

## ***Claudia R. Benitez-Nelson***

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### **EDUCATION:**

Ph.D. Marine Chemistry and Geochemistry, Massachusetts Institute of Technology/Woods Hole Oceanographic Institution Joint Program, February 1999

Thesis Title: *Phosphorus cycling in the Gulf of Maine: A Multi-tracer Approach*

Advisor: Dr. Ken Buesseler

B.S. Physical Chemistry, University of Washington, 1987 - 1992

B.S. Chemical Oceanography, University of Washington, 1987 - 1992

**CURRENT POSITION:** As a Senior Associate Dean, I have direct oversight of 13 interdisciplinary units and institutes (African American Studies, Ann Johnson Institute for Science, Technology and Society, Cardiovascular Technology, Film and Media Studies, Humanities Collaborative, Jewish Studies, Linguistics, McKissick Museum (incl. Museum Management Program), Neuroscience, Southern Studies, Walker Institute of International and Area Studies, and Women's and Gender Studies). This role includes day to day interactions with Directors and Chairs on faculty recruitment, retention, tenure and promotion, as well as general oversight of budgets, graduate student support, etc. I also handle our external relations and communications teams, all strategic initiatives for the College, which encompasses faculty travel and scholarship grants, fellowships, and mentorship programs, and oversee the College's Strategic Planning.

**RESEARCH INTERESTS:** My research largely focuses on understanding the mechanisms that influence particle formation, composition, and the flux of particles from the surface ocean to the seafloor. Related to this broad theme is an emphasis on understanding carbon and phosphorus biogeochemistry under changing ocean conditions. My research is mainly field based and includes both blue water and coastal regimes.

### **PROFESSIONAL EXPERIENCE:**

2022 – present *Senior Associate Dean for College Initiatives and Interdisciplinary Programs, USC*

2019 – present *Endowed Chair in Marine Studies, USC*

2019 – present *Carolina Distinguished Professor, USC*

2017 – 2022 *Associate Dean for Instruction, Community Engagement, & Research, USC*

2012 – 2018 *College of Arts & Sciences Distinguished Professor in Marine Science, USC*

2010 – present *Professor, School of the Earth, Ocean & Environment, USC*

2010 – 2013 *Director, Marine Science Program, USC*

2005 – 2008 *Undergraduate Director, Marine Science Program, USC*

2006 – 2010 *Associate Professor with tenure, Department of Geology, USC*

2002 – 2006 *Assistant Professor, Department of Geology, University of South Carolina*

2002 – 2005 *Affiliate Graduate Faculty, Department of Oceanography, University of Hawaii*

1999 – 2001 *Full Graduate Faculty, Department of Oceanography, University of Hawaii*

1998 – 2001 *SOEST Young Investigator, University of Hawaii*

1998 – 2000 *NOAA/UCAR Postdoctoral Fellow in Climate and Global Change, University of Hawaii*

### **MEMBERSHIP IN PROFESSIONAL SOCIETIES:**

American Geophysical Union	Oceanography Society
Geological Society of America	AAAS
American Chemical Society	American Society of Limnology and Oceanography

### **HONORS AND AWARDS:**

2024	Fellow, The Oceanography Society.
2021	The Oceanography Society Mentoring Award, For Excellence and/or Innovation in Mentoring the Next Generation of Ocean Scientists
2019	Marine Chemistry & Geochemistry H. Burr Steinbach Scholar, MIT/WHOI Joint Program
2017 - 2018	SEC Academic Leadership Development Program Fellow
2017	Sustaining Fellow, Association for the Sciences of Limnology & Oceanography
2016	SEC Faculty Achievement Award (1 each year from USC)
2016	Ada B. Thomas Outstanding Faculty Advisor of the Year Award, USC
2015	American Association for the Advancement of Science (AAAS) Fellow
2015	Dennis and Jean Wiesenburg Distinguished Lecturer in Ocean Science, University of Southern Mississippi
2014	Sulzman Award for Excellence in Education and Mentoring, Biogeosciences Section. American Geophysical Union
2013	USC Distinguished Professor of the Year (USC's highest undergraduate teaching honor). Only 1 awarded each year,
2012	College of Arts & Sciences Distinguished Professor, USC
2012, 2015	Mortar Board Excellence in Teaching Award, USC
2012	National Academies of Science/Humboldt Foundation Kavli Fellow
2011	MEL Distinguished Visiting Fellow, Xiamen, China.
2010	Selected as one of USC's Rising Stars (14 selected each year)
2008 – 2009	Marie Curie International Incoming Fellow (Spain)
2008	U.S. Fulbright Scholar (Spain)
2007	Freshman Advocate Award Finalist Honoree, USC
2006	Ocean Sciences Early Career Award, American Geophysical Union
2006	Doctoral Hooding and Commencement Ceremony Speaker, USC
2005	Faculty of the Year, National Award from the National Society of Collegiate Scholars (for outstanding undergraduate mentoring and leadership)
2005	USC Mungo Undergraduate Teaching Award (5 awarded each year)
2004	Nominee USC Mungo Graduate Teaching Award
2002	S. Carolina Alliance for Minority Participation (SCAMP) Outstanding Mentor
1998 – 2001	SOEST Young Investigator, University of Hawaii
1998 – 2000	NOAA/UCAR Postdoctoral Fellow in Climate and Global Change
1996 – 1998	Environmental Protection Agency STAR Graduate Fellowship
1993 – 1996	Office of Naval Research Graduate Fellowship.
1991	Woods Hole Oceanographic Institution Summer Student Fellow

### **SELECTED GRANTS RECEIVED:**

- ARPA-E, Quantification of atmospheric carbon dioxide removal using an autonomous ocean sensor that measures sinking particulate carbon flux, DOE, Co-PI Benitez-Nelson. 5/1/2024 – 12/31/2026. \$867,208
- Center for Clean Water, USC Research Institute. Co-PI Benitez-Nelson 6/1/2023 -5/31/2027, \$400,000
- Collaborative Research: Three decades of foraminiferal assemblages in the Santa Barbara Basin provide a link between present and past climates. NSF PI: Benitez-Nelson 7/15/2022-8/14/2025. \$280,509

- Collaborative Research: Foraminiferal Ecological Response to Ocean Conditions in the Northwest Pacific Ocean. NSF PI: Benitez-Nelson 5/15/2020-5/14/2023. \$377,418
- Collaborative Research: US GEOTRACES GP17-OCE and GP17-ANT: Export and remineralization rates of bioactive and particle reactive trace elements using thorium-234 NSF PI: Benitez-Nelson 6/1/2021 – 5/31/2024, \$140,467.
- Louis Stokes Alliances for Minority Participation (LSAMP) Bridge to Doctorate: University of South Carolina-Columbia LS SCAMP, NSF. Co-PIs: Matthews and Benitez-Nelson, 8/15/2019 – 11/14/2022, \$1,075,000.
- Collaborative Research: Assessing the relative importance of small vs large particles as sources of nutrition to abyssal communities, NSF, PI: Drazen, Co-PIs: Benitez-Nelson, Popp, and Smith, 1/1/2018 – 12/31/2021 \$264,691 (CBN Portion).
- Elucidating Spatial and Temporal Variability in the Export and Attenuation of Ocean Primary Production using Thorium-234, NASA, PI: Buesseler, Co-PIs: Benitez-Nelson and Resplandy, 9/1/2018 – 1/30/2022 \$172,654 (CBN Portion).
- Determining sediment rates in storm water ponds to improve life cycle cost assessments associated with maintenance dredging. SC Sea Grant, PI: Smith, Co-PI: Benitez-Nelson, 3/1/2016 – 2/28/2018. \$123,799
- GEO-Scholar: Broadening undergraduate participation in the geosciences. NSF, PI: Benitez-Nelson, 7/01/2015-6/30/2022, \$599,383.
- Collaborative Research: Isotopic insights to mercury in marine food webs and how it varies with ocean biogeochemistry, NSF PI: Popp, Co-PIs: Benitez-Nelson and others, 8/1/2014-7/31/2017, \$362,164 (CBN portion).
- Collaborative Research: The Cariaco Basin Oceanographic Time Series Program. NSF, PI: R. Thunell, co-PI: C.R. Benitez-Nelson, 3/1/2014 – 2/28/2017, \$800,000.
- ICESCAPES 2011-2014. NASA, 2/23/2011-2/22/2014, PI: Benitez-Nelson, \$224,598.
- Collaborative Research: Chemical and Biological Characterizations of Phosphonate and Polyphosphate Dynamics in Marine Phytoplankton. NSF, PI: Benitez-Nelson, Co-PIs: Dyhrman and Ingall, 5/1/11-4/31/2014, \$811,997.
- Persistence and fate of domoic acid in the Santa Barbara Basin. NSF, PI: Benitez-Nelson, 1/01/2009-12/31/2011, \$499,383.
- Spatial and temporal variability in chlorophyll, primary production and export production in the Southern Ocean. NASA ROSES, PI: Mitchell, co-PI: Benitez-Nelson, 1/01/09 - 12/31/11, \$170,000 (CBN Portion)
- Collaborative Research: Nitrogen Fixation and its Coupling with Denitrification in the Eastern Tropical North Pacific. NSF, PI: Prahl, Co-PIs: Popp and Benitez-Nelson 10/1/07–9/30/10, \$257,612 (CBN Portion).
- ScienceQuest: A South Carolina Geoscience Initiative. NSF, PI: Benitez-Nelson, Co-PI: Owens, 3/1/06–2/28/10, \$153,641.
- Collaborative Research: Examining redox-sensitive phosphorus speciation and remineralization using X-ray and NMR spectroscopic methods. NSF. PI: Brandes, Co-PI: Ingall and Benitez-Nelson, 9/1/05 – 8/31/08, \$241,661. (CBN Portion)
- Influences of Cyclonic Eddy Activity on Planktonic Food Web Dynamics and Carbon Export in the Lee of Hawaii. NSF. PI: Benitez-Nelson, Co-PIs: Bidigare, Dickey, Leonard, Landry, 9/1/04 – 6/30/07, \$1,425,000.
- Future applications of <sup>234</sup>Th in aquatic ecosystems. NSF. PI: Benitez-Nelson, 4/1/04-12/31/06, \$78,520.
- Phosphorus speciation in Cariaco Basin using chemical separation and <sup>31</sup>P NMR, USC. PI: Benitez-Nelson 4/1/03-6/30/04, \$13,000.
- Radioisotopic Measurements to Determine Plankton Nutrient Sources and Carbon Export at Station ALOHA. NSF. PI: Benitez-Nelson 9/1/99 – 8/30/03, \$219,999.

- Elucidation of Atmospheric Nitrogen and Phosphorus Deposition Rates and Pathways to the Hawaiian Islands. Andrew W. Mellon Foundation, PI: Huebert, Co-PIs Blomquist and Benitez-Nelson. 1/1/00 – 12/31/02, \$600,000.

**PUBLICATIONS** (\* Denotes graduate student or postdoc as author, \*\*Denotes my undergraduate student as author) *H-Index Web of Science: 45, Google Scholar: 52,*

<https://orcid.org/0000-0002-1004-5048>;

<https://scholar.google.com/citations?user=nEuGaD4AAAAJ&hl=en>

144. Moore, WS, **Benitez-Nelson, CR**, Schutte, C, Moody, A, Shiller, A, Sibert, RJ, Joye, SJ (2024) SGD-OD: Investigating the Potential Oxygen Demand of Submarine Groundwater Discharge in Coastal Systems, *Nature Scientific Reports*, in revision.
143. Clevenger, SJ, **Benitez-Nelson, CR**, Roca-Marti, M, Bam, W, Estapa, M, Kenyon, J, Pike, S, Resplandy, L, Wyatt, A, Buesseler, K. (2023) Carbon and silica fluxes during a declining North Atlantic spring bloom as part of the EXPORTS program. *Marine Chemistry*, 258, 104346, <https://doi.org/10.1016/j.marchem.2023.104346>
143. Benitez-Nelson, CR, McNeal, KS, Jones, WJ (2023) Improving Retention of Underrepresented Groups in the Geosciences through an Intensive First-Year Experience at the University of South Carolina *Oceanography Magazine*, 36(4), <https://doi.org/10.5670/oceanog.2024.108>
142. Abdalla, A, Van Wyk, A, **Benitez-Nelson, CR**, Hill, T (2024) Soil organic carbon and nitrogen reduction through cattle-path induced erosion in montane grasslands, KwaZulu-Natal, South Africa, *Catena*, Catena, 236, 107741, <https://doi.org/10.1016/j.catena.2023.107741>
141. Graff, JR, Nelson, NB, Roca-Martí, M, Romanelli, E, Kramer, SJ, Erickson, Z, Cetinić, I, Buesseler, KO, Passow, U, Zhang, X, **Benitez-Nelson, CR**, Bisson, K, Close, HG, Crockford, T, Fox, J, Halewood, S, Lam, P, Roesler, C, Sweet, J, VerWey, B, Xiong, Y, Siegel, DA (2023) Reconciliation of total particulate organic carbon and nitrogen measurements determined using contrasting methods in the North Pacific Ocean as part of the NASA EXPORTS field campaign *Elementa: Science of Anthropocene*, 11 (1): 00112, <https://doi.org/10.1525/elementa.2022.00112>
140. Wojtal, PK, Doherty, SC, Shea, HC, Popp, BN, **Benitez-Nelson, CR**, Buesseler, KO, Estapa, ML, Roca-Martí, M, Close, HC (2023) Deconvolving Mechanisms of Particle Flux Attenuation using Nitrogen Isotope Analyses of Amino Acids, *Limnology and Oceanography Letters*, <https://doi.org/10.1002/lno.12398>
139. \*Szewczyk, CJ, Smith, E, **Benitez-Nelson, CR** (2023) Temperature sensitivity of oxygen demand varies as a function of organic matter source, *Frontiers in Marine Science*, 10 <https://doi.org/10.3389/fmars.2023.1133336>
138. Motta, LC, Blum, JD, Popp, BN, Umhau, BP, **Benitez-Nelson, CR**, Close, HG, Washburn, SJ, Drazen, HC (2022). Mercury Isotopic Evidence for the Importance of Particles as a Source of Mercury to Marine Organisms, *PNAS*, 19 (44) e2208183119, <https://doi.org/10.1073/pnas.2208183119>.
137. Moore, WS, Frankle, JD, **Benitez-Nelson, CR**, Früh-Green, G, Lang, SQ (2021) Activities of <sup>223</sup>Ra and <sup>226</sup>Ra in fluids from the Lost City Hydrothermal Field require short fluid residence times, *Journal of Geophysical Research-Oceans*, 126, e2021JC017886. <https://doi.org/10.1029/2021JC017886>.
136. Clevenger, SJ, **Benitez-Nelson, CR**, Drysdale, J, Pike, S, Puigcorbe, V, Buesseler, KO (2021) Review of the analysis of <sup>234</sup>Th in small volume (2 - 4 L) seawater samples: improvements and recommendations, *Journal of Radioanalytical and Nuclear Chemistry*, 329:1–13, <https://doi.org/10.1007/s10967-021-07772-2>
135. Zhou, K, **Benitez-Nelson, CR**, Huang, J, Xiu, P, Sun, Z, Dai, M (2021) Cyclonic eddies modulate temporal and spatial decoupling of particulate carbon, nitrogen, and biogenic silica export in the North Pacific Subtropical Gyre, *Limnology and Oceanography Letters*, <https://doi.org/10.1002/lno.11895>.

134. Siegel, DA et al. (2021) An Operational Overview of the EXport Processes in the Ocean from RemoTe Sensing (EXPORTS) Northeast Pacific Field Deployment. *Elementa: Science of Anthropocene*, 9 (1): 00107. <https://doi.org/10.1525/elementa.2020.00107>.
133. Roca-Martí, M, **Benitez-Nelson, CR**, Umhau, P, Wyatt, AM, Clevenger, SJ, Pike, S, Horner, TJ, Estapa, ML, Resplandy, Buesseler, KO (2021) Concentrations, ratios, and sinking fluxes of major bioelements at Ocean Station Papa. *Elementa: Science of Anthropocene*, 9: 1. DOI: <https://doi.org/10.1525/elementa.2020.00166>
132. Estapa, M., Buesseler, K, Durkin, CA, Omand, M, **Benitez-Nelson, CR**, Roca-Martí, M, Breves, E, Kelly, RP, Pike, S (2021) Biogenic sinking particle fluxes at Ocean Station Papa. *Elementa: Science of Anthropocene* 9(1): <https://doi.org/10.1525/elementa.2020.00122>.
131. \*McCabe, K, Smith, E, Lang, S, Osburn, C, **Benitez-Nelson, C** (2021) Particulate and dissolved organic matter in storm water runoff influences oxygen demand in urbanized headwater catchments, *Environmental Science and Technology*, <https://doi.org/10.1021/acs.est.0c04502>.
130. Buesseler, KO, **Benitez-Nelson, CR**, Roca-Martí, M, Wyatt, AM, Laure Resplandy, L, Clevenger, SJ, Drysdale, JA., Estapa, ML, Pike, S, Umhau, BP (2020) High resolution spatial and temporal measurements of particulate organic carbon flux using thorium-234 in the NE Pacific Ocean during the EXPORTS Program, *Elementa: Science of the Anthropocene*, 8 (1): 030. <https://doi.org/10.1525/elementa.030>
129. Zhou, K., Dai, M., Xiu, P., Wang, L., Hu, J., **Benitez-Nelson, CR** (2020) Transient enhancement and decoupling of carbon and opal export in cyclonic eddies, *Journal of Geophysical Research-Oceans*, *Journal of Geophysical Research: Oceans*, 125, e2020JC016372. <https://doi.org/10.1029/2020JC016372> .
128. \*Davis, CV, Livsey, CM, Palmer, HM, Hull, PM, Thomas, E, Hill, TM, **Benitez-Nelson, CR** (2020) Extensive morphological variability in asexually produced planktic foraminifera. *Science Advances*, 6, eabb8930. <https://advances.sciencemag.org/content/6/28/eabb8930>.
127. Romero, S, Ka'apu-Lyons, C, Umhau, Blaire; **Benitez-Nelson, CR**, Close, H, Hannides, C, Drazen, J, Popp, B (2020) Deep zooplankton rely on small particles in response to low particle fluxes, *Limnology and Oceanography Letters*, 5, 410-416. <https://doi.org/10.1002/lol2.10163>
126. \*Sarno, CT, **Benitez-Nelson, CR**, Ziolkowski, LA, Hendy, IL, \*Davis, CV, Tappa, EJ, Thunell, RC (2020) The Impacts of Flood, Drought, and Turbidites on Organic Carbon Burial over the Past 2,000 years in the Santa Barbara Basin, California, *Paleoceanography and Paleoclimatology*, 35, e2020PA003849. <https://doi.org/10.1029/2020PA003849>
- 125.\*Davis, CV, **Benitez-Nelson CR** (2020) Evidence for rapid trace element alteration of planktic foraminiferal shells from the Panama Basin: Manganese adsorption during vertical transport. *Marine Micropaleontology*, 157, 101872 <https://doi.org/10.1016/j.marmicro.2020.101872>.
124. \*Bell, DW, Pellechia, P, Ingall, E.D., **Benitez-Nelson, CR** (2020) Resolving marine dissolved organic phosphorus (DOP) composition in a coastal estuary, North Inlet, South Carolina. *Limnology and Oceanography*, 65(11), 27872-2799. <https://doi.org/10.1002/lno.11552>
- 123.\*Davis, CV, Fehrenbacher, J., **Benitez-Nelson, CR**, Thunell, R.C. (2020) Trace Element Heterogeneity across Individual Planktic Foraminifera from the Modern Cariaco Basin. *Journal of Foraminiferal Research*, (2020) 50 (2): 204–218. <https://doi.org/10.2113/gsjfr.50.2.204>
122. Hannides, CC, Popp, BN, Close, HG, **Benitez-Nelson, CR**, Ka'apu-Lyons, C.A., Gloecker, K., Wallsgrove, N., Umahu, B., Drazen, J. (2020) Seasonal dynamics of midwater zooplankton and relation to particle cycling in the North Pacific Subtropical Gyre. *Progress in Oceanography*, 182, 102266, <https://doi.org/10.1016/j.pocean.2020.102266>.
121. Humphries, MS, **Benitez-Nelson, CR**, Bizimis, M, Ralph, TJ, Larkin, ZT, McCarthy, TS (2020) Dust provenance and its role as a potential fertilising agent for the Okavango Delta, Botswana. *Earth Surface Processes and Landforms*, <https://doi.org/10.1002/esp.4840>.

120. Arias-Ortiz, A, Masque, P, Glass, Benson, L, Kennedy, H, Duarte, CM, Garcia-Orellana, J, **Benitez-Nelson, CR**, Humphries, MS, Ratefinjanahary, I, Ravelonjatovo, J Lovelock, CE (2020) Losses of soil organic carbon with deforestation in mangroves of Madagascar. *Ecosystems*, <https://doi.org/10.1007/s10021-020-00500-z>.
119. \*\*Davis, AN, \*Davis, CV, Thunell, RC, Osborne, EB, Black, DE, **Benitez-Nelson, CR** (2019) Reconstructing 800 years of Carbonate Ion Concentration in the Cariaco Basin Using the Area-Density of Planktonic Foraminifera Shells, *Paleoceanography*, <https://doi.org/10.1029/2019PA003698>.
118. Osborne, EO, Thunell, RC, Gruber, N, Feely, RF, **Benitez-Nelson, CR** (2019) Climatic Modulation of Anthropogenic Ocean Acidification in the California Current, *Nature Geoscience*, 13, 43–49 (2020) <https://www.nature.com/articles/s41561-019-0499-z>.
117. \*Umhau, B, Motta, LC, **Benitez-Nelson, CR**, Close, HG, Hannides, CC, Popp, BN, Blum, JD, Drazen, J, Grabb, KC (2019) Seasonal and spatial changes in carbon and nitrogen fluxes estimated using  $^{234}\text{Th}$ : $^{238}\text{U}$  disequilibria in the North Pacific Subtropical Gyre, *Marine Chemistry*, 217, 103705. <https://doi.org/10.1016/j.marchem.2019.103705>.
116. \*Davis, CV, Ontiveros-Cuadras, JF, **Benitez-Nelson, CR**, Schmittner, A, Tappa, EJ, Osborne, EO, Thunell, RC (2019) Ongoing increase in Eastern Tropical North Pacific denitrification as interpreted through the Santa Barbara Basin sedimentary  $\delta^{15}\text{N}$  record. *Paleoceanography*, 34: 1554-1567. <https://doi.org/10.1029/2019PA003578>.
115. Lorenzoni, L, Thunell, RC, **Benitez-Nelson, CR**, Montes, E, Varela, R, Astor, Y, and Muller-Karger, F. (2019) From land to the ocean: the interplay between allochthonous and autochthonous contribution to particles in nepheloid layers of the Cariaco Basin, Venezuela, *Journal of Geophysical Research – Biogeoscience*, 124. <https://doi.org/10.1029/2019JG005288>.
114. Motta, LC, Blum, JD, Johnson, MW, Umhau, B, Popp, P, Washburn, SJ, Drazen, J, **Benitez-Nelson, CR**, Hannides, C.C., Close, H.G., Lamborg, CH (2019) Mercury cycling in the North Pacific Subtropical Gyre as revealed by mercury stable isotope ratios. *Global Biogeochemical Cycles*, 33, 777– 794. <https://doi.org/10.1029/2018GB006057>.
113. Ontiveros-Cuadras, JF, Thunell, R., Ruiz-Fernández, AC, **Benitez-Nelson, CR**, Machain-Castillo, MA, Tappa, E, Sanchez-Cabeza, JA (2019) Centennial OMZ changes in the NW Mexican Margin from geochemical and foraminiferal sedimentary records, *Continental Shelf Research*, 176 (2019) 64–75. <https://doi.org/10.1016/j.csr.2019.02.009>.
112. Moore, WS, Humphries, MS, **Benitez-Nelson, CR**, Pillay, L, Higgs, C (2019) Transport of solutes through beaches: Insights and limitations from radium isotope studies *Journal of Geophysical Research – Oceans*, <https://doi.org/10.1029/2018JC014772>
111. \*Shi, X, **Benitez-Nelson, CR**, Cai, P, He, L, Moore, WS (2019) Development of a two-layer transport model in layered muddy - permeable marsh sediments using  $^{224}\text{Ra}/^{228}\text{Th}$  disequilibrium, *Limnology and Oceanography*, <https://doi.org/10.1002/lno.11143>.
110. Muller-Karger, F, Astor, Y, **Benitez-Nelson, CR**, Buck, K, Fanning, K, Lorenzoni, L, Montes, E, Scranton, M, Rueda-Roa, D, Taylor, G, Thunell, R, Tappa, E, Vaerla, R (2019) Scientific Legacy of the CARIACO Oceanographic Time-Series Program. *Annual Reviews in Marine Science*, 11, <https://doi.org/10.1146/annurev-marine-010318-095150>.
109. \*Umhau, B, **Benitez-Nelson, CR**, Anderson, C, McCabe, K, Burrell, C (2018) A time series of water column distributions and sinking particle flux of *Pseudo-nitzschia* and domoic acid in the Santa Barbara Basin, California. *Toxins*, Nov 17;10(11). pii: E480. <https://doi.org/10.3390/toxins10110480>.
108. \*Bell, DW, Denham, S., Smith, EM, **Benitez-Nelson, CR** (2018) Temporal variability in ecological stoichiometry and material exchange in a tidally-dominated estuary (North Inlet, South Carolina) and the impact on community nutrient status. *Estuaries and Coasts* <https://doi.org/10.1007/s12237-018-0430-7>.
107. \*Schroer, WF, **Benitez-Nelson, CR**, Smith, EM, Ziolkowski, LA (2018) Drivers of sediment accumulation and nutrient burial in coastal stormwater detention ponds, South Carolina, USA, *Ecosystems*, <https://doi.org/10.1007/s10021-017-0207-z>.

106. **Benitez-Nelson CR** et al. (2018) Radioactivity in the Marine Environment: Radioecology, *Limnology and Oceanography e-Lectures.*, 2018;8:170–228. <https://doi.org/10.3390/toxins10110480>.
105. **Benitez-Nelson, CR** et al. (2018) Radioactivity in the Marine Environment: Cosmogenic and Anthropogenic Radionuclides, *Limnology and Oceanography e-Lectures.* 2018;8:114–169. <https://doi.org/10.1002/loe2.10008>.
104. **Benitez-Nelson, CR** et al. (2018) Radioactivity in the Marine Environment: Uranium-Thorium Decay Series. *Limnology and Oceanography e-Lectures.* 2018;8:59–113. <https://doi.org/10.1002/loe2.10009>.
103. **Benitez-Nelson, CR** et al. (2018) Radioactivity in the Marine Environment: Understanding the Basics of Marine Radioactivity, *Limnology and Oceanography e-Lectures.* 2018;8:1–58. <https://doi.org/10.1002/loe2.10010>.
102. Humphries, M., **Benitez-Nelson, CR**, Bizimis, M., Finch, JM (2017) An aeolian sediment reconstruction of regional wind intensity and links to larger scale climate variability since the last deglaciation from the east coast of southern Africa, *Global and Planetary Change*, 156, 59-67. <https://doi.org/10.1016/j.gloplacha.2017.08.002>
101. \*Bell, DW, Pellechia, P, Chambers, LR , Longo, AF, McCabe, KM, Ingall, ED, **Benitez-Nelson, CR** (2017) Isolation and molecular characterization of dissolved organic 1 phosphorus using electro dialysis-reverse osmosis and solution 31P-NMR. *Limnology & Oceanography Methods*, <https://doi.org/10.1002/lom3.10171>.
100. \*Puigcorbé, V, Roca-Martí, M, Masqué, P, **Benitez-Nelson, CR**, Rutgers van der Loeff, Bracher, Moreau, S. (2017) Latitudinal distributions of particulate carbon export across the North Western Atlantic Ocean. *Deep-Sea Research I*, 129, 116-130, <https://doi.org/10.1016/j.dsr.2017.08.016>.
99. Buesseler, KO, Dai, M, Aoyama, M, **Benitez-Nelson, CR**, Charmasson, S, Higley, K, Maderich, V, Masque, P, Morris, PJ, Oughton, D, Smith, J. (2017) Fukushima Daiichi-derived radionuclides in the Ocean: transport, fate, and impacts, *Annual Reviews of Marine Science*, 9, <https://doi.org/10.1146/annurev-marine-010816-060733>.
98. Schnetzer, A, Lampe, R, **Benitez-Nelson, CR**, Marchetti, A, Osburn, C, Tatters, A (2017) Marine snow formation by the toxin producing diatom, *Pseudo-nitzschia australis*, *Harmful Algae*, 61, 23–30, <https://doi.org/10.1016/j.hal.2016.11.008>
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[Flourishing Children, Healthy Communities, and a Stronger Nation: The U.S. Early Years Climate Action Plan](#), Task force Member, 2023.

**PUBLISHED ABSTRACTS** (\* Denotes my graduate student or postdoc author, \*\*Denotes undergraduate student author):

- Abdalla, A, Van Wyk, A, **Benitez-Nelson, CR**, Hill, T (2024) Cattle-path induced erosion reduced soil organic carbon in montane grasslands: A case study from South Africa 9<sup>th</sup> International Symposium on Soil Organic Matter, Morocco, March, 2024
- Bam W, Pike SM, Buesseler K, **Benitez-Nelson CR**.(2024) Particulate carbon export and remineralization along the contrasting biogeochemical regimes from Tropical Pacific to Southern Ocean Waters. 2024 Ocean Sciences Meeting. New Orleans, LA February 2024.
- Hupp BN, Fehrenbacher JS, Hasley-Velez S, Doherty S, Davis C, **Benitez-Nelson CR**. (2024) Salp blooms and their potential effect on inorganic carbon burial, 2024 Ocean Sciences Meeting. New Orleans, LA February 2024.
- Yanuszkiewicz, E, Wojtal, PK Popp, BN, **Benitez-Nelson, CR**, Buesseler, KO, Estapa, M, Roca Martí, M, Close, HG (2024) Organic composition and degradative transformation of particles from surface to mesopelagic depths in two contrasting water columns: the North Atlantic spring bloom and the northeast Pacific, 2024 Ocean Sciences Meeting. New Orleans, LA February 2024.
- Cherry, K, Harvard, E, **Benitez-Nelson, CR**, Tappa, E, Davis, C (2023) Response of planktic foraminifera to rapid climate change in the California Current Ecosystem: Implications for proxy applications. AGU Winter Meeting, San Francisco, CA, Dec 2023
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- Paul, NL, Tappa, E, **Benitez-Nelson, CR**, Santoro, AR (2023) Connections between particle-attached community composition, environmental conditions, and sequestration of particulate organic matter in the Santa Barbara Basin, 4<sup>th</sup> SoCal NLP Symposium, UCLA, Los Angeles, CA, Nov. 2023.
- Clevenger, **Benitez-Nelson, CR**, Roca-Martí, M, Buesseler, KO (2023) Quantifying carbon export and remineralization during a North Atlantic spring bloom using <sup>234</sup>Th-<sup>238</sup>U and <sup>210</sup>Pb-<sup>210</sup>Po study, Chemical Oceanography Gordon Research Conference, New Hampshire July 2023
- Harvard, E, Cherry, K, Davis, C, Tappa, E, **Benitez-Nelson, CR** (2023) A changing response of planktic foraminifera to seasonality in the California Current Ecosystem: Updates from 2018-2021. FORAMS Conference, Perugia, Italy, June 2023
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- \*Faton, KG, Smith, EM, **Benitez-Nelson, CR** (2023) Linking land use changes to stormwater impacts in an urban estuary. ASLO Summer Meeting, Palma de Mallorca, Spain June 2023
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- McNeal, KS, **Benitez-Nelson, CR**, Jones, W (2021) Supporting Underrepresented Undergraduate Students in the Geosciences through Partnerships Between University Housing and Academics, Geological Society of America, Southeastern Section - 70th Annual Meeting, April 2021
- Livsey, CM, \*Davis, CV, Fehrenbacher, JS, **Benitez-Nelson, C**, Hill, T (2020) Patterns of trace element geochemistry in cultured *Neogloboquadrina pachyderma* crust calcite, GSA annual meeting (online), October 2020
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- Zhou, K, **Benitez-Nelson, CR.** Huang, J., Xiu, P., Sun, Z., Dai, M. (2020) Decoupling between particulate carbon and biogenic silica export within North Pacific Subtropical Gyre cyclonic eddies, Ocean Sciences Meeting, Abstract: OB14E-0416, San Diego, CA February 2020.
- Close, HG, Wojtal, PK, Henderson, LC, **Benitez-Nelson, CR**, Buesseler, KO, Estapa, ML, Pike, SM, Popp, BN, Roca-Marti, M (2020) Estimating relative flux of phytodetritus, fecal pellets, and bacterial biomass using compound-specific isotope analysis of amino acids at Station Papa (EXPORTS), Ocean Sciences Meeting, Abstract: OB14E-0419, San Diego, CA February 2020.
- Buesseler, KO, **Benitez-Nelson, CR**, Jade Clevenger, S, Drysdale, J, Roca Martí, M, Pike, SM, Resplandy, L, Umhau, B, Wyatt, A (2020) OB14E-0422 Expanding our Use of Thorium-234 as a Particle Flux Tracer in the EXPORTS Program, Ocean Sciences Meeting, Abstract: OB14E-0419, San Diego, CA February 2020.
- Jade Clevenger, S, Buesseler, KO, **Benitez-Nelson, CR**, Drysdale, J (2020) Updates to the classic small volume (2-4L) <sup>234</sup>Th analysis protocol, Ocean Sciences Meeting, Abstract: OB24F-0523, San Diego, CA February 2020.
- \*McCabe, K., Smith, E, **Benitez-Nelson, CR** (2019) Influence of stormwater management on organic matter dynamics and oxygen demand in urbanizing headwater catchments of a coastal plain river. 2019 AGU Fall Meeting, December 9-13, 2019 San Francisco, CA.
- Moore, WS, Frankle, JD\*, Lang, SQ, **Benitez-Nelson, CR** (2019) Enormous excess <sup>223</sup>Ra in fluids from the Lost City hydrothermal field. 2019 Goldschmidt Meeting, August 18-23, 2019, Barcelona, Spain
- \*\*Davis, AN, Thunell, RC, Tappa, EJ, **Benitez-Nelson, CR**, Black, DE, Osborne, EO, and Davis, CV (2019) Reconstructing Ocean Acidification Using Fossil Planktonic Foraminifera in the Cariaco Basin. 2019 Ocean Sciences Meeting, February 25 – February 29, San Juan, Puerto Rico
- \*McCabe, KM, Smith, EM, **Benitez-Nelson, CR** (2019) Effects of stormwater management practices on nonpoint source BOD loading to coastal waters in South Carolina, Geological Society of America, Southeastern Section, 2019. Charleston, SC
- Buesseler, KO, Benitez-Nelson, CR, Burt, WJ, Clevenger, SJ, Drysdale, J, Francois, R, Pike, S, Resplandy, L, Roca-Martí, L, Blaire Umhau, BP, Wyatt, A (2019) EXPORTS: using high resolution studies of thorium-234 at Ocean Station PAPA to elucidate spatial and temporal variability in particle export and attenuation, 2019 Ocean Sciences Meeting, February 25 – February 29, San Juan, Puerto Rico
- \*Weirich, N, McCabe, K.; **Benitez-Nelson, C.**; Smith, E. (2018). Are stormwater ponds hot spots of BOD<sub>5</sub> production? 2018 South Carolina Water Resources Conference, October, 2018, Columbia, SC.
- \*Schroer, W. F.; **Benitez-Nelson, C.**; Smith, E.; Ziolkowski, L. (2018). Drivers of Sediment Accumulation in South Carolina stormwater ponds, 2018 South Carolina Water Resources Conference, October, 2018, Columbia, SC.
- Zhou, K. Huang, J., Xiu, P., **Benitez-Nelson, C.R.**, Sun, Z., Dai, M. (2019) Particulate carbon and silica export mediated by cyclonic eddies at Station ALOHA. The Fourth Xiamen Symposium on Marine Environmental Sciences, January 2019, Xiamen China.
- Popp, B.N, Hannides, C.S., Close, H.H, **Benitez-Nelson, C.R.**, Umhau, B. and Drazen, J.C. (2018) Compound-specific isotope analyses reveal varying seasonal zooplankton-particle interactions. (Abstract ID: XXX), 2018 Goldschmidt Conference, August 2018, Boston MA.



- Benitez-Nelson, C.R. (2018) The building blocks of life: From oceanic to molecular scales and back again, 2018 Ocean Sciences Meeting, February 12 – February 16, Portland, Oregon. INVITED PLENARY
- \*Bell, DW, Pellechia, P, Ingall, E.D., **Benitez-Nelson, CR.** (2018). Dissolved Organic Phosphorus Composition: New Insights from Electrodeialysis-Reverse Osmosis Isolation and Solution <sup>31</sup>P-NMR Analysis (Abstract ID: BN14B-1030) 2018 Ocean Sciences Meeting, February 12 – February 16, Portland, Oregon
- Drazen, J.C, Romero-Romero, Lyons, C, Gloeckler, K., Close, H.G., **Benitez-Nelson, C.R.**, Popp, B. N. (2018) Evaluating variations in the importance of small particles as a food source to the mesopelagic micronekton from the central gyre to the equator in the North Pacific. (Abstract ID: ME34A-0960), 2018 Ocean Sciences Meeting, February 12 – February 16, Portland, Oregon.
- Shanahan, M, Wilsom, AM, Smith, EM, **Benitez-Nelson, CR** (2017) Impact of Coastal Development and Marsh Width Variability on Groundwater Quality in Estuarine Tidal Creeks H43J-1781. AGU Fall Meeting, Dec 11-15, 2017 New Orleans, LA.
- \*Bell, DW, Denham, S, Smith, EM, **Benitez-Nelson, CR.** Invited, Nov. 2017. Evaluating seasonal community nutrient status with ecological stoichiometry in a salt marsh tidal creek. CERF 2017 Biennial Conference, November, Providence, RI
- Van Meerssche, E., Pinckney, J, **Benitez-Nelson, CR**, Greenfield, D, (2017) The influence of the environmental factors on the allelopathic effect of domoic acid on natural phytoplankton communities. The 9<sup>th</sup> U.S. HAB conference, November, Baltimore, MD
- \*Schroer, W. F.; **Benitez-Nelson, C.**; Smith, E.; Ziolkowski, L. (2017). Coastal Stormwater Detention Ponds: Sediment, Accumulation, and Nutrient Sequestration (Abstract ID: 29040), 2017 ASLO Winter Meeting, February 26 – March 3, Honolulu, HI.
- Drazen, J.C.; Gloeckler, K., Choy, C.A., Close, H.G., Hannides, C. C., **Benitez-Nelson, C.R.**, Umhau, B., Popp, B. N., (2017) Small Plankton may Form a Previously Overlooked Food Source for Mesopelagic Zooplankton and Micronekton (Abstract ID: 29671), 2017 ASLO Winter Meeting, February 26 – March 3, Honolulu, HI.
- Close, H. G.; Ka'apu-Lyons, C. A., Grabb, K. C., Bour, A. L., Wallsgrove, N., Umhau, B. P., **Benitez-Nelson, C.R.**, McCarthy, M.D., Drazen, J.C., Popp, B.N. (2017) Heterotrophic Influence on Organic Matter at Epipelagic vs. Mesopelagic Depths Reflected in Compound Specific Stable Isotope Patterns. (Abstract ID: 30048), 2017 ASLO Winter Meeting, February 26 – March 3, Honolulu, HI.
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- \*\*Palmer, ER, Hannides, CS, Drazen, JC, Popp, BN, **Benitez-Nelson, CR** (2016). Zooplankton Phosphorus concentrations and Redfield stoichiometry in the central tropical North Pacific, Geological Society of America Southeastern Section, 65th Annual Meeting. 31 March 2016 – 1 April 2016, Columbia, SC.
- \*Umhau, B, Motta, LC, Blum, Popp, BN, Ka'apu-Lyons, C., **Benitez-Nelson, CR.** (2016). Latitudinal changes in <sup>234</sup>Th derived mercury, carbon, and nutrient particle fluxes in the central Tropical North Pacific, Geological Society of America Southeastern Section, 65th Annual Meeting. 31 March 2016 – 1 April 2016, Columbia, SC.
- Hannides, CC Popp, BN, Drazen, J, Close, HG, **Benitez-Nelson, CR** Grabb, CZ, Umhau, B, Ka'apu-Lyons, CA, , K (2016) B31A-03: Midwater Zooplankton Response to Seasonality in Export Flux in the North Pacific Subtropical Gyre, 2016 Ocean Sciences Meeting, February 22-26, New Orleans, LA
- Grabb, KC, **Benitez-Nelson, CR**, Drazen, J Close, HG. Hannides, CC, Ka'apu-Lyons, CA, Umhau, B, Popp, B (2016) B34A-0331: Characterizing seasonal contribution of particles from the surface ocean to the mesopelagic food web through amino acid compound specific isotopic analysis and <sup>234</sup>Thorium measurements, 2016 Ocean Sciences Meeting, February 22-26, New Orleans, LA

- \*Bell, D, Denham, S, Smith, E, **Benitez-Nelson, CR**, Richardson, TL (2016) B54A-0402: Beyond the Blue: C:N:P relationships across tidal and seasonal time-scales within a salt-marsh estuary, 2016 Ocean Sciences Meeting, February 22-26, New Orleans, LA
- \*Umhau, B, Motta, LC, **Benitez-Nelson, CR**, Close, HG, Hannides, CC, Popp, BN, Blum, JD, Drazen, J, Grabb, KC (2016) CT21A-01: Characterization of Mercury Particle Flux Using <sup>238</sup>U:<sup>234</sup>Th Disequilibria in the North Pacific Subtropical Gyre, 2016 Ocean Sciences Meeting, February 22-26, New Orleans, LA
- Motta, LC, Blum, JD, Popp, P, Drazen, J, Hannides, CC, Close, HG, Umhau, B., **Benitez-Nelson, CR**. (2016) CT41A-04 Mercury Stable Isotopes Reveal Deep Methylation of Mercury and its Uptake into the Open Ocean Food Web, 2016 Ocean Sciences Meeting, February 22-26, New Orleans, LA
- Scranton, MI, Taylor, GT, Thunell, R, Tappa, E, **Benitez-Nelson, CR**, Muller-Karger, F, Lorenzoni, L, Astor, Y (2016) ME34D-0825: Anomalous  $\delta^{13}\text{C}$  in POC at the chemoautotrophy maximum in the Cariaco Basin, 2016 Ocean Sciences Meeting, February 22-26, New Orleans, LA
- Lorenzoni, L, Muller-Karger, ME, Rueda-Roa, DT, Thunell, R., Scranton, MI, Taylor, GT, **Benitez-Nelson, CR**, Montes, E, Astor, YM, Rojas, J (2016) OD14B-2420: The CARIACO Ocean Time-Series: two decades of oceanographic observations to understand linkages between biogeochemistry, ecology, and long-term environmental variability. 2016 Ocean Sciences Meeting, February 22-26, New Orleans, LA
- Osborne, E., Thunell, R., Bizimis, M, Buckley, W, **Benitez-Nelson, C**, Chartier, C (2015) A History of Warming Sea Surface Temperature and Ocean Acidification Recorded by Planktonic Foraminifera Geochemistry from the Santa Barbara Basin, California, (Abstract ID: PP33C-2321) 2015 FALL AGU Meeting, San Francisco, CA.
- Osborne, E., Thunell, R., Gruber, N., **Benitez-Nelson, C.**, and Cai, W., (2015) Planktonic foraminiferal shell thickness as a carbonate ion concentration proxy, SCOR Workshop on the Biology of Planktonic Foraminifera, Catalina Island, CA, September 2015
- Benitez-Nelson, C.R.**, Thunell, R., Pinckney, J., Lorenzoni, L., Montes, E., Muller-Karger, F, Scranton, M., Taylor, G., Varela, R., Astor, Y. (2015) Elemental Composition (C, N and P) of Sinking and Suspended Particulate Matter in the Cariaco Basin, Venezuela. February 2015 ASLO Winter Meeting Granada, Spain
- Scranton, M., Taylor, G., Muller-Karger, F., Lorenzoni, L., Fanning, K., Thunell, R., **Benitez-Nelson, C.R.**, Astor, Y, Varela, R. (2015) A source for “missing” oxidant and reductant at the redox interface of the Cariaco Basin. February 2015 ASLO Winter Meeting Granada, Spain
- Osborne, E., Bizimis, M., Wei-Jun Cai, WJ, Wang, YC, Iglesias-Rodriguez, D., **Benitez-Nelson, CR**, Holm, JA, Thunell, RC (2014) Planktonic foraminiferal response to ocean acidification in the Santa Barbara Basin over the last century. 2014 FALL AGU Meeting, San Francisco, CA.
- Longo, A.F., Ingall, E.D., Diaz, J.M., Oakes, M., King, L.E., Mihalopoulos, K., Violaki, K., Avila, A., Nenes, A., **Benitez-Nelson, C.R.**, Brandes, J., McNulty, I., Vine, D.J. (2014) Aerosol Phosphorus Composition: New Insights from Synchrotron X-ray Spectroscopy. 2014 FALL AGU Meeting, San Francisco, CA.
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- Lorenzoni, L, Muller-Karger, F, Montes, E, Taylor, G, Thunell, R, Scranton, M, **Benitez-Nelson, CR**, Astor, Y., Varela, R., Troccoli, L, Fanning, K. (2014) The CARIACO Ocean Time-Series: 19 years of international collaboration in ocean biogeochemistry and ecological

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- Pellechia, P., **C. R. Benitez-Nelson**, C. R., L. Kolowith, and R. C. Thunell. The use of solid state <sup>31</sup>P NMR and bloch decays to examine phosphorus speciation in an anoxic marine basin. 2004 45<sup>th</sup> ENC Experimental Nuclear Magnetic Resonance Conference, Pacific Grove, CA, April 18-24.
- Benitez-Nelson, C. R.**, L.O. O'Neill, P. Pellechia, and R. C. Thunell. Phosphorus speciation under anoxic conditions: Insights from the Cariaco Basin. 2004 ASLO/TOS Ocean Research Conference, Honolulu, HI, Feb. 16-20, published program, p. 16.
- Sheridan, C. C., M. R. Landry, **C. R. Benitez-Nelson**, and J. P. Montoya. A synthesis of Hawaii Ocean Time-series (HOT) mesozooplankton data from 1994-2002: Temporal variability in



- biomass and contribution to elemental cycles. 2003 JGOFS Open Science Conference, May 5-9 Washington D.C. (Best Student Presentation Award)
- Benitez-Nelson, C. R.**, T. K. Gregory, D. M. Karl. Upper ocean and mesopelagic particle export at Station ALOHA in the NPSG derived from  $^{234}\text{Th}$ . 2002 AGU Fall Meeting, San Francisco, CA, Dec. 5-12, published program, p. F175.
- Bidigare, R. R., M. P. Seki, C. L. Leonard, **C. R. Benitez-Nelson**, R. D. Vaillancourt and J. J. Polovina. Influence of cyclonic eddies on new production rates in the vicinity of the Hawaiian Islands. North Pacific Marine Science Organization (PICES) 10th Annual Meeting, 7-17 October 2001 (Victoria, INVITED).
- Sansone, F. J., **C. R. Benitez-Nelson**, E. H. DeCarlo, Z. Liangzhong, J. A. Heath and B. J. Huebert. Chemical composition of the steam plume resulting from the ocean lava entry at Kilauea Volcano, Hawaii. 2000 AGU Fall Meeting, San Francisco, CA, Dec. 15-19, published program, p. F1275.
- Benitez-Nelson, C. R.**, A. J. Cundiff, J. A. Heath and B. J. Huebert. Atmospheric P deposition to the Hawaiian Island Chain. 2000 AGU Fall Meeting, San Francisco, CA, Dec. 15-19, published program, p. F175.
- Benitez-Nelson, C. R.**, and D. M. Karl. Phosphorus cycling in the North Pacific Gyre. 2000 AGU Fall Meeting, San Francisco, CA., Dec. 15-19, published program, p. F192 (INVITED).
- Benitez-Nelson, C. R.**, D. M. Karl and K. O. Buesseler.  $^{234}\text{Th}$  derived carbon export at Station ALOHA. 2000 AGU Ocean Sciences meeting, San Antonio, TX, Jan. 24-28, published program, p. OS103.
- Benitez-Nelson, C. R.** and K. O. Buesseler. Upper ocean phosphorus cycling in the Gulf of Maine: Utilization of cosmogenic  $^{32}\text{P}$  and  $^{33}\text{P}$ . 1998 AGU Ocean Sciences meeting, San Diego, CA, Feb. 9-13, published program, p. OS81.
- Benitez-Nelson, C. R.** and K. O. Buesseler (1997). Utilization of  $^{32}\text{P}$ ,  $^{33}\text{P}$ ,  $^7\text{Be}$ , and  $^{210}\text{Pb}$  as tracers of tropospheric aerosol residence times and stratospheric exchange. *EOS*, **78(46)**, 108.
- Buesseler, K. O., L. Ball, J. Andrews, **C. Benitez-Nelson** and R. Belostock (1996). Upper ocean particulate export in the Arabian Sea. *EOS*, **77(46)**, 396.
- Benitez-Nelson, C. R.** and K. O. Buesseler. Phosphorus cycling and export production in the Gulf of Maine: A multi-tracer approach. 1996 Gulf of Maine Ecosystem Dynamics Meeting, New Brunswick, Canada, Sept. 16-20, published program.
- Buesseler, K. O., J. E. Andrews, L. A. Ball, R. A. Belostock, and **C. R. Benitez-Nelson**. Particle export fields in the Arabian Sea derived from  $^{234}\text{Th}$ :  $^{238}\text{U}$  disequilibria. 1996 AGU Ocean Sciences meeting, San Diego, CA, Feb. 12-16, published program, p. OS23.
- Buesseler, K. O., S. B. Moran, R. L. Edwards, J. A. Hoff, M. C. Hartman, J. E. Andrews, R. A. Belostock, and **C. R. Benitez** (1994). Residence time of colloids and particles along the shelf and slope of the NE USA derived from thorium isotopes. *EOS*, **75(44)**, 311.
- Benitez, C.** and K. O. Buesseler (1991). Determination of the sedimentation rate in the Black Sea over the last century using radionuclides. *EOS*, **72(51)**, 27.

## **INVITED PAPERS, SEMINARS, SYMPOSIA and WORKSHOPS:**

- Invited Speaker, Eastern Pacific Ocean Conference, Fireside Chat, Lake Tahoe, CA, Sept 2023.  
Session organizer and discussion leader, Gordon Research Conference in Chemical Oceanography. Late Breaking Topics. GRC, New Hampshire, July 2023
- Invited Seminar, Using Elemental Composition and Stoichiometry to Explore Marine Biogeochemical Cycles, North Carolina State University, March 2021
- Invited Seminar, Using Elemental Composition and Stoichiometry to Explore Marine Biogeochemical Cycles, Rutgers University, February 2021
- Key Note Address, Using Elemental Composition and Stoichiometry to Explore Marine Biogeochemical Cycles, The Fifth Xiamen Symposium on Marine Environmental Sciences, Xiamen, China. Jan 11-14, 2021
- Invited Seminar, Using Elemental Composition and Stoichiometry to Explore Marine Biogeochemical Cycles, Bromery Lecture, California Institute of Technology, November 2020
- Invited Seminar, Using Elemental Composition and Stoichiometry to Explore Marine Biogeochemical Cycles, Bromery Lecture, Johns Hopkin University, October, 2020
- Invited Speaker, H. Burr Steinbach Scholar, MIT/WHOI Joint Program, July 2019 (three seminars over the course of a week)
- Invited Plenary, The building blocks of life: From oceanic to molecular scales and back again, 2018 Ocean Sciences Meeting, February 12 – February 16, Portland, Oregon.
- Invited Seminar, Neurotoxins in the Environment Understanding the Production, Cycling and Fate of Domoic Acid Along the California Coast. University of North Carolina-Wilmington, March 2017
- Invited Seminar, Neurotoxins in the Environment Understanding the Production, Cycling and Fate of Domoic Acid Along the California Coast. University of North Carolina-Charlotte, March 2017
- Invited Seminar, Neurotoxins in the Environment Understanding the Production, Cycling and Fate of Domoic Acid Along the California Coast. Duke Marine Lab, March 2017
- Keynote Speaker Earth: Our radioactive home. Facts versus Misconceptions. Xiamen China, June 2016
- Keynote Speaker, Junior Science and Humanities Symposium. Great Failures in Science. January 2016
- Invited Speaker, “Insights into phosphorus cycling across oxic-anoxic boundaries in marine systems,” Geological Society of American Annual Meeting, Baltimore, MD, November 2015
- Invited Speaker, “Elemental stoichiometry and the composition and flux of suspended and sinking material in a coastal marine ecosystem,” LDEO Colloquium, Columbia University, April 24, 2015.
- Denis and Jean Wiesenburg Distinguished Lecturer in Ocean Science, “Neurotoxins in the Environment. Understanding the cycling and fate of domoic acid in marine systems,” University of Southern Mississippi, April 9, 2015
- Invited Seminar, “Elemental stoichiometry and the composition and flux of suspended and sinking material in a coastal marine ecosystem,” Stennis Space Center and Marine Science University of Southern Mississippi Lecture Series, April 8, 2015
- Invited Seminar, “Navigating your way through a broken pipeline,” ADVANCE Speaker Series, Texas A&M University, Dec. 9, 2014.
- Invited Seminar, “Phosphorus Biogeochemistry and Elemental Stoichiometry in Sinking and Suspended Particulate Matter in the Cariaco Basin, Venezuela,” Department Oceanography, Texas A&M University, Dec. 8, 2014.
- Invited Seminar, “Phosphorus Biogeochemistry and Elemental Stoichiometry in Sinking and Suspended Particulate Matter in the Cariaco Basin, Venezuela,” Department of Marine, Earth, and Atmospheric Sciences, North Carolina State University, Sept .22, 2014.
- 2013 USC New Student Convocation, Invited speaker, August 18, 2013

Keynote Speaker, “Starting discussions on climate change” World Association of Zoos and Aquariums annual meeting. Orlando, FL, Oct. 14, 2013.

Invited Seminar, “The Toxin Express, Understanding What controls the magnitude and variability of the downward transport of domoic acid in coastal waters” Marine Science Program, UC Santa Barbara, April 2013.

Invited Seminar, “The Toxin Express, Understanding What controls the magnitude and variability of the downward transport of domoic acid in coastal waters” Department of Earth Science, University of Southern California, April 2013.

Keynote Speaker, “Starting discussions on climate change” Association of Zoos and Aquariums, mid-year annual meeting, Charleston SC, April 9, 2013.

Invited Speaker, “Communicating science to non-scientists,” TEDX Columbia, Columbia, SC January 21, 2013.

Invited Speaker, “Marine Radioactivity” The Accidents at Fukushima Dai-Ichi: Exploring the Impacts of Radiation on the Ocean Conference, Tokyo, Japan, November 2012.

Invited Seminar, “The Toxin Express, Understanding What controls the magnitude and variability of the downward transport of domoic acid in coastal waters” Marine Sciences Department, University of North Carolina-Chapel Hill, October 2012.

Invited Seminar, “Understanding the Toxin Express, Rapid Downward Transport of Domoic Acid in Coastal Waters” School of Chemistry, University of KwaZulu-Natal, Durban, South Africa, November 2011.

Invited Speaker, “Phosphorus biogeochemistry, what have we learned and where do we need to go in the future.” Gordon Conference, Chemical Oceanography, August 2011, Andover, NH

Invited Speaker, “I want to grow up to be a ...” USC TRIO McNair Scholars Program Luncheon, Columbia, SC 2011.

Invited Speaker, “The Ocean Twilight Zone.” OCB Scoping Workshop on GBF-OOI, May 23, 2011, Woods Hole, MA.

MEL Distinguished Visiting Fellow, “Phosphorus Cycling in Marine Systems,” State Key Laboratory of Marine and Environmental Science, Xiamen University, December 2010.

MEL Distinguished Visiting Fellow, “Fate and Transport of the Neurotoxin Domoic Acid to Depth,” State Key Laboratory of Marine and Environmental Science, Xiamen University, December 2010.

MEL Distinguished Visiting Fellow, “Nitrogen Fixation and its Potential Role in Particle Export,” State Key Laboratory of Marine and Environmental Science, Xiamen University, December 2010.

Invited Speaker, “When I grow up I want to be a ...”, USC Last Lecture Series, November 2010, Columbia, SC.

Invited Speaker, “Life after Graduate School,” Dissertations in Chemical Oceanography (DISCO XXII), sponsored by the National Science Foundation, October 2010, Honolulu, HI.

Invited Speaker, “Dangers of the deep: Possible long-term impacts of harmful algal blooms,” National Geographic Explorer’s Club, September 2010, Columbia, SC.

Invited Speaker, “I want to grow up to be a Marine Scientist”, College of Arts & Sciences New Student Convocation, August 2010, Columbia, SC.

Invited Seminar, “Understanding the Toxin Express: A Historical Record of Rapid Downward Transport of Domoic Acid in Coastal Waters,” University of Texas, February 2010, Austin, Texas.

Invited Speaker, joint with Ken Buesseler, “What goes up must come down... but when or where?” 2009 AGU Chapman Conference on the Biological Pump in the Oceans. September 2009, Brockenhurst, Hampshire, England.

Invited Seminar, “The role of mesoscale eddies on particle export” Institut de Ciències del Mar, CSIC, July 2009 Barcelona, Spain.

Invited Seminar, “Recent advances in understanding the biogeochemical cycling of phosphorus in the oceans,” National Oceanography Centre, University of Southampton, March 2009 Southampton, England.

Invited Seminar, “The biogeochemical cycling of phosphorus in modern day marine systems”, Ocean and Climate Processes Research Group (GEOC) Seminar, Universitat Autònoma de Barcelona, February 2009 Barcelona, Spain.

Invited Tutorial, “Short-lived radionuclides as tracers of particle flux in the oceans: A look towards the future.” ASLO Winter Meeting, January 2009, Nice, France.

Invited Speaker, “Climate Change and the Oceans,” USC’s Citizen’s School of the Environment, April 2008, USC, Columbia, SC.

Invited Speaker, “Transport and fate of the marine biotoxin, domoic acid, in the Santa Barbara Basin, California,” Regional Workshop for Harmful Algal Blooms in California Coastal Waters, April 2008, Costa Mesa, CA.

Invited Speaker, “Phosphorus Cycling in the Coastal Zone,” Distinguished Role Model Lecture, Bodega Marine Laboratory, August 2007, Bodega Bay, CA.

Invited Seminar, “Water Column Phosphorus Cycling in Continental Margins: Insights from sequential extraction and <sup>31</sup>P NMR,” Duke University, February 2007, Durham, NC.

Invited Seminar, “Phosphorus Cycling in a Continental Margin Ecosystem,” University of Georgia, November 2006, Athens, GA.

Invited Speaker, “Particulate phosphorus dynamics in coastal environments,” Society for Advancement of Chicanos and Native Americans in Science (SACNAS) National Conference, October 2006, Tampa, FL.

Invited Seminar, “Particulate Phosphorus Cycling in Continental Margins,” University of Vermont, September 2006, Burlington, VT.

Invited Speaker, Doctoral and Master’s Commencement Address, May 2006, USC.

Invited Seminar, “Open Ocean Eddies Bring Life to the Desert,” Eastern Carolina University, April 2006, Greenville, NC.

Invited Seminar, “Open Ocean Eddies Bring Life to the Desert,” Louisiana State University, March 2006, Baton Rouge, LA.

Invited Seminar, “Eddy Biogeochemistry in the lee of the Hawaiian Islands,” Skidaway Institute of Oceanography, March 2006, Savannah, GA.

Invited Lecture, “The Day After Tomorrow: Global Climate Change over the next century?” Last Lecture Series, Carolina Scholars Association, Oct. 2005, USC.

Invited Seminar, “Phosphorus biogeochemistry and export in marine systems,” Hall-Bonner Lecture Series (Joint between Hampton University, Virginia Institute of Marine Sciences, and Old Dominion University) April 2005, Hampton, VA.

Invited Speaker, “The ocean’s role in global climate change,” AGU Lecturer, National Science Teacher’s Association, April 2004, Atlanta GA.

Invited Speaker, “Nutrient Cycling in the Ocean: Why is it important?,” Celebrating women in science in SC, University of South Carolina, March 2004, Columbia, SC.

Invited Seminar, “Particulate Phosphorus cycling across and oxic/anoxic interface: Implications for past, present, and future changes in nutrient limitation,” Stanford University, March 2004, Stanford, CA.

Invited Seminar, “Particulate Phosphorus cycling across and oxic/anoxic interface: Implications for past, present, and future changes in nutrient limitation,” USGS Water Resources Division, March 2004, Menlo Park, CA.

Invited Seminar, “Phosphorus speciation in the Cariaco Basin,” Fort Johnson Seminar Series, January 2004, Charleston SC.

Invited Speaker, “Moving beyond phosphate: Are plankton consuming (and sinking) more than we think?” Gordon Conference, Chemical Oceanography, August 2003, Tilton NH

Invited Seminar, “A reinterpretation of Carbon and phosphorus cycling in the open ocean”, MIT May 2003, Boston MA.

Invited Seminar, “Are open oceans really biological deserts? A new perspective on phosphorus and carbon cycling in the North Pacific”, University of Connecticut, March 2003, Groton, CT

Invited Seminar, “Atmospheric Deposition of Phosphorus and Trace Metals”, Harvard University, November 2002, Boston, MA

Invited Participant, Coastal ocean processes and observatories: Advancing coastal research, May, 2002 Savannah, GA.

Invited Participant, NOAA National Exploration and Education Workshop, September, 2002 Charleston, SC.

Invited Profile, Minorities in Aquatic Sciences, 2002, <http://www.aslo.org/mas/profiles.html>

Invited Speaker, “‘Export Production’ at Station ALOHA,” 2002 BATS/HOT Time-series Summit, April 2002, Vancouver BC.

Invited Speaker, “Phosphorus cycling in the North Pacific Gyre,” 2000 AGU Fall Meeting, San Diego, CA

Invited Seminar, “Atmospheric cycling and atmospheric deposition of P,” Princeton University, October 2000, Princeton, NJ

Invited Speaker, “Phosphorus cycling in a coastal ecosystem using short-lived radionuclides,” Dissertations Symposium on Chemical Oceanography (DISCO XV), May 1999, Honolulu, Hawaii.

Invited Seminar, “Atmospheric mixing and upper-ocean phosphorus cycling using short-lived radioisotopes,” University of Washington, April 1999, Seattle, Washington.

Invited poster, “Phosphorus cycling in the Gulf of Maine: A Multi-tracer Approach” EPA STAR Symposium, June 1998, Arlington, Virginia.

#### **PROFESSIONAL ACTIVITIES:**

2024 – present Chair, AGU Ewing Medal Committee

2023 – present [Ocean Research Advisory Panel \(ORAP\)](#) advises the Ocean Policy Committee, Congressionally mandated, Secretary-level interagency body to coordinate ocean science and technology and management policy across the federal government.

2022 – present Scientific Advisory Board, [Hypothesis Fund](#)

2021 – present Chair, [Ocean Studies Board](#), National Academies of Sciences, Engineering, and Medicine

2021 – present National Academy of Sciences Committee, Ocean Decade Committee

2021 – present Associate Editor, *JGR-Oceans*

2021 – 2023 Center for Chemical Currencies of a Microbial Planet (C-CoMP), External Advisory Board

2020 – 2021 National Academy of Sciences Committee, Advancing a Systems Approach to Studying the Earth: A Strategy for the National Science Foundation

2018 – present Editorial Committee, *Oceanography Magazine*

2017 – 2022 Chair, International SCOR Committee on Capacity Building.

2017 – 2020 AGU Ocean Sciences, Secretary Marine Geochemistry Elected

2016 – 2022 Member, International SCOR Committee on Capacity Building.

2015 – present Senior Editor, *Limnology & Oceanography Letters*

2015 – 2019 Board Member, Association of Public and Land-grant Universities’ Board on Oceans, Atmosphere, and Climate

2016 – 2019 Member, U.S. National Committee for the Scientific Committee on Oceanic Research (SCOR)

2015 – 2019 Editorial Committee, *Annual Review of Marine Science*

2015 – 2018 Member, SCOR Working Group 146 Radioactivity in the Ocean, 5 Decades Later (RiO5)

2014 Chair, Committee of Visitors review the Division of Ocean Sciences, Integrative Programs Section: Oceanographic Centers, Facilities, and Equipment programs

2013 and 2014 NSF GRF Review Panel

- 2013 – 2019 Board Member, Ocean Studies Board, National Academies of Sciences, Engineering, and Medicine
- 2012 – 2015 At Large Board member (elected), Association for the Sciences of Limnology and Oceanography (ASLO)
- 2011 – 2013 U.S. Carbon Cycle Scientific Steering Group
- 2009 – 2012 Science Advisory Board (SAB) Environmental Protection Agency
- 2008 – 2011 National Science Foundation, Advisory Committee to the Geosciences (AC-GEO)
- 2008 – 2015 Associate Editor, *Limnology and Oceanography Methods*
- 2008 – 2011 Co-Chair, 2011 ASLO Winter Meeting (1900 attendees) San Juan, Puerto Rico, Feb 13<sup>th</sup>-19<sup>th</sup>, 2011.
- 2007 – 2010 Council Member (elected), Chemical Oceanography Representative. *Oceanography Society*
- 2010 Session Chair, Nitrogen Cycling Near Oxygen Minima Zones: Linking Observations to Global Models of Nitrogen Fixation in the Anthropocene, 2010 Ocean Sciences Meeting, Portland Oregon
- 2007 Session Chair, Conundrums and Controversies: What contributes to the vertical flux of carbon in aquatic ecosystems? ASLO Winter Meeting Santa Fe, NM
- 2006 Session Chair, Eddies and Fronts: Mesoscale Physical-Biological-Biogeochemical Linkages in the Open Ocean, ASLO/AGU/TOS Ocean Sciences Meeting, Honolulu HI
- 2006 – 2017 Associate Editor, *Marine Chemistry*
- 2006 – 2007 ASLO 2007 Winter Meeting Organization Committee
- 2006 Committee of Visitors, NSF Geoscience Directorate Ocean Sciences Division.
- 2005 Guest Editor for Marine Chemistry. Includes papers from FATE workshop
- 2004 Chair and Organizer, Future Applications of <sup>234</sup>Th in Aquatic Ecosystems (International Workshop with 45 participants), August 16-19<sup>th</sup>, Woods Hole, MA
- 2004 Session Chair, General Contributions in Oceanography, AGU Fall Meeting,
- 2002 Session Chair, Marine Biogeochemistry, AGU Fall Meeting

Panel Service and Reviewer of numerous proposals each year from the Australia Research Council, NSF (Ocean Division, Hydrology, CAREER, ADVANCE, International Programs), NASA, NOAA, NERC, Science Foundation of Ireland.

Reviewer of manuscripts for Biogeosciences, Continental Shelf Research, Deep-Sea Research I & II, Earth and Planetary Science Letters, Environmental Science & Technology, Journal of Geophysical Research –atmospheres & -oceans, Geochimica et Cosmochimica Acta, Geophysical Research Letters, Global Biogeochemical Cycles, Journal of Marine Research, Limnology and Oceanography, Limnology and Oceanography-Methods, Marine Chemistry, Nature, Nature Geoscience, Science.

### **TEACHING, STUDENT ADVISING, and OUTREACH & SERVICE at USC:**

\*\*Note – Due to my current administrative load, I no longer regularly teach courses in the SEOE

- Even Years: Chemical Oceanography MSCI/GEOL 782  
*Required Graduate Core Course*  
Introduction to Oceanography MSCI 101 Honors  
*Required Undergraduate Core Course*
- Odd Years: Environmental Radiochemistry MSCI/GEOL 524  
*Undergraduate Major Credit Course – developed by CBN*  
Introduction to Oceanography MSCI 101 Non-Honors  
*Required Undergraduate Core Course – developed by CBN*

**Undergraduate Advisor:** I regularly advise 30-35 undergraduates in the SEOE including Honor's College and non-Honor's College students.

**Undergraduate Research Mentor:** I have mentored over 80 undergraduates in my laboratory including more than 20 Magellan Scholars.

Thesis Advisor: Lauren O'Neill, M.S. USC Marine Science Program 2004  
Now an Associate Professor, College of New Jersey  
Melissa Ranhofer, M.S. USC Dept. of Geological Sciences 2005  
Now an Adjunct Professor, Furman University  
Kanchan Maiti, Ph.D. USC Dept. of Geological Sciences 2007  
Now an Associate Professor, LSU  
Gabrielle Lyons, M.S. USC Dept. of Geological Sciences 2008  
Ph.D., Florida A&M  
Suzanne Dubois, M.S. USC Dept. of Geological Sciences 2008  
Now a Research Scientist, 3M Corporation  
Emily Sekula-Wood, Ph.D. UofS Dept of Earth &  
Ocean Sciences 2010  
Now a Research Scientist, Exxon-Mobil, Houston TX  
Chris Burrell, M.S. USC Dept. of Earth & Ocean Sciences, 2011  
Principal chemist for Ecolab in the energy service division at  
Nalco Champion, Houston TX  
Sharmila Pal, M.S. USC Marine Science Program, 2012. Now an  
Instructor at Seattle Community College.  
Annie Opseth, M.S. USC Marine Science Program, 2014. Now an  
Environmental Chemist at Badger Technical Services  
Meryssa Piper, M.S. USC Marine Science Program, 2015. Now a Ph.D.  
Student, University of South Carolina  
Viena Puigcorbe, Ph.D. Universitat Autònoma de Barcelona, Spain (Joint  
with Dr. Pere Masque). Now Associate Scientist at Edith Cowan  
University  
William Schroer, M.S. USC Geological Sciences. 2018 Now a PhD  
student at UGA  
Doug Bell, Ph.D., USC Marine Science Program, 2018 Now a  
Management and Program Analyst at NOAA  
Blair Umhau, Ph.D. USC Marine Science Program, 2019 Physical  
Scientist, U.S. Naval Oceanographic Office  
Caitlyn Sarno, M.S. USC Marine Sciences. 2019 Chemistry and  
Environmental Science Teacher at High School  
Kelly McCabe, M.S. USC Marine Sciences. 2020 Now a  
Biogeochemistry Lab Analyst, CILGR, University of Michigan.  
Curtis Szewcyk, M.S. USC Marine Sciences. 2022  
Biological Scientist at South Florida Water Management District  
Heather Kish, M.S. USC Marine Sciences. 2021  
Environmental Scientist at Anchor QEA  
Gwen Hopper, PhD USC Chemistry. In progress  
Gabi Faton, MS USC Geology. In progress  
Leah Fairbert, MS USC Marine Science. In progress

Postdoctoral Advisor: Elisabet Verdeny Jan 2009 to Nov. 2010  
Now an Instructor at Universitat Autònoma de Barcelona

Clarissa Anderson Oct. 2009 to Dec. 2010  
 Now the Executive Director at Southern California Coastal  
 Ocean Observing System (SCCOOS)  
 Catherine Davis May 2018 to May 2020  
 Assistant Professor NC State

**UNIVERSITY SERVICE (As faculty not as Senior Associate Dean):**

2023 USC Conflict of Interest Committee, VPR  
 2023 Provost Advisory Committee on Interdisciplinary Studies  
 2023 Search Committee Chair, Director Search School of Journalism and Mass  
 Communications  
 2021 - 2022 USC Strategic Planning Committee  
 2017 -2018 Chemical Oceanography Search, USC  
 2017 -2018 Presidential Excellence Initiative Committee, USC  
 2017 Chair, SEOE DBER Faculty Search  
 2016 – 2017 COVE, College of Arts & Sciences, USC  
 2016 – 2017 PFAC Advisory Committee, SEOE  
 2015 – 2016 College of Arts & Sciences Dean Search Committee, USC  
 2015 – 2016 Chair, Tenure and Promotion Committee, EOS, USC  
 2014 – 2017 Member, Undergraduate Committee Marine Science  
 2014 – 2016 SEOE Tenure and Promotion Development Committee, USC  
 2013 – 2015 Member, College of Arts & Sciences Academic Planning Committee, USC  
 2012 – 2015 Vice President for Research, Breakthrough Awards Committee, USC  
 2012 – 2019 McNair Trio Program Mentor, USC  
 2012 – 2019 Honors College Faculty Fellow/Advisor, USC  
 2012 Director School of the Earth, Ocean, and Environment, Search Committee, USC  
 2011 – 2013 Internal Research Advisory Board, Vice President for Research, USC  
 2011 Vice President for Research Search Committee, USC  
 2010 – 2013 *Director*, Marine Science Program, USC  
 2010 College of Arts and Sciences Associate Dean Search Committee, USC  
 2009 – 2010 Chair, Faculty Advisory Committee, School of Earth, Ocean, and Environment,  
 USC  
 2009 – 2022 Hollings Scholarship Advisor, USC  
 2006 – 2014 UDALL Scholarship Committee, USC (Chair 2007-2008)  
 2005 – 2008 *Undergraduate Director*, Marine Science Program, USC  
 2004 – 2012 National Society of Collegiate Scholars, USC Faculty Advisor  
 2003 – 2010 S.C. Governor School Mentor (on sabbatical Fall 2008- Sp. 2009)  
 2002 – 2018 Team Leader and Organizer, ScienceQuest  
 2004 – 2008 Academic Responsibilities Committee, USC  
 2003 – 2008 MSPHD’s Mentor (National program to increase minority M.S. and Ph.D.  
 participation in Earth Science)  
 2002 – 2008 Women’s Soccer Club, Faculty Advisor  
 2002 – 2007 Upward Bound Mentor (under-represented high schooler works in my lab for a  
 few weeks in the summer)  
 2002 – 2003 SCAMP undergraduate research advisor (South Carolina Alliance for Minority  
 Participation): Tiffany Hall (2002 Outstanding Researcher), Susan Morvey  
 (2003)  
 2000 & 2001 Head Judge, Pacific High School Science Symposium