

KELLY LUIS

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EDUCATION

Ph.D., Marine Science and Technology, University of Massachusetts, Boston, MA, 2021

Thesis: Coastal and Inland Ocean Color Remote Sensing for Water Quality Monitoring

Advisor: Zhongping Lee

Committee Members: Robert Chen, Jarrett Byrnes, Cedric Fichot, and Jianwei Wei

B.A., Environmental Science, Columbia University, New York, NY, 2015

Senior Thesis: Calcium Carbonate Burial in the North Pacific

Thesis Advisor: Jerry McManus

RESEARCH INTERESTS

Development, validation, and application of ocean color remote sensing approaches for aquatic ecosystem monitoring, forecasting, and decision

RELEVANT WORK EXPERIENCE

Research Assistant, University of Massachusetts Boston	2021.6-2021.7
Associate Lecturer, University of Massachusetts Boston	2020.1-2021.5
Career Building Coordinator, Woods Hole Partnership Education Program	2020.5-2020.8
Research Assistant II, Woods Hole Oceanographic Institution	2015.8-2016.8
Research Intern, Woods Hole Partnership Education Program	2015.5-2015.8
National Science Foundation-REU Intern, Central Caribbean Marine Institute	2014.5-2014.8
Course Assistant, Earth Institute at Columbia University	2013.5-2015.5
Lab Assistant, Lamont Doherty Earth Observatory	2012.1-2014.5

HONORS

NASA Postdoctoral Program Fellowship	2021
Robert & Patricia Switzer Foundation – Switzer Environmental Fellow	2020
ASLO – Limnology and Oceanography Research Exchange Fellow	2019
Ford Foundation – Predoctoral Fellowship	2018
National Science Foundation –IGERT Advanced Fellowship	2016
University of California-Santa Cruz – Climate Engagement Fellow	2017
National Science Foundation –IGERT Fellowship	2016
Woods Hole Oceanographic Institution – Whelan Memorial Fund	2016

Columbia University - King's Crown Leadership Award: Columbia Spirit	2015
Mellon Mays Undergraduate Research Fellowship	2013
Columbia University – Richard E. Witten Scholarship Recipient	2011

PUBLICATIONS

Luis, K., Lee, Z. The fusion of multispectral ocean color sensors for water clarity monitoring. (*in prep*)

Lee, Z., Shang, S., Li, Y., **Luis, K.**, Dai, M., & Wang, Y. (2021). Three-Dimensional Variation in Light Quality in the Upper Water Column Revealed With a Single Parameter. *IEEE Transactions on Geoscience and Remote Sensing*.

Scott Price, O., **Luis, K.**, Price, A. L., Harden, B., Howard, J., Valentin, L. E., Liles, G., Jearld Jr, A. (2020). Same Program Different Delivery: Adapting the Woods Hole Partnership Education Program for a Virtual Era. *Limnology and Oceanography Bulletin*, 29(4), 117-124.

Lee, Z., Wang, Y., Yu, X., Shang, S., **Luis, K.** Evaluation of forward reflectance and empirical algorithm for chlorophyll concentration of stratified waters. *Applied Optics*, 59(30) 9340-9352.

Wei, J., Wang, M., Lee, Z., Briceño, H. O., Yu, X., Jiang, L., ... & **Luis, K.** (2020). Shallow water bathymetry with multi-spectral satellite ocean color sensors: Leveraging temporal variation in image data. *Remote Sensing of Environment*, 250, 112035.

Luis, K. M., Rheuban, J. E., Kavanaugh, M. T., Glover, D. M., Wei, J., Lee, Z., & Doney, S. C. (2019). Capturing coastal water clarity variability with Landsat 8. *Marine Pollution Bulletin*, 145, 96-104.

Torres, A. D., Keppel-Aleks, G., Doney, S. C., Fendrock, M., **Luis, K.**, De Mazière, M., ... & Sussmann, R. (2019). A geostatistical framework for quantifying the imprint of mesoscale atmospheric transport on satellite trace gas retrievals. *Journal of Geophysical Research: Atmospheres*, 124(17-18), 9773-9795.

Kavanaugh, M. T., Rheuban, J. E., **Luis, K. M.**, & Doney, S. C. (2017). Thirty-Three Years of Ocean Benthic Warming Along the US Northeast Continental Shelf and Slope: Patterns, Drivers, and Ecological Consequences. *Journal of Geophysical Research: Oceans*, 122(12), 9399-9414.

Lee, Z., Shang, S., Lin, G., Liu, T., Liu, Y., Du, K., & **Luis, K.** (2017). Secchi disk observation with spectral-selective glasses in blue and green waters. *Optics Express*, 25(17), 19878-19885.

MEDIA & NON-PEER REVIEWED PUBLICATIONS

Luis, K. The Simplification of an Indigenous Scientist. *ASLO Bulletin*

Luis, K. [Online Conversations for Equity, Action, and Networking](#). ASLO Blog

Luis, K. [Ocean Hues](#). Schmidt Institute Cruise Log: Studying the Sea-Surface Microlayer 2

Luis, K. [TOS Student Highlight](#). The Oceanography Society Student Newsletter

CONFERENCE ACTIVITY & PARTICIPATION

Luis, K., Lee, Z. Fusion of Ocean Color Sensors for Global Water Clarity Monitoring – 2nd International Ocean Color Symposium, (virtual poster)

Luis, K., Lee, Z. Fusing Multiple Ocean Color Sensors for Coastal Water Clarity Monitoring. School for the Environment – Earth Day Symposium 2020, (virtual poster)

Luis, K., Lee, Z. The fusion of multispectral ocean color sensors for water clarity monitoring. Ocean Sciences 2020, San Diego, CA (poster presentation)

Chen, R., **Luis, K.**, Largier, J. Transdisciplinary Research and Education in Coastal Systems Posters, San Diego, CA (co-chair)

Luis, K., Lee, Z., McNally, S. Remote Sensing of Water Quality Parameters for *Vibrio* spp. monitoring. School for the Environment – Earth Day Symposium 2019, Boston, MA (oral presentation)

Luis, K., Lee, Z., Capturing coastal water clarity variations with Landsat 8 and Citizen Science. Ocean Sciences Meeting 2018, Dubrovnik, Croatia (poster presentation, sponsored by TOS student travel award)

Davis, S, Foint, Y., **Luis, K.**, Sheldon, P. Water Security. Land of a Thousand Ideas: Rwanda and the Sustainability Challenge 2018, Boston, MA (oral presentation)

Luis, K., Lee, Z., Capturing coastal water clarity variations with Landsat 8 and Citizen Science. Ocean Sciences Meeting 2018, Portland, OR (poster presentation)

Luis, K., Doney, S. Measuring Carbon Dioxide from Space. Woods Hole Partnership Education Program Symposium 2015, Woods Hole, MA (oral presentation)

GRANTS

NASA – MUREP INCLUDES Grant, author	2021
Partners Aligned To Heighten broad participation in STEM	
NASA – MUREP OCEAN Grant, author	2021
Using Hyperspectral Imagery to Assess the Effects of Warming on New England Kelp Forests	
Social Sciences Research Council – Predoctoral Research Development, PI	2020
Coastal and Inland Ocean Color Remote Sensing for Water Quality Monitoring	
NASA – MUREP INCLUDES Planning Grant, author	2020
Partners Aligned To Heighten broad participation in STEM	
Woods Hole Sea Grant – Advancing Diversity, Equity, and Inclusion, PI	2020
Online Conversation for Equity, Action, and Networking	
Woods Hole Sea Grant – Advancing Diversity, Equity, and Inclusion Partnership Education Program-II, author	2020
Social Sciences Research Council – Graduate Enhancement Grant, PI	2019
Remote Sensing of Water Quality Parameters for Vibrio Monitoring	
Social Sciences Research Council – Dissertation Development Grant, PI	2018
After the storm: Coastal Underwater Habitat Mapping for Improved Storm Response and Coastal Management	

INVITED TALKS & PANELS

Massachusetts Institute of Technology – EAPS Seminar Series	2021
Title: Finding Clarity in the Crowd: Improving Water Quality Monitoring	
Harris Center for Conservation Education – Women in Science Series	2021
Title: The Urban Ocean – The View from Boston Harbor	
Indigenous Peoples Day at UMass Boston (<i>Moderator</i>)	2020
Title: Climate Change and Indigenous Resistance: An Intergeneration and Inter-tribal Conversation	
Sea Education Association – The Ocean Odyssey Lecture Series	2020
Title: Painting the Oceans with Satellites and Planes	
Lamont Doherty Earth Observatory – Biology Department Seminar Talk	2020
Title: Coastal and Inland Ocean Color Water Quality Monitoring	
Documentary Educational Resources (<i>Discussion Panelist</i>)	2019
Documentary: Smokin’ Fish	
Ocean Sciences Meeting – Fluid Oceans: Pecha Kucha Evening	2018
Title: Satellite Imagery	

CRUISES & FIELDWORK

Massachusetts Bay, Massachusetts, *R/V Neritic*, NOAA-VIIRS Validation Day Cruises, 2016-2020

Suva, Fiji, *R/V Falkor*, Sea Surface Microlayer 2, November – December 2019

Maui, Hawaii, 32' Dive boat, NASA HypIRI and CORAL Campaigns, February 2017 and 2018

TEACHING & MENTORING:

Associate Lecturer & Founding Instructor, Spring 2020 & Spring 2021, The Urban Oceans, University of Massachusetts – Boston

Guest Lecturer, Spring 2019, Coral Reefs and Climate Change for Climate Change, Emerson College

Guest Lecturer, Spring 2019, Ocean Acidification and Aquatic Optics for Introduction to Oceans, University of Massachusetts-Boston

Undergraduate Mentor, 2020-2021, for Ryan Smith, Orpheus Meletis, and Samuel Domingues **Participant**, University of Massachusetts-Boston's Graduate Teaching Program

Course Assistant, 2013-2015, Environmental Sustainability and Corporate Decision Making, Introductory to Ecology, Climate Change Adaptation and Natural Disasters, Climate and Biodiversity, Evolution: Darwin to DNA, and Systems and Sustainability, Earth Institute at Columbia University

COURSES AND CERTIFICATIONS

OceanHackWeek – Summer 2021, virtual

Commonwealth Seminar: Opening the Doors of Government to Everyone – Fall 2020, Boston, MA

Near Term Ecological Forecasting Course – July 2019, Boston University, Boston, MA

Imaging FlowCytobot Training Course – November 2018, McLane Research Laboratories, Inc., Falmouth, MA

Calibration and Validation of Ocean Color Remote Sensing Course – June 2017, Darling Marine Center, Damariscotta, ME (Travel expenses sponsored by Ocean Carbon & Biogeochemistry)

PADI Open Water Diver, Advanced Diver, and Rescue Diver – Summer 2014, Little Cayman, Cayman Islands

Emergency First Responder – Summer 2014, Little Cayman, Cayman Islands

Field Geology Courses: Death Valley, CA; Barbados; Coldigioco, Italy

COMMUNITY ENGAGEMENT

Association for Limnology & Oceanography Early Career Researcher Committee, January 2021 - Present

Ocean Sciences Meeting 2022 ASLO Student Program Representative, Fall 2020-Present

Girls Who Code Lead Instructor, 2016-2020, Grove Hall Branch of the Boston Public Library, Dorchester, MA

NASA HypSIRI Outreach Activities Coordinator, 2017 & 2018, Maui, HI

SUBMERGE Marine Science Festival Volunteer, 2017, Hudson River Park, New York, NY

Neponset RiverFest Volunteer, 2018, Neponset River, Dorchester, MA

Ocean Sciences Meeting K-12 Day Mentor, 2018, Portland, Oregon

Höküle'a Coordinator and Guest Crew Member, 2018, Massachusetts

ACADEMIC & INSTITUTIONAL SERVICE

Convener of the School for the Environment Graduate Student Anti-Racism Taskforce

Convener of UMass-Boston's Deep Learning Group

Peer Reviewer: Estuarine, Coastal, and Shelf Science, Limnology and Oceanography Letters, Marine Pollution Bulletin

MEMBERSHIPS

Ecological Forecasting Initiative

Columbia Alumni Representative Committee

Association for Sciences in Limnology and Oceanography

The Oceanography Society

Society for Advancement of Chicanos/Hispanics & Native Americans in Science

Growing Women in Science

RELEVANT RESEARCH SKILLS

Computational:

- Proficient in Linux, Mac, Python, MATLAB, R, SeaDAS, ACOLITE, Hydrolight, High-Performance Computing Clusters (SLURM, LSF), Google Earth Engine, Git
- Familiar with SNAP, Tensorflow, ArcGIS, QGIS

Instrumentation:

- Field: Hyperpro-profiler, Spectral Evolution – Handheld Radiometer, AC-9, AC-S, BB7, Microtops sunphotometer, CTD, Secchi Disk, Van Dorn Sampling
- Laboratory: UV-Probe, Imaging Flow Cytobot (benchtop), VINDTA 3-C