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CURRICULUM VITAE

William M. Landing, M.S., Ph.D.

Department of Earth, Ocean, and Atmospheric Science

Florida State University

117 N. Woodward Ave. (Room 325 OSB)

Tallahassee, Florida 32306-4320

Phone: (850) 644-6037; FAX: (850) 644-2581; Email: wlanding@fsu.edu

PERSONAL:

Born: March 16, 1953 Boston, Massachusetts. U.S. Citizen

EDUCATION:

Ph.D. (Chemistry) University of California, Santa Cruz 1983

M.S. (Chemical Oceanography) University of Washington 1978

B.A. (Chemistry) University of California, Santa Cruz 1975

ACADEMIC POSITIONS:

Professor, Department of Earth, Ocean, and Atmospheric Science, Florida State University 2010-Present

Courtesy Professor, Department of Chemistry and Biochemistry, Florida State University 2000-Present

Honorary Visiting Professor with the Faculty of Science, University of Plymouth, UK 2009-Present

Professor, Department of Oceanography, Florida State University 1996-2010

Associate Professor, Department of Oceanography, Florida State University 1991-1996

Assistant Professor, Department of Oceanography, Florida State University 1985-1991

NSF/NATO Post-Doctoral Fellow 1984-1985

Department of Analytical and Marine Chemistry

Chalmers University of Technology and University of Göteborg, Sweden

Post-Doctoral Research Associate, University of California, Santa Cruz 1983-1984

Adjunct Lecturer, Chemistry Board, University of California, Santa Cruz 1982, 1983

RESEARCH INTERESTS:

Environmental chemistry, chemical oceanography, low-temperature aqueous geochemistry, mercury cycling in the environment, atmospheric chemistry and deposition.

(1) Biogeochemistry of trace elements in marine and fresh waters with emphasis on the effects of biological and inorganic processes on dissolved - particulate fractionation, solution speciation, and redox chemistry;

(2) Development of analytical schemes for studies of trace element concentrations, equilibrium complexes and redox states in natural waters and the atmosphere.

(3) Chemistry and deposition of atmospheric aerosols and precipitation.

(4) Mercury cycling in the atmospheric and in aquatic environments.

SOCIETY MEMBERSHIPS:

Alpha Chi Sigma

American Chemical Society

American Geophysical Union

American Society of Limnology and Oceanography

The Oceanographic Society

Phi Beta Kappa

Union of Concerned Scientists

HONORS AND AWARDS:

1974 USC Oncology Training Fellowship

1980 NOAA Distinguished Authorship Award

1982 Dissertations Symposium in Chemical Oceanography (DISCO-IV) Participant

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- 1984 NSF/NATO Post-Doctoral Fellowship
- 2007 Editor's citation for Excellence in Refereeing; JGR-Oceans

NATIONAL/INTERNATIONAL SERVICE:

- 1987 Invited participant. CHEMRAWN IV, modern chemistry and chemical technology applied to the oceans and its resources. Keystone, Co.
- 1988 AGU/ASLO Ocean Sciences Meeting, Session Chairman, "Biogeochemistry and Diagenetic Processes in Suboxic and Anoxic Marine Environments."
- 1989 American Chemical Society Fall National Meeting, Session Chairman, "Symposium on Aqueous Chemistry and Geochemical Cycles of Iron and Manganese: Geochemistry of Marine and Estuarine Systems."
- 1990 UNESCO/IOC Trace Metals Baseline Expedition in the Southeast Atlantic, Coordinator/"Designated Sampler" for U.S. participation.
- 1990 NSF Chemical Oceanography Proposal Evaluation/Review Panel.
- 1991 NSF Steering Committee Member, "Analysis and Characterization of Marine Particles."
- 1991 NSF Chemical Oceanography Proposal Evaluation/Review Panel.
- 1991 NOAA Proposal Evaluation/Review Panel.
- 1992 American Geophysical Union Ocean Sciences Meeting, Session Chairman, "Biogeochemical Cycling in the Atlantic Ocean," Session I and II.
- 1993 UNESCO/IOC Trace Metals Baseline Expedition in the North Atlantic, Coordinator for U.S. participation.
- 1994 International Conference on Mercury as a Global Pollutant, Whistler, BC, Session Chairman.
- 1995 American Chemical Society Fall National Meeting, Symposium organizer and session chairman, "Mercury Deposition and Cycling," Sessions 1-4.
- 1999 American Chemical Society Fall National Meeting, Symposium organizer and session chairman, "Geochemistry and Bioavailability of Nitrogen and Phosphorus in Dissolved Organic Compounds".
- 1999 (to present) Associate Editor, MARINE CHEMISTRY (Elsevier).
- 2001 Program Chair-Elect, Geochemistry Division, American Chemical Society
- 2002 Program Chair and Chair-Elect, Geochemistry Division, American Chemical Society
- 2002 American Geophysical Union Fall National Meeting, Session Chair, "Impacts of Air/Sea Exchange on Biogeochemical Processes in the Ocean I."
- 2002 American Geophysical Union Fall National Meeting, Session Chair, "Impacts of Air/Sea Exchange on Biogeochemical Processes in the Ocean II Posters."
- 2003 Chair, Geochemistry Division, American Chemical Society.
- 2005 Member, US GEOTRACES Steering Committee (through 2014).
- 2013 UNESCO-SCOR Working Group 141 Sea-Surface Microlayers; Full Member (to present).
- 2015 Member, International GEOTRACES Data Management Committee (to present).

GRADUATE STUDENTS:

	Date Entered:	Date Graduated (degree):
Paulo Barrocas	Jan-1998	December, 2003 (Ph.D.)
Clifton Buck	Aug-2001	August, 2008 (Ph.D.)
Sara D. Cleveland	Sep-2003	April 2007 (M.S.)
Angela Dial	Sep-2010	April 2013 (MS); August 2016 (Ph.D.)
Alina Ebling	Jul-2009	December 2016 (Ph.D.)
Carley Farst (Chemistry Department)	Jan-2010	December 2015 (Ph.D.)
Kathleen Gosnell	Sep-2006	December, 2009 (M.S.)
Jane L. Guentzel	Jan-1990	February, 1997 (Ph.D.)
Paul Hansard	Sep-2002	August, 2008 (Ph.D.)
Nishanth Krishnamurthy	Aug-2008	August 2018 (Ph.D.)
Christopher J. Lach	Sep-1988	June, 1991 (MS)
Brent L. Lewis	Sep-1986	December, 1990 (Ph.D.)

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Rodney T. Powell	Sep-1988	December, 1991 (MS); December 1995 (Ph.D.)
John Rolison	Jul-2009	June 2012 (M.S.)
Scott Sigler	Jan-1995	December, 1998 (MS)
Jintu Wang	Sep-1988	November, 1992 (MS)

CURRENT POST-DOCTORAL RESEARCH ASSOCIATES:

FORMER POST-DOCTORAL RESEARCH ASSOCIATES:

Johan Schijf (1994-1995), Associate Professor, University of Maryland, MD, USA

David Kurk (2000-2002), Research Scientist, US Army Center for Health Promotion and Preventive Medicine, MD, USA

Angela Milne (2007-2010), Research Scientist, University of Plymouth, Plymouth, UK

Peter L. Morton (2010-2014), Assistant Scholar Scientist, FSU NHMFL, USA

Rachel U. Shelley (2010-2013; 2017), Research Scientist, University of Brest, France.

Clifton S. Buck (2011-2013), Associate Professor, Skidaway Institute of Oceanography, University of Georgia.

Neil J. Wyatt (2014-2017),

COURSES TAUGHT:

UC Santa Cruz:

CHEM 120 Principles of Instrumental Analysis (upper-division undergraduate course) (1982, 1983).

Florida State University:

OCE-1001 Elementary Oceanography (undergraduate "breadth" requirement for non-science majors).
Lecture and Online versions.

ISC-2003 Global Change: Its Scientific and Human Dimensions (undergraduate interdisciplinary course)

OCE-4008 Principles of Oceanography (upper division non-specialist course)

OCC-5050 Basic Chemical Oceanography (graduate level core-course)

OCC-5052 Aquatic Chemistry (thermodynamics, speciation, kinetics)

OCC-5065 Environmental Chemistry (anthropogenic influences on the environment)

OCC-5939 Chemical Oceanography Seminar (invited speakers and student presentations)

OCC-5415 Marine Geochemistry (cosmogenesis, terrestrial and marine geochemical cycles)

OCC-5417 Geochemical Ocean Tracers (physical modeling, tracers)

EVR1001 Introduction to Environmental Science (online)

EVR1001L Introduction to Environmental Science Laboratory (online)

OTHER SIGNIFICANT TEACHING EFFORTS:

Individual Research Project Sponsor; FSU Young Scholars Program Summer Science and Math Camp (two students per summer; 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2004, 2005, 2007, 2009, 2010, 2011, 2014).

Undergraduate Research Sponsor; CHEM 1051L Honors Program (1-2 students each year; 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2010, 2011).

Undergraduate Research Sponsor; ONR Program in Environmental Numerical Modeling Support for Under-Represented Groups (Prof. J.J. O'Brien, Dr. Patricia Stith); (1 undergraduate student each year; 1994, 1995).

Undergraduate Research Sponsor: NSF Research Experiences for Undergraduates Program; (support each year for undergraduate research assistants).

Undergraduate Research Sponsor: FSU Women in Math Science and Engineering Program (WIMSE) (2009, 2012, 2013, 2014, 2015, 2016).

REFEREED PUBLICATIONS:

1. Feely, R.A., Baker, E.T., Schumacher, J.D., Massoth, G.J. and Landing, W.M. (1979) PROCESSES AFFECTING THE DISTRIBUTION AND TRANSPORT OF SUSPENDED MATTER IN THE NORTHEAST GULF OF ALASKA. Deep-Sea Research Part a-Oceanographic Research Papers 26, 445-464.
2. Landing, W.M. and Bruland, K.W. (1980) MANGANESE IN THE NORTH PACIFIC. Earth and

- Planetary Science Letters 49, 45-56.
3. Bruland, K.W., Franks, R.P., Landing, W.M. and Soutar, A. (1981) SOUTHERN-CALIFORNIA INNER BASIN SEDIMENT TRAP CALIBRATION. *Earth and Planetary Science Letters* 53, 400-408.
 4. Feely, R.A., Massoth, G.J. and Landing, W.M. (1981) MAJOR-ELEMENT AND TRACE-ELEMENT COMPOSITION OF SUSPENDED MATTER IN THE NORTHEAST GULF OF ALASKA - RELATIONSHIPS WITH MAJOR SOURCES. *Marine Chemistry* 10, 431-453.
 5. Landing, W.M. and Feely, R.A. (1981) THE CHEMISTRY AND VERTICAL FLUX OF PARTICLES IN THE NORTHEASTERN GULF OF ALASKA. *Deep-Sea Research Part a-Oceanographic Research Papers* 28, 19-&.
 6. Landing, W.M., Haraldsson, C. and Paxeus, N. (1986) VINYL POLYMER AGGLOMERATE BASED TRANSITION-METAL CATION CHELATING ION-EXCHANGE RESIN CONTAINING THE 8-HYDROXYQUINOLINE FUNCTIONAL-GROUP. *Analytical Chemistry* 58, 3031-3035.
 7. Landing, W.M. and Bruland, K.W. (1987) THE CONTRASTING BIOGEOCHEMISTRY OF IRON AND MANGANESE IN THE PACIFIC-OCEAN. *Geochimica Et Cosmochimica Acta* 51, 29-43.
 8. Landing, W.M. and Westerlund, S. (1988) THE SOLUTION CHEMISTRY OF IRON(II) IN FRAMVAREN FJORD. *Marine Chemistry* 23, 329-343.
 9. Gropper, S.A.S., Anderson, K., Landing, W.M. and Acosta, P.B. (1990) DIETARY SELENIUM INTAKES AND PLASMA SELENIUM CONCENTRATIONS OF FORMULA-FED AND COWS MILK FED INFANTS. *Journal of the American Dietetic Association* 90, 1547-1550.
 10. Landing, W.M., Burnett, W.C., Lyons, W.B. and Orem, W.H. (1991) NUTRIENT CYCLING AND THE BIOGEOCHEMISTRY OF MANGANESE, IRON, AND ZINC IN JELLYFISH LAKE, PALAU. *Limnology and Oceanography* 36, 515-525.
 11. Lewis, B.L. and Landing, W.M. (1991) THE BIOGEOCHEMISTRY OF MANGANESE AND IRON IN THE BLACK-SEA. *Deep-Sea Research Part a-Oceanographic Research Papers* 38, S773-S803.
 12. Orem, W.H., Burnett, W.C., Landing, W.M., Lyons, W.B. and Showers, W. (1991) JELLYFISH LAKE, PALAU - EARLY DIAGENESIS OF ORGANIC-MATTER IN SEDIMENTS OF AN ANOXIC MARINE LAKE. *Limnology and Oceanography* 36, 526-543.
 13. Schijf, J., Debaar, H.J.W., Wijbrans, J.R. and Landing, W.M. (1991) DISSOLVED RARE-EARTH ELEMENTS IN THE BLACK-SEA. *Deep-Sea Research Part a-Oceanographic Research Papers* 38, S805-S823.
 14. Lewis, B.L. and Landing, W.M. (1992) THE INVESTIGATION OF DISSOLVED AND SUSPENDED PARTICULATE TRACE-METAL FRACTIONATION IN THE BLACK-SEA. *Marine Chemistry* 40, 105-141.
 15. Falkner, K.K., Klinkhammer, G.P., Bowers, T.S., Todd, J.F., Lewis, B.L., Landing, W.M. and Edmond, J.M. (1993) THE BEHAVIOR OF BARIUM IN ANOXIC MARINE WATERS. *Geochimica Et Cosmochimica Acta* 57, 537-554.
 16. Sholkovitz, E.R., Landing, W.M. and Lewis, B.L. (1994) OCEAN PARTICLE CHEMISTRY - THE FRACTIONATION OF RARE-EARTH ELEMENTS BETWEEN SUSPENDED PARTICLES AND SEAWATER. *Geochimica Et Cosmochimica Acta* 58, 1567-1579.
 17. Gill, G.A., Guentzel, J.L., Landing, W.M. and Pollman, C.D. (1995) TOTAL GASEOUS MERCURY MEASUREMENTS IN FLORIDA - THE FAMS PROJECT (1992-1994). *Water Air and Soil Pollution* 80, 235-244.
 18. Guentzel, J.L., Landing, W.M., Gill, G.A. and Pollman, C.D. (1995) ATMOSPHERIC DEPOSITION OF MERCURY IN FLORIDA - THE FAMS PROJECT (1992-1994). *Water Air and Soil Pollution* 80, 393-402.
 19. Landing, W.M., Cutter, G.A., Dalziel, J.A., Flegal, A.R., Powell, R.T., Schmidt, D., Shiller, A., Statham, P., Westerlund, S. and Resing, J. (1995a) ANALYTICAL INTERCOMPARISON RESULTS FROM THE 1990 INTERGOVERNMENTAL-OCEANOGRAPHIC-COMMISSION OPEN-OCEAN BASE-LINE SURVEY FOR TRACE-METALS - ATLANTIC-OCEAN. *Marine Chemistry* 49, 253-265.
 20. Landing, W.M., Perry, J.J., Guentzel, J.L., Gill, G.A. and Pollman, C.D. (1995b) RELATIONSHIPS BETWEEN THE ATMOSPHERIC DEPOSITION OF TRACE-ELEMENTS, MAJOR IONS, AND MERCURY IN FLORIDA - THE FAMS PROJECT (1992-1993). *Water Air and Soil Pollution* 80, 343-352.

21. Pollman, C., Gill, G., Landing, W., Guentzel, J., Bare, D., Porcella, D., Zillioux, E. and Atkeson, T. (1995) OVERVIEW OF THE FLORIDA ATMOSPHERIC MERCURY STUDY (FAMS). *Water Air and Soil Pollution* 80, 285-290.
22. Powell, R.T., King, D.W. and Landing, W.M. (1995) IRON DISTRIBUTIONS IN SURFACE WATERS OF THE SOUTH-ATLANTIC. *Marine Chemistry* 50, 13-20.
23. Buesseler, K.O., Bauer, J.E., Chen, R.F., Eglinton, T.I., Gustafsson, O., Landing, W., Mopper, K., Moran, S.B., Santschi, P.H., VernonClark, R. and Wells, M.L. (1996) An intercomparison of cross-flow filtration techniques used for sampling marine colloids: Overview and organic carbon results. *Marine Chemistry* 55, 1-31.
24. Guentzel, J.L., Powell, R.T., Landing, W.M. and Mason, R.P. (1996) Mercury associated with colloidal material in an estuarine and an open-ocean environment. *Marine Chemistry* 55, 177-188.
25. Lyons, W.B., Lent, R.M., Burnett, W.C., Chin, P., Landing, W.M., Orem, W.H. and McArthur, J.M. (1996) Jellyfish Lake, Palau: Regeneration of C, N, Si, and P in anoxic marine lake sediments. *Limnology and Oceanography* 41, 1394-1403.
26. Powell, R.T., Landing, W.M. and Bauer, J.E. (1996) Colloidal trace metals, organic carbon and nitrogen in a southeastern US estuary. *Marine Chemistry* 55, 165-176.
27. Reitmeier, R., Powell, R.T., Landing, W.M. and Measures, C.I. (1996) Colloidal aluminum and iron in seawater: An intercomparison between various cross-flow ultrafiltration systems. *Marine Chemistry* 55, 75-91.
28. Moran, S.B., Charette, M.A., Hoff, J.A., Edwards, R.L. and Landing, W.M. (1997) Distribution of Th-230 in the Labrador Sea and its relation to ventilation. *Earth and Planetary Science Letters* 150, 151-160.
29. Guentzel, J.L., Landing, W.M., Gill, G.A. and Pollman, C.D. (1998) Mercury and major ions in rainfall, throughfall, and foliage from the Florida Everglades. *Science of the Total Environment* 213, 43-51.
30. Landing, W.M., Guentzel, J.L., Gill, G.A. and Pollman, C.D. (1998) Methods for measuring mercury in rainfall and aerosols in Florida. *Atmospheric Environment* 32, 909-918.
31. Statham, P.J., Yeats, P.A. and Landing, W.M. (1998) Manganese in the eastern Atlantic Ocean: processes influencing deep and surface water distributions. *Marine Chemistry* 61, 55-68.
32. Ebinghaus, R., Jennings, S.G., Schroeder, W.H., Berg, T., Donaghy, T., Guentzel, J., Kenny, C., Kock, H.H., Kvietskus, K., Landing, W., Muhleck, T., Munthe, J., Prestbo, E.M., Schneeberger, D., Slemr, F., Sommar, J., Urba, A., Wallschlager, D. and Xiao, Z. (1999) International field intercomparison measurements of atmospheric mercury species at Mace Head, Ireland. *Atmospheric Environment* 33, 3063-3073.
33. Mortazavi, B., Iverson, R.L., Landing, W.M. and Huang, W.R. (2000a) Phosphorus budget of Apalachicola Bay: a river-dominated estuary in the northeastern Gulf of Mexico. *Marine Ecology-Progress Series* 198, 33-42.
34. Mortazavi, B., Iverson, R.L., Landing, W.M., Lewis, F.G. and Huang, W.R. (2000b) Control of phytoplankton production and biomass in a river-dominated estuary: Apalachicola Bay, Florida, USA. *Marine Ecology-Progress Series* 198, 19-31.
35. Dierssen, H., Balzer, W. and Landing, W.M. (2001) Simplified synthesis of an 8-hydroxyquinoline chelating resin and a study of trace metal profiles from Jellyfish Lake, Palau. *Marine Chemistry* 73, 173-192.
36. Guentzel, J.L., Landing, W.M., Gill, G.A. and Pollman, C.D. (2001) Processes influencing rainfall deposition of mercury in Florida. *Environmental Science & Technology* 35, 863-873.
37. Llewelyn, J.M., Landing, W.M., Marshall, A.G. and Cooper, W.T. (2002) Electrospray ionization Fourier transform ion cyclotron resonance mass spectrometry of dissolved organic phosphorus species in a treatment wetland after selective isolation and concentration. *Analytical Chemistry* 74, 600-606.
38. Pollman, C.D., Landing, W.M., Perry, J.J. and Fitzpatrick, T. (2002) Wet deposition of phosphorus in Florida. *Atmospheric Environment* 36, 2309-2318.
39. Stenson, A.C., Landing, W.M., Marshall, A.G. and Cooper, W.T. (2002) Ionization and fragmentation of humic substances in electrospray ionization Fourier transform-ion cyclotron resonance mass spectrometry. *Analytical Chemistry* 74, 4397-4409.
40. Wang, Y., Hsieh, Y.P., Landing, W.M., Choi, Y.H., Salters, V. and Campbell, D. (2002) Chemical and carbon isotopic evidence for the source and fate of dissolved organic matter in the northern Everglades.

- Biogeochemistry 61, 269-289.
41. Brown, M.T., Landing, W.M. and Measures, C.I. (2005) Dissolved and particulate Fe in the western and central North Pacific: Results from the 2002 IOC cruise. *Geochemistry Geophysics Geosystems* 6.
 42. Buck, C.S., Landing, W.M., Resing, J.A. and Lebon, G.T. (2006) Aerosol iron and aluminum solubility in the northwest Pacific Ocean: Results from the 2002 IOC cruise. *Geochemistry Geophysics Geosystems* 7.
 43. Measures, C.I., Cutter, G.A., Landing, W.M. and Powell, R.T. (2006) Hydrographic observations during the 2002 IOC Contaminant Baseline Survey in the western Pacific Ocean. *Geochemistry Geophysics Geosystems* 7.
 44. Bowie, A.R., Ussher, S.J., Landing, W.M. and Worsfold, P.J. (2007) Intercomparison between FI-CL and ICP-MS for the determination of dissolved iron in Atlantic seawater. *Environmental Chemistry* 4, 1-4.
 45. Measures, C.I., Landing, W.M., Brown, M.T. and Buck, C.S. (2008a) A commercially available rosette system for trace metal-clean sampling. *Limnology and Oceanography-Methods* 6, 384-394.
 46. Measures, C.I., Landing, W.M., Brown, M.T. and Buck, C.S. (2008b) High-resolution Al and Fe data from the Atlantic Ocean CLIVAR-CO(2) repeat hydrography A16N transect: Extensive linkages between atmospheric dust and upper ocean geochemistry. *Global Biogeochemical Cycles* 22.
 47. Hansard, S.P. and Landing, W.M. (2009) Determination of iron(II) in acidified seawater samples by luminol chemiluminescence. *Limnology and Oceanography-Methods* 7, 222-234.
 48. Hansard, S.P., Landing, W.M., Measures, C.I. and Voelker, B.M. (2009) Dissolved iron(II) in the Pacific Ocean: Measurements from the PO2 and P16N CLIVAR/CO2 repeat hydrography expeditions. *Deep-Sea Research Part I-Oceanographic Research Papers* 56, 1117-1129.
 49. Sunderland, E.M., Krabbenhoft, D.P., Moreau, J.W., Strode, S.A. and Landing, W.M. (2009) Mercury sources, distribution, and bioavailability in the North Pacific Ocean: Insights from data and models. *Global Biogeochemical Cycles* 23.
 50. Ussher, S.J., Milne, A., Landing, W.M., Attiq-ur-Rehman, K., Seguret, M.J.M., Holland, T., Achterberg, E.P., Nabi, A. and Worsfold, P.J. (2009) Investigation of iron(III) reduction and trace metal interferences in the determination of dissolved iron in seawater using flow injection with luminol chemiluminescence detection. *Analytica Chimica Acta* 652, 259-265.
 51. Barrocas, P.R.G., Landing, W.M. and Hudson, R.J.M. (2010) Assessment of mercury(II) bioavailability using a bioluminescent bacterial biosensor: Practical and theoretical challenges. *Journal of Environmental Sciences-China* 22, 1137-1143.
 52. Buck, C.S., Landing, W.M. and Resing, J.A. (2010a) Particle size and aerosol iron solubility: A high-resolution analysis of Atlantic aerosols. *Marine Chemistry* 120, 14-24.
 53. Buck, C.S., Landing, W.M., Resing, J.A. and Measures, C.I. (2010b) The solubility and deposition of aerosol Fe and other trace elements in the North Atlantic Ocean: Observations from the A16N CLIVAR/CO2 repeat hydrography section. *Marine Chemistry* 120, 57-70.
 54. Caffrey, J.M., Landing, W.M., Nolek, S.D., Gosnell, K.J., Bagui, S.S. and Bagui, S.C. (2010) Atmospheric deposition of mercury and major ions to the Pensacola (Florida) watershed: spatial, seasonal, and inter-annual variability. *Atmospheric Chemistry and Physics* 10, 5425-5434.
 55. Landing, W.M., Caffrey, J.M., Nolek, S.D., Gosnell, K.J. and Parker, W.C. (2010) Atmospheric wet deposition of mercury and other trace elements in Pensacola, Florida. *Atmospheric Chemistry and Physics* 10, 4867-4877.
 56. Milne, A., Landing, W., Bizimis, M. and Morton, P. (2010) Determination of Mn, Fe, Co, Ni, Cu, Zn, Cd and Pb in seawater using high resolution magnetic sector inductively coupled mass spectrometry (HR-ICP-MS). *Analytica Chimica Acta* 665, 200-207.
 57. Prospero, J.M., Landing, W.M. and Schulz, M. (2010) African dust deposition to Florida: Temporal and spatial variability and comparisons to models. *Journal of Geophysical Research-Atmospheres* 115.
 58. Ranville, M.A., Cutter, G.A., Buck, C.S., Landing, W.M., Cutter, L.S., Resing, J.A. and Flegal, A.R. (2010) Aeolian Contamination of Se and Ag in the North Pacific from Asian Fossil Fuel Combustion. *Environmental Science & Technology* 44, 1587-1593.
 59. Gallon, C., Ranville, M.A., Conaway, C.H., Landing, W.M., Buck, C.S., Morton, P.L. and Flegal, A.R. (2011) Asian Industrial Lead Inputs to the North Pacific Evidenced by Lead Concentrations and Isotopic Compositions in Surface Waters and Aerosols. *Environmental Science & Technology* 45, 9874-9882.
 60. Huneus, N., Schulz, M., Balkanski, Y., Griesfeller, J., Prospero, J., Kinne, S., Bauer, S., Boucher, O.,

- Chin, M., Dentener, F., Diehl, T., Easter, R., Fillmore, D., Ghan, S., Ginoux, P., Grini, A., Horowitz, L., Koch, D., Krol, M.C., Landing, W., Liu, X., Mahowald, N., Miller, R., Morcrette, J.J., Myhre, G., Penner, J., Perlwitz, J., Stier, P., Takemura, T. and Zender, C.S. (2011) Global dust model intercomparison in AeroCom phase I. *Atmospheric Chemistry and Physics* 11, 7781-7816.
61. Barrett, P.M., Resing, J.A., Buck, N.J., Buck, C.S., Landing, W.M. and Measures, C.I. (2012) The trace element composition of suspended particulate matter in the upper 1000 m of the eastern North Atlantic Ocean: A16N. *Marine Chemistry* 142, 41-53.
62. Costa, M.F., Landing, W.M., Kehrig, H.A., Barletta, M., Holmes, C.D., Barrocas, P.R.G., Evers, D.C., Buck, D.G., Vasconcellos, A.C., Hacon, S.S., Moreira, J.C. and Malm, O. (2012) Mercury in tropical and subtropical coastal environments. *Environmental Research* 119, 88-100.
63. Gosnell, K.J., Landing, W.M. and Milne, A. (2012) Fluorometric detection of total dissolved zinc in the southern Indian Ocean. *Marine Chemistry* 132, 68-76.
64. Harris, R., Pollman, C., Hutchinson, D., Landing, W., Axelrad, D., Morey, S.L., Dukhovskoy, D. and Vijayaraghavan, K. (2012a) A screening model analysis of mercury sources, fate and bioaccumulation in the Gulf of Mexico. *Environmental Research* 119, 53-63.
65. Harris, R., Pollman, C., Landing, W., Evans, D., Axelrad, D., Hutchinson, D., Morey, S.L., Rumbold, D., Dukhovskoy, D., Adams, D.H., Vijayaraghavan, K., Holmes, C., Atkinson, R.D., Myers, T. and Sunderland, E. (2012b) Mercury in the Gulf of Mexico: Sources to receptors. *Environmental Research* 119, 42-52.
66. Lenes, J.M., Prospero, J.M., Landing, W.M., Virmani, J.I. and Walsh, J.J. (2012) A model of Saharan dust deposition to the eastern Gulf of Mexico. *Marine Chemistry* 134, 1-9.
67. Zurbrick, C.M., Morton, P.L., Gallon, C., Shiller, A.M., Landing, W.M. and Flegal, A.R. (2012) Intercalibration of Cd and Pb concentration measurements in the northwest Pacific Ocean. *Limnology and Oceanography-Methods* 10, 270-277.
68. Buck, C.S., Landing, W.M. and Resing, J. (2013) Pacific Ocean aerosols: Deposition and solubility of iron, aluminum, and other trace elements. *Marine Chemistry* 157, 117-130.
69. Morton, P.L., Landing, W.M., Hsu, S.C., Milne, A., Aguilar-Islas, A.M., Baker, A.R., Bowie, A.R., Buck, C.S., Gao, Y., Gichuki, S., Hastings, M.G., Hatta, M., Johansen, A.M., Losno, R., Mead, C., Patey, M.D., Swarr, G., Vandermark, A. and Zamora, L.M. (2013) Methods for the sampling and analysis of marine aerosols: results from the 2008 GEOTRACES aerosol intercalibration experiment. *Limnology and Oceanography-Methods* 11, 62-78.
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PRESENTATIONS FROM THE LAST FIVE YEARS (2014-2019):

INVITED LECTURES:

William Landing: Atmospheric Deposition to the Oceans Controls Biological Productivity. 7th Kaplan Symposium. February 11-13, 2019. Eilat, Israel

NATIONAL and INTERNATIONAL MEETINGS (Graduate Students in BOLD): (speaker underlined, ¹invited, ²published abstract)

2014 AGU/ASLO Ocean Sciences Meeting (Honolulu, HI; Feb. 23-28, 2014)

Barrett, P. M.; Resing, J. A.; Buck, N. J.; Landing, W. M.; **DECADAL COMPARISON OF THE DISTRIBUTION OF PARTICULATE TRACE ELEMENTS IN THE TOP 1000 M OF THE NORTH ATLANTIC OCEAN ALONG CLIVAR SECTION A16N: 2003–2013** (Abstract ID: 13042)

Galfond, B.; Kadko, D.; Shelley, R.; Landing, W.; **A NOVEL METHOD OF DETERMINING ATMOSPHERIC DEPOSITION OF TRACE ELEMENTS TO THE OCEAN/ICE SYSTEM OF THE ARCTIC** (Abstract ID: 13088)

Shelley, R. U.; Morton, P. L.; Landing, W. M.; **ELEMENTAL COMPOSITION OF NORTH ATLANTIC AEROSOLS (US GEOTRACES)** (Abstract ID: 14189)

Ebling, A. M.; Landing, W. M.; **RESIDENCE TIMES OF TRACE METALS IN THE SEA SURFACE MICROLAYER** (Abstract ID: 14291)

Buck, C. S.; Bowman, K.; Gill, G.; Hammerschmidt, C.; Landing, W. M.; **PARTITIONING, SPECIATION, AND FLUX OF MERCURY IN GULF OF MEXICO ESTUARIES** (Abstract ID: 14826)

- Landing, W. M.; Morton, P. L.; Shelley, R. U.; Resing, J. A.; Barrett, P. M.; DISSOLVED TRACE METALS IN THE NORTH ATLANTIC FROM 2003 TO 2013: RESULTS FROM THE A16N CLIVAR/REPEAT HYDROGRAPHY SECTIONS (Abstract ID: 14852)
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- Grand, M. M.; Measures, C. I.; Hatta, M.; Morton, P. L.; Landing, W. M.; BIOGEOCHEMISTRY OF DISSOLVED FE AND AL IN THE EASTERN INDIAN OCEAN: INSIGHTS FROM THE ANTARCTIC MARGIN TO THE BAY OF BENGAL ALONG $>95^{\circ}\text{E}$ (Abstract ID: 15438)
- McElhenie, S. D.; Wozniak, A. S.; Shelley, R. U.; Landing, W. M.; Hatcher, P. G.; SOURCE-SPECIFIC CHARACTERISTICS OF AEROSOL ORGANIC MATTER OVER THE NORTH ATLANTIC OCEAN: IMPLICATIONS FOR THE IDENTITY OF POTENTIAL IRON BINDING LIGANDS (Abstract ID: 16338)
- Wozniak, A. S.; Shelley, R. U.; McElhenie, S. D.; Landing, W. M.; Hatcher, P. G.; AEROSOL WATER SOLUBLE ORGANIC MATTER MOLECULAR CHARACTERISTICS AND IRON SOLUBILITY FROM THE 2010-11 US GEOTRACES CRUISES IN THE NORTH ATLANTIC OCEAN (Abstract ID: 16937)

2014 AGU Fall Meeting (San Francisco, CA; Dec. 15-19, 2014)

- Pamela Barrett, Maxime Grand, William Landing, Chris Measures, Joseph Resing. OS23E1256. Trace Metal Composition of Suspended Particulate Matter Along Meridional and Zonal CLIVAR Sections in the Indian Ocean.
- Clifton Buck, William Landing, Ana Aguilar-Islas, Robert Rember. OS23E1269. Trace Element Fractional Solubility in Ultrapure Water From Samples Collected During the US GEOTRACES Eastern Tropical South Pacific Section.
- David Krabbenhoft, Morgan Maglio, Jacob Ogorek, William Landing, Peter Morton, Rachel Shelley, Elsie Sunderland. OS51F05. Mercury and Methylmercury Distributions Along a Longitudinal Transect of the North Atlantic Ocean.
- William Landing, Rachel Shelley, David Kadko. OS23D1245. Recent Rainfall and Aerosol Chemistry From Bermuda.
- Peter Morton, Rachel Weisend, William Landing, Jessica Fitzsimmons, Christopher Hayes, Edward Boyle. OS23D1239. Trace Element Cycling in Lithogenic Particles at Station ALOHA.
- Rachel Weisend, Peter Morton, William Landing, Jessica Fitzsimmons, Christopher Hayes, Edward Boyle. OS23D1240. Particulate Trace Element Cycling in a Diatom Bloom at Station ALOHA.

2016 AGU/ASLO Ocean Sciences Meeting (New Orleans, LA Feb. 2016)

- Alina Ebling, WM Landing, et al. A24C-2595 Trace Elements in the Sea Surface Microlayer: Results from a Two Year Study in the Florida Keys
- Tom Conway, WM Landing, et al. CT11A-04 Tracing anthropogenic aerosol Fe sources in the North Atlantic Ocean using dissolved Fe isotope ratios
- Chris Measures, WM Landing, et al. CT11A-08 Dissolved Al in the A16S CLIVAR Repeat Hydrography Section and Its Implication for Aerosol Deposition in the South Atlantic
- Mariko Hatta, WM Landing et al. CT12A-01 Dissolved Fe and Mn During the A16S CLIVAR Repeat Hydrography Transect in the South Atlantic
- Rachel Weisend, WM Landing et al. CT14A-0116 Supply of Natural and Industrial Aerosols to the Indian Ocean
- Ana Aguilar-Islas, WM Landing et al. CT14A-0121 Constraining the Solubility of Aerosol Fe using US GEOTRACES Data
- WM Landing et al. CT14A-0123 Quantifying the Fluxes of Atmospherically Derived Trace Elements in the Arctic Ocean/Ice System using ^{7}Be
- Yuan Gao, WM Landing et al. CT14A-0124 Mass-size distributions of selected nutrient elements in aerosols and their air-to-sea fluxes to the Arctic Ocean: Preliminary results from the US

GEOTRACES Arctic Cruise in summer 2015.

Chris Marsay, WM Landing et al. CT14A-0125 Atmospheric Deposition to the Arctic Ocean:
Concentrations of Dissolved Trace Elements in Melt Ponds During US GEOTRACES Western Arctic
Section

Susan Little, WM Landing et al. CT14B-0132 Isotopic composition of dissolved and particulate Cu in the
North Atlantic: Constraining the atmospheric deposition of aerosol Cu

Clifton Buck, WM Landing et al. CT14B-0134 Flux of Total and Methyl Mercury to the Northern Gulf of
Mexico from U.S. Estuaries

Peter Morton, WM Landing et al. CT14B-0139 A Margin Source of Cd in the Western North Pacific
Ocean

Brent Summers, WM Landing et al. CT24A-0154 Elemental Ratios of Bioactive Trace Metals in the Bay
of Bengal

Neil Wyatt, WM Landing et al. CT31A-07 THE MODIFICATION OF DISSOLVED ZINC
DISTRIBUTIONS ALONG THE U.S. GEOTRACES WESTERN ARCTIC SECTION

2017 Goldschmidt Conference (August 14-18, 2017 Paris, France)

Landing W, Shelley R, Ebling A & Morton P. Fluxes of Bio-Active Aerosol Trace Elements in the North
Atlantic.

Buck C, Landing W, Aguilar-Islas A, Marsay C & Kadko D. Invited: Aerosol Deposition and Fractional
Solubility of Trace Elements in the Remote Ocean.

Ito A, Myriokefalitakis S, Kanakidou M, Mahowald N, Baker A, Jickells T, Sarin M, Bikkina S, Gao Y,
Shelley R, Buck C, Landing W, Bowie A, Perron M, Meskhidze N, Johnson M, Feng Y & Duce R.
Evaluation of Labile Iron Processing in Atmospheric Models

Shelley R, Wyatt N & Landing W. Trace Elements in Aerosols, Rain, and the Sea-Surface Microlayer of
the South Pacific Ocean Under Low Wind Conditions.

2017 AGU Fall Meeting (December 11-15, 2017; New Orleans, LA)

Christine Wiedinmyer, WM Landing et al. COARSEMAP: synthesis of observations and models for
coarse-mode aerosols.

Jane M Caffrey, WM Landing et al. Comparative Analysis of Nitrate Levels in Pensacola Area Rain
Water.

2018 Ocean Sciences Meeting (February 11-16, 2018; Portland OR)

William M Landing. The Impacts of Aerosol Deposition on the Distribution of Bioactive Iron and Other
Trace Elements in the Sea Surface Microlayer

Rachel Shelley and WM Landing. Trace elements in aerosols, rain, and the sea-surface microlayer of the
Indo- Pacific Ocean under low wind conditions

Alessandro Tagliabue, WM Landing et al. Quantifying the internal cycling of iron in the ocean from basin
scale sections, process studies and numerical models.

Pamela M Barrett, WM Landing et al. Trace element composition of suspended particulate matter along
CLIVAR sections I9N/I8S and I6S: Impact of scavenging on particulate Al distributions in the
Southern Ocean.

Chris I Measures, WM Landing et al. Potential sources of sub-surface Al enrichments seen in the
CLIVAR and GEOTRACES data sets.

2018 AGU Fall Meeting (December 10-14, 2018; Washington DC)

William M Landing et al. Trace Element Cycling in the Sea Surface Microlayer from a Controlled
Atmospheric Deposition Event.

Clifton S Buck, WM Landing et al. Particle-size effects on aerosol fractional solubility in samples from
US GEOTRACES section cruises.

Christopher T Hayes, WM landing et al. Replacement times of the rare earth elements in the North
Atlantic Ocean based on thorium supply.

2019 SOLAS Open Science Meeting (April 21-25, 2019; Sapporo Japan)

WM Landing: Atmospheric Deposition to the Oceans Controls Biological Productivity.
(Discussion Session) A. Ito, W. Landing, D. Hamilton: Atmospheric deposition of iron, ocean biogeochemistry and marine emission of biological aerosols.

REGIONAL MEETINGS: (speaker underlined, ¹invited, ²published abstract):

2015 Southeastern Biogeochemistry Symposium (March 27-29, 2015)

Brent A. Summers, Peter L. Morton, Nathaniel Buck, William M. Landing, and Joseph Resing. Total and Soluble Trace Element Concentrations in Aerosols in the Indian Ocean.
Angela Dial, Sambuddha Misra, Vincent Salters, and William Landing. The Magnesium Isotopic Composition of Foraminifera: Implications as a Paleoclimate Proxy.
Alina Ebling, Neil Wyatt, and William Landing. The Missing Link: Characterizing Trace Elements within the Atmosphere, Sea Surface Microlayer, and Underlying Water Column.
Amelia Longo, Yan Feng, Barry Lai, William Landing, Athanasios Nenes, Nikos Mihalopoulos, Kaliopi Violaki, and Ellery Ingall. Key Factors Controlling the Solubility of Iron in Saharan Dust.

STATE/LOCAL MEETINGS: (speaker underlined, ¹invited, ²published abstract):

2014 Florida Annual Meeting and Exposition, Florida Section American Chemical Society, May 2014.

Carley Farst, William Landing, Alexandra Stenson. ISOLATION OF MARINE SIDEROPHORES.
Angela R. Dial, Sambuddha Misra, Vincent J. M. Salters, & William M. Landing. MAGNESIUM ISOTOPES AS A GEOCHEMICAL PROXY FOR PALEOCLIMATE.
William M. Landing, Rachel Shelley, Brian Kilgore, and Nishanth Krishnamurthy, Dave Kadko and Ben Galfond. USING BERYLIUM-7 TO QUANTIFY THE FLUXES OF TRACE ELEMENTS FROM THE ATMOSPHERE TO THE OCEANS.

CURRENT RESEARCH SUPPORT:

National Science Foundation (Chemical Oceanography OCE-1756104). Collaborative Research: US GEOTRACES PMT: Quantification of Atmospheric Deposition and Trace Elements Fractional Solubility. \$147,979, 02/01/2018-01/31/2021.
National Science Foundation (Chemical Oceanography and OPP, OPP-1753408). Collaborative Research: Defining the atmospheric deposition of trace elements into the Arctic ocean-ice ecosystem during the year-long MOSAiC ice drift. \$135,032, 01/01/2018-12/31/2021.

PRIOR RESEARCH SUPPORT:

National Science Foundation (Chemical Oceanography OCE-1357140). Collaborative Research: Vibrio as a model microbe for opportunistic heterotrophic response to Saharan dust deposition events in marine waters. \$200,584, 04/01/2014-03/31/2017.
National Science Foundation (OCE, OPP 1355833). Collaborative Research: Management and Implementation of the US Arctic GEOTRACES Study. \$338,109. 07/01/2014-06/30/2017.
National Science Foundation (Chemical Oceanography OCE-1437266). Collaborative Research: GEOTRACES Arctic Section: Collection and analysis of atmospheric deposition. \$104,290, 10/01/2014-09/30/2017.
National Science Foundation (Chemical Oceanography OCE- 1260287), Collaborative Research: Trace metal deposition and cycling in the North Atlantic on the 2013 CLIVAR/Repeat Hydrography expedition. \$162,000, 02/01/13-01/31/16.
National Science Foundation (Chemical Oceanography OCE-1234646), Collaborative Proposal: GEOTRACES Pacific Section: Collection and analysis of atmospheric deposition. \$199,380, 12/01/2012-11/30/15.
National Science Foundation (Chemical Oceanography OCE-0962158). Collaborative Research: Global Ocean Survey of Dissolved and Particulate Iron and Aluminum and Aerosol Iron and Aluminum Solubility Supporting the CLIVAR Repeat Hydrography Project (2010-2014). \$490,223, 1/01/2010-12/31/2015.
National Science Foundation (Chemical Oceanography OCE-1034764). Collaborative research: A novel tracer approach to estimate the atmospheric input of trace elements into the global ocean. \$221,185, 01/01/2011-12/31/2014.

- National Science Foundation (Office of Polar Programs ARC-1202992), Collaborative Research: Sample Analysis to Test a Novel Method of Determining Atmospheric Deposition of Trace Elements to the Ocean/Ice System of the Arctic. \$30,234 09/01/2012-08/31/2014.
- National Science Foundation (Chemical Oceanography OCE- 1061354). Acquisition of a sector magnet ICP-MS for Ocean and Earth Science Research at Florida State University. \$250,000, 01/01/11-12/31/12.
- National Science Foundation (Chemical Oceanography OCE-1132766). GEOTRACES Atlantic Section: Aerosol and rainfall collection and analysis. \$327,566, 08/15/2009-07/31/2012.
- National Science Foundation (Chemical Oceanography OCE-1132766). GEOTRACES Atlantic Section: Aerosol and rainfall collection and analysis (RAPID supplemental funding). \$27,091, 08/11/2011-07/31/2012.
- National Science Foundation (Chemical Oceanography OCE-0752832). GEOTRACES: Intercalibration for Aerosol Sampling and Analysis. \$220,117, 02/15/2008-01/31/2012.
- National Science Foundation (Chemical Oceanography OCE-0752351). Collaborative Research: Participation in the GEOTRACES Intercalibration Cruise. \$70,585, 02/15/2008-01/31/2010.
- National Science Foundation (Chemical Oceanography OCE-0649639). Collaborative Research: Global Ocean Survey of Dissolved and Particulate Iron and Aluminum and Aerosol Iron and Aluminum Solubility Supporting the CLIVAR Repeat Hydrography Project (2007-2009). \$391,710, 1/01/07-12/31/09.
- National Science Foundation (Chemical Oceanography OCE-0550317). Trace Element Analysis of Aerosol and Seawater Samples Collected on the A16N, P02, and P16S CLIVAR Cruises. \$320,229, 1/01/06-12/31/08.
- National Science Foundation (EAR-0521201). The Acquisition of a Multi Collector Inductively Coupled Plasma Mass Spectrometer and Laser Ablation System for Earth and Ocean Sciences at Florida State University. \$287,294, 09/01/05-08/30/07.
- National Science Foundation (Chemical Oceanography OCE-0223378). Collaborative Research: Global ocean survey of dissolved iron and aluminum and aerosol iron and aluminum solubility supporting the Repeat Hydrography (CO₂) project. 1368-887-22, \$305,276, 1/15/03-1/14/06.
- National Science Foundation (Chemical Oceanography OCE-0117655): Collaborative research: Biogeochemistry of trace elements in the western Pacific: atmospheric input and upper ocean cycling. 1368-804-22, \$243,403, 8/1/2001-8/31/2004.
- National Science Foundation (EAR-0106789). Mercury Isotope Investigations of Pre- and Post-Industrial Atmospheric Deposition. \$158,898, Odom, Salters, and Landing, co-PIs., 7/1/2001-6/30/2003.
- National Science Foundation (Chemical Oceanography OCE-9911339): Influences of Atmospheric Deposition, Organic Complexation, and Photochemical Processes on the Redox Cycle of Iron in Surface Waters. 1368-776-22, \$208,024, 4/1/2000-9/31/2003.
- National Science Foundation (Division of Earth Sciences): Acquisition of a high resolution ICPMS for elemental concentration analysis in Earth Science research. EAR-9601952, \$267,500, G.A. Zindler, V.J. Salters, W.M. Landing and P.C. Ragland, co-PIs, 8/1/96-7/31/99.
- National Science Foundation (Chemical Oceanography OCE-9531848): Trace element input and cycling in the western south Atlantic. \$161,290, 10/1/95-4/30/98.
- National Science Foundation (Chemical Oceanography OCE-9302562): Colloidal trace metals and DOC/DON in the surface waters of the North Atlantic Ocean. \$121,354, W.M. Landing, 4/1/93-12/31/95. Research Experiences for Undergraduates Supplements, \$4,000 (1993), \$4,000 (1994).
- National Science Foundation (Chemical Oceanography OCE-9102559): Sources and properties of colloidal trace metals in the oceans, \$111,951, W.M. Landing and James E. Bauer, co-PIs. 4/1/91 - 3/31/93. Research Experiences for Undergraduates Supplement, \$4,000 (1991), \$4,000 (1992).
- National Science Foundation (Chemical Oceanography OCE-8613638): Trace Metal Biogeochemistry in the Black Sea. \$154,057, 11-1-87 to 10-31-89, Research Experiences for Undergraduates Supplement, \$4,000 (1987), \$4,000 (1988), Supplement for participation in the IOC-Trace Metals Baseline Cruise in the South Atlantic, \$8,640 (1990).
- National Science Foundation (Chemical Oceanography and Marine Geology): \$17,000 (1986-1987) supplement for WML (to W.C. Burnett's NSF grant) to participate in a study of Jellyfish Lake, Palau Islands.
- National Oceanic and Atmospheric Administration (NA090AR4600198). FSU Southeastern Consortium for the Study of Mercury in the Atmosphere. \$400,000, 09/01/2009 – 02/28/2013.
- GoMRI, Deep-C: Impacts on mercury cycling from a massive oil spill in the Gulf of Mexico. \$238,003,

- 10/01/2011-09/30/2014. Co-PIs Landing and Salters.
National Oceanic and Atmospheric Administration (NA10AR4600209). FSU Southeastern Consortium for the Study of Mercury in the Atmosphere: Phase II. \$487,500, 09/01/2010 – 02/28/2013.
- U.S. Environmental Protection Agency and University of West Florida: PERCH project. Atmospheric Deposition of Mercury, Trace Metals and Major Ions in the Pensacola Bay Watershed. \$104,040, 5/1/2005-4/30/2008.
U.S. Environmental Protection Agency STAR Program, Natural mercury isotopes as tracers of sources, cycling, and deposition of atmospheric mercury. \$827,147 (10/1/02-9/30/05). Landing, Odom, and Salters, co-PIs.
- Electric Power Research Institute (EP-P33676/C15484), Mercury Isotopes In The Pensacola Bay Watershed. \$159,613.00, 04/01/2010-06/30/2013.
Electric Power Research Institute, Collection and analysis of atmospheric deposition of mercury and trace metals to the Pensacola Bay watershed. \$370,216, 01/01/2008-12/31/2012.
Electric Power Research Institute: Florida Aquatic Ecosystem Mercury Cycling and Modeling Project (FAEMCMP). \$134,316, 9/1/95-6/30/98.
Electric Power Research Institute: Atmospheric deposition of mercury and other trace metals in north central Florida, south Florida, and the Everglades. \$147,391, 3/1/94-12/31/97.
Electric Power Research Institute: Florida Atmospheric Mercury Study. \$350,000, 9/1/92-12/31/97.
- Florida Department of Environmental Protection (RM115). Mercury Species Fluxes and Cycling in Gulf of Mexico Estuaries, \$179,443, 03/27/2012-03/15/2013.
Florida State University, Equipment and Infrastructure Enhancement Grant (EIEG). Separation of monomethyl mercury from food web samples for isotopic analysis. \$40,000, 11/21/2011-11/20/2012.
Florida State University Council on Research and Creativity Planning Grant, Development of a volume-salinity-temperature (VoST) continuity device to quantify submarine groundwater discharge (SGD) and the impact of heavy metals to the coastal ocean. FSU-CRC 069000-140-161426, \$12,000, 4/1/2011-09/30/2012.
Florida Department of Environmental Protection. Continuous Remote Sensing of Nitrate using a Moored Instrument. FL Coastal Ocean Observing System, \$97,839, 1/1/08-6/30/08.
University of West Florida, Atmospheric deposition of mercury and trace metals to the Pensacola Bay watershed. \$104,040, 05/01/05-04/30/08.
Florida Department of Environmental Protection: Apalachicola NERRS Nutrient Project. \$99,600, Landing, Iverson and Kostka, co-PIs., 2/15/02-2/28/07
Florida State University, Council for Research and Creativity. A workshop and seminar series supporting the FSU Interdisciplinary Program in Biogeochemical Dynamics. \$24,943, 02/01/04-06/30/05.
Florida State University Cornerstone program, Program Enhancement Grant; Determining the Speciation of Metals and Nutrients in Natural Waters. \$100,000, Salters, Cooper, and Landing, co-PIs. 4/1/2000-3/31/2002.
Florida State University Cornerstone program, Program Enhancement Grant; Developing Solid-State Microelectrode and Optical Waveguide Sensors for Measuring Trace Elements and Redox Species in Natural And Contaminated Waters. \$100,000 (4/1/2000-3/31/2002). Landing, Kostka, and Dahmen, co-PIs.
Florida Department of Environmental Protection (SP-507), Developing a Bacterial Biosensor for Aquatic Mercury(II) Speciation and Bioavailability. \$159,310, Landing and Proctor, co-PIs. 12/01/98-6/30/02.
South Florida Water Management District: Speciation and sources of dissolved phosphorus in the Everglades. \$185,000, V.J. Salters, W.T. Cooper, W.M. Landing, L.M. Proctor, Y.Wang, co-PIs, 8/1/97-3/15/99.
Northwest Florida Water Management District: Nutrient transport and primary production in the Apalachicola River and Bay. \$304,252, R.L. Iverson and W.M. Landing, co-PIs. 2/1/93-9/30/98.
Florida Department of Environmental Protection: Florida Atmospheric Mercury Study: Phase III. \$1,350,000 (\$353,608 to FSU), W.M. Landing, Gary A. Gill (TAMU-Galveston), C.D. Pollman (KBN Engineering), co-PIs. 9/1/92-12/31/97.
Florida Department of Environmental Regulation: Atmospheric deposition of mercury and other trace metals in Florida. FDER WM-412, \$199,864, W.M. Landing, Gary A. Gill (UC Santa Cruz), and C.D. Pollman (KBN Engineering), co-PIs. 5/1/92-4/30/93. (\$104,260 to FSU).
Florida Department of Environmental Regulation: Atmospheric supply of pollutants to estuarine and coastal

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waters. \$50,000, W.M. Landing and J.W. Winchester, co-PIs. 9/30/91-9/29/92.

Northwest Florida Water Management District: Chemical analysis of sediments in Ford's Arm, Lake Jackson. \$37,500, 6/13/91-2/28/92.

Florida Department of Environmental Regulation: Atmospheric contribution of nutrients to a Florida estuary: the role of acid rain and acid deposition. FDER CM-298, \$42,000, John W. Winchester and W.M. Landing, co-PIs. 1/1/91-12/31/91.

Florida Department of Environmental Regulation: Deterioration of Lake Water Quality by Urban Runoff: Remediation using Artificial Wetlands. FDER WM-345, \$100,000, Paul A. LaRock and W.M. Landing, co-PIs. 9/1/90-11/15/91.

Northwest Florida Water Management District: Lake Water Quality Assessment: Lakes under the jurisdiction of the Northwest Florida Water Management District. \$51,907, Paul A. LaRock and W.M. Landing, co-PIs. 6/30/90-11/15/90.

Northwest Florida Water Management District: Chemical analysis of sediments in Meginnis Arm, Lake Jackson. \$10,000, 7/27/89-4/30/90.