

CURRICULUM VITAE

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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, September 1980 to August 1981.
- M.I.T. Research Assistantship, Massachusetts Institute of Technology, Fall 1981 to Spring 1983.
- Graduate Research Assistant, WHOI, Spring 1983 to Fall 1986.
- Post-Doctoral Investigator, WHOI, September 1986 to February 1987.
- Visiting Investigator, WHOI, February 1987 to September 1988.
- Assistant Scientist, WHOI, September 1988 to September 1992.
- Adjunct Associate Scientist, Bermuda Biological Station for Research, Inc., January 1992 to January 1996.
- Associate Scientist, WHOI, September 1992 to March 1996.
- Associate Program Director, National Science Foundation, Ocean Sciences Division/Chemical Oceanography Program, September 1996 to September 1998.
- Associate Scientist w/Tenure, WHOI, March 1996 to September 2000.
- Executive Scientist, US JGOFS Planning and Data Management Office, Dec. 1998 to October 2005.
- Department Chair, Marine Chemistry and Geochemistry, WHOI, May 2003 to September 2007.
- Senior Scientist, WHOI, September 2000 to present.
- Director, Center for Marine and Environmental Radioactivity, January 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, 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 present.
- 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.

Research Interests

- Upper-ocean biogeochemical cycles and POC export fluxes.
- Studies of scavenging and particle cycling processes using man-made and naturally occurring radionuclides.
- Geochemical studies of the Black Sea using Chernobyl radiotracers.
- Plutonium isotopes and the behavior of fallout Pu in seawater and groundwater.
- Use of radium isotopes and other tracers of submarine groundwater discharge.

Publications

1. Buesseler, K. O., B. Brown and E. Borchardt (1980). A Limnological Investigation of Lake Itasca. *Itasca Biological Station publication* #1384.
2. Buesseler, K. O., G. Benoit and E. R. Sholkovitz (1985). A pore water study of plutonium in a seasonally anoxic lake. *Journal of Environmental Radioactivity*, **2**, 283–292.
3. Buesseler, K. O., H. D. Livingston and E. R. Sholkovitz (1985/1986). $^{239,240}\text{Pu}$ and excess ^{210}Pb inventories along the shelf and slope of the northeast U.S.A. *Earth and Planetary Science Letters*, **76**, 10–22.
4. Buesseler, K. O. (1986). [Plutonium isotopes in the North Atlantic](#). Ph.D. Thesis, Massachusetts Institute of Technology/Woods Hole Oceanographic Institution Joint Program in Oceanography, 220 pp.
5. Kempe, S., H. Nies, V. Ittekkot, E. T. Degens, K. O. Buesseler, H. D. Livingston, S. Honjo, B. J. Hay, S. J. Manganini, E. Izdar and T. Konuk (1987). Comparison of Chernobyl nuclide deposition in the Black Sea and in the North Sea. In: *Particle Flux in the Ocean* (E. T. Degens, E. Izdar and S. Honjo, eds.), Mitt. Geol.-Palaont. Inst., Univ. Hamburg, Hamburg, Germany. SCOPE UNEP Sonderband, Vol. **62**, pp. 165–178.
6. Buesseler, K. O. and J. Halverson (1987). [The mass spectrometric analysis of fallout \$^{239}\text{Pu}\$ and \$^{240}\text{Pu}\$ in marine samples](#). *Journal of Environmental Radioactivity*, **5**(6), 425–444.
7. Buesseler, K. O., H. D. Livingston, S. Honjo, B. J. Hay, S. J. Manganini, E. T. Degens, V. Ittekkot, E. Izdar and T. Konuk (1987). [Chernobyl radionuclides in a Black Sea sediment trap](#). *Nature*, **329**, 825–828.
8. Buesseler, K. O. and E. R. Sholkovitz (1987). The geochemistry of fallout plutonium in the North Atlantic: I. A pore water study in shelf, slope and deep-sea sediments. *Geochimica et Cosmochimica Acta*, **51**, 2605–2622.

9. Buesseler, K. O. and E. R. Sholkovitz (1987). The geochemistry of fallout plutonium in the North Atlantic: II. $^{240}\text{Pu}/^{239}\text{Pu}$ ratios and their significance. *Geochimica et Cosmochimica Acta*, **51**, 2623–2637.
10. Buesseler, K. O. (1987). [Chernobyl: Oceanographic studies in the Black Sea](#). *Oceanus*, **30**(3), 23–30.
11. Anderson, R. A., R. F. Bopp, K. O. Buesseler and P. E. Biscaye (1988). Mixing of particles and organic constituents in sediments from the continental shelf and slope off Cape Cod: SEEP-I Results. *Continental Shelf Research*, **8**(5-7), 925–946.
12. Livingston, H. D., K. O. Buesseler, E. Izdar and T. Konuk (1988). [Characteristics of Chernobyl fallout in the southern Black Sea](#). In: *Radionuclides: A Tool for Oceanography* (J. C. Guary, P. Guegueniat and R. J. Pentreath, eds.), Elsevier, Essex, U.K., pp. 204–216.
13. Buesseler, K. O., S. A. Casso, M. C. Hartman and H. D. Livingston (1990). [Determination of fission-products and actinides in the Black Sea following the Chernobyl accident](#). *Journal of Radioanalytical and Nuclear Chemistry, Articles*, **138**(1), 33–47.
14. Buesseler, K. O., H. D. Livingston, S. Honjo, B. J. Hay, T. Konuk and S. Kempe (1990). Scavenging and particle deposition in the southwestern Black Sea--evidence from Chernobyl radiotracers. *Deep-Sea Research*, **37**(3), 413–430.
15. Cochran, J. K., T. McKibbin-Vaughan, M. M. Dornblaser, D. Hirschberg, H. D. Livingston and K. O. Buesseler (1990). [\$^{210}\text{Pb}\$ scavenging in the open ocean](#). *Earth and Planetary Science Letters*, **97**, 332–352.
16. Druffel, E. R. M., L. L. King, R. A. Belastock and K. O. Buesseler (1990). Growth rate of a deep-sea coral using ^{210}Pb and other isotopes. *Geochimica et Cosmochimica Acta*, **54**(5), 1493–1500.
17. Buesseler, K. O. (1991). [Do upper-ocean sediment traps provide an accurate record of particle flux? \(PDF\)](#) *Nature*, **353**, 420–423.
18. Buesseler, K. O., H. D. Livingston and S. A. Casso (1991). [Mixing between oxic and anoxic waters of the Black Sea as traced by Chernobyl cesium isotopes](#). *Deep-Sea Research*, **38**(Suppl. 2), S725–S745.
19. Sanchez, A. L., J. Gastaud, V. Noshkin and K. Buesseler (1991). plutonium oxidation states in the southwestern Black Sea: Evidence regarding the origin of the cold intermediate layer. *Deep-Sea Research*, **38**(Suppl. 2), S845–S854.
20. Buesseler, K. O., H. D. Livingston and S. A. Casso (1991). Ruthenium-106 in the Black Sea. In: *Black Sea Oceanography* (E. Izdar and J.W. Murray, eds.), Kluwer Academic Publishers, Netherlands, pp. 229–243.

21. Polikarpov, G. G., H. D. Livingston, L. G. Kulebakina, K. O. Buesseler, N. A. Stokozov and S. A. Casso (1992). Inflow of Chernobyl ^{90}Sr to the Black Sea from the Dnepr River. *Estuarine, Coastal and Shelf Science*, **34**, 315–320.
22. Buesseler, K.O., J.K. Cochran, M.P. Bacon, H.D. Livingston, S.A. Casso, D. Hirschberg, M.C. Hartman and A.P. Fleer (1992). Determination of thorium isotopes in seawater by non-destructive and radiochemical procedures. *Deep-Sea Research*, **39**(7/8), 1103–1114.
23. Buesseler, K. O., M. P. Bacon, J. K. Cochran and H. D. Livingston (1992). [Carbon and nitrogen export during the JGOFS North Atlantic bloom experiment estimated from \$^{234}\text{Th}\$: \$^{238}\text{U}\$ disequilibria](#). *Deep-Sea Research*, **39**(7/8), 1115–1137.
24. Moran, S. B. and K. O. Buesseler (1992). Short residence time of colloids in the upper ocean off Bermuda. *Nature*, **359**, 221–223.
25. Keafer, B. A., K. O. Buesseler and D. M. Anderson (1992). Burial of living dinoflagellate cysts in estuarine and nearshore sediments. *Marine Micropaleontology*, **20**, 147–161.
26. Buesseler, K. O. (1993). Thermal ionization mass spectrometry. In: Development and evaluation of alternative radioanalytical methods, including mass spectrometry for marine materials, Proceedings of an Advisory Group Meeting, Monaco, 6-9 June 1989, *International Atomic Energy Agency*, IAEA-TECDOC-683, pg. 45-52.
27. Cochran, J. K., K. O. Buesseler, M. P. Bacon and H. D. Livingston (1993). Thorium isotopes as indicators of particle dynamics in the upper watercolumn: Results from the JGOFS North Atlantic Bloom Experiment. *Deep-Sea Research*, **40**(8), 1569-1595.
28. Moran, S. B., and K. O. Buesseler (1993). Size-fractionated ^{234}Th in continental shelf waters off New England: implications for the role of colloids in oceanic trace metal scavenging. *Journal of Marine Research*, **51**, 893-922.
29. Polikarpov, G. G., K. O. Buesseler, S. A. Casso, L. G. Kulebakina, H. D. Livingston and N. A. Stokosov (1993). Discharge of ^{90}Sr from 1986-1990 with the waters of Dnepr River to the Black Sea. *Aquatic Resources*, **20**(3), 387-390 (in Russian).
30. Buesseler, K. O. and C. R. Benitez (1994). Determination of mass accumulation rates and sediment radionuclide inventories in the deep Black Sea. *Deep-Sea Research Part I*, **41**(11/12):1605-1615.
31. Buesseler, K. O., H. D. Livingston, L. Ivanov, and A. Romanov (1994). [Stability of the Oxic/Anoxic Interface in the Black Sea](#). *Deep-Sea Research Part I*, **41**(2), 283-296.
32. Buesseler, K. O., A. F. Michaels, D. A. Siegel, A. H. Knap (1994). A Three Dimensional Time-Dependent Approach to Calibrating Sediment Trap Fluxes. *Global Biogeochemical Cycles*, **8**(2), 179-193.

33. Hartman, M. C. and K. O. Buesseler (1994). [Adsorbers for In-Situ Collection and At-Sea Gamma Analysis of Dissolved Thorium-234 in Seawater](#). *WHOI Technical Report*, WHOI-94-15.
34. Michaels, A. F., N. R. Bates, K. O. Buesseler, C. A. Carlson, and A. H. Knap (1994). Carbon System Imbalances in the Sargasso Sea. *Nature*, **372**, 537-540.
35. Waser, N. A., A. P. Fler, T. R. Hammar, K. O. Buesseler and M. P. Bacon (1994). Determination of Natural ^{32}P and ^{33}P in Rainwater, Marine Particles and Plankton by Low-Level Beta Counting. *Nuclear Instruments and Methods in Physics Research, A*, **338**, 560-567.
36. Buesseler, K. O., J. A. Andrews, M. C. Hartman, R. Belastock, and F. Chai (1995). [Regional Estimates of the Export Flux of Particulate Organic Carbon Derived from Thorium-234 During the JGOFS EQPAC Program](#). *Deep-Sea Research Part II*, **42**(2-3), 777-804.
37. Cochran, J. K., D. J. Hirschberg, H. D. Livingston, K. O. Buesseler, and R. M. Key (1995). [Natural and Anthropogenic Radionuclide Distributions in the Nansen Basin, Arctic Ocean: Scavenging Rates and Circulation Timescales](#). *Deep-Sea Research Part II*, **42**(6), 1495-1517.
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39. Murnane, R. J., J. K. Cochran, K. O. Buesseler, and M. P. Bacon (1996). Least-squares Estimates of Thorium, Particle, and Nutrient Cycling Rate Constants from the JGOFS North Atlantic Bloom Experiment. *Deep-Sea Research Part I*, **43**(2), 239-258.
40. Buesseler, K.O. and H.D. Livingston (1996). [Natural and Man-Made Radionuclides in the Black Sea](#). In: *Radionuclides in the Oceans, Inputs and Inventories*, P. Guéguéniat, P. Germain and H. Métivier, eds. Institut de Protection et de Sureté Nucleaire, Cherbourg, France, 199-217.
41. Buesseler, K., J. Bauer, R. Chen, T. Eglinton, Ö. Gustafsson, W. Landing, K. Mopper, S. B. Moran, P. Santschi, R. Vernon Clark, M. Wells (1996). [An Intercomparison of Cross-Flow Filtration Techniques Used for Sampling Marine Colloids: Overview and Organic Carbon Results](#). *Marine Chemistry*, **55**(1/2), 1-31.
42. Gustafsson, Ö., K. O. Buesseler, and P. M. Gschwend (1996). On the Integrity of Cross-Flow Filtration for Marine Organic Colloids. *Marine Chemistry*, **55**(1/2), 93-112
43. Buesseler, K.O. and H.D. Livingston (1997). Time-series profiles of ^{134}Cs , ^{137}Cs and ^{90}Sr in the Black Sea. NATO ARW on "Sensitivity of North Sea, Baltic Sea and Black Sea to Anthropogenic and Climatic Changes" (E. Ozsoy and A. Mikaelyan, eds.) *Kluwer Academic Publishers*, The Netherlands, 239-251.

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45. Buesseler, K. O. (1997). [The Isotopic Signature of Fallout Plutonium in the North Pacific](#). *Journal of Environmental Radioactivity*, **36** (1), 69-83.
46. Gustafsson, Ö., P.M. Gschwend and K.O. Buesseler (1997). Settling Removal Rates of PCBs into the Northwestern Atlantic Derived from ^{238}U - ^{234}Th Disequilibria. *Env. Sci. and Tech.*, **31**, 3544-3550.
47. Buesseler, K.O. (1998). [The de-coupling of production and particulate export in the surface ocean](#). *Global Biogeochemical Cycles*, **12** (2), 297-310.
48. Benitez-Nelson, C. and K. O. Buesseler (1998). New techniques for the measurement of ^{32}P and ^{33}P activities in rain and seawater. *Analytical Chemistry*, **70** (1), 64-72.
49. Dai, M., K. O. Buesseler, P. Ripple, J. Andrews, R. Belostock, O. Gustafsson and S. B. Moran (1998). Evaluation of two cross-flow ultrafiltration membranes for their ability to isolate marine organic colloids. *Marine Chemistry*, **62**, 117-136.
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51. Buesseler, K. O., L. Ball, J. Andrews, C. Benitez-Nelson, R. Belostock, F. Chai and Y. Chao (1998). [Upper Ocean Export of Particulate Organic Carbon in the Arabian Sea derived from Thorium-234](#). *Deep-Sea Research Part II*, Arabian Sea Volume, **45** (10-11), 2461-2487.
52. Lee, C., D. W. Murray, R. T. Barber, K. O. Buesseler, J. Dymond, J. I. Hedges, S. Honjo, S. J. Manganini, J. Marra, C. Moser, M. L. Peterson, W. L. Prell and S. G. Wakeham (1998). Particulate organic carbon fluxes: Results from the U.S. JGOFS Arabian Sea Process Study. *Deep-Sea Research Part II*, Arabian Sea Volume, **45** (10-11), 2489-2501.
53. Stokozov, N.A. and K.O. Buesseler (1999). Mixing Model for the NW Black Sea Using Sr-90 and Salinity as Tracers. *J. Environ. Radioactivity*, **43** (2), 173-186.
54. Stanev, E., K. O. Buesseler, J. V. Staneva, and H. D. Livingston (1999). The fate of Chernobyl ^{90}Sr in the Black Sea: validation of numerical simulations against observed data. *J. Environ. Radioactivity*, **43** (2), 187-204.
55. Benitez-Nelson, C. and K. Buesseler. (1999). Temporal variability of inorganic and organic phosphorus in the coastal ocean. *Nature*, **398**, 502-505.

56. Benitez-Nelson, C. and K. Buesseler. (1999). ^{32}P , ^{33}P , ^7Be and ^{210}Pb as Tracers of Aerosol Residence Times and Stratosphere/Troposphere Exchange. *J. Geophys. Res.*, **104** (D9), 11,745-11,754.
57. Staneva, J., K.O. Buesseler, E. Stanev, and H.D. Livingston (1999). Application of radiotracers to study Black Sea circulation: Validation of numerical simulations against observed weapon testing and Chernobyl ^{137}Cs tracers. *J. Geophys. Res.* **104** (C5), 11,099-11,114.
58. Bidigare, R.R., Hanson, K.L., Buesseler, K.O., Wakeham, S.G., Freeman, K.H., Pancost, R.D., Millero, F.J., Steinberg, P., Popp, B.N., Latasa, M., Landry, M.R. and E.A. Laws (1999). Iron-stimulated changes in ^{13}C fractionation and export by equatorial Pacific phytoplankton. *Paleoceanography*, vol. **14**, No. 5, 589-595.
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