

Anusha L. Dissanayake

Centro Euro-Mediterraneo sui Cambiamenti Climatici, Lecce, Italy

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EDUCATION

- Ph.D.** Clarkson University, Potsdam, New York, USA: May 2013
Civil and Environmental Engineering
Major: Water Resources Engineering. *Minor:* Mathematics and Computer Science
Thesis Title: Numerical modeling of hydrothermal vent plumes in deep ocean
- M.Sc.** Clarkson University, Potsdam, New York, USA: December 2010
Civil Engineering, *Thesis Title:* Modeling the impact of CO₂ releases underwater
- M.Sc. (Eng.)** University of Peradeniya, Sri Lanka: June 2008
Disaster Management
Thesis Title: A model for predicting sand nourishment frequency in straight beaches
A semester was spent at the Polytechnic University of Ancona, Marche, Italy
- B.Sc. (Eng.)** University of Peradeniya, Sri Lanka: February 2005
(Hons.) Civil Engineering

WORK EXPERIENCE

- **Scientist/Independent Contractor**, CMCC Foundation, Italy: July 2024 – present
- **Independent Research Consultant**, EnvSoln, Badulla, Sri Lanka: July 2022 – May 2025
- **Research Scientist/Senior Research Scientist**, SINTEF Ocean, Trondheim, Norway: April 2020 – June 2022
- **Senior Scientist/Contaminant Modelling Specialist**, RPS Ocean Science, South Kingstown, Rhode Island, USA: February 2018 – March 2020
- **Postdoctoral Researcher**, Department of Marine Science, University of Georgia, Athens, Georgia, USA: October 2016 – January 2018
- **Postdoctoral Researcher**, Zachry Department of Civil Engineering, Texas A&M University, College Station, Texas, USA: July 2013 – October 2016
- **Graduate Research Assistant**, Department of Civil and Environmental Engineering, Clarkson University: January 2009 – June 2013
- **Graduate Research Assistant**, Faculty of Engineering, University of Peradeniya & Polytechnic University of Ancona in Italy: January 2007 - July 2008
- **Engineer** - Programming division (Ministry of Highways) and Design Engineer-Bridge Designs Division, Road Development Authority, Sri Lanka: October 2005 - December 2009
- **Undergraduate Internships-1**, Department of Buildings, Sri Lanka: October 2002 - December 2002
- **Undergraduate Internships-2**, Lanka Hydraulics Institute (LHI) Ltd., Sri Lanka: September 2003 - December 2003

TEACHING

- **Department of Marine Science, University of Georgia, Athens, Georgia:** October 2016 – February 2018 - Substitute Instructor
 - MARS 7380: Quantitative Methods in Marine Science - undergraduate students.
- **Zachry Department of Civil Engineering, Texas A&M University:** July 2013 – Oct 2016 - Substitute Instructor
 - CVEN 302: Computer Applications in Engineering and Construction, and CVEN 311: Fluid Dynamics - undergraduate students.
 - OCEN 678: Fluid Dynamics for Ocean and Environmental Engineering - graduate students.
- Completed the certificate program at the Academy for Future Faculty, at Texas A&M University.
- Followed ‘Evidence-Based Undergraduate STEM Teaching’ program at the Texas A&M University MOOC-Supported Learning Community affiliated with the Center for the Integration of Research, Teaching, and Learning (CIRTL) (Score: 69.2/100).
- **Department of Civil and Environmental Engineering, University of Peradeniya** March - October 2005 - Teaching Assistant
 - Design classes for Hydraulics, Environmental, and Geotechnical Engineering for second- and third-year undergraduate students.
 - Laboratory demonstrations for Fluid Mechanics and Environmental Engineering classes.

EDUCATIONAL & PROFESSIONAL OUTREACH

- Session organizer - Gulf of Mexico Oil Spill and Ecosystem Science Conference. Session title: Understanding the processes associated with chronic hydrocarbon releases from natural and accidental sources: 2019
- Session organizer - Gulf of Mexico Oil Spill and Ecosystem Science Conference. Topical track: Science for spills on modeling oil spills for response, prevention and minimizing risk, dispersant science and In-situ burn science: 2018
- Co-chair - Ocean Sciences Meeting. Session title: Processes Impacting the Distribution and Fate of Oil in the Marine Environment: 2018
- Judge - Georgia Science and Engineering Fair event: March 2017
- Judge - Student Research Week 2016 in Texas A&M University: 2016
- Event co-supervisor - 2016 Texas Science Olympiad State Event held in Texas A&M University: 2016
- Invited Participant of Response Oil Assay organized by The Coastal Response Research Center (CRRC), University of New Hampshire, USA: June 2020- Feb 2021
 - working group 1 what should be in the oil database used for oil spill modelling and
 - Working group 4 - Data Model (https://crrc.unh.edu/response_oil_assay)

PEER-REVIEW ACTIVITIES

- Journal of Hydraulic Engineering (ASCE)
- Journal of Hydro-Environment Research

- Marine Pollution Bulletin
- Environmental Fluid Mechanics Journal
- Environmental Pollution Journal
- Science of the Total Environment
- Reviewer: 2018 Arctic and Marine Oilspill Program Technical Seminar, Environment and Climate Change Canada

FUNDED RESEARCH

- Entrainment of oil in breaking waves (ENTIRE) project funded by the Research Council of Norway - 12 million Norwegian Kroner: 2021-2026

SUPERVISION OF PHD STUDENTS

- Co-supervisor of PhD student at Department of Physics, NTNU, Trondheim, Norway. Thesis title "Entrainment of oil in breaking waves": 2022-2026

PUBLICATIONS

Nordam, T. **Dissanayake, A. L.** Brakstad, O. B. Hakvag, S., Øverjordet, I. B., Litzler, E. Nepstad, R. Drews, A., Rohrs, J. and Seiler, M., Fate of dissolved methane from ocean floor seeps. *Environmental Science & Technology*, 59, 17, 8516–8526

Reum, F., Marshall, J., Bittig, H. C., Bretschneider, L., Broström, G., **Dissanayake, A. L.**, Glauch, T., Gottschaldt, K. D., Gros, J., Huntrieser, H., Lampert, A., Lichtenstern, M., Miller, S. M., Mohrmann, M., Pätzold, F., Magdalena Puñal, M., Gregor Rehder, G., Roiger, A., Airborne observations reveal the fate of the methane from the Nord Stream pipelines, *Nature Communications* 16, no. 1 (2025): 351.

Jun, I., Wang, B., Gros, J., **Dissanayake, A. L.**, Socolofsky, S. A., Modeling the Dissolution and Transport of Bubbles Emitted from Hydrocarbon Seeps within the Hydrate Stability Zone of the Oceans, *Journal of Geophysical Research: Oceans* 130, no. 3 (2025): e2024JC021942.

Dissanayake, A. L., Jonas Gros, Henning Johannes Drews, Jacob Woge Nielsen, and Annika Drews (2023). "Fate of Methane from the Nord Stream Pipeline Leaks." *Environmental Science & Technology Letters* 10, no. 10 903-908.

Dissanayake, A. L., Scott A. Socolofsky, Jonas Gros, Inok Jun, Lin Zhao, Michel C. Boufadel, and J. Samuel Arey (2023). "Relative sensitivity of hydrodynamic, thermodynamic, and chemical processes for simulating the buoyant multiphase plume and surfacing flows of an oil and gas blowout." *Marine Pollution Bulletin* 186: 114377.

Wu, Huijie, Binbin Wang, and **A. L. Dissanayake** (2023). "Dynamics of Underwater Gas Blowout in Sonic Regime: Laboratory-Scale Study." *Journal of Hydraulic Engineering* 149, no. 1 : 04022034.

Dissanayake, A. L., Rezvani, M., Socolofsky, S. A., Bierlein, K. A., and Little, J. C., (2021). Bubble plume integral model for line-source diffusers in ambient stratification, *Journal of Hydraulic Engineering*, [https://doi.org/10.1061/\(ASCE\)HY.1943-7900.0001885](https://doi.org/10.1061/(ASCE)HY.1943-7900.0001885)

Dissanayake, A. L., Nordam, T., Gros, J., (2021). Simulations of subsea CO₂ leak scenarios, Trondheim Conference on CO₂ Capture, Transport and Storage, Trondheim, Norway - June 21-23, 2021.

- French-McCay, D.P., Lehr, W., Stone, K., Fieldhouse, B., **Dissanayake, A.L.**, Marcotte, G., Daling, P. S., Skancke, S., and Jones, R., (2021). Floating Oil Emulsification – Review of Models, Input Requirements and Research Needs, *Proceedings of the Forty-third AMOP Technical Seminar, Environment and Climate Change Canada, Ottawa, ON, Canada.*
- Gros, J., Arey, J. S., Socolofsky, S. A. and **Dissanayake, A. L.**, (2020). Dynamics of live oil droplets and natural gas bubbles in deep water. *Environmental Science & Technology*, 54(19), pp.11865-11875, <https://doi.org/10.1021/acs.est.9b06242>
- Barker, C.H.; Kourafalou, V.H.; Beegle-Krause, C.; Boufadel, M.; Bourassa, M.A.; Buschang, S.G.; Androulidakis, Y.; Chassignet, E.P.; Dagestad, K.-F.; Danmeier, D.G.; **Dissanayake, A.L.**; Galt, J.A.; Jacobs, G.; Marcotte, G.; Özgökmen, T.; Pinardi, N.; Schiller, R.V.; Socolofsky, S.A.; Thrift-Viveros, D.; Zelenke, B.; Zhang, A.; Zheng, Y. (2020). Progress in Operational Modeling in Support of Oil Spill Response. *J. Mar. Sci. Eng.* 2020, 8, 668. <https://doi.org/10.3390/jmse8090668>
- Dissanayake, A. L.**, Mendelsohn, D., Fontenault, J., and Franey, T., (2019). Advanced Numerical Modeling of Oil Spills on Land, *Proceedings of the Forty-second AMOP Technical Seminar, Environment and Climate Change Canada, Ottawa, ON, Canada.*
- Vaz, A. C., Paris, C. B., **Dissanayake, A. L.**, Socolofsky, S.A., Gros, J., and Boufadel, M.C., *Direct Coupling of Near-field and Far-field Models Hones Predictions of Oil Spill Transport and Fate from Deep-sea Blowout, Proceedings of the Forty-second AMOP Technical Seminar, Environment and Climate Change Canada, Ottawa, ON, Canada.*
- Vaz A.C., Paris C.B., **Dissanayake A.L.**, Socolofsky S.A., Gros J., Boufadel M.C. (2020) Dynamic Coupling of Near-Field and Far-Field Models. In: Murawski S. et al. (eds) *Deep Oil Spills*. Springer, Cham. https://doi.org/10.1007/978-3-030-11605-7_9
- Passow, U., Sweet, J., Francis, S., Xu, C., **Dissanayake, A. L.**, Lin, Y.Y., Santschi, P.H. and Quigg, A., (2019). Incorporation of Oil into Diatom Aggregates. *Marine Ecology Progress Series*, 612, pp.65-86.
- Dissanayake, A. L.**, Gros, J. and Socolofsky, S.A., (2018). Integral models for bubble, droplet, and multiphase plume dynamics in stratification and crossflow. *Environmental Fluid Mechanics*, pp.1-36.
- Dissanayake, A. L.**, Burd, A.B., Daly, K.L., Francis, S. and Passow, U., (2018). Numerical Modeling of the Interactions of Oil, Marine Snow, and Riverine Sediments in the Ocean. *Journal of Geophysical Research: Oceans*, 123(8), pp.5388-5405.
- Dissanayake, A. L.**, Crowley, D., French McCay, D.P., and Mendelsohn, D., (2018). Further Validation of a Unified Droplet Size Distribution Model for Droplet Break-up in Underwater Plumes, *Proceedings of the Forty-first AMOP Technical Seminar, Environment and Climate Change Canada, Ottawa, ON, Canada*, pp. 943-956.
- Gros, J., **Dissanayake, A. L.**, Daniels, M. M., Barker, C. H., William Lehr, W., Socolofsky, S.A., (2018). Oil Spill Modeling in Deep Waters: Estimation of pseudo-component properties for cubic equations of state from distillation data, *Marine Pollution Bulletin* 137, 627-637.
- Gros, J., Socolofsky, S. A., **Dissanayake, A. L.**, Jun, I., Zhao, L., Boufadel, M.C., Reddy, C.M., & Arey, J.S., (2017). Petroleum dynamics in the sea and influence of subsea dispersant injection during Deepwater Horizon, *Proceedings of the National Academy of Science* 2016.

- Dissanayake, A. L.,** Rezvani, M., Socolofsky, S. A., Bierlein, K. A., & Little, J. C., (2016). *Integral model for bubble plumes from line-source geometry*, International Symposium on outfalls systems, 2016, Ottawa, Canada.
- Socolofsky, S. A., & **Dissanayake, A. L.,** (2016). *Integral plume model for particle laden discharges*, International Symposium on outfalls systems, 2016, Ottawa, Canada.
- Dissanayake A. L.,** Jun, I., & Socolofsky, S., (2015). *Numerical models to simulate oil and gas blowout plumes and associated chemical and physical processes of hydrocarbons*, E-proceedings of the 36th IAHR World Congress 28 June – 3 July, 2015, The Hague, the Netherlands.
- Socolofsky, S. A., **Dissanayake, A. L.,** Jun, I., Gros, J., Arey, S., & Reddy, C.M., (2015). *Texas A&M Oilspill Calculator (TAMOC): Modeling Suite for Subsea Spills*, 38th AMOP Technical Seminar on Environmental Contamination and Response, June 2 to 4, 2015, Vancouver, British Columbia, Canada.
- Dissanayake, A. L.,** Yapa, P.D., & Nakata, K., (2014). *Simulation of hydrothermal vents in the Izena Cauldron, Mid Okinawa trough, Japan and other Pacific Locations*, Journal of Hydro-Environment Research.
- Dissanayake, A. L.,** Yapa, P.D., & Nakata, K., (2014). *Modeling of Hydrothermal Vent Plumes to Assess the Mineral Particle Distribution*, Journal of Hydraulic Research, 1-18.
- Dissanayake, A. L.,** DeGraff Jr., J. A., Yapa, P. D., Nakata, K., Ishihara, Y., & Yabe, I., (2012). *Modeling the Impact of CO₂ Releases in Kagoshima Bay, Japan*, Journal of Hydro-Environment Research IAHR/Elsevier, 6, 195-208.
- Yapa, P.D., Wimalaratne, M.R., **Dissanayake, A. L.,** & De Graff Jr., J. A, (2012). *How does oil and gas behave when spilled underwater*, Journal of Hydro-Environment Research, IAHR/Elsevier, 6, 275-285.
- Yapa, P.D., & **Dissanayake A. L.,** (2012). *Discussion: for the paper Bubble plume modeling with new functional relationships by Iran E. Lima Neto*, Journal of Hydraulic Research, 50, 6, 646–649.
- Yapa, P.D., **Dissanayake, A. L.,** Nakata, K., & Ishihara, Y., (2010). *Modeling the impact of CO₂ release under water*, Proceedings of the 6th international symposium on environmental hydraulics, Athens, Greece, Taylor and Francis Group, London, 1183-1188.
- Dissanayake, A. L.,** & Pathirana, K.P.P., (2010). *A mathematical model to predict frequency of sand nourishment in straight beaches*, Journal of Institute of Engineers Sri Lanka ('Engineer'), 43,1, 1-7.

INVITED TALKS

- Dissanayake A. L.** (2021). *Numerical modeling of subsea oil and gas spills*, Department of Civil & Environmental Engineering, University of Missouri, Columbia, USA
- Dissanayake A. L.** (2020). *Oil Properties Needed in Models*, Response Oil Assay Workshop, NOAA Western Regional Facility, Seattle, Washington, USA
- Dissanayake, A. L.** (2020). *Training Through the Gulf of Mexico Research Initiative Funding*, . (2020) Gulf of Mexico Oil Spill & Ecosystem Science Conference, Tampa, Florida, USA
- Dissanayake A. L.** (2019). *Oil Fate Process Modeling*, Gulf of Mexico Research Initiative Synthesis Workshop for Operational Oil Spill Forecast Workshop, Washington DC, USA

Dissanayake A. L. (2018). Developments in numerical modeling of oil spills before and after Deepwater Horizon Spill, Marine Oil Snow Sedimentation and Flocculent Accumulation (MOSSFA) Synthesis workshop at Texas A&M University at Galveston Texas - Invited Talk

Dissanayake A. L., (2017). Numerical modeling of multiphase plumes and their applications: 1) Lagrangian Integral Near-field Plumes 2) Lagrangian Far-field Plumes, University of Georgia, Athens, Georgia.

Dissanayake A. L., (2014). Numerical modeling of hydrothermal vent plumes and their mineral particle distribution. Seminar, Texas A&M University, College Station, Texas.

Date: 20/05/2025

Signature:  A. L. Dissanayake