C3] Carsten Burstedde et al. "ForestClaw: Hybrid forest-of-octrees AMR for hyperbolic conservation laws". In: vol. 25. ParCo 2013. 2013, pp. 253–262. DOI: 10.3233/978-1-61499-381-0-253. URL: http://www.ebooks.iospress.nl/volumearticle/35888.

[C4] Andy R Terrel and Kyle T Mandli. "ManyClaw: Slicing and dicing Riemann solvers for next generation highly parallel architectures". In: TACC-Intel Symposium on Highly Parallel Architectures 2012. Feb. 2012, pp. 1–6.

Books

[B1] Lorena A. Barba et al. *Teaching and Learning with Jupyter*. Dec. 2019. URL: https://jupyter4edu.github.io/jupyter-edu-book/.

Honors

Sigma XI Full Fellow, 2020

Early Career Faculty Innovator Program, NCAR, 2019-2021

NSF Vigre Graduate Fellow, University of Washington, 2008-2009

Boeing Award for Service, University of Washington, 2007

ARCS Graduate Fellowship, University of Washington, 2004-2007

Top Scholar Award, University of Washington, 2004-2005

Applied Math, Engineering and Physics Leadership Prize, University of Wisconsin, 2003

Teaching

Instructor

Columbia Faculty

APMA 6901 - Uncertainty Quantification

APMA 6901 - Finite Volume Methods for Hyperbolic PDEs

APMA 4302 - Methods in Computational Science

APMA 4301 - Numerical Methods for PDEs

APMA 4300 - Introduction to Numerical Methods

APMA 3102 - Applied Mathematics II - Partial Differential Equations

Lecturer

Gene Golub Summer School 2012 - Simulation and Supercomputing in the Geosciences.

Professional Affiliations

American Meteorological Society

Society for Industrial and Applied Mathematics

American Geophysical Union

American Mathematical Society

United States Association of Computational Mechanics

Service and Leadership

Columbia:

- Masters Student Advisor
- Undergraduate student advisor
- Egleston Scholar Mentor
- Faculty secretary 2014-2016
- Columbia SIAM chapter faculty advisor, 2014-present
- Organized local SCUDEM mathematics competition, 2018
- Earth Institute Postdoctoral Committee (2022)
- Climate School Coastal Viability Committee member 2020
- Operating Committee Chair for High Performance Computing
- Bridge to the Ph.D. Faculty Council Member
- Foundations for Research Computing advisory committee member
- Faculty representative for HPC RFP
- Faculty representative to the SRCPAC training sub-committee
- Faculty Advising Board for Columbia Undergraduate Science Journal

Service to the Field

- Panelist and moderator for the New York Academy of Science event "Science of Risk Discussion Forum Symposium on Mesoscale Weather Risk", September 2025
- SIAM NNP Section district liason for New York City and Long Island
- Organizer for SIAM NNP Section Conference, 2023, 2024, 2025.
- Theme leader for the National Water Center's Summer Institute, 2018-2023 run by NOAA and the National Weather Service
- Program Committee for the International Symposium on Parallel and Distributed Computing (2021-2024)
- ENVISION Women in STEM competition judge 2021
- Bergen County Academy research mentor 2019-2021
- Convener of "Convergence Research in Climate Science: How to Move Beyond Disciplinary Silos" AGU Fall

Meeting 2020

- Lead organizer of the 2019 "Future Directions for Enabling Coastal Storm Flooding Prediction for High-Resolution Forecasts and Climate Scenarios" workshop 2019
- Program committee for NY Scientific Data Summit 2019
- Academic review committee for the International Conference on Sustainable Cities, 2018
- University Corporation for Atmospheric Research (UCAR) Congressional Briefing Panelist, 2018
- Organized and ran a Center for teaching (CIRTL) workshop on open source principles and education, 2018
- Birds of a Feather Co-Chair, SciPy, 2013-2015
- Organizer of IMA hot topics workshop "Impact of Waves Along Coastlines", 2014
- Co-organized $[HPC]^3$, 2012 and 2014

Funding Agencies

- NSF panelist
- DOE panelist
- NSF GRFP reviewer
- NSF site reviewer
- NSF CRISP PI Meeting Organizing Committee

Referee

Science Advances (AAAS), Advances in Computational Mathematics (ACOM), Applied Numerical Mathematics (APNUM), Current Climate Change Reports (CCLR), Computing in Science and Engineering (CiSE), Computational Geosciences (COMG), Computer Physics Communications (CPC), Engineering and Computational Mechanics (EACM), Euro-Par, Finite Volumes for Complex Applications (FVCA), Geophysical Journal International (GJI) Journal of Applied Mathematics and Computing (JAMC), Journal of Computational Physics (JCP), Journal of Nonlinear Science (JNS), Journal of Scientific Computing (JOMP), Mathematical Communications (MATCOM), Natural Hazards (NHAZ), Numerical Algorithms (NUMA), Ocean Modelling (OCEMOD), Ocean Dynamics (OCDYN), Pure and Applied Geophysics (PAAG), Platform for Advanced Scientific Computing (PASC), Science, SIAM Journal of Scientific Computing (SISC), Transport in Porous Media (TIPM), Marine Geodesy (UMG), and Journal of Waterway, Port, Coastal, and Ocean Engineering (WWENG).

Invited Presentations

- CCNY, Bruce Podwal Seminar in Civil Engineering, October 28th, 2025.
- Georgia Tech, School of Civil and Environmental Engineering, October 30th, 2024.
- Keynote Speaker at CSDMS 2024 Meeting, May 16th, 2024.
- Flatiron Institute CCM Seminar, October 24th, 2023.
- Stevens Institute of Technology, September 20, 2023.
- American Natural History Museum, August 15, 2023.
- NOAA GFDL, January 13, 2023.
- Floodbase, February 1, 2023.
- American Natural History Museum, August 9, 2022.
- WCCCM-APCOM 2022, Yokohoma Japan.
- Resilient Coastlines Seminar, January 31, 2022.
- Columbia Undergraduate Scholars Program, October 26, 2021.
- U.S. National Congress on Computational Mechanics, Chicago, IL (virtual), July 25-29, 2021.
- 2021 Managed Retreat Conference, June 2021.
- SIAM GeoSciences, Milan, Italy (virtual), June 21-24, 2021.
- SIAM Computational Science and Engineering, Fort Worth, TX (virtual), March 3, 2021.
- AGU Invited Talk, San Francisco, CA. December 7, 2020.
- Brigham Young University, Utah State Mathematics Seminar, November 9, 2020.
- New York Scientific Data Summit, October 20, 2020.

- University of Delaware Numerical Analysis Seminar, October 9, 2020.
- University of Texas Oden Institute Colloquium, October 8, 2020.
- Tulane University, New Orleans, AL. January 15, 2020.
- AGU Invited Talk, San Francisco, CA. December 9, 2019.
- AGU Invited Workshop Talk, San Francisco, CA. December 8, 2019.
- Teaching and Learning with Jupyter, New York University, New York, NY. October 31, 2019.
- University of Durham, Durham U.K., September 26th, 2019.
- USCACM 2019 Mini-Symposium Keynote Presentation, Austin, July 31, 2019.
- ITN Workshop on Shocks and Interfaces, Oxford U.K., July 4, 2019.
- U.S. Naval Academy, Annapolis, June 6, 2019.
- SIAM Computational Science and Engineering, Spokane, WA, February 27, 2019.
- AGU Fall Meeting 2019 Invited Talk, Washington D.C., December 12, 2018.
- WCCM 2018 Mini-symposium Keynote Presentation, New York, July 24, 2018.
- SIAM Annual Meeting, Portland, OR, July 11, 2018.
- University of Alabama, January 29, 2018,
- Virginia Tech University, October 27, 2017,
- NCAR Worshop on Multiscale Geoscience Numerics, May 16-19, 2017,
- Purdue University, May 1, 2017,
- Tulane University - Clifford Lectures, April 14, 2017,
- SIAM Computational Science and Engineering, Atlanta, GA, March 1, 2017.
- Temple University, February 1, 2017,
- New York University, February 10, 2017,
- India Institute of Technology - Bombay, January 9, 2017,
- Boise State, November 3, 2016
- SIAM Mathematics of Planet Earth, Philadelphia, PA, September 30, 2016.
- HPC for Water Related Hazards, Münich, June 30, 2016,
- Fields Institute, May 25, 2016,
- Stevens Institute Davidson Lab Seminar, March 9, 2016,
- New Jersey Institute of Technology, Mathematics Seminar, February 19, 2016,
- Lamont-Doherty, Ocean and Climate Physics Seminar, October 9, 2015,
- SIAM Geosciences, Stanford, CA, July 1, 2015.
- Frontiers in Applied and Computational Mathematics Conference, June 6, 2015,
- SIAM Computational Science and Engineering, Salt Lake City, UT, March 18, 2015.
- University of Notre Dame Environmental Dynamics Seminar, December 9, 2014.
- SIAM Annual Meeting, Chicago, IL, July 7, 2014.
- Universität Hamburg, May 26, 2014.
- ASCETE Workshop, May 21, 2014.
- Technische Universität München Seminar, May 19, 2014.
- Seattle University Mathematics Colloquium, May 15, 2014.
- Iowa State University Mathematics Colloquium, April 21, 2014.
- Texas A&M Oceanography Seminar, March 31, 2014.
- Columbia University Applied Mathematics Colloquium, March 6, 2014.
- SIAM Parallel Computing, Portland, OR, February 19, 2014.
- MSU Mathematics Seminar, July 11th 2013.
- UNC Applied Mathematics Seminar, April 26th, 2013.
- SIAM Computational Science and Engineering, Boston, MA, February 26, 2013.

- Gene Golub Summer School, Monterey, CA. July 29-August 10 2012.
- SIAM Parallel Computing, Savannah, GA, February 16, 2012.
- SIAM Geosciences, Long Beach, CA, March 22, 2011.
- SIAM Computational Science and Engineering, Reno, NV, March 1, 2011.
- SIAM Annual Meeting, Pittsburgh, PA, July 15, 2010
- SIAM Annual Meeting, San Diego, CA, July ,2008.
- SIAM Computational Science and Engineering, Costa Mesa, CA, February 21, 2007.