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I. Education

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| 1991 | B.S., University of California at San Diego. Physics (Earth Sciences). |
| 1998 | Ph.D., University of Miami. Rosenstiel School of Marine and Atmospheric Sciences. Physical Oceanography. (Advisor. Dr. Donald B. Olson) |

II. Professional Experience

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| 2017-Present | Associate Professor, Horn Point Laboratory, University of Maryland Center for Environmental Science. |
| 2009–17 | Research Associate Professor, Horn Point Laboratory, University of Maryland Center for Environmental Science. |
| 2001–09 | Research Assistant Professor, Horn Point Laboratory, University of Maryland Center for Environmental Science. |
| 1999–01 | Visiting Scientist, Horn Point Laboratory, University of Maryland Center for Environmental Science. |
| 2000–01 | Research Associate, University of Maryland, Baltimore County, Goddard Earth Science and Technology Center. |
| 1997–00 | Postdoctoral Fellow, Universities Space Research Association, Goddard Space Flight Center, National Atmospheric and Space Agency. |
| 1991-97 | Graduate Research Assistant, Division of Meteorology and Physical Oceanography, Rosenstiel School of Marine and Atmospheric Science, University of Miami. |
| 1989-91 | Undergraduate Research Assistant, Scripps Institute of Oceanography, University of California at San Diego (working for Dr. James Swift). |

III. Research

A. Areas of professional expertise

- Observation and modeling of ocean circulation
- Climate variability and impacts on regional and global scales
- Biogeochemical, ecological, and genomic modeling

B. Publications (* for students advised or committee member, + for postdocs)

1. Papers in Refereed Journals

- Dukhovskoy, D.S., S. L. Morey, E. P. Chassignet, X. Chen, **V. J. Coles**, L. Cui, C. K. Harris, R. Hetland, T.-J. Hsu, A. J. Manning, M. R. Stukel, K. Thyng, J. Wang (2021) Development of the CSOMIO coupled ocean-oil-sediment-biology model, *Frontiers in Marine Science*, section Marine Pollution <https://doi.org/10.3389/fmars.2021.629299>.
- Sprintall, J., **V.J. Coles**, K.A. Reed, A. H. Butler, G. R. Foltz, S. G. Penny, H. Seo (2020) Best practice strategies for process studies designed to improve climate modeling, *Bulletin of the American Meteorological Society* <https://doi.org/10.1175/BAMS-D-19-0263.1>
- *Barbour, N. G. L. Shillinger, A.L. Hoover, S. A. Williamson, **V.J. Coles**, D. Liang, W. F. Fagan, H. Bailey (2020) Environmental and biological factors influencing dispersal of neonate Leatherback turtles (*Dermochelys coriacea*) from an endangered Costa Rican nesting population, *Front. Mar. Sci*, 7, <https://doi.org/10.3389/fmars.2020.582933>
- *Paver, C.R., L.A. Codispoti, **V.J. Coles**, L.W. Cooper (2020) Sampling errors arising from carousel entrainment and insufficient flushing of oceanographic sampling bottle, *Limnology and Oceanography Methods*, 18(7).
- Shropshire, T. A., Morey, S. L., Chassignet, E. P., Bozec, A., **Coles, V. J.**, Landry, M. R., Swalethorp, R., Zapfe, G., and Stukel, M. R. (2020) Quantifying spatiotemporal variability in zooplankton dynamics in the Gulf of Mexico with a physical-biogeochemical model, *Biogeosciences*, 17, 3385–3407, <https://doi.org/10.5194/bg-17-3385-2020>.
- *Brooks, M.T., **V.J. Coles**, W.C. Coles, (2019) Inertia influences pelagic *Sargassum* advection and distribution, *Geophys. Res. Lett.* doi: 10.1029/2018GL081489
- Gouveia, N.A., D.F.M. Gherardi, F.H. Wagner, E.T. Paes, **V.J. Coles**, L.E.O.C. Aragão (2019), The salinity structure of the Amazon river plume drives spatiotemporal variation of oceanic primary productivity, doi:10.1029/2018JG004665
- D’Alelio, D., D. Eveillard, **V.J. Coles**, L. Caputi, M. Ribera d’Alcalà, D. Iudicone (2018) Modelling the complexity of plankton communities exploiting omics potential: from present challenges to an integrative pipeline, *Current Opinion in Systems Biology*, doi.org/10.1016/j.coisb.2018.10.003

- *Brooks, M.T., **V.J. Coles**, R.R. Hood, J.F.R. Gower (2018), The seasonal distribution of pelagic *Sargassum*, *Marine Ecology Progress Series*, 599, 1-18, doi.org/10.3354/meps12646
- Coles, V.J.**, M. R. Stukel, M. T. Brooks, A. Burd, B. C. Crump, M. A. Moran, J. H. Paul, B. M. Satinsky, P.L. Yager, B. L. Zielinski, R. R. Hood (2017) Ocean biogeochemistry modeled with emergent trait-based genomics. *Science*, 358, 1149-1154.
- Satinsky B.M., C.B. Smith, S. Sharma, M. Landa, P.M. Medeiros, **V.J. Coles**, P.L. Yager, B.C. Crump, M.A. Moran (2017), Expression patterns of elemental cycling genes in the Amazon River Plume, *The ISME Journal*, **11**, 1852–1864, doi:10.1038/ismej.2017.46
- Weber, S.C., E.J. Carpenter, **V.J. Coles**, P.L. Yager, J. Goes, and J.P. Montoya (2017), Amazon River influence on nitrogen fixation and export production in the western tropical North Atlantic, *Limnology and Oceanography*, **63**, 618-631.
- Doherty, M., P.L. Yager, M.A. Moran, **V.J. Coles**, C.S. Fortunato, A.V. Krusche, P.M. Medeiros, J.P. Payet, J.E. Richey, B.M. Satinsky, H.O. Sawakuchi, N.D. Ward, B.C. Crump (2017), Bacterial biogeography across the Amazon river-to-ocean continuum, *Frontiers in Microbiology*, **8**, 1-17. doi: 10.3389/FMICB.2017.00882
- Zielinski B.L., A.E. Allen, E.J. Carpenter, **V.J. Coles**, B.C. Crump, M. Doherty, R.A. Foster, J.I. Goes, H.R. Gomes, R.R. Hood, J.P. McCrow, J.P. Montoya, A. Moustafa, B.M. Satinsky, S. Sharma, C.B. Smith, P.L. Yager, J.H. Paul (2016), Patterns of transcript abundance of eukaryotic biogeochemically-relevant genes in the Amazon River Plume, *PLoS ONE* **11**(9): e0160929. doi:10.1371/journal.pone.0160929.
- Conroy, B.J., D.K. Steinberg, *M.R. Stukel, J.I. Goes, **V. J. Coles**, (2016), Meso- and microzooplankton grazing in the Amazon River Plume and western tropical North Atlantic, *Limnology and Oceanography*, **61**, 825-840.
- Loick-Wilde, N., S. C. Weber, B. J. Conroy, D. G. Capone, **V. J. Coles**, D. K. Steinberg, and J. P. Montoya (2015), Nitrogen sources and net growth efficiency of zooplankton in three Amazon River Plume food webs, *Limnology and Oceanography*, **61**, 460-481.
- Strutton, P.G., **V.J. Coles**, R.R. Hood, R.J. Matear, M.J. McPhaden, H.E. Phillips (2015) Biogeochemical variability in the equatorial Indian Ocean during the monsoon transition, *Biogeosciences*, **12**, 2367-2382, doi:10.5194/bg-12-2367-2015.
- Satinsky, B.M., B.C. Crump, C.B. Smith, S. Sharma, B. Zielinski, M. Doherty, J. Meng, S. Sun, P.M. Medeiros, J.H. Paul, **V.J. Coles**, P.L. Yager, M.A. Moran, (2014) Microspatial Gene Expression Patterns in the Amazon River Plume, *Proceedings of the National Academy of Sciences*, 111(30) 11085-11090, doi:10.1073/pnas.1402782111.
- Ayers, J.M., P.G. Strutton, **V.J. Coles**, R.R. Hood, R.J. Matear, (2014), Indonesian throughflow nutrient fluxes and their potential impact on Indian Ocean productivity, *Geophysical Research Letters*, **41**, doi:10.1002/2014GL060593.

- +Stukel, M.R., **V.J. Coles**, *M.T. Brooks, R.R. Hood (2014), Top-down, bottom-up and physical controls on diatom-diazotroph assemblage growth in the Amazon River plume, *Biogeosciences*, **11**, 3259—3278, doi:10.5194/bg-11-3259-2014.
- *Colton, A.R., M.J. Wilberg, **V.J. Coles**, and T.J. Miller (2014), An evaluation of the synchronization in the dynamics of blue crab populations in the western Atlantic. *Fisheries Oceanography*, doi:10.1111/fog.12048.
- Goes, J., H. do Rosario Gomes, A.C. Chekalyuk, E.J. Carpenter, J.P. Montoya, **V.J. Coles**, P.L. Yager, W. M. Berelson, D.G. Capone, R. A. Foster, D. K. Steinberg, M. Hafez (2013), Biogeography of phytoplankton communities in the western tropical North Atlantic as influenced by discharge from the Amazon River, *Progress in Oceanography*, **120**, 29-40, doi:10.1016/j.pocean.2013.07.010.
- Grodsky, S.A., G. Reverdin, J.A. Carton and **V.J. Coles** (2013), Year-to-year salinity changes in the Amazon Plume: contrasting 2011 and 2012 Aquarius/SACD and SMOS satellite data, *Remote Sensing of Environment*, **140**, 14-22.
- Coles, V. J.**, *M. T. Brooks, *J. Hopkins, +M. R. Stukel, P. L. Yager, and R. R. Hood (2013), The pathways and properties of the Amazon River Plume in the tropical North Atlantic Ocean, *Journal of Geophysical Research, Oceans*, **118**(12), 6894-6913, doi:10.1002/2013JC008981.
- +Yoshikawa, C., **V.J. Coles**, R. R. Hood , D.G. Capone, N. Yoshida (2013), Modeling how surface nitrogen fixation influences subsurface nutrient patterns in the North Atlantic, *Journal of Geophysical Research, Oceans*, **118**, 2520-2534, doi: 10.1002/jgrc.20165.
- L. Y. Yeung, W. M. Berelson, E. D. Young, M. G. Prokopenko, N. Rollins, **V. J. Coles**, J. P. Montoya, E. J. Carpenter, D.K. Steinberg, R.A. Foster, D.G. Capone and P. L. Yager (2012), Impact of diatom-diazotroph associations on carbon export in the Amazon River plume. *Geophysical Research Letters*, **39**, doi:10.1029/2012GL053356.
- *Cooley, S., **V. J. Coles**, A. Subramaniam and P. Yager (2007), Seasonal variations in the Amazon plume-related atmospheric carbon sink. *Global Biogeochemical Cycles* **21**, GB3014, doi:10.1029/2006GB002831.
- Coles, V. J.** and R. R. Hood (2007), Modeling the impact of iron and phosphorus limitations on nitrogen fixation in the Atlantic Ocean. *Biogeosciences* **4**, 455-479.
- Wilson, C., **V. J. Coles** (2005), Global climatological relationships between satellite biological and physical observations and upper ocean properties. *Journal of Geophysical Research, Oceans*, doi:10.1029/2004JC002724.
- Coles, V.J.**, R. R. Hood, M. Pascual and D. G. Capone (2004), Modeling the impact of *Trichodesmium* and nitrogen fixation in the Atlantic Ocean. *Journal of Geophysical Research, Oceans*, **109**, C06006, doi:10.1029/2002JC001753.
- Hood, R.R., **V. J. Coles**, and D. G. Capone (2004), Modeling the distribution of *Trichodesmium* and nitrogen fixation in the Atlantic Ocean. *Journal of Geophysical Research, Oceans*, **109**, C06007, doi:10.1029/2002JC001754.

- Coles, V.J.**, C. Wilson, R. R. Hood (2004), Remote sensing of new production fuelled by nitrogen fixation. *Geophysical Research Letters*, **31**, L06301, doi:10.1029/2003GL019018.
- Coles, V.J.** and M. M. Rienecker (2001), North Pacific subtropical-tropical gyre exchanges in the thermocline: Simulations with two isopycnal OGCM's. *Journal of Physical Oceanography*, **31**, 2590-2611.
- Griffa, A., E. P. Chassignet, **V. J. Coles**, and D. B. Olson (1996), Inertial gyre solutions from a primitive equation ocean model. *Journal of Marine Research*, **54**, 653—677.
- Coles, V. J.**, M. S. McCartney, D. B. Olson, and W. M. Smethie, Jr. (1996), Changes in Antarctic Bottom Water properties in the western South Atlantic in the late 1980's. *Journal of Geophysical Research, Oceans*, **101**, 8957—8970.

2. Other Peer Reviewed Publications

- Coles, V.J.**, R.R. Hood, (2015), Approaches and challenges for linking marine biogeochemical models with the “omics” revolution, In: P. M. Glibert and T. Kana (Editors), Aquatic nutrient biogeochemistry and microbial ecology: A dual perspective , Springer.
- Coles, V. J.**, L. Gerber, S. Legg, and M. S. Lozier, (2011), Commentary: Mentoring groups—A nonexit strategy for women in physical oceanography. *Oceanography* 24(2):17–20, doi:10.5670/oceanog.2011.43.
- Boesch D.F., V.J. **Coles**, D.G. Kimmel, W.D. Miller (2010), Climate Change: Coastal Dead Zones. In: Comstock G.L. (eds) Life Science Ethics. Springer, Dordrecht.
- Boesch, D.F. (editor). (2008), Global Warming and the Free State: Comprehensive Assessment of Climate Change Impacts in Maryland. Report of the Scientific and Technical Working Group of the Maryland Commission on Climate Change, submitted to the Governor and General Assembly pursuant to Executive Order 01.10.2007.07. (**Primary author of Sections 3 and 4**).
- Hood, R., W. Naqvi, J. Wiggert, J. Goes, **V. Coles**, J. McCreary, N. Bates, P. K. Karuppasamy, N. Mahowald, S. Seitzinger and G. Meyers (2008), Research opportunities and challenges in the Indian Ocean. *Eos Transactions AGU*, **89**(13): 125.
- Coles, V.J.**, R.R. Hood, T. F. Gross (2008) Hydrodynamic Models. In: Sven Erik Jorgensen and Brian D. Fath (Editor-in-Chief), Ecological Models Vol. [3] of Encyclopedia of Ecology, 5 vols., Oxford: Elsevier.
- Hood, R. R., **V. J. Coles**, and T. F. Gross (2008) Marine Models. In: Sven Erik Jorgensen and Brian D. Fath (Editor-in-Chief), Ecological Models Vol. [3] of Encyclopedia of Ecology, 5 vols. pp. 2217-2225 Oxford: Elsevier.

Boesch, D. F., **V. J. Coles**, D. G. Kimmel, and W. D. Miller (2007), Coastal dead zones and global climate change: Ramifications of climate change to Chesapeake Bay hypoxia, Pew Environmental series.

3. Other Non-Peer Reviewed Publications

Coles, V.J., R.R. Hood, M.A. Moran (2017), In modeling marine biogeochemistry, it's not who you are, but what you do. *Cell Systems*, **5**.

Wang, P., A.B. Burd, M.A. Moran, R.R. Hood, **V.J. Coles**, P.L. Yager (2013), Incorporating genomic information and predicting gene expression patterns in a simplified biogeochemical model. *Biogeosciences Discussions*, **10**: 815-850.

Valvo, L. M., M.S. Lozier and **V. Coles**. (2008), The Pattullo conference report and update on other MPOWIR activities. Report of a workshop held May 18-21, 2008. 35pp. [Online] available at: <http://www.mpowir.org>.

Lozier, M.S., A. Adcroft, L. Beal, A. Bower, D. Byrne, A. Capotondi, **V. Coles**, K. Lavender, C.M. Lee, J. MacKinnon, K. Shearman, L. St. Laurent, L. Thompson, and D. Witter. (2006), *MPOWIR: Mentoring physical oceanography to increase retention. Report of a workshop held October 9- 12, 2005*. 32 pp. [Online] available at: <http://www.mpowir.org>.

Hood, R.R., **V. J. Coles**, M. Pascual, and D. G. Capone (2001), Modeling *Trichodesmium* and Nitrogen Fixation in the Atlantic: JGOFS meets Biocomplexity. *US. JGOFS News*, **11**: 3pp.

4. Submitted Publications

+St.Laurent, K.A., **V.J. Coles**, R. J. Wood, R. R. Hood (2020), Climate Extremes and Variability in Chesapeake Bay: Part I: Past, Present, and Future, Accepted pending revision and resubmitted to *Journal of the American Water Resources Association*.

Shropshire, T.A., Morey, S.L., Chassignet, E.P., Coles, V.J., Karnauskas, M., Malca, E., Laiz-Carrion, R., Fiksen, O., Reglero, P., Shiroza, A., Quintanilla Hervas, J.M., Gerard, T., Lamkin, J.T., Stukel, M.R. Trade-offs between risks of predation and starvation in larvae make the shelf break an optimal spawning location for Atlantic Bluefin tuna, (2020) In Revision to *J. Plankton Res.*

Mu, L., H.R. Gomes, S.M. Burns, J.I. Goes, V.J. Coles, C.E. Rezende, F.L. Thompson, R.L. Moura, B. Page, P.L. Yager (2021), Temporal variability of air-sea CO₂ flux in the western tropical North Atlantic influenced by the Amazon River plume, In revision at *Global Biogeochem. Cycles*.

3. Websites

- Coles, V.J. Zooplankton from Space (2019)
<https://sites.google.com/view/zoopfromspace/home>
- D. Jasinski, **V.J. Coles**, P. Jasinski, R. Hood, K. St.Laurent (2016) Changing Chesapeake. <http://www.chesapeakeedata.com/changingchesapeake/>
- Coles, V.J.** (2008) Maryland Commission on Climate Change Science and Technical Working Group data server, <http://hpl.umces.edu/vcoles/cbayclim.htm>
- Coles, V.J.** (2007) HPL research website, <http://www.hpl.umces.edu/vcoles/>
- Coles, V.J.**, A.G. Willey (2006) Mentoring Physical Oceanography Women to Increase Retention website, <http://www.mpowir.org/>
- Coles, V. J.**, A. G. Willey and R. R. Hood (2006) Oceanography at the University of System of Maryland: <http://ocean.umd.edu> (now closed)
- Coles, V.J.**, A.G. Willey (2005) HPL Physical Oceanography website. <http://hpl.umces.edu/po/index.htm> (Now closed)

E. Awards and Special Recognition

- 2009 State of Maryland Governor’s Commendation for work on Maryland Commission on Climate Change.
- 2008 University of Maryland Center for Environmental Science President’s award for excellence in application of science. (Awarded annually to one faculty member)

V. Outreach and Service

A. Local (l), National (n), and International (i) Service

Present:

- n Ocean Carbon and Biogeochemistry Scientific Steering Committee 2018. Elected vice-Chair 2020.
- ni Co-Chair Ecological Forecasting workshop co-sponsored by US CLIVAR and OCB.
- l Climate expert for two episodes of the “Landscaping for resilience in a changing climate course” developed by UM Extension, Chesapeake Bay Landscape Professional Program, and UM Environmental Finance Center.

Past:

- n US CLIVAR Process Study and Model Improvement Panel (2017-2021), Co-chair 2018, Chair 2019, US CLIVAR SSC member 2018, 2019.
- lni Founding member of Mentoring Physical Oceanography Women to Increase Retention (MPOWIR), developer of MPOWIR mentor group program and mentor group leader (2008, 2009, 2010, 2011, 2012, 2014, 2015, 2016, 2017)

- ni Elected American Geophysical Union (AGU) physical oceanography secretary by oceanography community (2015-2019)
- ni American Geophysical Union Fall Meeting Program Committee, Honors Committee, chair of General oceanography and Oceanography without getting wet: Leveraging satellite, glider and model data streams sessions. (2016)
- ni American Geophysical Union Fall Meeting Program Committee, Honors Committee, Chair of General oceanography and New technologies, approaches or methods for relating observations to models (2015)
- l Member Science and Technical Working Group, Maryland Commission on Climate Change (2007)