

**KATHERINE C. FILIPPINO**

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Hampton Roads Planning District Commission  
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**EDUCATION:**

2008 Old Dominion University, Ph.D. Oceanography  
2002 Old Dominion University, M.S. Oceanography  
1999 University of Delaware, B.S. Chemistry

**PROFESSIONAL POSITIONS:**

**Senior water resources planner** (October 2016 – Present) *Hampton Roads Planning District Commission, Chesapeake, Virginia*

- Monitors Chesapeake Bay Program (CBP) developments and Total Maximum Daily Load (TMDL) implementation for the 17 localities, including 11 Phase I and II MS4's in Hampton Roads
- Participates in meetings for the CBP's Water Quality Goal Implementation Team, Land Use Workgroup (co-chair), Modeling Workgroup, Urban Stormwater Workgroup (local government representative), Modeling Workgroup, Watershed Technical Workgroup, BMP ad-hoc Verification Team, Local Government Engagement Initiative, and Local Government Advisory Committee
- Works closely with VA Department of Environmental Quality (DEQ) on contracts, permits, reporting requirements, and workgroups related to stormwater, local and Chesapeake Bay TMDLs, and emerging water-related issues
- Conducts research and prepares professional studies, reports, and planning documents related to water regulations and initiatives
- Manages the Regional Water Quality Monitoring Program in coordination with the Hampton Roads Sanitation District (HRSD) and U.S. Geological Survey (USGS)
- Coordinates the monthly Regional Environmental Committee (REC) and quarterly Water Quality Technical Workgroup meetings and assists in developing the monthly Stormwater Workgroup meetings

**Research Assistant Professor** (March 2014 – September 2016) *Department of Ocean, Earth, and Atmospheric Sciences, Old Dominion University, Norfolk, Virginia*

- Coordinated large-scale water quality research efforts and field projects in estuarine waters; prepared successful grant proposals; managed technicians and students; maintained budgets
- Coordinated studies among research scientists, wastewater engineers (HRSD), non-profit environmental groups, regulatory agencies (VA DEQ, VA VDH), and municipalities to bridge the gap between research and applied science
- Supported and engaged in long-term monitoring to benefit restoration activities, climate change and sea-level rise initiatives, and best management practices using a variety of water quality instrumentation
- Evaluated the initiation, development, and succession of potentially harmful algae blooms with respect to the impacts of meteorological events and stormwater on pollutants and ecosystem structure in estuarine and coastal waters
- Managed large data sets and visualization tools using Matlab, Excel, SigmaPlot, and ArcGIS

- Instructed students in a capstone field studies course for Ocean and Earth Science (OES) majors
- Program coordinator and mentor for summer research experience for undergraduates (REU) program on climate change and sea level rise: Recruited, hired, and mentored undergraduate students from universities nationwide; organized and implemented a summer program with enrichment activities; planned outreach events

**Research Professional** (February 2011 – February 2014)

*Department of Ocean, Earth, and Atmospheric Sciences, Old Dominion University, Norfolk, Virginia*

- Assessed numerical Chlorophyll *a* criteria in the James River by evaluating stormwater-related nutrient pulses in local waterways
- Assessed environmental factors promoting algal blooms in the Lower James River estuary
- Developed strategies for nitrogen and phosphorus removal for tertiary treatment of wastewater effluent through the optimization of natural polymers and algae
- Wrote and submitted successful proposals for grant funding
- Mentored staff, students, and fellow researchers to develop complimentary research efforts within the laboratory research group

**Post-doctoral Researcher** (November 2008 – February 2011) *Old Dominion University, Norfolk, Virginia*

- Developed new protocols and techniques in the laboratory and in the field to streamline sampling efforts
- Prepared and performed chemical analyses (nitrogen, phosphorous, biomass, etc.) on water samples using EPA (or similar) standard techniques and methodologies
- Maintained analytical instrumentation: Nutrient auto analyzer (Astoria Pacific), HPLC (Shimadzu), flow cytometer (Beckton Dickinson), fluorometer (Turner), coulometer
- Examined the extent of bioavailable nitrogen to receiving waters from treated wastewater effluent
- Prepared data, developed presentations and peer reviewed publications on research findings to present to government agencies, non-profit organizations, fellow scientists, and the general public

**Graduate Research Assistant** (August 2004 - October 2008) - Under the direction of Dr. Margaret Mulholland, *Department of Ocean, Earth, and Atmospheric Sciences, Old Dominion University, Norfolk, Virginia*

- Examined the transport of nitrogen and phosphorous from the Chesapeake Bay to the coastal ocean with respect to the hydrography of the Virginia coast
- Scheduled, planned, organized, and managed environmental compliance for chemicals, logistics, and environmental sample collection for multiple research cruises
- Coordinated research efforts and cruise planning with federal agencies (NASA and NOAA)
- Mentored undergraduates in summer Coastal Observations Intern program and in summer REU program

**Research Specialist Senior** (October 2002 - July 2004) *The College of William and Mary, Virginia Institute of Marine Science, Gloucester Pt., Virginia*

- Lead technician on National Science Foundation biocomplexity project researching dissolved organic matter sources and cycling in coastal waters

- Developed a method for the isolation of dissolved organic nitrogen for uptake and release experiments of phytoplankton using stable nitrogen isotopes as a tracer
- Conducted chemical analysis of water samples for ammonia, nitrate, nitrite, phosphate, urea, total dissolved nitrogen, dissolved primary amines, dissolved organic carbon

#### PROFESSIONAL DEVELOPMENT:

##### Committees

- Virginia Water Environment Association, Member, 2018 - Present
- Elizabeth River Eastern Branch Implementation Team, 2017 - Present
- ODU Resiliency Collaborative Steering Committee, 2016
- Elizabeth River Watershed Action Team member – Water Quality work group, 2015 - Present
- State of the Lafayette River, 2014 - Present
- Elizabeth River Steering Committee, 2013 – Present
- Harmful Algal Bloom task force, 2013 – Present
- NOAA Chesapeake Bay Sentinel Site Advisory panel, 2013 – 2014
- Science Advisory Panel – James River Chl *a* criteria study, 2012 – 2016
- Lafayette Fishable Swimmable Steering Committee, 2012 – Present

#### PUBLICATIONS:

- Hofmann, E., J.M. Klinck, M.R. Mulholland, K.C. **Filippino**, T. Egerton, L.B. Davis, M. Echevarria, E. Perez-Vega. (In Review). Understanding Controls on *Margaledidinium polykrikoides* Blooms in the Lower Chesapeake Bay. Harmful Algae.
- Mulholland, M. R., Morse, R. E., Egerton, T., Bernhardt, P. W., and **Filippino**, K. C. (2018). Blooms of dinoflagellate mixotrophs in a lower Chesapeake Bay tributary: Carbon and nitrogen uptake over diurnal, seasonal, and interannual timescales. *Estuaries and Coasts*
- Tang, T., **Filippino**, K. C., Liu, Z., Mulholland, M. R., and Lee, C. (2017). Peptide hydrolysis and uptake of peptide hydrolysis products in the James River estuary and lower Chesapeake Bay. *Marine Chemistry*, 197, pp. 52-63.
- Filippino**, K.C., T.A. Egerton, W. S. Hunley, M.R. Mulholland. The Influence of Storms on Water Quality and Phytoplankton Dynamics in the Tidal James River. 2016. *Estuaries and Coasts*. DOI: 10.1007/s12237-016-0145-6.
- Filippino**, K.V., M.R. Mulholland, C.B. Bott. 2015. Phycoremediation strategies for rapid tertiary nutrient removal in a waste stream. *Algal Research*. 11,125-133.
- Filippino**, K.C., M.R. Mulholland, P.W. Bernhardt. Nitrogen and Carbon in the Mid-Atlantic Bight (MAB), comparisons between the shelf, plume and Gulf Stream. *Estuarine, Coastal, and Shelf Science*. 2011. 91(1) 13-23.
- Pan, X., A. Mannino, H.G. Marshall, K.C. **Filippino**, M. R. Mulholland. 2011. Remote sensing of phytoplankton community composition along the northeast coast of the United States. *Remote Sensing of Environment*. 115(12), 3731-3747.
- Filippino**, K.C., M.R. Mulholland, P. W. Bernhardt, G. E. Boneillo, R. E. Morse, M. Semcheski, H. Marshall, N. G. Love, Q. Roberts, D. A. Bronk. 2010. The bioavailability of effluent-derived organic nitrogen along an estuarine salinity gradient. *Estuaries and Coasts*. DOI: 10.1007/s12237-010-9314-1.
- Bronk, D.A., Q.N. Roberts, M.P. Sanderson, E. A. Canuel, P.G. Hatcher, R. Mesfioui, K.C. **Filippino**, M.R. Mulholland, N. G. Love. 2010. Effluent Organic Nitrogen (EON): Bioavailability and photochemical and salinity-mediated release. *Environmental Science and Technology*. 44(15) 5830 – 5835.

- Filippino, K.C.**, P.W. Bernhardt, M.R. Mulholland. 2009. Chesapeake Bay plume morphology and the effects on nutrient dynamics and primary productivity in the coastal zone. *Estuaries and Coasts*, 32: 410-424.
- Mulholland, M.R., R.E. Morse, G.E. Boneillo, P.W. Bernhardt, **K.C. Filippino**, L.A. Procise, J.L. Blanco, H.G. Marshall, T.A. Egerton, W. Hunley, Y. Tang, C.J. Gobler. 2009. Nutrient dynamics and ecological impacts of *Cochlodinium* blooms in the Chesapeake Bay. *Estuaries and Coasts*, 32: 734-747.
- Cutter, G.A., L.S. Cutter, & K.C. **Filippino**. 2004. Sources and cycling of carbonyl sulfide in the Sargasso Sea. *Limnology & Oceanography*, 49(2), 555-565.

#### MANUSCRIPTS SUBMITTED AND IN PREP:

- Filippino, K.C.**, M.R. Mulholland, P.W. Bernhardt, Z. Hu. Controls on peptide hydrolysis in aquatic systems. In prep.
- Filippino, K.C.**, T.A. Egerton, W.S. Hunley, J. Shen, M.R. Mulholland. Drivers of interannual variability of *Cochlodinium polykrikoides* blooms in a coastal urban estuary. In prep.

#### CONFERENCE PAPERS AND SCIENTIFIC PRESENTATIONS:

- Filippino, K.C.**, T.A. Egerton, W.S. Hunley, J. Shen, M.R. Mulholland. Drivers of interannual variability of *Cochlodinium polykrikoides* blooms in a coastal urban estuary. American Society of Limnology and Oceanography Ocean Sciences Meeting, Granada Spain. – Poster Feb. 2015.
- Filippino, K.C.**, M.R. Mulholland, C. B. Bott, D. Katehis, C. Wilson. Algae Bioreactors – A Cost-effective approach for enhanced nutrient removal. Water Environment Research Foundation Research Forum, Chicago, IL – Invited Speaker Jan. 2013.
- Egerton, T. A., K.C. **Filippino**, W. Hunley, and H.G. Marshall. Storms, river flow and algal blooms in Virginia tidal tributaries. Association of Southeastern Biologists. Charleston, WV. Apr., 2013.
- Filippino, K.C.**, C. Schweitzer, M.R. Mulholland, C. B. Bott. Phycoremediation strategies for rapid nutrient removal in a waste stream. WEFTEC, New Orleans, LA. – Poster Nov. 2012.
- Filippino, K.C.**, T.A. Egerton, R.E. Morse, W. S. Hunley, M.R. Mulholland. Storm chasing: Nutrient dynamics in the tidal James River before, during, and after Hurricane Irene and Tropical Storm Lee. OCEANS '12 – Speaker Oct. 2012.
- Filippino, K.C.** Nutrient dynamics in the James River along a salinity gradient before, during, and after Hurricane Irene and Tropical Storm Lee. Center for Coastal and Physical Oceanography, ODU, Norfolk, VA. – Invited Seminar Speaker Jan. 2012.
- Filippino, K.C.**, C. Schweitzer, M.R. Mulholland. Phycoremediation strategies for rapid nutrient removal in a waste stream. Virginia Water Environment Association: WaterJAM, Virginia Beach, VA. - Speaker Sept. 2011.
- Bernhardt, P. W., M. R. Mulholland, C. Lee, K.C. **Filippino**, and T. Tang. Peptide hydrolysis and dipeptide uptake in coastal and oceanic waters in the mid-Atlantic. AGU/ASLO Ocean Sciences Meeting, Portland, OR. - Poster Feb. 2010.
- Filippino, K.C.**, M. R. Mulholland, Bernhardt, P.W., Boneillo, G.E., Morse, R.E., Semcheski, M., Marshall, H., Love, N., Roberts, Q., Bronk, D.A. The bioavailability of effluent-derived organic nitrogen along an estuarine salinity gradient. Coastal and Estuarine Research Federation, Portland, OR. Nov. 2009.
- Mulholland, M. R., P. W. Bernhardt, K. C. **Filippino**, J. L. Blanco-Garcia, E. Mondragon, P. H.

- Moisander, and J. P. Zehr. Unexpectedly high rates of N<sub>2</sub> fixation and *nifH* gene diversity in the coastal mid-Atlantic Ocean. CERF Meeting, Portland, OR – Poster Nov. 2009.
- Filippino**, K.C., M.R. Mulholland, N.G. Love, D.A. Bronk, R. Mesfioui, P. Hatcher. Wastewater treatment derived effluent organic nitrogen: Bioavailability in the environment. Virginia Water Research Conference, Virginia Commonwealth University, Richmond, VA – Speaker Oct. 2009.
- Filippino**, K.C., M.R. Mulholland, D.A. Bronk, N.G. Love. The bioavailability of effluent-derived organic nitrogen along an estuarine salinity gradient. Ecosystem Based Management Conference, Baltimore, MD - Speaker March, 2009.
- Mulholland, M. R., K. C. **Filippino**, D. A. Bronk, N. G. Love, H. D. Stensel, and A. Pramanik. Plant Derived Effluent Organic Nitrogen (EON) – From Pipe to Estuary, Part 2. Chesapeake Research Consortium’s conference on Ecosystem Based Management: the Chesapeake and Other Systems, Baltimore, MD March 2009.
- Bronk, D. A., M. R. Mulholland, Nancy G. Love, Quinn Roberts, K. C. **Filippino**, E. Canuel. Assessing the bioavailability of effluent organic nitrogen (EON) using a suite of water quality-based assays. Nutrient Removal 2009, Water Environment Federation, Washington, DC. 2009.
- Love, N. G., Q. Roberts, D. Bronk, K.C. **Filippino**, M. R. Mulholland, R. Mesfioui, P. Hatcher and E. Canuel. The Importance of Effluent Organic Nitrogen Bioavailability and its Contribution to Nitrogen Management in Nitrogen-Limited Regions. AEESP meeting. 2009.
- Filippino**, K.C., M.R. Mulholland, P.W. Bernhardt, E. Mondragon, J.P. Zehr. Contrasting di-nitrogen fixation in the Chesapeake Bay outflow plume with surrounding coastal and shelf waters. ASLO/TOS Ocean Sciences Meeting, Orlando, FL - Poster Mar. 2008.
- Bernhardt, P. W., M. R. Mulholland, C. Gobler, R. Morse, G. Boneillo, K. C. **Filippino**, and L. Procise. Ecosystem impacts of a *Cochlodinium polykrikoides* bloom in a mid-Atlantic estuary. ASLO/TOS Ocean Sciences Meeting, Orlando, FL. March 2008.
- Filippino**, K.C., M.R. Mulholland, P.W. Bernhardt. Nitrogen and Carbon dynamics in the Chesapeake Bay outflow plume. ASLO/TOS Ocean Sciences Meeting, Santa Fe, NM Poster Feb. 2007.
- Mulholland, M. R., K. C. **Filippino**, P. Bernhardt, G. Boneillo, R. Morse, L. Procise, D. A. Bronk, N. Love, and E. Canuel. Stimulation of algal growth by effluent organic nitrogen along a salinity gradient. Virginia/West Virginia Water Research Symposium, Blacksburg, VA, Nov. 2007.
- Mulholland, M. R., K. C. **Filippino**, P. W. Bernhardt, L. Mondragon, and J. P. Zehr. N<sub>2</sub> fixation in mid-Atlantic coastal waters. ASLO Aquatic Sciences Meeting, Santa Fe, NM, Feb. 2007.
- Makinen, C. P., T. A. Moisan, J. L. Blanco, J. W. Ambler, L. Atkinson, P. W. Bernhardt, K. C. **Filippino**, S. B. Hooker, A. Mannino, M. R. Mulholland, J. Nolan, M. E. Russ, R. N. Swift, A. L. Sybrandy, and J. Yungle. NASA Wallops Coastal Ocean Observing Laboratory [WA-COOL], the Integrated Ocean Observing System (IOOS) of the Southern Mid-Atlantic Bight. ASLO/AGU Meeting, Honolulu, HI, Feb. 2006.
- Jackson, J., M. R. Mulholland, K. C. **Filippino**, and P. W. Bernhardt. The use of stable isotopic tracers in the study of nutrient uptake and cycling across the Chesapeake Bay plume. ASLO/AGU Meeting, Honolulu, HI, Feb. 2006.

**Filippino, K.C., M.R. Mulholland, P.W. Bernhardt, J.Austin, A. Valle-Levinson.** Evaluation of Nutrient Distributions at the Chesapeake Bay mouth: Physical and Biological Implications. ERF Meeting, Norfolk, VA. Oct. 2005.

**Filippino, K.C., D.A. Bronk, M.P. Sanderson, J.H. See.** Methods to Measure Dissolved Organic Nitrogen Concentrations and Flux Rates: The Good, the Bad, and the Ugly-Revisited. ASLO/TOS- Ocean Science Meeting, Honolulu HI, Feb., 2004.

**Filippino, K.C. & Cutter, G.A.** Photochemical Effects on Arsenic Speciation in Surface Waters, AGU/ASLO- Ocean Sciences Meeting, Honolulu, HI, Feb., 2002.