

S. Bradley Moran

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I. PERSONAL AND PROFESSIONAL INFORMATION

Personal:

Date of Birth: September 30, 1962.
Place of Birth: Sault Ste. Marie, Ontario, Canada
Citizenship: U.S. and Canadian citizenship.

Education:

Ph.D., 1991 Dalhousie University, Oceanography.
B.Sc., 1985 Concordia University, Chemistry, Industrial Cooperative Education Program.

Professional Appointments:

Assistant Vice President for Research Administration, URI, 2008 to present.
IAEA Expert, Marine Radiochemistry, Monaco, 2007; Mumbai, 2008; Jakarta, 2009.
Co-Editor, Encyclopedia of Environmental Sciences from A to Z, Wiley-VCH (due 2009).
Editorial Advisory Board, CLEAN – Soil, Air, Water, 2007 - 2010.
Program Coordinator, University of Rhode Island MBA-MO dual degree, 2007 to present.
Visiting Scientist, Alfred-Wegener Institute, Bremerhaven, Germany, 2007.
Adjunct Scientist, Bermuda Institute of Ocean Sciences, 2006 to present.
Adjunct Faculty, University of Tennessee, 2003 - 2006.
Assistant Professor to Full Professor, University of Rhode Island, 1993 - 2003.
Postdoctoral Scholar, Woods Hole Oceanographic Institution, 1991- 1993.

Areas of Research Specialization:

Marine geochemistry; application of U-series and artificial radionuclides as tracers of scavenging, particle cycling and carbon export; marine colloids; Arctic oceanography; coastal groundwater supply; deep-water circulation in the modern and last glacial Atlantic.

Awards and Fellowships:

URI Exceptional Salary Increase, 1997.
Office of Naval Research Young Investigator Award, FY1996.
Woods Hole Oceanographic Institution Postdoctoral Scholarship, 1991 - 1992.
NSERC of Canada Postdoctoral Fellowship, 1990 - 1992.
Dalhousie University Graduate Fellowship, 1985 - 1990.

II. UNIVERSITY TEACHING AND ADVISING EXPERIENCE

I have over 15 years of University instructional experience teaching undergraduate and graduate courses and advising graduate students. An ongoing objective of my teaching is to make connections between classroom instruction, advising, and research.

Undergraduate and Graduate Teaching Experience

Semester	Course No.	Course Title	Credit	Contact Hours	No. of Students	Sole Instructor/ Team Taught
Spring 1995	OCG 694C	Marine Particles	3	2.5 hrs/wk	5	Sole
Spring 1996	OCG 694F	Radionuclides in the Ocean	3	2.5 hrs/wk	2	Sole
Spring 1997	OCG 694C	Marine Particles	3	2.5 hrs/wk	4	Sole
Fall 1997	OCG 694F	Radionuclides in the Ocean	3	2.5 hrs/wk	2	Sole
Spring 1999	OCG 640	Marine Particles	3	2.5 hrs/wk	5	Sole
Spring 2000	OCG 694F	Radionuclides in the Ocean	3	2.5 hrs/wk	3	Sole
Spring 2001	OCG 451	Oceanographic Science	3	2.5 hrs/wk	25	Team Taught
Spring 2002	OCG 451	Oceanographic Science	3	2.5 hrs/wk	33	Team Taught
Spring 2003	OCG 451	Oceanographic Science	3	2.5 hrs/wk	21	Team Taught
Spring 2003	OCG 640	Marine Particles	3	2.5 hrs/wk	3	Sole
Spring 2004	OCG 451	Oceanographic Science	3	2.5 hrs/wk	25	Team Taught
Spring 2004	OCG 694F	Radionuclides in the Ocean	3	2.5 hrs/wk	3	Sole
Spring 2005	OCG 451	Oceanographic Science	3	2.5 hrs/wk	28	Team Taught
Spring 2006	OCG 451	Oceanographic Science	3	2.5 hrs/wk	28	Team Taught
Fall 2006	OCG 694	Radionuclides in the Ocean	3	2.5 hrs/wk	2	Sole
Spring 2008	OCG 451	Oceanographic Science	3	2.5 hrs/wk	22	Team Taught
Spring 2009	OCG 451	Oceanographic Science	3	2.5 hrs/wk	30	Team Taught

Graduate Student Advising Experience (*denotes year student graduated)

Student	Degree Thesis or Non-Thesis Option	Year Graduated/Expected
Jennifer Greenamoyer	M.Sc., Oceanography, GSO	1995*
Steven Pike	M.Sc., Oceanography, GSO	1998*
Matthew Charette	Ph.D., Oceanography, GSO	1998*
Margaret Scott	M.Sc., Oceanography, GSO	1998*
Roger Kelly	M.Sc., Oceanography, GSO	2001*
Ozge Kocabayoglu	M.O., Oceanography, GSO Non-Thesis Option	2002*
Sarah Weinstein	Ph.D., Oceanography, GSO	2003*

Elly Speicher	M.Sc., Oceanography, GSO	2005*
Andrea Hougham	M.Sc., Oceanography, GSO	2006*
Kate Hagstrom	Ph.D., Oceanography, GSO	2006*
Haley Brew	M.Sc., Oceanography, GSO	2008*
Scott Stachelhaus	Ph.D., Oceanography, GSO	2011
Matthew Baumann	M.Sc., Oceanography, GSO	2010

Service on Graduate Student Committees

Student	Committee	Year
Robert Burgess	Ph.D., Oceanography, GSO, Ph.D. Comprehensive Exam	1994
Robert Griffin	M.Sc., Oceanography, GSO, Thesis Committee Member	1995
Barbara Bergen	Ph.D., Oceanography, GSO, Thesis Committee Member	1996
Orjan Gustafsson	Ph.D., MIT-WHOI Joint Program, Thesis Committee Member	1997
Catherine Lalande	Ph.D., University of Tennessee, Thesis Committee Member	2003
David Amiel	Ph.D., SUNY, Stony Brook, Thesis Defense External Examiner	2006

Course Development:

1. 1995, Developed new URI course entitled "Marine Particles" (OCG 640).
2. 1996, Developed new URI course entitled "Radionuclides in the Oceans" (OCG 694).
3. 2001-09, Continued development and updating of Oceanographic Science (OCG 451).

Other teaching and student advising not covered above:

1. OCG 493 (3 credits) Steven Pike - undergraduate research, Fall 1994
2. Temporary Advisor - Wendy Woods, Ph.D. candidate, Fall 1994-Fall 1995.
3. OCG 494 (3 credits) Steven Pike - undergraduate research, Spring 1995.
4. Temporary Advisor - Paul Hartmann, M.Sc. candidate, Fall 1996-Spring 1997.
5. NSF-REU, SURFO student Carrie Wicklund, Summer 1996.
6. Instructional Development Program - attended Fall 1996.
7. Temporary Advisor - Peter Egli, M.Sc. candidate, Fall 1997-Spring 1998.
8. NSF-REU, SURFO student Jennifer Szlosyk, Summer 2000.
9. NSF-REU, SURFO student Claire Henderson, Summer 2003.
10. NSF-REU, SURFO student Joe Swearman, Summer 2006.
11. NSF-REU, SURFO student Katie Bentley, Summer 2007.
12. OCE 493 (3 credits) Makaila Gallup - undergraduate research, Fall 2007.
13. Undergraduate research advising of Makaila Gallup, 2007-09.

III. RESEARCH ACTIVITIES

Brief description of my research specialization: I have over 20 years experience leading a wide range of research projects related to ocean-climate processes, including ocean carbon dynamics, Arctic oceanography, coastal groundwater transport, and environmental radioactivity. I lead the Marine Geochemistry Laboratory, which is the only laboratory in Rhode Island specializing in low-level radiochemical analysis. I have over 75 peer-reviewed publications and have participated in over 50 research cruises. Since 1991, I have been awarded a total of \$13.9M in external funding from the U.S. National Science Foundation (NSF), Office of Naval Research (ONR), National Ocean and Atmospheric Administration (NOAA), and other Federal and State funding agencies. A number of research projects have been conducted in collaboration with investigators at other institutions, both nationally and internationally.

PEER REVIEWED JOURNAL ARTICLES AND BOOK SECTIONS

1. Moran, S.B. and Moore R.M. (1988) Evidence from mesocosm studies for biological removal of dissolved aluminum from sea water. *Nature*, **335**, 706-708.
2. Moran, S.B. and Moore R.M. (1988) Temporal variations in dissolved and particulate aluminum during a spring bloom. *Estuarine Coastal and Shelf Science*, **27**, 205-215.
3. Moran, S.B. and Moore R.M. (1989) The distribution of colloidal aluminum and organic carbon in coastal and open ocean waters off Nova Scotia. *Geochimica et Cosmochimica Acta*, **53**, 2519-2527.
4. Wangersky, P.J., Moran S.B., Pett R.J., Slauenwhite D.E. and Zhou X. (1989) Biological control of trace metal residence times; an experimental approach. *Marine Chemistry*, **28**, 215-226.
5. Moran, S.B. and Moore R.M. (1991) The potential source of dissolved aluminum from resuspended sediments to the North Atlantic Deep Water. *Geochimica et Cosmochimica Acta*, **55**, 2745-2751.
6. Moran, S.B. (1991) The application of cross-flow filtration to the collection of colloids and their associated metals in seawater. In: *Marine Particles: Analysis and Characterization* (eds. D. C. Hurd and D. W. Spencer), pp. 275-280, Geophysical Monograph 63, American Geophysical Union, Washington, D.C.
7. Moran, S.B., Moore R.M. and Westerlund S. (1992) Dissolved aluminum in the Weddell Sea. *Deep-Sea Research*, **39**, 537-547.
8. Moran, S.B. and Moore R.M. (1992) Kinetics of the removal of dissolved aluminum by diatoms in seawater: A comparison with thorium. *Geochimica et Cosmochimica Acta*, **56**, 3365-3374.

9. Moran, S.B. and Buesseler K.O. (1992) Short residence time of colloids in the upper ocean estimated from $^{238}\text{U}/^{234}\text{Th}$ disequilibria. *Nature*, **359**, 221-223.
10. Yeats, P.A., Dalziel J. and Moran S.B. (1992) A comparison of dissolved and particulate manganese and aluminum distributions in the western North Atlantic. *Oceanologica Acta*, **15**, 609-619.
11. Moran, S.B. and Buesseler K.O. (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*, **51:4**, 893-922.
12. Moran, S.B., Hoff J.A., Buesseler K.O. and Edwards R.L. (1995) High precision ^{230}Th and ^{232}Th in the Norwegian Sea and Denmark Strait by thermal ionization mass spectrometry. *Geophysical Research Letters* **22 (19)**, 2589-2592.
13. Moran, S.B., Cochran J.K., Fisher N.S. and Kilius L.R. (1995) ^{129}I in the Ob River. In *Environmental Radioactivity in the Arctic*. Scientific Committee of the International Conference on Environmental Radioactivity in the Arctic (Eds. P. Strand and A. Cooke), Oslo, Norway, August 21-25, pp. 75-78.
14. Ellis, K.M., Smith J.N., Nelson R.P., Kilius L., MacDonald R.W., Carmack E., and Moran S.B. (1995) Distribution of artificial radionuclides in the Arctic Ocean from the 1994 Arctic Ocean Section. In *Environmental Radioactivity in the Arctic*. Scientific Committee of the International Conference on Environmental Radioactivity in the Arctic (Eds. P. Strand and A. Cooke), Oslo, Norway, August 21-25, pp. 204-207.
15. Moran, S.B., Yeats P.A. and Balls P.W. (1996) On the role of colloids in trace metal solid-solution partitioning in continental shelf waters: a comparison of model results and field data. *Continental Shelf Research* **16**, 397-408.
16. Greenamoyer, J.M. and Moran S.B. (1996) Evaluation of a spiral wound cross-flow filtration system for colloidal size-fractionation in Cu, Ni and Cd in seawater. *Marine Chemistry* **55**, 153-163.
17. Buesseler, K.O., J. Bauer, R. Chen, T. Eglinton, O. Gustafsson, W.M. Landing, K. Mopper, S.B. Moran, P.H. Santschi and M. Wells (1996) An intercomparison of cross-flow filtration techniques used for sampling marine colloids: overview and organic carbon results. *Marine Chemistry* **55**, 1-31.
18. Moran, S.B., Ellis K.M., Nelson R.P. and Smith J.N. (1996) Thorium isotopes as tracers of scavenging and particle cycling in the Arctic Ocean. In *The 1994 Arctic Ocean Section: The First Scientific Crossing of the Arctic Ocean* (W. Tucker and D. Cate, eds.). CRREL Special Report 96-23, U.S. Army Cold Regions Research and Engineering Laboratory, Hanover, NH, pp. 29-31.

19. Ellis, K.M., Nelson R.P., Smith J.N. and Moran S.B. (1996) Artificial radionuclides in the Arctic Ocean. In *The 1994 Arctic Ocean Section: The First Scientific Crossing of the Arctic Ocean* (W. Tucker and D. Cate, eds.). CRREL Special Report 96-23, U.S. Army Cold Regions Research and Engineering Laboratory, Hanover, NH.
20. Pike, S.M. and S.B. Moran (1997) Use of Poretics 0.7 μm glass fiber filters for determination of particulate organic carbon and nitrogen in aquatic systems. *Marine Chemistry* **57**, 355-360.
21. Greenamoyer, J.M. and S.B. Moran (1997) Investigation of Cd, Cu, Ni and ^{234}Th in the colloidal size range in the Gulf of Maine. *Marine Chemistry* **57**, 217-226.
22. Moran, S.B., J.A. Hoff, R.L. Edwards, M.A. Charette and W.M. Landing (1997) Distribution of ^{230}Th in the Labrador Sea in relation to ventilation. *Earth and Planetary Science Letters* **150(1/2)**, 151-160.
23. Moran, S.B., Ellis K.M., Smith J.N. (1997) $^{234}\text{Th}/^{238}\text{U}$ disequilibrium in the central Arctic Ocean. *Radioprotection* **32(C2)**, 169-175.
24. Smith, J.N., Ellis K.M., Kilius L., Moran S.B., Polyak L., Ivanov G. (1997) The transport of ^{129}I and ^{137}Cs from European reprocessing plants through the Kara Sea. *Radioprotection* **32(C2)**, 97-103.
25. Moran, S.B., Ellis K.M. and Smith J.N. (1997) $^{234}\text{Th}/^{238}\text{U}$ disequilibrium in the central Arctic Ocean: implications for particulate organic carbon export. *Deep-Sea Research II, 1994 Arctic Ocean Section* **44(8)**, 1593-1606.
26. Moran, S.B. and W.L. Woods (1997) Cd, Cr, Cu, Ni and Pb in the water column and sediments of the Ob-Irtysh Rivers, Russia. *Marine Pollution Bulletin* **35(7-12)**, 270-279.
27. Gustafsson, O., K.O. Buesseler, W.R. Geyer, S.B. Moran and P.M. Gschwend (1998) An assessment of the relative significance of horizontal and vertical transport of particle-reactive chemicals in the coastal ocean. *Continental Shelf Research* **18**, 805-829.
28. Dai, M., Ripple P., Andrews J.A., Buesseler K.O., Gustafsson O. and Moran S.B. (1998) A comparison of two cross-flow filtration methods for sampling marine organic colloids. *Marine Chemistry* **62**, 117-136.
29. Edmonds, H.N., Moran, S.B., Hoff, J.A., Edwards, R.L. and Smith, J.N. (1998) Protactinium-231 and thorium-230 abundances and high scavenging rates in the Western Arctic Ocean. *Science* **280**, 405-407.
30. Charette, M.A and S.B. Moran (1999) Rates of particle scavenging and particulate organic export estimated using ^{234}Th as a tracer in the subtropical and tropical Atlantic Ocean. *Deep-Sea Research II* **46**, 885-905.

31. Charette, M.A., S.B. Moran and J.K.B. Bishop (1999) Seasonal changes in particulate organic carbon export in the North East Pacific indicated from $^{234}\text{Th}/^{238}\text{U}$ disequilibrium. *Deep-Sea Research II* **46**, 2833-2861.
32. Boyd, P.W., Sherry N., Berges J., Bishop J.K.B., Calvert S., Charette M., Giovannoni S., Goldblatt R., Harrison P.J., Moran S.B., Roy S., Soon M., Strom S., Thibault D., Vergin K., Whitney F. and C.S. Wong (1999) Transformations of biogenic particulates from the pelagic to the deep ocean realm. *Deep-Sea Research II* **46**, 2761-2792.
33. Moran, S.B., M.A. Charette, S.M. Pike and C.A. Wicklund (1999) Differences in seawater particulate organic carbon concentration in samples collected using small-volume and large-volume methods: the importance of DOC adsorption to the filter blank. *Marine Chemistry* **67**, 33-42.
34. Smith, J.N., K.M. Ellis, L. Polyak, G. Ivanov, S.L. Forman and S.B. Moran (2000) $^{239,240}\text{Pu}$ transport into the Arctic Ocean from underwater nuclear tests in Chernaya Bay, Novaya Zemlya. *Continental Shelf Research* **20**, 255-179.
35. Moran, S.B. and J.N. Smith (2000) ^{234}Th as a tracer of scavenging and particle export in the Beaufort Sea. *Continental Shelf Research* **20**, 153-167.
36. Cochran J.K., S.B. Moran, N.S. Fisher, T.M. Beasley and J.M. Kelly (2000) Sources and transport of anthropogenic radionuclides in the Ob River system, Siberia. *Earth and Planetary Science Letters* **179**, 125-137.
37. Burd, A.B., Moran S.B. and Jackson, G.A. (2000) A coupled adsorption-aggregation model of the POC/ ^{234}Th ratio of marine particles. *Deep-Sea Research* **47(1)**, 103-120.
38. Scott, M.K. and S.B. Moran (2001) Groundwater input to coastal salt ponds of southern Rhode Island estimated using ^{226}Ra as a tracer. *Journal of Environmental Radioactivity* **54(1)**, 163-174.
39. Pike, S.M. and S.B. Moran (2001) Trace elements in aerosol and precipitation at New castle, N.H., U.S.A. *Atmospheric Environment* **35/19**, 3361-3366.
40. Charette, M.A., S.B. Moran, S.M. Pike, and J.N. Smith (2001) Investigating the carbon cycle in the Gulf of Maine using the natural tracer thorium-234. *Journal of Geophysical Research, Oceans* **106**, 11,553-11,579.
41. Moran, S.B., Shen, C.-C., Weinstein, S.E., Hettinger, L.H., Hoff, J.H., Edmonds, H.N. and R.L. Edwards (2001) Constraints on deep water age and particle flux in the Equatorial and South Atlantic based on seawater ^{231}Pa and ^{230}Th data. *Geophysical Research Letters* **28 (18)**, 3437-3440.
42. Shen, C.-C., Edwards R.L., Cheng, H, Dorale, J.A., Thomas, R.B., Moran S.B., Weinstein, S.E. and H.N. Edmonds (2002) Uranium and thorium isotopic concentration

- measurements by magnetic sector inductively coupled plasma mass spectrometry. *Chemical Geology* **185/3-4**, 165-178.
43. Kelly, R.P. and S.B. Moran (2002) Seasonal changes in groundwater input to a well-mixed estuary estimated using radium isotopes and implications for coastal nutrient budgets. *Limnology and Oceanography* **47**, 1796-1807.
 44. Moran, S.B., Shen, C.-C., Edmonds, H.N., Weinstein S.E., J.N. Smith and R.L. Edwards (2002) Dissolved and particulate ^{231}Pa and ^{230}Th in the Atlantic Ocean: constraints on intermediate/deep water age, boundary scavenging and $^{231}\text{Pa}/^{230}\text{Th}$ fractionation. *Earth and Planetary Science Letters* **203/3-4**, 999-1014.
 45. Smith, J.N., S.B. Moran and R.W. MacDonald (2003) Shelf-basin interactions in the Arctic Ocean based on ^{210}Pb and Ra isotope tracer distributions. *Deep-Sea Research I* **50**, 397-416.
 46. Shen, C.-C., H. Cheng, R.L. Edwards, S.B. Moran, H.N. Edmonds, J.A. Hoff and R.B. Thomas (2003) Measurement of attogram quantities of ^{231}Pa in dissolved and particulate fractions of seawater by isotope dilution thermal ionization mass spectroscopy. *Analytical Chemistry* **75(5)**, 1075-1079.
 47. Moran, S.B., S.E. Weinstein, H.N. Edmonds, J.N. Smith, R.P. Kelly, M.E.Q. Pilson and W.G. Harrison (2003) Does $^{234}\text{Th}/^{238}\text{U}$ disequilibrium provide an accurate record of particulate organic carbon export flux from the upper ocean? *Limnology and Oceanography* **48(3)**, 1018-1029.
 48. Wassmann, P., E. Bauerfeind, M. Fortier, M. Fukuchi, B. Hargrave, S.B. Moran, T. Noji, E.-M. Nöthig, K. Olli, R. Peinert, H. Sasaki, V. P. Shevchenko (2003) Particulate organic carbon flux to the Arctic Ocean sea floor. In: *The Organic Carbon Cycle in the Arctic Ocean* (Eds. R. Stein and R. W. Macdonald) Springer-Verlag Heidelberg-Berlin-New York. pp 102-138.
 49. Moran, S.B., S.E. Weinstein, H.N. Edmonds, J.N. Smith, R.P. Kelly, M.E.Q. Pilson and W.G. Harrison (2004) Rejoinder to comment: Uncertainty versus variability in upper ocean carbon fluxes. *Limnology and Oceanography* **49(4)** 1221-1223. <http://aslo.org/lo/toc/vol_49/issue_4/1221.pdf>
 50. Weinstein, S.E. and S.B. Moran (2004) Distribution of size-fractionated particulate trace metals collected by bottles and in-situ pumps in the Gulf of Maine-Scotian Shelf and Labrador Sea. *Marine Chemistry* **87**, 121-135.
 51. Edmonds, H.N., S.B. Moran, H. Cheng, and R.L. Edwards (2004) ^{230}Th and ^{231}Pa in the Arctic Ocean: implications for particle fluxes and basin-scale Th/Pa fractionation. *Earth and Planetary Science Letters* **227**, 155-167.

52. Smith, J.N., E.P. Jones, S.B. Moran, W.M. Smethie Jr. and L. Kieser (2005) Iodine 129/CFC 11 transit times for Denmark Strait Overflow Water in the Labrador and Irminger Sea. *Journal of Geophysical Research-Oceans* **110**, C05006, doi:10.1029/2004JC002516.
53. Moran, S.B., Shen, C.-C., Edwards, R.L., Edmonds, H.N., Scholten, J.C, Smith, J.N. and Ku, T.-L. (2005) ^{231}Pa and ^{230}Th in surface sediments of the Arctic Ocean: implications for $^{231}\text{Pa}/^{230}\text{Th}$ fractionation, boundary scavenging, and advective export. *Earth and Planetary Science Letters* **234**, 235-248.
54. Weinstein, S.E. and S.B. Moran (2005) Vertical flux of particulate Al, Fe, Pb and Ba from the upper ocean determined using $^{234}\text{Th}/^{238}\text{U}$ disequilibrium. *Deep-Sea Research I* **52**, 1477-1488.
55. Bates, N.R., D.A. Hansell, S.B. Moran and L.A. Codispoti (2005) Seasonal and spatial distribution of particulate organic matter (POM) in the Chukchi Sea. *Deep-Sea Research II* **52/24-26**, 3324-3343.
56. Moran, S.B., R.P. Kelly, K. Hagstrom, J.N. Smith, J.M. Grebmeier, L.W. Cooper, G.F. Cota, J.J. Walsh, N.R. Bates, D.A. Hansell, W. Maslowski, R.P. Nelson, S. Mulsow (2005) Seasonal changes in POC export flux in the Chukchi Sea and implications for water column-benthic coupling in Arctic shelves. *Deep-Sea Research II* **52/24-26**, 3427-3451.
57. Walsh, J.J., Dieterle, D.A., Maslowski, W., Grebmeier, J.M., Whitledge, T.E., Flint, M., Sukhanova, I. N., Bates, N., Cota, G.F., Stockwell, D., Moran, S.B., Hansell, D.A. and McRoy, C.P. (2005) A numerical model of neglected spring primary production within the Chukchi/Beaufort Seas. *Deep-Sea Research II* **52/24-26**, 3541-3576.
58. Cooper, L.W., I.L. Larsen, J.M. Grebmeier and S.B. Moran (2005) Detection of rapid deposition of sea ice-rafted material to the Arctic Ocean benthos using the cosmogenic tracer ^7Be . *Deep-Sea Research II* **52/24-26**, 3452-3461.
59. Smith, J.N., S.B. Moran, and E.A. Speicher (2006) On the accuracy of upper ocean particulate organic carbon export fluxes estimated from $^{234}\text{Th}/^{238}\text{U}$ disequilibrium. *Deep-Sea Research I* **53**, 860-868.
60. Buesseler, K.O., C. Benitez-Nelson, S.B. Moran, A. Burd, M. Charette, J.K. Cochran, N. Fisher, S. Fowler, W. Gardner, L. Guo, O. Gustafsson, C. Lamborg, P. Masque, J.C. Miquel, U. Passow, P. Santschi, N. Savoye, G. Steward and T. Trull (2006) Ratios of particulate carbon to thorium-234: what do they tell us and how can they be used to estimate sinking fluxes out of the upper ocean? *Marine Chemistry* **100**, 213-233.
61. Santschi, P.H., J.W. Murray, M. Baskaran, C.R. Benitez-Nelson, L.D. Guo, C.-C. Hung, C. Lamborg, S.B. Moran, U. Passow and M. Roy-Barman (2006) Thorium speciation in seawater. *Marine Chemistry* **100**, 250-268.

62. Hall, I.R., S.B. Moran, R. Zahn, P.R. Knutz, C.-C. Shen and R.L. Edwards (2006) Accelerated draw-down of meridional overturning in the late-glacial Atlantic triggered by transient pre-H event freshwater perturbation. *Geophysical Research Letters* **33**, L16616, doi:10.1029/2006GL026239.
63. Speicher, E.A., S.B. Moran, A.B. Burd, R. Delfanti, H. Kaberi, R.P. Kelly, C. Papucci, J.N. Smith, S. Stavrakakis, L. Toricelli and V. Zervakis (2006) Particulate organic carbon export fluxes and size-fractionated POC/²³⁴Th ratios in the Ligurian, Tyrrhenian and Aegean Seas. *Deep-Sea Research I* **53(11)**, 1810-1830.
64. Bates, N.R., S.B. Moran, D.A. Hansell, J. Mathis (2006) An increasing CO₂ sink in the Arctic Ocean due to sea-ice loss. *Geophysical Research Letters* **33**, L23609, doi:10.1029/2006GL027028.
65. Lalande, C., K. Lepore, J.M. Grebmeier, L.W. Cooper, S.B. Moran (2007) Export fluxes of particulate organic carbon in the Chukchi Sea: A comparative study using ²³⁴Th/²³⁸U disequilibria and drifting sediment traps. *Marine Chemistry* **103**, 185-196.
66. Lepore, K., Moran, S.B., Grebmeier, L.W. Cooper, C. Lalande, W. Maslowski, N.R. Bates, D.A. Hansell, J. Mathis and R.P. Kelly (2007) Seasonal and interannual changes in POC export and deposition in the Chukchi Sea. *Journal of Geophysical Research-Oceans* **112**, C10024, doi:10.1029/2006JC003555.
67. Hougham, A.L. and S.B. Moran (2007) Water mass ages of coastal ponds estimated using ²²³Ra and ²²⁴Ra as tracers. *Marine Chemistry* **105**, 194-207.
68. Lepore, K. and S.B. Moran (2007) ²³⁴Th and ²²⁸Th as tracers of particle aggregation and disaggregation in the Chukchi Sea. *Deep-Sea Research I* **54**, 919-938.
69. Burd, A.B., G.A., Jackson and S.B. Moran (2007) The role of the particle size spectrum in estimating POC fluxes from ²³⁴Th/²³⁸U disequilibrium. *Deep-Sea Research I* **54**, 897-918.
70. Lalande, C., S.B. Moran, P. Wassmann, J.M. Grebmeier, L.W. Cooper (2008) ²³⁴Th-derived particulate organic carbon fluxes in the northern Barents Sea with comparison to drifting sediment trap fluxes. *Journal of Marine Systems* **73**, 103-113.
71. Hougham, A.L. S.B. Moran, J.P. Masterson and R.P. Kelly (2008) Seasonal changes in submarine groundwater discharge to coastal salt ponds estimated using ²²⁶Ra and ²²⁸Ra as tracers. *Marine Chemistry* **109**, 268-278.
72. Hung, C.-C., S.B. Moran, J.K. Cochran, L. Guo and P.H. Santschi (2008) Comment on "How accurate are ²³⁴Th measurements in seawater based on the MnO₂-impregnated cartridge technique?" by Pinghe Cai et al. *Geochemistry-Geophysics-Geosystems* **9**, doi:10.1029/2007/GC001770.

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74. Lepore, K., S.B., Moran, A.B. Burd, G. Jackson, J.N. Smith, M.L. Lomas, R.P. Kelly, H. Kaberi, S. Stavrakakis and G. Asimakopoulou (2009) Sediment trap and in-situ pump size-fractionated POC/ ^{234}Th ratios in the Mediterranean Sea and North Atlantic: implications for POC export. *Deep-Sea Research I* **56**, 599-613.
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70. Lepore, K., S.B. Moran and J.N. Smith (2007) ^{210}Pb as a tracer of shelf-basin transport and sediment focusing in the Chukchi Sea. European Geophysical Union Meeting, Vienna, Austria, April 15-20, 2007.

71. Moran, S.B., D.M. Farmer, D.C. Smith, M.M. Higgins, and D.E. Rosen (2008) Educating future business leaders in global change opportunities. ASLO Meeting, Orlando, FL, March 3-7, 2008.
72. Rutgers van der Loeff. M.M., S.B. Moran and P. Cai (2008) ^{224}Ra in Arctic surface waters: a high $^{228}\text{Th}/^{228}\text{Ra}$, low scavenging environment. Conference on Measurement and Application of Radium and Radon Isotopes in Environmental Sciences, Venice, Italy, April 7-11, 2008.

INVITED PRESENTATIONS

1. "On the marine geochemistry of aluminum". Department of Earth, Atmospheric and Planetary Sciences, M.I.T., Cambridge, MA, July, 1989.
2. "On the marine geochemistry of aluminum". Department of Oceanography, University of Hawaii, Honolulu, HI, November, 1990.
3. "Marine scavenging and colloids". Institute of Marine Sciences, University of California at Santa Cruz, Santa Cruz, CA, December, 1990.
4. " $^{234}\text{Th}/^{238}\text{U}$ disequilibria among dissolved, colloidal and particulate forms in oceanic waters: implications for the role of colloids in reactive metal transport". University of Massachusetts, Boston, MA, June, 1991.
5. "Oceanic particle dynamics: application of U-Th isotopes and implications for the role of colloids in the marine carbon cycle". Institute of Marine and Coastal Science, Rutgers University, New Brunswick, NJ, September, 1991.
6. "Oceanic particle dynamics: application of U-Th isotopes and implications for the role of colloids in the marine carbon cycle". Graduate School of Oceanography, University of Rhode Island, Narragansett, RI, January, 1992.
7. "Oceanic particle dynamics: application of U-Th isotopes and implications for the role of colloids in the marine carbon cycle". Virginia Institute of Marine Science, College of William and Mary, Gloucester Point, VA, March, 1992.
8. "Oceanic particle dynamics: application of U-Th isotopes and implications for the role of colloids in the marine carbon cycle". Marine Laboratory, Duke University, Beaufort, NC, May, 1992.
9. "Oceanic particle dynamics: application of U-Th isotopes and implications for the role of colloids in the marine carbon cycle". Chesapeake Biological Laboratory, University of Maryland, Solomons, MD, March, 1993.

10. "Oceanic particle dynamics: application of U-Th isotopes and implications for the role of colloids in the marine carbon cycle". Department of Marine Chemistry and Geochemistry, Woods Hole Oceanographic Institution, Woods Hole, MA, April, 1993.
11. "Size-fractionated ^{234}Th in oceanic waters: implications for the role of colloids in reactive metal scavenging". Parsons Laboratory, M.I.T., Cambridge, MA, November, 1992.
12. "Oceanic trace metal scavenging and colloid dynamics". Chemistry Department, University of Rhode Island, March, 1994.
13. "Oceanic trace metal scavenging and colloid dynamics". Department of Earth, Atmospheric and Planetary Sciences, M.I.T., Cambridge, MA, March, 1994.
14. "Advances in the use of Th isotopes as tracers of oceanic scavenging and particle cycling". Bedford Institute of Oceanography, Dartmouth, N.S., Canada, October, 1995.
15. "Natural and artificial radionuclides as tracers of shelf-basin interactions in the Arctic Ocean". Harvard University, Cambridge, MA, April, 1996.
16. "Thorium scavenging and carbon fluxes in the central Arctic Ocean". Department of Oceanography, Texas A&M University, College Station, TX, April 28, 1997.
17. "Th-230 and Pa-231: tracers of particle flux and ventilation in the Atlantic". Universite de Quebec a Montreal, Montreal, P.Q., Canada, April, 22, 1998.
18. "Radioactive clocks in the sea". New England Association of Chemistry Teachers (NEACT) Conference. Roger Williams University, August 7, 2000 (invited).
19. " ^{231}Pa and ^{230}Th in the Atlantic Ocean: implications for deep water age, particle flux, and boundary scavenging". Department of Geology, Boston University, Boston, MA, November 29, 2001.
20. "Use of radium isotopes in groundwater to estimate nitrogen loads to coastal waters", Nitrogen Loading Workshop, New England Interstate Water Pollution Control Commission, Lowell, MA, January 18, 2002, (invited).
21. " ^{231}Pa and ^{230}Th in the Atlantic Ocean: constraints on deep water age and boundary scavenging". Graduate School of Oceanography, URI, March 8, 2002.
22. "Radium tracers of groundwater supply and coastal water residence times." Sea Grant Annual Science Symposium on the Shallow Marine Ecosystems of Southern Rhode Island. Part One: Hydrology, nutrient and bacteria dynamics. Coastal Institute, URI, December 9, 2002.

23. “Upper ocean export of particulate organic carbon” Department of Marine Sciences, University of Connecticut, April 25, 2003.
24. “Radionuclide tracers of marine processes” Graduate School of Oceanography Inaugural Talk, September 18, 2003.
25. “Radionuclide tracers of marine processes.” National Centre for Marine Research, Athens, Greece, September 23, 2003.
26. “How accurate are upper ocean POC export fluxes estimated from $^{234}\text{Th}/^{238}\text{U}$ disequilibrium?” National Centre for Marine Research, Athens, Greece, September 24, 2003.
27. “How accurate are upper ocean POC export fluxes estimated from $^{234}\text{Th}/^{238}\text{U}$ disequilibrium?” ENEA, La Spezia, Italy, October 28, 2003.
28. “Size and speed matter: estimating upper ocean POC flux using $^{234}\text{Th}/^{238}\text{U}$ disequilibria.” MIT, Cambridge, MA, April 30, 2004.
29. “Geochemical and geophysical techniques for studying coastal groundwater in Rhode Island.” Brown University, Providence, RI, May 13, 2004.
30. “On top of the World: Arctic Ocean exploration”. Naval War College, Newport, RI, August 3, 2004.
31. “Theoretical conditions for determining POC flux From $^{234}\text{Th}/^{238}\text{U}$ Disequilibria”. WHOI, Woods Hole, MA, August 16, 2004.
32. “Geochemical and geophysical techniques for studying coastal groundwater in Rhode Island.” University of Athens, Athens, GA, November 12, 2004.
33. “The p -ratio: a new diagnostic for evaluating the accuracy of ^{234}Th -derived POC export flux”. Bermuda Biological Station for Research, Inc., October 20, 2005.
34. “Overview of field and laboratory methods used for marine geochemical studies at URI-GSO.” AWI, Bremerhaven, Germany, April 5, 2007.
35. “Field and modeling studies of POC export in the upper ocean: the p -ratio and implications for ^{234}Th -derived POC export”. IAEA-MEL, Monaco, May 3, 2007.
36. “Field and modeling studies of POC export in the upper ocean: the p -ratio and implications for ^{234}Th -derived POC export”. AWI, Bremerhaven, Germany, May 7, 2007.
37. “Educating future business leaders in the strategic management of global change opportunities.” Global U8 Consortium, Workshop, Kingston, RI, May 2, 2008.

38. “IAEA/RCA Regional Training Course on application of radionuclide tracers to determine the fate and behavior of nuclear contaminants in marine systems”. Mumbai, India, May 27- June 7, 2008.
39. “URI’s energy future: cutting costs, carbon, and global change”. URI Council of Deans, September 3, 2008.
40. “URI’s energy future: cutting costs, carbon, and global change”. URI Research Seminar, September 26, 2008.
41. “Green industry workforce challenge = university + corporate opportunities.” Association of Energy Services Professionals (AESP) – Northeast Energy Efficiency Council (NEEC) Green Industry Workforce Development Panel. Marlborough, MA, October 16, 2008.
42. “Green economy: future opportunities and barriers to success”. Organizer and panel moderator, Providence Business Expo 2009, Rhode Island Convention Center, Providence, RI, May 5, 2009.
43. “IAEA/RCA Regional Training Course on application of nuclear and stable isotope tracers to determine the fate and behavior of nuclear contaminants in marine systems”. Jakarta, Indonesia. May 11-23, 2009.

Research Funding Record

Year	Title of Project	Funding Agency	Total Award	URI Award	% Effort
1991	A study of colloids and their associated metals in coastal waters.	WHOI Coastal Research Center	\$7,200	\$7,200	100%
1991	A study of colloids and their associated metals in coastal waters.	NOAA-MA Sea Grant New Initiative Program	\$1,800	\$1,800	100%
1992	The role of colloids in metal transport in coastal waters.	NOAA-MA Sea Grant Program	\$27,635	\$27,635	100%
1993	The application of in-situ cross-flow filtration and TIMS to the study of oceanic particle dynamics.	NSF-OCE Co-P.I.'s.; K. Buesseler, WHOI; R.L. Edwards, UMinn	\$749,571	\$63,741	9%
1993	Transformation rates and fate of organic carbon in continental shelf waters.	DOE Co-P.I.: K. Buesseler, WHOI, E. Druffel, UC Irvine, R.L. Edwards, UMinn	\$1,005,481	\$17,145	2%
1993	Cycling of particle-reactive trace metals and organic pollutants in the Gulf of Maine.	NOAA-DOC Co-P.I.'s: K. Buesseler, WHOI, P. Gschwend, MIT	\$427,140	\$33,201	11%
1994	Natural and artificial radionuclides as tracers of particle cycling and circulation time scales in the Arctic Ocean.	NSF-SGER	\$49,927	\$49,927	100%
1994	Transport and fate of radionuclides in the Ob River estuarine system.	ONR Co-P.I.'s J.K. Cochran, N.S. Fisher, SUNY, Stony Brook	\$249,999	\$83,333	33%
1994	Sources, fate and transport of radionuclides in the Arctic Ocean.	ONR Co-P.I. J.N. Smith, BIO	\$150,435	\$64,683	43%
1994	Geochemical transport of trace metals and organic compounds via particle settling in the Gulf of Maine.	NOAA-GOM-RMRP Co-P.I. P. Gschwend, MIT	\$267,835	\$205,808	77%
1994	Acquisition of an ICP-MS.	NSF-Instrumentation Co-P.I. J.-G. Schilling, GSO	\$199,056	\$199,056	100%

Year	Title of Project	Funding Agency	Total Award	URI Award	% Effort
1995	Transport and fate of artificial radionuclide contaminants in the Ob River estuarine system.	ONR Co-P.I.'s J.K. Cochran, N.S. Fisher, SUNY, Stony Brook	\$169,002	\$56,334	33%
1995	Nitrogen and trace metal contaminants in the Gulf of Maine: An atmosphere-water column-sediment study of contaminant transport.	NOAA-GOM-RMRP Co-P.I. R. Talbot, B. Mosher, UNH	\$198,256	\$99,128	50%
1995	Radionuclide studies in the western Arctic Ocean.	ONR Co-P.I. J.N. Smith, BIO	\$40,000	\$20,000	50%
1995	Th-230 and Th-232 analysis of samples from Arctic Ocean Section 1994.	NSF-OCE supplement Co-P.I. R.L. Edwards, UMinn	\$45,483	\$45,483	100%
1995	Plutonium mass spectrometry analyses.	ONR supplement.	\$6,000	\$6,000	100%
1996	Thorium isotopes as tracers of scavenging and particle dynamics in high latitudes.	ONR-YIP	\$325,000	\$325,000	100%
1996	Investigation of submarine groundwater discharge to Rhode Island coastal waters using natural radionuclide tracers.	NOAA-RI Sea Grant	\$79,257	\$79,257	100%
1998	Seasonal study of groundwater input to Rhode Island coastal ponds using radium isotopes as tracers.	NOAA-RI Sea Grant	\$177,728	\$177,728	100%
1998	²³⁰ Th and ²³¹ Pa: Tracers of particle flux and ventilation in the Atlantic.	NSF-OCE Co-P.I.'s: R.L. Edwards, UMinn, H.N. Edmonds, UT, Austin	\$490,532	\$299,832	61%
1999	Application of Ra-223 as a tracer of groundwater in southern Rhode Island	USGS-URI Water Resource Center	\$23,500	\$23,500	100%
2000	Constraining water mass age and particle flux in the Arctic Ocean using Pa-231 and Th-230	NSF-Arctic Natural Sciences Program Co-P.I.: R.L. Edwards, UMinn	\$228,405	\$170,115	74%
2001	Application of ²²³ Ra, ²²⁴ Ra, ²²⁶ Ra and ²²⁸ Ra to studies of groundwater input and coastal mixing in southern Rhode Island.	NOAA-RI Sea Grant Program	\$163,146	\$163,146	100%

Year	Title of Project	Funding Agency	Total Award	URI Award	% Effort
2001	Collaborative Research: Carbon cycling in the Chukchi and Beaufort Seas—field and modeling studies.	NSF-Office of Polar Programs	\$4,465,250	\$565,611	13%
2002	Collaborative Research supplement: carbon cycling in the Chukchi and Beaufort Seas—field and modeling studies.	NSF-Office of Polar Programs	\$25,835	\$25,835	100%
2002	Assay Toxicity of Chlorine Dioxide to Ballast Water Flora and Fauna.	EcoChlor, Inc.	\$73,554	\$73,554	100%
2003	Constraints on seasonal and interannual groundwater nutrient input and biogeo-chemical cycling within the subsurface land-sea interface.	NOAA-RI Sea Grant Program	\$85,686	\$85,686	100%
2003	Field and modeling studies of the magnitude and variability of ²³⁴ Th-based estimates of POC export flux and remineralization in the upper ocean.	NSF-OCE Co-PI's: A. Burd, UGA, G. Jackson, Texas A&M	\$827,710	\$494,645	60%
2004	Hydrogeologic characterization and groundwater flow patterns in southern Rhode Island and implications for coastal lagoons: numerical simulations and field observations.	NOAA-RI Sea Grant Program	\$199,463	\$199,463	100%
2006	Integrated numerical modeling and field observations of groundwater flow in southern Rhode Island and implications for nutrient loading in coastal lagoons: phase II	NOAA-RI Sea Grant Program	\$125,449	\$125,449	100%
2006	Observations of the structure and dynamics of mid-shelf fronts Total:	NSF-OCE and PO Co-PI's: D. Ullman, D. Hebert, C. Kincaid, D. Codiga, GSO	\$702,542	\$90,442	13%
2007	BEST: The impact of changes in sea ice extent on primary production, phytoplankton community structure, and export in the eastern Bering Sea	NSF-OPP ARCSS Co-PI: M. Lomas, BIOS, M. Bender, Princeton	\$800,130	\$418,951	52%

Year	Title of Project	Funding Agency	Total Award	URI Award	% Effort
2007	Collaborative Research: Determining the present and future ocean carbon dynamics in the Chukchi Sea and pan-Arctic Ocean: a contribution to Shelf-Basin Interactions Phase III	NSF-OPP ARCSS Co-PI's: N. Bates, J. Mathis, BIOS, D. Hansell, RSMAS.	\$697,331	\$122,718	18%
2007	BEST-BSIERP: Carbon export in the eastern Bering Sea water column	North Pacific Research Board	\$20,000	\$20,000	100%
2008	Seasonal changes in microbial contaminant sources related to groundwater quality and physical circulation in southern Rhode Island coastal ponds.	NOAA-RI Sea Grant Co-PI's: D.C. Smith, R.A. Pockalny, GSO	\$211,505	\$211,505	33%
2008	GEOTRACES intercalibration of ²³⁰ Th, ²³¹ Pa, ¹⁰ Be, REE, Nd isotopes and selected man-made radionuclides.	NSF-OCE Co-PI's: R.F. Anderson, LDEO; R.L. Edwards, UMinn.	\$551,724	\$88,300	16%
2009	Green Economy Panel at 2009 Providence Business EXPO	Greater Providence Chamber of Commerce	\$2,500	\$2,500	100%
2009	Ocean to Plate: Development of a Johnson & Wales University – University of Rhode Island Joint Initiative on Sustainable Seafood	Greater Providence Chamber of Commerce	\$20,000	N/A	50%

Total Funding: \$13,891,067 (Total Awards)
 \$4,758,720 (Moran effort; average = \$338K/year, since 1994 at URI)

Scientific Collaborators:

Robert M. Moore (Ph.D. advisor) - Dalhousie University.
 Philip A. Yeats - Bedford Institute of Oceanography.
 Peter J. Wangersky - Dalhousie University (retired).
 Stig Westerlund - University of Goteborg.
 Ken O. Buesseler (Post-doctoral Advisor) - Woods Hole Oceanographic Institution.
 R. Lawrence Edwards - University of Minnesota.
 Philip W. Balls - Scottish Office Agriculture and Fisheries Department.
 Philip M. Gschwend - Massachusetts Institute of Technology.
 J. Kirk Cochran - SUNY at Stony Brook.
 Nicholas S. Fisher - SUNY at Stony Brook.
 John N. Smith - Bedford Institute of Oceanography.
 Katherine M. Ellis - Bedford Institute of Oceanography (deceased).
 Linas R. Kilius - University of Toronto (deceased).

Tom Beasley - Department of Energy.
 James K.B. Bishop - University of Victoria.
 George Jackson - Texas A&M University.
 Adrian Burd - University of Georgia .
 Henrietta N. Edmonds - University of Texas at Austin.
 Chuan-Chou Shen - National Taiwan University, Taiwan.
 Lee W. Cooper - University of Tennessee.
 Jacqueline M. Grebmeier - University of Tennessee.
 Sandor Mulsow - Universidad Austral de Chile.
 John J. Walsh - University of South Florida.
 Nick R. Bates - Bermuda Institute of Ocean Sciences, Inc.
 Dennis A. Hansell - University of Miami.
 W. Glen Harrison - Bedford Institute of Oceanography.
 Robbie W. MacDonald - Institute of Ocean Science.
 Martin Frank - ETH Zürich.
 Jan C. Scholten - IAEA, Monaco.
 T.-L. Ku - University of Southern California.
 Weislaw Maslowski - Naval Postgraduate School.
 Ian Hall - Cardiff University.
 Rainer Zahn - University of Barcelona.
 Jeremy Mathis – University of Alaska, Fairbanks.
 Michael Lomas - Bermuda Institute of Ocean Sciences, Inc.
 Michael Bender - Princeton University.
 Michel Rutgers van der Loeff, Alfred Wegener Institute
 Robert F. Anderson - Lamont-Doherty Earth Observatory.
 Gillian Stewart - Queens College, CUNY.
 Xavier Boes – Royal Observatory of Belgium.

Graduate Students, Postdoctoral Fellows, and Technical Personnel:

Graduate Students (current position indicated in brackets):

1. Jennifer Greenamoyer. M.Sc. 1995. Major Professor (Administrator, Sea Grant)
2. Matthew A. Charette. Ph.D. 1998. Major Professor (Associate Scientist, WHOI)
3. Steven M. Pike. M.Sc. 1998. Major Professor (Research Associate, WHOI)
4. Margaret K. Scott. M.Sc. 1998. Major Professor (Scientist, GZA Environmental)
5. Roger P. Kelly. M.Sc. 2001. Major Professor (Marine Research Associate, URI)
6. Sarah Weinstein. Ph.D. 2003. Major Professor (Assistant Professor, RIC)
7. Elly Speicher, M.Sc. 2005. Major Professor (Marine Technician, *R/V Kilo Moana*)
8. Kate Hagstrom, Ph.D. 2006. Major Professor (Post-doctoral Fellow, UCD, Ireland)
9. Andrea Hougham, M.Sc. 2006. Major Professor (Ph.D. candidate, U. South Carolina)
10. Haley Brew, M.Sc. 2008. Major Professor (High School Teacher, Sandwich, MA)
11. Scott Stachelhaus, Ph.D. candidate. Major Professor
12. Matthew Baumann, M.Sc. candidate. Major Professor

Post-doctoral Fellows:

1. Henrietta N. Edmonds, 1996 - 1998 (Associate Professor, U. Texas)
2. Sarah Weinstein, 2003 - 2004 (Assistant Professor, RIC)
3. Kate Lepore, 2006 - 2008 (also Post-doctoral Fellow at UCD, Ireland)
4. Xavier Boes, 2007 - 2008 (Fulbright Fellow; University of Bordeaux)

Technical Personnel:

1. Christopher Reddy. Ph.D. 1997. Partial support, 1994 (Associate Scientist, WHOI)
2. Doug Cullen, Marine Scientist, 1994 - 1996
3. Kimberly A. Roberts, Marine Research Associate, 1996 - 1998
4. Suizhou Xue, Marine Research Specialist, 1999 (part-time)
5. Sarah Whitford, M.O. Student, 2001 (part-time)
6. Roger P. Kelly, Research Assistant, 2001 - 2002
7. Roger P. Kelly, Marine Research Associate II, 2002 to present
8. Makaila Gallup, Undergraduate Student, 2008-09 (part-time).
9. Dennis Graham, Research Associate, 2008 (part-time).

Research Cruise Participation:

- Key:** **A.** Sampling conducted by myself and/or my research group.
B. Sampling conducted by others on behalf of my research group.
C. Chief Scientist.

1. December 1-6, 1985; *CSS Dawson*, Bay of Fundy, monitoring Point Lepreau, N.B., nuclear reactor effluent, hydrographic sampling and ^{210}Pb , ^{210}Po , ^3H , ^{137}Cs , ^{90}Sr determinations. **A.**
2. November 3-7, 1986; *CSS Dawson*, shelf and slope waters off Nova Scotia, hydrographic sampling and aluminum determinations. **A.**
3. April 21-26, 1987; *CSS Dawson*, shelf and slope waters off Nova Scotia, hydrographic sampling and aluminum determinations. **A.**
4. September 6-11, 1988; *CSS Dawson*, shelf and slope waters off Nova Scotia, hydrographic sampling and aluminum determinations. **A.**
5. May 11-13, 1991; *R/V Weatherbird II*, Bermuda JGOFS times-series station, size-fractionated ^{234}Th determinations. **A.**
6. July 17-30, 1991; *R/V Cape Hatteras*, Gulf of Maine, hydrographic sampling and size-fractionated ^{234}Th determinations. **A.**

10. April 22-May 24, 1992; *R/V Malcolm Baldrige*, Equatorial Pacific; Papeete, Tahiti-Panama City Miami, Fla., hydrographic sampling and shipboard ^{234}Th determinations. **A.**
11. July 5-9, 1993; *R/V Weatherbird II*, Bermuda JGOFS time-series station, in-situ pumping for size-fractionated ^{234}Th , ^{228}Th , ^{230}Th , ^{232}Th determinations. **A.**
12. September 26-30, 1993; *R/V Argo Maine*, Gulf of Maine, in-situ and surface pumping for determination of size-fractionated trace metals, Th isotopes and hydrophobic organics. **A.**
13. April 18-May 1, 1994; *R/V Columbus Iselin*, Mid-Atlantic Bight and Cape Hatteras, in-situ and surface pumping for determination of size-fractionated Th isotopes and organic carbon. **B.**
14. May 19-25, 1994; *R/V Argo Maine*, Gulf of Maine, in-situ and surface pumping for determination of size-fractionated trace metals, Th isotopes and hydrophobic organics. **C.**
15. July 13-August 9, 1994; Ob River, Russia, water and sediment sampling for artificial and natural radionuclides, trace metals, nutrients, organic carbon. **A.**
16. August-September, 1994; *C.C.G.S. Louis St. Laurent*, Arctic Ocean Section Expedition, sampling for artificial and natural radionuclides and particulate organic carbon in the water column. **B.**
17. October 10-14, 1994; *R/V Weatherbird II*, Bermuda JGOFS time-series station, in-situ pumping for size-fractionated ^{234}Th , ^{230}Th , ^{232}Th determinations. **B.**
18. March 16-20, 1995; *R/V Argo Maine*, Gulf of Maine, in-situ and surface pumping for determination of size-fractionated trace metals and Th isotopes. **A.**
19. June 1-July 2, 1995; Ob River, Russia, water and sediment sampling for artificial and natural radionuclides, trace metals, nutrients, organic carbon. **A.**
20. June 15-29, 1995; *R/V Argo Maine*, Gulf of Maine, in-situ and surface pumping for determination of size-fractionated trace metals and Th isotopes. **A.**
21. August 17-September 7, 1995; *C.C.G.S. Louis St. Laurent*, Beaufort Sea and Canada Basin, water column sampling for artificial and natural radionuclides and particulate organic carbon. **A.**
22. September 14-16, 1995; *R/V Argo Maine*, Gulf of Maine, in-situ and surface pumping for determination of size-fractionated trace metals and Th isotopes. **A.**
23. October 1-6, 1995; *R/V Weatherbird II*, Bermuda JGOFS time-series station, in-situ pumping for size-fractionated ^{234}Th , ^{228}Th , ^{230}Th , ^{232}Th determinations. **A.**

24. February, 1996; *CSS John P. Tully*, Canadian JGOFS, Ocean St. Papa, in-situ pumping for ^{234}Th and POC export. **B.**
25. May 11-June 23, 1996; *R/V Knorr*, IOC-96 Baseline Contaminants Expedition, Uruguay to Barbados. At-sea ^{234}Th analysis, upper ocean particulate organic carbon export fluxes, ^{230}Th and ^{231}Pa , DOC profiles. **A.**
26. May, 1996; *CSS John P. Tully*, Canadian JGOFS, Ocean St. Papa, in-situ pumping for ^{234}Th and POC export. **B.**
27. September, 1996; *CSS John P. Tully*, Canadian JGOFS, Ocean St. Papa, in-situ pumping for ^{234}Th and POC export. **B.**
28. October 7-11, 1996; *R/V Argo Maine*, Gulf of Maine, in-situ and surface pumping for determination of size-fractionated trace metals and Th isotopes. **A.**
29. February, 1997; *CSS John P. Tully*, Canadian JGOFS, Ocean St. Papa, in-situ pumping for ^{234}Th and POC export. **B.**
30. August 29-September 17, 1997; *CSS Parizeau*, Gulf of Maine and Scotian Shelf, in-situ and surface pumping for determination of size-fractionated trace metals, ^{234}Th , and ^{210}Pb ; box coring. **A.**
31. July 1-17, 1999; *CSS Hudson*, Labrador Sea, in-situ and surface pumping for determination of dissolved and particulate ^{234}Th , ^{230}Th , ^{231}Pa and trace metals. **A.**
32. May 5-June 15, 2002; *USCGC Healy*, Chukchi and Beaufort Seas, in-situ and surface pumping, sediment coring, determination of ^{234}Th , ^{223}Ra , ^{224}Ra , ^{210}Pb , POC, PON, stable Pb isotopes, trace metals. **A.**
33. July 15-August 26, 2002; *USCGC Healy*, Chukchi and Beaufort Seas, in-situ and surface pumping, sediment coring, determination of ^{234}Th , ^{210}Pb , POC, PON, stable Pb isotopes, trace metals. **A.**
31. August 6-7, 2003; *R/V Knorr*, Black Sea, water column sampling for U, Th, Pa, Nd, and Be isotopes. **A.**
32. March 15-20, 2004; *AECEO*, Tyrrhenian Sea, in-situ and surface pumping; determination of ^{234}Th , POC, PON, ^{129}I , ^{137}Cs . **A.**
33. May 15-June 23, 2004; *USCGC Healy*, Chukchi and Beaufort Seas, in-situ and surface pumping, sediment coring, determination of ^{234}Th , POC, PON. **A.**
34. May 29-June 14, 2004; *R/V Urania*, Tyrrhenian Sea, in-situ and surface pumping, determination of ^{234}Th , POC, PON, ^{129}I , ^{137}Cs . **A.**

35. July 16-August 26, 2004; *USCGC Healy*, Chukchi and Beaufort Seas, in-situ and surface pumping, sediment coring, determination of ^{234}Th , POC, PON. **A.**
36. May 6-15, 2005; *R/V Endeavor*, Alboran-Provencal Basin, Mediterranean Sea, in-situ and surface pumping, floating sediment traps, determination of ^{234}Th , ^{129}I , ^{137}Cs , POC, PON. **C.**
37. August 16-27, 2005; *R/V Endeavor*, Northwest Atlantic, in-situ and surface pumping, floating sediment traps, determination of ^{234}Th , POC, PON. **A.**
38. May 8-12, 2006; *R/V Atlantic Explorer*, BATS station, in-situ and surface pumping, floating sediment traps, determination of ^{234}Th , ^{210}Po , POC, PON. **A.**
39. November 6-10, 2006; *R/V Atlantic Explorer*, BATS station, in-situ and surface pumping, floating sediment traps, determination of ^{234}Th , ^{210}Po , POC, PON. **A.**
40. December 13-15, 2006; *R/V Kilo Moana*, HOTS sampling for super high-precision U isotope determinations. **A.**
41. January 10-20, 2007; *R/V Endeavor*, Cross-shelf mixing study off New Jersey using radium isotopes as tracers. **A.**
42. January 27-February 1, 2007; *R/V Atlantic Explorer*, BATS station, in-situ and surface pumping, floating sediment traps, determination of ^{234}Th , ^{210}Po , POC, PON. **A.**
43. February 18-28, 2007; *R/V Endeavor*, Cross-shelf mixing study off New Jersey using radium isotopes as tracers. **A.**
44. March 19-24, 2007; *R/V Atlantic Explorer*, BATS station, in-situ and surface pumping, floating sediment traps, determination of ^{234}Th , ^{210}Po , POC, PON. **A.**
45. April 2-11, 2007; *R/V Endeavor*, Cross-shelf mixing study off New Jersey using radium isotopes as tracers. **A.**
46. July 28-October 11, 2007; *Polarstern*, Water column and sediment sampling for ^{231}Pa , ^{230}Th , ^{232}Th , ^{129}I , ^{137}Cs in the Eurasian Basin, Arctic Ocean. **A.**
47. March 29-May 6, 2008; *USCGC Healy*, BEST, Eastern Bering Sea, Primary production, phytoplankton community structure, sediment trap ^{234}Th , POC/N flux. **A.**
48. June 25-July 12, 2008; *R/V Knorr*, Bermuda-Norfolk, GEOTRACES ^{231}Pa and Th isotope sampling. **A.**
49. July 2-31, 2008; *USCGC Healy*, Eastern Bering Sea, Primary production, phytoplankton community structure, sediment trap ^{234}Th , POC/N flux. **A.**

50. June 29-July 12, 2008; *R/V Knorr*, GEOTRACES Intercalibration Experiment, Water column sampling for ^{231}Pa , ^{230}Th , ^{232}Th , Bermuda-Norfolk A.
51. February 16-20, 2009; *R/V Kilo Moana*, HOTS sampling for super high-precision U isotope determinations. A.
52. March 31-May 5, 2009; *USCGC Healy*, Eastern Bering Sea, Primary production, phytoplankton community structure, sediment trap ^{234}Th , POC/N flux. A.
53. July 1-31, 2009; *USCGC Healy*, Eastern Bering Sea, Primary production, phytoplankton community structure, sediment trap ^{234}Th , POC/N flux. A.

IV. SERVICE: CONTRIBUTIONS TO THE UNIVERSITY AND EXTRAMURAL COMMUNITY

Among my administrative service contributions, I currently serve as Assistant Vice President of Research Administration (since June, 2008), Director of the CHN Analytical Facility (since 2000), Advisory Member on the University Radiation Safety Committee (since 2003), and was co-Director of the ICP-MS facility (1995-2001). Since 1996, I have been invited to participate in NSF and NOAA scientific review panels, and have experience working on a number of academic and governmental chairs, panels and committees. I initiated the development of the first Masters of Business Administration-Masters of Oceanography dual degree (MBA-MO), the “Blue MBA”, which has the goal of educating future leaders in global change opportunities. In 2007, I evaluated URI’s GHG emissions and energy costs for the American College and Universities Presidents Climate Commitment (ACUPCC) initiative. I have served as an invited IAEA Expert in marine radiochemistry in Monaco (2007), Mumbai (2008) and Jakarta (2009). During 2007-08, I served as Co-Chair of the Environmental and Alternative Energy Hot Team for the Providence-Rhode Island Knowledge Economy Initiative. I am presently working with Johnson and Wales University to develop a JWU-URI “Ocean-to-Plate” research and education partnership in sustainable seafood. Most recently, I organized and moderated the Green Economy Panel discussion at the Providence Business Expo 2009, which included presentations by Senator Sheldon Whitehouse, IBM, Deepwater Wind, APC by Schneider Electric, The Hudson Companies, and Save The Bay.

Service to the University Community:

1. Marine Committee, 1994 - 1995.
2. *Maritimes* Advisory Committee, 1995 - 1997.
3. Media Briefing, "Radioactive Waste in the Russian Arctic" June, 1994.
4. Faculty Search Committee, Air-Sea Exchange Chemist, 1995.
5. Educational and Policy Committee, 1996 - 1998.
6. Marine Committee, Chair, 1997-1998.
7. Marine Committee, 1998 to present.
8. Faculty Search Committee, Stable Isotope Geochemist, 1997 - 2000.

9. Faculty Search Committee, Air-Sea Geochemist, 1998 - 2000.
10. SARC Committee, 2000 - 2002.
11. Director, CHN Analytical Facility, 2000 to present.
12. University Radiation Safety Committee, 2003 to present.
13. Faculty Search Committee, Marine Geochemist, 2003 - 2004.
14. Faculty Search Committee, Marine Robotics, 2004.
15. GSO Promotion and Tenure Committee, 2004 - 2005.
16. Faculty Search Committee, ADVANCE Program, 2004 - 2005.
17. Marine and Endeavor Replacement Committee, 2005 to present.
18. Presidents Council on Sustainability, 2007 to present.
19. Chair, MBA-MO Dual Degree Committee, 2007.
20. Program Coordinator, MBA-MO Dual Degree, 2007 to present.
21. Faculty Search Committee, Marine Chemist, 2007 - 2008.
22. Panelist, Global U8 Consortium Workshop, 2008.
23. Assistant Vice President for Research Administration, 2008 to present.
24. URI Council for Research, 2008 to present.
25. URI Conflict of Interest Committee, 2008 to present.
26. Chair, URI Search Committee, Director of Sponsored Programs Research, 2008.
27. Co-PI, JWU-URI Ocean-to-Plate Sustainable Seafood Initiative, 2008 to present.
28. ACUPCC Report on URI's GHG Emissions and Energy Consumption, 2008.
29. Session Facilitator, URI Academic Summit, 2009.
30. Co-organizer, URI Student Sustainability Fund, 2009.
31. Co-organizer, ARRA Research Opportunities Brown Bag Workshops, 2009.
32. Program Advisor, URI-NUWC Green Students Partnership, 2009.
33. Chair, URI Search Committee, SRGA, Sponsored Programs Research, 2009.

Service to the Extramural Community (invited):

1. Chair, Marine Geochemistry and Radioactive Isotopes, AGU Fall Meeting, 1992.
2. NSF Chemical Oceanography Review Panel, May, 1996.
3. NSF Chemical Oceanography Review Panel, November, 1996.
4. NSF Office of Polar Programs, SBI-I Reviewer Selection, July, 1998.
5. NSF Office of Polar Programs, RAISE Review Panel, January, 1999.
6. NSF Integrated Carbon Cycle Program Review Panel, June, 2002.
7. NSF Sponsored ARCSS Working Group (OASIS), Purdue University, November, 2002.
8. NOAA Ocean Exploration Review Panel, San Diego, CA, March, 2003.
9. NSF Sponsored GEOTRACES Planning Workshop, Toulouse, France, April, 2003.
10. NSF Sponsored FATE Workshop, WHOI, August, 2004.
11. NPRB Workshop on Chukchi/Beaufort Sea, Coconut Island, HI, February, 2006.
12. IAEA Expert Lecturer, Marine Radiochemistry, Monaco, 2007.
13. GEOTRACES Pacific Planning Meeting, Honolulu, July, 2007.
14. Bering Sea Ecosystem Study PI meeting, Seattle, WA, September, 2007.
15. ARCSS Synthesis Meeting, Arlington, VA, October, 2007.
16. IAEA Expert Lecturer, Marine Radiochemistry, Mumbai, India, May-June, 2008.
17. Co-Chair, Environmental and Alternative Energy Hot Team, Providence-RI Knowledge Economy Initiative, 2007-08.

18. IBM Global Innovation Outlook “Deep Dive” on Water and the Oceans, Invited Panelist, San Diego, September, 2008.
19. Bering Sea Ecosystem Study PI meeting, Anchorage, AK, October, 2008.
20. NSF Chemical Oceanography Review Panel, November, 2008.
21. Moderator, Green Economy Panel, Business Expo, Providence, RI, May, 2009.
22. IAEA Expert Lecturer, Marine Radiochemistry, Jakarta, Indonesia, May, 2009.
23. Rhode Island Green Economy Roundtable Discussion, Providence, RI, June, 2009.

Editorial, Journal, and Proposal Review Service:

1. Editorial Service:

Environmental Science from A to Z (M. Bahadir, H. Parlar, S.B. Moran, Eds.)
 Wiley-VCH, to be published in 2009.
 Editorial Advisory Board, CLEAN – Soil, Air, Water, 2007 - 2010.

2. Journal Reviewer:

Marine Chemistry
Geochimica et Cosmochimica Acta
Limnology and Oceanography
Nature
Journal of Marine Research
Journal of Geophysical Research-Oceans
Earth and Planetary Science Letters
Analytical Chemistry
Estuaries
Marine Technology Society
Geophysical Research Letters
Journal of Environmental Radioactivity
Deep-Sea Research
CLEAN – Soil, Air, Water

3. Grant Proposal Reviewer:

NSF Chemical Oceanography
 NSF Marine Geology and Geophysics
 NSF Instrumentation
 NSF Office of Polar Programs
 NOAA Sea Grant College Program
 NSERC of Canada
 NERC - U.K