Tian-Jian Hsu (Tom), Ph.D.
Donald C. Phillips Professor
Civil, Construction, and Environmental Engineering
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EDUCATION

Ph.D. Civil & Environmental Engineering, Cornell University, Ithaca, NY, USA. August 2002.
Dissertation: A two-phase approach for sediment Transport.
Advisor: Dr. Philip L.-F. Liu, James T. Jenkins.

M.S. Civil & Environmental Engineering, Cornell University, Ithaca, NY, USA. May 1999.
Thesis: A Numerical Study of Wave-Structure Interaction Using Reynolds Averaged Navier-Stokes Equation with a k-ε Turbulence Model.
Advisor: Dr. Philip L.-F. Liu

B.S. Naval Architecture & Ocean Engineering, National Taiwan University, Taipei, Taiwan. May 1994.

EXPERIENCE

Donald C. Phillips Professor, Civil, Construction, and Environmental Engineering, University of Delaware. *September 2024 – present.*
Director, Center for Applied Coastal Research, *July 2020 – present.*
Affiliated faculty, Data Science Institute, University of Delaware. *May 2024 – present.*
Affiliated faculty, Delaware Environmental Institute*, University of Delaware, September 2022 – present.*
Professor, Civil and Environmental Engineering, University of Delaware. *September 2017 – August 2024.*
Adjunct Scientist, Applied Ocean Physics and Engineering, Woods Hole Oceanographic Institution. *May 2006 – June 2018.*
Associate Professor, Civil and Environmental Engineering, University of Delaware. *September 2010 – August 2017.*
Assistant Professor, Civil and Environmental Engineering, University of Delaware. *September 2008 – August 2010.*
Assistant Professor, Civil and Coastal Engineering, University of Florida. *January 2006 – August 2008.*
Assistant Scientist (tenure-accruing), Applied Ocean Physics and Engineering, Woods Hole Oceanographic Institution. *August 2004 – December 2005.*
Postdoctoral Scholar, Applied Ocean Physics and Engineering, Woods Hole Oceanographic Institution. *September 2003 – August 2004.*
Postdoctoral Fellow, Civil and Environmental Engineering, University of Delaware, *September 2002 – August 2003.*

RESEARCH INTERESTS

Sediment transport; Coastal engineering; Environmental fluid mechanics; Machine learning applications to multi-scale modeling

HONORS AND AWARDS

- Donald C. Phillips Professor of Civil, Construction, and Environmental Engineering – University Named professorship in recognition of excellence and achievements in scholarship, teaching and service; received in 2024.
- 2024 College of Engineering Faculty Award for Excellence in Research and Entrepreneurship, University of Delaware.
- Hans Albert Einstein Award (ASCE) 2021.
- Outstanding paper of Journal of Waterway, Port, Coastal and Ocean Engineering in 2014.
- National Science Foundation Faculty Early Career Development (CAREER) Award, 2007.
- Coastal Ocean Postdoctoral Scholarship, Woods Hole Oceanographic Institution, 2003.
- DeFrees Fellowship, Cornell University, 2000 – 2002.

PROFESSIONAL MEMBERSHIP

- American Geophysical Union
- American Society of Civil Engineers
- International Association of Hydraulic Research
- American Physical Society

PROFESSIONAL SERVICE

- Guest Editor, Special Issue on Swash-Zone Processes, Coastal Engineering, November 2024 –present
- Organizing Committee and Member of Scientific Committee for the 5th Symposium on Two-phase Modeling for Sediment Dynamics in Geophysical Flows (THESIS 2025), Santa Barbara, CA, USA (October 13-15, 2025). November 2024 – present.
- Member of Leadership Team of NSF supported 5-year project "Democratizing Access to Research Software Engineering (DARSE)", University of Delaware, August 2024 – present.
- Member of Internal Advisory Board, Delaware Environmental Institute (DENIN), September 2023 – present.
- Chair of organizing committee, DARWIN Computing Symposium 2024.
- Mentor of Mentoring Institute for Sediment Transport Researchers (MIST), 2023.
- Member of organizing committee, The Middle Atlantic Bight Physical Oceanography and Meteorology (MABPOM) Meeting, October 13~14, 2022, Newark, DE, USA.
- Chair of organizing committee, Delaware Coastal Flooding Workshop, Newark, DE, USA. May 24, 2022.
- Guest Editor, Special Issue on Two-phase modeling for sediment dynamics, European Journal of Mechanics - B/Fluid, 2020.
- Associate Editor, Journal of Geophysical Research-Ocean, January 2011 – July 2019.

- Chair of the Organizing Committee and Member of Scientific Committee for the 4th Symposium on Two-phase Modeling for Sediment Dynamics in Geophysical Flows (THESIS 2019) took place on Sept 17~19, 2019 in Newark, Delaware, USA.
- Elected as Member of the Executive Committee, Community Surface Dynamics Modeling System (CSDMS) and Chair of the Cyberinformatics & Numerics Working Group, September 2015 – June 2019.
- Scientific Committee member, 8th Symposium of Environmental Hydraulics (ISEH 2018), Notre Dame, IN, USA, June 4~7, 2018. Also, serve as convener to organize the Mini-symposium on Sediment Transport and Coastal Processes.
- Local Organizing Committee member of the 36th International Conference on Coastal Engineering (ICCE 2018), Baltimore, MD, USA, July 30~ Aug 3, 2018.
- Convener for the 2017 AGU Fall Meeting Session: EP028: Modeling earth surface processes using computational fluid dynamics across scales, New Orleans, LA, USA. December 11~15, 2017.
- National Science Foundation (NSF) proposal review panel: May 2009, November 2010, January 2012, March 2013, December 2015.
- Scientific Committee member (founding member), Symposium on Two-phase Modelling for Sediment Dynamics in Geophysical Flows, IAHR-AIRH, 2011, 2013, 2016.
- Convener for the 2016 AGU Fall Meeting Session EP028: Moving down the chain — studying earth surface processes using computational fluid dynamics approaches across scales, San Francisco, CA, USA. December 12~16, 2016.
- Convener: 2016 Ocean Science Meeting Session in "Physical and Biogeochemical Processes at the Sediment-Water Interface in Estuaries, Coastal Oceans, and Shelf Seas", New Orleans, MS, USA. Feb 21-26, 2016.
- Convener: 2012 Ocean Science Meeting Session in "Biogeochemical and Sedimentological factors that influence physical, geotechnical and mechanical properties of cohesive sediments in riverine and littoral zones", Salt Lake City, Utah, USA. Feb 20-24, 2012.
- Scientific Committee member, International Conference on Multiphase flow 2010 (ICMF-2010), May 30 – June 4, 2010, Tampa, FL.
- Convener for 2010 Ocean Science Meeting Special Session on Advances in Coupled Models of Coastal Sedimentary Dynamics and Morphology. Feb 22-26, Portland, Oregon, USA.
- Scientific committee member, International Symposium on Sediment Transport and Sedimentation on Asian Continental Margins. March 23-29, 2009, National Sun Yat-sen University, Kaohsiung, Taiwan.
- Organizing committee member, International Workshop on Sediment Transport in Taiwanese Rivers-Coastal Seas and Other Coastal Systems, Nov 3-5, 2008. National Central University, Jungli, Taiwan.
- Convener: 2006 AGU Fall Meeting Special Session on New Algorithms and Models for Fluvial and Coastal Sediment Transport and Surface Dynamics, San Francisco, December, 2006.
- Convener for the Nearshore Processes session in 2006 Ocean Science Meeting, American Geophysical Union, Honolulu, Hawaii, February, 2006
- Proposal reviewer for National Science Foundation; DoD/SERDP; US Army Corps of Engineers, Delaware, Louisiana, Puerto Rico Sea Grant; U.S. Geological Survey (NIWR);

American Society for Engineering Education; University of Wisconsin Water Resource Institute; Chilean National Research Council; Netherlands Organization for Scientific Research; Research Council of Norway; Agence Nationale La Recherche (France), Government of Greece. KU Leuven (Belgium). Kuwait University Research Section (Kuwait).

DEPARTMENT AND UNIVERSITY SERVICE

- Chair, Promotion and Tenure Committee, Civil and Environmental Engineering, University of Delaware, Sept 2022 – present.
- Director, Center for Applied Coastal Research, University of Delaware, July 2020–present.
- Mentor, University of Delaware, NSF CAREER Academy. January 2024 – present.
- University of Delaware Faculty Senate Student and Faculty Honors Committee member, Sept 2021 – present.
- University of Delaware Faculty Senate International Studies Committee member, Sept 2022 – present.
- Member of the College of Engineering Dean Search Committee, November 2023 – May 2024.
- Chair Designate, Promotion and Tenure Committee, Civil and Environmental Engineering, University of Delaware, June 2022 – August 2022.
- University of Delaware Faculty Senate COCAN Committee, Sep 2021 – August 2022.
- Chair of Faculty Mentoring Committee, Civil and Environmental Engineering, University of Delaware, Sep 2020 – August 2022.
- Geotech/Coastal faculty Search Committee, January 2022 – September 2022.
- Civil and Environmental Engineering Graduate Education Committee, University of Delaware, Sep 2008 – Aug 2020.
- College CT Promotion Guidelines Committee, Fall 2019 – Spring 2021.
- Ad Hoc committee on Department Graduate Student Funding Policy committee. Fall 2019.
- Civil and Environmental Engineering Department Chair Search Committee, June 2019 – December 2019.
- College of Engineering Tenure and Promotion Committee, University of Delaware, Sep 2017 – 2019.
- Faculty Senate, September 2012 – 2016.
- Environmental Engineering Search Committee, Fall 2015 – Spring 2016.
- College eCalc Committee, September 2011 – 2014.
- College Election's Committee, September 2010 – 2014.
- Geotechnical Engineering Faculty Search Committee, Fall 2012 – Spring 2013.
- College Graduate Tuition Policy Committee, May – June 2011.
- Civil and Coastal Engineering Faculty Workload Committee, University of Florida, 2006 – 2007.

PUBLICATIONS

(*: Hsu's graduate student; &: Hsu's postdoc or research associate)

Chapters in Books

1. Busch, H., Metelkin, A., Zhao, K., Penaloza-Giraldo*, J. A., Meiburg, E., Hsu, T.-J., Vowinckel, B., (2025) Analysis of simulation data for cohesive sediment flocculation using a population balance model, in *Particulate Gravity Currents* monograph, Wiley, in press.
2. Manning A. J., Ye, L., Hsu, T.-J., Holyoke, J., Penaloza-Giraldo*, J. A. (2022) Oil-mineral flocculation and settling dynamics, in "River Deltas Research" edited by Andrew J. Manning, IntechOpen, London UK. DOI: 10.5772/intechopen.103805
3. Vowinckel, B., Zhao, K., Ye, L., Manning, A. J., Hsu, T.-J., Meiburg, E., Bai, B. (2022) Physics of cohesive sediment flocculation and transport: State-of-the-art experimental and numerical techniques, in "Sediment Transport" edited by Andrew J. Manning. IntechOpen, London, UK. DOI: 10.5772/intechopen.104094
4. Hsu, T.-J., (2016) Sediment Resuspension, in "*Encyclopedia of Estuaries"*, Editor: M. Kennish, in *Encyclopedia of Earth Sciences Series*, Springer Netherlands.
5. Hetland, R. D., and Hsu, T.-J. (2013) Freshwater and sediment dispersal of large river plumes, in "*Biogeochemical Dynamics at Major River-Coastal Interfaces: Linkages with Global Climate Change*", Editors: Thomas S. Bianchi, Mead A. Allison, and W.-J. Cai, Cambridge University Press.
6. Hsu T.-J., and Yu*, X., (2009) Sand transport under nearshore wave and current and its implication to sandbar migration, *Nonlinear Wave Dynamics, Selected paper of the symposium hold in honor of Philip L.-F. Liu's 60th birthday, Editor: Patrick Lynett*, World Scientific, 247-266.

Journal Articles

(H-index 40, i10-index 95 according to Google Scholar)

1. Mathieu&, A., Kim, Y, Hsu, T.-J., Bonamy, C., Chauchat, J. (2025) sedInterFoam 1.0: a three-phase numerical model for sediment transport applications with free surfaces, Geoscientific Model Development, Geoscientific Model Development, 18, 1561-1573.
2. Huang, Z. C., Hsu, T.-J., Ly, T. N., (2025) Field evidence of flocculated sediments on a coastal algal reef, Communications Earth & Environments, 6(1), 8. https://doi.org/10.1038/s43247-024-01957-9
3. Zhang*, J., Tsai, B., Rafati, Y., Hsu, T.-J., Puleo, J. (2025) Cross-shore hydrodynamics and morphodynamics modeling of an erosive event in the inner surf zone, Coastal Engineering, 196, 104662.
4. Penaloza-Giraldo*, J., Yue, L., Hsu, T.-J., Vowinckel, B., Manning, A., Meiburg, E, (2025) A Modeling framework for flocculated cohesive sediment transport in the current bottom boundary layer, Advances in Water Resource, 195, 104857.
5. Hubler, J., Mayer, T., Stark, N., Hummel, E., Zhang*, J., & Hsu, T.-J. (2025) Measurement of Changes in Beach Sand Soil Stiffness due to Fluctuating Tides, J. Waterway, Port, Coastal, Ocean Eng., 2025, 151(1): 04024022.

6. Tsai*, B., Hsu, T.-J., Lee, S.-B., Pontiki, M., Puleo, J. A., & Wengrove, M. E. (2024). Large eddy simulation of cross-shore hydrodynamics under random waves in the inner surf and swash zones. Journal of Geophysical Research: Oceans, 129, e2024JC021194.
7. Sogut, D. V., Sogut, E., Farhadzadeh, A., Hsu, T.-J. (2024) Non-equilibrium scour evolution around an emerged structure exposed to a transient wave, J. Mar. Sci. Eng., 12(6), 946.
8. Shi, F., Simpson, A., Hsu, T.-J. (2024) Modeling lobe-and-cleft instabilities on a river plume, J. Geophys. Res.: Oceans, 129(5), e2023JC020485.
9. Montella, E. P., Bonamy, C., Chauchat, J., Hsu, T.-J. (2024). Implementing moving object capability in a two-phase Eulerian model for sediment transport applications. OpenFOAM® Journal, 4, 79–104. https://doi.org/10.51560/ofj.v4.119
10. Salimi-Tarazouj*, A., Hsu, T.-J., Traykovski, P., Chauchat, J. (2024) Investigating wave shape effects on sediment transport over migrating ripples using an eulerian two-phase model, Coastal Engineering, 189, 104470.
11. Zhang,* J., Rafati*, Y., Hsu, T.-J., Calantoni, J., & Romaniello, S. (2024). Wave-driven vertical sorting of density-varying particles. Journal of Geophysical Research: Earth Surface, 129, e2023JF007320.
12. Montella, E. P., Chauchat, J., Bonamy, C., Weij D., Keetels, G. H., Hsu, T.-J. (2023) Numerical investigation of mode failure in submerged granular columns, *Flow*, 3, E28, doi:10.1017/flo.2023.23
13. Pontiki M., Puleo J. A., Bond H., Wengrove M., Feagin R. A., Hsu T.-J., Huff T. (2023) Geomorphic response of a coastal berm to storm surge and the importance of sheet flow dynamics, Journal of Geophysical Research: Earth Surface, 128(10), doi:10.1029/2022JF006948
14. Zhao K., Vowinckel B., Hsu T.-J., Köllner, T., Bai B., Meiburg E. (2023) Cohesive sediment: intermediate shear produces maximum aggregate size, J. Fluid Mech., 965, A5, doi:10.1017/jfm.2023.380
15. Ye&, L., Penaloza-Giraldo*, J. A., Manning, A. J., Holyoke, J., Hsu, T.-J. (2023) Biophysical flocculation reduces variability of cohesive sediment settling velocity, Communications Earth & Environment, 4(1), 138. https://doi.org/10.1038/s43247-023-00801-w
16. Penaloza-Giraldo*, J. A., Hsu, T.-J., Manning A. J., Ye&, L., Vowinckel, B., Meiburg, E. (2023) On the importance of temporal floc size statistics and yield strength for population balance equation flocculation model, Water Research, 233, 119780. doi:10.1016/j.watres.2023.119780
17. Yue*, L., Hsu, T.-J., Horner-Devine, A. R. (2023) Selection of vortex ripple dimensions in sinusoidal oscillatory flows. Part 1. Ripple dimensions and fluid kinematics, J. Fluid Mechanics, 960, A40. https://doi.org/10.1017/jfm.2023.232
18. Rafati*, Y., T.-J Hsu, J. Calantoni, and J.A. Puleo. (2022) Entrainment and transport of well-sorted and mixed sediment under wave motion, Journal of Geophysical Research – Oceans, 127, 8. https://doi.org/10.1029/2022JC018686

19. Krahl, E., Vowinckel, B., Ye&, L., Hsu, T.-J., Manning, A. J. (2022) Impact of the salt concentration and biophysical cohesion on the settling behavior of bentonites, Front. Earth Sci., 10:886006. https://doi.org/10.3389/feart.2022.886006
20. Mathieu&, A., Cheng, Z., Chauchat, J., Bonamy C., Hsu, T.-J. (2022). Numerical investigation of unsteady effects in oscillatory sheet flows, J. Fluid Mech., 943, A7. doi:10.1017/jfm.2022.405
21. Simpson, A. J., Shi, F., Jurisa, J. T., Honegger, D. A., Hsu, T.-J., & Haller, M. C. (2022). Observations and modeling of a buoyant plume exiting into a tidal cross-flow and exhibiting along-front instabilities. Journal of Geophysical Research: Oceans, 127, e2021JC017799.
22. Hsu, T.-J. (2022). Causality between fluid motions and bathymetric features, Journal of Fluid Mechanics, 936, F1, doi:10.1017/jfm.2022.29.
23. Sogut, E., T.-J. Hsu, Farhadzadeh, A. (2022) Experimental and numerical investigations of solitary wave-induced non-equilibrium scour around structure of square cross-section on sandy berm, Coastal Eng., 173, 104091. Doi:10.1016/j.coastaleng.2022.104091
24. Chauchat, J., Hurther, D., Revil-Baudard, T., Cheng, Z., Hsu, T.-J. (2022) Controversial turbulent Schmidt number value in particle-laden boundary layer flows, Phys. Rev. Fluid, 7, 014307.
25. Tsai*, B., Mathieu, A., Montella, E. P., Hsu, T.-J., Chauchat, J. (2022) An Eulerian two-phase flow model investigation on scour onset and backfill of a 2D pipeline, European J. of Mech. B/Fluids, 91, 10-26.
26. Innocenti, R. A., Feagin. R., Charbonneau, B. R., Figlus, J., Lomonaco, P., Wengrove, W., Puleo, J., Huff, T. P., Rafati*, R., Hsu, T.-J., Moragues, M. V., Tsai*, B., Boutton, T., Pontiki, M., Smith, J., (2021) The effects of plant structure and flow properties on the physical response of coastal dune plants to wind and wave run-up, Estuarine, Coastal and Shelf Science, 261, 107556.
27. Montella, E. P., Chauchat, J., Chareyre, B., Bonamy, C., Hsu, T.-J. (2021) A two-fluid model for immersed granular avalanches with dilatancy effects, J. Fluid Mech., 925, A13.
28. Sherwood C. R., van Dongeren A., Doyle, J., Hegermiller, C. A., Hsu, T.-J., Kalra, T. S., Olabarrieta, M., Penko, A. M., Rafati*, Y., Roelvink, D., van der Lugt, M., Veeramony, J., Warner, J. C. (2022) Modeling morphodynamics of coastal response to extreme events – What shape are we in?, Annual review of Marine Science, Vol. 14. https://doi.org/10.1146/annurev-marine-032221-090215
29. Salimi-Tarazouj*, A., Hsu, T.-J., Traykovski, P., & Chauchat, J. (2021). Eulerian two-phase model reveals the importance of wave period in ripple evolution and equilibrium geometry. Journal of Geophysical Research: Earth Surface, 126, e2021JF006132.
30. Kim*, Y., Kalligeris, N., Hsu, T.-J., Lynett, P. J., (2021) Large eddy simulation study of a wave-induced shallow-water monopolar vortex, Ocean Modelling, 162, 101796.

31. Mathieu, A., Chauchat, J., Bonamy, C., Balarac, G., Hsu, T.-J. (2021) A finite-size correction model for two-fluid Large-Eddy Simulation of particle-laden boundary layer flow, Journal of Fluid Mechanics, 913, A26. DOI: https://doi.org/10.1017/jfm.2021.4

32. Dukhovskoy, D. S., Morey, S. L., Chassignet, E. P., Chen, X., Coles, V. J., Cui, L., Harris, C. K., Hetland, R., Hsu, T.-J., Manning, A. J, Stukel, M., Thyng, K. and Wang, J. (2021) Development of the CSOMIO coupled ocean-oil-sediment- biology model. Front. Mar. Sci. 8:629299. doi: 10.3389/fmars.2021.629299

33. Ye&, L., Manning A. J., Holyoke*, J., Penaloza-Giraldo*, J. A. and Hsu, T.-J. (2021) The role of biophysical stickiness on oil-mineral flocculation and settling in seawater. Front. Mar. Sci., 8:628827. doi: 10.3389/fmars.2021.628827

34. Han, Z., Horner-Devine, A. R., Ogston, A., Hsu, T.-J. (2021) The role of sand in wave boundary layers over primarily muddy seabeds, implications for wave-supported gravity flows, J. Geophys. Res., 126(5), e2020JC016621.

35. Rafati*, Y., Hsu, T.-J., Elgar, S., Raubenheimer, R., Quataert, E., van Dongeren, A., (2021) Modeling the hydrodynamics and morphodynamics of sandbar migration events, Coastal Engineering, 166, 103885.

36. Zhao, K., Pomes, F., Vowinckel, B., Hsu, T.-J., Bai, B., Meiburg, E. (2021) Flocculation of suspended cohesive particles in homogeneous isotropic turbulence, J. Fluid Mech., 921, A17.

37. Salimi-Tarazouj*, A., Hsu, T.-J., Traykovski, P., Cheng, Z., Chauchat, J. (2021) A numerical study of onshore ripple migration using a Eulerian two-phase model, J. Geophys. Res. Oceans, 126(2), e2020JC016773. doi: 10.1029/2020JC016773

38. Rafati*, Y., Hsu, T.-J., Cheng, Z., Yu, X., Calantoni, J., (2020) Armoring and exposure effects on the wave-driven sediment transport, Continental Shelf Research, 211, 104291.

39. Nagel, T., Chauchat, J., Bonamy, C., Liu, X., Cheng* Z., Hsu T.-J. (2020) Three-dimensional scour simulations with a two-phase flow model, Advances in Water Resources, 138, 103544.

40. Zhao K., Vowinckel B., Hsu T.-J., Köllner, T., Bai B., Meiburg E. (2020) An efficient cellular flow model for cohesive particle flocculation in turbulence, J. Fluid Mech., 889. 10.1017/jfm.2020.79.

41. Yue* L., Cheng& Z., Hsu T.-J., (2020) A turbulence-resolving numerical investigation of wave-supported gravity flows, J. Geophys. Res. Oceans, 125 (2). 10.1029/2019JC015220

42. Ye& L., Manning A. J., Hsu, T.-J. (2020) Oil-Mineral Flocculation and Settling Velocity in Saline Water, Water Research, 173(15). 10.1016/j.watres.2020.115569

43. Kim*, Y., Mieras, R. S., Cheng, Z., Anderson, D., Hsu, T.-J., Puleo, J. A., Cox, D. (2019) A numerical study of sheet flow driven by velocity and acceleration skewed near-breaking waves on a sandbar using SedWaveFoam, Coastal Engineering, 152, 103526.

44. Mieras, R. S., J. A. Puleo, D. Anderson, Hsu, T.-J., D. T. Cox, J. Calantoni (2019), Relative contributions of bed load and suspended load to sediment transport under skewed-

asymmetric waves on a sandbar crest, J. Geophys. Res. Oceans, doi: 10.1029/2018JC014564

45. Kim*, Y., Cheng, Z., Hsu, T.-J., & Chauchat, J. (2018). A numerical study of sheet flow under monochromatic nonbreaking waves using a free surface resolving Eulerian two-phase flow model. Journal of Geophysical Research: Oceans, 123, 4693–4719.
46. Ye&, L., Manning, A. J., Hsu, T.-J., Morey, S., Chassignet, E., P., Ippolito, T. A. (2018) Novel Application of Laboratory Instrumentation Characterizes Mass Settling Dynamics of Oil-Mineral Aggregates (OMAs) and Oil-Mineral-Microbial Interactions, Marine Tech. Soc. J., 56(6), 1-4.
47. Cheng*, Z., Chauchat, J., Hsu, T.-J., Calantoni, J. (2018) Eddy interaction model for turbulent suspension in Reynolds-averaged Euler–Lagrange simulations of steady sheet flow, Advances in Water Resources, 111, 435-451, doi:10.1016/j.advwatres.2017.11.019.
48. Cheng*, Z., Hsu, T.-J., Chauchat, J. (2018) An Eulerian two-phase model for steady sheet flow using large-eddy simulation methodology, Advances in Water Resources, 111, 205-223, doi:10.1016/j.advwatres.2017.11.016.
49. Anderson, D., D. Cox, R. Mieras, J. A. Puleo, and T.-J. Hsu (2017), Observations of wave-induced pore pressure gradients and bed level response on a surf zone sandbar, J. Geophys. Res. Oceans, 122, 5169–5193, doi:10.1002/2016JC012557.
50. Mieras, R. S., J. A. Puleo, D. Anderson, D. T. Cox, and T.-J. Hsu (2017), Large-scale experimental observations of sheet flow on a sandbar under skewed-asymmetric waves, J. Geophys. Res. Oceans, 122, 5022–5045, doi:10.1002/2016JC012438.
51. Chauchat, J., Cheng*, Z., Nagel, T., Bonamy, C., Hsu, T.-J. (2017) SedFoam-2.0: a 3-D two-phase flow numerical model for sediment transport, Geoscientific Model Development, 10, 4367-4392, doi:10.5194/gmd-10-4367-2017.
52. Zhou*, Z., X. Yu&, T.-J. Hsu, F. Shi, W. R. Geyer, and J. T. Kirby (2017), On nonhydrostatic coastal model simulations of shear instabilities in a stratified shear flow at high Reynolds number, J. Geophys. Res. Oceans, 122, doi:10.1002/2016JC012334.
53. Kim*, Y., Zhou*, Z., Hsu, T.-J., Puleo, J. A., (2017) Large eddy simulation of dam-break driven swash on a rough-planar beach, *Journal of Geophysical Research: Ocean*, 122. doi: 10.1002/2016JC012366.
54. Zhou*, Z., Hsu, T.-J., Cox, D., Liu, X., (2017) Large–eddy simulation of wave-breaking induced turbulent coherent structures and suspended sediment transport on a barred beach, *Journal of Geophysical Research: Oceans*, 122, 207-235, doi: 10.1002/2016JC011884
55. Cheng*, Z., Hsu, T.-J., Calantoni, J. C., (2017) SedFoam: A multi-dimensional Eulerian two-phase model for sediment transport and its application to momentary bed failure, *Coastal Engineering*, 119, 32-50, doi:10.1016/j.coastaleng.2016.08.007

56. Shi, F., Chickadel, C., Hsu, T.-J., Kirby, J. T., Farquharson, G., Ma, G. (2017) High-Resolution Non-Hydrostatic Modeling of Frontal Features in the Mouth of the Columbia River, *Estuaries and Coasts*, 40(1), 296-309, doi:10.1007/s12237-016-0132-y.

57. Briganti, R., Torres-Freyermuth, A., Baldock, T. E., Brocchini, M., Dodd, N., Hsu, T.-J., Jiang, Z., Kim*, Y., Pintado-Patino, J. C., Postacchini, M., (2016) Advances in numerical modelling of swash zone dynamics, *Coastal Engineering,* 115, 26-41.

58. Ma, G., Kirby, J. T., Hsu, T.-J., Shi, F., (2015) A two-layer granular landslide model for tsunami wave generation: Theory and computation, *Ocean Modelling*, 93, 40-55, doi:10.1016/j.ocemod.2015.07.012.

59. Chen*, J.-L., Hsu, T.-J., Shi, F., Raubenheimer, B., Elgar, S. (2015) Hydrodynamic and sediment transport modeling of New River Inlet (NC) under the interaction of tides and waves, *J. Geophys. Res.,* 120(6), 4028-4047.

60. Cheng* Z., Yu&, X., Hsu, T.-J., Balachandar, S., (2015) A numerical investigation of fine sediment resuspension in the wave boundary layer - uncertainties in particle inertia and hindered settling, *Computers & Geosciences,* 83, 176-192, doi:10.1016/j.cageo.2015.07.009.

61. Cheng* Z., Yu&, X., Hsu, T.-J., Ozdemir, C. E., Balachandar, S., (2015) On the transport mode of fine sediment in the wave boundary layer due to resuspension/deposition – A turbulence-resolving numerical investigation, *J. Geophys., Res.*, 120, 1918–1936, doi:10.1002/2014JC010623.

62. Hsu, W.-Y., Yang, R.-Y., Hsu, T.-J., Torres-Freyermuth, A., Hwung, H.-H, (2014) Boundary layer structure under wave-mud interactions, *International Journal of Offshore and Polar Engineering,* 24(4), 247-252.

63. Yu&, X., Hsu, T.-J., Balachandar, S., (2014) Convective instability in sedimentation – 3D numerical study. *J. Geophys. Res.,* 119(11), 8141-8161, doi: 10.1002/2014JC010123.

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Refereed Conference Proceedings

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Research and Technical Reports

1. T.-J. Hsu, Zhang, J., Tsai, B., A. Chauchat, J., Montella, E. P., Bonamy, C. (2023) Enhancement and Validation of a Eulerian Two-phase Model for Munition Mobility and Burial Dynamics, Interim report, SERDP Project, MR-1478.
2. T.-J. Hsu, Tsai, B., Salimi-Tarazouj, A. Chauchat, J., Montella, E. P., Bonamy, C. (2020) Novel Eulerian two-phase simulations of burial dynamics of munition Phase I, final report, SERDP Project, MR20-1478.
3. Yue, L., Cheng, Z., and Hsu, T.-J. (2019). Turbid: A turbulence-resolving numerical model for simulating bottom boundary layer and fine sediment transport. Technical report CACR-19-02, Center for Applied Coastal Research, Department of Civil and Environmental535Engineering. University of Delaware, Newark, USA. Open source model available at https://github.com/yueliangyi/TURBID
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6. Yu*, X., T.-J. Hsu and S. Balachandar (2012) A hybrid spectral-compact scheme for turbulence resolving simulation of fine sediment transport in the bottom boundary layer, research report CACR-12-07, Center for Applied Coastal Research, University of Delaware, Newark, DE, USA.
7. C. E. Ozdemir*, Hsu, T.-J., (2009) CFD evaluation of extreme flow characteristics through SFWMD spillways. Water Resource Research Center Report WRRC:2006FL146B, University of Florida, Gainesville, FL, USA.
8. Hsu, T.-J., Newman, M. A., and C. E. Ozdemir*, (2006) Erosion at hydraulic structure – A literature survey, Water Resource Research Center Report WRRC:200FL145B.
9. Hsu, T.-J. (2002) "A two-phase approach for sediment Transport". PhD Thesis, Cornell University.
10. Hsu, T.-J. (1999) "A Numerical Study of Wave-Structure Interaction Using Reynolds Averaged Navier-Stokes Equation with a k-ε Turbulence Model", M.S. Thesis, Cornell University.

OTHER PRESENTATIONS AND INVITED LECTURES

1. "Understanding multi-scale, multi-physics Coastal Processes with high-performance computing", College of Engineering Inaugural Lecture Series, February 25, 2025. https://capture.udel.edu/media/2025+Named+Professor+Lecture+Tian+Jian+Hsu/1_65io1chi

2. “Large-eddy simulation of ripple evolution using a two-phase model and its preliminary application to benthic flux”, National Taiwan University, Graduate Institute of Applied Mechanics Seminar, January 21, 2025.
3. “Large-eddy simulation of ripple evolution using a two-phase model and its preliminary application to benthic flux”, National Central University, Graduate Institute of Hydrological and Oceanic Sciences Seminar, Taoyuan City, Taiwan, January 20, 2025.
4. “AI/ML enabled surrogate modeling to tackle multi-scale challenges due to climate change”, The 2nd AICoE Workshop, University of Delaware Newark, DE, USA. December 11, 2024.
5. “AI applications to multi-scale coastal processes”, invited talk presented at the Executive Session, Board on Coastal Engineering Research, Panel Session #2: Coastal sediment transport research needs and plans, March 20, 2024, Norfolk, VA, USA.
6. “Numerical modeling of nearshore sediment transport and beach profile evolution”, National Cheng-Kung University, Department of Hydraulic and Ocean Engineering, December 11, 2023, Kaohsiung, Taiwan.
7. “Numerical modeling of nearshore sediment transport and beach profile evolution”, National Sun Yat-Sen University, College of Marine Science, December 11, 2023, Kaohsiung, Taiwan.
8. “A Field Observation Framework for Coupling Soil Mechanics with Hydrodynamic-Morphodynamic Models of Surf Zone Beach Processes”, with Nina Stark et al., Field Research Facility, US Army Crop of Engineers, November 8, 2023 Duck, NC, USA.
9. “Numerical modeling of nearshore sediment transport and beach profile evolution”, Rutgers University, Civil and Environmental Engineering Seminar, October 26, 2023, Piscataway, NJ, USA.
10. “An Eulerian two-phase model for scour applications - SedFoam”, International Energy and Ocean Engineering Workshop, Oct 5~6, 2023, Keelung, Taiwan.
11. “Needs for AI in Coastal Engineering, Civil Infrastructures and Environments”, invited talk at the UD AI Symposium, Sept 25, 2023, Newark, Delaware, USA.
12. “Cohesive and non-cohesive sediment transport modeling”, invited lecture at the Gerhard-Jirka Summer School, September 1st, 2023, Dresden Germany.
13. “Numerical modeling of nearshore sediment transport and beach profile evolution”, invited talk at Gerhard-Jirka Summer School, August 30th, 2023, Dresden Germany.
14. “Computational fluid dynamics (CFD) application to coastal process”, ERDC-UD joint workshop, University of Delaware, May 10, 2023.
15. “Multi-scale numerical modeling of coastal storm and flooding impact to infrastructures and environments”, invited presentation at the College of Engineering Spring Faculty and Staff Meeting, University of Delaware, April 28, 2023.
16. “Modeling seabed response and burial dynamics in a two-phase model framework “, Munitions in the Underwater Environment Workshop – University of Delaware – April 11-13, 2023.

17. "The role of turbulent coherent structures on the evolving seabed", Distinguished Warren Seminar Series at the University of Minnesota, Feb 24, 2023.
18. "A New Research Tool for Predicting Mobility and Burial of Munitions using an Eulerian Two-Phase Methodology", invited talk in SERDP-ESTCP Symposium in the Munition Burial and Mobility Session, November 30, 2022,
19. "Coastal Engineering – From sand grins to coastal systems", Osher Institute of Lifelong Learning, Wilmington, Delaware. November 18, 2022.
20. "The role of turbulent coherent structures on the frontal features and evolving seabed", Atmospheres, Oceans, Earths – Unifying Perspectives on Geophysical and Environmental Multiphase Flows, Kavli Institute of Theoretical Physics, University of California Santa Barbara, November 2, 2022.
21. "A Novel Eulerian Two-phase Numerical Simulation Tool for Scour Burial of Munitions", SERDP/ESTCP 2002 MR Fall In Progress Review (Virtual), October 25, 2022.
22. "The application of large-eddy simulation to coastal processes", 2022 Korean Water Resources Association Annual Conference, invited virtual talk, May 17, 2022.
23. "Multi-scale numerical modeling of coastal storm and flooding impact to infrastructures and environments", Darwin Computing Symposium, March 24, 2022. University of Delaware, Newark, DE.
24. "A Novel Eulerian Two-phase Numerical Simulation Tool for Scour Burial of Munitions" Recent Developments in Burial and Mobility Modeling of Munitions in the Underwater Environment Side Meeting SERDP/ESTCP Symposium, Dec 2, 2021.
25. "On the instabilities at the buoyant plume front", 2021 ONR USRS annual project meeting, November 11, 2021.
26. "Novel Eulerian two-phase simulations for burial dynamics", 2020 SERDP and ESTCP Symposium. November 30, 2020.
27. "Novel Eulerian two-phase simulations for burial dynamics of munitions", 2020 MR Spring In Progress Review, SERDP/ESTCP. June 4, 2020.
28. "Oil-Mineral Flocculation and Settling Dynamics in Saline Water" in session: Cohesive Sediment Transport Processes I, 2020 Ocean Science Meeting, San Diego, California, USA. February 16 – 21, 2020.
29. "Cohesive sediment processes – flocculation, oil-mineral aggregates and mixed sediments", weekly seminar on December, 26, 2019 in the Department of Marine Environment and Engineering, National Sun Yet-sen University, Kaohsiung, Taiwan.
30. "Cohesive sediment processes – flocculation, oil-mineral aggregates and mixed sediments". Invited lecture (fifth of the five lectures) on November 29, 2019 to graduate students at the University of Science and Technology at Korean Institute of Ocean Science and Technology (KIOST), Busan, South Korea.
31. "Sediment source to sink – insights into wave-driven resuspension of fine sediments", Invited lecture (fourth of the five lectures) on November 28, 2019 to graduate students

at the University of Science and Technology at Korean Institute of Ocean Science and Technology (KIOST), Busan, South Korea.

32. "New challenges in two-phase modeling of coastal sediment transport", Invited lecture (third of the five lectures) on November 27, 2019 to graduate students at the University of Science and Technology at Korean Institute of Ocean Science and Technology (KIOST), Busan, South Korea.
33. "A Eulerian two-phase modeling framework to study wave-driven sediment transport and its application to event scale coastal processes", weekly seminar on November 26, 2019 to KIOST scientists/researchers in the Coastal Engineering Division, Korean Institute of Ocean Science and Technology, Busan, South Korea.
34. "SedWaveFoam – sheet flow driven by surface waves", Invited lecture (second of the five lectures) on November 26, 2019 to graduate students at the University of Science and Technology at Korean Institute of Ocean Science and Technology (KIOST), Busan, South Korea.
35. "SedFoam - An open-source two-phase numerical modeling framework for sediment transport applications", Invited lecture (first of the five lectures) on November 25, 2019 to graduate students at the University of Science and Technology at Korean Institute of Ocean Science and Technology (KIOST), Busan, South Korea.
36. "Wave-driven sediment transport and their applications to event-scale coastal processes". Invited Keynote Talk in 41st Ocean Engineering Conference of Taiwan, November 21-22, 2019. National Cheng-Kung University, Tainan, Taiwan.
37. "Nonhydrostatic modeling of Connecticut River plume – on the along-front instabilities", Office of Naval Research, USRS DRI meeting, Sept. 24~26, 2019, Arlington, VA.
38. "An open-source numerical modeling tool for wave-scale and turbulence/grain-scale coastal processes", in Session: Coastal Response to Extreme Events: Fidelity of Model Predictions of Surge, Inundation, and Morphodynamics, 2018 AGU Fall Meeting, Washington, D.C., December 10~14, 2018.
39. "On uncertainties in sediment transport process", in Office of Naval Research IFMSIP (Increasing the Fidelity of Morphological Storm Impact Predictions) Project Progress Meeting, October 9~11, University of Delaware, Newark, DE, USA.
40. "Insights into several issues in sediment dynamics investigated by turbulence-scale and wave-scale models", National Science Foundation Workshop on Coastal and Estuarine Modeling, June 19, 2018, North Carolina State University, Raleigh, NC, USA.
41. "Turbulence-resolving simulation of fine sediment transport in wave bottom boundary layer", 8th International Symposium on Environmental Hydraulics (ISEH 2018), June 5, 2018, Notre Dame, IN, USA.
42. "Modeling wave-driven sediment transport with heterogeneous sediment properties", Naval Postgraduate School, ONR Littoral Geosciences and Optics Program Review, May 15, 2018, Monterey, CA, USA.

43. "Frontal Structures and Surface Signatures in a River Plume – A non-hydrostatic eddy-resolving model study", Naval Postgraduate School, ONR Littoral Geosciences and Optics Program Review, May 14, 2018, Monterey, CA, USA.
44. "On wave-driven sediment transport: some insights revealed by a two-phase flow modeling approach", LEGI, Université Grenoble-Alpes, Grenoble, France, April 24, 2018.
45. "The physics of Oil-Mineral Aggregates (OMA) and Marine Oil Snow (MOS) and their parameterizations into regional scale modeling systems", Consortium for Simulation of Oil-Microbial Interaction in the Ocean, Center for Ocean-Atmospheric Prediction Studies, Florida State University, January 11, 2018.
46. "Understanding sediment transport using an Eulerian two-phase model with large-eddy simulation methodology" IUTAM/AMERIMECH SYMPOSIUM: Dynamics of Gravity Currents, Sept. 25~27, 2017, University of California – Santa Barbara.
47. "Frontal Structures and Surface Signatures in a River Plume – A non-hydrostatic eddy-resolving numerical simulation study", Office of Naval Research, USRS Project Meeting, Sept. 12, 2017, Arlington, VA.
48. "Numerical Modeling for Poly-dispersed Sediment Transport under Waves", Office of Naval Research IFMSIP (Increasing the Fidelity of Morphological Storm Impact Predictions) Project Progress Meeting, August 30, 2017.
49. "Studying various aspects of turbulent mixing and sediment transport processes in the aquatic environment through open-source numerical modeling/simulation", University of Delaware Water Workshop, Feb. 3rd, Newark, Delaware, USA..
50. "Wave-mud interaction – on fine sediment transport mode and its implication to wave attenuation", invited talk in the International Symposium on Nonlinear Wave Dynamics in Taiwan – Review and Outlook, Nov. 5th, 2016, Tainan, Taiwan.
51. "A multi-dimensional multiphase sediment transport modeling framework - an open-source community modeling effort", invited keynote in 3rd Symposium on Two-phase Modelling for Sediment Dynamics in Geophysical Flows, Sept. 13, 2016, Tokyo, Japan.
52. "Modeling Coastal Processes Using OpenFOAM", invited Clinic Session talk for Community Surface Dynamics and Systems (CSDMS) 2016 Annual Meeting, May 18, 2015. University of Colorado, Boulder, CO, USA.
53. "A multi-dimensional Eulerian two-phase model for coastal sediment transport applications", Department of Civil Engineering, Stony Brook University, May 2, 2016.
54. "A turbulence-resolving Eulerian two-phase model for coastal sediment transport applications", Max Planck Institute for the Physics of Complex Systems, Dresden, Germany, March 31, 2016.
55. "Fine-sediment transport and the depositional record in wave-supported mud flows", invited talk in session *Sources, Transport Processes, and Deposition/Storage of Fine-Grained and Cohesive Sediment: From Hillslopes to Oceans*, 2015 AGU Fall Meeting, December 15, 2015, San Francisco, CA, USA.

56. "On mechanisms driving large sediment transport under breaking waves in shallow water", Coastal/Oceanographic Engineering Seminar, December 1, 2015. University of Delaware.
57. "Sediment transport driven by wave-breaking-induced turbulent coherent structures – A numerical investigation", Fluid Dynamics Reviews Seminar Series, University of Maryland, October 30, 2015. College Park, MA, USA.
58. "Large-eddy simulation of wave-breaking induced turbulent coherent structures in the nearshore zone", invited talk at Harbor & Marine Technology Center of Taiwan, July 27, 2015. Taichung, Taiwan.
59. "Large-eddy simulation of wave-breaking induced turbulent coherent structures in the nearshore zone", invited talk at Tainan Hydraulic Laboratory, National Cheng-Kung University, July 24, 2015. Tainan, Taiwan.
60. "On Large-eddy simulation of river plumes and their surface signatures", a talk presented at International Conference on Model Integration across Desperate Scales in Complex Turbulent Flow Simulations (ICMIDS), June 16, 2015. Penn State University, State College, PA, USA.
61. "SedFOAM: Modeling Coastal Sediment Transport Using OpenFOAM", invited Clinic Session talk for Community Surface Dynamics and Systems (CSDMS) 2015 Annual Meeting, May 26, 2015. University of Colorado, Boulder, CO, USA.
62. "Understanding Coastal Sediment Transport Through Turbulence-Resolving Numerical Simulations", Levich Institute Spring 2015 Seminar Series, City University of New York, April 28, 2015.
63. "Unveiling coherent structures in river plumes through surface signatures – nonhydrostatic numerical simulations using NHWAVE", Littoral Geosciences and Optics Program Review, Office of Naval Research, Monterey, CA, April 21~23, 2015.
64. "Understanding critical fine sediment transport mechanisms in sediment source to sink – A turbulence-resolving numerical study", 2015 Spring Special Program in Applied Mathematics and Applied Mechanics, National Taiwan University, March 31st, 2015.
65. "Non-hydrostatic simulation of river plumes", COFDL seminar series, Applied Ocean Physics and Engineering, Woods Hole Oceanographic Institution, March 13, 2015.
66. "Using Computational fluid dynamic (CFD) to study coastal processes - Our HPC experience (MILLS)", HPC Symposium, University of Delaware, Feb 24, 2015.
67. "Understanding fine sediment transport through 3D turbulence resolving simulations", Environmental Fluid Mechanics Seminar, University of Washington, January 29, 2015.
68. "Understanding fine sediment transport through 3D turbulence resolving simulations – Implications to offshore delivery of fine sediment", COAS Seminar, Oregon State University, January 15, 2015.
69. "A multi-dimensional Eulerian two-phase model for sediment transport – plug flow and sediment burst events" 34th International Conference on Coastal Engineering, June 15~20, Seoul, Korea, 2014.

70. "Understanding wave-driven fine sediment transport through 3D turbulence resolving simulations – Implications to offshore delivery of fine sediment", invited as Keynote talk in the 2014 Community Surface Dynamics and Systems (CSDMS) annual meeting, Boulder, CO, May 22~24, 2014,
71. "A numerical investigation of wave-current interaction in New River Inlet using NearCoM-TVD – residual flow and sediment transport", ONR RIVET review, Arlington, VA. April 22~25, 2014.
72. "On the dynamics of plug flow and sediment bursts - A multi-dimensional Eulerian two-phase model investigation", 2014 Ocean Science Meeting, Nearshore Processes session. Honolulu, HI, Fabury22~24, 2014.
73. "Beach Erosion after Hurricane Sandy", Constable Elementary School, South Brunswick, NJ. November 15, 2013 (public outreach to elementary school students in Center NJ).
74. "Selected topics on fine (cohesive) sediment transport and sand (non-cohesive) transport in the coastal environment", Kavli Institute for Theoretical Physics, University of California, Santa Barbara, October 21, 2013.
75. "Wave-breaking-induced turbulent coherent structures and their interaction with the bed – A 3D numerical investigation", Johns Hopkins University, Center for Environmental and Applied Fluid Mechanics Seminar, October 4, 2013.
76. "Wave-breaking-induced turbulent coherent structures and their interaction with the bed – A 3D numerical investigation", Woods Hole Oceanographic Institution, COFDL seminar series, August 9, 2013.
77. "On turbulence modulation due to the presence of fine sediment in the bottom wave boundary layer – a numerical investigation" Invited talk in AGU Meeting of the Americas, Session on Progress in Turbidity Current Research, May 14, 2013, Cancun, Mexico.
78. "A numerical investigation on fine sediment transport in the oscillatory bottom boundary layer and its implication to muddy seabed states", invited talk in the spring departmental seminar series, Civil and Environmental Engineering, University of Texas at San Antonio, January 18, 2013.
79. "Understanding the state of the muddy seabed - a numerical study utilizing multiphase flow approach", invited talk in Session: Modeling developments for sediment transport and other multiphase flow, 2012 AGU Fall Meeting, San Francisco, CA, USA, December 3~7, 2012.
80. "Interactions of Waves, Tidal Currents and Riverine Outflow and their Effects on Sediment Transport" Office of Naval Research Littoral Geosciences and Optics RIVET II project meeting on the Mouth of Columbia River, Denver, CO, September 13-14, 2012.
81. "A 3D Numerical Investigation of Fine Sediment Transport in an Oscillatory Channel and its Field Implications" Office of Naval Research Littoral Geosciences and Optics Peer Review, Denver, CO, September 11-12, 2012.

82. "A 3D Numerical Investigation of Fine Sediment Transport in an Oscillatory Channel and its Field Implications", invited to weekly seminar of Institute of Oceanography, National Taiwan University, Taipei, Taiwan, August 24th, 2012.
83. "On the Formation of Hyperpycnal Flow from Riverine Outflow with Low Sediment Concentration", invited to weekly seminar of Tainan Hydraulic Laboratory, National Cheng-Kung University, Tainan, Taiwan, August 22nd, 2012.
84. "On the Formation of Hyperpycnal Flow from Riverine Outflow with Low Sediment Concentration", invited to COFDL seminar, Applied Ocean Physics and Engineering, Woods Hole Oceanographic Institution, August 10, 2012.
85. "A 3D investigation on fine sediment transport in an oscillatory channel", presented as 33rd International Conference on Coastal Engineering, Santander, Spain, July 1st~6th, 2012.
86. "Turbulence-resolved numerical investigation on fine sediment transport in wave bottom boundary layer - Physics of lutocline and laminarization" invited talk in Workshop on Environmental and Extreme Multiphase Flows (NSF-funded), University of Florida, Gainesville, FL, March 14~16, 2012.
87. "On the occurrence of low concentration hyperpycnal flow ", 2012 Ocean Science Meeting, Session: Sediment Transport and Deposition in Lakes, Estuaries, and Shallow Shelves, Feb. 21st, Salt Lake City, Utah, USA.
88. "Initial deposition and wave resuspension of fine sediment in the coastal environment – a numerical study". Invited to POSE seminar, College of Earth, Ocean and Environment, University of Delaware, Feb 10, 2012.
89. "On wave-driven fine sediment transport and its implication to fluid mud processes on the continental shelves", International Workshop on Coastal Observations and Sediment Transport in Coastal Zones, National Central University, Taiwan, June 27~28, 2011.
90. "Fine sediment transport driven by oscillatory channel flow", Taiwan Hydraulic Laboratory, National Cheng-Kung University, Taiwan, June 24, 2011.
91. "On wave-driven fluid mud and its applications", Coastal Engineering and Processes Laboratory (LIPC) of the Engineering Institute Campus Yucatán, National Autonomous University of Mexico, Merida, Mexico, June 8, 2011.
92. "A two-phase sheet flow model and its application to wave-induced sediment transport", Symposium on Two-phase Modelling for Sediment Dynamics in Geophysical Flows, Chatou, France, April 26-28, 2011.
93. "On wave-driven fluid mud and its applications", Coastal/Oceanographic Engineering Seminar, University of Delaware, March 1, 2011.
94. "Effects of wave-current interaction on vertical mixing and implication to sediment transport", ONR Inlet DRI Meeting, December 16, 2010. San Francisco, CA.
95. "The trapping and delivery of fine sediment in the coastal environment", Summer Seminar Series, Naval Research Laboratory, Stennis Space Center, MS, July 14, 2010.

96. “Enhanced settling in hypopycnal river plume” Western Pacific Geophysics Meeting, June 25, 2010, Taipei, Taiwan.

97. “Sediment trap – the role of buoyancy driven flow in trapping and delivering of fine sediment in the coastal environment”, Mini Source to Sink Workshop, National Taiwan University.

98. “High resolution numerical modeling of cohesive sediment transport in tide-dominated estuaries”, invited talk in special session on Tidal Flats: Hydrodynamics and Morphodynamics of Macrotidal Estuarine and Beach Environments, 2010 Ocean Science Meeting, Portland, Oregon, Feb 22-26, 2010.

99. “The trapping and delivery of fine sediment in coastal environment”, Environmental Engineering Seminar, Cornell University, Feb 4, 2010.

100. “The role of turbulence modulation in wave-induced fine sediment transport”, Coastal Ocean Fluid Dynamics Laboratory Seminar, Woods Hole Oceanographic Institution, Jan 15, 2010.

101. “Effects of Flocculation on modeling cohesive sediment transport”, ONR Tidal Flat Symposium, Boston, MA, Oct 28-30, 2009.

102. “The trapping and delivering of fine sediment in coastal environment”, Research Center of Ocean Environment and Technology, National Cheng-Kung University, Tainan, Taiwan, Aug 14th, 2009.

103. “Sediment trap - the role of buoyancy-driven flow in trapping and delivering sediment in the coastal environment”, invited lecture in Gordon Research Conference, Coastal Ocean Circulation, Colby-Sawyer College, New London, NH, June 7-12, 2009.

104. “Facts about Taiwan’s coastal ocean that you need to know”, Taiwan Study Association, Rutgers University, Piscataway, New Jersey, April 24, 2009. (invited presentation to general public).

105. “A numerical study on wave-mud interaction”, National Cheng-Kung University, Tainan Hydraulics Laboratory, Tainan, Taiwan, March 27th, 2009.

106. “Understanding sediment source to sink – on modeling several critical processes in the nearshore”, 2009 International Sediment Transport and Sedimentation Symposium, Kaohsiung, Taiwan, March 24, 2009.

107. “On several critical processes in understanding sediment source to sink”, National Central University, Jungli, Taiwan, March 20, 2009.

108. “Understanding the fate of river-borne sediment in the coastal ocean”, RISE Program Workshop, University of Delaware, Feb 21, 2009. (invited presentation to undergraduate students from underrepresented groups).

109. “Critical processes in understanding the fate of terrestrial sediment in the coastal ocean”, Johns Hopkins University, Environmental Fluid Mechanics Seminar, Feb 20, 2009.

110. “High resolution numerical modeling of cohesive sediment transport and evolution of bed properties at mudflats”, Office of Naval Research Tidal Flat DRI annual meeting, December 17, 2008, San Francisco.

111. “A numerical modeling framework for fine sediment transport in estuary and continental shelf”, presented at the International Workshop on Sediment Transport in Taiwanese Rivers-Coastal Seas and Other Coastal Systems, Nov 3-5, 2008. National Central University, Jungli, Taiwan.

112. “Numerical modeling of cohesive sediment transport processes in estuary and continental shelf”., Woods Hole Oceanographic Institution, Coastal Ocean Fluid Dynamic Laboratory (COFDL) seminar, Aug 2008.

113. “Numerical modeling of cohesive sediment transport processes in estuary and continental shelf”. Massachusetts Institute of Technology, Environmental Fluid Mechanics Seminar Series, Civil and Environmental Engineering, Apr 10, 2008.

114. “Numerical modeling of cohesive sediment transport processes in estuary and continental shelf”. University of Delaware, Civil and Environmental Engineering, March 2008.

115. “High resolution numerical modeling of cohesive sediment transport in estuary and continental shelf”, National Central University, Institute of Hydrological and Ocean Sciences, Jhongli, Taiwan, Feb 22nd 2008.

116. “High resolution numerical modeling of cohesive sediment transport in estuary and continental shelf”, Taiwan-US Source to Sink Resource Workshop, Kaohsiung, Taiwan, Feb. 2008.

117. “High resolution numerical modeling of cohesive sediment transport in estuary and continental shelf”, National Taiwan University, Department of Engineering Science and Ocean Engineering, Taipei, Taiwan, Dec 28th 2007.

118. “High resolution numerical modeling of cohesive sediment transport in estuary and continental shelf”, National Cheng-Kung University, Tainan Hydraulics Laboratory, Tainan, Taiwan, Dec 27th 2007.

119. “High resolution numerical modeling of cohesive sediment transport in estuary and continental shelf”, National Sun Yat-sen University, Institute of Applied Ocean Physics and Undersea Technology, Kaohsiung, Taiwan, Dec 21st, 2007.

120. “Sediment transport mechanics investigated by a multiphase flow approach - current status and challenges”, invited lecture in Gordon Research Conference, Coastal Ocean Modeling, Colby-Sawyer College, New London, NH, June 17-22, 2007.

121. “CROSSTEX – Wave breaking, boundary layer processes, the resulting sediment transport and beach profile evolution”, Florida State University, Office of Naval Research Progress Review Southeast Region, May 2007.

122. “Coastal sediment transport using multiphase and granular flow approach”, Thermal-Fluid Seminar Series, University of Florida, Feb. 2007.

123. “A fluid mud transport model in multi-dimensions”, Office of Naval Research workshop on wave-mud interaction, Johns Hopkins University, Jan. 2007.

124. “Modeling Sediment Transport in Heterogeneous Coastal Environment”, 50th Florida Shore & Beach Preservation Association Annual Meeting, September 2006.

125. “Modeling sediment transport in heterogeneous coastal environment”, presented at Prof. Philip L.-F. Liu Symposium, Cornell University, Ithaca, NY. September 2006.

126. “Coastal Sediment Transport in Different Scales”, U.S. Army Crop of Engineers, ERDC-CHL, Vicksburg, MS, June 2006.

127. “On Multiphase Modeling for Sediment Transport”, Workshop on Discrete Element Method, U.S. Army Crop of Engineers, ERDC-GSL, May 2006.

128. “Critical Processes in the wave-current bottom boundary layer”, NOPP – Community Sediment Transport Model Meeting, Woods Hole, MA, May 2006.

129. “Understanding Coastal Sediment Transport Using Small-scale Fluid Mechanics”, University of Miami, RSMAS, Office of Naval Research Progress Review Southeast Region, March 2006.

130. “Toward Modeling Sediment Transport in Heterogeneous Environment”, Texas A&M University, Civil Engineering, College Station, TX, Oct. 2005.

131. “Toward Modeling Sediment Transport in Heterogeneous Environment”, Universidad de Cantabria, Ocean and Coastal Research, Santander, Spain, April 2005.

132. “Toward Modeling Sediment Transport in Heterogeneous Environment”, University of California, Berkeley, Civil and Environmental Engineering, Feb. 2004.

133. “Toward Modeling Sediment Transport in Heterogeneous Environment”, University of Florida, Civil and Coastal Engineering, Nov. 2004.

134. “Sediment transport on beaches”, Summer Lecture Series for Undergraduate Student Research Fellows, Woods Hole Oceanographic Institution, 2004.

135. “Nearshore sub-tidal processes”, Coastal Ocean Forum - A Short Course and Workshop on Coastal Change, Woods Hole Oceanographic Institution, April 2004.

136. “Toward nearshore sediment transport modeling using two-phase flow approach”, Naval Research Laboratory, Stennis Space Center, MS, Aug. 2003.

137. “Sediment transport and beach morphology – an integrated modeling framework”, Woods Hole Oceanographic Institution, Applied Ocean Physics & Engineering Seminar, March 2003.

138. “Toward nearshore sediment transport – a theory, the models, and what next?” Johns Hopkins University, Department of Civil Engineering, March 2003.

139. “Toward nearshore sediment transport – a theory, the models, and what next?, University of Delaware, Civil & Environmental Engineering, Feb. 2003.

140. “Toward nearshore sediment transport – a theory, the models, and what next?”, Cornell University, Environmental Fluid Mechanics Seminar, Civil & Environmental Eng., Feb. 2003.

141. “A two-phase flow model for sheet flow”, National Taiwan University, Engineering Science & Ocean Engineering, Jan. 2003.

142. “A two-phase flow model for sediment transport: sheet flow”, NOPP- Nearshore Community Model project meeting, University of Delaware, Aug. 2002.

143. “A two-phase flow model for sediment transport: sheet flow”, Oregon State University, College of Oceanic & Atmospheric Science, Jun. 2002.

RESEARCH AND CONTRACTS AND GRANTS

(Total: $14,582,738; Hsu portion: $8,179,741; 15 projects from NSF)

1. SCIPE: Building a computational and data-intensive research workforce and network in the mid-Atlantic region
   PI: Sunita Chandrasekaran, Hsu serves a Co-PI along with John Huffman, Benjamin Bagozzi and Rudolf Eigenmann
   Sponsor: National Science Foundation
   Amount: $4,679,886
   Duration: 9/1/2024~8/31/2029

2. Integration of soil mechanics in numerical models of surf zone beach processes
   PI: Tian-Jian Hsu (collaborator: Nina Stark, University of Florida; Jonathan Hubler, Villanova University)
   Sponsor: Office of Naval Research
   Amount: $209,802
   Duration: 8/1/2024~7/31/2026

3. Breaking wave-induced rapid beach profile evolution in the inner surf and swash zones.
   PI: Jack Puleo, Hsu serves as Co-PI (lead by UNCW, Ryan Mieras and collaborative institution UT Austin, Blair Johnson).
   Sponsor: USACE- USCRP
   Amount: $324,997
   Duration: 1/1/2024~12/31/2027

4. The Role of Turbulent Coherent Structures on the Evolving Seabed
   PI: Tian-Jian Hsu
   Sponsor: National Science Foundation
   Amount: $380,940
   Duration: 5/15/2023~4/30/2026

5. Integration of soil mechanics in numerical models of surf zone beach processes via joint field observations and numerical modeling
   PI: Tian-Jian Hsu
   Sponsor: Office of Naval Research
   Amount: $210,243

Duration: 5/2022~4/2024

6. A Novel Eulerian Two-phase Numerical Simulation Tool for Scour Burial of Munitions
   PI: Tian-Jian Hsu (with Julien Chauchat, LEGI, Univ. Grenoble – Alps)
   Sponsor: SERDP
   Amount: $617,993
   Duration: 9/2011~1/2025
7. Nonhydrostatic numerical modeling of wave dynamics interacting with estuarine fronts
   PI: Tian-Jian Hsu
   Sponsor: Office of Naval Research
   Amount: $200,308
   Duration: 6/1/2021~5/31/2023
8. Collaborative Research: Hybrid flow-sediment-structure interaction analysis of extreme scour due to coastal flooding
   PI: Tian-Jian Hsu
   Sponsor: National Science Foundation
   Amount: $249,888
   Duration: 1/1/2022~12/31/2024
9. Building a Computational Framework for Predicting Impacts of Coastal Stressors on Delaware's Communities
   PI: Tian-Jian Hsu (with Co-PI: Jim Kirby, Holly Michael, Sunita Chandrasekaran, Rudi Eigenmann, Xi Peng, Fengyan Shi)
   Sponsor: College of Engineering
   Amount: $100,000
   Duration: 6/2021~10/2022
10. Vertical sorting of olivine particles in sands driven by waves - a numerical model investigation
    PI: Tian-Jian Hsu
    Sponsor: Project Vesta
    Amount: $2,9996
    Duration: 6/2021~1/2022
11. Collaborative Research: Understanding the physics of flocculation processes and cohesive sediment transport in bottom boundary layers through multi-scale modeling
    PI: Tian-Jian Hsu
    Sponsor: National Science Foundation
    Amount: $409,851
    Duration: 9/1/2019~8/31/2023
12. Novel Eulerian two-phase simulations for burial dynamics of munitions
    PI: Tian-Jian Hsu (with Julien Chauchat, LEGI, Univ. Grenoble – Alps)
    Sponsor: SERDP
    Amount: $169,717
    Duration: 9/19/2019~9/18/2021

13. A symposium on sediment dynamics in geophysical flows using two-phase flow methodology
    PI: Tian-Jian Hsu (with Co-PIs, Jack Puleo and James Kirby)
    Sponsor: National Science Foundation
    Amount: $15,000
    Duration: 12/1/2018~11/30/2019
14. Grain/turbulence-scale numerical simulation of heterogeneous sediment transport and their parameterization in coastal models
    PI: Tian-Jian Hsu
    Sponsor: Office of Naval Research
    Amount: $205,091
    Duration: 7/15/2018 ~7/14/2021
15. Collaborative Research: Physics of Dune Erosion during Extreme Surge and Wave Events
    PI: Jack Puleo, Hsu serve as co-PI.
    Sponsor: National Science Foundation
    Amount: $599,584 (Hsu's component is about $220k)
    Duration: March 2018 ~ Feb 2021
16. Consortium for Simulation of Oil-Microbial Interactions in the Ocean
    PI: Tian-Jian Hsu
    Sponsor: Gulf of Mexico Research Initiative (subcontract from Florida State University)
    Amount: $317,190
    Duration: Jan 2018 ~ June 2019
17. Frontal structures and surface signatures revealed by non-hydrostatic eddy resolving numerical simulations
    PI: Tian-Jian Hsu (with co-PI: Fengyan Shi, James Kirby)
    Sponsor: Office of Naval Research
    Amount: $332,527
    Duration: Aug 2017~ July 2021
18. Evolution of Small Scale Seafloor Topography and Sediment Transport under Energetic Waves: From ripples to sheet flow
    PI: Tian-Jian Hsu (with co-PI: P. Traykovski, Woods Hole Oceanographic Institution)
    Sponsor: National Science Foundation
    Amount: $499,241
    Duration: Sep 2016 ~ Aug 2020
19. An Euler-Lagrangian Numerical Modeling for Poly-dispersed Sediment Transport under Waves
    PI: Tian-Jian Hsu
    Sponsor: Office of Naval Research
    Amount: $179,890
    Duration: July 2016 ~ June 2018
20. Collaborative Research: The effect of sand fraction and event evolution on fine-sediment transport and the depositional record in wave-supported mud flows
    PI: Tian-Jian Hsu (with A. Horner-Devine and A. Ogston, U. Washington)

Sponsor: National Science Foundation
Amount: $259,648
Duration: Sep 2015~Aug 2018

21. Frontal Structure in the Columbia River Plume Nearfield – A Non-hydrostatic Coastal Modeling Study
PI: Tian-Jian Hsu (with co-PI: J. Kirby, F. Shi)
Sponsor: Office of Naval Research
Amount: $199,377
Duration: June 2015~May 2017

22. A 3D Coupled Euler-Lagrangian Numerical Modeling Framework for Poly-dispersed Sediment Transport Simulations
PI: Tian-Jian Hsu
Sponsor: Office of Naval Research
Amount: $171,356
Duration: June 2014~May 2016

23. Collaborative Research: Large-scale laboratory investigation and numerical modeling of sheet flow sediment transport dynamics across a surf zone sand bar&
PI: Jack Puleo; Tian-Jian Hsu serve as co-PI
Sponsor: National Science Foundation
Amount: $452,130 (Hsu's component is about $200,000)
Duration: Feb 2014~Jan 2017

24. Collaborative Research: The interaction of waves, tidal currents and river outflows and their effects on the delivery and resuspension of sediments in the near field
PI: Jim Kirby; Tian-Jian Hsu serves as co-PI.
Sponsor: National Science Foundation
Amount: $483,437 (Hsu's component is about $145,000)
Duration: Sep 2013~ Aug 2017

25. The Trapping, Storage, and Resuspension of Sediments in the Columbia River Estuary and Near Field Plume (RIVET II)
PI: Tian-Jian Hsu (with co-PI F. Shi and J. Kirby)
Sponsor: Office of Naval Research
Amount: $156,247
Duration: Dec 2012~ Nov 2014

26. Interactions of Waves, tidal currents and riverine outflow and their effects on sediment transport (RIVET I -data analysis)
PI: Tian-Jian Hsu (with Co-PI F. Shi)
Sponsor: Office of Naval Research
Amount: $75,424
Duration: Oct 2012~Sep 2013

27. NEESR: Tsunami Induced Coherent Structures and their Impact on our Coastal Infrastructure
PI: Tian-Jian Hsu (with Diane Foster (UNH), Patrick Lynett (USC))
Sponsor: National Science Foundation (subcontract from UNH)

Amount: $351,643
Duration: Oct 2011~ Sep 2015

28. Collaborative Research: Physics of lutoclines and laminarization extracted from turbulence-resolved numerical investigations on sediment transport in wave-current bottom boundary layer
    PI: Tian-Jian Hsu
    Sponsor: National Science Foundation
    Amount: $235,949
    Duration: Sep 2011~Aug 2014
29. A Numerical Modeling Framework for Cohesive Sediment Transport Driven by Waves and Tidal Currents
    PI: Tian-Jian Hsu
    Sponsor: Office of Naval Research
    Amount: $124,273
    Duration: Oct 2010- Sep 2012
30. Interactions of Waves and River Plume and their Effects on Sediment Transport at River Mouth (Inlet and River Mouth DRI, Phase II)
    PI: Tian-Jian Hsu
    Sponsor: Office of Naval Research
    Amount: $146,245
    Duration: Nov 2010- Oct 2012
31. Using wave-current observation to predict bottom sediment processes on muddy beaches
    PI: Tian-Jian Hsu (Collaborative project with U. Florida PI: Alex Sheremet)
    Sponsor: Office of Naval Research
    Amount: $39,442
    Duration: Oct 2010- Sep 2012
32. Interactions of Waves and River Plume and their Effects on Sediment Transport at River Mouth
    PI: Tian-Jian Hsu
    Sponsor: Office of Naval Research (Inlet and River Mouth DRI, Phase I)
    Amount: $29,539
    Duration: Nov 2009- Sep 2009
33. Collaborative Research: The dynamics of sediment-laden river plume and initial deposition off small mountainous rivers
    PI: Tian-Jian Hsu, Co-PI: James Kirby
    Sponsor: National Science Foundation
    Amount: $450,361
    Duration: Sep 2009 – Aug 2012
34. CAREER: 3D Multiphase Sediment Transport Modeling Framework
    PI: Tian-Jian Hsu
    Sponsor: National Science Foundation
    Amount: $400,208

Duration: March 2007 – Feb 2012

35. High Resolution Numerical Modeling of Cohesive Sediment Transport and Evolution of Bed Properties at Mudflats
    PI: Tian-Jian Hsu
    Sponsor: Office of Naval Research (Tidal Flat DRI – Phase 2)
    Amount: $212,719
    Duration: Oct 2008 – Sep 2010
36. NOPP - Community Sediment Transport Model
    PI: Tian-Jian Hsu
    Sponsor: NOPP (subcontract from WHOI)
    Amount: $60,000
    Duration: June 2006 – Oct 2009
37. Complex Flow Through Culvert Structure by CFD Modeling
    PI: Tian-Jian Hsu, Kirk Hatfield (UF)
    Sponsor: South Florida Water Management District (SFWMD); USGS (NIWR)
    Amount: $50,000 (SFWMD); $10,000 (USGS-NIWR)
    Duration: March 2006- Feb 2009
38. CROSSTEX – Wave breaking, boundary layer processes, the resulting sediment transport and beach profile evolution
    PI: Tian-Jian Hsu (UF), Co-PI: J. Trowbridge (WHOI).
    Sponsor: Office of Naval Research
    Amount: $375,000
    Duration: Oct 2005 – Sep 2009
39. A Fluid Mud Transport Model in Multi-dimensions
    PI: Tian-Jian Hsu, Co-PI: P. Traykovski (WHOI)
    Sponsor: Office of Naval Research
    Amount: $139,888
    Duration: Oct 2006 – Sep 2008
40. Collaborative Research: Coastal Modeling Management and Integration (NSF-ITR)
    PI: P. Lynett (Texas A&M), B. Raubenheimer (WHOI), Tian-Jian Hsu (UF), P. Liu (Cornell).
    Sponsor: National Science Foundation
    Amount: $245,166 (WHOI-UF component)
    Duration: Sep 2004 – Aug 2008
41. Scouring Around District's Hydraulic Structures
    PI: Tian-Jian Hsu
    Sponsor: South Florida Water Management District (SFWMD); USGS (NIWR)
    Amount: $62,000 (SFWMD); $10,000 (USGS-NIWR)
    Duration: March 2006 – Sep 2007
42. Effect of Fluid Mud on Bottom Boundary Layer Dynamics Sediment Fluxes at Mud Flats
    PI: Tian-Jian Hsu, Co-PIs: A. Valle-Levinson, A. Sheremet, A. Mehta
    Sponsor: Office of Naval Research (Tidal Flat DRI – Phase 1)

Amount: $50,552
Duration: Feb 2007- Dec 2007.

43. Parameterization of a Two-phase Model and Application to Nearshore Morphology
PI: S. Elgar (WHOI), Co-PIs: Tian-Jian Hsu (WHOI), D. Hanes (USGS); Collaborate with J. Kirby (U. Delaware).
Sponsor: Office of Naval Research
Amount: $60,000
Duration: Sep 2003- Sep 2005

RESEARCH ADVISING

Doctoral Students

Onur Manat (Advisor)
Narayan Kumar (Advisor)
Sadegh Nouri (Advisor, PhD candidate)
Jiaye Zhang (Advisor, PhD candidate)
Jorge Penaloza Giraldo PhD Candidate (Advisor, graduated 5/2024, now at Oak Ridge National Lab)
Benjamin Tsai PhD Candidate (Advisor; graduated 8/2023, now Mendenhall postdoc at USGS; Assistant Professor, Oregon State University starting January 2026)
Ali Salimi Tarazouj PhD (Advisor; graduated 6/2022, now at NOAA)
Yashar Rafati PhD (Advisor; graduated 6/2021, now at HDR)
Liangyi Yue PhD (Advisor; graduated 8/2020, now postdoc at National University of Singapore)
Yeulwoo Kim, PhD (Advisor; graduated 12/2018, now Assistant Professor at Pukyong National University, South Korea)
Zhen Cheng, PhD (Advisor; graduated 8/2016, now Principal Research Engineer at Convergent Science)
Zheyu Zhou, PhD (Advisor; graduated 8/2016, now Coastal Engineer at COWI)
Jia-Lin Chen, PhD (Advisor; graduated 12/2014, now Associate Professor, National Cheng-Kung University, Taiwan)
Xiao Yu, PhD (Advisor; graduated 1/2012. Now Associate Professor, University of Florida)
Celalettin Emre Ozdemir, PHD (Advisor; graduated 8/2010, now Associate Professor, Louisiana State University)
Minwoo Son, PhD (Advisor; graduated 12/2009, now Professor, Chungnam National University, South Korea)
Hsu, W.-Y., PhD (Advisor during his one-year visit to UD; graduated 12/2012 National Cheng-Kung University, Taiwan; Now scientist at Tainan Hydraulic Laboratory)
W. M. Kranenburg (hosted and advised his two one-month long visits to UD on two-phase modeling of sediment transport; graduated in 2012, University of Twente, Netherlands; Now at Deltares)
Gabriela Salgado Dominguez (committee member, UD)
SeyedAlireza Mirghafouri (committee member, Stony Brooks University)
Danial Golbaz (serve as co-adviser with Yao Hu, UD)
Alban Gilletta (committee member, University of Grenoble Alpes)

Temitope E. Idowu (committee member, UD)
Todd Thoman (committee member, UD-CEOE)
Jinshi Chen (external committee member, MIT-WHOI joint program)
Jirat Laksanalamai (committee member, UD)
Maria Pontiki (committee member, UD)
Wang Xingchi (committee member, UD-CEOE)
Zhu Tingting (committee member, UD, graduated July 2021)
Sicheng (Winston) Wu (committee member, UD-CEOE)
Z Han (external committee member, University of Washington)
Mithun Deb (committee member, UD)
Cheng Zhang (committee member, UD)
Tim Nagel (committee member, University of Grenoble Alpes)
Saeideh Banihashemi (committee member, UD)
Ryan Mieras (committee member, UD)
Julia Hopkins (WHOI/MIT joint program, external committee member)
Anna Wargula (WHOI/MIT joint program, external committee member)
Patricia Chardon-Maldonado (committee member, UD)
Zhefei Dong (committee member, UD)
Morteza Derkhti (committee member, UD)
Mohammad Keshtpoor (committee member, UD)
Thijs Lanckriet (committee member, UD)
Gangfang Ma (committee member, UD)
Jain Mamta (committee member, UF)
Jun Lee (committee member, UF)
Jaramillo Sergio (committee member, UF)

Master Students

Ryan Schanta (Advisor)
Daniel Sharar-Salgado (Advisor, Sept 2019~Jan 2021)
Jiaye Zhang (Advisor, graduate 5/2021, now PhD student at UD)
Marina Reilly-Collette (Advisor, now at USACE, NH)
Taisuk Kim (MS graduated 5/2014, now at Haerfest)
Jacob Sangermano, (MS graduated 5/2012; Now at EQT)
Tom Boland (MS graduated 5/2011; Now at NYC-DEP)
Patrick Snyder (MS graduated 5/2009; Now at AECOM)
Gowtham Krishna (UF) (Advisor, 1/2008-12/2008)
Kwangmin Kang (UF) (Advisor, graduated 5/2007)
Allison Penko (UF, committee member)
Shirshant Sharma (UF, committee member)
Tyler Hesser (UF, committee member)

Undergraduate Students

Alyssa Wintzel (UD, CEOE)
James Holyoke (UD, Civil Engineering, 5/2018~8/2020)
Simon d'Albignac (University of Toulouse, France, 5/2012~8/2012)
Selasie Buatsi (UD, Civil Engineering, 6/2010~8/2010)
Michael Honeychuck (UD, Mechanical Engineering 6/2009-8/2009)

Tom Boland (UD, Civil and Environmental Engineering, 2/2009-8/2009)
Benjamin Boss (UF, Civil Engineering, 5/2007-12/2007)
Jennifer Apell (UF, Environmental Science and Engineering, 5/2007-12/2007)
Jahrue Mullings (UF, Civil Engineering, 5/2007-8/2007)

High School Students

Kathrynn Steward (6/2014~8/2014; now at University of Delaware)

Postdoctoral Research Associate

Chieh-Ying Chen, August 2024 – present, co-advise with Holly Michael.
Antoine Mathieu, Feb 2022 – August 2023. Now Research Engineer at Électricité de France (EDF).
Zhendong Cao, Oct 2021 – Oct 2022. Now data scientist at JP Morgen Chase.
Leiping Ye, March 2018~Febuary 2021. Now Assistant Professor, Sun Yat-sen University, China.
X. Yu, Feb 2012~July 2015. now Assistant Professor, University of Florida, USA.
C. E. Ozdemir, September 2010~Jan 2012. Now Associate Professor, Louisiana State University, USA.
Son Minwoo, Jan 2010~July 2010. Now Professor, Chungnam University, South Korea.
Alec Torres-Freyermuth, Jan 2008- Sep 2009. Now Senior Researcher and Head of the Coastal Processes and Engineering Laboratory at the Instituto de Ingeniería-Sisal, Universidad Nacional Autónoma de México
Nicholas V. Scott, Dec 2007 – Dec 2008. Now principal modeling scientist, Riverside Research, OH, USA.

COURSE TOUGHT

2025 Spring	CIGE161	Introduction to CE Design
	CIEG678	Transport and Mixing Process
2024 Fall	CIEG639	Ocean Fluid Dynamics
2024 Spring	CIGE161	Introduction to CE Design
	CIEG405	Advanced Fluid Mechanics
	CIEG678	Transport and Mixing Process
2023 Spring	CIGE161	Introduction to CE Design
	CIEG405	Advanced Fluid Mechanics
	CIEG678	Transport and Mixing Process
2022 Fall	CIEG639	Ocean Fluid Dynamics
2022 Spring	CIGE161	Introduction to CE Design
	CIEG405	Advanced Fluid Mechanics
	CIEG678	Transport and Mixing Process
2021 Fall	CIEG670	Physics of Cohesive Sediment
	CIEG865	Coastal/Oceanographic Seminar

2021 Spring	CIGE161	Introduction to CE Design
	CIEG678	Transport and Mixing Process
2020 Fall	CIEG639	Ocean Fluid Dynamics
	CIEG865	Coastal/Oceanographic Seminar
2020 Spring	CIGE161	Freshman Design
	CIEG678	Transport and Mixing Process
2019 Fall	CIEG670	Physics of Cohesive Sediment
2019 Spring	CIGE161	Freshman Design
	CIEG678	Transport and Mixing Process
2018 Fall	CIEG639	Ocean Fluid Dynamics
2018 Spring	CIEG161	Freshman Design
2017 Fall	CIEG678	Transport and Mixing Process
2017 Spring	CIGE 161	Freshman Design
	CIEG 670	Physics of Cohesive Sediment
2016 Fall	CIEG 639	Ocean Fluid Dynamics
2016 Spring	CIEG167	Freshman Design
	CIEG678	Transport and Mixing Process
2016 Winter	CIEG467	Environmental Fluid Systems and Applications
2015 Fall	CIEG667	Physics of Cohesive Sediment
2014 Fall	CIEG 639	Ocean Fluid Dynamics
2014 Spring	CIEG 678	Transport and Mixing Process
	CIEG 161	Freshman Design
2013 Fall	CIEG 678	Transport and Mixing Process
2013 Spring	CIEG 670	Physics of Cohesive Sediment
	CIEG 161	Freshman Design
2012 Fall	CIEG678	Transport and Mixing Process
2012 Spring	CIEG 161	Freshman Design
	CIEG 306	Fluid Mechanics Laboratory
	CIEG 865	Coastal/Oceanographic Seminar
2011 Fall	CIEG 678	Transport and Mixing Process
2011 Spring	CIEG 306	Fluid Mechanics Laboratory
	CIEG 865	Coastal/Oceanographic Seminar
2010 Fall	CIEG 667	Physics of Cohesive Sediment
2010 Spring	CIEG 306	Fluid Mechanics Laboratory
	CIEG 678	Transport and Mixing Process
2009 Fall	CIEG 667	Physics of Cohesive Sediment
2009 Spring	CIEG 306	Fluid Mechanics Laboratory
	CIEG 678	Transport and Mixing Process

2008 Fall	CIEG 865	Coastal/Oceanographic Seminar
2008 Spring (UF)	OCP 6655	Coastal Sediment Transport
2007 Fall (UF)	EOC 6934	Mixing and Transport in Turbulent Flow
2007 Spring (UF)	OCP 6655	Coastal Sediment Transport
	EOC 6939	Coastal/Oceanographic Seminar
2006 Fall (UF)	EOC 6934	Mixing and Transport in Turbulent Flow