Dr. Ken O. Buesseler, *Senior Scientist*
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Education

B.A. Biochemistry and Cell Biology cum laude, University of California at San Diego, 1981.
Ph.D. Marine Chemistry, Massachusetts Institute of Technology/Woods Hole Oceanographic Institution Joint Program, 1986.

Professional Experience

- Lab Technician, Scripps Institute of Oceanography, part-time, Sept. 1980 to Aug. 1981.
- M.I.T. Research Assistantship, Massachusetts Institute of Technology, Fall 1981 to Spring 1983.
- Graduate Research Assistant, Woods Hole Oceanographic Institution, Spring 1983 to Fall 1986.
- Post-Doctoral Investigator, Woods Hole Oceanographic Institution, Sept. 1986 to Feb. 1987.
- Visiting Investigator, Woods Hole Oceanographic Institution, Feb. 1987 to Sept. 1988.
- Assistant Scientist, Woods Hole Oceanographic Institution, Sept. 1988 to Sept. 1992.
- Adjunct Associate Scientist, Bermuda Biological Station for Research, Jan. 1992 to Jan. 1996.
- Associate Scientist, Woods Hole Oceanographic Institution, Sept. 1992 to March 1996.
- Associate Program Director, National Science Foundation, Ocean Sciences Division/Chemical Oceanography Program, Sept. 1996 to Sept. 1998.
- Associate Scientist w/Tenure, Woods Hole Oceanographic Institution, March 1996 to Sept. 2000.
- Executive Scientist, US JGOFS Planning and Data Management Office, Dec. 1998 to Oct. 2005.
- Department Chair, Marine Chemistry and Geochemistry, Woods Hole Oceanographic Institution, May 2003 to Sept. 2007.
- Senior Scientist, Woods Hole Oceanographic Institution, Sept. 2000 to present.
- Director, Center for Marine and Environmental Radioactivity, Jan. 2013 to present.

Professional Affiliations & Awards

- Member, Geochemical Society, 1982 to 1993.
- Editorial Board, Journal of Environmental Radioactivity, 1987 to 1993.
- Member, American Geophysical Union, 1984 to present.
- Member, The Oceanography Society, 1989 to present.
- Chair, Scientific Committee on Oceanic Research Working Group 116, Sediment Trap and 234Th Methods for Carbon Export Flux Determination, 2000 to 2007.
- Fellow, Ocean Life Institute, WHOI 2001 to 2003.
- Directors Award for Collaborative Integration, US NSF, 2007.
- Paul M. Fye Chair, WHOI, 2008 to 2013.
- Fellow, American Geophysical Union, 2009.

• Times Higher Education top cited scientist in Oceanography, 2000 to 2010.
• Foreign member of the Royal Netherlands Academy of Arts and Sciences, 2013 to present.
• Japan Society for the Promotion of Science Short term "S" Fellowship (highest level fellowship for overseas researchers), 2013.
• Co-Chair, Scientific Committee on Oceanic Research (SCOR) Working Group Radioactivity in the Ocean, 5 decades later (RiO5), with Minhan Dai of Xiamen University, China
• Elected a Fellow of the American Association for the Advancement of Science (AAAS), 2018.
• Awarded the 2019 John H. Martin Award with co-authors by Association for the Sciences of Limnology and Oceanography for Boyd et al., (2000). A mesoscale phytoplankton bloom in the polar Southern Ocean stimulated by iron fertilisation. *Nature*, 407, 695-702.
• 2021 NASA Robert H. Goddard Honor Award- EXPORTS team. D. Siegel & others, including K. Buesseler
• 2022 Geochemistry Fellow, Geochemical Society and the European Association of Geochemistry

Research Interests

- Upper-ocean biogeochemical cycles and fluxes of carbon and associated elements as part of the ocean biological pump.
- Improvement in methods to quantify and assess suspended and sinking particles abundances, sources and transport in the ocean.
- Use of man-made and naturally occurring radionuclides to study ocean processes.
- Assessment of radioactivity associated with the releases from Chernobyl, Fukushima, the Marshall Islands and other localized sources.
- Assessment of the ocean's role in regulating climate and to what degree ocean carbon dioxide removal might be enhanced in a responsible, transparent and quantifiable way.
- Education of public audiences regarding radioactivity in the oceans and training of the next generation of ocean radiochemists

Research Publications (Most recent to oldest)

216 Karthäuser, C., Mass, A., Niimi, Y., Blanco-Bercial, L., Wankel, S.D., Buesseler, K.O., Sievert, S.M. (2026) Fecal pellet packaging enhances marine carbon sequestration. *Limnology and Oceanography*, 71(3), e70328. DOI: 10.1002/lno.70328

215 Buesseler et al. (2026) The case for ocean iron fertilization field trials. *Dialogues on Climate Change,* online. DOI: 10.1177/29768659261420631

214 Siegel D.A. et al. (2025) Assessing marine snow dynamics during the demise of the North Atlantic spring bloom using in situ particle imagery. *Global Biogeochemical Cycles*, 39(11), e2025GB008676. DOI: doi.org/10.1029/2025GB008676

213 Song, Y., Omand, M., Durkin, C., Estapa, M., Buesseler, K. (2025) GelCam: Visualizing sinking particle flux via a polyacrylamide gel-based sediment trap. *Limnology and Oceanography*, preprint. DOI: doi.org/10.1002/lom3.10724.

212 Stephens, B.M., Roca-Martí, M., Maas, A., et al. (2025) An upper-mesolelagic-zone carbon budget for the subarctic North Pacific. *Biogeosciences*, 22, 3301-3328. DOI: doi.org/10.5194/bg-22-3301-2025.

211 Traylor, S., Nicholson, D.P., Clevenger, S.J., Buesseler, K.O., D'Asaro, E., Lee, C.M. (2025) Autonomous observations enhance our ability to observe the biological carbon pump across diverse carbon export regimes. *Limnology and Oceanography*, 9999, 1-14. DOI: doi.org/10.1002/lno.70002.

210 Buesseler, K.O, Bianchi, D., Chai, F. et al (2024) Next steps for assessing ocean iron fertilization for marine carbon dioxide removal. *Frontiers: Climate*, 6:1430957. DOI: doi.org/10.3389/fclim.2024.1430957

209 Karthäuser, C., Fucile, P.D., Maas, A.E. et al. (2024) RotoBOD - quantifying oxygen consumption by suspended particles and organisms. *Environmental Science & Technology*, 50(20), 8760-8770. DOI: doi.org/10.1021/acs.est.4c03186

208 Taqieddin, A., Sarrouf, S., Ehsan, M.F., Buesseler, K., Alshawabkeh, A. (2024) Electrochemical ocean iron fertilization and alkalinity enhancement approach toward CO2 sequestration. *npj Ocean Sustainability*, 3:28. DOI: doi.org/10.1038/s44183-024-00064-8

207 Clevenger, S.J., Benitez-Nelson, C.R., Roca-Martí, M., Bam, W., Estapa, M., Kenyon, J.A., Pike, S., Resplandy, L., Wyatt, A., Buesseler, K.O. (2024) Carbon and silica fluxes during a declining North Atlantic spring bloom as part of the EXPORTS program. *Marine Chemistry*, 258, 104346. DOI: 10.1016/j.marchem.2023.104346

206 Johnson et al. including K. Buesseler (2023) Assessment of oceanographic conditions during the North Atlantic Export Processes in the Ocean from RemoTe Sensing (EXPORTS) field campaign. *Progress in Oceanography*, 220, 103170. DOI: https://doi.org/10.1016/j.pocean.2023.103170

205 Graff et al. including Buesseler, K. (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*, 11(1), 00112. DOI: https://doi.org/10.1525/elementa.2022.00112

204 Wojtal P.K., Doherty, S.C., Shea, C.H., Popp, B.N., Benitez-Nelson, C.R., Buesseler, K.O., Estapa, M.L., Roca-Marti, M., Close, H.G. (2023) Deconvolving mechanisms of particle flux attenuation using nitrogen isotope analyses of amino acids. *Limnology and Oceanography*, 68:8, 1949-1963. DOI: https://doi.org/10.1002/lno.12398

203 Rypina, I., Macdonald, A., Yoshida, S., Manning, J., Gregory, M., Rozen, M., Buesseler, K. (2022) Spreading Pathways of Pilgrim Nuclear Power Station Wastewater in and around Cape Cod Bay: Estimates from Ocean Drifter Observations. *Journal of Environmental Radioactivity,* 255, 107039.

202 Buesseler, K., Leinen, M., Ramakrishna, K. (2022) Removing carbon dioxide: first, do not harm. *Nature Correspondence*, 606, 864. doi: https://doi.org/10.1038/d41586-022-01774-0

201 Ceballos-Romero, E., Buesseler, K.O., Villa-Alfageme, M., (2022) Revisiting five decades of ^{234}Th data: a comprehensive global oceanic compilation. *Earth System Science Data Discussions,* 1-64. DOI: 10.5194/essd-2021-259.

200 Therrold, S. et al including K. Buesseler (2021) Twilight Zone Observation Network: A distributed observation network for sustained, real-time interrogation of the ocean's twilight zone. *Marine Technology Society Journal*, 55(3). DOI: 10.4031/MTSJ.55.3.46

199 Ceballos-Romero, Elena; Buesseler, Ken O; Muñoz-Nevado, Carlos; Villa-Alfageme, María (2021): More than 50 years of Th-234 data: a comprehensive global oceanic compilation. *PANGAEA*, https://doi.pangaea.de/10.1594/PANGAEA.918125.

198 National Academies of Sciences, Engineering, and Medicine. *Authors: Doney, S.C., Buck, H., Buesseler, K., Iglesias-Rodriguez, M.D., Moran, K., Oschlies, A., Renforth, P., Roman, J., Sant, G.N., Siegel, D.A., Webb, R., White, A.* (2021) A Research Strategy for Ocean-based Carbon Dioxide Removal and Sequestration. Washington, DC: The National Academies Press. https://doi.org/10.17226/26278.

197 Durkin, C. Buesseler, K.O., Cetinic, I., Estapa, M., Kelly, R.P., Omand, M. (2021) A visual tour of carbon export by sinking particles. *Global Biogeochemical Cycles*, 35, e2021GB006985. DOI: 10.1029/2021GB006985.

196 Siegel, D., et al including Buesseler, K.O. (2021) An operational overview of the EXport Processes in the Ocean from RemoTe Sensing (EXPORTS) Northeast Pacific Field Deployment. *Elementa*, 9(1), 00107. DOI: 10.1525/elementa.2020.00107.

195 Roca-Marti, M., Benitez-Nelson, C.R., Umhau, B.P., Wyatt, A.M., Clevenger, S.J., Pike, S., Horner, T.J., Estapa, M.L., Resplandy, L., Buesseler, K.O. (2021) Concentrations, ratios and sinking fluxes of major bioelements at Ocean Station Papa (pdf). *Elementa*, 9(1), 00166. DOI: 10.1525/elementa.2020.00166.

194 Estapa, M., Buesseler, K., Durkin, C.A., Omand, M., Benitez-Nelson, C.R., Roca-Marti, M., Breves, E., Kelly, R.P., Pike, S. (2021) Biogenic sinking particle fluxes and sediment trap collection efficiency at Ocean Station Papa (pdf). *Elementa*, 9(1), 00122. DOI: 10.1525/elementa.2020.00122.

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177 Hayes, C.T., Black, E.E., Anderson, R.F., Barkaran, M., Buesseler, K.O., Charette, M.A. et al. (2018) Flux of particulate elements in the North Atlantic Ocean constrained by multiple radionuclides. *Global Biogeochemical Cycles*, 32 (12), 1738-1758.

176 Bisson, K.M., Siegel, D.A., DeVries, T., Cael, B.B., Buesseler, K.O. (2018) How data set characteristics influence ocean carbon export models. *Global Biogeochemical Cycles*, 32 (9), 1312-1328.

175 Schlitzer, R., and others, including K.O. Buesseler (The GEOTRACES Group) (2018). The GEOTRACES Intermediate Data Product 2017.*Chemical Geology*, 493, 210-223.

174 Buesseler, K., M.A. Charette, S. Pike, P. Henderson, and L. Kipp (2018). Lingering radioactivity at the Bikini and Enewetak Atolls. *Science of the Total Environment*, 621, 1185-1198.

173 Black, Erin, Ken Buesseler, Steven Pike, and Phoebe Lam (2018). 234Th as a tracer of particulate export and remineralization in the Southeastern Tropical Pacific. *Marine Chemistry*,201, 35-50.

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