

CURRICULUM VITAE

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POSITIONS HELD:

Research Professor, UMCES Horn Point Laboratory 2012-present
Research Associate Professor Horn Point Laboratory 1996-2012
Research Assistant Professor Horn Point Laboratory 1989-1996
Research Associate, Horn Point Laboratory 1986-1989
Assistant Research Scientist, Texas A&M University 1985-1986
Post-Doctoral Research Associate, Texas A&M University 1984-1985
Research Assistant, University of Alaska 1976-1983

DEGREES:

Hobart College, B.S., Chemistry with Honors, 1976.
Honors Project: "Mercury and zinc in the sediments of Seneca Lake, NY".

University of Alaska, Ph.D., Chemical Oceanography, 1983.
Dissertation: "The geochemistry of manganese, iron and phosphorus in an arctic lake".

RESEARCH INTERESTS:

- Biogeochemistry of nutrients and metals in aquatic sediments
- Estuarine chemistry and water quality
- Metals, nutrients and stable isotopes in tidal and non-tidal wetlands
- Freshwater chemistry and ecology
- Biogeochemistry and geochemistry of dredged sediments
- Denitrification in aquatic sediments
- Bivalve effects on estuarine water quality

PEER-REVIEWED PUBLICATIONS:

1980's (8)

Blackburn, T.R., J.C. Cornwell and T.R. Fogg, 1980, Mercury and zinc in the sediments of Seneca Lake, Seneca River and Keuka Outlet, N.Y. *J. Great Lakes Res.*, 6, 68-75.

Whalen, S.C. and J.C. Cornwell, 1985, Nitrogen, phosphorus and organic carbon cycling in an arctic lake. *Can. J. Fish. Aquat. Sci.*, 42, 797-808.

Cornwell, J.C., 1985, Sediment accumulation rates in an Alaskan arctic lake using a modified ^{210}Pb technique. *Can.*

- J. Fish. Aquat. Sci., 42, 809-814.
- Cornwell, J.C., 1986, Diagenetic trace metal profiles in arctic lake sediments. Environ. Sci. Technol., 20, 299-302.
- Morse, J.W., F.J. Millero, J.C. Cornwell and D. Rickard, 1987, The chemistry of the hydrogen sulfide and iron sulfide systems in natural waters. Earth Sci. Rev., 24, 1-42.
- Cornwell, J.C., 1987, Phosphorus cycling in arctic lake sediments: adsorption and authigenic minerals. Arch. Hydrobiol., 109, 161-179.
- Morse, J.W. and J.C. Cornwell, 1987, Analysis and distribution of iron sulfide minerals in recent anoxic marine sediments. Mar. Chem. 22:55-69.
- Cornwell, J.C. and J.W. Morse, 1987, The characterization of iron sulfide minerals in anoxic marine sediments. Mar. Chem. 22:193-206.
- Whalen, S.C., J.C. Cornwell and V. Alexander, 1988, Comparison of chemical and biological N budgets in an Arctic lake: implications for phytoplankton production. SCOPE/UNEP Sonderband, 66:99-115.

1990's (18)

- Morse, J.W., J.C. Cornwell, T. Arakaki, S. Lin and M. Huerta-Diaz, 1992, Iron sulfide and carbonate mineral diagenesis in Baffin Bay, Texas. J. Sed. Petrol. 62:671-680.
- Cornwell, J.C. and S. Banahan, 1992, A silica budget for an Alaskan arctic lake. Hydrobiologia, 240:37-44.
- Cornwell, J.C., 1992, Cation export from Alaskan arctic watersheds. Hydrobiologia, 240:15-22.
- Cornwell, J.C. and G.W. Kipphut, 1992, The sediment biogeochemistry of manganese- and iron-rich sediments of Toolik Lake, Alaska. Hydrobiologia, 240:45-59.
- Neill, C. and J.C. Cornwell, 1992, Stable isotopes used to trace the utilization of algae and macrophyte detritus in a prairie marsh food web. Wetlands, 12:217-224.
- Marcus, W.A., C. Nielsen and J.C. Cornwell, 1993, Sediment budget-based estimates of trace metal inputs to a Chesapeake estuary. Env. Geol. Wat. Sci. 22:1-9.
- Kana, T.M., C. Darkangelo, D. Hunt, J. Oldham, G. Bennett, and J.C. Cornwell, 1994, A dissolved gas analyzer based on membrane inlet mass spectrometry for rapid high precision analysis of N₂, O₂, and Ar in environmental water samples. Anal. Chem. 66:4166-4170.
- Owens, M. and J.C. Cornwell, 1995, Sedimentary evidence for decreased heavy metal inputs to the Chesapeake Bay. Ambio 24: 25-27.
- Conley, D.J., W.M. Smith, J.C. Cornwell and T.R. Fisher, 1995, Transformations of particle-bound phosphorus at the land-sea interface. Est. Coastal Shelf Sci. 40:161-176.
- Cornwell, J.C., C. Neill, and J. C. Stevenson. 1995. Biogeochemical Origin of $\delta^{34}\text{S}$ Isotopic Signatures in a Prairie Marsh. Can. J. Fish. Aquat. Sci. 52:1816-1820.
- Cornwell, J.C., and P.A. Sampou. 1995. Environmental controls on iron sulfide mineral formation in a coastal plain estuary. (ACS Symposium Series, In: Vairavamurthy, M.A. and M.A.A. Schoonen (eds.), Geochemical Transformations of Sedimentary Sulfur, pp. 224-242, American Chemical Society, Washington, DC.).
- Cornwell, J.C., D.J. Conley, M. Owens and J.C. Stevenson. 1996. A sediment chronology of Chesapeake Bay eutrophication. Estuaries, 19:488-499.
- Stribling, J.M. and J.C. Cornwell. 1997. Identification of important primary producers in a Chesapeake Bay tidal creek system using stable isotopes of carbon and sulfur. Estuaries 20:77-85
- Wigand, C., J.C. Stevenson and J.C. Cornwell. 1997. Effects of different submersed macrophytes on sediment biogeochemistry. Aquatic Botany 56:233-244.
- Kana, T.M., M.B. Sullivan, J.C. Cornwell and K Groszkowski. 1998. Denitrification in estuarine sediments determined by membrane inlet mass spectrometry. Limnology and Oceanography 43:334-339.
- Stribling, J.M., J.C. Cornwell and C. Currin. 1998. Variability of stable sulfur isotopic ratios in *Spartina alterniflora*. Marine Ecology Progress Series 166:73-81.
- Petersen, J, J.C. Cornwell and W.M. Kemp. 1999. Implicit scaling of experimental aquatic ecosystems. Oikos 85:3-18.
- Cornwell, J.C., W.M. Kemp and T.M. Kana. 1999. Denitrification in coastal ecosystems: methods, environmental controls, and ecosystem level controls, a review. Aquatic Ecology 33:41-54.

2000's (30)

- Arnold, R., J.C. Cornwell, W. Dennison and J.C. Stevenson. 2000. Sediment-based reconstruction of submersed aquatic vegetation distribution in a Chesapeake subestuary. *J. Coastal Res.* 16:188-195
- Merrill, J.Z. and J.C. Cornwell. 2000. The Role of Oligohaline and Tidal Freshwater Marshes in Estuarine Nutrient Cycling. pp. 425-442. In: M.P. Weinstein and D.A. Kreeger (eds.), *Concepts and Controversies in Tidal Marsh Ecology*. Kluwer Academic Publishers.
- Helz, G.R., J.M. Adelson, C.V. Miller, J.C. Cornwell, J.M. Hill, M. Horan and R.M. Walker. 2000. Osmium isotopes demonstrate distal transport of contaminated sediment in Chesapeake Bay. (*Environ. Sci. Technol.*, 34: 2528-2534)
- Stribling, J.M. and J.C. Cornwell. 2001. Nitrogen, phosphorus and sulfur dynamics in a low salinity marsh system dominated by *Spartina alterniflora*. *Wetlands* 21:629-638
- Schneider, A.R., H.M. Stapleton, J. Cornwell, and J.E. Baker. 2001. Recent declines in PAH, PCB, and toxaphene levels in the Northern Great Lakes as determined from high resolution sediment cores. *Environ. Sci. Technol.*, 35(19):3809-3815.
- Newell, R.I.E., M.S. Owens and J.C. Cornwell. 2002. Influence of simulated bivalve biodeposition and microphytobenthos on sediment nitrogen dynamics: a laboratory study. *Limnol. Oceanogr.* 47:1367-1369.
- Rooth, J.E., J. C. Stevenson and J.C. Cornwell. 2003. Increased sediment accretion rates following invasion by *Phragmites australis*: the role of litter. *Estuaries* 26:475-483.
- Petersen, J.E., W. Michael Kemp, R. Bartleson, W.R. Boynton, C.C. Chen, J.C. Cornwell, R.H. Gardner, D.C. Hinkle, E.D. Houde, T.C. Malone, W.P. Mowitt, L. Murray, L.P. Sanford, J.C. Stevenson, K.L. Sundberg and S.E. Suttles. 2003. Multiscale experiments in coastal ecology: improving realism and advancing theory. *Bioscience* 53:1181-1197.
- Porter, E.T., J. C. Cornwell, L. P. Sanford, and R.I.E. Newell. 2004. Effect of Oysters (*Crassostrea virginica*) and Bottom Shear Velocity on Benthic-Pelagic Coupling and Estuarine Water Quality. *Mar. Ecol. Prog. Ser.* 271:61-75.
- Mason, R.P., E.-H. Kim, and J.C. Cornwell. 2004. Metal Accumulation in Baltimore Harbor: Current and Past Inputs. *Applied Geochemistry* 19:1801-1825.
- Lomas, M.W., T.M. Kana, H.L. MacIntyre, J.C. Cornwell, R. Nuzzi and R. Waters. 2004. Interannual variability of *Aureococcus anophagefferens* in Quantuck Bay, Long Island: natural test of the DON hypothesis. *Harmful Algae* 3:389-402.
- Kana, T.M., M.W. Lomas, H.L. MacIntyre, J.C. Cornwell and C.J. Gobler. 2004. Stimulation of brown tide organism, *Aureococcus anophagefferens*, by selective nutrient additions to *in situ* mesocosms. *Harmful Algae* 3:377-388.
- MacIntyre, H.L., M.W. Lomas, J.C. Cornwell, D.J. Suggett, C.J. Gobler, E.W. Koch and T.M. Kana. 2004. Mediation of benthic pelagic coupling by microphytobenthos: an energy- and material-based model for initiation of blooms of *Aureococcus anophagefferens*. *Harmful Algae* 3:403-437.
- Newell, R.I.E., T.R. Fisher, R.R. Holyoke and J.C. Cornwell. 2005. Influence of eastern oysters on N and P regeneration in Chesapeake Bay, USA. Pp 93-120 In: R. Dame and S. Olenin (eds.) *The Comparative Roles of Suspension Feeders in Ecosystems*. NATO Science Series IV – Earth and Environmental Sciences.
- Kemp, W.M., W.R. Boynton, J.E. Adolf, D.F. Boesch, W.C. Boicourt, G. Brush, J.C. Cornwell, T.R. Fisher, P.M. Glibert, J.D. Hagy, L.W. Harding, E.D. Houde, D.G. Kimmel, W.D. Miller, R.I.E. Newell, M. R. Roman, E.M. Smith, J.C. Stevenson. 2005. Eutrophication of Chesapeake Bay: Historical trends and ecological interactions. *Marine Ecology Progress Series*. 303:1-29.
- Stribling, J.M., O.A. Glahn, X. Mara Chen and J.C. Cornwell. 2006. Microtopographic variability in plant distribution and biogeochemistry in a brackish marsh system. *Marine Ecology Progress Series* 320:121-129.
- Kana, T.M., J.C. Cornwell and L. Zhong. 2006. Determination of denitrification in the Chesapeake Bay from N₂ accumulation in bottom water. *Estuaries and Coasts* 29:222-231.

- Mason, R.P., E.H. Kim, J.C. Cornwell and D. Heyes. 2006. An examination of the factors influencing the flux of mercury, methylmercury and other constituents from estuarine sediment. *Marine Chemistry* 102:96-110.
- Cook, P., F. Wenzhöfer, R. N Glud, O. Galaktionov, B. Eyre, S. Rysgaard, J.C. Cornwell and M. Huettel. 2006. Measuring denitrification in permeable sediments: Insights from a 2 dimensional simulation analysis and experimental data. *L&O Methods* 4:294-307.
- Porter, E.T., M.S. Owens and J.C. Cornwell. 2006. Effect of manipulation on the biogeochemistry of experimental sediment systems. *Journal of Coastal Research* 22:1539-1551.
- Stribling, J.M., **J.C. Cornwell** and A. Glahn. 2007. Microtopography in tidal marshes: ecosystem engineering by vegetation? *Estuaries and Coasts* 30:1007-1015.
- Crump, B.C., C. Peranteau, B. Beckingham, and **J. C. Cornwell**. 2007. Respiratory succession and community succession of bacterioplankton in seasonally anoxic estuarine waters. *Applied and Environmental Microbiology* 73:6802-6810
- Jordan, T.E. **J.C. Cornwell**, W.R. Boynton and J.T. Anderson. 2008. Changes in phosphorus biogeochemistry along an estuarine salinity gradient: The iron conveyor belt *Limnology and Oceanography*, 53:172-184.
- Boynton, W.R., J. D. Hagy, **J. C. Cornwell**, W. M. Kemp, S. M. Greene, M. S. Owens, J. E. Baker and R. K. Larsen. 2008. Nutrient Budgets and Management Actions in the Patuxent River Estuary, Maryland. *Estuaries and Coasts* 31:623-651
- Hopfensperger, K.N., S.S. Kaushal, S.E.G. Findlay and **J. C. Cornwell**. 2009. Influence of plant communities on denitrification in a tidal freshwater marsh of the Potomac River, U.S.A. *Journal of Environmental Quality* 38:618-626.
- Nagel, J. L., W. M. Kemp, **J. C. Cornwell**, M. S. Owens, D. Hinkle, and C. J. Madden. 2009. Seasonal and regional variations in net ecosystem production in *Thalassia testudinum* communities throughout Florida Bay. *Contributions in Marine Science* 38: 91-108.
- Cornwell, J. C.**, and E. T. Porter. 2009. Biogeochemical Factors, p. 93-101. In J. E. Petersen, V. S. Kennedy, W. C. Dennison and W. M. Kemp [eds.], *Enclosed Experimental Ecosystems and Scale: Tools for Understanding and Managing Coastal Ecosystems*. Springer.
- Kemp, W. M., J. E. Petersen, E. D. Houde, C.-C. Chen, **J. C. Cornwell**, and E. T. Porter. 2009. Spatial and temporal scaling, p. 49-62. In J. E. Petersen, V. S. Kennedy, W. C. Dennison and W. M. Kemp [eds.], *Enclosed Experimental Ecosystems and Scale: Tools for Understanding and Managing Coastal Ecosystems*. Springer.
- Porter, E. T., **J. C. Cornwell**, L. P. Sanford, and R. I. E. Newell. 2009. Biofiltration, water quality and sediment processes, p. 190-194. In J. E. Petersen, V. S. Kennedy, W. C. Dennison and W. M. Kemp [eds.], *Enclosed Experimental Ecosystems and Scale: Tools for Understanding and Managing Coastal Ecosystems*. Springer.
- Wazniak, C.E.; Hall, M.R.; Bailey, E.M.; Boward, D.M.; Boynton, W.R.; Bratton, J.F.; Carruthers, T.J.B.; Chalmers, R.J.; Cole, L.W.; **Cornwell, J.C.**; Fertig, B.M.; Glibert, P.M.; Jones, A.B.; Jordan, T.E.; McCoy, J.; McGinty, M.; Shedlock, R.J.; Sherwell, J.; Sturgis, R.B.; Thomas, J.E.; Trice, T.M.; Wells, D.V. (2009). Water Quality Responses to Nutrients. *Shifting Sands: Environmental and cultural change in Maryland's Coastal Bays*, 249-292.

2010's (31)

- Hartzell, J.L., T.E. Jordan and **J.C. Cornwell**. 2010. Phosphorus burial in sediments along the salinity gradient of the Patuxent River, a subestuary of the Chesapeake Bay (USA). *Estuaries and Coasts*. 33:92-106.
- Cai, W.J., G. W. Luther III, **J.C. Cornwell** and A.E. Giblin. 2010. Carbon cycling and the coupling between proton and electron transfer reactions in aquatic sediments in Lake Champlain. *Aquatic Geochemistry* 16:421-446.
- Cornwell, J.C.** and M.S. Owens. 2011. Quantifying sediment nitrogen releases associated with estuarine dredging. *Aquatic Geochemistry* 17:499-517.
- Velinsky, D.J., G.F. Riedel, J.T.F. Ashley and **J.C. Cornwell**. 2011. Historical contamination of the Anacostia River, Washington, D.C. *Environmental Monitoring and Assessment*. 183:307-328
- Glibert, P.M., D. Fullerton, J. Burkholder, **J.C. Cornwell** and T.M. Kana. 2011. Ecological stoichiometry, biogeochemical cycling, invasive species and aquatic food webs: San Francisco Estuary and comparative

- systems. *Reviews in Fisheries Science* 19:368-417.
- Palinkas, C.M. and **J. C. Cornwell**. 2012. A preliminary sediment budget for the Corsica River (MD): improved estimates of nitrogen burial and implications for restoration. *Estuaries and Coasts* 35:546-558.
- Gao, Y., **J.C. Cornwell**, D.K. Stoecker and M.S. Owens. 2012. Effects of cyanobacterial-driven pH increases on sediment nutrient fluxes and coupled nitrification-denitrification in a shallow fresh water estuary. *Biogeosciences*. 9: 2697-2710.
- Kellogg M.L., **J.C. Cornwell**, M.S. Owens and K.T. Paynter KT. 2013. Denitrification and nutrient assimilation on a restored oyster reef. *Marine Ecology Progress Series* 480:1-19.
- Cornwell, J.C.** 2013. Measurement of sulfate reduction in wetland soils. Chapter 39 in DeLaune, R.D., K.R. Reddy, C.J. Richardson and J.P. Megonigal (eds), *Methods in Biogeochemistry of Wetlands*. Soils Science Society of America, Madison, WI.
- Testa, J.M., D.C. Brady, D.M. Di Toro, W.R. Boynton, **J.C. Cornwell**, and W. M. Kemp. 2013. Sediment Flux Modeling: Simulating nitrogen, phosphorus, and silica cycles. *Estuarine Coastal and Shelf Science*. 131:245-263.
- Hewson, I., E. Eggleston, M. Doherty, D.Y. Lee, M. Owens, J.P. Shapleigh, **J.C. Cornwell** and B.C. Crump. 2014. Metatranscriptomic analyses of plankton communities inhabiting surface and sub-pycnocline waters of the Chesapeake Bay during oxic-anoxic-oxic transitions. *Applied and Environmental Microbiology*. 80:328-338
- Gao, Y., **J.C. Cornwell**, D.K. Stoecker and M.S. Owens. 2014. Sediment nutrient regeneration during tidal freshwater cyanobacterial blooms: Control by oxygen, pH, and organic matter inputs. *Limnology and Oceanography* 59:959-971
- Cornwell, J.C.**, P.M. Glibert and M.S. Owens. 2014. Nutrient fluxes from sediments in the San Francisco Bay Delta. *Estuaries and Coasts*. 37:1120-1133.
- Gao, Y., J.M. O'Neil, D.K. Stoecker and **J.C. Cornwell**. 2014. Photosynthesis and nitrogen fixation during cyanobacterial blooms in an oligohaline / tidal fresh estuary. *Aquatic Microbial Ecology* 72:127-142
- Kellogg, M.L., A. R. Smyth, M.W. Luckenbach, B.L. Brown, R.H. Carmichael, J. C. Cornwell, M. F. **Piehler**, Michael S. Owens, D. J. Dalrymple and C. B. Higgins. 2014. Use of oysters to mitigate eutrophication in coastal waters. *Estuarine Coastal and Shelf Science* 151:156-168
- Lee, D.Y., M.S. Owens, M. Doherty, E.M. Eggleston, I. Hewson, B.C. Crump and **J.C. Cornwell**. 2015. The effects of oxygen transition on community respiration and potential chemotrophic production in a seasonally stratified anoxic estuary. *Estuaries and Coasts* 38:104-117.
- Bosch, J.A., **J.C. Cornwell** and W.M. Kemp. 2015. Short-term Effects of Nereid Polychaete Size and Density on Sediment Inorganic Nitrogen Cycling under Varying Oxygen Conditions. *Marine Ecology Progress Series* 524:155-169.
- Eggleston, E., M., D.Y. Lee, M.S. Owens, **J.C. Cornwell**, B.C. Crump and I. Hewson. 2015. Key respiratory genes elucidate bacterial community respiration in a seasonally anoxic bay. *Environmental Microbiology* 17:2306-2318
- Perez, P.-H., **J.C. Cornwell**, J. Ortiz-Zayas and E. Cuevas. 2015. Sediment denitrification and nutrient fluxes in San José Lagoon, a tropical lagoon in the highly urbanized San Juan Bay Estuary, Puerto Rico. *Estuaries and Coasts*. 38:2259-2278.
- Lee, D.Y., M.S. Owens, M. Doherty, B.C. Crump and **J.C. Cornwell**. 2015. Elevated microbial CO₂ production and fixation in the oxic/anoxic interface of estuarine water columns during seasonal anoxia. *Estuarine Coastal and Shelf Science* 164:65-76.
- Testa, J.M., Brady, D.C., **Cornwell, J.C.**, Owens, M.S., Sanford, L.P., Newell, R.I.E., Newell, C.R., Richardson, J. and Suttles, S.E. 2015. Modeling the impact of floating oyster aquaculture on sediment-water nutrient and oxygen fluxes. *Aquaculture Environment Interactions* 7:205-222.
- Cornwell, J.C.**, M.S. Owens, L. Harris and W.R. Boynton. 2016. Sediment-water N₂ fluxes along the Potomac River estuarine salinity gradient. *Journal of Coastal Research* 32:776-787.
- Owens, M.S., J.C. Cornwell, J.C. 2016. Sediment oxygen demand, denitrification and nutrient exchange using small core incubations. *Journal of Visualized Experiments*. 114:e54098
- Pennino, M.J., S.S. Kaushal, S.S. Murthy, J.D. Blomquist, J.C. Cornwell and L.A. Harris. 2016. Sources and transformations of anthropogenic nitrogen and carbon along an urban-estuarine continuum. *Global*

Biogeochemical Cycles 13:6211-6228

- Gurbisz, C., W.M. Kemp, **J.C. Cornwell**, L.P. Sanford, M.S. Owens and D. Hinkle. 2017. Interactive effects of physical and biogeochemical feedback processes in a large submerged plant bed. *Estuaries and Coasts*. 40:1626-1641.
- Hartzell, J.L., T.E. Jordan and **J.C. Cornwell**. 2017 Phosphorus sequestration in sediments along the salinity gradients of Chesapeake Bay subestuaries. *Estuarine Coastal and Shelf Science*. 40:1607-1625.
- Cai, W.J., Huang, W.J., Luther, G.W. III, Pierrot, D., Li, M., Testa, J., Xue, M., Joesoef, A., Mann, R., Brodeur, J., Chen, B., Xu, Y.Y., Waldbusser, G.G, **J.C. Cornwell**, and W.M. Kemp. 2017. Redox reactions and weak buffering capacity lead to acidification in the Chesapeake Bay. *Nature Communications* 8:369.
- Ji, Q., Frey, C. Sun, X., Jackson, S., Lee, Y.-S., Jayakumar, A., **J.C. Cornwell**, and B.B. Ward. 2018. Nitrogen and oxygen availabilities control water column nitrous oxide production during seasonal anoxia in the Chesapeake Bay. *Biogeosciences* 15: 6127-6138.
- Jackson M, M.S. Owens, **J.C. Cornwell**, M.L. Kellogg. 2018. Comparison of methods for determining biogeochemical fluxes from a restored oyster reef. *Plos One* 13(12): e0209799.
- Shen, C., J. M. Testa, M. Li, W. J. Cai, G. G. Waldbusser, W. Ni, W. M. Kemp, **J.C. Cornwell**, B. Chen, and J. Brodeur. 2019. Controls on Carbonate System Dynamics in a Coastal Plain Estuary: A Modeling Study. *Journal of Geophysical Research: Biogeosciences* 124:61-78.
- Palinkas, C.M., J.M. Testa, **J.C. Cornwell**, M. Li, and L.P. Sanford. 2019. Influences of a river dam on delivery and fate of sediments and particulate nutrients to the adjacent estuary: case study of Conowingo Dam and Chesapeake Bay. *Estuaries and Coasts* 42:2072-2095.

2020's (7)

- Russ, E., C.M. Palinkas and **J.C. Cornwell**. 2020. Evaluating estuarine sediment provenance from geochemical patterns in upper Chesapeake Bay. *Chemical Geology*.
- Su, J., W.J. Cai, J. Brodeur, N. Hussain, B. Chen, J. Testa, K.M. Scaboo, D.P. Jaisi, J. Dai, **J.C. Cornwell**. 2020. Source partitioning of oxygen-consuming organic matter in the hypoxic zone of the Chesapeake Bay. *Limnology and Oceanography*
- Roose, J.J., J.M. Stribling, M.S. Owens, and **J.C. Cornwell** 2020. The Development of Denitrification and the Denitrifying Community in a Newly-Created Freshwater Wetland. *Wetlands*
- Cornwell, J.C. M.S. Owens, L.W. Staver and J.C. Stevenson. Submitted. Accepted. Tidal Marsh Restoration at Poplar Island I: Transformation of Estuarine Sediments into Marsh Soils. *Wetlands*
- Su, J., W.J. Cai, J. Brodeur, B. Chen, H. Hussain, Y. Yao, C. Ni, J. Testa, M. Li, X. Xie, W. Ni, M. Scaboo, Y. Xu, J. Cornwell, C. Gurgisz, M.S. Owens, G.G. Waldbusser, M. Dai and W.M. Kemp. Accepted. A bay-wide self-regulated pH buffer mechanism in response to eutrophication and acidification in Chesapeake Bay. *Nature Geoscience*
- Staver, L.W., Stevenson, J.C., Cornwell, J.C., Nidzieko, N, Staver, K.W., Owens, M.S., Logan, L., Kim, C. and Malkin, S. Accepted. Tidal marsh restoration at Poplar Island: II. Elevation trends, vegetation development, and carbon dynamics. *Wetlands*
- Porter, E.T., E. Robins, S. Davis, R. Lacoutre and J.C. Cornwell. Accepted. Impact of Eastern Oyster, *Crassostrea virginica*, Biodeposit Resuspension on Phytoplankton Community Structure in Estuarine Systems with Tidal Resuspension. *Marine Ecology Progress Series*

PUBLICATIONS/REPORTS:

1. Cornwell, J.C. and R.J. Barsdate, 1977, Sensitivity of arctic lakes to phosphorus loading, p. 57-61, In Technical Session Papers to the 18th Alaska Science Conference, Alaska Division of AAAS, Anchorage, Alaska.
2. Cornwell, J.C., 1983, The geochemistry of manganese, iron and phosphorus in an arctic lake. Ph.D. Dissertation, University of Alaska, Fairbanks
3. Cornwell, J.C., 1987, Migration of metals in sediment pore waters: problems for the interpretation of

- historical deposition rates. In Proceedings of the 6th International Conference on Heavy Metals in the Environment, Vol. 2, p. 233-235, New Orleans.
4. Cornwell, J.C. and J.C. Stevenson, 1990, Toxic substances in submerged aquatic vegetation beds. Report CBRB90-H1-1, Maryland Department of Natural Resources.
 5. Cornwell, J.C., J.M. Stribling and J.C. Stevenson, 1990, Biogeochemical Studies at the Monie Bay National Estuarine Research Reserve. Final Report NA89AA/D C2 130, NOAA National Estuarine Research Reserve System. 69 pp.
 6. Cornwell J.C., J. Stribling and J.C. Stevenson, 1994, Biogeochemical Studies at the Monie Bay National Estuarine Research Reserve. In Proceedings of the 13th International Conference of the Coastal Society, p. 645-655, Washington, D.C.
 7. Zelenke, J.L., J. Stevenson and J.C. Cornwell. 1994. Deposition of inorganic and organic phosphorus in Maryland tidal marshes: a preliminary analysis. In: Toward a Sustainable Coastal Watershed: The Chesapeake Experiment. Proceedings of a Conference. Chesapeake Research Consortium Publication No. 149 pp. 630-633.
 8. Baker, J, R. Mason, J.C. Cornwell, J Ashley, J. Halka and J. Hill. 1997. Spatial mapping of sedimentary contaminants in the Baltimore Harbor/Patapsco River/Back River System. Final Report to Maryland Department of the Environment. UMCES 97-142.
 9. Cornwell, J.C. and M. Owens. 1998. Sediment biogeochemistry at Site 104 Open Water Placement Area. Final report to Maryland Environmental Service Under Contract to the Maryland Port Administration. TS-167-98.
 10. Cornwell, J.C. and M. Owens. 1998. Benthic phosphorus cycling in Lake Champlain. Final report to Hydroqual, Inc. Under Contract to the Lake Champlain Management Conference. TS-168-98.
 11. Cornwell, J.C. and M. Owens. 1999. The Nutrient Chemistry of Sediment Dredging: Sediment Nutrient Inventories and Fluxes. Final report to Maryland Environmental Service Under Contract to the Maryland Port Administration. TS-187-99
 12. Cornwell, J.C. and W.R. Boynton. 1999. Sediment Water Oxygen and Nutrient Exchanges at Shoal and Channel Stations in the Upper Bay. Final report to Maryland Environmental Service Under Contract to the Maryland Port Administration. TS-186-99
 13. Cornwell, J.C. 1999. Estimation of Potential Nutrient Releases Associated With Placement Activities at Site 104. Final report to Maryland Environmental Service Under Contract to the Maryland Port Administration. TS-188-99
 14. Cornwell, J.C., M. Owens and L Pride. 2000. Nitrogen and Phosphorus Releases During Dredging: Assessing Potential Phosphorus Releases and Refinement of Ammonium Release Estimates Final report to Maryland Environmental Service under contract to the Maryland Port Authority. TS-230-0
 15. Cornwell, J.C. and M.S. Owens. 2000. Nitrogen Cycling in Florida Bay Mangrove Environments: Sediment-Water Exchange and Denitrification. Final Report to South Florida Water Management District
 16. Cornwell, J.C. and M. Owens. 2002. Triadelphia Sediment-Water Exchange Study. Final report to WSSC. TS-364-02.
 17. Malone, T.C., W.C. Boicourt, J.C. Cornwell, L.W. Harding, Jr., and J. C. Stevenson. 2003. The Choptank River: a mid-Chesapeake Bay index site for evaluating ecosystem responses to nutrient management. Final Report to USEPA Contract R826941-01-0
 18. J. C. Cornwell, J. C. Stevenson, L.W. Staver, K. Mielcarek and E. Kiss. 2005. Wetland plant viability and wetland sediment monitoring 2003-2004. Final Report to Maryland Port Administration. TS-484-05
 19. Cornwell, J.C., E. Kiss and M.S. Owens. 2005. Hart-Miller South Cell Pond Chemistry 2004. Final Report to Maryland Port Administration. TS-485-05.
 20. Cornwell, J.C. 2006. Characterization of Bed Sediment Behind the Lower Three Dams on the Susquehanna River: Activities of Anthropogenic Gamma Emitting Isotopes. Final Report to Susquehanna River Basin Commission. TS-507-06
 21. Bailey, E.M., M.S. Owens, W.R Boynton, J.C. Cornwell, E. Kiss, P.W. Smail, H. Soulen, E. Buck, and M. Ceballos. 2006. Sediment phosphorus flux: pH interactions in the tidal freshwater Potomac River estuary. UMCES Final Report to the Interstate Commission on the Potomac River Basin. TS-505-06
 22. Cornwell, J.C., E. Kiss and M.S. Owens. 2006. Hart-Miller South Cell Chemistry 2005. UMCES Final

- Report to Maryland Environmental Services on behalf of the Maryland Port Administration. UMCES Report TS-513-06
23. Stevenson, J.C., J.C. Cornwell, L. Staver and M.S. Owens. 2007. Marsh Establishment in Cell 3D at Poplar Island in 2005-6: Survival and Overall Health May. UMCES Final Report to Maryland Environmental Service. UMCES Technical Series TS-527-07.
 24. Cornwell, J.C. and M.S. Owens. 2007. Development of an estuarine phosphorus sub-model for incorporation into the new-generation Potomac River Environment model: phosphorus data and laboratory experiments. UMCES final report to Limno-Tech Inc. on behalf of the Metropolitan Washington Council of Governments. TS-563-07
 25. Cornwell, J.C., M.S. Owens, T. Kana, E. Bailey, J. Barnes and W.R. Boynton. 2008. An assessment of processes controlling benthic nutrient fluxes in the Caloosahatchee River and Estuary and the St. Lucie Estuary River and Estuary. Final Report to South Florida Water Management District. UMCES Technical Series Contribution TS-552-08.
 26. Cornwell, J. C., L. Staver, M. S. Owens, and J. D. Stevenson. 2009. Sediment and Plant Monitoring at the South Cell of Hart Miller Island. University of MD Center for Environmental Science. UMCES Technical Report Number TS-574-09
 27. Stevenson, J. C., J. C. Cornwell, et al. (2009). 2008 Poplar Island Cell 3D and 4D plant and geochemical monitoring. Prepared for Maryland Port Administration, US Army Corps of Engineers (Baltimore District) and Maryland Environmental Service. Cambridge MD, UMCES.
 28. Independent Technical Review Team. 2009. Sediment in Baltimore Harbor. Quality and Suitability for Innovative Reuse. An Independent Technical Review. Kramer, J.G., J. Smits and K.G. Sellner. Eds. Review Team (Douglas, Nipper, Windom, Dickhut, Rumbold, **Cornwell**, Hamilton). Maryland Sea Grant Publication UM-SG-TS-2009-04.
 29. Cornwell, Jeffrey C. and M.S. Owens. 2010. Time Course of Acid Generation During Crust Management of Dredged Sediment. UMCES Final Report to Maryland Environmental Services on behalf of the Maryland Port Administration. UMCES Technical Report Number TS-594-10
 30. Kellogg, M. L., J. C. Cornwell, K. T. Paynter, and M. S. Owens. 2011. Nitrogen removal and sequestration capacity of a restored oyster reef: Chesapeake Bay experimental studies. Final Report to the Oyster Recovery Partnership., UMCES, Cambridge, MD.
 31. Sisson, M., L. Kellogg, M. Luckenbach, and R. N. Lipcius. 2011. Assessment of Oyster Reefs in Lynnhaven River as a Chesapeake Bay TMDL Best Management Practice. Virginia Institute of Marine Science, College of William and Mary, Gloucester Point, Virginia, USA.
 32. Kellogg, M. L., M. W. Luckenbach, B. L. Brown, R. H. Carmichael, J. C. Cornwell, M. F. Piehler, M. S. Owens, D. J. Dalrymple, C. B. Higgins, and A. R. Smyth. 2013. Quantifying nitrogen removal by oysters - workshop report. NOAA Chesapeake Bay Office.
 33. Stevenson, J. C., J. C. Cornwell, L. Staver, and M. Owens. 2013. 2011 Studies to address sea-level rise, marsh dieback and silicon-related issues. Final Report for Maryland Port Administration and Maryland Environmental Service.
 34. Lazur, A., J. C. Cornwell, and A. Hengst. 2013. Evaluation of Floating Treatment Wetlands as a best management practice for stormwater remediation. Chesapeake Bay Trust Project Final Report., University of Maryland Center for Environmental Science.
 35. Stevenson, J. C., J. C. Cornwell, L. Staver, M. Owens, and N. Nidzieko. 2016. Final Report. Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island. Wetland Cells Monitoring Program: 2014 - 2015 Studies to Address Sea-Level Rise, Marsh Die Back, and Silicon-Related Issues.. University of Maryland Center for Environmental Science.
 36. Cornwell, J. C., M. S. Owens, and M. L. Kellogg. 2016. Integrated Assessment of Oyster Reef Ecosystem Services. Final Report to National Oceanic and Atmospheric Administration's Chesapeake Bay Office. UMCES.
 37. Cornwell, J. C., J. M. Rose, M. L. Kellogg, M. Luckenbach, S. Bricker, K. Paynter, C. Moore, M. Parker, L. Sanford, W. Wolinski, A. Lacatell, L. Fegley, K. Hudson, J. Reichert-Nguyen, E. French, and W. Slacum. 2016. Panel Recommendations on the Oyster BMP Nutrient and Suspended Sediment Reduction Effectiveness Determination Decision Framework and Nitrogen and Phosphorus Assimilation in Oyster

- Tissue Reduction Effectiveness for Oyster Aquaculture Practices.
38. Linker, L. R., W. Hirsch, W. Ball, J. Testa, K. Boomer, C. Cerco, L. W. Sanford, J. C. Cornwell, L. Currey, C. Friedrichs, and R. Dixon. 2016. Conowingo Reservoir Infill and Its Influence on Chesapeake Bay Water Quality. STAC Publication Number 16-004. Edgewater, MD.
 39. Cornwell, J. C. 2016. Hart-Miller Island Pond Issues and Potential for Biologically-Assisted Acid Neutralization - Biogeochemical Observations. UMCES Horn Point Laboratory, Cambridge MD 21613.
 40. Cornwell, J. C., H. Perez-Villalona, M. S. Owens, K. G. Sellner, and D. Ferrier. 2017. Lake Linganore biogeochemical measurements: sediment-water exchange rates of oxygen and nutrients from September 2016. Final Report to MDE. UMCES Technical Report TS-5340-17
 41. Cornwell, J. C., M. S. Owens, H. Perez, and Z. Vulgaropulos. 2017. The Impact of Conowingo Particulates on the Chesapeake Bay: Assessing the Biogeochemistry of Nitrogen and Phosphorus in Reservoirs and the Chesapeake Bay. Final Report to Exelon Generation and Gomez and Sullivan. UMCES Contribution UMCES, Cambridge, Maryland.
 42. Kellogg, M. L., M. J. Brush, and J. C. Cornwell. 2018. An updated model for estimating the TMDL-related benefits of oyster reef restoration. A final report to The Nature Conservancy and Oyster Recovery Partnership. VIMS and UMCES, Gloucester Point, VA.
 43. Cornwell, J. C., A. Sanford, M. Owens, and Z. Vulgaropulos. 2018. An Investigation of the Composition and Reactivity of Material Eroded from Chesapeake Bay Marshes. Final Report to United States Army Corps of Engineers (ERDC-EL). UMCES Contribution Number TS- TS-715-18
 44. Cornwell, J.C., M.S. Owens, M. Jackson and M.L. Kellogg. 2019. Integrated Assessment of Oyster Reef Ecosystem Services; Quantifying Denitrification Rates and Nutrient Fluxes. Final Report to NOAA Chesapeake Bay Office. UMCES Technical Report TS-732-19.
 45. Cornwell, J.C., M.S. Owens and M. Jackson. 2019. Direct Measurements of Denitrification Rates in Wetland Mesocosms: A Comparison of Removal Rates of Biologically Available Nitrogen between Vegetation and Hydraulic Loading Rates Treatments. Final Report to South Florida Water Management District.

GRANTS AND CONTRACTS AT UMCES (Current Grants in Bold)

1. Cornwell. Lead mobility in anaerobic environments. Brookhaven National Laboratory. 2/87-9/87. (\$8,000).
2. Cornwell/Stevenson. Nitrogen and sulfur cycling process studies in the Delta Marsh Ecology Research Program. Delta WWRS. 4/87-3/89. (\$15,000).
3. Stevenson/Cornwell. Toxic substances in submerged aquatic vegetation beds; Springtime herbicide concentrations in SAV beds. Maryland DNR. 6/87-9/88. (\$11,500).
4. Stevenson/Cornwell. Environmental impacts of pH on submersed aquatic vegetation in Chesapeake Bay. Maryland DNR. 11/87-10/88. (\$42,907).
5. Cornwell/Sampou/Kemp. EPA sediment data collection program: anaerobic processes component. MDE. 4/88-12/89. (\$129,960).
6. Cornwell/Ward. Toxic metals deposition in sediments of Maryland reservoirs and Chesapeake Bay: impact on water supplies and habitat quality. Maryland WRRC. (\$26,925)
7. Cornwell. Responses of a major land margin ecosystem to changes in terrestrial nutrient inputs: internal nutrient cycling, production and export. P, Fe, S cycling component. NSF. 9/88-11/94. (\$182,236).
8. Stevenson/Cornwell. Anacostia wetlands demonstration project. District of Columbia/EPA. 3/89-2/92. (\$102,646).
9. Glibert/Kana/Cornwell. Rates of utilization and fluxes of nitrogenous nutrients in a Chesapeake Bay subestuary; Sources and fates of nitrogenous nutrients in a Chesapeake Bay subestuary. Water Resources Research Center. 5/89-4/91. \$39,646.
10. Cornwell/Sampou/Kemp. MDE/EPA sediment data collection program: sediment composition and nitrogen cycling. 7/89-6/90. (\$59,513)
11. Cornwell/Stevenson. Marine sulfate inputs and the degradation of coastal marsh soils: biogeochemical

- enhancement of marsh loss? NOAA Estuarine Reserve. 9/89-8/90. (\$35,154).
12. Cornwell. Phosphorus mobility in estuarine particulates: an experimental approach. Water Resources Research Center. 5/91-4/92 (\$12,907).
 13. Cornwell. Pb-210 Analysis. Maryland Geological Survey. (\$10,000).
 14. Cornwell. Direct measurements and biogeochemical controls of sediment-water flux of trace metals from estuarine sediments. Sea Grant. (\$93,317). 1/92-12/93.
 15. Malone, Kennedy et al. Multiscale Experimental Environmental Research Center. USEPA. (10 year program). (Cornwell lead P.I. grants: \$38,876; \$334,666; \$222,791; \$78,527; \$44,224; \$13,548)
 16. Cornwell. Onondaga Lake sediment nutrient study. PTI Environmental Services. (\$77,382).
 17. Cornwell. Water quality in the Anacostia River: Metals and nutrients. Interstate Commission on the Potomac River Basin. 9/92-9/93. (\$17,488).
 18. Cornwell. Short-term and long-term sequestering of nitrogen and phosphorus in northern Chesapeake Bay marshes. NOAA. 6/93-5/95. (\$50,010).
 19. Cornwell. Benthic phosphorus cycling in Lake Champlain. USEPA. (07-5-23342; 07-5-23424; \$110,000)
 20. Cornwell. Determination of the volume of contaminated sediments in the Anacostia River: Sediment geochronology. Interstate Commission on the Potomac River Basin. 5/95-12/95. (\$6,500).
 21. Harrell, Glibert, Kana, Cornwell. Water quality and waste management in aquaculture production. NERAC. 5/95-8/95. (\$37,284).
 22. Cornwell. Sediment biogeochemical processes in Jamaica Bay, New York. NYC/Hydroqual Inc. 9/95-12/96. (\$180,000).
 23. Newell, R.C., J.C. Cornwell and J.H. Tuttle. Can increasing stocks of oysters in Chesapeake Bay serve to improve water quality? Maryland Sea Grant. 2/96-1/98. (\$79,599).
 24. Baker, J.E., R.P. Mason and J.C. Cornwell. Spatial mapping of contaminants in Baltimore Harbor/Patapsco River/Back River System. Maryland Department of the Environment. 3/96-5/97. (HPEL part \$36,000)
 25. Kana, J.C. and J.C. Cornwell. Denitrification in tidal river/marsh ecosystems. National Science Foundation/Environmental Geochemistry. 9/96-12/99. (\$249,985).
 26. Zelenke, J. and J.C. Cornwell. Graduate Fellowship-Freshwater marshes of the Hudson River as nutrient sinks. 9/96-5/97. (\$13,000).
 27. Cornwell. Sediment oxygen demand and nutrient fluxes from Delaware River sediments. Delaware River Commission. 9/96-7/98. (\$23,700).
 28. Cornwell. Carbon and electron acceptor cycling in lake and estuarine sediments during early diagenesis. National Science Foundation/Ecosystems. 6/1996-5/1998. (\$43,344).
 29. Cornwell. Sediment biogeochemistry at site 104 open water placement area. Maryland Environmental Service. 5/96-8/97. (\$17,000).
 30. Cornwell, J.C. Metal fluxes from sediments in the Back River and Patapsco River estuaries. Baltimore City Department of Public Works. 8/97-6/98 (\$25,955).
 31. Zelenke and Cornwell. Denitrification in the Maryland National Estuarine Research Reserves. NOAA/Research Reserves. 6/97-5/98. (\$16,495).
 32. Cornwell. Hart-Miller Island Well Monitoring. Maryland Environmental Service. 8/97-5/98. (\$9,999).
 33. Cornwell. Baltimore Harbor Sediment Metals: Dissolved Exchange With Overlying Water Versus Sediment Burial. Maryland Sea Grant. 12/97-1/98. (\$58,000).
 34. Cornwell/Kana. Nutrient Cycling in Oligohaline Sediments and Marshes: Is Denitrification a Major Sink for Nitrogen? Maryland Sea Grant. 2/98-1/00. (\$100,000).
 35. Cornwell. The nutrient chemistry of sediment dredging; sediment nutrient inventories and fluxes. Maryland Environmental Service. 1998. (\$85,715).
 36. Cornwell. Loch Raven sediment geochronology. Maryland Geological Survey. 1998. (\$25,000).
 37. Malone, Boicourt, Cornwell, Harding and Stevenson. The Choptank River: A Mid-Chesapeake Bay Index Site for Evaluating Ecosystem Responses to Nutrient Management. USEPA. 9/98-8/01. (\$596,096).
 38. Cornwell. Sediment-Water Nutrient Exchange in Tridelphia Reservoir. Washington Suburban Sanitary Commission/Versar Inc.. 3/99-12/99. (\$19,215).
 39. Kemp, Cornwell. Role of Benthic Communities in the Cycling and Balance of Nitrogen in Florida Bay. 8/99-7/00. (\$50,000).

40. Kana, MacIntyre, Cornwell. ECOHAB: Benthic pelagic coupling and Long Island Brown Tide. NOAA. 9/99-8/02. (\$696,021).
41. Cornwell, Kana. Environmental Controls of Denitrification in Estuarine Sediments. Sea Grant/NOAA. 2/00-1/02. (\$124,652).
42. Glibert, Kana, Cornwell. Biocomplexity of Aquatic Systems: Relating Diversity of Microorganisms to Ecosystem Function. National Science Foundation. 8/00-7/05. (Cornwell \$257,133).
43. Cornwell, Kemp. Nitrogen and Phosphorus Biogeochemistry of Florida Bay Sediments. NOAA. 8/00-10/02. (\$235,674)
44. Cornwell. Experimental Pond Biogeochemistry at Hart Miller Island. MES/MD Port Administration. 12/01-12/02. (\$128,146)
45. Newell, Cornwell, Merrit. Quantifying the Magnitude of Nitrogen and Phosphorus Removal of Oysters in Chesapeake Bay. MD Sea Grant. 02/02 – 01-04. (\$130,668)
46. Sanford, Cornwell. Bottom Sediment Erodability in Northern Chesapeake Bay. MD Sea Grant. 02/02 – 01/03. (07-5-23581; \$95,000).
47. Cornwell, Kemp. SFP 2002: Nitrogen and Phosphorus Mass Balance Models and Nutrient Biogeochemistry in Florida Bay. NOAA. 2002 – 2004. (\$263,737)
48. Cornwell/Boynton. Collaborative Research: Origin of N Limitation in Estuarine Waters. NSF Ecosystems. 2002-2005 (\$410,667)
49. Kemp, Murray, Cornwell. Sediment Biogeochemistry and Seagrass Bed Development: Implications for Restoration and Sustainability. MD Sea Grant. 02/03-01-05 (\$128,000)
50. Cornwell. Poplar Point Sediment Geochronology. NOAA/Philadelphia Academy of Natural Sciences. 2004. (\$27,000).
51. Cornwell. Biogeochemical Analysis of Poplar Island dredge sediments. MPA/MES. 2003-4. (\$150,000)
52. Cornwell. Examination of Sediment Phosphorus Flux- pH Interactions in the Tidal Freshwater Potomac River Estuary. Interstate Commission on the Potomac River Basin. \$84,478. 4/04 – 4/05.
53. Cornwell. Biogeochemistry of Suspended Phosphorus in the Potomac River. USCOE/Limnotech. \$135,000. 05/2005-12/2006.
54. Cornwell/Kana. Predicting the Restoration Trajectory and Water Quality Value of Benthic Microalgae in Shallow Water Chesapeake Sediments. \$138,000. Maryland Sea Grant, 02/2005 - 01/2008.
55. Cornwell. Poplar Island Cell 3D Sediment and Plant Monitoring Program; Chemistry. \$208, 259. Maryland Port Administration, 07/2005-02/2007.
56. Cornwell. HMI Interior Sediment Chemistry and Plant Composition. \$45,392. Maryland Port Administration. 07/2005-02/2006.
57. Cornwell. Denitrification and Nutrient Balance in Corsica River Sediments, Maryland. Maryland Department of Natural Resources. \$46,524. 7/2006-6-2007
58. Stevenson/Cornwell. Sediment and Plant Monitoring at South Cell of Hart Miller Island. Maryland Port Administration/ Maryland Environmental Service. \$75,679. 2007-2008
59. Stevenson/Cornwell. UMCES Poplar Cell 3D Monitoring Program: Sediment and Plant Dynamics 3rd Year. Maryland Port Administration/ Maryland Environmental Service. \$102,345. 2007-2008
60. Cornwell/Owens. Sediment and Chemistry Technical Support: pH mapping. Maryland Port Administration/ Maryland Environmental Service. \$65,832. 2007-2010.
61. Cornwell/Owens. Sediment and Chemistry Technical Support: Time Course of Acid Generation During Crust Management of Dredge Sediment. Maryland Port Administration/ Maryland Environmental Service. \$65,935. 2007-2008
62. Cornwell/Palinkas. Nutrient Balance in Corsica River Sediments: Improved Estimates of Nutrient Burial and Denitrification. Maryland Department of Natural Resources. \$20,000. 07/2007-06/2008.
63. Cornwell/Newell. Assessing Ecosystem Effects of Harvesting Geoducks. Washington State Sea Grant. \$200,000. 2008-2010.
64. Cornwell/Kana. Advancing Methods for Measuring Denitrification in Terrestrial and Aquatic Systems: A Workshop. \$7,760. 2008.
65. Kellogg/Cornwell. Nitrogen removal capacity in a restored oyster reef: the relative roles of oysters and the associated reef community. Mirant Corporation / Oyster Recovery Program. \$180,000. 2009-2011.

66. Stoecker/Cornwell. Cyanobacterial blooms: a roadblock to estuarine restoration. MD Sea Grant. \$139,998. 2009-2011
67. Cornwell/Schijf. UMCES technical support for pH and metal issues in dredge sediment disposal. Maryland Port Administration/ Maryland Environmental Service. \$29,327. 2009-2010
68. Cornwell. Poplar Island Cell 3D and 1A Monitoring program – sediment chemistry. Maryland Port Administration/ Maryland Environmental Service. \$431,574. 2009-2014.
69. Crump/Cornwell. Collaborative Research: Life in the Dead Zone: Microbial respiration, production, diversity and gene expression in seasonally anoxic estuarine waters. National Science Foundation. \$836,774. 2010-2013.
70. Harris/Cornwell/Boynton/Kaushal. Washington. Field campaign to improve water quality model parameterization in the Potomac River. District of Columbia Water and Sewer Authority. HPL: \$58,390. 2010-2011
71. Cornwell/Kellogg. How Does Shellfish Aquaculture Change Nutrient Balances in Maryland's Coastal Bays. Bays? Maryland Coastal Bays Program. \$25,000. 2010.
72. Baldwin/Cornwell. Forecasting the responses of tidal freshwater wetlands to sea level rise: biogeochemical responses to saltwater intrusion. National Institute for Climatic Change Research/U.S. Dept of Energy. 2010-2012. \$30,083.
73. Newell/Cornwell/Sanford. National Sea Grant Program. Predicting Spatial Impacts of Bivalve Aquaculture on Nutrient Cycling and Benthic Habitat Quality. 2010-2013. \$398,325.
74. Lazur/Cornwell. Evaluation of Floating Wetlands as a best management practice for storm water remediation. Chesapeake Bay Trust. \$10,000. 2012.
75. Glibert/Cornwell. Nutrient fluxes from San Francisco Bay Delta sediments. State and Federal Contractors Water Agency. \$132,538. 2011-2012.
76. Cornwell. Nitrogen Sources in the Coastal Bays Land-Sea Margin: Flux From Tidal Wetland Creeks and Bottom Sediments. Maryland Coastal Bays Program. \$20,000. 2011-2012.
77. Cornwell. Scaling ecological function to reef development: effects of oyster density on nitrogen removal and biodiversity. NOAA/VIMS Subcontract. \$20,000. 2011-2012.
78. Cornwell. Linking Structural and Functional Features in Restored Oyster Reefs: A Restoration Project in the Virginia Coast Reserve. \$20,699. 2011-2012.
79. Cornwell. Benthic Nutrient Cycling at the Coastal Bays Land-Sea Interface. Maryland Coastal Bays Program. \$25,000. 2012-2013.
80. Cornwell/Glibert. Sediment Nutrient Fluxes in the San Francisco Bay Delta. State and Federal Contractors Water Agency. \$132,538. 2012-2014
81. Cornwell/Glibert. Environmental controls of sediment-water nitrogen and phosphorus exchange across the Delta-Suisun salinity gradient. Interagency Ecology Program. \$135,476 2013-2014
82. Cornwell/Kellogg. Integrated assessment of oyster reef ecosystem services: Quantifying denitrification rates and nutrient fluxes. NOAA Chesapeake Bay Office. \$115,959. 2014-2015.
83. Cornwell. Hart-Miller Island Pond Issues and Potential for Biologically-Assisted Acid Neutralization – Chemistry Component. Maryland Environmental Service/Maryland Port Administration. \$155,936. 2014-2016.
84. Kemp/Cornwell. Inputs to Upper Chesapeake Bay: Biogeochemical Processes. Maryland Sea Grant. \$144,677. 2014-2016.
85. **North et al. Coastal SEES Collaborative Research: Integrating stakeholder objectives with natural system models to promote sustainable natural resource policy. NSF, \$1,405,076. 2015-2019.**
86. **Cornwell. Poplar Island Vegetation and Sediment Monitoring: Marsh Die Back, Sea-Level Rise and Nitrogen, Phosphorus, Silica Issues – Biogeochemical Component 2014-2020. \$560,804.**
87. Cornwell/Kellogg. Integrated assessment of oyster reef ecosystem services: Quantifying denitrification rates and nutrient fluxes Renewal. NOAA Chesapeake Bay Office. Year 1 \$115,115. **2015-2018.**
88. Cornwell/Sanford/Palinkas/Kemp/Li. UMCES Comprehensive proposal to address the impacts of Conowingo particulates on the Chesapeake Bay. 2014-2016. \$1,214,477.
89. Cornwell/Kellogg. Integrated Assessment Of Ecosystem Services Provided By Restored Reefs In Harris Creek, MD: Quantifying Denitrification Rates And Nutrient Fluxes. NOAA Chesapeake Bay Office.

- 2015-2018. \$327,833.
90. Testa/Li/Cornwell. OA2015 Interactions Between Ocean Acidification and Eutrophication in Estuaries: Modeling Opportunities and Limitations for Shellfish Restoration. NOAA. 2015-2018. \$846,570.
 91. Cornwell. An Investigation of the Composition and Reactivity of Material Eroded from Chesapeake Bay Marshes. US Army Corps of Engineers. 2016-2017. \$99,949.
 92. Cornwell. Lake Linganore Nutrient Flux Work. Maryland Department of the Environment. 2016. \$18,241.
 93. Cornwell. Wetland Mesocosm Denitrification Rates. South Florida Water Management District. 2018-2019. \$146,097

CONTRACTS AT CHESAPEAKE BIOGEOCHEMICAL ASSOCIATES (Cornwell is a Sr. Partner With Michael Owens)

- Sediment-Water Exchange of Nutrients and Gases in Grand Calumet River Sediments. Mead and Hunt/U.S. Army Corps of Engineers. 2000.
- Delaware Tidal River Sediment-Water Exchange Study. DNREC. 2001-2003.
- Coastal Bay Denitrification. Maryland Coastal Bays Program. 2002-2003
- A Study of Phosphorus Release from Byllesby Reservoir, July 2004. Cities of Fairibault and Owatanna, Minnesota. 2004.
- Passaic River Erosion Testing and Core Collection. Malcolm Pirnie/USEPA. 2005
- Sediment Nutrient Fluxes and Denitrification in Jamaica Bay. Battelle Memorial Institute/New York City. 2005-2008
- Spokane Lake Sediment Nutrient Fluxes. Wastewater Management, City of Spokane. 2006
- Nutrient Flux Study: Murderkill River. Kent County Levy Court. 2007-2009
- pH Effects on Phosphorus Flux From Spokane Lake Sediments. Wastewater Management, City of Spokane 2007
- Redox Effects on Phosphorus Flux From Spokane Lake Sediments. Wastewater Management, City of Spokane 2008.
- Nutrient flux study from the Murderkill River. Kent County DE. 2007-2010.
- Measurement of sediment-water nutrient fluxes in Everglades National Park saline Lakes. SFWMD. 2010-2013
- Sediment oxygen demand and nutrient fluxes from Delaware River sediments. City of Philadelphia. 2012-2020.
- Nutrient fluxes from Tampa Bay sediments. Janicki Environmental 2012.
- Nutrient fluxes from Hempstead Bay sediments. Battelle Memorial Institute. 2012-2013
- Wetland nutrient fluxes – NJ Coast. Drexel University. 2014
- Jamaica Bay Sediment Nutrient Fluxes. HDR/New York City. 2017-2020

HONORS AND AWARDS:

New York State Regents Scholarship, 1972-1976
Hobart College Presidential Scholarship, 1972-1976
Freshman Chemistry Award, Hobart College, 1973
Most Valuable Player Varsity Basketball, 1972/73, 1973/74;
Bullard Analytical Chemistry Prize, Hobart College, 1976
State of Alaska Graduate Fellowship, University of Alaska, 1979-82
Outstanding Student, Marine Science, University of Alaska, 1982
UMCES Presidential Award for Science Application 2014
USM Regents Award for Excellence in Public Service 2018

PAPERS REVIEWED

American Chemical Society Symposia; American Journal of Science; Aquatic Geochemistry; Aquatic Microbial Ecology; Biogeochemistry; Biogeosciences; Estuarine, Coastal and Shelf Science; Environmental Monitoring and Assessment; Estuaries and Coasts; Geochemical Journal; Geochimica et Cosmochimica Acta; Hydrobiologia; Journal of Geophysical Research – Biogeosciences; Journal of Environmental Quality; Journal of Marine Research; Journal of Sedimentary Petrology; Limnology and Oceanography; Marine Chemistry; Marine and Freshwater Research; Marine Geology; Nature; Proceedings of the Ocean Drilling Program; Science; Science of the Total Environment

PROPOSALS REVIEWED

National Science Foundation (Marine Chemistry, Biological Oceanography, Ecosystems, Polar Programs, Hydrology); Sea Grant (National Program, Alaska, Delaware, Hawaii, Louisiana, Maryland, New Jersey, New York, North Carolina, Rhode Island, South Carolina, Texas, Wisconsin); Hudson River Foundation; USEPA (Bay Program); Maryland Power Plant Research Program; Maryland Industrial Partnership, NOAA, NERRS (RI), Deutsche Forschungsgemeinschaft (German Research Foundation)

MEMBERSHIPS

American Chemical Society; American Geophysical Union; American Society for Limnology and Oceanography; Estuarine Research Federation; Geochemical Society; Society of Wetland Scientists

GRADUATE STUDENTS SUPERVISED (Total = 23; Current Students in Bold)

- Geremia, Marion , M.S., MEES Program/UMCP, graduated 1993. Thesis Title: "A Comparison of Sediment, Heavy Metal and Nutrient Retention in Natural and Manmade Wetlands in Centennial Park, Maryland".
Current Employment: US Army Corps of Engineers.
- Stribling, Judith , Ph.D., MEES Program/UMES, graduated 1994. Dissertation Title: "Sulfur and Nutrient Chemistry of *Spartina Alterniflora* Loisel. in a Low Salinity Marsh". Current Employment: Prof., Salisbury State University.
- Liebert, Amy, M.S., MEES Program/UMCP, Environmental Geochemistry, graduated 1997. Thesis Title: Metabolism and Nutrient Cycling in Experimental Marsh Sediments@.
- Elka Porter, Ph.D., MEES Program/UMCP, co-advisor with L. Sanford, graduated 1999. Dissertation Title: "Physical and Biological Scaling of Benthic-Pelagic Coupling in Experimental Ecosystem Studies".
Current Employment: Current Employment: University of Baltimore.
- Zelenke, Jennifer, Ph.D., MEES Program/UMCP, Environmental Geochemistry, graduated 1999. Dissertation Title: "Tidal Freshwater Marshes as Nutrient Sinks: Nutrient Burial and Denitrification". Current Employment: Delaware Sea Grant
- Haberkern, Erik, M.S., MEES Program/UMCP, Ecology. Graduated 2000. Thesis Title: "Algal production and nitrogen cycling in tidal marshes". Current Employment: Praxair Inc.
- Bryner, Jeanna, M.S., MEES Program/UMCP, Environmental Geochemistry. Graduated 2000. Thesis Title: "The effects of iron and sulfur on phosphorus dynamics along a tidal gradient in fresh/oligohaline marshes".
Current Employment: Scholastic Inc.
- Coley, Teresa, M.S., MEES Program, Environmental Geochemistry. Graduated 2003. "Effects of flow on sediment biogeochemistry". Current Employment: South Florida Water Management District.
- Nagel, Eric, M.S., MEES Program, Environmental Science. Graduated 2004. "Nitrogen fixation in benthic microalgal mats: an important source of new nitrogen to benthic communities in Florida Bay". Current Employment: US Coast Guard.
- Burton, Jessica, M.S. MEES Program, Environmental Science. Graduated 2005. "The effect of benthic microalgal photosynthetic production on nitrogen fluxes across the sediment-water interface in a shallow, sub-tropical estuary". Current employment: US Army Corps of Engineers – San Francisco.
- O’Keefe, Jennifer, M.S. MEES Program, Environmental Science. Graduated 2007. "Sediment biogeochemistry

- across the Patuxent River estuarine gradient: geochronology and Fe-S-P Interactions” Current Employment: MBL
- Holyoke, Rebecca, Ph.D. MEES Program Environmental Science. Graduated 2008. “Biodeposition and Biogeochemical Processes in Shallow, Mesohaline Sediments of Chesapeake Bay”. Current Employment: NOAA Office of National Marine Sanctuaries.
- Owens, Michael, M.S. MEES Program, Environmental Geochemistry. Graduated 2009. “Nitrogen Cycling and Controls on Denitrification in Mesohaline Sediments of Chesapeake Bay”. Current Employment: UMCES
- Seldomridge, Emily, M.S. MEES Program, Environmental Science. Co-Advised with Karen Prestegaard. Graduated 2009. “Importance of channel networks on nitrate retention in freshwater tidal wetlands, Patuxent River, Maryland”. Current Employment: Research Associate, Texas Tech University.
- Chick, Christopher, M.S. MEES Program, Environmental Science. Graduated 2009. Benthic oxygen production in the Choptank River estuary. Ph.D Candidate at Texas A&M University.
- Yonghui Gao, Ph.D. MEES Program, Environmental Chemistry. Graduated 2011. High pH effects on nutrient inputs from sediment and cyanobacterial N₂ fixation in a shallow water ecosystem. Co-advised with Diane Stoecker. Faculty at institute of Oceanography at the Shanghai Jiaotong University.
- Lee, Dong-Yoon (Daniel), Ph.D., MEES Program, Graduated 2014, “Elevated respiration in the oxic/anoxic interface”
- Thomas, Laura Landis, MEES Program M.S. co-advised with Louis Plough. Graduated 2016. The effect of aquaculture gear and tidal zone on the growth and shape of the oyster *Crassostrea virginica* (Gmelin) during a “finishing period” in Chesapeake Bay.
- Vulgaropulos, Zoe, MEES Program, M.S. Graduated 2017. Reservoir Scour as a Major Source of Bioavailable Phosphorus to a Coastal Plain Estuary?
- Jackson, Melanie, Ph.D., MEES Program, Graduated 2019. Characterization of oyster-associated biogeochemical processes in oyster restoration and aquaculture
- Knauss, Christine, Ph.D., MEES Program. Co-Advised.**
- Todd, Jessie, M.S., MEES Program**
- Hanacek, Daniella. Co-advised with Lorie Staver**

Maryland Sea Grant REU Students Supervised (21)

Year	Name	Year	Name
1989	Mark Trice	2006	Rebecca Halvorson
1992	Jill Stevenson	2007	Miriam Maynard-Ford
1993	Kevin Groskowski	2008	Maureen Caupp
1994	Michelle Simons	2009	Zsolt Kormendy
1996	Amy Poe	2011	Jessica Hopkins
1997	Susan Layton	2014	Zachary Nickersen
1998	Brandy Smith	2015	Ana McClain
2001	Chris Chick	2016	Jessica Czarnecki
2003	Janet Krenn	2017	Leysa Gonzalez
2004	Barbara Beckingham	2019	Jayvoni Francis
2005	Joe Hunt		

Students/Investigators Hosted/Trained at HPL

- David Fredericks, CSIRO Australia
 Ana Sousa, Spring 2008. University of Lisbon, Portugal
 Rebecca Phillips, 2009, USDA/ARS, North Dakota

US Non-Maryland Ph.D. Committees

- Andy Zimmerman (Canuel), VIMS (2000)

International Ph.D. Defenses

Lars Ottosen , Aarhus Denmark (1999)
Hanna Silvennoinen, Kuopio Finland (2008)

International – Reader

Todd Scicluna, Monash University, Australia (2016)

UMD GRADUATE COMMITTEES – Cornwell Not an Advisor: (Current Total = 10; graduation date in brackets)

M.S.

1. Susan Hill (Stevenson), HPL (1989)
2. Linda Hurley (Harrell), HPL (1989)
3. Charlotte Nielsen (Marcus), UMCP (1990)
4. Phillipe Hensel (Stevenson), HPL (1992)
5. Neal Greenburg (Harrell), HPL (1992)
6. William Kuhn (Kemp), HPL (1992)
7. Ricky Arnold (Dennison), HPL (1992)
8. Erik Smith (Kemp), HPL (1992)
9. Mike Williams (Fisher), HPL (1992)
10. Marilyn Ailes (French), UMES (1993)
11. Duane Hunt (Glibert), HPL (1993)
12. Tyler Abbot (Jesien), HPL (1994)
13. Jackie Takacs (Harrell), HPL (1995)
14. Alison Bryant (Ducklow), HPL (1995)
15. Koichiro Nakanishi (Baker), CBL (1996)
16. Catherine Stokes (Sampou/Kemp), HPL (1996)
17. Kellie Merrell (Stevenson), HPL (1996)
18. David Jasinski (Boynton), CBL (1996)
19. Sean Michael Crawford (Sanford), HPL (1998)
20. Joshua Schmitz (Stevenson), HPL (2000)
21. Jason Traband (Fisher), HPL (2003)
22. Mike Rearick (Mason), CBL (2004)
23. Lynne Heighton (Siefert), CBL (2005)
24. Sarah Greene (Boynton), CBL (2005)
25. Kristin Mielcarek (Stevenson), HPL (2006)
26. Ji Li (Glibert), HPL (2008)
27. Kathleen Marshall (Schijf), CBL (2011)
28. Melanie Jackson (Glibert), HPL (2016)
29. Agraj Khare, (Kilbourne), CBL (2018)
30. Melissa Day (Harris), CBL (withdrawn)
31. **Carol Kim (Malkin), HPL**
32. **Brendan Campbell (Gray), HPL**

Ph.D.

1. Joseph Seraphy (Harrell), HPL (1992)
2. Theresa Paluskiewicz (Chao), HPL (1993)
3. Louise Wooten (Roman), HPL (comps only)
4. Monde Mayekisko (Hocutt), HPL (1994)
5. Aaron Mabaye (Hocutt), HPL (1994)
6. Cathy Wigand (Stevenson), HPL (1994)
7. Craig Carlson (Ducklow), HPL (1994)
8. Mark Marvin (Capone), CBL (1995)M
9. Ken Moore (Kemp), HPL (1996)
10. Marilyn Ailes (Rebach), UMES (1996)
11. Debra Lonergan (Capone), CBL (1996)
12. Jordan Adelson (Helz), UMCP Chemistry (1997)
13. Juanita Urban-Rich (Roman), HPL (1997)
14. Mine Berg (Glibert), HPL (1998)
15. John Petersen (Kemp), HPL (1998)
16. Chung-Chi Chen (Kemp), HPL (1998)
17. Kim Warner (Capone), CBL (1998)
18. Miao-Li Chang (Sanford), HPL (1999)
19. Vallen Emery Jr. (Wright), CBL (comps only)

- 1999)
20. Reno Nguyen (Harvey), CBL (2000)
21. Matt Mills (Sebens), UMCP Zoology (2000)
22. Janina Benoit (Mason), CBL (2000)
23. Gary Smith (Newell), HPL (2001)
24. John Brawley (Costanza),CBL (comps only, 2002)
25. Jill Rooth (Stevenson), HPL (2003)
26. Joyce Dewar (Stevenson), HPL, dnf
27. Rick Bartleson (Stevenson), HPL (2004)
28. Zhenghua Jin, (Boicourt) HPL (comps only)
29. Eun Hee Kim (Mason), CBL (2004)
30. Carrie Miller (Mason), CBL (2005)
31. Carolyn Miller Solomon (Glibert), HPL (2006)
32. Jessica Davis (Kemp), HPL (2007)
33. George Walbusser (Marinelli), CBL (2007)
34. Laura Belicka (Harvey), HPL (2008)
35. Rebecca Fox (Fisher), HPL (2011)
36. Ji Li (Glibert), HPL (2011)
37. Emily Seldomridge (Prestegaard), UMCP Geology (2012)
38. Owen McDonough (Palmer), UMCP Ecol. Evol. (2012)
39. Jeremy Testa (Kemp), HPL (2013)
40. Jennifer Bosch (Kemp) HPL (2014)
41. Pennino, Michael (Kaushal), UMCP (2014)
42. Tammy Newcomer, (Kaushal), UMCP, (2015)
43. Karen Kesler (Paynter), UMCP (2015)
44. Lorie Staver (Stevenson), HPL (2015)
45. Gurbisz, Cassie (Kemp), HPL (2016)
46. Yinni Shangguan, (Glibert), HPL (2016)
47. Lindy Fine (Crump/Santoro), HPL DNF
48. Sarah Lapierre (Santoro), HPL (transferred)
49. Erin Markin (Secor), HPL (2017)
50. Beth Zinecker (Kangas), UMCP ENST (2018)
51. Russ, Emily (Palinkas), HPL (2019)
52. Blake Clark (Hood), HPL, (2019)
53. Matthew Parker (Lipton/Harrell), UMCP (2019)
54. Jenny Allen (Baldwin), UMCP ENST (2019)
55. Hao Wang (Hood), HPL (2019)
56. Weifei Ni, (Li), HPL (2019)
57. Katherine Hornick (Plough), HPL (2020)
58. **Pinky Liao (Malkin), HPL**
59. **Dana Young, (Fisher), HPL**
60. **Hannah Morrissette (Hood), HPL**
61. **Lisa Ziegler (Hood), HPL**
62. **Mahdi, Khademishamami (Nardin), HPL**