Adrean A. Webb

Curriculum Vitae

Contact Information

Kyoto University
Disaster Prevention Research Institute
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Research Interests

Coastal hazards, climate projections and impact assessments, ocean-related phenomenon, numerical modeling, and meshless methods.

Education

Ph.D. Applied Mathematics, University of Colorado Boulder, **Aug 2013**. Advisors: B. Fox-Kemper and K. Julien.

M.S. Applied Mathematics, University of New Hampshire, **May 2007**. Advisor: M. Shubov.

B.S. Physics, University of Oklahoma, **May 1998**. *Attended Kings College (Aberdeen, Scotland) and Ritsumeikan University (Kyoto, Japan) in 1997 and 1995.*

Academic Appointments

Specially Appointed Associate Professor: Kyoto University (Kyoto, Japan), Disaster Prevention Research Institute (DPRI), Coastal Disaster Research Section, **Apr 2020–present**. *Future climate projections of coastal hazards (Tougou).*

Specially Appointed Assistant Professor: Kyoto University (Kyoto, Japan), DPRI, Coastal Disaster Research Section, **Sep 2017–Mar 2020**. *Future climate projections of coastal hazards (Tougou).*

Specially Appointed Researcher: The University of Tokyo (Kashiwa, Japan), Department of Ocean Technology, Policy, and Environment, **Oct 2014–Aug 2017**. *Wave energy resources for Japan (NEDO); Arctic wave modeling (ArCS).*

Postdoctoral Fellow: Tokyo University of Marine Sciences and Technology (Tokyo, Japan), Department of Ocean Sciences under H. Yamazaki, **Aug 2013–Sep 2014**. *Estuarine dynamics in Iwate, Japan (TEAMS, CREST).*

Research Assistant: University of Colorado Boulder, Cooperative Institute for Research in the Environmental Sciences (CIRES) under B. Fox-Kemper, **May 2008–Dec 2012**. *Langmuir turbulence on a global scale (CIRES, NASA).*

Visiting Positions

Invited Participant: University of California Santa Barbara, Kavli Institute for Theoretical Physics, **Jun 2018**. *Short-term participant in the program "Planetary Boundary Layers in Atmospheres, Oceans, and Ice on Earth and Moons,"* `https://www.kitp.ucsb.edu/activities/blayers18`.

Visiting Scientist: University of California Los Angeles, Institute for Pure and Applied Mathematics (IPAM), **Mar–Jun 2010, Dec 2011, Dec 2012**. *Supported participant and seminar coordinator in the program, "Model and Data Hierarchies for Simulating and Understanding Climate,"* `http://www.ipam.ucla.edu/programs/long-programs/model-and-data-hierarchies-for-simulating-and-understanding-climate/`.

Non-Academic Positions

Instructor: Kyoto City Board of Education (Kyoto, Japan), **Apr 2002–Mar 2005**. *Assistant language teacher for eight junior high schools.*

Instructor: GEOS (Kansai & Chubu, Japan), **Apr 2000–Mar 2002**. *English instructor at two private schools.*

System Analyst: MCI WorldCom/EDS Communications (Tulsa, OK), **Apr 1998–Mar 2000**. *UNIX mainframe and software administrator.*

Refereed Journal Publications

[R.1] I. Odériz, R. Silva, T.R. Mortlock, N. Mori, T. Shimura, A. Webb, R. Padilla-Hernandez, & S. Villers **(2021)**. Natural variability and warming signals in global ocean wave climates. *Geophysical Research Letters*, in press.

[R.2] N. Mori, T. Takemi, Y. Tachikawa, H. Tatano, T. Shimura, T. Tanaka, T. Fujimi, Y. Osakada, A. Webb, & E. Nakakita **(2021)**. Recent nationwide climate change impact assessments of natural hazards in Japan and East Asia. *Weather and Climate Extremes*, *32*(100309)1–23. https://doi.org/10.1016/j.wace.2021.100309.

[R.3] T. Waseda, T. Nose, T. Kodaira, K. Sasmal, and A. Webb **(2020)**. Climatic trends of extreme wave events caused by Arctic Cyclones in the western Arctic Ocean. *Polar Science*, *27*(100625)1–16. https://doi.org/10.1016/j.polar.2020.100625.

[R.4] K. Sasmal, T. Waseda, A. Webb, S. Miyajima, & K. Nakano **(2020)**. Assessment of wave energy resources and their associated uncertainties for two coastal areas in Japan. *Journal of Marine Science and Technology*. https://doi.org/10.1007/s00773-020-00781-y.

[R.5] A. Webb, T. Waseda, & K. Kiyomatsu **(2020)**. A High-Resolution, Long-Term Wave Resource Assessment of Japan with Wave-Current Effects. *Renewable Energy*, *161*:1341–1358. https://doi.org/10.1016/j.renene.2020.05.030.

[R.6] J. Morim, M. Hemer, X.L. Wang, N. Cartwright, C. Trenham, A. Semedo, I. Young, L. Bricheno, P. Camus, M. Casas-Prat, L. Erikson, L. Mentaschi, N. Mori, T. Shimura, B. Timmerman, O. Aarnes, Ø. Breivik, A. Behrens, M. Dobrynin, M. Menendez, J. Staneva, M. Wehner, J. Wolf, B. Kamranzad, A. Webb, J. Stopa, & F. Andutta **(2019)**. Robustness and uncertainties in global multivariate wind-wave climate projections. *Nature Climate Change*, *9*:711–718. https://doi.org/10.1038/s41558-019-0542-5.

[R.7] N. Mori, T. Yasuda, T. Arikawa, T. Kataoka, S. Nakajo, K. Suzuki, Y. Yamanaka, A. Webb, & 2018 Typhoon Jebi Coastal Disaster Survey Team **(2019)**. 2018 Typhoon Jebi Post-Event Survey of Coastal Damage in the Kansai Region, Japan. *Coastal Engineering Journal*, *61*(3):278–294. https://doi.org/10.1080/21664250.2019.1619253.

[R.8] W. Fujimoto, T. Waseda, & A. Webb **(2018)**. Impact of the four-wave quasi-resonance to freak wave shapes in the ocean. *Ocean Dynamics*, *69*(1):101–121. https://doi.org/10.1007/s10236-018-1234-9.

[R.9] Y. Kita, T. Waseda, & A. Webb **(2018)**. Development of waves under explosive cyclones in the Northwestern Pacific. *Ocean Dynamics*, *68*(10):1403–1418. https://doi.org/10.1007/s10236-018-1195-z.

[R.10] T. Nose, A. Webb, T. Waseda, J. Inoue, & K. Sato **(2018)**. Predictability of storm wave heights in the ice-free Beaufort Sea. *Ocean Dynamics*, *68*(10):1383–1402. https://doi.org/10.1007/s10236-018-1194-0.

[R.11] T. Waseda, A. Webb, K. Sato, J. Inoue, A. Kohout, B. Penrose, & S. Penrose **(2018)**. Correlated Increase of High Ocean Waves and Winds in the Ice-Free Waters of the Arctic Ocean. *Scientific Reports*, *8*(4489):1–9. https://doi.org/10.1038/s41598-018-22500-9.

[R.12] K. Sasmal, E. Masunaga, A. Webb, O. Fringer, E. Gross, M. Rayson, & H. Yamazaki **(2018)**. A three-dimensional numerical study of river plume mixing processes in Otsuchi Bay, Japan. *Journal of Oceanography*, *74*(2):169–186. https://doi.org/10.1007/s10872-017-0446-9.

[R.13] Q. Li, B. Fox-Kemper, Ø. Breivik, & A. Webb **(2017)**. Statistical models of global Langmuir mixing. *Ocean Modelling*, *113*:95–114. https://doi.org/10.1016/j.ocemod.2017.03.016.

[R.14] Q. Li, A. Webb, B. Fox-Kemper, A. Craig, G. Danabasoglu, W.G. Large, & M. Vertenstein **(2016)**. Langmuir mixing effects on global climate: WAVEWATCH III in CESM. *Ocean Modelling*, *103*:145–160. https://doi.org/10.1016/j.ocemod.2015.07.020.

[R.15] S. Haney, B. Fox-Kemper, K. Julien, & A. Webb **(2015)**. Symmetric and Geostrophic Instabilities in the Wave-Forced Ocean Mixed Layer. *Journal of Physical Oceanography*, *45*(12):3033–3056. https://doi.org/10.1175/JPO-D-15-0044.1.

[R.16] A. Webb & B. Fox-Kemper **(2015)**. Impacts of wave spreading and multi-directional waves on estimating Stokes drift. *Ocean Modelling*, *96*:49–64. https://doi.org/10.1016/j.ocemod.2014.12.007.

[R.17] A. Webb & B. Fox-Kemper **(2011)**. Wave spectral moments and Stokes drift estimation. *Ocean Modelling*, *40*(3–4):273–288. https://doi.org/10.1016/j.ocemod.2011.08.007.

Refereed Journal Publications (J-STAGE)

[J.1] Y. Araki, T. Yasuda, A. Webb, & N. Mori **(2020)**. Statistical prediction of storm surge height time series by convolutional neural network and its long-term projection. *Journal of Japan Society of Civil Engineers, Ser. B2 (Coastal Engineering)*, *76*(2):1093–1098 (in Japanese). https://doi.org/10.2208/kaigan.76.2_I_1093.

[J.2] A. Webb, T. Shimura, & N. Mori **(2019)**. Global Tropical Cyclone Track Detection and Analysis of the d4PDF Mega-ensemble Projection. *Journal of Japan Society of Civil Engineers, Ser. B2 (Coastal Engineering)*, *75*(2):1207–1212. https://doi.org/10.2208/kaigan.75.I_1207.

[J.3] A. Webb, T. Shimura, & N. Mori **(2018)**. A High-Resolution Future Wave Climate Projection for the Coastal Northwestern Atlantic. *Journal of Japan Society of Civil Engineers, Ser. B2 (Coastal Engineering)*, *74*(2):1345–1350. https://doi.org/10.2208/kaigan.74.I_1345.

[J.4] T. Waseda, A. Webb, K. Kiyomatsu, W. Fujimoto, Y. Miyazawa, S. Varlamov, K. Horiuchi, T. Fujiwara, T. Taniguchi, K. Matsuda, & J. Yoshikawa **(2016)**. Marine energy resource assessment at reconnaissance to feasibility study stages; wave power, ocean and tidal current power, and ocean temperature power. *Journal of the Japan Society of Naval Architects and Ocean Engineers*, *23*:189–198 (in Japanese). https://doi.org/10.2534/jjasnaoe.23.189.

Refereed Conference Publications (Selected)

[C.1] K. Sasmal, A. Webb, T. Waseda, & S. Miyajima **(2018)**. Wave energy resource assessment: A comparative study for two coastal areas in Japan. *Advances in Renewable Energies Offshore: Proceedings of the 3rd International Conference on Renewable Energies Offshore (RENEW 2018), October 8–10, 2018, Lisbon, Portugal*, (p. 67). CRC Press. https://www.crcpress.com/Advances-in-Renewable-Energies-Offshore-Proceedings-of-the-3rd-International/Soares/p/book/9781138585355.

[C.2] T. Waseda, T. Nose, & A. Webb **(2018)**. Comparison of the Long-Term Trends of the Largest Waves in the Ice-Free Arctic Waters from Different Reanalysis Products. *ASME 2018 37th International Conference on Ocean, Offshore and Arctic Engineering; Vol. 3: Structures, Safety, and Reliability.* https://doi.org/10.1115/OMAE2018-77971.

[C.3] T. Waseda, A. Webb, K. Sato, J. Inoue, A. Kohout, B. Penrose, & S. Penrose **(2017)**. Arctic Wave Observation by Drifting Type Wave Buoys in 2016. *Proceedings of the International Offshore and Polar Engineering Conference, (2017)*:16–20. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85038896140&partnerID=40&md5=a7145051b81587c884118159836d1926.

[C.4] A. Webb, T. Waseda, J. Inoue, & K. Sato **(2017)**. Ocean wave forecasting sys-

tem for the Northern Sea Route. *Proceedings of the Japan Society of Naval Architects and Ocean Engineers*, *24*:247–249. https://ci.nii.ac.jp/naid/40021613508/.

[C.5] A. Webb, T. Waseda, W. Fujimoto, K. Horiuchi, K. Kiyomatsu, K. Matsuda, Y. Miyazawa, S. Varlamov, & J. Yoshikawa **(2016)**. A High-Resolution, Wave and Current Resource Assessment of Japan: The Web GIS Dataset. *Proceedings of the 3rd Asian Wave and Tidal Energy Conference (AWTEC 2016)*. http://tinyurl.com/AAWEBB002.

Other Publications

[O.1] M. Hemer, X.L. Wang, A. Webb, & COWCLIP contributors **(2018)**. Report of the 2018 Meeting for the WCRP-JCOMM Coordinated Ocean Wave Climate Project (COWCLIP), Paris, 21-23 May, 2018. *JCOMM Technical Report*, *92*. https://tinyurl.com/AAWEBB004.

[O.2] Q. Li, B. Fox-Kemper, & A. Webb **(2017)**. WAVEWATCH III in CESM and Langmuir mixing. *POP2 Reference Manual Addendum*, LANL Tech Note LAUR-10-018253, in press. http://tinyurl.com/AAWEBB003.

[O.3] A. Webb **(2013)**. Stokes Drift and Meshless Wave Modeling. *Ph.D. Thesis*, University of Colorado Boulder, 251 pages. http://tinyurl.com/AAWEBB001.

Submitted Publications

[S.1] L. Erikson, J. Morim, M. Hemer, I. Young, X. Wang, L. Mentaschi, N. Mori, A. Semedo, J. Stopa, V. Grigoreva, S. Gulev, O. Aarnes, J. Bidlot, Ø. Breivik, L. Bricheno, T. Shimura, M. Menendez, M. Markina, V. Sharmar, C. Trenham, J. Wolf, C. Appendini, C. Sofia, N. Groll, & A. Webb. Reconciling trends in global ocean wave parameters. Submitted to *Communications Earth & Environment* (2020/12).

Grants

Kakenhi Grant-in-Aid for Early-Career Scientists by Ministry of Education, Culture, Sports, Science and Technology (MEXT) and Japan Society for the Promotion of Science (JSPS): A. Webb, **Apr 2020**–**Mar 2023**. *Urban shoreline amplification of storm surge during extreme tropical cyclones: Current and future flood risks*, 4.3M JPY.

Honors and Awards

Outstanding Young Scientist Award: First Place, In *7th IWMO*. International Workshop on Modeling the Ocean (Canberra, Australia), **Jun 2015**.

Best Presentation Award: Third Place, In *7th IWMO*. International Workshop on Modeling the Ocean (Canberra, Australia), **Jun 2015**.

Outstanding Student Presentation Award, In *TOS/ALSO/AGU 2012 Ocean Sciences Meeting*. American Geophysical Union (Salt Lake City, UT), **Feb 2012**.

Student Awards

Treatise Encouragement Award, Y. Araki (Co-authors: M. Yasuda, A. Webb, & N. Mori), In *65th Coastal Engineering Lectures*. Japan Society of Civil Engineers, **Oct 2020**.

Additional Travel Awards

National Science Foundation: For [P.39]; *IPAM Workshop on Geophysical and Astrophysical Turbulence*, Institute for Pure and Applied Mathematics, University of California Los Angeles (Los Angeles, CA), **Oct 2014**; *1st PRIMA Congress: Special Session on the Mathematics of Climate Change*, Pacific Rim Mathematical Association (Sydney, Australia), **Jul 2009**; *SIAM Conference on Mathematical and Computational Issues in the Geosciences*, Society for Industrial and Applied Mathematics (Leipzig, Germany), **Jun 2009**; *Climate Program at Joint Mathematics Meeting*, American Mathematical Society (San Diego, CA), **Jan 2008**. **Society for Industrial and Applied Mathematics:** For [P.35, 1/3]. **University of Colorado Boulder, Department of Applied Mathematics:** For [P.42]; [P.35, 1/3]; *ECMWF Workshop on Ocean Waves*, European Centre for Medium-Range Weather

Forecasts (Reading, England), **Jun 2012**; **University of Colorado Boulder, CIRES:** For [P.35, 1/3].

Invited Presentations (Selected)

[P.1] Detection and Analysis of Tropical Cyclones and Associated Coastal Extreme Waves Within the D4PDF Mega-Ensemble Projection. In *AOGS 18th Annual Meeting*. Asia Oceania Geosciences Society (Virtual), **Aug 2021**.

[P.2] Future Nearshore Wave Climate Projection for the Northwestern Atlantic. Upcoming in *CASPO Seminar*. Scripps Institution of Oceanography, University of California San Diego (San Diego, CA), **Feb 2020**.

[P.3] A Meshless Approach to Spectral Wave Modeling. In *Coastal Seminar*. Department of Civil and Construction Engineering, Oregon State University (Corvallis, OR), **Feb 2018**.

[P.4] A Meshless Numerical Approach to Spectral Wave Modeling (supported). In *Localized Kernel-Based Meshless Methods for Partial Differential Equations*. Institute for Computational and Experimental Research in Mathematics, Brown University (Providence, RI), **Aug 2017**.

[P.5] A Meshless Numerical Approach to Spectral Wave Modeling. In *Workshop on Theoretical and Computational Methods of Nonlinear Water Waves*. Waseda University (Tokyo, Japan), **May 2016**.

[P.6] The role of wave-current interactions in marine renewable energy near Japan (supported). In *Coastal Disaster Research Seminar*. DPRI, Kyoto University (Kyoto, Japan), **Jul 2015**.

[P.7] Meshless and Unstructured Wave Modeling. In *Joint Wave Seminar*. JAMSTEC and The University of Tokyo (Tokyo, Japan), **Apr 2014**.

[P.8] A Meshless Approach to Global Ocean Wave Modeling (supported). In *Coastal Disaster Research Seminar*. DPRI, Kyoto University (Kyoto, Japan), **Oct 2013**.

[P.9] A Meshless Approach to Ocean Wave Modeling (supported). In *Brownbag Seminar*. Lawrence Berkeley National Laboratory Seminar (Berkeley, CA), **Apr 2013**.

Submitted Presentations (Selected)

[P.10] Nearshore wave-current interaction effects on wave power density near Japan. Upcoming in *JpGU 2021*. Japan Geoscience Union Meeting (Virtual), **June 2021**.

[P.11] Progress on Detection and Analysis of Cyclones and Associated Coastal Waves Using Mega-Ensemble and Seamless MRI-AGCM Projections. In *2021 COWCLIP Workshop*. Coordinated Ocean Wave Climate Project (Virtual), **May 2021**.

[P.12] Future Nearshore Wave Climate Projection for the Northwestern Atlantic. In *TOS/ALSO/AGU 2020 Ocean Sciences Meeting*. American Geophysical Union (San Diego, CA), **Feb 2020**.

[P.13] Future Wave Climate Projection for the Northwestern Atlantic. In *2nd International Workshop on Waves, Storm Surges and Coastal Hazards*. International Waves Workshop (Melbourne, Australia), **Nov 2019**.

[P.14] Global Tropical Cyclone Track Detection and Analysis of the d4PDF Mega-ensemble Projection. In *66th Coastal Engineering Lectures*. Japan Society of Civil Engineers (Kagoshima, Japan), **Oct 2019**.

[P.15] A High-Resolution Future Wave Climate Projection for the Northwestern Atlantic. In *JpGU Meeting 2019*. Japan Geoscience Union (Chiba, Japan), **May 2019**.

[P.16] Wave Climate Projection for the Northwestern Atlantic (poster). In *WISE 2019 Meeting*. Waves In Shallow water Environment (Jyozankei, Japan), **May 2019**.

[P.17] A High-Resolution Future Wave Climate Projection for the Coastal Northwestern Atlantic. In *65th Coastal Engineering Lectures*. Japan Society of Civil Engineers

(Tottori, Japan), **Nov 2018**.

[P.18] A High-Resolution Wave Climate Projection for the Northwestern Atlantic and Coastal Eastern USA. In *AOGS 15th Annual Meeting*. Asia Oceania Geosciences Society (Honolulu, HI), **Jun 2018**.

[P.19] A Regional Wave Climate Projection for the Coastal Northwestern Atlantic. In *2018 COWCLIP Workshop*. Coordinated Ocean Wave Climate Project (Paris, France), **May 2018**.

[P.20] A Meshless Approach to Spectral Wave Modeling. In *Mathematical Aspects and Applications of Nonlinear Wave Phenomena Workshop*. Research Institute of Mathematical Sciences, Kyoto University (Kyoto, Japan), **Oct 2017**.

[P.21] First steps toward a wave forecasting system for the Northern Sea Route (poster). In *1st International Workshop on Waves, Storm Surges and Coastal Hazards*. International Waves Workshop (Liverpool, UK), **Sep 2017**.

[P.22] Arctic wave field model analysis and observation in 2016. In *9th IWMO*. International Workshop on Modeling the Ocean (Seoul, Korea), **Jul 2017**.

[P.23] Ocean wave forecasting system for the Northern Sea Route. In *Spring 2017 Meeting*. Japan Society of Naval Architects and Ocean Engineers (Tokyo, Japan), **May 2017**.

[P.24] Arctic wave field reanalysis and observation in 2016. In *32nd International Symposium on Okhotsk Sea & Polar Oceans*. Okhotsk Sea and Cold Ocean Research Association (Monbetsu, Japan), **Feb 2017**.

[P.25] A High-Resolution, Wave and Current Resource Assessment of Japan: The Web GIS Dataset. In *AWTEC 2016*. Asian Wave and Tidal Energy Conference (Singapore), **Oct 2016**.

[P.26] A Wave and Current Resource Assessment of Japan: Web GIS Dataset. In *Fall 2016 Meeting*. Oceanographic Society of Japan (Kagoshima, Japan), **Sep 2016**.

[P.27] A 20-Year High-Resolution Wave Resource Assessment of Japan. In *Spring 2016 Meeting*. Oceanographic Society of Japan (Tokyo, Japan), **Mar 2016**.

[P.28] A 20-Year High-Resolution Wave Resource Assessment of Japan with Wave-Current Interactions. In *TOS/ALSO/AGU 2016 Ocean Sciences Meeting*. American Geophysical Union (New Orleans, LA), **Feb 2016**.

[P.29] Progress on a 20-Year High-Resolution Wave Resource Assessment of Japan. In *14th Wave Workshop*. International Waves Workshop (Key West, FL), **Nov 2015**.

[P.30] Update on a 20-Year High-Resolution Wave Resource Assessment of Japan. In *Fall 2015 Meeting*. Oceanographic Society of Japan (Ehime, Japan), **Sep 2015**.

[P.31] The role of wave-current interactions in marine renewable energy near Japan. In *7th IWMO*. International Workshop on Modeling the Ocean (Canberra, Australia), **Jun 2015**.

[P.32] Progress on a 20-Year High-Resolution Wave Resource Assessment of Japan. In *Spring 2015 Meeting*. Oceanographic Society of Japan (Tokyo, Japan), **Mar 2015**.

[P.33] A Meshless Approach to Global Ocean Wave Modeling. In *TOS/ALSO/AGU 2014 Ocean Sciences Meeting*. American Geophysical Union (Honolulu, Hi), **Feb 2014**.

[P.34] A First Step Towards Modeling the Impact of the 2011 Tōhoku Earthquake and Tsunami on Internal Dynamics in Ōtsuchi Bay, Japan (poster). In *6th CJK IMBER Symposium*. Integrated Marine Biosphere Research (Tokyo, Japan), **Oct 2013**.

[P.35] A Meshless Approach to Ocean Wave Modeling. In *SIAM Conference on Mathematical and Computational Issues in the Geosciences*. Society for Industrial

and Applied Mathematics (Padova, Italy), **Jun 2013**.

[P.36] Waves and Langmuir Mixing in Climate Models. In *CESM Ocean Model Working Group Meeting*. National Center for Atmospheric Research (Boulder, CO), **Jan 2013**.

[P.37] An Unstructured Approach to Ocean Wave Modeling. In *Frontiers in Computational Physics: Modeling the Earth System*. Journal of Computational Physics (Boulder, CO), **Dec 2012**.

[P.38] An Unstructured Approach to Ocean Wave-Generation Modeling. In *IPAM Climate Modeling Reunion Conference*. Institute for Pure and Applied Mathematics, University of California Los Angeles (Lake Arrowhead, CA), **Dec 2012**.

[P.39] An Unstructured Approach to Surface Ocean Wave Modeling (poster). In *IUGG Conference on Mathematical Geophysics*. International Union of Geodesy and Geophysics (Edinburgh, Scotland), **Jun 2012**.

[P.40] Global Stokes Drift and Climate Wave Modeling. In *TOS/ALSO/AGU 2012 Ocean Sciences Meeting*. American Geophysical Union (Salt Lake City, UT), **Feb 2012**.

[P.41] Global Stokes Drift and Climate Wave Modeling. In *IPAM Climate Modeling Reunion Conference*. Institute for Pure and Applied Mathematics, University of California Los Angeles (Lake Arrowhead, CA), **Dec 2011**.

[P.42] Global Stokes Drift and Climate Wave Modeling (poster). In *12th Wave Workshop*. International Waves Workshop (Waikoloa, Hawaii), **Nov 2011**.

[P.43] Preliminary Linear Stability Analysis of Langmuir Circulation with Aligned and Misaligned Wind-Wave Components. In *IPAM Climate Modeling Culminating Workshop*. Institute for Pure and Applied Mathematics, University of California Los Angeles (Lake Arrowhead, CA), **Jun 2010**.

[P.44] Demonstrated Sensitivity to Langmuir Mixing in a Global Climate Model (CCSM). In *IPAM Long Program Seminar*. Institute for Pure and Applied Mathematics, University of California Los Angeles (Los Angeles, CA), **May 2010**.

[P.45] Demonstrated Sensitivity to Langmuir Mixing in a Global Climate Model (CCSM). In *AGU 2010 Ocean Sciences Meeting*. American Geophysical Union (Portland, OR), **Feb 2010**.

Department Presentations (Selected)

[P.46] Global Tropical Cyclone Track Detection and Analysis of the d4PDF Mega-ensemble Projection. In *Joint Meeting*. SI-CAT and Tougou-CD Programs, Ministry of Education, Culture, Sports, Science, and Technology (Kyoto, Japan), **Jan 2020**.

[P.47] The d4PDF Tropical Cyclone Track Dataset. In *Tougou-D Research Meeting*. Tougou Program, Ministry of Education, Culture, Sports, Science, and Technology (Kyoto, Japan), **Jul 2019**.

[P.48] Global Track Analysis of d4PDF Tropical Cyclones. In *DPRI Annual Meeting*. DPRI, Kyoto University (Kyoto, Japan), **Feb 2019**.

[P.49] A High-Resolution Future Wave Climate Projection for the Northwestern Atlantic. In *Joint Meeting*. SI-CAT and Tougou-CD Programs, Ministry of Education, Culture, Sports, Science, and Technology (Tokyo, Japan), **Jan 2019**.

[P.50] Projected Changes in Ocean Wave Climate. In *Session 7: Climate*. Kyoto University-Universität Hamburg Symposium, Kyoto University (Kyoto, Japan), **Oct 2018**.

[P.51] A High-Resolution Wave Climate Projection for the Coastal Northwestern Atlantic. In *DPRI Annual Meeting*. DPRI, Kyoto University (Kyoto, Japan), **Feb 2018**.

[P.52] A numerical perspective on wave modeling. In *OTPE Seminar*. Department of Ocean Technology, Policy, and Environment, The University of Tokyo (Kashiwa, Japan), **Jul 2017**.

[P.53] Arctic wave field reanalysis and observation. In *ArCS 2nd Plenary Meeting*. Arctic Challenge for Sustainability, Ministry of Education, Culture, Sports, Science and Technology (Kanagawa, Japan) **Mar 2017**.

[P.54] An Overview of Wave Modeling for Japan and the Arctic. In *ArCS Kickoff Meeting*. Arctic Challenge for Sustainability, Ministry of Education, Culture, Sports, Science and Technology (Kanagawa, Japan) **Apr 2016**.

[P.55] Impacts of wave spreading and multidirectional waves on estimating Stokes drift. In *Joint Wave Seminar*. JAMSTEC and The University of Tokyo (Tokyo, Japan), **Nov 2015**.

[P.56] Updated status of the NEDO Wave Resource Assessment. In *NEDO Joint Meeting*. New Energy and Industrial Technology Development Organization (Tokyo, Japan) **Jul 2015**.

[P.57] Current status of the NEDO Wave Resource Assessment. In *NEDO Meeting*. New Energy and Industrial Technology Development Organization (Tokyo, Japan) **Feb 2015**.

[P.58] Development of a Three-Dimensional SUNTANS Model of Ōtsuchi Bay, Japan. In *SUNTANS Symposium*. Department of Ocean Sciences, Tokyo University of Marine Science and Technology (Tokyo, Japan), **Feb 2014**.

[P.59] An Unstructured Approach to Surface Ocean Wave Modeling (poster). In *CIRES' 45th Anniversary Celebration*. Cooperative Institute for Research in the Environmental Sciences, University of Colorado Boulder (Boulder, CO), **Sep 2012**.

[P.60] Global Stokes Drift and Climate Wave Modeling (poster). In *CIRES Science Rendezvous*. Cooperative Institute for Research in the Environmental Sciences, University of Colorado Boulder (Boulder, CO), **Apr 2012**.

[P.61] Global Stokes Drift and Climate Wave Modeling. In *CIRES Graduate Student Seminar Series*. Cooperative Institute for Research in the Environmental Sciences, University of Colorado Boulder (Boulder, CO), **Feb 2012**.

[P.62] Global Stokes Drift and Climate Wave Modeling. In *Dynamical Systems Seminar*. Department of Applied Mathematics, University of Colorado Boulder (Boulder, CO), **Dec 2011**.

[P.63] Impacts of Wind-Wave Interaction on Climate. In *SIAM Graduate Student Chapter*. Department of Applied Mathematics, University of Colorado Boulder (Boulder, CO), **Apr 2011**.

Datasets, Software, and Toolboxes

Online Interactive Dataset: Led development of "Web GIS Dataset: A High-Resolution, Wave and Current Resource Assessment of Japan," **Oct 2016**. Maintained by The University of Tokyo. `http://www.todaiww3.k.u-tokyo.ac.jp/nedo_p/en/`.

Stokes Drift MATLAB Toolbox: Complete set of Stokes drift functions for calculating depth-dependent and depth-integrated approximations, **Dec 2014**. `http://www.mathworks.com/matlabcentral/fileexchange/48678-stokes-drift-for-directional-random-seas`.

Service Experience

Review Editor: Editorial board member of Coastal and Offshore Engineering, Frontiers in Built Environment, **Jan 2021–Present**.

Conference Session Moderator: Wave Modeling, virtual International Conference on Coastal Engineering (vICCE), **6 Oct 2020**.

Website Administrator: Coordinated Ocean Wave Climate Project, **Nov 2017–Present**. https://cowclip.org/.

Seminar Coordinator: Long Program, IPAM (Los Angeles, CA), **Mar–May 2010**. *Organized weekly seminars for visiting scholars.*

Referee Work

Grants: National Science Foundation Grant. **Journal:** Coastal Engineering Journal; Geoscientific Model Development; Geophysical Research Letters; Journal of Advances in Modeling Earth Systems; Journal of Climate; Journal of Geophysical Research: Oceans; Journal of Marine Science and Technology; Journal of Physical Oceanography; Journal of Waterway, Port, Coastal, and Ocean Engineering; Ocean Modelling; Physics of Fluids; Proceedings of the Royal Society A. **Proceedings:** Asian Wave and Tidal Energy Conference (2016).

Additional Education:

Summer School Mathematical Sciences Research Institute (MSRI; Berkeley, CA), **Jul 2008**. *Supported attendee in the graduate and postdoc workshop, "MSRI Climate Change Summer School,"* https://www.msri.org/summer_schools/453.

Teaching Experience

Teaching Assistant: National Center for Atmospheric Research (NCAR), Institute for Mathematics Applied to Geosciences (IMAGe; Boulder, CO), **Jul 2010**. *Designed graduate lab content for the "NCAR Summer Graduate School on Mathematics of Climate Change,"* https://www.image.ucar.edu/Workshops/TOY2010/focus03/.

Instructor: Department of Applied Mathematics, University of Colorado Boulder. Calculus II Workgroup (**Fall 2008**).

Teaching Assistant: Department of Applied Mathematics, University of Colorado Boulder. Calculus II (**Spring 2013, Summer 2008, Fall 2008**), Differential Equations (**Spring 2008**), Calculus III (**Fall 2007**).

Instructor: Department of Mathematics, University of New Hampshire. Calculus II (**Summer 2007**), online course in Pre-Calculus (**Summer 2006**), Pre-Calculus (**Spring 2006**).

Teaching Assistant: Department of Mathematics, University of New Hampshire. Calculus II (**Spring 2007**), Calculus I (**Fall 2006**), Finite Mathematics (**Fall 2005**).

Professional Associations

Society for Industrial and Applied Mathematics (**2007–2017, 2019–2021**); American Geophysical Union (**2010–2016, 2018–2021**); Oceanographic Society of Japan (**2015–2016**); Japan Society for Industrial and Applied Mathematics (**2016–2017**).

Languages

English, Japanese (JLPT N3 level certification), C, FORTRAN, HTML, Julia, LaTeX, Mathematica, MATLAB, Python, UNIX.