

## ALAN MARK SHILLER

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Citizenship: USA

Education:

B.S. in Chemistry, California Institute of Technology, 1975.  
Ph.D. in Oceanography, Scripps Institution of Oceanography, University of California, 1982.

Employment:

2001- Director, USM Center for Trace Analysis  
1998- Professor, University of Southern Mississippi  
1993-1998 Associate Professor, University of Southern Mississippi  
1991-1993 Assistant Professor, University of Southern Mississippi  
1987-1991 Assistant Professor & Research Associate, University of Southern Mississippi  
1985-1987 Visiting Scientist & Assistant Lecturer, Moss Landing Marine Laboratories  
1985 Postdoctoral Associate, Scripps Institution of Oceanography  
1983-1984 Postdoctoral Associate, Massachusetts Institute of Technology  
1982-1983 NSF Postdoctoral Fellow, Massachusetts Institute of Technology  
1975-1981 Research and Teaching Assistant, Scripps Institution of Oceanography  
1972-1975 Undergraduate Research and Teaching Assistant, California Institute of Technology

Professional Societies:

American Geophysical Union; Geochemical Society; American Society of Limnology and Oceanography; The Oceanography Society; Mississippi Academy of Sciences; American Chemical Society; Geological Society of America; International Association for Geochemistry; Estuarine Research Federation.

Research Interests

Geochemistry of trace elements in natural waters, weathering and other controls on river composition, estuarine chemistry, global carbon system.

## TEACHING

### **Current Teaching**

Marine Chemistry (includes laboratory)

Estuaries (co-taught with S. Lohrenz)

Global Carbon System

Marine Sediments and Sedimentary Geochemistry (co-taught with C. Brunner)

Aquatic Chemistry (both as USM graduate course and for USGS at Denver Training Center; co-taught with B. Kimball, G. Aiken)

Seminar in Marine Science (emphasizes making scientific presentations)

### **Previous Courses Taught**

Microcomputer Applications in Marine Science Instrumentation (co-taught with V. Asper)

Seminar (topics include science writing, hydrothermal systems, analytical instrumentation and estuaries)

Marine Geology (included laboratory)

Scanning Electron Microscopy and X-ray Microanalysis (included laboratory)

Introduction to Marine Chemistry (1-week summer undergrad course at Shoals Marine Lab)

High School Chemistry (advanced summer course)

### **Major Advisor for Masters Thesis**

--Virginia A. Elrod\*, Moss Landing Marine Labs, December 1987, "The behavior of dissolved selenium in California coastal waters."

--William L. Hughes, San Jose State University, Department of Geology, December 1988, "Recent sediment accumulation rates on the Monterey Fan, central California."

--Amy R. Leitman\*, San Jose State University, Department of Biology, December 1989, "Gas supersaturation and its effect on the red abalone, *Haliotis rufescens*, (Swainson)."

\*Graduated after I left Moss Landing; thus, I was not allowed to sign as thesis advisor.

--Leanne J. Mallini, University of Southern Mississippi, Center for Marine Sciences, August 1992, "Development of kinetic-colorimetric flow analysis techniques for determining dissolved manganese and iron and an assessment of the behavior of dissolved manganese in the far-field plume of the Mississippi River."

--Daphne M. Frilot, University of Southern Mississippi, Center for Marine Sciences, December 1992, "The geochemistry of gallium relative to aluminum in California stream waters."

--Lunjin Mao, University of Southern Mississippi, Center for Marine Sciences, August 1994, "Development of a flow injection analysis technique for determining dissolved vanadium in natural waters and biogeochemical behavior of vanadium and barium in Louisiana shelf waters."

--Tracey Hebert, University of Southern Mississippi, Institute of Marine Sciences, December 1997, "An investigation of the seasonal variability of dissolved trace elements in the Mississippi and Pearl Rivers."

--Kenneth Grembowicz, University of Southern Mississippi, Department of Marine Science, May 2000, "The use of field-flow fractionation to study environmental colloids."

--Toshihiko Uozumi, University of Southern Mississippi, Department of Marine Science, May 2001, "The effect of microbial Mn oxidation on seasonal variability of dissolved Zn and Pb in the lower Mississippi River."

--Raj Bairamadgi, University of Southern Mississippi, Department of Marine Science, August 2005, "Determining dissolved gallium (Ga) in seawater by magnesium induced coprecipitation (MagIC)."

--Peter van Erp, University of Southern Mississippi, Department of Marine Science, December 2009, "A Study of Iron and Other Trace Metals in Fluvial Systems."

--Hailong Huang, University of Southern Mississippi, Department of Marine Science, December 2009, "Copper (Cu) speciation within waters of the Yukon River Basin (Alaska) and the Lower Pearl River and its floodplain (Mississippi-Louisiana)."

--Yinghao Chen, in progress.

### **Major Advisor for Doctoral Dissertation**

--Jinchun Yuan, University of Southern Mississippi, Department of Marine Science, May 2000, "The distribution of hydrogen peroxide in seawater of the central Atlantic Ocean and in river waters of southern Mississippi and Louisiana."

--MooJoon Shim: in progress.

--DongJoo Joung: in progress.

--Gopal Bera: in progress.

### **Valuations of Teaching**

**Student Evaluations** : Have averaged 4.3 out of 5 on student evaluation forms.

### **Graduate Advisee Awards**

J. Yuan: NRC Postdoctoral Fellowship, 5/00.

J. Yuan: Dissertations Symposium in Chemical Oceanography, 5/99.

K. Grembowicz: Mississippi/Alabama Sea Grant Consortium Fellowship, 3/98.

L.J. Mallini: Outstanding Student Poster Award, 1991 Marine Technology Society Convention, 11/91.

L.J. Mallini: Mississippi/Alabama Sea Grant Consortium Fellowship, 3/91.

L.J. Mallini: Gulf Coast Association of Geological Societies research grant, 5/91.

V.A. Elrod: Moss Landing Marine Labs award for contributions to student life.

### **Other Teaching Activities**

--Guided a summer undergraduate research student during many summers at USM as part of NSF

REU Supplement program.

--Worked with the high school science teacher (M. House) at Eagle Community School (Eagle, AK) to provide information and materials for a water quality class project.

--Mentored high school students either through summer volunteer internship (S. Davis, 2007) or for high school science fair (S. Butirich, who placed 5<sup>th</sup> at the state science fair in 2008).

## SERVICE

### PROFESSIONAL SERVICE

**Manuscript reviews:** Over 25 reviews in last 5 years.

**Proposal reviews:** Over 40 reviews in last 5 years (excluding panels).

Member of NSF review panel for REU Sites in Oceanography, 11/95.

Member of NSF/EPA review panel for Water & Watersheds, 7/96, 5/97, 8/99.

Member NSF Chemical Oceanography review panel, 5/00, 5/01, 11/08.

Member EPA review panel for STAR Graduate Fellowships, 2/02, 2/05, 2/07, 1/10.

Member NSF review panel for Academic Research Infrastructure, 11/09.

**Dissertation External Reviewer:** Bjorn Stolpe, Gothenburg University, 2006; Clare Merrin, University of British Columbia, 2002.

**External Reviewer for Promotion or Hiring:** East Carolina University; Oregon State University; National Taiwan University; Kuwait University.

**Editorial service:** Editor of special issues of *Marine Chemistry* devoted to results from IOC-sponsored trace element intercalibration. (*Marine Chemistry* 49, No. 4 and *Marine Chemistry* 61, No. 1-2.)

**Regional meeting, organizer:** Gulf Coast Geochemistry Group/Conference, 1988-1991.

### **Workshop, invited participant**

1989 "NOAA workshop on the Mississippi River Plume and Louisiana Shelf interaction," 7/89, Baton Rouge, LA.

1989 "Poorman's GOMEX workshop," 11/89, Ocean Springs, MS.

1991 "MarChem'91," ONR/NSF-sponsored workshop on transfer of new analytical technologies, 6/91, Steamboat Springs, CO.

1992 "Gulf of Mexico Program Nutrient Enrichment Brainstorming Meeting," 8/92, Covington, LA.

1993 "MarChem'93," ONR/NSF-sponsored workshop on transfer of new analytical

- technologies, 8/93, Steamboat Springs. (Served as rapporteur for panel discussion.)
- 1995 “The Gulf of Mexico--A Large Marine Ecosystem Symposium”, sponsored by NOAA NMFS, EPA Gulf of Mexico Program, and Florida Dept. of Environmental Quality, 8/95, St. Pete Beach, FL.
- 1996 “Mississippi Bight Workshop”, 4/96, Ocean Springs, MS; Working Group B Rapporteur.
- 1997 “Coastal Benthic Boundary Layer Program--Key West Experiment”, 2/97, Stennis Space Center, MS.
- 1998 Coastal Benthic Boundary Layer Special Research Program, Final Meeting, April 22-24, 1998, Stennis Space Center, MS. Presentation: “Early diagenesis of carbonate sediments in the Dry Tortugas and Marquesas Keys, Florida, USA.”
- 1998 RioMar: River-Dominated Coastal Ocean Margins, November 20-21, 1998, Tulane University.
- 2001 RiOMar (River-Dominated Ocean Margins) workshop (co-sponsored by Tulane and NSF), Invited Panelist, Nov. 1-3, 2001.
- 2005 Coastal Ecosystem Responses to Changing Nutrient Inputs from Large Temperate and Sub-tropical Rivers, Xiamen, China, May 29-June 1, 2005.
- 2006 Fifth GERM Workshop Columbia University, New York May 29-31, 2006 (Geochemical Earth Reference Model–GERM)

### **National committee member**

Nutrient Enrichment Issue Committee for US EPA Gulf of Mexico Program, 1989-1996.  
Data Information and Transfer Committee (liaison member) for US EPA Gulf of Mexico Program, 1995-96.

### **State or local committee member**

Assistant Chair, Marine & Atmospheric Sciences Division, Mississippi Academy of Sciences, 1989-90; 2000-01.  
Chair, Marine & Atmospheric Sciences Division, Mississippi Academy of Sciences, 1990-91.  
Membership Committee, Sigma Xi, Gulf Coast Chapter, 1992.

### **Miscellaneous professional service**

Science Judge/Grader, National Ocean Science Bowl Finals, April 2005.

Coordinator and author of overview section for "CATCH", a multi-investigator, multi-institutional set of coordinated proposals to NSF Ocean Sciences; total request \$2.6M for three years; 6/88; one proposal of the package (by G. Knauer & V. Asper) was funded.

1990-94; involved in the US Geological Survey's Mississippi River Methods Comparison Study. The goal of this study was to evaluate USGS's methods for dissolved trace element sampling and analysis as well as to propose new sampling and analysis protocols for their national water quality

program. This involved participation in various review and coordination meetings plus the analysis of 60 samples for 9 elements. The study resulted in a revision of USGS dissolved trace element methods as well as a conclusion that some of their past trace element data are not reliable (see USGS Office of Water Quality *Technical Memorandum 91.10*, Sept. 30, 1991; Cohen, *Environ. Sci. Tech.* 25 [1991] 1940; Taylor & Shiller, *Environ. Sci. Tech.* 29 [1995] 1313).

With B. Kimball of USGS in Utah, have helped revise the materials for a USGS training course in aquatic chemistry.

## **UNIVERSITY SERVICE**

### **State-wide universities committee**

Global Climate Change/Environmental Modeling Task Force (for the University Research Consortium), 1991-92.

### **College-wide and inter-departmental committees**

Marine Science Ph.D. Task Force Committee on Faculty, 1988.

Chair, CMS/GCRL Joint Academic/Curriculum Committee, 1989-93.

CMS/GCRL Marine Activities Planning Group, 1989-90.

Dean's Ad-hoc Committee on Environmental Studies, 1990-91.

Chair, USM Ad Hoc Committee on Permanent Facilities at Stennis Space Center, 1992-1994.

College of Science & Technology Dean's Advisory Committee (elective) 95-96, 01-03, 09-12.

USM Ad Hoc Committee on Use of the R/V Tommy Munro, 1995.

Institute of Marine Sciences Committee on Academic Status and Tenure, 1996.

College of Science & Technology, Ad Hoc Committee on Environmental Science, 2004.

College of Science & Technology, Research Committee (Chair), 2005-current.

College of Science & Technology, Ad Hoc Committee on Organization of School of Ocean & Earth Science, 2006.

### **Departmental committees**

Co-chair, Marine Geology Faculty Search Committee, 1988.

Physical Oceanography Faculty Search Committee, 1988 and 1995/6.

Chair, Recruitment Committee, 1989-94.

Environmental Scan Committee, 1991.

Advisor to Student Oceanographic Society, 1991-93, 1994-96, 1999-2000.

Alternate for Faculty Senate, 1991-94.

Chair, Committee on Committees, 1993.

Chair, Facilities and Safety Committee, 1993-94.

Chair, Committee on Permanent Facilities, 1995-2008.

Monthly Seminar Organizer, 1995-96.

Web site coordinator/author, 1999-2001.

Chair, Web Review Committee, 2002-2004.

Chair, Department Chair Search Committee, 2004.  
Chair, Marine Chemistry Search Committee, 2005.  
Chair, Boat & Vehicle Committee, 2009-2010.  
Also, have been member of Admissions, Academic/Curriculum, & Recruitment Committees.

### **Interim Committee Member at USM-CMS**

From 1987-94 I was the only chemist on the CMS faculty and was thus assigned to all first-year graduate advisement committees. At present I serve on approximately half of these interim committees.

## **RESEARCH AND SCHOLARLY ACTIVITIES**

### **Articles and book chapters**

- 1975 Cohen, E.A., A.M. Shiller, S.I. Chan and S.L. Mannat. The  $^{14}\text{N}$  NMR linewidth versus pH profiles for several amino acids. *Organic Magnetic Resonance* 7: 605-609.
- 1978 McAlister, D.R., E. Rosenberg, A.M. Shiller, K.L. Williamson, S.I. Chan and J.E. Bercaw. Solution structure and dynamics of binuclear dinitrogen complexes of bis(pentamethylcyclopentadienyl) titanium (II) and bis(pentamethylcyclopentadienyl) zirconium (II). *J. Amer. Chem. Soc.* 100: 3078-3083.
- 1980 Shiller, A.M. and J.M. Gieskes. Processes affecting the oceanic distributions of dissolved calcium and alkalinity. *J. Geophys. Res.* 85: 2719-2727.
- 1981 Shiller, A.M. Calculating the oceanic  $\text{CO}_2$  increase: A need for caution. *J. Geophys. Res.* 86: 11083-11088.
- 1982 Shiller, A.M. Reply to comments by Chen, Millero, and Pytkowicz. *J. Geophys. Res.* 87: 2086.
- 1983 Shiller, A.M. Particulate chemistry in an area of coastal upwelling -- the Santa Barbara Basin, in: E. Suess and J. Thiede, (eds.). *Coastal Upwelling: Its Sediment Record*, Plenum Press.
- 1985 Shiller, A.M., J.M. Gieskes and N.B. Price. Particulate iron and manganese in the Santa Barbara Basin, California. *Geochim. Cosmochim. Acta* 49: 1239- 1249.
- 1985 Shiller, A.M. and E.A. Boyle. Dissolved zinc in rivers. *Nature* 317: 49-52.
- 1987 Shiller, A.M. and E.A. Boyle. Dissolved vanadium in rivers and estuaries. *Earth and Planetary Science Letters* 86: 214-224.
- 1987 Shiller, A.M. and E.A. Boyle. Variability of dissolved trace metals in the Mississippi River. *Geochim. Cosmochim. Acta.* 51: 3273-3277.
- 1988 Shiller, A.M. Enrichment of dissolved gallium relative to aluminum in natural waters. *Geochim. Cosmochim. Acta.* 52: 1879-1882.
- 1991 Shiller, A.M. and E.A. Boyle. Trace elements in the Mississippi River Delta outflow region: Behavior at high discharge. *Geochim. Cosmochim. Acta* 55: 3241-3251.

- 1993 Allen, S.G., M. Stephenson, L. Fancher, R.W. Risebrough, A. Shiller, and D. Smith. High incidence of red-pelaged harbor seals in the San Francisco Bay region attributed to ferric oxide deposition. *J. Mammalogy* 74: 588-593.
- 1993 Shiller, A.M. A mixing rate approach to understanding nutrient distributions in the plume of the Mississippi River. *Marine Chemistry* 43: 211-216.
- 1993 Shiller, A.M. Comparison of nutrient and trace element distributions in the delta and shelf outflow regions of the Mississippi/Atchafalaya River. *Estuaries* 16: 541-546.
- 1993 Mallini, L.M. and A.M. Shiller. Determination of dissolved manganese in seawater by flow injection analysis with colorimetric detection. *Limnology and Oceanography* 38: 1290-1295.
- 1994 Teague, W.J., A.M. Shiller, and Z.R. Hallock. Hydrographic section across the Kuroshio near 35°N, 143°E. *J. Geophys. Res.* 99: 7639-7650.
- 1995 Landing, W.M., G.A. Cutter, J.A. Dalziel, A.R. Flegal, R.T. Powell, D. Schmidt, A. Shiller, P. Statham, S. Westerlund, and J. Resing. Analytical intercomparison results from the 1990 Intergovernmental Oceanographic Commission Open-Ocean Baseline Survey for trace metals: Atlantic Ocean. *Marine Chemistry* 49: 253-265.
- 1995 Taylor, H.E. and A.M. Shiller. The Mississippi River Methods Comparison Study: implications for water quality monitoring of dissolved trace elements. *Environmental Science and Technology* 29: 1313-1317.
- 1996 Shiller, A.M. and D.M. Frilot. The geochemistry of gallium relative to aluminum in Californian streams. *Geochimica et Cosmochimica Acta* 60: 1323-1328.
- 1996 Shiller, A.M., W.J. Teague, and Z.R. Hallock. Deep water properties near 35°N, 143°E observed during the Kuroshio Extension Regional Experiment. *Journal of Geophysical Research* 101: 16,695-16,702.
- 1996 Shiller, A.M. The effect of recycling traps and upwelling on estuarine chemical flux estimates. *Geochimica et Cosmochimica Acta* 60: 3177-3185.
- 1997 Shiller, A.M. Manganese in surface waters of the Atlantic Ocean, *Geophysical Research Letters* 24: 1495-1498. (Key figure from this article appeared on cover of issue.)
- 1997 Shiller, A.M. Dissolved trace elements in the Mississippi River: seasonal, interannual, and decadal variability, *Geochimica et Cosmochimica Acta* 61: 4321-4330.
- 1998 Shiller, A.M. Gallium in the Atlantic Ocean. *Marine Chemistry* 61: 87-99.
- 1998 Shiller, A.M., L. Mao, and J. Cramer. Determination of dissolved vanadium in natural waters by flow injection analysis with colorimetric detection, *Limnology and Oceanography* 43: 526-529.
- 1999 Wen, L.S., A. Shiller, P. Santschi, and G. Gill. Trace element behavior in Gulf of Mexico estuaries. In: *Biogeochemistry of Gulf of Mexico Estuaries*, T.S. Bianchi, J.R. Pennock, and R.R. Twilley, eds., J. Wiley & Sons, New York, Chpt. 10, pp. 303-346.
- 1999 Shiller, A.M. An overview of the marine chemistry of the Gulf of Mexico. In: The Gulf of Mexico Large Marine Ecosystem: Assessment, Sustainability and Management (H. Kumpf, K. Steidinger, K. Sherman, eds.) Blackwell Science, Chpt. 8, pp. 132-148.
- 1999 Shiller, A.M. and L. Mao. Dissolved vanadium on the Louisiana shelf: effect of oxygen depletion, *Continental Shelf Research* 19:1007-1020.
- 1999 Yuan, J. and A.M. Shiller. Determination of sub-nanomolar levels of hydrogen peroxide in seawater by reagent-injection chemiluminescence detection, *Analytical Chemistry* 71:



- 1975-1980.
- 2000 Shiller, A.M. and L. Mao. Dissolved vanadium in rivers: Effects of silicate weathering, *Chemical Geology* 165: 13-22.
- 2000 Yuan, J. and A.M. Shiller. The variation of hydrogen peroxide in rain water over the South and Central Atlantic Ocean. *Atmospheric Environment* 34: 3973-3980.
- 2000 Furukawa, Y., S.J. Bentley, A.M. Shiller, D.L. Lavoie and P. van Cappellen. The role of biologically-enhanced pore water transport in early diagenesis: An example from carbonate sediments in the vicinity of North Key Harbor, Dry Tortugas National Park, Florida. *Journal of Marine Research* 58: 493-522.
- 2001 Yuan, J. and A.M. Shiller. The distribution of hydrogen peroxide in the southern and central Atlantic Ocean. *Deep-Sea Research II* 48: 2947-2970.
- 2002 Shiller, A.M. Seasonality of Dissolved Rare Earth Elements in the Lower Mississippi River. *Geochemistry, Geophysics, Geosystems* 3(1), 1068, doi: 10.1029/2002GC000372. (<http://www.g-cubed.org>)
- 2003 Shiller, A.M. Syringe filtration methods for examining dissolved and colloidal trace element distributions in remote field locations. *Environmental Science & Technology* 37(17): 3953 - 3957. doi:10.1021/es0341182  
<http://pubs.acs.org/cgi-bin/download.pl?es0341182/66ec>
- 2004 Yuan, J., and A. M. Shiller. Hydrogen peroxide in deep waters of the North Pacific Ocean, *Geophys. Res. Lett.*, 31, L01310, doi:10.1029/2003GL018439
- 2005 Shiller, A.M. and T.H. Stephens. Microbial manganese oxidation in the lower Mississippi River: methods and evidence. *Geomicrobiology Journal* 22: 117 - 125. DOI: 10.1080/01490450590945924
- 2005 Yuan, J. and A.M. Shiller. The distribution of hydrogen peroxide in the Northwest Pacific Ocean. *Geochemistry, Geophysics, Geosystems* 6: doi:10.1029/2004GC000908.
- 2006 Shiller, A.M., S. Duan, P. van Erp, and T.S. Bianchi. Photo-oxidation of dissolved organic matter in river water and its effect on trace element speciation. *Limnology and Oceanography* 51: 1716-1728. [http://aslo.org/lo/toc/vol\\_51/issue\\_4/1716.pdf](http://aslo.org/lo/toc/vol_51/issue_4/1716.pdf)
- 2006 Shiller, A.M and G.R. Bairamadgi. Dissolved Gallium in the Northwest Pacific and the South and Central Atlantic Oceans: Implications for Aeolian Fe Input and a Reconsideration of Profiles. *Geochemistry, Geophysics, Geosystems* 7, Q08M09, doi:10.1029/2005GC001118.
- 2007 Duan, S., T.S. Bianchi, A.M. Shiller, K. Dria, P.G. Hatcher and K.R. Carman. Temporal Variability in the Composition and Abundance of Dissolved Organic Matter in the Lower Mississippi and Pearl Rivers (USA): I. The Application of Bulk Carbon and Nitrogen Measurements. *J. Geophys. Res.-Biogeosci.*, 112, G02024, doi:10.1029/2006JG000206.
- 2008 Comyns, B.H., C.F. Rakocinski, M.S. Peterson and A.M. Shiller. Differences in otolith microchemistry of early juvenile spotted seatrout, *Cynoscion nebulosus*, reflect local geographic source areas across coastal Mississippi. *Marine Ecology Progress Series* 371, 243-252. DOI: 10.3354/meps07604.
- 2008 Balof, S., S.J. P'Pool, N.J. Berger, C.K. Bush, E.J. Valente, A.M. Shiller and H.-J. Schanz. Olefin Metathesis Catalysts Bearing a pH-Responsive NHC Ligand: A Feasible Approach to Catalyst Separation from RCM Products. *Dalton Trans.* 42, 5791-5799. DOI: 10.1039/b809793c.

- 2010 Stolpe, B., L. Guo, A.M. Shiller and M. Hassellöv. Size and composition of colloidal organic matter and trace elements in the Mississippi River, Pearl River and the northern Gulf of Mexico, as characterized by flow field-flow fractionation. *Marine Chemistry* 118: 119-128. DOI:10.1016/j.marchem.2009.11.007
- 2010 Shiller, A.M. Dissolved Rare Earth Elements in a Seasonally Snow-covered, Alpine/Subalpine Watershed, Loch Vale, Colorado. *Geochimica et Cosmochimica Acta* 74: 2040-2052. DOI:10.1016/j.gca.2010.01.019.
- 2010 Diercks, A.R., R.C. Highsmith, V.L. Asper, D. Joung, Z. Zhou, L. Guo, A.M. Shiller, S.B. Joye, A.P. Teske, N. Guinasso, T.L. Wade, and S.E. Lohrenz. Characterization of subsurface polycyclic aromatic hydrocarbons at the Deepwater Horizon site. *Geophysical Research Letters* 37: L20602, doi:10.1029/2010GL045046.
- 2011 Shiller, A.M., M.-J. Shim, L. Guo, T.S. Bianchi, R. Smith, and S. Duan. Hurricane Katrina Impact on Water Quality in the East Pearl River, Mississippi. Submitted to *Chemical Geology*.
- 2011 Balakrishna, K., G.P. Gurumurthy, A.M. Shiller, and G. Mugeraya. Effect of Paper Mill Effluents on the River Water Chemistry: a Case Study of River Godavari at Rajahmundry. Submitted to the International Journal of Earth Sciences and Engineering (Special Issue dealing with International Engineering Symposium 2011).
- 2011 Shim, M.-J., P.S. Swarzenski, and A.M. Shiller. Dissolved and Colloidal Trace Elements in the Mississippi River Delta Outflow after Hurricanes Katrina and Rita. Submitted to *Estuarine, Coastal and Shelf Science*.
- 2011 Zhou, Z., L. Guo, A.M. Shiller, S.E. Lohrenz, V.L. Asper, and C.L. Osburn. Characterization of oil components from Deepwater Horizon oil spill in the northern Gulf of Mexico using fluorescence EEMs and PARAFAC modeling. Submitted to *Environmental Science and Technology*.

### Other Publications

- 1992 Shiller, A.M. Rapid shipboard analysis of trace elements: the low-cost option. In: Proceedings of the Marchem '91 Workshop on Marine Chemistry. Office of Naval Research, *OCNR 12492-10*, 1992.
- 1993 Teague W.J., Z.R. Hallock, J.M. Dastugue, and A.M. Shiller. Kuroshio Extension Regional Experiment hydrographic data: Summer 1992. Naval Research Laboratory Report, #NRL/MR/7332-93-7050, 68pp.
- 1994 Shiller, A.M., Z.R. Hallock, and W.J. Teague. Deep currents in the Northwest Pacific off Japan during KERE. Naval Research Laboratory Report #NRL/MR/7332-93-7083, 19pp.
- 1995 Taylor, H.E., A.M. Shiller, J.R. Garbarino and T.I. Brinton. Dissolved Trace Metal Data from Intercomparison Experiments in the Mississippi River and its Tributaries, between the U.S. Geological Survey's National Research Program, the National Stream Quality Accounting Network and the University of Southern Mississippi, *USGS Open-File Report* 93-628.

- 1995 Yeats, P.A. and A.M. Shiller, editors. IOC Contaminants Baseline Study. *Marine Chemistry* 49, No. 4.
- 1996 Shiller, A.M. and H.E. Taylor. Comment on “Problems associated with using filtration to define dissolved trace element concentrations in natural water samples.” *Environmental Science and Technology* 30: 3397-3398.  
<http://pubs.acs.org/cgi-bin/download.pl?es960387z/u7SU>
- 1996 Shiller, A.M. Effects of carbonate dissolution and precipitation on sediment physical properties and structure: pore water flux component. In Coastal Benthic Boundary Layer Research Program: A Review of the Third Year (M.D. Richardson, ed.). NRL/MR/7431--96-8001; pp. 159-165.
- 1998 Shiller, A.M., editor. IOC Contaminants Baseline Study–Part II. *Marine Chemistry* 61, Nos. 1-2: 1-114.
- 1998 Shiller, A.M. and T.L. Hebert. Biogeochemical controls on dissolved trace elements in rivers. *Mineral. Mag.* 62A: 1391-1392.
- 1999 Shiller, A.M. Dissolved trace elements in a seasonally snow-covered catchment. In: *Geochemistry of the Earth’s Surface*, H. Ármannsson, ed., Balkema, Rotterdam, pp. 123-125.
- 2001 Shiller, A.M., Z. Chen and R. Hannigan. A time series of dissolved rare earth elements in the lower Mississippi River. In: *Water-Rock Interaction 2001*, R. Cidu, ed., Swets & Zeitlinger, Lisse, pp. 1005-1007.
- 2003 Shiller, A.M. Dissolved and colloidal trace elements. In: *Water and Sediment Quality in the Yukon River Basin, Alaska during Water Year 2001*, P.F. Schuster, ed., U.S. Geol. Survey, Open-File Report, 03-427. (<http://pubs.usgs.gov/of/2003/ofr03427/>)
- 2004 Comyns, B.H., C.F. Rakocinski, M.S. Peterson & A.M. Shiller. Fisheries recruitment in the northcentral Gulf of Mexico: can important geographic sources of juvenile nursery habitat be determined using otolith microchemistry? Project Number R/SP-4. Final Report. Mississippi-Alabama Sea Grant Consortium. 63pp.
- 2005 Shiller, A.M. Dissolved and colloidal trace elements. In: *Water and Sediment Quality in the Yukon River Basin, Alaska during Water Year 2002*, P.F. Schuster, ed., U.S. Geol. Survey, Open-File Report 2005-1199. (<http://pubs.usgs.gov/of/2005/1199/>)
- 2005 Shiller, A.M. Dissolved and colloidal trace elements. In: *Water and Sediment Quality in the Yukon River Basin, Alaska during Water Year 2003*, P.F. Schuster, ed., U.S. Geol. Survey, Open-File Report 2005-1397. (<http://pubs.usgs.gov/of/2005/1397/>)
- 2006 Shiller, A.M. Dissolved and colloidal trace elements. In: *Water and Sediment Quality of the Yukon River and its Tributaries, from Eagle to St. Marys, Alaska, 2002–2003*, M.M. Dornblaser & D.R. Halm, eds., U.S. Geol. Survey, Open-File Report 2006-1228, p. 141-157. (<http://pubs.usgs.gov/of/2006/1228/>)
- 2007 Comyns, B., C. Rakocinski, M. Peterson, A. Shiller and P. Grammer. Use of otolith microchemistry of spotted seatrout to identify stock source-areas, reveal population movements, and determine interannual variability in regional patterns of otolith signatures in Mississippi coastal waters. Final report to Mississippi- Alabama Sea Grant Consortium, Ocean Springs, MS., 70 p.

**Presentations** (Note: Many presentations by students or colleagues with A.M. Shiller as co-author are not listed)

\*\*Shiller, A.M. and N.B. Price. Geochemistry of particulate matter in the Santa Barbara Basin, California. Presented at American Geophysical Union, Spring 1980 Meeting, Toronto, Canada. Abstract: *Eos, Trans. Amer. Geophys. U.* 61 (17): 269.

\*\*The hidden oceanic CO<sub>2</sub> increase. Presented at American Geophysical Union, Fall 1980 Meeting, San Francisco, CA. Abstract: *Eos, Trans. Amer. Geophys. U.* 61 (46): 1015.

\*\*Iron and manganese particulate geochemistry in the Santa Barbara Basin, California. Presented at American Geophysical Union, Fall 1981 Meeting, San Francisco, CA. Abstract: *Eos, Trans. Amer. Geophys. U.* 62 (45): 906-907.

\*\*Particulate matter in the Santa Barbara Basin, California: influence of the biota. Presented at American Geophysical Union, Spring 1981 Meeting, Baltimore, MD. Abstract: *Eos, Trans. Amer. Geophys. U.* 62 (17): 301.

\*\*Shiller, A.M. & E.A. Boyle. Seasonal variability of dissolved metals in the Mississippi River. Presented at American Geophysical Union, Fall 1981 Meeting, San Francisco, CA. Abstract: *Eos, Trans. Amer. Geophys. U.* 65 (45): 951.

\*\*Shiller, A.M., K.O. Buessler & E.A. Boyle. Trace metals in the Mississippi Plume. Presented at Geological Society of America, Southeastern Section, 32nd annual meeting (1983), Tallahassee, FL. Abstract: *Abstr. w Prgms - Geol. Soc. Amer.* 15 (2): 107. Also presented at American Geophysical Union, Fall 1982 Meeting, San Francisco, CA. Abstract: *Eos, Trans. Amer. Geophys. U.* 63 (45): 1009.

\*\*Shiller, A.M. & E.A. Boyle. Metal adsorption in a natural aquatic system. Presented at American Geophysical Union, Fall 1983 Meeting, San Francisco, CA. Abstract: *Eos, Trans. Amer. Geophys. U.* 64 (45): 735.

\*\*Shiller, A.M. & E.A. Boyle. Vanadium and zinc in rivers and estuaries. Presented at American Geophysical Union, Fall 1983 Meeting, San Francisco, CA. Abstract: *Eos, Trans. Amer. Geophys. U.* 64 (45): 715.

\*\*Shiller, A.M. & E.A. Boyle. Laboratory mixing and field studies of Mississippi Plume trace metals. Presented at American Geophysical Union, Spring 1983 Meeting, Baltimore, MD. Abstract: *Eos, Trans. Amer. Geophys. U.* 64 (18): 246.

\*\*Shiller, A.M. & E.A. Boyle. Trace metals in the plume of the Mississippi River. Presented at American Geophysical Union, 1984 Ocean Sciences Meeting, New Orleans, LA. Abstract: *Eos, Trans. Amer. Geophys. U.* 64 (52): 1021.

\*\*Colorimetric estimation of dissolved copper in seawater: an examination of methods. Presented at American Geophysical Union, Fall 1988 Meeting, San Francisco, CA. Abstract: *Eos, Trans. Amer. Geophys. U.* 69 (44): 1264.

\*\*Gallium in seawater: preliminary results. Presented at American Geophysical Union, 1988 Ocean Sciences Meeting, New Orleans, LA. Abstract: *Eos, Trans. Amer. Geophys. U.* 68 (50): 1755.

\*\*Carey, M & A.M. Shiller. Colorimetric determination of dissolved manganese in seawater. Presented at American Geophysical Union, 1988 Ocean Sciences Meeting, New Orleans, LA. Abstract: *Eos, Trans. Amer. Geophys. U.* 68 (50): 1699.

\*\*Shiller, A.M. & R.L. Cuhel. Comparisons of interstitial water chemistry of Great Lakes and Lake Oneida sediment cores. Presented at American Geophysical Union, 1990 Ocean Sciences Meeting,

New Orleans, LA. Abstract: *Eos, Trans. Amer. Geophys. U. 71 (2): 112.*

\*\*Shiller, A.M., L.J. Mallini & S.W. Wagner. Automated colorimetric analysis of manganese and other trace elements in seawater. Presented at American Geophysical Union, Fall 1990 Meeting, San Francisco, CA. Abstract: *Eos, Trans. Amer. Geophys. U. 71 (43): 1414.*

\*\*Trace elements in the outflow region of the Mississippi River: comparison of the Mississippi and Atchafalaya plumes, invited presentation at 2nd International Symposium on the Biogeochemistry of Model Estuaries, Jekyll Island, GA, 14-20 April 1991.

\*\*Rapid shipboard analysis of trace elements: the low cost option, invited presentation at MarChem'91 ONR-sponsored workshop, Steamboat Springs, CO, 10-13 June 1991.

\*\*Ocean chemistry, carbon dioxide, and the Greenhouse Effect, USM College of Science Blue Cross/Blue Shield Lecture Series in the Sciences, March 31, 1992.

\*\*D.M. Frilot and A.M. Shiller. Gallium/aluminum ratios in California stream waters: a possible tool in weathering studies? American Geophysical Union, Fall 1992 Meeting, San Francisco. (Presented by A.M. Shiller) Abstract: *Eos, Trans. Amer. Geophys. U. 73 suppl., 179.*

\*\*L.J. Mallini and A.M. Shiller. Dissolved manganese in Louisiana shelf waters: relationships with oxygen and nutrients. American Geophysical Union, Fall 1992 Meeting, San Francisco. (Presented by A.M. Shiller) Abstract: *Eos, Trans. Amer. Geophys. U. 73 suppl., 279.*

\*\*Trace elements in the Mississippi River and its outflow region. Presented at University of New Orleans, March 1993. Also presented to Sigma Xi, Gulf Coast Chapter, March 1993.

\*\*Dissolved trace elements in rivers: problems and perspectives. Presented to USM Department of Chemistry and Biochemistry, January 1994.

\*\*The effect of recycling traps and upwelling on estuarine chemical flux estimates. Presented at AGU/ASLO Ocean Sciences Meeting, February 1994. Abstract: *Eos, Trans. Amer. Geophys. U. 75(3) suppl., 122.*

\*\*Mao, L., J. Cramer & A.M. Shiller. Vanadium in rivers: influence of weathering and oxygen depletion. Presented at American Geophysical Union, Fall 1994 Meeting, San Francisco, CA. Abstract: *Eos, Trans. Amer. Geophys. U. 75 (44): 279.*

\*\*Shiller, A.M., R.M. Vereecke, and K.E. Smith. Atmospherically-transported trace elements in the Atlantic. Presented by A.M. Shiller at AGU Fall Meeting, San Francisco, Dec. 1994. Abstract: *Eos, Trans. Amer. Geophys. U. 75(44-suppl.), 344.*

\*\*Seasonal variability of dissolved trace elements in the Mississippi River. Presented at American Chemical Society Annual Meeting, Anaheim, CA, April 2, 1995. Abstract published in *Geochemistry Newsletter*, Spring 1995 (ACS Division of Geochemistry).

\*\*An overview of the marine chemistry of the Gulf of Mexico. Invited presentation to Interagency Symposium on The Gulf of Mexico--A Large Marine Ecosystem, St. Pete Beach, FL, August 23, 1995.

\*\*Shiller, A.M., T.L. Hebert, K.R. Thornton, & C.A. Brunner. Sediment chemistry and pore water fluxes in the vicinity of the Dry Tortugas. Presented at 1<sup>st</sup> SEPM Congress on Sedimentary Geology, St. Pete Beach, FL (1995). Abstract: *Linked Earth Systems; Congress Program and Abstracts; Vol. 1: 113.*

\*\*Dissolved vanadium in rivers. Presented at GSA Annual Meeting, New Orleans, LA, Nov. 6, 1995. Abstract published in *GSA Abstracts with Programs* 27(6), p. A-96.

\*\*Trace elements in rivers and estuaries. Invited presentation at the Louisiana Universities Marine Consortium, January 11, 1996.

- \*\*Dissolved gallium in the Atlantic Ocean. Presented at AGU/ASLO Ocean Sciences Meeting, San Diego, February 1996. Abstract published in *Eos, Trans. Amer. Geophys. U.* 77, Ocean Sciences Meeting Suppl., OS8.
- \*\*Variability of dissolved trace elements in rivers and streams: seasonal redox effects. Invited presentation to NSF/EPA 1996 Water and Watersheds Program Review. Abstract published in *Proceedings: 1996 Water and Watersheds Program Review*, National Science Foundation, p.29.
- \*\*Shiller, A.M. and T.L. Hebert. The effect of manganese-oxidizing bacteria on trace element cycling in the Mississippi River. Presented by A.M. Shiller at AGU Fall Meeting, San Francisco, December, 1996. Abstract published in *Eos, Trans. Amer. Geophys. U.* 77(46), Fall Meet. Suppl. F201.
- \*\*A.M. Shiller, L.J. Mallini, and L. Mao, FIA determination of manganese and vanadium distributions in the plume of the Mississippi and Atchafalaya Rivers: implications for nutrient recycling. 5th International Symposium on Model Estuaries: New Approaches to Estuarine Chemistry, Rimouski, Quebec, Canada, May 25-29, 1997. Abstract published in symposium program.
- \*\*Dissolved trace elements in the Mississippi River: Seasonal, interannual, and decadal variability. Clean Enough? A Conference on Mississippi River Water Quality, New Orleans, 19-20 Sept. 1997.
- \*\*Shiller, A.M. and T.L. Hebert. Seasonal variability of dissolved trace elements in rivers and streams. Presented by A.M. Shiller at GSA Annual Meeting, Salt Lake City, October 1997. Abstract published in GSA Abstracts with Programs, 1997 Annual Meeting, A-175.
- \*\*Shiller, A.M. A seasonal study of dissolved trace elements in the Loch Vale Watershed. American Geophysical Union Fall Meeting, San Francisco, Dec. 8, 1997. Abstract published in *Eos* 78 (48) [1997] F220.
- \*\*Shiller, A.M., C.A. Brunner, Y. Furukawa, T. Hebert, and J. Yuan. Early diagenesis of carbonate sediments in the Dry Tortugas and Marquesas Keys, Florida, USA. 1998 AGU/ASLO Ocean Sciences Meeting, San Diego, CA, Feb. 1998. Abstract: *Eos, Trans. Amer. Geophys. U.* 79 (1-suppl.): OS95.
- \*\*J. Yuan and A.M. Shiller. The distribution of hydrogen peroxide in the central Atlantic Ocean. 1998 AGU/ASLO Ocean Sciences Meeting, San Diego, CA, Feb. 1998. Abstract: *Eos, Trans. Amer. Geophys. U.* 79 (1-suppl.): OS117.
- \*\*Shiller, A.M. and T.L. Hebert. Biogeochemical controls on dissolved trace elements in rivers. 8<sup>th</sup> Annual Goldschmidt Conference, Toulouse, France, Aug. 1998. Abstract: *Mineral. Mag.* 62A: 1391-1392.
- \*\*Shiller, A.M. Dissolved trace elements in rivers. Presented at University of Otago Dept. of Chemistry (New Zealand), University of Alabama Dept. of Geology (Tuscaloosa), and Tulane University Dept. of Geology (New Orleans); October/November 1998.
- \*\*Stephens, T.L. and A.M. Shiller. Temperature-dependent microbial control of dissolved manganese in the lower Mississippi River. 1999 ASLO Aquatic Sciences Meeting, presented by A.M. Shiller. Abstract: 1999 ASLO Aquatic Sciences Meeting, Abstract Book, p. 170.
- \*\*Shiller, A.M. Dissolved trace elements in a seasonally snow-covered catchment. 5<sup>th</sup> International Symposium on Geochemistry of the Earth's Surface, Reykjavik, Iceland, Aug. 1999. Abstract in: *Geochemistry of the Earth's Surface*, H. Ármannsson, ed., Balkema, Rotterdam, pp. 123-125.
- \*\*Shiller, A.M. A comparison of dissolved trace element variability in a major river and a small stream. American Geophysical Union, 1999 Fall Meeting. Abstract: *Eos, Transactions AGU* 80 (46-

supplement) [1999] F378.

\*\*Shiller, A.M. Estimation of bottom recycled nutrients on the Louisiana Shelf from trace element distributions. Estuarine Research Federation, 15<sup>th</sup> Biennial International Conference, Abstracts [1999] 94.

\*\*Shiller, A.M. Variability of dissolved trace elements in rivers. Invited presentation: Geochemical Perspectives on Environmental Processes (GPEP-2000), St. Louis, April, 2000.

\*\*Shiller, A.M., Using trace element distributions to estimate bottom recycled nutrient fluxes on the Louisiana Shelf. ASLO 2001 Aquatic Sciences Meeting Abstract Book, p. 128.

\*\*Shiller, A.M., Z. Chen and R. Hannigan. A time series of dissolved rare earth elements in the lower Mississippi River. Water-Rock Interaction-10, Villasimius, Italy, June 2001. Abstract in: *Water-Rock Interaction 2001*, R. Cidu, ed., Swets & Zeitlinger, Lisse, pp. 1005-1007.

\*\*Shiller, A.M. Dissolved trace elements in rivers: problems and perspectives. Invited presentation: International Arctic Research Center, Fairbanks, AK, May 2002.

\*\*Schuster, P.F., R. G. Striegl, G. R. Aiken, R. G. Striegl, T.P. Brabets, R. P. Hooper, D. P. Krabbenhoft, M.M. Reddy, H.E. Taylor, A. M. Shiller, D.D. Eberl, M.A. Voytek, T.F. Kraemer, C. Kendall, J. Finlay, and R.L. Michel. "An Overview and Preliminary Data of a Five-year Water Quality Study of the Yukon River" American Geophysical Union, 2002 Fall Meeting. Abstract: Eos, Transactions AGU 83(47) Fall Meeting Suppl. Abstract H61C-0785, 2002.

\*\*Yuan, J. and A.M. Shiller. "Marine photochemistry of hydrogen peroxide in the Northwest Pacific Ocean" American Geophysical Union, 2002 Fall Meeting. Abstract: Eos, Transactions AGU 83(47) Fall Meeting Suppl. Abstract OS72D-12, 2002.

\*\*Shiller, A.M. Simple syringe filtration methods for reliably examining dissolved and colloidal trace element distributions in remote field locations. American Geophysical Union, 2002 Fall Meeting. Abstract: Eos, Transactions AGU 83(47) Fall Meeting Suppl. Abstract H61C-0799, 2002.

\*\*Comyns, B.H., C.F. Rakocinski, M.S. Peterson and A.M. Shiller. August 2003. Differences in otolith microchemistry of early juvenile spotted seatrout (*Cynoscion nebulosus*) reflect local geographic source areas across coastal Mississippi. 27<sup>th</sup> Annual Larval Fish Conference - Early Life History Section of the American Fisheries Society. Santa Cruz, California.

\*\*Duan, S., T.S. Bianchi, and A.M. Shiller. Seasonal changes in the abundance and composition of dissolved and particulate organic carbon in the lower Mississippi and Pearl Rivers. 225<sup>th</sup> National Meeting, American Chemical Society, Division of Geochemistry paper #87, New Orleans, LA. March 2003. Abstract published in ACS Division of Geochemistry Newsletter, Spring 2003.

\*\*Shiller, A.M. Dissolved trace elements in two contrasting river systems: the Mississippi and Yukon Rivers. J. Miss. Acad. Sci. 49(1) [2004] 59. Presented at 68<sup>th</sup> Annual Meeting of the Mississippi Academy of Sciences, Feb. 2004.

\*\*Shiller, A.M. Major Rivers in RiOMar: A Comparison of Dissolved and Colloidal Trace Elements in the Mississippi and Yukon Rivers. American Geophysical Union, Ocean Sciences Meeting, Portland, OR. Jan. 2004. Abstract: Eos Trans. AGU, 84(52), Ocean Sci. Meet. Suppl., Abstract OS22F-01, 2003.

\*\*Yuan, J. and A.M. Shiller. Hydrogen Peroxide in Deep Waters of the North Pacific Ocean. American Geophysical Union, Ocean Sciences Meeting, Portland, OR. Jan. 2004. Abstract: Eos Trans. AGU, 84(52), Ocean Sci. Meet. Suppl., Abstract OS32L-10, 2003.

\*\*Shiller, A.M. Dissolved and colloidal trace elements in two contrasting rivers systems: the Mississippi and Yukon Rivers, ACS, Anaheim, March 2004,

[http://membership.acs.org/g/geoc/Anaheim\\_2004\\_Abstracts.pdf](http://membership.acs.org/g/geoc/Anaheim_2004_Abstracts.pdf)

\*\*Shiller, A.M. Temperature dependence of microbial Mn oxidation as a control on seasonal concentration variability of dissolved metals in flood-plain rivers. ACS, Anaheim, March 2004, [http://membership.acs.org/g/geoc/Anaheim\\_2004\\_Abstracts.pdf](http://membership.acs.org/g/geoc/Anaheim_2004_Abstracts.pdf)

\*\*Shiller, A.M. and P. Heidingsfelder. Determination of V, Mn, and Co in seawater using MagIC WISRD and HR-ICP-MS. 5th International Conference on Magnetic Sector Field ICP-MS, Omaha, Aug 2004. (Abstract on Conference CD-ROM)

\*\*Shiller, A.M., S. Duan, P. van Erp and T. Bianchi, 2004. Photo-oxidation of Dissolved Organic Matter in River Water and its Effect on Trace Element Speciation. AGU Fall Meeting, Eos Trans. AGU, 85(47), Fall Meet. Suppl., Abstract H51G-04.

\*\*Shiller, A.M., J. Finlay and G.R. Aiken, 2005. Spatial and Temporal Variability of Dissolved and Colloidal Trace Elements in Rivers of Central Alaska. ASLO Aquatic Sciences Meeting. Abstract: <http://www.aslo.org/meetings/slc2005/abstracts/761.htm>

\*\*Shiller, A.M., G.R. Aiken, J. Finlay, 2005. Trace Elements in Rivers of Central Alaska and Their Potential Response to Climate Change. *Eos Trans. AGU*, 86(52), Fall Meet. Suppl., Abstract H24B-05.

\*\*Shiller, A.M., G.R. Bairamadgi, P. Heidingsfelder and L. Gross, 2006. Dissolved trace elements in surface waters of the Northwest Pacific Ocean. AGU/ASLO Ocean Sciences Meeting, Feb. 2006. *Eos, Trans. AGU* 87(36) *Ocean Sci. Meeting Suppl.* Abstract OS16M-07.

\*\*Shiller, A.M., T.S. Bianchi, and G.R. Aiken, 2006. Dissolved Trace Metal and Organic Matter Relationships over Various Fluvial Scales. Invited presentation at 2006 Joint Assembly, Baltimore, Md. May 2006. *Eos Trans. AGU*, 87(36), *Jt. Assem. Suppl.*, Abstract B33A-06.

\*\*Shiller, A.M., T.S. Bianchi, and G.R. Aiken, 2006. Dissolved Trace Metal and Organic Matter Relationships over Various Fluvial Scales. Invited poster at Fifth GERM Workshop Columbia University, New York May 29-31, 2006. Abstract published at <http://earthref.org/events/GERM/2006/index.html>.

\*\*Shiller, A.M. Dissolved and colloidal trace elements in rivers: problems and perspectives. Presented to the Dept. of Chemistry, Göteborg University, Göteborg (Gothenburg) Sweden, November 2006.

\*\*Shiller, A.M. and S. Duan, 2006. Effect of Hurricane Katrina on the Water Quality of the Pearl River (Mississippi). AGU Fall Meeting, San Francisco, Dec. 2006. *Eos, Trans. AGU*, 87 (52) Fall Mtg Suppl. Abstract H23B-1490.

\*\*Shiller A.M. and G. R. Aiken, 2006. Dissolved and colloidal trace elements in the Yukon River system: possible responses to climate change. Invited presentation at AGU Fall Meeting, San Francisco, Dec. 2006. *Eos, Trans. AGU*, 87 (52) Fall Mtg Suppl. Abstract B23E-04.

\*\*Shiller, A.M., 2007. Microbial control of dissolved manganese in rivers. ASLO Aquatic Sciences Meeting, Santa Fe, Feb. 2007. Abstract 471: <https://www.sgmeet.com/aslo/santafe2007/viewabstract2.asp?AbstractID=471&SessionID=SS27>

\*\*Shiller, A.M. Dissolved and colloidal trace elements in rivers: problems and perspectives. Presented to the Dept. of Geology, Univ. Texas, El Paso, Oct. 2007.

\*\*Shiller, A.M., 2007. Towards a Model of Dissolved and Colloidal Fe and Mn in the Yukon River Basin. AGU Fall Meeting, San Francisco, Dec. 2007. *Eos, Trans. AGU*, 88 (52) Fall Mtg Suppl. Abstract B43F-08.

\*\*A.M. Shiller & G.R. Aiken, 2008. Predicting the climate change response of dissolved and



colloidal trace elements in the Yukon River basin. Invited Tutorial Presentation, 2008 Ocean Sciences Meeting, Orlando, FL, March 2008. Abstract: <http://aslo.org/meetings/orlando2008/>.

\*\*Shiller, A.M. Dissolved and colloidal trace elements in rivers: problems and perspectives. Presented to the Dept. of Earth & Environmental Sciences, Tulane University, April 2008.

\*\*Balakrishna, K. and A.M. Shiller, 2008. Sources, transport and fate of Dissolved Trace Metals in the Godavari river mouth, India. Geological Society of America, Annual Meeting, Nov. 2008. Abstract online at <http://a-c-s.confex.com/crops/2008am/webprogram/Paper50335.html>

\*\*Shiller, A.M., H. Huang and G.R. Aiken, 2008. Dissolved and colloidal oxyanion trace elements in the Yukon River system. AGU Fall Meeting, Dec. 2008. Eos Trans. AGU, 89(53), Fall Meet. Suppl., Abstract B21B-0354.

\*\*Stolpe, B., L. Guo and A.M. Shiller, 2008. Colloidal Size Spectra of Fe in Seawater and River Water as Revealed by Flow Field-Flow Fractionation. AGU Fall Meeting, Dec. 2008. Eos Trans. AGU, 89(53), Fall Meet. Suppl., Abstract OS23D-1285.

\*\*Shiller, A.M., H. Huang, P. van Erp and G.R. Aiken, 2008. Dissolved and Colloidal Trace Elements in Glacial Watersheds of the Yukon River Basin. Invited Presentation, AGU Fall Meeting, Dec. 2008. Eos Trans. AGU, 89(53), Fall Meet. Suppl., Abstract C11A-0481.

\*\*Shiller, A.M., 2009. Colloidal suspended iron in rivers. AGU Fall Meeting, Dec. 2009. Eos Trans. AGU, 90(52), Fall Meet. Suppl., Abstract H42B-04.

\*\*Stolpe, B., L. Guo and A.M. Shiller, 2009. Characterization of Colloidal Iron-binding Organic Matter in Marine Waters. AGU Fall Meeting, Dec. 2009. Eos Trans. AGU, 90(52), Fall Meet. Suppl., Abstract OS23A-1177.

\*\*Stolpe, B., L. Guo, A. M. Shiller, Z. Zhou, and V. Lovko, 2010. Sources and Size Spectra of Fluorescent Colloidal Organic Matter in Coastal Seawater, as Revealed by Field-Flow Fractionation. Ocean Sciences Meeting, Portland, Oregon, February 2010. Abstract CO25A-30, <http://agu-os10.abstractcentral.com>

\*\*Shiller, A.M., 2010. Colloidal iron in rivers and estuaries. Invited Keynote Talk, Goldschmidt Conference, Knoxville, June 2010. Abstract: Geochim. Cosmochim. Acta 74 (11; Suppl. 1) A952. (Oral)

\*\*Shiller, A.M., M.J. Shim, L. Guo, T.S. Bianchi, R.W. Smith, and S. Duan, 2010. Hurricane Katrina Impact on Water Quality in the East Pearl River, Mississippi. Abstract H53F-1101 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec. (Poster)

\*\*Williams, C., B.P. Flower, D.W. Hastings, A.M. Shiller, and E.A. Goddard, 2010. A Multi-proxy Approach to Deglacial Paleo-Salinity Reconstructions Based on Gulf of Mexico Sediments. Abstract PP33B-1677 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec. (Poster).

\*\*Shim, M.J., P.W. Swarzenski, and A.M. Shiller, 2010. Dissolved and Colloidal Trace Elements in the Mississippi River Delta Outflow after Hurricanes Katrina and Rita. Abstract OS33D-1503 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec. (Poster).

\*\*Joung, D.J. and A.M. Shiller, 2010. Trace element distributions in waters affected by the Deepwater Horizon oil spill. Abstract OS21G-08 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec. (Oral).

\*\*Williams, C., B. Flower, D. Hastings, T. Guilderson, E. Goddard, and A. Shiller. Meltwater routing and enhanced seasonality during the Younger Dryas and Mystery Interval based on Gulf of Mexico sediments. Poster presentation at the 10<sup>th</sup> International Conference on Paleoceanography, San Diego, CA, August 2010. <http://icp10.ucsd.edu/> (Won best student poster award.)

\*\*Wade, T.L., Sweet S.T., Sericano, J.L., Guinasso, N.L. Jr., Lohrenz, S.E., Shiller, A.M., Joye, S.B, Dierks, A.R., Asper, V.L. and Highsmith, R.C. 2010. Documentation of Sub-Surface Oil Plume by Analyses of Toxic PAH in Water Samples from the Deep Water Horizon Oil Spill. Presented at SETAC 31th Annual Meeting, November 7-11, 2010, Portland OR, Abstract WP290 (<http://portland.setac.org/node/5>). (Poster).

## **FUNDING HISTORY**

### **Prior Funding**

“Gallium in seawater and its relationship to aluminum,” NSF Chemical Oceanography, \$45,900, 4/1/87 - 10/31/89. (Plus two \$4,000 REU Supplements)

“Development of atomic absorption spectrophotometry capability at the University of Southern Mississippi Center for Marine Science,” (co-PI with G. Knauer) NSF Oceanographic Facilities, \$60,000, (Additional \$6,667 in USM cost-sharing) 5/15/88-10/31/89.

“RUI: Rapid shipboard analysis of manganese, copper and iron,” NSF Ocean Sciences, \$79,172 (\$42,723, first year), July 1, 1989 - 31 Dec. 1991. (Additional \$4,000 REU supplement, \$1,000 research supplement, and 2nd year \$4,000 REU supplement.)

“Development of a trace element clean facility at the USM Center for Marine Science,” (lead PI with G.A. Knauer, S.E. Lohrenz, D.G. Redalje, and V.L. Asper), NSF Biological, Behavioral & Social Science, \$140,000 (plus \$140,000 matching from USM), October 15, 1989 - March 31, 1992.

“The gallium/aluminum ratio in rivers: a possible new tool in studies of weathering and aluminum geochemistry,” NSF Geology & Paleontology, \$42,760, June 1, 1991 - Nov. 30, 1992.

“KERE Hydrographic/Tracer Studies,” Office of Naval Research, \$42,143, Jan. 1, 1992 - Dec. 31, 1992.

“Mississippi River trace elements: variability and controlling mechanisms,” Environmental Protection Agency, \$109,943, Aug 23, 1991 - Jan. 31, 1994. (Additional \$9,065 in-kind cost share from USM.)

“Gallium and other reactive trace elements in the Atlantic Ocean.” NSF Chemical Oceanography, \$41,995; 1/1/93 - 12/31/94. (Plus two \$4,000 REU Supplements)

“Acquisition of a particle enumeration and analysis facility for marine science.” NSF Office of Science & Technology Infrastructure, \$203,000 with \$87,000 USM cash cost share; 9/1/94 - 12/31/95. (Co-PI with V. Asper, D. Redalje, and S. Lohrenz)

“Variability of dissolved trace elements in rivers and streams: seasonal redox effects.” NSF Water

& Watersheds Program; \$50,000; 9/15/95 - 8/31/97.

“Effects of carbonate dissolution and precipitation on sediment physical properties and structure--- pore water flux component.” Naval Research Laboratory; \$76,520; 4/1/95 - 3/31/98.

“Characterization of fluvial suspended particulate matter using field-flow fractionation and related methods.” NSF Hydrologic Sciences and Ocean Sciences; \$175,000 plus two REU supplements for \$4,625 each; 1/1/97 - 12/31/99.

“Acquisition of a high resolution inductively coupled plasma--mass spectrometer (HR-ICP-MS) for the central Gulf Coast region.”; NSF Oceanographic Instrumentation; \$400,000 plus \$188,000 USM cost-share; 8/15/98 - 8/14/01.

“Microbial and surface area effects on surface water transport of dissolved metals.”; USDA-CSREES-NRICGP; \$50,000; 9/15/99 - 9/14/01.

“Fisheries recruitment in the northcentral Gulf of Mexico: Can important geographic sources of juvenile nursery habitat be determined using otolith microchemistry?” Mississippi-Alabama Sea Grant; 2/1/01-1/31/03; \$106,037 (plus \$56,550 USM match); NA886RG0039-4; co-PI with B. Comyns, C. Rakocinski, M. Peterson.

“Collaborative Research: Redox Controls on and Seasonal Variability of Dissolved Iron and Manganese in Rivers.”; NSF Hydrologic Sciences; \$220,000; 8/01/00 - 7/31/03. (T. Bianchi, Tulane, is the PI of a separate collaborative proposal budget.)

“Reactive trace chemicals in ocean surface waters: hydrogen peroxide, manganese and gallium”; NSF Chemical Oceanography; 2.5 years; \$170,083 plus \$6,000 REU supplement; co-PI with J. Yuan. (OCE 0137359; 3/1/02 - 8/31/05)

“SGER: Repair and upgrade of high resolution ICP-MS facility at the University of Southern Mississippi.” NSF Oceanographic Instrumentation. \$34,046. 1 year. (OCE 0606818; 12/15/05 - 11/30/06).

“Use of otolith microchemistry of spotted seatrout to identify stock source areas, reveal population movements, and determine interannual variability in regional patterns of otolith signatures in Mississippi coastal waters.” (co-PI with B. Comyns, C. Rakocinski, and M. Peterson) Mississippi-Alabama Sea Grant Consortium, \$137,643 plus \$69,878 in-kind match, 2/04-1/07.

Upgrade of ICP-MS Facilities at the University of Southern Mississippi. NSF Earth Science Instrumentation and Facilities, 11/1/08 - 10/31/09. Award 0824683, \$49,130.

From Landscape to Floodplain: An Examination of Dissolved and Colloidal Trace Element Chemistry in the Yukon River Basin; \$237,829; 3 years; NSF-Geobiology and Low Temperature Geochemistry. (EAR-0617607; 7/15/06 - 8/31/10).

NGI-BP Gulf Research Initiative. A comprehensive assessment of oil distribution, transport, fate and impacts on ecosystems and the Deepwater Horizon oil release; Task 2: Chemical effects associated with leaking Macondo well oil in the Northern Gulf of Mexico. \$100,000. 7/2/10-3/31/11.

### **Current Funding**

“Collaborative Research: Trace Distributions, Chemical Fluxes, and Distributary Comparisons in the Mixing Zone of the Mississippi River,” NSF Chemical Oceanography Program, 3 years, \$253,088. Co-PIs include James Krest (University of South Florida) and Kyeong Park (Dauphin Island Sea Lab).

“Manganese, vanadium, gallium and rare earth elements in the GEOTRACES North Atlantic zonal section. NSF-Chemical Oceanography, Dec. 1, 2009- Nov. 30, 2012, \$174,857.

Monitoring and assessment of coastal and marine ecosystems in the northern Gulf. NOAA (subcontract from MS State Univ.); 10/1/06 - 9/30/11; with 5 co-PIs.

NSF-OCE. RAPID: Deepwater Horizon Oil Spill Effects on Metal, Nutrient, and Organic Matter Distributions in the Water. \$39,354, 6/1/10-5/31/11.

NSF-OCE. MRI-RAPID: Acquisition of Spectroscopic Instrumentation for Oil Spill Research, \$108,871, 9/1/10-8/31/11. Co-PI with L. Guo.

CIAP/MS-DMR. Sediment-associated pollutants and water quality in St. Louis Bay. \$250,000, 4/1/10-3/31/14. (with K. Yeager)

NGI-BP Gulf Research Initiative. Continuation of Chemical effects associated with leaking Macondo well oil in the Northern Gulf of Mexico. \$113,801. Co-PI with L. Guo.

### **Other Funding**

Faculty Member Appointment as a Hydrologist with the U.S. Geological Survey Water Resources Division, Denver, CO. USGS provided \$7,000 of direct funds for participation in their Mississippi River Project. Additional reimbursement for travel was provided.

### **Recent Honors and Awards**

\*\*Downey High School Hall of Fame, 2011.

\*\*Letter of commendation from USM President for service during and after Hurricane Katrina, January 2006.

\*\*Alan Berman Research Publications Award 2000 (Naval Research Laboratory) for Furukawa et al., 2000.

\*\*Figure selected for cover of *Geophysical Research Letters*, Vol. 24 no. 12, June 15, 1997.

\*\*Appreciation Award, U.S. Department of Interior, Water Resources Division, Jan. 1997 & '98.  
\*\*Aubrey Keith and Ella Ginn Lucas Faculty Excellence Endowment Award, January 1997 & 2002.  
\*\*Sabbatical leave granted for academic years 1996-97 & 2008-09.  
\*\*Selected to give lecture as part of the first year of the USM College of Science and Technology Blue Cross/Blue Shield Lecture Series in the Sciences. March 1992.  
\*\*Kaminski Award for best published paper in 1991 by a member of the Gulf Coast Chapter of Sigma Xi. (For Shiller & Boyle, *Geochim. Cosmochim. Acta* 55: 3241.)

### **Other Awards and Honors**

Moss Landing Marine Laboratories Visiting Faculty, 1985-1986  
National Science Foundation Postdoctoral Fellowship, 1981  
AIBS Dissertations Symposium on Chemical Oceanography, 1981  
Frederick W. Hinrichs, Jr. Award, Caltech, 1975  
Graduated with Honor, Caltech, 1975