CURRICULUM VITAE

Matthew H. Long
Coastal Biogeochemist
Associate Scientist
Marine Chemistry and Geochemistry
McLean 205, MS#8
Woods Hole Oceanographic Institution
Woods Hole, MA, 02543

Telephone: 508-289-2798
Email: mlong@whoi.edu
Webpage: https://www2.whoi.edu/staff/mlong/
Google Scholar
ORCID: 0000-0003-1359-0233

EDUCATION:

B.S., Albright College — Reading, PA — May, 2004
Honors Thesis: The Quantification and Qualification of Furanocoumarins in the Giant Hogweed, *Heracleum mantegazzianum;* Advisor: Christian Hamann

M.S., University of Virginia — Charlottesville, VA — January, 2008
Thesis: The Role of Organic Acid Exudates in Liberating Phosphorus from Seagrass-Vegetated Carbonate Sediments*;* Co-Advisors: Joseph C. Zieman, Karen McGlathery

Ph.D., University of Virginia — Charlottesville, VA — May, 2013
Dissertation: Using Eddy Correlation to Understand the Impacts of Hydrodynamics, Irradiance, and Surface Area on Ecosystem Metabolism Dynamics in Coral Reefs, Seagrass Meadows, and Ice Sheets*;* Co-Advisors: Joseph C. Zieman, Peter Berg

PROFESSIONAL EXPERIENCE:

Associate Scientist	Woods Hole Oceanographic Inst.	2021 – current
Assistant Scientist	Woods Hole Oceanographic Inst.	2016 – 2020
Postdoctoral Investigator	Woods Hole Oceanographic Inst.	2015 – 2016
Postdoctoral Scholar	Woods Hole Oceanographic Inst.	2013 - 2015
Doctoral Research	University of Virginia	2008 - 2013
Masters Research	University of Virginia	2004 - 2007

AWARDS:

Early Career Scientist Award. 2021. Woods Hole Oceanographic Institution.
Ocean Acidification Postdoctoral Scholarship. 2013. Woods Hole Oceanographic Institution.
Outstanding Student Presentation. 2012. Ocean Sciences Meeting, ASLO / AGU / TOS.
Best Oral Presentation. 2012. 28th Enviroday, University of Virginia.
Robert J. Huskey Travel Fellowship. 2011, 2012, 2013. University of Virginia.
2nd Best Oral Presentation. 2011. 27th Enviroday, University of Virginia.
Society of Fellows Travel Fellowship. 2010. University of Virginia.
Best Oral Presentation. 2009. 25th Enviroday, University of Virginia.
Joseph K. Roberts Award. 2008. University of Virginia.
2nd Best Oral Presentation. 2007. Coastal and Estuarine Research Federation.
University of Virginia Fellowships. Spring 2005, 2006, 2009 - 2012; Fall 2008, 2011 - 2013
Departmental Distinction in Chemistry. 2004. Albright College.
Biology Department Award. 2004. Albright College.
Chemistry Faculty Award. 2004. Albright College.

NCAA Scholar Athlete. *Cross Country, Indoor & Outdoor Track*. 2000-2004. Albright College.
Jacob Albright Scholar. 2004. Albright College.
Eagle Scout, Boy Scouts of America. Vigil Honor member, Order of the Arrow.

PROFESSIONAL AFFILIATIONS:

Member, Association for the Sciences of Limnology and Oceanography, 2008-present
Member, Estuarine and Coastal Research Federation, 2007- present
Member, American Geophysical Union, 2019- present

RESEARCH INTERESTS:

- Coastal ecosystem metabolism, calcification, and nutrient cycling; the in-situ dynamic drivers of these processes, and their roles in global biogeochemical cycling
- Bio-physical interactions and ocean acidification effects on calcifying organisms and ecosystem processes
- Micro-scale turbulence and boundary layer exchange techniques
- Macrophyte carbon cycling, carbonate sediment dissolution, and nutrient acquisition
- The development of in-situ instrumentation, platforms, and techniques for investigating the processes above. Specifically, boundary layer exchange techniques and the development of new sensors, techniques, and platforms.

PROFESSIONAL ACTIVITIES:

Woods Hole Oceanographic Institution:

Advisory Group for the Strategic Facilities Assessment 2.0 (2022-present)
CWATER subcommittee for small boats (2022)
Institution Safety Committee Chair (2022-present)
Reef Solutions Catalyst Member (2021-present)
David Center Committee (2022-present)
AVAST Oversight Committee (2021-Present)
Scientific Staff Executive Committee (SciSEC) Co-Chair (elected 2019-2020)
Autonomous Vehicle and Sensor Technology (AVAST) and New Quissett Facility (NQF) Workshop participant and committee (2019-2022)
Center for Air-Sea Interaction and Marine Atmospheric Sciences member (2019-present)
Scientific Staff Executive Committee member (2018-2020)
Marine Chemistry and Geochemistry Seminar Coordinator (2018)
Institution Safety Committee member (2018-present) and Chair (2022-present)
Marine Chemistry and Geochemistry Safety Committee Chair (2018-2022)
Coral Chorus Symposium. (January 2017)
Speed Talk to new JP students and simmer students. (2016-present)
Under the Waves (2015)

Outside Woods Hole Oceanographic Institution:

National Academy of Science, Ocean Studies Board panelist for 'Declining Oxygen in Ocean Waters'. 2021
Guest Lecturer – Bermuda Institute of Ocean Sciences: Coral Reef Ecology course (2021)
Hudson Carbon Consortium, invited participant, 2019-2021
NSF Ocean Acidification PI meeting, 2015, 2018

Coastal and Estuarine Research Federation (CERF) meeting Session co-chair: Acidification in the coastal environment: Drivers, co-stressors, and biological responses. 2017.
Associate Editor: Frontiers in Marine Science, 2017-present
Falmouth Academy Science Fair Judge 2017-present
Reviewer for: National Science Foundation (CO, PO, OTIC, DEB, Career), SeaGrant, Science, Nature Communications, Limnology and Oceanography, Ecosystems, Estuaries and Coasts, Biogeosciences, Marine Ecology Progress Series, Environmental Monitoring and Assessment, Frontiers in Marine Science, Deep Sea Research, Physical Sensors, Marine Chemistry, Journal of Geophysical Research: Oceans, Estuarine and Coastal Shelf Science, Limnology and Oceanography: Methods, Journal of Geophysical Research: Biogeosciences, Global Biogeochemical Cycles, Journal of Geophysical Research: Atmospheres

PARTICIPATION IN EDUCATION, MIT-WHOI JOINT PROGRAM:

PhD committee member, MIT-WHOI Joint Program Student Lina Taenzer (2022-present)
MIT-WHOI JP PhD Adviser, Solomon Chen, MIT-WHOI Joint Program Student (2020-2023)
Proposal Defense Chair, Erica Herrera, MIT-WHOI Joint Program Student (2022)
MS committee member, MIT-WHOI Joint Program Student Luciana Villarroel (2022)
Thesis Defense Chair, Kalina Grabb, MIT-WHOI Joint Program Student (2022)
MIT-WHOI JP Academic Advising Committee (2019-2021)
12.743 - Geochemistry of Marine Sediments (2019-present)
PhD committee member, MIT-WHOI Joint Program Student Mallory Ringham (2019-2022)
WH.412 - Ocean Acidification and Related Stressors: Current Adaptations and Future Reponses (with T.A. Mooney), Fall 2015

SUPERVISION AT WHOI:

Samuel Koeck, Research Assistant II, 2022-present
Ryan Galusha, Undergraduate Mentee, WHOI Summer Student Fellow, 2022
Natalia Wierzbicki, Undergraduate Mentee, WHOI Guest Student, 2022
Chris Murray, Postdoctoral Advisee, Postdoctoral Fellow, 2022-present
Heather Ricker, Undergraduate Mentee, WHOI Summer Student Fellow, 2021
Katie Haviland, Cornell PhD candidate, WHOI Guest Student, 2021
Jeff Coogan, Postdoctoral Advisee, Postdoctoral Investigator & Engineer II, 2020-2023
Solomon Chen, MIT-WHOI MS Student and WHOI Summer Student Fellow, 2019-2022
David Bailey, RA, field instrument deployment, lab facilities management, 2017-present
Adam Subhas, Postdoctoral Advisee, Postdoctoral Scholar, 2017-2019
Kyle Conner, Undergraduate Mentee, Summer Student Fellow, 2018
Alex Quizon, Undergraduate Mentee, Guest Student, 2018
Miraflor Santos, Undergraduate Mentee, Partnership in Education Program, 2017
Lucy Fitzgerald, Undergraduate Mentee, Biological Discovery in Woods Hole, 2016
Apryle Panyi, Undergraduate Mentee, Biological Discovery in Woods Hole, 2015
Katherine Hoering, RA, Analysis of alkalinity and dissolved inorganic carbon samples, 2015
Colin Wirth, Jessica Wingar, RA, Multiple stressor experiments on squid development, 2015
Alexandra Dunn, Undergraduate Mentee, WHOI Guest Student, 2014

CRUISE AND FIELDWORK PARTICIPATION:

US Virgin Islands, 10/2022 – Reef Solutions Catalyst field work (benthic and pelagic fluxes)
Hadley Harbor, MA, 8/2022 – Underwater mass spectrometer and green energy platform
RV Tioga Cruise, Buzzards Bay 7/2022 – CRITTR testing and undergraduate education
Hadley Harbor, MA, 4-11/2021 – Solar and communication buoy deployment at Naushon Island
Hadley Harbor / Naushon Island 8/2021 – Underwater Mass Spectrometer deployment
Buzzards Bay, MA, 10/2020 – Solar and communication buoy deployment at Naushon Island
Waquoit Bay, MA 10/2020 – Fetch-dependent gas transfer velocity, floating spar buoy platform
Great Harbor, MA 9/2020 - Seagrass incubations for ROS evaluation
Waquoit Bay, MA 8/2020 – Seagrass incubations for ROS evaluation
Buzzards Bay, MA, 7/2019 – Surface mixed layer primary productivity near Weepeckett Islands
R/V Walton Smith - Lee Stocking Island, 5/2019 – Seagrass carbon cycling
Waquoit Bay, MA, 7/2018 – Testing of a mass spectrometer benthic exchange system
Florida Keys, FL, 6/2018 – Calcification and metabolism in tropical benthic environments
R/V Walton Smith - Lee Stocking Island, 5/2018 – Seagrass carbon cycling
Bermuda 9/2017 – Coral reef and sand metabolism and calcification flux measurements
Waquoit Bay, MA 8/2017 – Terrestrial CO_2 and underwater O_2 flux measurements on a barge
Eastern Shore, VA 7/2017 – Seagrass and water column carbon cycling
Gulf Coast, FL 5/2017 – Seagrass and water column carbon cycling
Eastern Shore, VA 9/2016 – Testing of eddy covariance and gradient exchange methods
U.S. Virgin Islands 7/2016 – Eddy Covariance H^+ and O_2 exchange system over coral reefs
Waquoit Bay, MA 9/2015 – Air-sea exchange from a floating, aquatic eddy covariance platform
Waquoit Bay, MA 7/2014 – Chamber and H^+ and O_2 eddy covariance flux validation over sands
Waquoit Bay, MA 6-9/2013 – Development of in-situ, fast-response pH and O_2 sensor
Florida Keys, FL 12/2012 – Offshore carbonate sand flux measurements
Florida Keys, FL 7-8/2012 – Florida Bay eddy covariance and Eulerian flux measurements
Gulf Coast, FL 6/2012 – Eddy covariance flux measurements in St. George Bay
Gulf Coast, FL 6/2011 – Turbulence and metabolic measurements over permeable sands
Florida Keys, FL 6-8/2010 – Florida Bay and offshore reef and seagrass flux measurements
Greenland 3/2010 – Under ice productivity and ice melt measurements (O_2, salt & heat fluxes)
Florida Keys, FL 1/2010 – Florida Bay seagrass flux measurements
Woods Hole, MA, 8/2009 – Flux measurements in seagrass and sands in West Falmouth Harbor
Florida Keys, FL 6/2009 – Florida Bay and offshore reef, rubble and seagrass flux measurements
Gulf Coast, FL 4/2009 – Eddy covariance flux measurements in St. George Bay
Florida Keys, FL 1/2009 – Calcium eddy covariance flux measurements in carbonate sands
Falling Springs, VA 10/2008 – Geothermal hot springs measurements of calcium flux
Woods Hole, MA, 8/2008 – Flux measurements over seagrass beds in West Falmouth Harbor
Wakulla River, FL 5/2008 – Chamber and eddy covariance flux measurements in a sandy river
Bremen, GE 11-12/2007 – Development and testing of a calcium eddy covariance sensor
R/V Neeskay, Lake Michigan 9/2007 – Particle image velocimetry and acoustic turbulence
Florida Bay, FL 8/2006 - Seagrass organic acid production and biogeochemical cycling
Florida Bay, FL 6/2006 – Seagrass above/belowground production and phosphorus cycling
Florida Bay, FL 1/2006 – Seagrass organic acid production and phosphorus cycling
Florida Bay, FL 6/2005 – Seagrass productivity and sediment porewater analysis
Taylor Bog, PA 7/2003 – Bog turtle habitat restoration and hydrology
Hudson River, NY 7/2002 – Nekton habitat usage in *Phragmities australis*

PUBLICATIONS IN REFEREED JOURNALS:

** Indicates a student /postdoctoral advisee and underline represents corresponding author*

Manuscripts Submitted/In Review:

Chen ST*, Ward CP, **Long MH**. (2022) Quantifying Pelagic Primary Production and Respiration via an Automated In-Situ Incubation System. **Limnology and Oceanography: Methods.** Submitted 12/2022: LOM-22-12-0099

Coogan JS* and **Long MH**. (2022) Development and deployment of a long-term aquatic eddy covariance system. **Limnology and Oceanography: Methods.** Submitted 12/2022: LOM-22-12-0098

Apprill A, Girdhar Y, Mooney TA, Hansel CM, **Long MH**, Liu Y, Zhang WG, Kapit J, Hughen KA. A New Era of Coral Reef monitoring. Environmental Science & Technology. *In Revision*: es-2022-053698

Peer-reviewed Publications (21 total, 13 first author, 1 only author):

Long MH, Mora JW. (2022) Deoxygenation, Acidification and Warming in Waquoit Bay, USA, and a Shift to Pelagic Dominance. **Estuaries and Coasts**. *In Press*. ESCO-D-22-00087

Coogan JS*, Rheuban JE, **Long MH**. (2022) Evaluating Benthic Flux Measurements from a Gradient Flux System. **Limnology and Oceanography: Methods 20: 222-232**. DOI: 10.1002/lom3.10482

Koopmans D, Meyer V, Holtappels M, Schaap A, Dewar M, Farber P, **Long MH**, Gros J, Connelly D, de Beer D. (2021) Detection and quantification of carbon dioxide gas at the seafloor using pH eddy covariance and measurements of plume advection. **International Journal of Greenhouse Gas Control**. 112:1-12. DOI: 10.1016/j.ijggc.2021.103476

Long, MH. (2021) Aquatic Biogeochemical Eddy Covariance Fluxes in the Presence of Waves. **Journal of Geophysical Research: Oceans**. 126: 1-23; e2020JC016637. DOI: 10.1029/2020JC016637. ***Featured on Issue Cover.***

Owen DP, **Long MH**, Fitt WK, Hopkinson BM. (2021) Taxon-specific primary production rates on coral reefs in the Florida Keys. **Limnology and Oceanography**. 66: 625-638. DOI: 10.1002/lno.11627

Doo SS, Kealoha A, Andersson AJ, Cohen A, Hicks TL, Johnson ZI, **Long MH**, McElhany P, Mollica N, Shamberger KEF, Silbiger N, Takeshita Y, Busch DS. (2020) The challenges of detecting and attributing ocean acidification impacts on marine ecosystems. **ICES Journal of Marine Sciences**. 77: 2411-2422. DOI: 10.1093/icesjms/fsaa094

Long MH, Sutherland K, Wankel SD, Burdige DJ, Zimmerman RC. (2020) Ebullition of Oxygen from Seagrasses under Supersaturated Conditions. **Limnology and Oceanography** 65: 314-324. DOI: 10.1002/lno.11299

Hopkinson BM, King AC, Johnson-Roberson M, **Long MH**, Bhandarkar M. (2020) Automated classification of three-dimensional reconstructions of coral reefs using convolutional neural networks. **PLoS ONE** 15(3): e0230671. DOI: 10.1371/journal.pone.0230671

Long MH, Rheuben JE, McCorkle DC, Burdige DJ, Zimmerman RC. (2019) Closing the oxygen mass balance in shallow coastal ecosystems. **Limnology and Oceanography** 64: 2694-2708. DOI: 10.1002/lno.11248

Subhas AV*, McCorkle DC, Quizon A*, McNichol A, **Long MH**. (2019) Selective Preservation of Coccolith Calcite in Ontong-Java Plateau Sediments. **Paleoceanography and Paleoclimatology** 34: 2141-2157. DOI: 10.1029/2019PA003731

Long MH, Nicholson DP. (2018) Surface Gas Exchange Determined from an Aquatic Eddy Covariance Floating Platform. **Limnology and Oceanography: Methods** 16: 145-159. DOI: 10.1002/lom3.10233

Long MH, Mooney TA, Zakroff C. (2016) Extreme low oxygen and decreased pH conditions naturally occur within developing squid egg capsules. **Marine Ecology Progress Series** 550:111-119. DOI: 10.3354/meps11737

Long MH, Charette MA, Martin WR, McCorkle DC. (2015) Oxygen metabolism and pH in coastal ecosystems: Eddy Covariance Hydrogen ion and Oxygen Exchange System (ECHOES). **Limnology and Oceanography: Methods** 13: 438-450. DOI: 10.1002/lom3.10038

Long MH, Berg P, Falter JL. (2015) Seagrass Metabolism across a productivity gradient using the eddy covariance, Eulerian control volume, and biomass addition techniques. **Journal of Geophysical Research: Oceans** 120: 3624-3639. DOI: 10.1002/2014JC010352

Long MH, Berg P, McGlathery KJ, Zieman JC. (2015) Sub-tropical seagrass ecosystem metabolism measured by eddy covariance. **Marine Ecology Progress Series** 529: 75-90. DOI: 10.3354/meps11314.

Long MH, Berg P, De Beer D, Zieman JC. (2013) In situ coral reef oxygen metabolism: An eddy correlation study. **PloS ONE** 8: e58581. DOI: 10.1371/journal.pone.0058581

Berg P, **Long MH**, Huettel M, McGlathery K, Rheuban J, Giblin A, Howarth R, Marion R, Foreman K. (2013) Eddy correlation measurements of oxygen fluxes for permeable sediments exposed to varying current flows. **Limnology and Oceanography** 58: 1329-1343. DOI: 10.4319/lo.2013.58.4.1329

Long MH, Rheuban J, Berg P, Zieman JC. (2012) A comparison and correction of light intensity loggers to photosynthetically active radiation sensors. **Limnology and Oceanography Methods** 10: 416-424. DOI 10.4319/lom.2012.10.416

Long MH, Berg P, Koopmans D, Rysgaard S, Glud R. (2012) Oxygen exchange and ice melt measured at the ice-water interface by eddy correlation. **Biogeosciences** 9: 1957–1967. DOI: 10.5194/bg-9-1957-2012

Liao Q, Bootsman HA, Xiao J, Klump JV, Hume A, **Long MH**, Berg P. (2009) Development of an in situ Underwater Particle Image Velocimetry (UWPIV) System. **Limnology and Oceanography Methods** 7: 169-184. DOI: 10.4319/lom.2009.7.169

Long MH, McGlathery K, Zieman JC, Berg P. (2008) The role of organic acid exudates in liberating phosphorus from seagrass-vegetated carbonate sediments. **Limnology and Oceanography** 53: 2616-2626. DOI: 10.4319/lo.2008.53.6.2616

Link to Google Scholar, https://orcid.org/0000-0003-1359-0233

Non-peer Reviewed Publications:

Pasour VB, White BL, Ghisalberti M, Adams MP, **Long MH**, Reidenbach MA, Shavit U, Samson JE, eds. (2020) Canopies in Aquatic Ecosystems: Integrating Form, Function, and Biophysical Processes. Lausanne: **Frontiers Media** SA. doi: 10.3389/978-2-88963-340-1

Samson JE, Ghisalberti M, Adams MP, Reidenbach MA, **Long MH**, Shavit U, Pasour VB. (2019) Editorial: Canopies in Aquatic Ecosystems: Integrating Form, Function, and Biophysical Processes. **Frontiers in Marine Science** - Canopies in Aquatic Ecosystems: Integrating Form, Function, and Biophysical Processes. doi: 10.3389/fmars.2019.00697

PUBLISHED ABSTRACTS:

** Indicates a student /postdoctoral advisee*

Galusha RC*, Chen ST*, **Long MH**. The Open Source Engineered Autonomous Sampler (OpenSEAS): Improving access to low-cost, in situ chemical sensor development. New England Estuarine Research Society. Providence, RI. Poster. November 2022.

Coogan, JS*, **Long MH**. Development and Deployment of a Long-Term Benthic Oxygen Flux System. Restore America's Estuaries. New Orleans, LA. Poster. December 2022.

Chen ST*, Ward C, **Long MH**. Quantifying pelagic primary production via automated in-situ incubation systems. Ocean Sciences Meeting, ASLO. Virtual. Presentation February 2022.

Ricker H*, Booth H, Reitsma J, **Long MH**. Comparative long-term water quality analysis of multiple estuaries across Cape Cod, MA. Ocean Sciences Meeting, ASLO. Virtual. Presentation February 2022.

Dzwonkowski B, Coogan JS*, **Long MH**, Lockridge G. Observations of the coupled impact of near-inertial oscillations and geostrophic shear on shelf stratification. Coastal and Estuarine Research Federation. Virtual. Presentation November 2021.

Koopmans D, Meyer V, Schaap A, Holtappels M, Dewar M, Farber P, **Long MH**, Gros J, Connellly D, de Beer D. pH eddy covariance: A remarkably sensitive technique for the detection of a seafloor source of CO_2. Aquatic Sciences Meeting, ASLO. Virtual. Presentation June 2021.

Long MH, Rheuban JE, McCorkle DC, Wankel SD, Sutherland K, Burdige DJ, Zimmerman RC. Advances in the Aquatic Eddy Covariance Technique and the Unique Challenges of Aquatic Boundary Layers: Waves, Ebullition, and Biogeochemical Mass-Balance Closure. American Geophysical Union, virtual. Presentation December 2020.

Zimmerman RC, **Long MH**, Burdige DJ, Hill V, Collister B, Islam K, Li J, Coffer M, Schaeffer B. Carbon Flux and Blue Carbon Potential of Seagrass Ecosystems in the Anthropocene. Ocean Sciences Meeting, ASLO. San Diego, CA. Presentation February 2020.

Chen S*, Ward C, Wang ZA, **Long MH.** PhRePhOx: an In-situ Approach to Quantify Carbon Cycling Processes. Ocean Sciences Meeting, ASLO. San Diego, CA. Presentation February 2020.

Long MH, Burdige DJ, Zimmerman RC. Novel Insights from High-frequency, In-situ Primary Productivity and Physical Exchange Rates in a Seagrass-dominated Coastal Ecosystem. ***Invited Presentation*** in *Scientific Surprises from Sensors: What Have We Learned About Ecosystem Science from Advancement of in situ Sensors?* AGU, San Francisco, CA. December 2019.

Zimmerman RC, Hill V, **Long MH**, Burdige DJ. Ocean Acidification, Climate Warming and Seagrass Meadows in the Anthropocene. Presentation. AGU, San Francisco, CA. December 2019.

Burdige DJ, Zimmerman RC, **Long MH.** The seagrass sediment carbon pump and its impact on carbon dynamics in coastal settings. Coastal and Estuarine Research Federation. Mobile, Alabama. Presentation November 2019.

Long MH, Burdige DJ, McCorkle DC, Rheuban JE, Zimmerman RC. Coastal primary productivity: Apportioning benthic, water column, and atmosphere exchange importance with in-situ fluxes. Coastal and Estuarine Research Federation. Mobile, Alabama. Presentation November 2019.

Long MH, Rheuban JE, Conner K*, Hopkinson B, McCorkle DC. Ecosystem productivity and calcification at marginal coral reef sites using turbulent boundary layer techniques. Aquatic Sciences Meeting, ASLO. San Juan, Puerto Rico. Presentation February 2019.

Lee JS, Kim S, **Long MH**, Park J, Lee T, Yoo S, Son YB. Estimation of the influence of barren ground on coastal rocky bottom ecosystem metabolism using a noninvasive eddy covariance technique: application to subtropical Jeju Island. Aquatic Sciences Meeting, ASLO. San Juan, Puerto Rico. Presentation February 2019.

Conner K*, Rheuban JE, McCorkle DC, **Long MH**. Assessing benthic ecosystem calcification and production in Key Largo reef environments using gradient exchange systems. Aquatic Sciences Meeting, ASLO. San Juan, Puerto Rico. Poster February 2019.

Owen DP, Frit WK, **Long MH**, Hopkinson B. A Bottom-Up Method to Estimate Species Specific Primary Production Rates on Coral Reefs. Ocean Sciences Meeting, ASLO. Portland, Oregon. Presentation February 2018.

Long MH, Zimmerman RC, Burdige DJ, McCorkle DC. Accessing Diel Changes in Coastal Oxygen, pH and Carbonate Chemistry Driven by Ecosystem Metabolic Processes. Ocean Sciences Meeting, ASLO. Portland, Oregon. Presentation February 2018.

Zimmerman RC, Hill VJ, Burdige DJ, Collister B, **Long MH**. Understanding the Role of Seagrasses in Sequestering CO2 in Coastal Habitats. Coastal and Estuarine Research Federation. Providence, RI. Presentation November 2017.

Long MH, Zimmerman RC, Burdige DJ, McCorkle DC. Benthic biogeochemical cycling mediates large diel changes in coastal pH and carbonate chemistry. Coastal and Estuarine Research Federation. Providence, RI. Presentation November 2017.

Fitzgerald L*, **Long MH**, Mooney TA. Effects of flow and hypoxia on developing squid (D. Pealeii) egg cases. Aquatic Sciences Meeting, ASLO. Hawaii. Presentation. February 2017.

Long, MH. Ecosystem-scale metabolism in 3-dimensinal canopies using eddy covariance. Aquatic Sciences Meeting, ASLO. Hawaii. Presentation. February 2017.

Johnson-Roberson M, Fitt WK, Hopkinson BM, **Long MH.** 3D Photogrammetry for Measuring Reef Productivity: Advances in Light Propagation and Self-Occlusion. International Coral Reef Symposium. June 2016.

Long MH, Nicholson D. Determining air-sea exchange from the sea-side: A new floating aquatic eddy covariance platform. Ocean Sciences Meeting, ASLO / AGU/ TOS. Presentation. February 2016.

Panyi A*, **Long MH**, Mooney TA. Effects of ocean acidification and flow on oxygen and pH conditions of developing squid (*Doryteuthis pealeii*) egg cases. Ocean Sciences Meeting, ASLO / AGU/ TOS. Poster Presentation. February 2016.

Long MH, Zakroff C, Mooney TA. Extreme low oxygen and decreased pH conditions naturally occur within developing squid egg capsules. Coastal and Estuarine Research Federation. Portland, Oregon. Presentation. November 2015.

Long MH, Charette MA, Martin W, McCorkle DC. Oxygen metabolism and pH in coastal ecosystems: Eddy Covariance Hydrogen ion and Oxygen Exchange System (ECHOES). New England Estuarine Research Society. Presentation, April 2015.

Long MH, McCorkle DC, Charette MA, Martin W. High resolution, in situ pH and oxygen fluxes using a new eddy correlation system to examine ocean acidification and ecosystem metabolism. Ocean Sciences Meeting, ASLO / AGU/ TOS. Presentation. February 2014.

Long MH, Berg P, De Beer D, Zieman JC. High-resolution metabolic rates of subtropical seagrass beds evaluated with the in situ eddy correlation technique. Ocean Sciences Meeting, ASLO / AGU/ TOS. Presentation. February 2013.

Berg P, Huettel M, **Long MH**. Effects of Advective Flow in Permeable Sediment Measured By Eddy Correlation. ASLO 2013 Aquatic Sciences Meeting February 2013.

Long MH, Berg P, De Beer D, Zieman JC. In-situ metabolism dynamics of subtropical coral reefs and seagrass beds determined by eddy correlation. Benthic Ecology Meeting. Presentation. March 2012.

Long MH, Berg P, De Beer D, Zieman JC. Metabolism of subtropical coral reefs and seagrass beds determined by eddy correlation. Ocean Sciences Meeting, ASLO / AGU/ TOS. Presentation. February 2012. **Awarded: Outstanding Student Presentation.**

Berg P, **Long MH**, Rheuban J, Koopmans D, Huettel M. Dynamic changes in eddy correlation measurements of benthic oxygen fluxes. Ocean Sciences Meeting, ASLO / AGU/ TOS. Poster. February 2012.

Long MH, Berg P, Rheuban J, Zieman JC. Entire reef system O_2 metabolism measured *in situ* by eddy correlation. Aquatic Sciences Meeting, ASLO. Presentation. February 2011.

Long MH, Berg P, Rheuban J, Zieman JC. Eddy Correlation measurements of benthic oxygen fluxes for coral reefs. Ocean Sciences Meeting, ASLO / AGU/ TOS. Poster. February 2010.

Berg P, **Long MH**, Foreman K, Giblin A, Howarth B, Huettel M, Marino R, McGlathery K, Rheuban, JE. Eddy Correlation measurements of benthic oxygen fluxes for permeable sediments. Ocean Sciences Meeting, ASLO / AGU/ TOS. Presentation. February 2010.

Long MH, McGlathery K, Zieman JC, Berg P. The role of organic acid exudates in liberating phosphorus from seagrass-vegetated carbonate sediments. Coastal and Estuarine Research Federation. November 2007. **Awarded**: **2nd Best Oral Presentation**.

INVITED SEMINARS:

Long, MH. Moving Beyond Concentration Measurements: How Technology, Physics and Fluxes Advance Marine Biogeochemistry. University of New Hampshire. March 2022.

Long, MH. Charismatic Photosynthesizers: Biochemical and Physical Controls of Water Chemistry. Bermuda Institute of Ocean Sciences. July 2021.

Long MH. Closing the coastal primary production budget: air-sea, water column, and benthic interactions. SMAST, UMass Dartmouth. October 2018.

Long MH. Productivity, pH and Carbon Cycling in Dynamic Coastal Ecosystems. Old Dominion University. September 2016.

Long MH. Physical Transport of Biogeochemical Tracers to Evaluate Exchange Across Coastal Ecosystem Interfaces. University of Rhode Island, Graduate School of Oceanography. February 2016.

Long MH. Community Ecology and Biogeochemical Cycling in Dynamic Coastal Ecosystems. Florida State University. January 2016.

Long MH. Ecosystem Calcification and Metabolism in Dynamic Coastal Ecosystems.

Bermuda Institute of Ocean Science. August 2015.

Long MH. Carbon Cycling and Ocean Acidification in Dynamic Coastal Ecosystems.

Skidaway Institute of Oceanography at the University of Georgia. March 2015.

Long MH. Benthic Carbon Cycling and Ocean Acidification in Dynamic Coastal Ecosystems.

Woods Hole Oceanographic Institution. March 2015.

Long MH. Ecosystem metabolism in challenging environments: Seagrass beds, coral reefs and Arctic ice sheets. Marine Biological Laboratory. March 2014.

Long MH. Eddy correlation: Challenges, field application, and recommendations. 4th Annual Eddy Correlation Workshop. February 2014.

Long MH, Berg P, McGlathery K, De Beer D, Zieman JC. Tropical seagrass meadows and coral reefs: An examination of productivity and biogeochemical cycling. Albright College. March 2011.

PAPERS PRESENTED AT MEETINGS:

** Indicates a student /postdoctoral advisee*

Galusha, R*, **Long MH**. The rapid design of a seawater autosampler. WHOI Summer Student Symposium. Poster August 2022.

Galusha, R*, **Long MH**. Engineering of a pumping system for an underwater mass spectrometer. WHOI Summer Student Symposium. Presentation. July 2022.

Long, MH. Moving Beyond Concentration Measurements: How Technology, Physics and Fluxes Advance Marine Biogeochemistry. Summer Student Fellowship Seminar Series, WHOI. June 2022.

Long MH, Coogan JC. Long-term continuous, in-situ eddy covariance oxygen fluxes. Blue Carbon Consortium Meeting. Virtual. May 2022.

Mora JW, **Long MH**. Shifting water quality and metabolism dynamics in the Waquoit Bay Estuary. Falmouth, Massachusetts, Water Quality Management Committee. March 2022.

Long MH, Van Mooy BAS. Accelerating Analyses of Mesopelagic Carbon Turnover: a Continuous Reconnaissance In-situ Twilight zone Tiny Respirometer (CRITTR). Ocean & Climate Innovation Accelerator Meeting March 2022.

Coogan, JS* and **Long MH**. Development and deployment of a long-term benthic oxygen flux system. Woods Hole Oceanographic Institution Marine Chemistry and Geochemistry Seminar. Presentation. November 2021.

Long MH. Coastal Deoxygenation: Case Studies on the Coastal Oxygen Budget. ***National Academy of Science. Ocean Studies Board panelist***: Declining Oxygen in Ocean Waters. Invited Presentation. November 2021.

Coogan, J* and **Long MH**. Development and deployment of a long-term benthic oxygen flux system. Woods Hole Oceanographic Institution Postdoc Symposium. Presentation. November 2021.

Ricker H*, **Long MH**. Applicable estuarine data for Cape Cod aquaculture: Communicating long-term water quality trends. WHOI Summer Student Symposium. Presentation & Poster August 2021.

Coogan, J* and **Long MH**. Dissolved Oxygen Flux and the Bottom Boundary Layer. Woods Hole Oceanographic Institution Postdoc Symposium. Presentation. October 2020.

Long, MH. Charismatic Photosynthesizers: Biochemical and Physical Controls of Water Conditions in Seagrass and Reef Environments. WHOI Marine Chemistry and Geochemistry Seminar. January 2020.

Chen S*, Ward C, **Long MH.** PhRePhOx: an In-situ Approach to Quantify Carbon Cycling Processes in the Ocean. 2019 SACNAS - The National Diversity in STEM Conference. Poster November 2019.

Chen S*, Ward C, **Long MH.** PhRePhOx: an In-situ Approach to Quantify Carbon Cycling Processes in the Ocean. WHOI Summer Student Symposium. Poster August 2019.

Conner K*, Rheuban JE, McCorkle DC, **Long MH**. Assessing Ecosystem Calcification and Production in Benthic Environments Using Gradient Exchange Systems. WHOI Summer Student Symposium. Poster August 2018.

Santos M*, **Long MH**, Zimmerman RC, Burdige DJ. Quantifying Primary Productivity of Algae in Seagrass Meadows. PEP Symposium. Presentation August 2017.

Santos M*, **Long MH**, Zimmerman RC, Burdige DJ. Quantifying Primary Productivity of Algae in Seagrass Meadows. WHOI Summer Student Symposium. Poster August 2017.

Long, MH. Turbulent boundary layer exchange from organismal to ecosystem scales. Coastal Ocean Fluid Dynamics Laboratory Seminar, WHOI. April 2017.

Koopmans, D.J., Holtappels, M., Meyer, V., **Long, M**., and de Beer, D. Resolving DIC flux in situ and at high frequency using pH eddy covariance. Max Planck Institute for Marine Microbiology Scientific Review. Bremen, Germany. Poster 2017.

Long, MH. Coral metabolism and calcification in the USVI. Coral Chorus Symposium, WHOI. January 2017.

Fitzgerald L*, **Long MH**, Mooney TA. Effects of flow and hypoxia on developing squid (D. Pealeii) egg cases. Biology Summer Student Research Forum, WHOI. August 2016.

Fitzgerald L*, **Long MH**, Mooney TA. Effects of flow and hypoxia on developing squid (D. Pealeii) egg cases. Marine Biological Laboratory Undergraduate Research Symposium. August 2016. **undergraduate mentee*

Long MH, Nicholson DP. A new floating aquatic eddy covariance platform for determining air-sea exchange. Ocean Chemistry and Biochemistry Workshop. July 2016.

Long MH, Charette MA, Martin WR, McCorkle DC. Oxygen metabolism and pH in coastal ecosystems: Eddy Covariance Hydrogen ion and Oxygen Exchange System (ECHOES). Warnemünde Turbulence Days. Isle of Vilm, Germany. **Invited Presentation**. September 2015.

Panyi A*, **Long MH**, Mooney TA, Zakroff C. Effects of ocean acidification and flow on oxygen and pH conditions of developing squid (*Doryteuthis pealeii*). Marine Biological Laboratory Undergraduate Research Symposium. August 2015.

Panyi A*, Long MH, Mooney TA. Oxygen and pH conditions of developing squid (D. Pealeii) egg cases. Biology Summer Student Research Forum, WHOI. August 2015.

Long MH, Charette MA, Martin WR, McCorkle DC. Oxygen metabolism and pH in coastal ecosystems: The Eddy Covariance Hydrogen ion and Oxygen Exchange System (ECHOES). Ocean Chemistry and Biochemistry Meeting, WHOI. Poster. July 2015.

Mooney TA, **Long MH**, Zakroff C. Dose-dependent impacts of ocean acidification conditions and potential resiliency in young squid. Ocean Acidification PI meeting. Presentation June 2015.

Dunn A*, Stanley RS, **Long MH.** Oxygen fluxes in Waquoit Bay: Comparing triple oxygen isotopes to eddy covariance techniques. Department of Chemistry. Wellesley College. Poster. October 2014.

Long MH, Charette MA, McCorkle DC, Martin W. Carbon cycling in benthic ecosystems: Development of an Eddy Covariance Hydrogen ion and Oxygen Exchange System (ECHOES). Applied Ocean Physics & Engineering, WHOI. Seminar. September 2014.

Long MH. Development of a novel high resolution O_2/H^+ eddy covariance technique: Coastal ocean acidification and carbon cycling due to geochemical and biological processes. Ocean and Climate Change Institute Meeting. **Invited Talk**. May 2014.

Long MH. High-resolution Metabolic Rates of Subtropical Seagrass Beds Evaluated with the in situ Eddy Correlation Technique. Postdoc Symposium, WHOI. Presentation, October 2013.

Long MH, Berg P, De Beer D, Zieman JC. High-resolution metabolic rates of subtropical seagrass beds evaluated with the in situ eddy correlation technique. WHOI Marine Chemistry and Geochemistry Seminar. June 2013.

Long MH, Berg P, Zieman JC, De Beer D, Koopmans, D, Rysgaard S**,** Glud RN**.** Ecosystem Metabolism in Challenging Environments with Eddy Correlation: Seagrass Beds, Coral Reefs, and Arctic Ice Sheets. University of Virginia. Seminar. March 2013.

Long MH, Berg P, Koopmans D, Rysgaard S, Glud R. Oxygen metabolism and ice melt measured at the water-ice interface by eddy correlation. 28th annual Enviroday. University of Virginia. Presentation. January 2012. **Awarded: Best Oral Presentation**.

Long MH, Berg P, Rheuban J, Zieman JC. Entire reef system O_2 metabolism measured *in situ* by eddy correlation. 27th annual Enviroday. University of Virginia. Presentation. January 2011**. Awarded: 2nd Best Oral Presentation**.

Long MH, Berg P, Zieman JC. Total ecosystem fluxes of calcium using the underwater eddy correlation technique. 25th annual Enviroday. University of Virginia. Presentation. January 2009. **Awarded: Best Oral Presentation**.

Long MH, Hamann C. Furanocoumarin qualification and quantification in *Heracleum mantegazzianum* (Giant Hogweed). Honors Research Symposium. Albright College. Presentation. May 2004.

Long MH, Osgood D. Habitat assessment for *Clemmys muhlenbergii* (bog turtle) after vegetation restoration. NCUR conference. Presentation. October 2003.