



University of Maryland  
CENTER FOR ENVIRONMENTAL SCIENCE  
HORN POINT LABORATORY

## CURRICULUM VITAE

**Victoria J. Coles**

Research Assistant Professor  
Horn Point Laboratory  
University of Maryland Center for Environmental Science

November 14, 2008

### *Certification*

I have reviewed this Curriculum Vitae and here certify  
that it is a current and accurate statement of my  
professional record.

Signed:

Date: November 14, 2008

## CURRICULUM VITAE

### Victoria J. Coles

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#### I. EDUCATION

B.S., Physics with specialization in Earth Sciences. (minor specializations French Literature and Mathematics). University of California at San Diego. (1991)

Ph.D., Physical Oceanography. University of Miami. Rosenstiel School of Marine and Atmospheric Science. (1998) Advisor: Dr. Donald B. Olson, Dissertation: *Abyssal Flow and Forcing: Observations and Numerical Models of the Argentine Basin.*

#### II. PROFESSIONAL BACKGROUND

July 2001 – Present	Research Assistant Professor, Horn Point Laboratory, University of Maryland Center for Environmental Science, Horn Point Laboratory.
1999 – July 2001	Visiting Scientist, University of Maryland Center for Environmental Science, Horn Point Laboratory.
2000 - 2001	Research Associate, University of Maryland, Baltimore County, NASA Goddard Earth Science and Technology Center.
1997 – 2000	Postdoctoral Fellow, Universities Space Research Association, Goddard Space Flight Center, NASA.
1991-1997	Graduate Research Assistant, Division of Meteorology and Physical Oceanography, Rosenstiel School of Marine and Atmospheric Science, University of Miami.

#### III. RESEARCH

##### A. Areas of professional expertise

Observation and modeling of ocean and estuarine circulation, variability, and interaction with climate

Climate change impacts on regional and global scales

Coupled physical - biogeochemical and ecosystem modeling

Remote sensing of ocean physics and biology

## B. Peer-Reviewed Publications

### 1. Papers in Refereed Journals

#### *Papers prior to employment at UMCES*

- 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*, **101**: 8957—8970.
- 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.

#### *Papers subsequent to employment at UMCES*

- Coles, V.J.**, C. Wilson and 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.**, 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*. 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*. **109**, C06007, doi:10.1029/2002JC001754.
- Wilson, C., **V. J. Coles** (2005) Global climatological relationships between satellite biological and physical observations and upper ocean properties. *Journal of Geophysical Research*, doi:10.1029/2004JC002724.
- 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.
- 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 D. G. Kimmel (2008) Projected climate change impacts for the Chesapeake Bay (submitted to *Climate Research*).

### 2. Other Peer or Editor Reviewed Publications

- Boesch, D. F., **V. J. Coles**, D. G. Kimmel, and W. D. Miller (2007), Ramifications of climate change to Chesapeake Bay hypoxia. *Pew Environmental series*.
- Hood, R. R. and **V. J. Coles** (2008) Marine ecosystem models. In: *Encyclopedia of Ecology*, S. E. Jorgensen (ed.), Elsevier Ltd., Oxford, in press.
- Coles, V. J.**, R. R. Hood and T. F. Gross (2008), Hydrodynamic models. In: *Encyclopedia of Ecology*, S. E. Jorgensen (ed.), Elsevier Ltd., Oxford, in press.

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.

### 3. Other Non Peer Reviewed Publications

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.

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>.

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**)

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>.

### c. Contracts and Grants

#### 1. Awarded (Since employment at UMCES)

“BIOCOMPLEXITY: Factors affecting, and impact of, diazotrophic microorganisms in the western Equatorial Atlantic”, NSF 1/1/00-1/1/04, \$282,000, HPL Component. (with R.R. Hood, D. G. Capone (USC), E. Carpenter (Tiburón) et al.)

“Understanding bio-physical coupling in the Atlantic using combined satellite observations and ocean modeling”, NASA 10/1/02-10/1/04, \$58,855 (with C. Wilson (NOAA))

“Assessing the Impact and Variability of Coccolithophorid Blooms in the Ocean Carbon Cycle”, NOAA 2/1/2005 – 1/31/2008, \$258,530, HPL Component. (With R. R. Hood, C. Brown (NOAA), R. Murtugudde (UMCP/ESSIC))

“An adaptive food web model for the epipelagic and mesopelagic”, NSF subcontract through LSU 9/1/2006-9/1/2009, \$95,614 (with R. Hood, E. Laws (LSU), Kelvin Richards (UH))

“Relating microbial biodiversity to biological oceanographic processes”, NSF 1/1/2006–12/31/2008, \$121,450 (HPL component) (With D. G. Capone (USC), and J. D. Fuhrman (USC))

“Linking ASI to regional science and solutions for Chesapeake Bay”, NOAA subcontract through ESSIC 2/1/2008-1/31/2009, \$35,850 (sole investigator).

“Implementation of a mentoring program for junior women in physical oceanography”, NSF 5/1/2007-4/30/2010, \$129,450 (With S. Lozier (Duke)).

“Maryland Commission on Climate Change Science and Technical Working Group”, Town Creek Foundation, 10/18/2007-10/31/2008, \$20,000, (sole investigator).

## 2. Under Review

“Interactive Effects of Storms and Droughts, Growing Season Length, and Land Use Change on Large River Basins”, EPA, \$166,504 (With D. Kimmel, T. Lookingbill, R. Gardner, A. Elmore, K. Eshleman, J. Julian, K. Brubaker)

“CAMEO: Building a Foundation: Developing Estuarine Ecological Principles”, NSF/NOAA, \$ 500,000 (With L. Harris, E. Houde, et al.)

“CAMEO: Building the Foundation: Connectivity and resiliency from estuaries to the ocean”, \$ 500,000 (With E. North et al.)

“ETBC: BOCA – Brazil to Ocean connections via Amazon: The Amazon River connection to the tropical Atlantic Ocean carbon cycle”, \$231,016 (With P. Yager UGA, J. Richey UW, and others)

## D. Recent Seminars, Presentations, Posters and Websites

### 1. Invited Seminars and Papers

**Coles, V.J.** (2000) Pathways, transports, and interannual variability in Pacific subtropical cells. FSU, Tallahassee, FL.

**Coles, V. J.** (2001) Tracer advection in the tropics. HPL.

**Coles, V.J.** and R. R. Hood (2001) Simulating hydrothermal vent larval transport in ocean general circulation transport models. LARVE 2000. Ogden, UH. (R. Hood presented).

**Coles, V. J.** (March 2004) Nitrogen Fixation in the Atlantic: Who Cares?. ESSIC, University of Maryland, College Park, MD.

**Coles, V. J.** (April 2004) Modeling nitrogen fixation in the Atlantic, CBL, Solomons, MD.

**Coles, V. J.** (December 2004) Modeling nitrogen fixation in the Atlantic, NOAA/PFEL, Monterey, CA.

Hood, R. R. and **V. J. Coles** (2004) Modeling the impact of iron and phosphorus limitation on *Trichodesmium* growth and N<sub>2</sub>-fixation in the Atlantic. Scripps Institution of Oceanography, San Diego, CA.

**Coles, V. J.** (November 2005) Climate change and nitrogen fixation driven export in the Atlantic, Duke University, Raleigh, NC.

**Coles, V. J.** (2007) From Climate to Biogeochemistry and back. HPL REU seminar.

**Coles, V. J.** (February 2008) Climate change and Chesapeake Bay, ODU, Virginia Beach, VA.

**Coles, V.J.** (March, 2008) MPOWIR Goals, Earth Science Women’s network Steering Committee, Princeton, NJ.

### 2. Contributed Papers and Posters

- Coles, V. J.** and R. R. Hood (2000) Modeling *Trichodesmium* and the impact of nitrogen fixation in the Atlantic Ocean. ASLO Aquatic Sciences, 2000, June 5-9, 2000, Copenhagen, Denmark.
- Coles, V.J.** and M. M. Rienecker (2001) Watermass formation in the South Pacific. Tropical Atlantic Meeting, Venice, IT.
- Coles, V.J.** and M. M. Rienecker (2001) Watermass formation in the South Pacific. Layered Ocean Model Meeting, Miami, FL.
- Coles, V. J.** and M. M. Rienecker (2002) Salinity variability in the South Pacific subtropics. AGU Ocean Sciences Meeting, Honolulu.
- Pascual, M., **V. J. Coles**, R. R. Hood, and D. G. Capone (2002) Modeling Nitrogen Fixation in an Atlantic Coupled Ecosystem Ocean Circulation Model. 2002 AGU/ASLO Ocean Sciences Meeting, Honolulu, HI, 11-15 February.
- Wilson C. and **V. J. Coles** (2002) Interpreting Satellite views of biophysical coupling with subsurface TAO data in the tropical Pacific, Fall AGU Meeting, San Francisco.
- Coles, V.J.**, R.R. Hood, M. Pascual, D.G. Capone (2003) Modeling Nitrogen Fixation in an Atlantic Coupled Ecosystem – Ocean Circulation Model, ASLO, Salt Lake City.
- Coles, V.J.**, C. Wilson, R. Hood (2004) New Production Fuelled by Nitrogen Fixation, AGU Ocean Sciences Meeting, Portland.
- Wilson, C., **V.J. Coles** (2004) Seasonal relationships between global subsurface oceanic structure (MLD and thermocline) and satellite observations, AGU Ocean Sciences Meeting, Portland.
- Coles, V.J.**, C. Wilson, R. Hood (2004) Nitrogen Fixation in the tropical North Atlantic, Layered Ocean Model Meeting, Miami.
- Hood, R. R., **V. J. Coles**, D. G. Capone (2004) Modeling the Impact of Iron and Phosphorus Limitation on *Trichodesmium* Growth and Nitrogen Fixation in the Atlantic Ocean, ASLO/TOS, Honolulu.
- Coles, V. J.**, C. Wilson (2004) Tropical Atlantic Ecosystem Variability associated with Nitrogen Fixation, CLIVAR Baltimore.
- Coles, V. J.** (2005) Modeling nitrogen fixation in the Atlantic : model physics, Layered Ocean Model workshop, Miami FL.
- Hood, R. R., **V. J. Coles**, and D. G. Capone (2005) Modeling the influence of nitrogen fixation on marine biogeochemical cycles in the Atlantic Ocean. 2005 ASLO Aquatic Sciences meeting, Salt Lake City, Utah, 20-25, February.
- Coles, V. J.** (2005) The influence of E-P and Amazon Inflow on western tropical North Atlantic Variability, CLIVAR Atlantic workshop, Miami, FL.
- Coles, V. J.** and R. R. Hood (2005) Atmospheric dust deposition variability and Atlantic nitrogen fixation, ASLO Santiago.
- Coles, V. J.** (2005) A tangled web: Deconstructing STC pathways in space and time, Venice.
- Coles, V. J.** (2005) Modeling nitrogen fixation in the Atlantic: Biogeochemistry and climate, HPL.
- Coles, V. J.**, R. R. Hood (2006) Atmospheric dust deposition variability and Atlantic nitrogen fixation, Ocean Sciences, Honolulu.
- Coles, V. J.** (2006) Passive and active tracers in HYCOM, Layered Ocean Model Meeting, Tallahassee, FL.
- Hood, R. R., **V. J. Coles** and D. G. Capone (2007) Modeling Nitrogen Fixation in the Atlantic Ocean. Invited presentation, ASLO/AGU/TOS Ocean Sciences Meeting, Orlando, FL.

- Coles, V. J.,** C. Brown, R. R. Hood (2008) Modeling Calcification in the North Atlantic, Ocean Sciences, Orlando, FL.
- O'Neil, J.M. and **V. J. Coles** (2008) Nitrogen Fixation in Chesapeake Bay tributaries: A seasonally important nitrogen term? Ocean Sciences, Orlando, FL.
- Davies, A.R. and **V. J. Coles** (2008) An Analysis of the future climate over the Chesapeake Bay watershed, Stormfest Conference, Pittsburgh, PA

### 3. Sessions Chaired

**Coles, V.J.** and E. Vazquez-Dominguez. (2005) Climate change in ocean and marginal sea ecosystems: observation, modeling and experiments, ASLO Summer meeting, Santiago, Spain.

### 4. Web sites

**Coles, V.J.,** A.G. Willey (2005) HPL Physical Oceanography website.  
<http://hpl.umces.edu/po/index.htm>

**Coles, V. J.,** A. G. Willey and R. R. Hood (2006) Oceanography at the University of System of Maryland: <http://ocean.umd.edu>

**Coles, V.J.,** A.G. Willey (2006) Mentoring Physical Oceanography Women to Increase Retention website, <http://www.mpowir.org/>

**Coles, V.J.** (2007) HPL research website, <http://www.hpl.umces.edu/vcoles/>

**Coles, V.J.** (2008) Maryland Commission on Climate Change Science and Technical Working Group data server, <http://hpl.umces.edu/vcoles/cbayclim.htm>

## F. Active Memberships in Professional Societies

American Geophysical Union

## IV. TEACHING AND TRAINING

2008 – present Regular Member UMCES Graduate Faculty, Horn Point Laboratory

2002 – 2008 Special Member UMCES Graduate Faculty, Horn Point Laboratory

### A. University System of Maryland Courses Taught

Course No.	Title	Institution	Semester	Credit Hrs.	Instructors	Lectures
MEES 661	Physics of Marine and Estuarine Environments	UM/MEES	Fall 2001	3	Coles/Boicourt	12
MEES 608K	Climate Impacts on Estuaries and Ecosystems.	UM/MEES	Fall 2002	1	Coles, Li	14
MEES 661	Physics of Marine and Estuarine Environments	UM/MEES	Spring 2004	3	Coles/Boicourt	12
MEES 661	Physics of Marine and Estuarine Environments	UM/MEES	Spring 2006	3	Coles/Boicourt	12
MEES 661	Physics of Marine and Estuarine Environments	UM/MEES	Spring 2008	3	Coles/Boicourt	12

## B. Graduate Students Supervised as Major Advisor

1. Students Supervised (co-chair and lead advisor)  
None.
2. Graduate Student Committee Memberships  
Sarah Cooley, PhD. University of Georgia (Graduated)  
Margaret Sexton, PhD. UMCES  
Apurva Dave, PhD. Duke University
3. REU students supervised (past)  
Alexander Davies, Chesapeake Climate Impacts, 2007
4. Post-docs advised  
Chisato Yoshikawa, Basin-scale biogeochemical modeling (2007-2008) with R. R. Hood.

## V. OUTREACH AND SERVICE

### A. Journal/Proposal Reviews

(4-5 per year since 2006)

Journal of Geophysical Research,  
Journal of Physical Oceanography,  
Geophysical Research Letters,  
Biogeosciences  
Antarctic Science  
Journal of Climate  
Global Change Biology  
National Science Foundation  
NASA  
NOAA

### B. Public Service

2001 Sandy Hill Elementary School  
2002 Anne Arundel high school science teachers (ENSO cycles)  
2004 HPL Open House  
2004 Sandy Hill Elementary School  
2005 HPL Open House  
2006 HPL Open House  
2007 HPL Open House  
2007 The Country School  
2008 HPL Open House

2008 Climate Panelist, Talbot County Country Club  
2008 Interview WBOC re: STAC climate report

### C. UMCES and Horn Point Laboratory

2002 UMCES convocation committee  
2002 HPL Open House committee chair  
2002-3 HPL Education Committee  
2003 Physical Oceanography Facilitator for faculty retreat.  
2004 Draft Physical Oceanography-Student recruiting website  
2004 Spearheading with B. Boicourt integration of MEES 661 with METO 670 (Jim Carton)  
2004 Physical Oceanography presenter for External Review committee  
2004 Chair Colloquium climate initiative workgroup and co-author of strategic plan section  
2004 Open House committee  
2004 Education Committee  
2005 Oceanography AOS student application reviewer  
2005 Open House committee  
2005 Education Committee  
2005 Oceanography AOS student application reviewer  
2006 Education Committee  
2006 Oceanography AOS student application reviewer  
2006 USM Oceanography website  
2006 USM Oceanography colloquium (with R. Hood and M. Roman)  
2007 HPL Seminar co-Chair  
2007 Library committee  
2008 Library Committee  
2008 IES committee

### D. Local/National/International

2000 RIDGE 2000 workshop, Newport, OR.  
2004 NASA MODIS proposal review panel  
2004 Reviewer Layered Ocean Model white paper draft.  
2004 MPOWIR - mentoring physical oceanography women to increase retention.  
2005 NASA Earth System Science Fellowship reviewer  
2005 NOAA CLIVAR Review Panel  
2006 MPOWIR steering committee – proposal submission – website.  
2007 NASA Biogeochemistry Review Panel.  
2007 Ocean Acidification workshop.  
2007 MPOWIR steering committee – website.  
2007 Member Science and Technical Working Group Maryland Commission on Climate Change.  
2008 MPOWIR Steering Committee  
2008 MPOWIR Patullo workshop convenor  
2008 MPOWIR mentor group chair.