

MARK ALAN MOLINE

MarLumina, LLC

+1 (302) 390-3096; mark@marlumina.com

EDUCATION

1991-1996 Ph.D. Biology, University of California, Santa Barbara

1982-1987 B.A. Biology, St. Olaf College

PROFESSIONAL APPOINTMENTS

2012- Founding Director, School of Marine Science and Policy, University of Delaware
2020- Maxwell P. and Mildred H. Harrington Professor of Marine Studies, School of Marine Science and Policy, University of Delaware
2012-2020 Professor, School of Marine Science and Policy, University of Delaware
2011-2012 Fulbright Distinguished Arctic Chair
2007-2012 Professor, California Polytechnic State University
2004-2012 UNOCAL Professor of Marine Science, California Polytechnic State University
2004-2012 Founding Director, Center for Coastal Marine Science, California Polytechnic State University
2003-2007 Associate Professor, California Polytechnic State University
2000-2004 Adjunct Professor, UC Santa Barbara
1998-2003 Assistant Professor, California Polytechnic State University
1996-1997 Postdoctoral Associate, Rutgers University

AWARDS, HONORS and CERTIFICATIONS

2020 Maxwell P. and Mildred H. Harrington Professor of Marine Studies, University of Delaware
2017 Heritage Daily Top Archaeological Discovery
2016 SERDP Best Project Award
2014 Explorers Club Fellow
2011 Fulbright Distinguished Arctic Chair Award
2008 Senior Fellow, California Council on Science and Technology
2007 Distinguished Scholarship Award, Cal Poly State University
2005 Editors' Citation for Excellence in Refereeing, American Geophysical Union
2004 UNOCAL Professor, Cal Poly State University
2004 Earth Systems Scholar, NASA
2002 Frontiers Scientist, National Academy of Science
2002 National Research Distinction Award, Cal Poly State University
2002 Presidential Early Career Award for Scientists and Engineers (PECASE)
2000 Young Investigator Award (YIP), Office of Naval Research
1999 New Investigator Program Award (NIP), NASA
1998 Scientific Committee for Antarctic Research (SCAR) Fellowship, NSF
1997 DIALOG II Scientist, ONR/NSF/NOAA
1995 Graduate Dissertation Fellowship, UC Santa Barbara
1992 University of California Research Diver Certificate
1990 EMBRAPA Research Fellowship, INPA, Manaus, Brazil
1987 Departmental Distinction, Biology, St. Olaf College
1986 Antarctic Service Medal, U.S. Navy

1986 Antarctic Service Medal, National Science Foundation
1985 National Sea Grant Fellow, NOAA

GRANTS AND CONTRACTS

Dr. Moline has received over \$2.1 M in philanthropic donations and been awarded in excess of \$18.8M in grants and contracts over his career.

MEMBERSHIP

American Society of Limnology and Oceanography
The Oceanography Society

PROFESSIONAL SERVICE

2021- Member, NOAA Ocean Exploration Advisory Board
2018 Organizer, NSF/ONR Workshop on Acoustic Applications for AUVs
2017 Participant, US Office of Management and Budget review of NOAA Sanctuaries Program.
2016/17 Participant, US General Accounting Agency review of the Defense POW/MIA Accounting Agency
2015 Member, NSF Review Panel
2014 Member, NOAA Panel on Underwater Vehicles for Fisheries Research
2013 Member, NSF Science and Technology Center Reviewer
2012 Member, 2 NSF Review Panels
2010 Delegate, 1st US Science Delegation to Viet Nam
2009-2011 Co-Director/Developer, NORUS Student Exchange Program (US-Norway)
2008-2012 Member, Technical Advisor Committee, Morro Bay National Estuary Program
2008 Member, NSF Review Panel
2007 Member, DEPSCOR Program Review
2007-2009 Associate Editor, AGU Journal of Geophysical Research - Oceans
2006 Chair, NSF/NURP Committee on ALPS development
2006 Chair, AUV Implementation, California Ocean Protection Council
2006 Co-Chair, NSF Design and Implementation for OOI
2006- Senior Fellow, California Council on Science and Technology
2005-2007 Member, Air Pollution Control District Board, San Luis Obispo County, CA
2005 Member, NSF Review Panel
2003-2007 Member, Executive Steering Committee, NSF Ocean Observatories Initiative
2002-2008 Member, Executive Committee, Morro Bay National Estuary Program
2000 Member, NASA EPSCOR Review Panel
1999 Member, NSF Review Panel

CONSULTING

2008-2016 Sea-Bird Scientific
2006-2007 Sea-Bird Scientific
2005-2006 Battelle
2003-2005 Pacific Gas and Electric Company/Tenera Environmental
2000 Coastal Alliance on Plant Expansion
1999-2000 Pacific Gas and Electric Company/Tenera Environmental

PUBLICATIONS (Google Scholar: h-index = 40; i10-index=100)

(Students underlined)

121. Benoit-Bird, K.J., B. L. Southall, **M. A. Moline**, D. E. Claridge, C. A. Dunn, and K. A. Dolan. 2020. Critical threshold identified in the functional relationship between beaked whales and their prey. *Marine Ecology Progress Series* 654, 1-16.
120. Shulman, I., M. A. Moline, J. H. Cohen, S. Anderson, E. J. Metzger, and C. Rowley. 2020. Bioluminescence potential modeling during polar night in the Arctic: impact of advection versus local sources. *Ocean Dynamics* 70 (9), 1211-1223.
119. Shulman, I., B. Penta, S. Anderson, **M. A. Moline**, M. Oliver and J. Cohen. Dynamics of bioluminescence potential and physical, bio-optical properties on the shelf and shelf-slope off Delaware Bay. *Journal of Geophysical Research- Oceans*. 125 (9), e2020JC016158.
118. Cohen, J. H., J. Berge, **M. A. Moline**, G. Johnsen, and A. P. Zolich. 2020. Light in the Dark. In: J. Berge, G. Johnsen, and J. H. Cohen (Eds) Polar Night Marine Ecology: Life and Light in the Dead of Night. Springer Publishing, 37-66.
117. Benoit-Bird, K. J., Southall, B. L., **M. A. Moline** and D. Moretti. 2019. Dynamic foraging in Risso's dolphins revealed in 4-dimensions. *Marine Ecology Progress Series* 632:221-234.
116. Southall, B. L., K. J. Benoit-Bird, **M. A. Moline** and D. Moretti. 2019. Quantifying deep-sea predator-prey dynamics: Implications of biological heterogeneity for beaked whale conservation. *Journal of Applied Ecology* 56(5): 1040-1049.
115. Pietruszka, Andrew T., E. J. Terrill and **M. A. Moline**. 2019. Kiska: Alaska's Underwater Battlefield. *Oceanography* 32(1), Supplement:121.
114. Benoit-Bird K. J., B. L. Southall and **M. A. Moline**. 2018. The ocean has music for those who ping AND listen. *Journal of the Acoustical Society of America* 144: 1920.
113. Johnsen, G., M. Norli, **M. A. Moline**, I. Robbins, C. von Quillfeldt, K. Sørensen, F. Cottier and J. Berge. 2018. The advective origin of an under-ice spring bloom in the Arctic Ocean using multiple observational platforms. *Polar Biology* 41: 1197. doi:10.1007/s00300-018-2278-5.
112. Benoit-Bird, K. J., **M. A. Moline** and B. L. Southall. 2017. Prey in oceanic sound scattering layers organize to get a little help from their friends. *Limnology and Oceanography* 62: 2788–2798. doi:10.1002/lno.10606.
111. Terrill, E. J., **M. A. Moline**, P. J. Scannon, E. Gallimore, T. Schramek, A. Nager, R. Hess, M. Cimino, P. L. Colin, A. Pietruszka, and M. R. Anderson. 2017. Project Recover: Extending the applications of unmanned platforms and autonomy to support underwater MIA searches. *Oceanography* 30(2):150–159. doi:10.5670/oceanog.2017.237.
110. Shulman, I., **M.A. Moline**, S. Anderson et al. 2017. A study case of bioluminescence potential dynamics in the Delaware Bay with observations and modeling. *Ocean Dynamics* 67:383. doi:10.1007/s10236-017-1045-4.
109. Pawlak, G., **M. A. Moline**, E. J. Terrill, and P. L. Colin. 2017. Hydrodynamic influences on acoustical and optical backscatter in a fringing reef environment, *Journal of Geophysical Research – Oceans* 122: 322–335. doi:10.1002/2016JC012497.

108. Cronin H. A., J. H. Cohen, J. Berge, G. Johnsen and **M. A. Moline**. 2016. Bioluminescence as an ecological factor during high Arctic polar night. *Scientific Reports* 6:36374. doi:10.1038/srep36374.
107. Benoit-Bird, K. J., B. L. Southhall and **M. A. Moline**. 2016. Using acoustics to examine odontocete foraging ecology: Predator-prey dynamics in the mesopelagic. *The Journal of the Acoustical Society of America* 140: 3130. doi:10.1121/1.4969801
106. Benoit-Bird, K. J., B. L. Southhall and **M. A. Moline**. 2015. Predator-guided sampling reveals biotic structure in the bathypelagic. *Proceedings of the Royal Society B* 283: 24-57. doi:10.1098/rspb.2015.2457.
105. Cimino, M. A., **M.A. Moline**, W. R. Fraser, D. L. Patterson-Fraser and M. J. Oliver. 2015. Climate-driven sympatry may not lead to foraging competition between congeneric top-predators. *Scientific Reports* 6. doi:10.1038/srep18820.
104. **Moline, M. A.** and K. Benoit-Bird. 2016. Sensor fusion and autonomy as a powerful combination for biological assessment in the marine environment. *Robotics* 5(1). doi:10.3390/robotics5010004.
103. **Moline, M. A.**, K. Benoit-Bird, D. O’Gorman, I. C. Robbins. 2015. Integration of scientific echo sounders with an adaptable autonomous vehicle to extend our understanding of animals from the surface to the bathypelagic. *Journal of Atmospheric and Oceanic Technology* 32: 2173–2186. doi:10.1175/jtech-d-15-0035.1.
102. Nilssen, I., Ø. Ødegård, A. J. Sørensen, G. Johnsen, **M. A. Moline** and J. Berge. 2015. Integrated environmental mapping and monitoring, a methodological approach to optimize knowledge gathering and sampling strategy. *Marine Pollution Bulletin* 96: 374–383. doi:10.1016/j.marpolbul.2015.04.045.
101. Berge, J., M. Daase, P. E. Renaud, W. G. Ambrose Jr., G. Darnis, K. S. Last, E. Leu, J. H. Cohen, G. Johnsen, **M. A. Moline**, F. Cottier, Ø. Varpe, N. Shunatova, P. Bałazy, N. Morata, J-C. Massabuau, S. Falk-Petersen, K. Kosobokova, C. J. M. Hoppe, J. M. Węśławski, P. Kukliński, J. Legeżyńska, D. Nikishina, M. Cusa, M. Kędra, M. Włodarska-Kowalczyk, D. Vogedes, L. Camus, D. Tran, E. Michaud, T. M. Gabrielsen, A. Granovitch, A. Gonchar, R. Krapp and T. A. Callesen. 2015. Unexpected levels of biological activity during the polar night offer new perspectives on a warming arctic. *Current Biology* 25: 2555-2561. doi:/10.1016/j.cub.2015.08.024.
100. Cohen J. H., J. Berge, **M. A. Moline**, A. J. Sørensen, K. Last, S. Falk-Petersen et al. 2015. Is ambient light during the high arctic polar night sufficient to act as a visual cue for zooplankton? *PLoS ONE* 10(6): e0126247. doi:10.1371/journal.pone.0126247
99. Berge, J., P. E. Renaud, G. Darnis, F. Cottier, K. Last, T. M. Gabrielsen, G. Johnsen, L. Seuthe, J. Marcin Weslawski, E. Leu, **M. A. Moline**, J. Nahrgang, J. E. Søreide, Ø. Varpe, O. J. Lønne, M. Daase and S. Falk-Petersen. 2015. In the dark: A review of ecosystem processes during the Arctic polar night. *Progress in Oceanography* 139: 258-271. doi:/10.1016/j.pocean.2015.08.005.
98. Jarosz, E., H. W. Wijesekera, W. J. Teague, **M. A. Moline** and D. B. Fribance. 2014. Observations on stratified flow over a bank at low froude numbers. *Journal of Geophysical Research* doi:10.1002/2014JC009934.
97. Johnsen, G., M. Candeloro, J. Berge, and **M. A. Moline**. 2014. Glowing in the dark - discriminating patterns of bioluminescence from different taxa during the Arctic polar night. *Polar Biology* 37: 707-713.
96. Hovland, E. K., K. Hancke, M. O. Alver, K. Drinkwater, J. Høkedal, G. Johnsen, **M. A. Moline** and E. Sakshaug. 2014. Measured and modeled optical impact of an *Emiliania*

- huxleyi* bloom in the frontal region of the Barents Sea. *Journal of Marine Systems* 130: 228–240. doi:10.1016/j.jmarsys.2012.07.002.
95. Hancke, K., E. K. Hovland, Z. Volent, R. Pettersen, G. Johnsen, **M. A. Moline** and E. Sakshaug. 2014. Optical properties of CDOM across the polar front in the Barents Sea: Origin, distribution and significance. *Journal of Marine Systems* 130: 219–227. doi: 10.1016/j.jmarsys.2012.06.006.
 94. Schofield, O., S. Glenn, and **M. A. Moline**. 2013. The Robot Ocean Network. *American Scientist*, 101: 434-441.
 93. Kim, S-Y, B. D. Cornuelle, E. J. Terrill, B. Jones, L. Washburn, **M. A. Moline**, J. D. Paduan, N. Garfield, J. L. Largier, G. Crawford, and P. M. Kosro. 2013. Poleward propagating subinertial alongshore surface currents off the U.S. West Coast. *Journal of Geophysical Research*, doi:10.1002/jgrc.20400.
 92. **Moline, M.A.**, M. J. Oliver, C. Orrico, R. Zaneveld and I. Shulman. 2013. Oceanic bioluminescence. In: Subsea Optics and Imaging. Watson, J. and Zielinski, O. (Eds.). Woodhead Publishing, Cambridge, 134-170. doi:10.1533/9780857093523.
 91. Johnsen, G., Z. Volent, H. Dierssen, R. Pettersen, M. V. Ardelan, F. Søreide, P. Fearn, M. Ludvigsen and **M. A. Moline**. 2013. Underwater hyperspectral imagery to create biogeochemical maps of seafloor properties. J. Watson and O. Zielinski (Eds) Subsea Optics and Imaging. Woodhead Publishing, Cambridge, 508-535. doi:10.1533/9780857093523.
 90. Orrico, C. M., J. R.V. Zaneveld, **M. A. Moline**, I. Robbins and A. H. Barnard. 2013. Measured and modeled nighttime visibility of vehicle stimulated bioluminescence. *Journal of Underwater Acoustics (unclassified)* 61 (4): 1-12.
 89. Schofield, O., **M. A. Moline**, B. Cahilla, T. Frazer, M. J. Oliver, J. Reinfelder, S. Glenn, and R. Chant. 2013. Phytoplankton productivity in a turbid buoyant coastal plume. *Continental Shelf Research*, doi:10.1016/j.csr.2013.02.005.
 88. Farrara, J. D., Y. Chao, Z. Li, X. Wang, X. Jin, H. Zhang, P. Li, Q. Vu, P. Q. Olsson, G. C. Schoch, M. Halverson, **M. A. Moline**, C. Ohlmann, M. Johnson, J. C. McWilliams and F. A. Colas. 2013. A data-assimilative ocean forecasting system for the Prince William Sound and an evaluation of its performance during sound predictions 2009. *Continental Shelf Research*, doi:10.1016/j.csr.2012.11.008.
 87. Oliver, M. J., A. Irwin, **M. A. Moline**, W. Fraser, D. Patterson, O. Schofield and J. Kohut. 2013. Adelie penguin foraging location predicted by tidal regime switching. *PLoS ONE* 8: 1-9.
 86. Schofield, O., S. M. Glenn, **M. A. Moline**, M. J. Oliver, A. Irwin, Y. Chao and M. Arrott. 2013. Ocean observatories and information: Building a global ocean observing network. In: Orcutt, J. (Ed) Earth System Monitoring: Encyclopedia of Sustainability Science and Technology. Springer Science, New York. doi:10.1007/978-1-4614-5684-1_14.
 85. Xydes A., **M. A. Moline**, C. G. Lowe, T. J. Farrugia and C.M. Clark. 2013. Behavioral characterization and particle filter localization of a shovelnose guitarfish. *Journal of Ocean Engineering*, 61: 1-11.
 84. Oliver, M. J., **M.A. Moline**, I. Robbins, W. Fraser, D. Patterson, and O. Schofield. 2012. Letting penguins lead: Dynamic modeling of penguin locations guides autonomous robotic sampling. *Oceanography*, 25:120–121. doi: doi.org/10.5670/oceanog.2012.84.
 83. Berge, J., Ø. Varpe, **M.A. Moline**, A. Wold, P. E. Renaud, M. Daase, and S. Falk-Petersen. 2012. Retention of ice-associated amphipods: possible consequences for and ice-free Arctic Ocean. *Biology Letters*, doi: 10.1098/rsbl.2012.0517.

82. Clark, C. M., A. Xydes, K. Hall, F. Schreiber, J. Klemme, **M.A. Moline**, J. Lehr and K. Hancke. 2012. Volumetric oxygen quantity estimation of a marine environment with an autonomous underwater vehicle. *Journal of Field Robotics*, doi:10.1002/rob.21421.
81. Dickey, T., M.-C. Alboussiere, M. Banner, P. Bhandari, T. Boyd, L. Carvalho, G. Chang, Y. Chao, M. Cimono, H. Czerski, M. Darecki, C. Dong, D. Farmer, E. Firing, S. Freeman, J. Gemmrich, P. Gernez, N. Hall-Patch, B. Holt, J. Hummon, S. Jiang, C. Jones, G. Kattawar, D. LeBel, L. Lenain, M. Lewis, Y. Liu, L. Logan, D. Manov, K. Melville, **M. A. Moline**, R. Morison, F. Nencioli, S. Pegau, B. Reineman, I. Robbins, R. Röttgers, H. Schultz, D. Siegel, L. Shen, M. Shinki, M. Slivkoff, M. Sokólski, P. Sutherland, F. Spada, N. Statom, D. Stramski, M. Twardowski, S. Vagle, R. Van Dommelen, K. Voss, L. Washburn, J. Wei, H. Wijesekera, D. Yang, O. Wurl, S. Yildiz, Y. You, D. Yue, R. Zaneveld, and C. Zappa. 2012. Recent advances in the study of optical variability in the near-surface and upper ocean. *Journal of Geophysical Research*, doi:10.1029/2012JC007964.
80. **Moline, M.A.**, I. Robbins, B. Zelenke, W.S. Pegau and H. Wijesekera. 2012. Evaluation of bio-optical inversion of spectral irradiance measured from an autonomous underwater vehicle. *Journal of Geophysical Research*, 117, doi:10.1029/2011JC007352.
79. Berge, J., P. Renard, **M. A. Moline**, T. Gabrielsen and Ø. Varpe. 2012. Evolution of the Arctic *Calanus* complex – an Arctic marine avocado? *Journal of Plankton Research*, 34:191-195.
78. Shulman, I., B. Penta, **M. A. Moline**, S. H. D. Haddock, S. Anderson, M. J. Oliver and P. Sakalaukus. 2012. Can vertical migrations of dinoflagellates explain observed bioluminescence patterns during an upwelling event in Monterey Bay, CA? *Journal of Geophysical Research*, 117, C01016, doi:10.1029/2011JC007480.
77. Johnsen, G., **M. A. Moline**, L. H. Pettersson, J. L. Pinckney, D. V. Pozdnyakov, E. S. Egeland and O. M. Schofield. 2011. Optical monitoring of phytoplankton bloom pigment signatures. S Roy, C. Llewellyn, E.S. Egeland, and G. Johnsen (Eds) Phytoplankton Pigments. Cambridge University Press, Cambridge.
76. Berge, J., A. S. Båtnes, G. Johnsen, S. M. Blackwell and **M. A. Moline**. 2011. Bioluminescence in the high Arctic during the polar night. *Marine Biology*. 159: 231-237. Doi:10.1007/s00227-011-1798-0.
75. Kim, S.Y., E. J. Terrill, B. D. Cornuelle, B. Jones, L. Washburn, **M. A. Moline**, J. D. Paduan, N. Garfield, J. L. Largier, G. Crawford, and P. M. Kosro. 2011. Mapping the U.S. West Coast surface circulation: A multi-year analysis of high-frequency radar observations. *Journal of Geophysical Research*, 116, C03011. doi:10.1029/2010JC006669.
74. Shulman, I., **M. A. Moline**, B. Penta, S. Anderson, M. J. Oliver and S. H. D. Haddock. 2011. Observed and modeled bio-optical, bioluminescent and physical properties during an upwelling event. *Journal of Geophysical Research*, 116, C01018. doi:10.1029/2010JC006525.
73. Schofield, O., H. M. Ducklow, D. G. Martinson, M. P. Meredith, **M. A. Moline**, and W. R. Fraser. 2010. How do polar marine ecosystems respond to rapid climate change? *Science*, 328: 1520-1523. doi:10.1126/science.1185779.
72. Chang, G., M. S. Twardowski, Y. You, **M. A. Moline**, P. Zhai, S. Freeman, M. Slivkoff, F. Nencioli and G. Kattawar. 2010. Effects of optical variability on the prediction of underwater visibility. *Applied Optics*, 49 (15):2784-2796.
71. Benoit-Bird, K. J., **M. A. Moline**, O. M. Schofield, I. C. Robbins, and C. M. Waluk. 2010. Zooplankton avoidance of a profiled open-path fluorometer. *Journal of Plankton Research*, doi:10.1093/plankt/fbq053.

70. Haddock, S., **M. A. Moline** and J. F. Case. 2010. Bioluminescence in the sea. *Annual Review of Marine Science*, 2: 293-343.
69. Benoit-Bird, K. J., **M. A. Moline**, C. M. Waluk, and I. C. Robbins. 2010. Integrated measurements of acoustical and optical thin layers I: Vertical scales of association. *Continental Shelf Research*, 30 (1): 17-28. doi:10.1016/j.csr.2009.08.001.
68. **Moline, M. A.**, K. J. Benoit-Bird, I. C. Robbins, M. Schroth-Miller, C. M. Waluk, B. Zelenke. 2010. Integrated measurements of acoustical and optical thin layers II: Horizontal length scales. *Continental Shelf Research*, 30 (1): 29-38. doi:10.1016/j.csr.2009.08.004.
67. Schofield, O., S. Glenn, J. Orcutt, M. Arrott, M. Mesinger, A. Gangopadhyay, W. Brown, R. Signell, **M. A. Moline**, Y. Chao, S. Chen, D. Thompson, A. Balasuriya, P. Lermusiaux, and M. J. Oliver. 2010. Automated sensor networks to advance ocean science. *EOS Transactions of the American Geophysical Union*, 91: 345-356.
66. Sullivan, J.M., M.A. McManus, O.M. Cheriton, K.J. Benoit-Bird, L. Goodman, Z. Wang, J. P. Ryan, M. Stacey, D. Van Holiday, C. Greenlaw, **M.A. Moline** and M. McFarland. 2010. Layered organization in the coastal ocean: An introduction to planktonic thin layers and the LOCO project. *Continental Shelf Research*, 30 (1): 1-6.
65. **Moline, M. A.**, and O. M. Schofield. 2009. Remote real-time video-enabled docking for underwater autonomous platforms. *Journal of Atmospheric Oceanic Technology* 26 (12): 2665–2672, doi:10.1175/2009JTECHO666.1.
64. **Moline, M. A.**, S. M. Blackwell, J. F. Case, S. H. D. Haddock, C. M. Herren, C. M. Orrico and E. Terrill. 2009. Bioluminescence to reveal structure and interaction of coastal planktonic communities. *Deep-Sea Research Part II*. 56: 232-245, doi:10.1016/j.dsr2.2008.08.002.
63. Chao, Y., L. Zhijin, J. Farrara, J. C. McWilliams, J. Bellingham, X. Capet, F. Chavez, J-K Choi, R. Davis, J. Doyle, D. Fratantoni, P. Marchesiello, **M. A. Moline**, J. Paduan and S. Ramp. 2009. Development, implementation and evaluation of a data-assimilative ocean forecasting system off the Central California Coast. *Deep-Sea Research Part II*. 56: 100-126, doi:10.1016/j.dsr2.2008.08.011.
62. **Moline, M.A.**, T.K. Frazer, R. Chant, S. Glenn, C.A. Jacoby, J. R. Reinfelder, J. Yost, M. Zhou, and O. Schofield. 2008. Biological responses in a dynamic buoyant river plume. *Oceanography*, 21 (4): 70-89.
61. Chant, R.J., J. Wilkin, W. Zhang, B.-J. Choi, E. Hunter, R. Castelao, S. Glenn, J. Jurisa, O. Schofield, R. Houghton, J. Kohut, T. K. Frazer, and **M. A. Moline**. 2008. Dispersal of the Hudson River plume in the New York Bight: Synthesis of observational and numerical studies during LaTTE. *Oceanography*, 21 (4): 148-161.
60. Dickey, T. D., E. C. Itsweire, **M. A. Moline**, and M. J. Perry. 2008. Introduction to the *Limnology and Oceanography* Special Issue on Autonomous and Lagrangian Platforms and Sensors (ALPS). *Limnology and Oceanography*, 53: 2251-2263.
59. Kirkpatrick, G. J., D. F. Millie, **M. A. Moline**, S. E. Lohrenz and O.M. Schofield. 2008. Phytoplankton community composition observed by an autonomous underwater vehicle. In: Moestrup, P.A. Tester, P. A. and H. Enevoldsen (eds.). *Proceedings of the XIIth International Conference on Harmful Algae*. ISSHA and IOC of UNESCO, Paris. 397 pp.
58. Bensky, T. J., L. Clemo, C. Gilbert, B. Neff, **M. A. Moline**, and D. Rohan. 2008. Observation of nanosecond laser induced fluorescence of *in vitro* seawater phytoplankton. *Applied Optics*, 47: 3980-3986, doi:10.1364/AO.47.003980.
57. **Moline, M. A.**, N. Karnovsky, Z. Brown, G. Divoky, T. Frazer, C. Jacoby, J. Torres and W. Fraser. 2008. High latitude changes in ice dynamics and their impact on polar marine

- ecosystems. In: The Year in Ecology and Conservation Biology 2008. R. S. Ostfeld and W. H. Schlesinger (Eds.). Annals New York Academy of Sciences, 1134: 267–319, doi:10.1196/annals.1439.010.
56. Baker, A. C., I. Robbins, **M. A. Moline**, and D. M. Iglesias-Rodriguez. 2008. Oligonucleotide primers for the detection of bioluminescent dinoflagellates reveals novel luciferase sequences and information on the molecular evolution of this gene. *Journal of Phycology*, 44: 419-428, doi:10.1111/j.1529-8817.2008.00474.x.
 55. Chao, Y., J. D. Farrara, Z. Li, O. Schofield and **M. A. Moline**. 2008. On the impact of autonomous underwater vehicles on coastal ocean monitoring and forecasting. *Limnology and Oceanography*, 53: 2251-2263.
 54. Hibler L. F., A. R. Maxwell, L. M. Miller, N. P. Kohn, D. L. Woodruff, M. J. Montes, J. H. Bowles and **M. A. Moline**. 2008. Improved fine scale transport model performance using AUV and HSI feedback in a tidally dominated system. *Journal of Geophysical Research*, 113, C08036, doi:10.1029/2008JC004739.
 53. Connolly, J. A., M. J. Oliver, J. M. Beaulieu, C. A. Knight, L. Tomanek and **M. A. Moline**. Correlated evolution of gemone size and cell volume in diatoms (*Bacillariophyceae*). *Journal of Phycology*, 44:124-131, doi:10.1111/j.15298817.2007.00452.x.
 52. **Moline, M. A.**, M. J. Oliver, C. D. Mobley, L. Sundman, T. Bensky, T. Bergmann, W. P. Bissett, J. Case, E. H. Raymond, and O. M. E. Schofield . 2007. Bioluminescence in a complex coastal environment: 1. Temporal dynamics of nighttime water-leaving radiance, *Journal of Geophysical Research*, 112, C11016, doi:10.1029/2007JC004138.
 51. Oliver, M. J., **M. A. Moline**, C. D. Mobley, L. Sundman, and O. M. E. Schofield. 2007. Bioluminescence in a complex coastal environment: 2. Prediction of bioluminescent source depth from spectral water-leaving radiance. *Journal of Geophysical Research*, 112, C11017, doi:10.1029/2007JC004136.
 50. Schofield, O., J. Bosch, S. M. Glenn, G. Kirkpatrick, J. Kerfoot, **M.A. Moline**, M. J. Oliver and W. P. Bissett. 2007. Harmful algal blooms in a dynamic environment: How can optics help the field-going and sample poor biologist? In: Real Time Coastal Observing Systems for Marine Ecosystems Dynamics and Harmful Algal Blooms: Theory, Instrumentation and Modeling. Babin, M., C. Rosler, and J. J. Cullen (Eds). Intergovernmental Oceanographic Commission of UNESCO, Paris, Monographs on Oceanographic Methodology 12: 85-108.
 49. Blackwell, S. M., **M. A. Moline**, A. Schaffner, T. Garrison and G. Chang. 2007. Sub-kilometer length scales in coastal waters. *Continental Shelf Research*, 28: 215-226, doi:10.1016/j.csr.2007.07.009.
 48. **Moline, M.A.**, D. L. Woodruff and N. R. Evans. 2007. Optical delineation of benthic habitat using an autonomous underwater vehicle. *Journal of Field Robotics*, 24 (6): 461-471. doi:10.1002/rob.20176.
 47. Robbins, I. C., G. J. Kirkpatrick, S. M. Blackwell, J. Hillier, C. A. Knight and **M. A. Moline**. 2006. Improved monitoring of HABs using autonomous underwater vehicles (UUV). *Harmful Algae*, 6 (6): 931–943, doi:10.1016/j.hal.2006.03.005.
 46. Schofield, O., J. Kerfoot, K. Mahoney, **M. A. Moline**, M. J. Oliver, S. Lohrenz and G. Kirkpatrick. 2006. Vertical migration of the toxic dinoflagellate *Karenia brevis* and the impact on ocean optical properties. *Journal of Geophysical Research*, 111, C06009, doi:10.1029/2005JC003115.

45. **Moline, M. A., S. M. Blackwell, B. Allen, T. Austin, N. Forrester, R. Goldsborough, M. Purcell, R. Stokey and C. von Alt.** 2005. Remote Environmental Monitoring Units: An autonomous vehicle for characterizing coastal environments. *Journal of Atmospheric Oceanic Technology*, 22 (11): 1798–1809.
44. **Kerfoot, J., G. Kirkpatrick, S. Lohrenz, K. Mahoney, M.A. Moline, and O. Schofield.** 2005. Vertical migration of a *Karenia brevis* bloom: Implications for remote sensing of harmful algal blooms. In: Harmful Algae 2002: Proceedings of the 10th International Conference of Harmful Algae, Steidinger, K.A., Landsberg, J.H., Tomas, C.R., and Vargo, G.A. (Eds). 2005. Florida Fish and Wildlife Commission, Florida Institute of Oceanography and Intergovernmental Oceanographic Commission of UNESCO, St. Petersburg, Florida, USA. p. 279-283.
43. **Moline, M.A., P. Bissett, S. Blackwell, J. Meuller, J. Sevadjian , C. Trees and R. Zaneveld.** 2005. An autonomous vehicle approach for quantifying bioluminescence in ports and harbors. In: Photonics for Ports and Harbors, M. J. DeWeert (Ed.), SPIE Press, Bellingham, WA, Vol. 5780, 81-87.
42. **Trees, C. C., W. P. Bissett, H. Dierssen, D. D. R. Kohler, M. A. Moline, J. L. Mueller, R. E. Pieper, M. S. Twardowski, J. R. V. Zaneveld.** 2005. Monitoring water transparency and diver visibility in ports and harbors using aircraft hyperspectral remote sensing. In: Photonics for Ports and Harbors, M. J. DeWeert (Ed.), SPIE Press, Bellingham, WA, Vol. 5780, 91-98.
41. **Shulman, I., D. J. McGillicuddy Jr., M. A. Moline, S. H. D. Haddock, J. C. Kindle, D. Nechaev and M. W. Phelps.** 2005. Bioluminescence intensity modeling and sampling strategy optimization. *Journal of Atmospheric and Oceanic Technology*, 22 (11): 1267–1281.
40. **Herren, C. M., S. H. D. Haddock, C. Johnson, C. M. Orrico, M. A. Moline and J. F. Case.** 2005. A multi-platform bathyphotometer for fine-scale, coastal bioluminescence research. *Limnology and Oceanography: Methods*, 3: 247-262.
39. **Moline, M. A., S. M. Blackwell, R. Chant, M. J. Oliver, T. Bergmann, S. Glenn and O. M. E. Schofield.** 2004. Episodic physical forcing and the structure of phytoplankton communities in the coastal waters of New Jersey. *Journal of Geophysical Research*, 109, C12S05 doi:10.1029/2003JC001985.
38. **Glenn, S., R. Arnone, T. Bergmann, W. P. Bissett, M. Crowley, J. Cullen, J. Gryzmiski, D. Haidvogel, J. Kohut, M. A. Moline, M. Oliver, C. Orrico, R. Sherrell, T. Song, A. Weidemann, R. Chant and O. Schofield.** 2004. Biogeochemical impact of summertime coastal upwelling on the New Jersey Shelf. *Journal of Geophysical Research*, Vol. 109, C12S02 doi:10.1029/2003JC002265.
37. **Schofield, O., T. Bergmann, W. P. Bissett, M. A. Moline and C. Orrico.** 2004. Inverting inherent optical signatures in the nearshore coastal waters at the Long Term Ecosystem Observatory. *Journal of Geophysical Research*, 109, C12S04, doi:10.1029/2003JC002071.
36. **Moline, M. A., H. Claustre, T. Frazer, O. Schofield and M. Vernet.** 2004. Alteration of the food web along the Antarctic Peninsula in response to a regional warming trend. *Global Change Biology*, 10:1973–1980, doi:10.1111/j.1365-2486.2004.00825.x.
35. **Prézelin, B. B., E. E. Hofmann, M. A. Moline and J. M. Klink.** 2004. Physical forcing of phytoplankton community structure and primary production in continental shelf waters of the Western Antarctic Peninsula. *Journal of Marine Research*, 62: 419-460.
34. **Chang, G., K. Mahoney, A. Briggs-Whitmire, D. D. R. Kohler, C. D. Mobley, M. Lewis, M. A. Moline, E. Boss, M. Kim, W. Philpot and T. D. Dickey.** 2004. The new age of hyperspectral oceanography. *Oceanography*, 17(2): 16-23.

33. Schofield, O., R. Arnone, W. P. Bissett, T. Dickey, C. Davis, Z. Finkel, M. J. Oliver and **M. A. Moline**. 2004. Watercolors in the coastal zone: What can we see? *Oceanography*, 17(2): 24-43.
32. Oliver, M. J., J. Kohut, A. Irwin, O. Schofield. S. Glenn, **M. A. Moline**, and W. P. Bissett. 2004. Bioinformatic approaches for objective detection of water masses. *Journal of Geophysical Research*, 109, C07S04 doi:10.1029/2003JC002072.
31. Oliver, M.J., O. Schofield, T. Bergmann, S. Glenn, C. Orrico and **M. A. Moline**. 2004. Deriving *in situ* phytoplankton absorption for bio-optical productivity models in turbid waters. *Journal of Geophysical Research*, 109, C07S11, doi:10.1029/2002JC001627.
30. **Moline, M. A.**, R. Arnone, T. Bergmann, S. Glenn, M. Oliver, C. Orrico, O. Schofield and S. Tozzi. 2004 Variability in spectral backscatter estimated from satellites and its relation to *in situ* measurements in optically complex coastal waters. *Journal of International Remote Sensing*, 25(7-8): 1465-1468.
29. Tozzi, S., O. Schofield, T. Bergmann, **M. A. Moline** and R. Arnone. 2004. Variability in measured and modeled remote sensing reflectance for coastal waters at LEO-15. *Journal of International Remote Sensing*, 25(7-8): 1469-1472.
28. Kirkpatrick, G. J., C. Orrico, **M. A. Moline** and O. Schofield. 2003. Continuous real-time determination of hyperspectral absorption of colored dissolved organic matter. *Applied Optics*, 42(33): 6564-6568.
27. Montes, M. J., B.-C. Gao, C. O. Davis, and **M. A. Moline**. 2003. Analysis of AVIRIS Data from LEO-15 Using TAAFKA Atmospheric Correction. In: Proceedings of the 12th AVIRIS/HYPERION Earth Science Workshop, Green, R. O. (Ed.) JPL Publ. 04-6, December 2003, Jet Propulsion Laboratory, Pasadena, CA, pp. 213-218.
26. Schofield, O., P. W. Bissett, T. K. Frazer, D. Iglesias-Rodriguez, **M. A. Moline** and S. Glenn. 2003. Development of regional coastal ocean observatories and the potential benefits to marine sanctuaries. In: Science, Technology and Management in the US National Marine Sanctuary Program, Lindholm J. (Ed.) *Marine Technology Society Journal*, 37: 54-67.
25. Blackwell, S., J. Case, S. Glenn, J. Kohut, **M. A. Moline**, M. Purcell, O. Schofield and C. VonAlt. 2002. A new AUV platform for studying near shore bioluminescence structure. In: (P. J. Herring, L. J. Kricka and P. E. Stanley, eds.) Proceedings of the 12th International Symposium on Bioluminescence and Chemiluminescence, Herring, P.J., Kricka, L. J., Stanley, P.E. (Eds.), World Scientific, London, pp. 197-200.
24. Chang G. C., T. D. Dickey, O. Schofield, A. D. Weidemann, E. Boss, **M. A. Moline** and S. M. Glenn. 2002. Nearshore physical forcing of bio-optical parameters in the New York Bight. *Journal of Geophysical Research*, ref. 10.1029/2001JC001018.
23. Schofield, O., T. Bergmann, W. P. Bissett, F. Grassle, D. Haidvogel, J. Kohut, **M. A. Moline** and S. Glenn. 2002. The Long-Term Ecosystem Observatory: An integrated coastal observatory. *IEEE Journal of Oceanic Engineering*, 27:146-154.
22. **Moline, M. A.**, E. Heine, J. Case, C. Herren and O. Schofield. 2001. Spatial and temporal variability of bioluminescence potential in coastal regions. In: Bioluminescence and Chemiluminescence 2000. Case, J. F., Herring P. J., Haddock, S. H. D., Kricka, L. J., Stanley, P. E. (Eds.) World Scientific Publishing Company, Singapore, 123-126.
21. **Moline, M. A.**, O. Schofield and J. Grzymalski. 2001. Impact of dynamic light and nutrient environments on phytoplankton communities in the coastal ocean. In: Dynamic Modeling for Marine Conservation. Ruth, M., Lindholm J. (Eds.), Springer-Verlag, Amsterdam., pp. 144-163.

20. Grzyski, J., M. A. Moline and J. T. Cullen. 2001. Modeling the atmosphere/ocean CO₂ cycle in relation to surface Fe concentrations. In: Dynamic Modeling for Marine Conservation. Ruth, M., Lindholm J. (Eds.), Springer-Verlag, Amsterdam. pp. 125-143.
19. **Moline, M. A.,** H. Claustre, T. Frazer, J. Grzyski, O. Schofield and M. Vernet. 2001. Changes in phytoplankton assemblages and potential implications for the Antarctic food web. In: Antarctic Ecosystems: Models for Wider Ecological Understanding. Davidson, B. (Ed.) Cambridge University Press, Cambridge. pp. 263-271.
18. Bissett, W. P., O. Schofield, C. D. Mobley, M. F. Crowley and **M. A. Moline.** 2000. Optical remote sensing techniques in biological oceanography. In: Methods in Microbiology, Paul, J. (Ed.) Vol 30. Academic Press, London. pp. 519-540.
17. **Moline, M. A.,** J. Case, E. Heine, C. Herren and O. Schofield. 2000. Spatial and temporal variability of bioluminescence potential in coastal regions. *Luminescence*, 15: 218.
16. Kirkpatrick, G. J., O. Schofield, D. F. Millie and **M. A. Moline.** 2000. Optical discrimination of a phytoplankton species in natural mixed populations. *Limnology and Oceanography* 45: 467-471.
15. **Moline, M. A.** and B. B. Prézelin. 2000. Optical fractionation of chlorophyll and primary production for coastal waters of the Southern Ocean. *Polar Biology*, 23: 129-136.
14. Schofield, O., J. Grzyski, P. Bissett, G. J. Kirkpatrick, D. F. Millie and **M. A. Moline.** 1999. Optical monitoring and forecasting systems for harmful algal blooms: Possibility or pipe dream? *Journal of Phycology*, 35: 1476-1496.
13. **Moline, M. A.,** O. Schofield and N. Boucher. 1998. Photosynthetic parameters and empirical modeling of primary production in the Southern Ocean. *Antarctic Science* 10: 45-54.
12. **Moline, M. A.** and B. B. Prézelin. 2000. Optical fractionation of chlorophyll and primary production for coastal waters of the Southern Ocean. *Polar Biology*. 23: 129-136.
11. Prézelin, B. B., **M. A. Moline** and H. A. Matlick. 1998. Icecolors '93: Spectral UV radiation effects on Antarctic frazil ice algae. In: Antarctic Sea Ice - Biological Processes. Lizzotte, M. P. and Arrigo, K. R. (Eds.) Antarctic Research Series. American Geophysical Union, 73: 45-83.
10. Schofield, O., J. Grzyski, **M. A. Moline** and R. V. M. Jovine. 1998. Impact of temperature on photoinhibition of photosynthesis in the red-tide dinoflagellate *Alexandrium fundyense* (Ca28). *Journal of Plankton Research*, 20: 1241-1258.
9. **Moline, M. A.** 1998. Photoadaptive response during the development of a coastal Antarctic diatom bloom and relationship to water column stability. *Limnology and Oceanography*, 43:146-153.
8. **Moline, M. A.,** B. B. Prézelin, O. Schofield and R. C. Smith. 1997. Temporal dynamics of coastal Antarctic phytoplankton: Environmental driving forces and impact of a 1991-1992 summer diatom bloom on the nutrient and light regimes. In B. Battaglia, J. Valencia, and D. W. H. Walton (eds.) Antarctic Communities. Battaglia, B., Valencia, J. and Walton, D. W. H. (Eds.). Cambridge University Press. pp. 67-72.
7. Claustre, H., **M. A. Moline** and B. B. Prézelin. 1997. Sources of variability in the column photosynthetic cross section for Antarctic coastal waters. *Journal of Geophysical Research*, 102(C11): 25,047-25,060.
6. Schofield, O., **M. A. Moline** and D. F. Millie. 1997. Photosynthesis in aquatic ecosystems. *Journal of Phycology*, 33: 1085-1086.

5. **Moline, M. A.** and B. B. Prézelin. 1997. High-resolution time-series data for *in situ* carbon fixation at a Palmer LTER site and its implications for modeling primary production in the Southern Ocean. *Polar Biology*, 17(1): 39-53.
4. **Moline, M. A.** and B. B. Prézelin. 1996. Palmer LTER 1991-1994: Long-term monitoring and analyses of physical factors regulating variability in coastal Antarctic phytoplankton biomass, *in situ* productivity and taxonomic composition over subseasonal, seasonal and interannual time scales. *Marine Ecology Progress Series*, 145:143-160.
3. Fisher, T. R. and **M. A. Moline**. 1992. Seasonal plant cover on the Amazon river floodplain determined with aerial videography and image analysis. In: Color Aerial Photography in the Plant Sciences and Related Fields. Blazquez, C. H. (Ed.) American Society for Photogrammetry and Remote Sensing, pp. 207-216.
2. Harell, R. M. and **M. A. Moline**. 1992. Comparative stress dynamics of brood stock striped bass *Marone saxatilis* associated with two capture techniques. *Journal of World Aquaculture Society*, 23(1): 58-62.
1. Fisher, W. S., M. M. Chintala and **M. A. Moline**. 1989. Annual variation of estuarine and oceanic oyster *Crassostrea virginica* Gmelin hemocyte capacity. *Journal of Experimental Marine Biology and Ecology*, 127: 105-120.

REPORTS

20. **Moline, M. A.** 2007. Executive Summary Report: Autonomous Platforms and Sensors. California Ocean Protection Council.
19. Daly, K., R. Janke, **M.A. Moline** and others. 2006. Report of the Design and Implementation Workshop. Joint Oceanographic Institutions and the National Science Foundation.
18. **Moline, M. A.** 2006. AUVs for the US West Coast. NOAA's Undersea Research Program.
17. Schofield, O., M. A. Moline, and others. 2006. The use of alternative sampling platforms in the Antarctic. Office of Polar Programs, National Science Foundation.
16. Janke, R., J. Bane, A. Barnard and others. 2003. Coastal Observation Research Arrays: A framework for implementation planning. Coastal Ocean Processes Program Report 9, National Science Foundation.
15. **Moline, M.A.** Nipomo Dunes Wetlands Evaluation. 2003. Interactive planning and management for the California Department of Fish and Game and State Coastal Conservancy. California Department of Fish and Game and State Coastal Conservancy
14. Kitts, C., **M. A. Moline**, A. Schaffner, M. Samadpour, K. McNeill and S. Duffield. 2002. Identifying the sources of *Escherichia coli* contamination to the shellfish growing areas of the Morro Bay Estuary. California Department of Health.
13. Noah Doughty, **M. A. Moline**, and A. Schaffner. 2000. Spatial and temporal variations in *Zostera marina* response to environmental change: An assessment of a possible bioindicator in Morro Bay Estuary. Morro Bay National Estuary Program.
12. **Moline, M.A.** and A. Schaffner. 1999. Diablo Canyon Power Plant Receiving Water Monitoring Program effects of water temperature on the distribution and abundance of intertidal organisms in Field's Cove. Pacific Gas and Electric.
11. **Moline, M. A.**, B. B. Prézelin and O. Schofield. 1997. Stable interannual successional patterns of phytoplankton communities in the coastal waters off Palmer Station, Antarctica. *Antarctic Journal of the United States*, 32(5): 151-153.

10. Claustre, H., **M. A. Moline** and B. B. Prézelin. 1996. Variations in the water column photosynthetic cross-section for Antarctic coastal waters. SPIE Ocean optics XIII. 2963: 846-849.
9. **Moline, M. A.**, B. B. Prézelin and H. Claustre 1996. Light-saturated primary productivity in Antarctic coastal waters. *Antarctic Journal of the United States*, 31(5):105-107.
8. **Moline, M. A.**, O. Schofield and B. B. Prézelin 1995. Statistical analyses of environmental predictors for phytoplankton photosynthetic parameters and productivity in an Antarctic time-series database. *Antarctic Journal of the United States*, 30(5):162-165.
7. Schofield, O., **M. A. Moline** and B. B. Prézelin 1995. Palmer LTER: Photoadaptation in a coastal phytoplankton bloom. *Antarctic Journal of the United States*, 30(5):260-262.
6. Boucher, N., B. B. Prézelin, T. Evans, R. Jovine, B. Kroon, **M. A. Moline**, and O. Schofield 1994. Icecolors '93: Biological weighting function for the UV inhibition of carbon fixation in a natural Antarctic phytoplankton community, *Antarctic Journal of the United States* 29(5): 272-275.
5. **Moline, M. A.** and B. B. Prézelin. 1994. Palmer LTER: Impact of a large diatom bloom on macro nutrient distribution in Arthur Harbor during austral summer 1991-1992. *Antarctic Journal of the United States*, 29(5): 217-219.
4. Schofield, O., **M. A. Moline** and B. B. Prézelin 1994. Palmer LTER: Photoadaptation in a coastal phytoplankton bloom and impact on the radiation utilization efficiency for carbon fixation. *Antarctic Journal of the United States*, 29(5): 214-216.
3. Prézelin, B. B., N. P. Boucher, **M. A. Moline**, E. Stephens, K. Seydel and K. Scheppe. 1992. Palmer LTER: Spatial variability in phytoplankton distribution and surface photosynthetic potential within the far field grid, November 1991. *Antarctic Journal of the United States*, 27(5): 242-245.
2. Prézelin, B. B., **M. A. Moline**, K. Seydel and K. Scheppe 1992. Palmer LTER: Temporal variability in HPLC pigmentation and inorganic nutrient distribution in surface waters adjacent to Palmer Station, December 1991-February 1992. *Antarctic Journal of the United States*, 27(5): 245-248.
1. Putt, M., R. B. Rivkin and **M. A. Moline**. 1986. Diel periodicities of photosynthesis in Antarctic phytoplankton: Species specific response. *Antarctic Journal of the United States*, 21(5):185-186.