

Matthew H. Long - Curriculum Vitae

Assistant Scientist
 Department of Marine Chemistry and Geochemistry
 Woods Hole Oceanographic Institution
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Education

Ph.D., University of Virginia	Charlottesville, VA	May, 2013
M.S., University of Virginia	Charlottesville, VA	January, 2008
B.S., Albright College	Reading, PA	May, 2004

Professional Experience

Assistant Scientist	Woods Hole Oceanographic Inst.	2016 – current
Postdoctoral Investigator	Woods Hole Oceanographic Inst.	2015 – 2016
	Bio-physical interactions, coastal biogeochemistry, and sediment-water-air exchange	
Postdoctoral Scholar	Woods Hole Oceanographic Inst.	2013 - 2015
	Coastal ocean acidification, biogeochemical cycling, and turbulent transport	
Doctoral Research	University of Virginia	2008 - 2013
	In situ dynamics of oxygen metabolism in coral reefs, seagrass beds and Arctic sea-ice	
Masters Research	University of Virginia	2004 - 2007
	Organic exudates from seagrasses and phosphorus release in root microenvironments	
Undergraduate Honors Research	Albright College	2003-2004
	Furanocoumarin quantification and qualification in <i>Heracleum mantegazzianum</i>	
Undergraduate Independent Research	Albright College	2002-2003
	Hydrological and nutrient changes after restoration of habitat for <i>Clemmys muhlenbergii</i>	

Specific 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 vehicles for investigating the processes above. Specifically, the boundary layer exchange techniques and the development of new sensors, techniques and platforms.

Publications

- Link to [Google Scholar](https://scholar.google.com/), <https://orcid.org/0000-0003-1359-0233>

In-review:

Subhas AV, McCorkle DC, Quizon A, McNichol A, **Long MH**. Selective Preservation of Cocolith Calcite in Ontong-Java Plateau Sediments. Submitted to Paleooceanography and Paleoclimatology in July 2019.

Hopkinson BM, King AC, Johnson-Roberson M, **Long MH**, Bhandarkar M. Automated classification of three-dimensional reconstructions of coral reefs using convolutional neural networks. Submitted to Limnology and Oceanography Methods in June 2019.

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. The challenges of detecting and attributing ocean acidification impacts on marine ecosystems. In Revision: Frontiers in Marine Science: Global Change and the Future Ocean April 2019.

Peer-reviewed:

Long MH, Sutherland K, Wankel SD, Burdige DJ, Zimmerman RC. (2019) Ebullition of Oxygen from Seagrasses under Supersaturated Conditions. **Limnology and Oceanography**. DOI: 10.1002/lno.11299

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

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 J (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

Teaching

Lecture-based:

Lecturer	WHOI-MIT Joint Program	2015-Present
	Sediment Geochemistry, Ocean Acidification and Related Stressors	

Lecturer	University of Virginia	2009-2013
	Marine biology and coral reef ecology: 3 week course in San Salvador, Bahamas	

Teaching Assistant	University of Virginia	2004-2011
	Fundamentals of Ecology, Aquatic Ecology (combined lectures and labs)	
Guest Lecturer	Charlottesville High School	2011-2013
	Lectured on environmental science and conducting research	
Academic Athletics Tutor	University of Virginia	2010-2013
	Tutored NCAA athletes in a number of science subjects	

Lab-based:

Teaching Assistant	University of Virginia	2004-2011
	Marine Environment and Organisms, Aquatic Methods, Estuarine Ecology	
Teaching Assistant	Albright College	2002-2004
	Organic Chemistry	

Mentoring & Advising

Solomon Chen, Undergraduate Mentee, Summer Student Fellow, WHOI, 2019
 Kyle Conner, Undergraduate Mentee, Summer Student Fellow, WHOI, 2018
 Alex Quizon, Undergraduate Mentee, Guest Student, WHOI, 2018
 Adam Subhas, Postdoctoral Advisee, Postdoctoral Scholar, WHOI, 2017-present
 Miraflor Santos, Undergraduate Mentee, Partnership in Education Program, WHOI, 2017
 Lucy Fitzgerald, Undergraduate Mentee, Biological Discovery in Woods Hole, WHOI, 2016
 Apryle Panyi, Undergraduate Mentee, Biological Discovery in Woods Hole, WHOI, 2015
 Alexandra Dunn, Undergraduate Mentee, WHOI Guest Student, 2014
 Alexandra Van Horn, Undergraduate Mentee, University of Virginia, 2012
 Suzannah Gordon, Undergraduate Mentee, University of Virginia, 2012
 Jason Truwit, Undergraduate Mentee, University of Virginia, 2011
 Renee Gruber, Undergraduate Mentee, University of Virginia, 2006
 Thomas Gaines Frazier, Undergraduate Mentee, University of Virginia, 2004

Awards and Honors

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.

Cruise / Field Experience

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 CO₂ and underwater O₂ 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 O₂ 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 O₂ eddy covariance flux validation over sands
 Waquoit Bay, MA 6-9/2013 – Development of in-situ, fast-response pH and O₂ 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 (O₂, 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 Neeskey, 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 *Phragmites australis*

Select Presentations

Invited Seminars:

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

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

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

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

Long MH. Ecosystem Calcification and Metabolism in Dynamic Coastal Ecosystems. Bermuda Institute of Ocean Science. **Invited Seminar.** August 2015.

Long MH. Carbon Cycling and Ocean Acidification in Dynamic Coastal Ecosystems. Skidaway Institute of Oceanography at the University of Georgia. **Invited Seminar.** March 2015.

Long MH. Benthic Carbon Cycling and Ocean Acidification in Dynamic Coastal Ecosystems. Woods Hole Oceanographic Institution. **Invited Seminar.** March 2015.

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

Long MH. Eddy correlation: Challenges, field application, and recommendations. 4th Annual Eddy Correlation Workshop. **Invited Seminar.** 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. Woods Hole Oceanographic Institution. **Invited seminar.** June 2013.

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. **Invited seminar.** March 2011.

Presentations: (*Denotes student advisee)

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.

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.

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.

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.

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.

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-dimensional canopies using eddy covariance. Aquatic Sciences Meeting, ASLO. Hawaii. Presentation. February 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.
- 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 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 talk**. 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.

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.

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, 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. 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, 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, 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, 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 O₂ metabolism measured *in situ* by eddy correlation. Aquatic Sciences Meeting, ASLO. Presentation. February 2011.

Long MH, Berg P, Rheuban J, Zieman JC. Entire reef system O₂ 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, 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, 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, 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.**

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.

Synergistic Activities

- Public Outreach: "Under the Waves" free public outreach events in Woods Hole, Trustee and Public tours of WHOI research, regular sponsor of undergraduates from the Summer Student Fellow program (WHOI), the Biological Discovery in Woods Hole program (MBL) and Partnership in Education Program, Falmouth Academy Science Fair judge

- Associate Editor: *Frontiers in Marine Science*; Reviewer for: National Science Foundation (CO, PO, OTIC), SeaGrant, *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*
- Conducted workshops, seminars and field instruction on the theory, use, and data analysis of the eddy covariance technique for researchers beginning eddy covariance research from various institutions (ASLO workshop 2011-2014, Univ. Aarhus, Univ. Brisbane, Florida State Univ., Greenland Inst. Climate Change, Max Plank Inst. for Marine Microbiology, Univ. Milwaukee-Wisconsin, Monash Univ., Old Dominion University, Korean Institute of Ocean Science and Technology)
- Received Outstanding Presentation Awards at the Coastal and Estuarine Research Federation (1x), the Association for the Study of Limnology and Oceanography (1x), and the Annual Enviroday Conference, University of Virginia (3x)