SCOTT H. EMERY, Ph.D.
Senior Technical Consultant/Ecologist

CREDENTIALS/CERTIFICATION

Ph.D., Ecology, Biological Sciences, SUNY at Stony Brook, N.Y. 1984
M.S., Zoology, Clemson University, S.C. 1978
B.A., Biology, Williams College, MA. 1975

PROFESSIONAL AFFILIATIONS

AWWA Water Resources Sub-committee, 1990-92
AWWA Water Quality Sub-committee, 1990-92
AWWA Yearbook Assistant Editor, 1992
IES Board of Directors, University of South Florida, 1993-present
Minimum Flows/Levels Committees/Sub-committees, 1996-present
Chairman, FDEP Groundwater Rule TAC, 1996-present
Visiting Research Professor, University of South Florida, 2003 - 2007
American Water Works Association
Ecological Society of America
Society of Wetland Scientists

FIELDS OF SPECIALIZATION

Minimum Flows and Levels for wetlands, lakes, springs, rivers
- Ecological risk assessments/land and habitat assessments
- Minimizing impacts from water supply development projects
- Assessing impacts from groundwater withdrawal on lakes/streams/wetlands
- Wetland ecology
- Water conservation and demand management
- Water supply development, treatment, and testing

RELEVANT PROJECT EXPERIENCE:

2003-2006: Technical Expert to St. Johns River Water Management District on MFL development for a major portion of the St. Johns River. Dr. Emery is part of a team of experts evaluating whether proposed MFLs for a portion of the river will serve to protect the ten water resource and human use values enumerated in Florida Statutes. This project involved the efforts of multiple technical experts in hydrology, ecology, engineering, modeling, fisheries.

2003-Present: Technical Expert to Southwest Florida Water Management District on potentially controversial water resource, MFL and water supply issues, many within the Water Use Caution Areas. Dr. Emery advises the District on a variety of issues involving surface and groundwater supply projects, MFLs, and rule development. Lakes, wetlands, rivers, springs and aquifer systems located within multiple counties within the District are involved in these efforts. Dr. Emery has

examined the implications of long-term climatic variation on the development of MFLs. He has worked for and/or with the District on multiple springs and rivers/streams, dozens of lakes, and roughly one hundred wetlands. Currently, Dr. Emery is currently working for the District on an evaluation of Crystal Springs, as well as Water Use in Lakeland and The Villages.

2003-2007: MFL Method Development - Wildlife usage on and adjacent to Florida lakes: Dr. Emery designed and is currently the Project Manager for a major multi-year sampling and survey study (birds, amphibians, vegetation, water quality) for the Southwest Florida Water Management District for 30 different lakes ranging in size from 10 acres to greater than 4,000 acres. This project involves identification of multiple species, description of the habitats, and the GPS coordinates of the habitats. Dr. Emery conducts surveys of multiple lakes himself, and coordinates the activities of other experts in ornithology, wildlife biology, herpetology, botany and water chemistry. All this is to examine the technical validity of an MFL method involving changes in lake surface area.

2004-Present: Expert Peer Reviewer, MFL s for Springs and Riverine Systems for Suwannee River Water Management District. Dr. Emery is one of a panel of technical experts and the group's facilitator for examining proposed MFLs for the District. These projects involve springs and river systems. Three separate springs have been examined to date, along with several river segments.

2004-2005: Environmental Monitoring Program, Hernando County. Dr. Emery developed an environmental monitoring program for Hernando County designed to protect the water quality of the groundwater and the ecological features within the County, including MFL lakes.

1992-Present: Water Resource/Environmental Advisor to Hillsborough County. During this time, Dr. Emery has been utilized as an expert advisor for multiple water resource, MFL, Water Use Permitting, Land Use Planning, and hydroecologic issues of concern to the County and its Environmental Protection Commission. Dr. Emery has represented the County on the majority of the MFL deliberations/investigations to date conducted by the SWFWMD within Hillsborough County. Currently, Dr. Emery is involved in MFL deliberations involving three spring systems within the County. Dr. Emery is the County's technical expert on MFL methodology formulations for cypress wetlands and all categories of lakes, plus the riverine systems. Dr. Emery is currently working with the County to develop a new MFL method for herbaceous wetlands. Dr. Emery has assessed wetlands, lakes, rivers, and spring systems over much of Hillsborough County on behalf of that local government (and many for the SWFWMD as well). Sites assessed include:

- Over 100 wetlands around the major wellfields (Cosme-Odessa, Section 21, Eldridge-Wilde, Northwest Regional, Southcentral Regional, Brandon Urban Dispersed, Morris Bridge, Cypress Bridge)
- Over 600 wetlands around proposed wellfield sites (Cone Ranch, Eagles, Cypress Bridge II)
- All major rivers and tributaries to those rivers;
- All major spring systems;
- The Tampa Bay and McKay Bay estuaries

Assessment methods have often followed the WAP process developed by a committee of technical experts, of which Dr. Emery was one. Also employed regularly are surveying of normal pool indicators, soils, and evaluations of existing water level data. During these years, Dr. Emery has

responded to numerous requests to evaluate lake and wetlands outside the areas of the wellfields. Dr Dr. Emery was a principal developer of the County's independent monitoring program for the major rivers and Tampa Bay. He has also assisted the County EPC in the actual field monitoring and evaluations. Dr. Emery is the County's technical advisor on multiple plans to restore wetland and lake systems impacted by groundwater withdrawals. These plans include structural alterations, transfers of surface waters, periodic augmentation with groundwater, and potential use of reclaimed water. Dr. Emery has served as an expert to the County on land purchases by the County's Environmental Lands Acquisition Program. Dr. Emery has closely examined a parcel of more than 12,000 acres, several parcels of more than 500 acres, and several parcels of more than 200 acres. Sites examined include areas of known habitats for "listed species" of wildlife, cattle ranch lands, active row crop lands, riverine systems, floodplain forests, isolated wetlands, lakes, pine flatwoods, oak scrub habitats, mined areas, sod farms.

2000-2003: Spring Flow Limitations on a Water Use Permit Issue. Dr. Emery was one of Hillsborough County's technical experts in a legal matter between a major regional water supply authority and the County regarding impacts from a newly permitted wellfield on the flow from Lithia and Buckhorn Springs. Dr. Emery helped develop the methodology used to assign a flow/level below which wellfield pumping would have to be reduced or eliminated.

1999-2004: Spring Flow Limitations on a Water Use Permit Issue. Dr. Emery was on of Hillsborough County's technical experts in deliberations on how much water was to be allowed to be diverted from Sulfur Springs to augment the base of the Hillsborough River Dam with a minimum flow. This was a highly controversial matter, in as much as the City of Tampa relies heavily upon the river for its potable water supplies, and given the importance of the springs to the ecology of the lower river.

1993–Present: Board Member, University of South Florida Institute for Environmental Studies, Adjunct/Visiting Research Professor (2003 – present). Evaluations of borrow pit use and phosphogypsum use in roads for FIPR. Assessment of potential for education center for natural systems in Tampa Bay area for Brooker Creek Preserve.

2006: Professional Facilitation and Technical Support, Tampa Bay Estuary Program. Dr. Emery, along with multiple HSW experts, is providing professional facilitation services and technical support to the Tampa Bay Estuary Program for undertaking Best Management Action Plans for Total Maximum Daily Loads within multiple basins in and around the Tampa Bay area.

2004-Present: Habitat creation/restoration of several miles of stream for a private client in west-central Florida. Dr. Emery is the HSW Team Leader for a multi-pronged program designed to de-channelize and re-create a stream system that had been severely altered roughly 35 years ago. The project involves the restoration of impacted cypress systems, creation of marsh systems, re-creation of a meandering stream bed, and the resolution of recently identified groundwater contamination within the project area. Dr. Emery is basing the habitat creation and restoration partly on the requirements of select "listed species".

2002-Present: Fully equipped sampling and survey vessel: Dr. Emery has modified an 18 foot power catamaran boat for biological and water quality sampling on Florida lakes, bays and

estuaries. This vessel can access areas of natural habitat too shallow or isolated for most boats to access, due to its extremely shallow draft and unusually quiet motor. This vessel is equipped with a boom and winch system capable of retrieving heavy sampling grabs from deep water. This boat has been/is being utilized by the University of South Florida, Southwest Florida Water Management District, and local governments for projects involving wildlife surveys, vegetation surveys, and benthic/water quality sampling.

1993–2005: Ecological Risk Assessments Involving Wildlife and Wetlands. Ecological investigations and ecological risk assessments (ERA) involving wildlife, fish and "listed species" associated with Work Plans and RFI's for approximately two dozen projects at various locations within Kennedy Space Center and Cape Canaveral Air Station; ERA work for private clients in Titusville, Pinellas Park, Sanford, Temple Terrace and Winter Haven, Florida plus ecological risk work in Milledgeville, Georgia; risk analysis of mercury in a surface water body in Florida for a regional government; sanitary survey for private client in Pasco County; environmental risk assessment for a Florida municipality. In total, these evaluations involved over 100 wetland systems and many species of fish and wildlife.

1985–Present: Water Use Permitting, Public Supply. Dr. Emery has been responsible for obtaining some of the largest public water supply WUPs issued by the SWFWMD. As Director of Environmental Services, then Director of Resource Management, West Coast Regional Water Supply Authority, he directed all activities in management of Authority water supply facilities (serving 1 million people) with total asset value of $150 million. Facilities included: 7 major wellfields (>70 production wells, 200 mgd permitted max. day and 120 mgd permitted average); 1 centralized production, maintenance and treatment facility (85 mgd max. day permitted capacity); 2 hydropneumatic treatment systems; 1 surface water source and pumping station (40 mgd max. day, 20 mgd average); analytical testing laboratory; remote telemetry and monitoring well sites (>250). Developed/implemented innovative, state-of-the-art ecologic, hydrologic and water quality monitoring and analytical programs (>$3 million/year) for each wellfield/source of supply designed to identify potential impacts from production and developing mitigating methodologies (including well rotation and augmentation programs). Developed and directed all activities associated with the Authority's fully certified (DHRS, DER, EPA) analytical testing laboratory; directed all in-house and consultants in developing policies and programs for managing and protecting the resource. Authority's project head for the multi-million dollar resource recovery testing program designed to demonstrate the feasibility of indirect potable reuse of highly treated reclaimed water (other agencies involved included City of Tampa and DER). Authority's in-house expert on all issues pertaining to matters of ecology and wellfield impacts, water quality, water treatment, and public health considerations. Other activities included: water supply production (from 8 regional facilities); operation and maintenance of all facilities; W.U.P. compliance at all sources of supply; inter-governmental liaison; alternative water supply development (incl. $0.5 million R-O); water conservation programs; expert witness testimony; presentations to elected/appointed officials and public interest groups. Since 1992, Dr. Emery has served as an advisor to several governmental organizations regarding WUP issues.

1993–Present: Water Use Permitting, Agriculture, Industrial, Recreation/Aesthetics. Dr. Emery has been responsible for obtaining multiple large agricultural WUPs for tomatoes, strawberries and other vegetable and berry crops (most from within the SWUCA). Dr. Emery has been Hillsborough

County's expert in the transferring and modification of multiple WUPs held by the County for various purposes, and has been the County's expert on negotiations with large developers on WUP and reclaimed water matters.

1995-1996: Feasibility analysis for proposed large reservoir. Dr. Emery was the principal author of a feasibility report concerning the proposed development of a large water supply reservoir to be located within Hillsborough County, Florida.

1987–Present: Water Use Caution Areas, Rule Developments. Dr. Emery has been involved in the Northern Tampa Bay Water Use Caution Area and the Southern Water Use Caution Area (including its predecessor areas, the Eastern Tampa Bay Water Use Caution Area and the Highlands Ridge Water Use Caution Area) since the initial meetings in the mid 1980's. Dr. Emery has served on advisory boards, and has assisted local governments on various ecological, water quality and hydrologic aspects of these efforts. He continues to be involved in the latest developments within the WUCAs. All these projects are intended to determine sustainable levels of withdrawals of water. Dr. Emery's focus has usually been on impacts to surficial features such as lakes, wetlands springs and streams, plus impacts to private well users.

1993-2004: Evaluation of multiple plans to develop new water supply sources in west-central Florida, with emphasis on potential impacts to wetlands, lakes, springs, streams and estuaries. Dr. Emery has evaluated multiple groundwater and surface water projects for their potential to impact natural systems within and around Tampa Bay. Dr. Emery continues to act in this capacity for Hillsborough County and Hillsborough County Environmental Protection Commission (EPC).

1996–1997: Four Wellfields Administrative Hearing. Dr. Emery was a major participant in one of the largest Administrative Hearings ever held, involving over-pumping and adverse impacts to lakes, and wetlands. Multiple parties were involved on both sides. Dr. Emery represented one of the parties seeking to have wellfield pumpage reduced. Dr. Emery was deposed as an expert witness as part of this case. The resultant Findings of Fact clearly indicated that wellfield pumpage had caused impacts to lake and wetland systems, and that such impacts were adverse.

1997–1998: Governance Agreement and Partnership Plan. As a direct result of the Four Wellfields Administrative Hearing, the parties involved began intense, long-term negotiations for reducing pumpage within impacted areas. Dr. Emery acted as a technical advisor to the Hillsborough County Administrator and Board of County Commissioners for both the development of the new Governance Agreement (greatly re-structured the former WCRWSA) and the Partnership Plan between the local governments, the new Tampa Bay Water, and the SWFWMD. As a result of these agreements, permitted wellfield pumpage was to be reduced by more than 50%.

1985–2005: Dr. Emery: Other Water Supply Projects. Analysis of flooding problems in Hillsborough County; development of draft policies for BOCC regarding regional water supplies, alternative water supplies, demand management; representative of BOCC and Administration on multiple matters dealing with land use, zoning, water use, private wells, stormwater, wastewater, etc; expert witness services regarding wellfields, proposed rules, proposed developments, proposed alternative water supplies; coordination of efforts to obtain outside funding for county projects ($10 million); intergovernmental liaison with various local, regional and state governmental

agencies; assistance to Environmental Lands Acquisition Program; Analysis of land use and surface water/drainage changes for a Florida municipality; water resource master planning for private client; analysis of potential impacts to surface water quality from mining activities (Peace River area); analysis of reuse options for a Florida municipality; water resource public education program development in Pinellas County; development of portion of land management plan for major environmentally sensitive land acquisition effort. Expert witness services to governmental and private interests dealing with wetlands and lakes, Water Use Permitting and water quality issues. Directed the development of award-winning, innovative water conservation, and public education programs. Initiated WCRWSA Speaker Bureau and trained initial participants. TBRPC Chairman Water Resources Task Force subcommittee (1986-87).

1993-Present: Reviews of Environmental Resource Permit (ERP) Applications. Since 1993, Dr. Emery has been repeatedly called upon by Hillsborough County, Florida to review and assess MSSW and ERP application materials for projects proposed to be located within Hillsborough County. These have included: roadways, industrial facilities, pipelines, treatment systems, water withdrawal facilities, residential developments.

2001-Present: Develop and Maintain Information on ERP Applications. Since 2001, Dr. Emery has reviewed all ERP applications packets considered by the SWFWMD Governing Board, and has maintained a data base for all applications involving impacts of 1 acre or greater to wetlands.

1993–1997 Professional Facilitation, Hillsborough River Greenways. Dr. Emery provided professional facilitation services to 1000 Friends of Florida for a multi-year, award-winning program to develop and implement action plans and protection strategies for the Hillsborough River Watershed in west-central Florida. The program involved more than 25 groups and agencies (including major phosphate companies, SWFWMD, and FDEP) from a wide-spectrum of interests (environmental to heavy industry). Issues addressed included: impacts from water withdrawals, land use changes, water quality improvement, highway impacts, development impacts, power line issues, scenic trails, parks, etc. Dr. Emery received accolades from the highest levels of the state government for his role in this successful project.

1993-1996: Professional Facilitation, Suncoast Rivers. Dr. Emery provided professional facilitation services for 1000 Friends of Florida for a multi-year effort to identify and prioritize a set of issues for 3 riverine systems in west Florida. This effort required extensive interactions with the major phosphate companies. The project was similar to the one described above, but was designed to scope out the issues, rather than develop the action plans and protection strategies.

1993-2002: Professional Facilitation, Natural Resource Issues, Hillsborough County. Dr. Emery provided professional facilitation for multiple issues on behalf of the Hillsborough County Board of County Commissioners. The BOCC would develop committees for environmental and water conservation-related topics, and assign Dr. Emery to facilitate these committees. These included:

- Development of positions statements and policies for the Southern Water Use Caution Area of Hillsborough County. This involved elected officials, regulatory agencies, agricultural, industrial and residential interests as well as environmental groups.

- Development of recommendations on ways to reduce water use within the County. Two special groups of technical representatives from the green industry, the irrigation industry, the water supply utilities, the native Plant Society, the Sierra Club and others, under the guidance of Dr. Emery, developed sets of specific recommendations for the BOCC to help control and reduce outdoor water use while maintaining attractive, healthy landscaping.

1994 – Present: Northern Tampa Bay Water Resource Assessment and Supply Development Project Phase I and II. Dr. Emery has acted as Hillsborough County's Technical Representative on this multi-year project since its inception. The project is designed to determine the sustainable limits to groundwater pumpage within a large area of north of Tampa Bay. The project has included years of wetland work, well tests, hydrologic monitoring, and modeling.

1993: Analysis of land use and surface water/drainage changes in Hillsborough County. Dr. Emery authored a report on historical changes in land use and surface water drainage in an area of high groundwater pumpage.

1985 – Present: Expert witness services to governmental and private interests dealing with wetlands and lakes, Water Use Permitting and water quality issues.

TRAINING COURSES:

Toxicology for Chemists
National Wetlands Inventory and Wetlands Mapping
Pesticides in Groundwater
Gas Chromatography
Principles of Accounting
Essentials of Management/Management Principles
Radiation Safety/Nuclear Soil Gauge Certifications
Budgeting

COMMITTEES, BOARDS:

AWWA Water Resources Sub-committee, 1990-92
AWWA Water Quality Sub-committee, 1990-92
AWWA Yearbook Assistant Editor, 1992
IES Board of Directors, University of South Florida, 1993-present
Minimum Flows/Levels Committees/Sub-committees, 1996-present
Chairman, FDEP Groundwater Rule TAC, 1996-present

REPORTS, PAPERS, PUBLICATIONS:

Author/co-author of 8 peer-reviewed published scientific/technical articles.
Over 70 technical reports.
Oral presentations at symposia, conferences.

CURRICULUM VITA

Mark Edward Luther

Education

Institution	Field of Study	Degree	Date
University of North Carolina at Chapel Hill	Mathematics and Physics	A.B.	1976
University of North Carolina at Chapel Hill	Physical Oceanography	M.S.	1980
University of North Carolina at Chapel Hill	Physical Oceanography	Ph.D.	1982

Professional Background

1990-Present	Associate Professor, College of Marine Science, University of South Florida
1982-1990	Postdoctoral Fellow and Research Associate, Mesoscale Air-Sea Interaction Group, The Florida State University
1977 (summer)	Research Technician, Department of Marine Science and Engineering, North Carolina State University
1976-1982	Graduate Research Assistant, Curriculum in Marine Sciences, University of North Carolina at Chapel Hill

Areas of Specialization

Numerical modeling of ocean dynamics; dynamics of western boundary currents; coastal and estuarine dynamics; equatorial dynamics; climate variability; real-time oceanographic observing-modeling systems; operational oceanography.

Awards

Control Data Corporation PACER (Program for Advanced Computing in Engineering and Research) Fellow, 1984-1986.

Professional Organizations, Offices, and Service Activities

Member of:

American Association for the Advancement of Science
American Geophysical Union
American Meteorological Society
The Oceanography Society

The Estuarine Research Federation
Marine Technology Society
The Coastal Society

U.S. Global Ocean Observing System (GOOS) Steering Committee, Member, 2002-present; Vice Chair, 2003-present.

National Federation of Regional Associations for the Integrated Ocean Observing System (IOOS) Organizing Committee, Member, 2004-present.

Marine Technology Society, Chairman, Florida Chapter, 2004-present.

National Research Council US National Committee for the International Union of Geodesy and Geophysics, Member, 1996-2004.

US National Correspondent to the International Association for the Physical Sciences of the Ocean, General Assembly, 1996-2004.

US National Delegate to the International Association for the Physical Sciences of the Ocean, General Assembly, 1999, 2003.

National Oceanic and Atmospheric Administration Working Group on Coastal Ocean Data Quality Assurance, Member, 1997-1998.

National Aeronautics and Space Administration Sea-viewing Wide Field-of-view Sensor (SeaWiFS) Science Team, Member, 1992-1997.

National Science Foundation Division of Ocean Sciences Review Panels, 1993, 1994, 1995, 1997, 1999.

World Climate Research Programme-International Oceanographic Commission Indian Ocean Climate Studies Panel, Member, 1989-1998.

World Ocean Circulation Experiment Indian Ocean Scientific Steering Committee, Member, 1993-1998

Managing Editor, *HydroWire, An On-Line Newsletter for the Aquatic Sciences*, 1996-2000 (sponsored by the American Geophysical Union, The Oceanography Society, the American Society for Limnology and Oceanography, and the Estuarine Research Federation)

American Geophysical Union Ocean Sciences Section Executive Committee, Public Information Officer, 1996-2000.

American Geophysical Union Information Technology Committee, 1998-2000.

American Geophysical Union Regional Advisory Committee for United States and Canada, Member, 1991-1995.

American Geophysical Union Ocean Sciences Section Secretary, 1994-1996.

American Geophysical Union Western Pacific Geophysics Meeting Program Committee, Ocean Sciences Section Program Chairman, 1991-1994.

American Geophysical Union Fall Meeting Program Committee, Ocean Sciences Section Program Chairman, 1994-1995.

American Geophysical Union Spring Meeting Program Committee, Ocean Sciences Section Program Chairman, 1994-1996.

Estuarine Research Federation 2001 Conference Steering Committee, Chairman, 1997-2001.

Estuarine Research Federation Initiative in Biocomplexity and Climate Change Steering Committee, Member, 2001-present.

U.S. Global Ocean Observing System (GOOS) Planning Workshop Steering Committee, Member, 2001-2003.

American Society for Limnology and Oceanography/The Oceanography Society Ocean Research Conference, Program Committee Member, 2002-2004.
The Oceanography Society Program Committee, 1993-1995.
The Oceanography Society Meeting Local Organizing Committee, Member, 1991.
Pinellas County Schools Center for Advanced Technology Advisory Board, Member, 1994-1998.
Greater Tampa Bay Marine Advisory Council, Member, 1993-2004.
Tampa Bay Physical Oceanographic Real-Time System (GTBMAC-PORTS, Inc.) Chief Operating Officer, 1995-present.
Tampa Bay Regional Planning Council Agency on Bay Management, Member, 1996-present.
Tampa Bay National Estuary Program Technical Advisory Committee, Member, 1991-present.
Tampa Bay Harbor Safety Committee Technical Subcommittee, Member, 1997-present.
The Pier Aquarium Board of Directors, Member, 2001-present.
Committee to Review the Outer Continental Shelf Environmental Studies Program, National Research Council, External Reviewer, Seattle, 1987.
NATO Advanced Study Institute on Physical Oceanographic Modelling, Banyuls-sur-Mer, France, Lecturer, 1985.
Indo/U.S. Science and Technology Initiative Planning Conference for Monsoon Oceanography, Bangalore, India, Member, U.S. Delegation, 1984.
University of South Florida Faculty Senate, Member, 2001-2004.
University of South Florida College of Arts and Sciences Tenure and Promotion Committee, Member, 1998-2000.
University of South Florida College of Arts and Sciences Faculty Advisory Council, Member, 1993-1995.
University of South Florida College of Arts and Sciences Computing Advisory Committee, Member, 1991-1995.
University of South Florida College of Marine Science Information Technology (formerly Computer) Committee, Member, 1990-present; Chair, 1992-present.
University of South Florida College of Marine Science Long Range Planning Committee, Member, 1997-present.
University of South Florida Department of Marine Science Faculty Evaluation Committee, Member, 1993; Chair, 1996.
University of South Florida Department of Marine Science Curriculum Committee, Co-chair, 1991-1994.
University of South Florida Department of Marine Science New Building Committee, Member, 1990-1991.
University of South Florida Department of Marine Science Personnel Committee, Member, 1990-1995.
University of South Florida Department of Marine Science Student Recruiting Committee, Member, 1990-1995.
University of South Florida Department of Marine Science Technical Support Positions Search Committee, Chair, 1994-1995, 1997-1998.
University of South Florida Dean of the Graduate School Search Committee, Member, 1993-1994.
University of South Florida Department of Geography Faculty Search Committee, Member,

1993-1994.

Florida State University Supercomputer Users' Executive Committee, Member, 1985-1990.

Florida State University Campus Networking Committee, Member, 1989-1990.

Florida State University Supercomputer Computations Research Institute Local Systems Operation Policy Committee, Member, 1988-1990.

Reviewer:

The Journal of Physical Oceanography
The Journal of Geophysical Research
The Journal of Marine Research
The Journal of the Oceanographical Society of Japan
Deep-Sea Research
Dynamics of Atmospheres and Oceans
Estuaries
Oceanologica Acta
Oceanography
Paleoceanography
Progress in Oceanography
Marine Technology Society Journal
Geological Society of London, Proceedings
Qatar University Science Buletin
Nonlinear World
CRC Press
The National Science Foundation
The National Oceanic and Atmospheric Administration
The National Aeronautics and Space Administration
The U.S. Department of State
The State of Louisianna Board of Regents

Students Supervised

Mark S. Vincent, Ph.D., 2002 (with Mark Ross)

Nancy J. Schmidt, Ph.D., 2001

David C. Burwell, Ph.D., 2001

Haiying Zhang, M. S., 2000

Dawn Olson, M. S., 1998

Zaihua Ji, Ph. D., 1997

Danielle M. Bartolacci, M. S., 1996

M. Grey Valenti, M. S., 1995

Lynn A. Leonard, Ph. D., 1994 (with A. C. Hine)

James T. Potemra, M. S., 1990 (with James J. O'Brien)

Pedro Tsai, M. S., 1990 (with James J. O'Brien)

Tommy G. Jensen, Ph. D., 1989 (with James J. O'Brien)

Karen E. Woodberry, M. S., 1988 (with James J. O'Brien)

Raymond C. Simmons, M. S., 1987 (with James J. O'Brien)

Alex H. Meng, M. S., 1985 (with James J. O'Brien)

Publications – Refereed Articles

Luther, M. E., and J. M. Bane, Jr., 1985. Mixed instabilities in the Gulf Stream over the continental slope. *J. Phys. Oceanogr., 15*, 3-23.

Luther, M. E., and J. J. O'Brien, 1985. A model of the seasonal circulation in the Arabian Sea forced by observed winds. *Prog. in Oceanogr., 14*, 353-385.

Luther, M. E., J. J. O'Brien, and A. H. Meng, 1985. Morphology of the Somali Current System during the southwest monsoon. in *Coupled Ocean-Atmosphere Models*, J.C.J. Nihoul, ed., Elsevier, Amsterdam, 405-437.

Luther, M. E., 1986a. Advanced methods for steady problems - Direct elliptic solvers. *Advanced Physical Oceanographic Numerical Modelling*, Ch. 3b, James J. O'Brien, ed., D. Reidel, Dordrecht, Holland, 608 pp.

Luther, M. E., 1986b. Ocean modelling on supercomputers. *Advanced Physical Oceanographic Numerical Modelling*, Ch. 9c, James J. O'Brien, ed., D. Reidel, Dordrecht, Holland, 608 pp.

Simmons, R. C., M. E. Luther, J. J. O'Brien and D. M. Legler, 1988. Verification of a numerical ocean model of the Arabian Sea. *J. Geophys. Res.-Oceans, 93*, 15 437-15 455.

Luther, M. E., and J. J. O'Brien, 1989. Modelling the variability in the Somali Current. in *Mesoscale/Synoptic Coherent Structures in Geophysical Turbulence*, J.C.J. Nihoul and

B. M. Jamart, eds., Elsevier, Amsterdam, 373-386.

Woodberry, K. E., M. E. Luther, and J. J. O'Brien, 1989. The wind-driven seasonal circulation in the southern tropical Indian Ocean. *J. Geophys. Res.-Oceans, 94*, 17,985–18,002.

Luther, M. E., J. J. O'Brien and W. L. Prell, 1990. Variability in upwelling fields in the northwestern Indian ocean; Part 1: Model experiments over the past 18,000 years. *Paleoceanography, 5*, 433–445.

Prell, W. L., R. E. Marvil, and M. E. Luther, 1990. Variability in upwelling fields in the northwestern Indian ocean; Part 2: Data-Model comparison at 9,000 years B.P. *Paleoceanography, 5*, 447–457.

Dube, S. K., M. E. Luther, and J. J. O'Brien, 1990. Relationships between interannual variability in the Arabian Sea and Indian summer monsoon rainfall. *J. Meteor. and Atmos. Phys., 44*, 153–165.

Potemra, J. T., M. E. Luther, and J. J. O'Brien, 1991. The seasonal circulation of the upper ocean in the Bay of Bengal. *J. Geophys. Res., 96*, 12,667–12,684.

Brock, J. C., C. R. McClain, M. E. Luther, and W. W. Hay, 1991. The phytoplankton bloom in the northwest Arabian Sea during the southwest monsoon of 1979. *J. Geophys. Res., 96*, 20,623-20,642.

Tsai, T. H., J. J. O'Brien, and M. E. Luther, 1992. The 26-day oscillation observed in satellite SST measurements in the western equatorial Indian Ocean. *J. Geophys. Res., 97*, 9605-9618.

Leonard, L. A., A. C. Hine, and M. E. Luther, 1995. Surficial sediment transport and deposition processes in a *Juncus Roemerianus* marsh, west-central Florida. *Journal of Coastal Research, 11*(2), 322-336.

Leonard, L. A., A. C. Hine, M. E. Luther, R. P. Stumpf, and E.E. Wright, 1995. Sediment transport processes in a west-central Florida open marsh tidal creek: The role of tides and extra-tropical storms, *Estuarine, Coastal and Shelf Sci. , 41*, 225-248.

Luther, M. E., 1995. Modelling climates and upwelling systems of the past, in*Upwelling in the Ocean: Modern Processes and Ancient Records.*, edited by C. P. Summerhayes, K.-C. Emeis, M. V. Angel, R. L. Smith, and B. Zeitzschel. John Wiley and Sons, London, 422pp.

Leonard, L. A., and M. E. Luther, 1995. Flow hydrodynamics in tidal marsh canopies. *Limnol. and Oceanogr. , 40*, 1474-1484.

Haines, M. A., M. E. Luther, and R.A. Fine, 1997. Model-validated parameterization for air-sea gas transfer in the north Indian Ocean. *Geophys. Res. Letters, 24*, 2545-2548.

Vincent, M., D. Burwell, M. Luther, and B. Galperin, 1998. Real-time data acquisition and

modeling in Tampa Bay. in Estuarine and Coastal Modeling, M. Spaulding and A. Blumberg, eds., ASCE, Reston, VA, pp 427-440.

Luther, M. E., 1999. Interannual variability in the Somali Current, 1954–1976. *Nonlinear Analysis: Real World Applications, 35*, 59-83.

Haines, M. A., R.A. Fine, M. E. Luther, and Z. Ji, 1999. Particle trajectories in an Indian Ocean model and sensitivity to seasonal forcing. *J. Phys. Oceanogr., 29*, 584-598.

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Luther, M. E., 1991. Equatorial waves in the Indian Ocean in models and observations. Equatorial Theoretical Panel Meeting Abstracts, Univ. Rhode Island, July 1991.

Luther, M. E., 1991. Indian Ocean Modelling activities related to WOCE. WOCE/WHP Indian Ocean Expedition Planning Meeting, Univ. Miami, November 12-15, 1991.

Luther, M. E., 1992. Modelling the variability of upwelling in the Arabian Sea. Presented at the Bedford Institute of Oceanography, April 14, 1992, Dartmouth, Nova Scotia.

Luther, M. E., 1992. Dynamics of upwelling in the Arabian Sea. Presented at the Global Ecosystems Dynamics Experiment (GLOBEC) Arabian Sea Expedition Planning Meeting, June 16, 1992, Denver, CO.

Luther, M. E., 1992. Coupled Physical-Biological Models. Invited presentation at the Workshop on Variation in the Marine Environment and Ecosystem Around the Hawaiian Archipelago, East-West Center, University of Hawaii, Honolulu, Hawaii, December 3-4, 1992.

Luther, M. E., 1992. Dynamics of the Northern Indian Ocean, invited presentation at the Seventh Session of the SCOR-IOC Indian Ocean Climate Studies Panel, Bangalore, India, August 24-28, 1992.

Luther, M. E., 1992. Upwelling in the Arabian Sea, invited presentation at the Indian Ocean Marine Affairs Cooperation (IOMAC) International Scientific Workshop on Marine Scientific Cooperation in the Indian Ocean, Colombo, Sri Lanka, October 18-25, 1992.

Luther, M. E., 1992. Modelling the Circulation of the Indian Ocean. Invited presentation at the meeting of the WOCE Working Group on Numerical Modelling, Rutgers University, October 5-6, 1992.

Luther, M. E., Z. Ji, and K. Chen, 1993. Near real-time modelling of the Indian Ocean wind-driven circulation. Invited presentation at The Oceanography Society Meeting, Seattle, WA, April 12-16, 1993.

Luther, M. E., 1993. Coupled Physical-Biological Models of the Indian Ocean/Arabian Sea. Presented at the First SeaWiFS Science Team Meeting, Annapolis, MD, January 21, 1993.

Luther, M. E., 1993. Modelling the Circulation of the Indian Ocean. Invited presentation at the University of Hawaii, Honolulu, Hawaii, March 30, 1993.

Luther, M. E., 1993. Seasonal variability in the Indian Ocean and the WOCE Hydrographic

Program. Presented at a meeting of the WOCE Indian Ocean Science Steering Committee, La Jolla, CA, August 2-5, 1993.

Luther, M. E., 1993. Ocean Modelling and Remote Sensing. Presented at the monthly meeting of the ACM/SIGGRAPH Tampa Bay Chapter, St. Petersburg, FL, September 8, 1993.

Luther, M. E., 1993. Modelling the variability of upwelling in the Arabian Sea. Invited presentation at the Office of Naval Research, Arabian Sea Expedition Program Managers Meeting, October 25, 1993.

Luther, M. E., 1993. Indian Ocean circulation and the global climate system. Invited presentation in the Department of Marine Science, Eckerd College, October 27, 1993.

Luther, M. E., 1994. Modelling the Indian Ocean Circulation. Lecture presented at Scripps Institution of Oceanography, Univ. of California at San Diego, La Jolla, CA, April 22, 1994.

Luther, M. E., 1994. Interannual variability in the wind-driven circulation of the Indian Ocean. Invited presentation at the World Climate Research Programme Workshop on Monsoon Predictability, Trieste, Italy, May 13, 1994.

Luther, M. E., 1994. Activities of the World Ocean Circulation Experiment (WOCE) and the Joint Global Ocean Flux Study (JGOFS) in the Indian Ocean. Invited presentation at the Eighth Session of the SCOR-IOC Indian Ocean Climate Studies Panel, Triete, Italy, May 16-17, 1994.

Luther, M. E., 1994. Modelling and remote sensing of ocean circulation. Invited lecture at the Ocean University of Qingdao, Qingdao, China, August 1, 1994.

Luther, M. E., 1995. Real-Time monitoring and modelling of Ocean Processes. Invited lecture at the NOAA National Ocean Service, August 11, 1995.

Luther, M. E., 1996. Indian Ocean Circulation and Climate Variability. Invited lecture in the Dept. of Oceanography, Texas A&M Univ., Oct. 7, 1996.

Luther, M. E., 1996. The Tampa Bay Physical Oceanographic Real-Time System. Invited lecture in the Dept. of Marine Science, Stony Brook University, Oct. 16, 1996.

Luther, M. E., and M. A. Haines, 1998. The West Florida Coastal Ocean Monitoring and Prediction System (COMPS). 12th annual Governors Hurricane Conference, Tampa, FL, June 1-5, 1998.

Luther, M. E., 1998. Seasonal to interannual variability in the heat budget of the Indian Ocean. Invited presentation at A Workshop on the Variability of the Asian-Australian Monsoon, July 29-31, 1998, St Michaels, MD.

Luther, M. E., 1998. Real-time physical oceanographic monitoring and modeling in West Florida. Invited lecture at Eckerd College, October 14, 1998.

Luther, M. E., D. Burwell, M. Haines, N. Schmidt, M. Vincent, R. Weisberg, and H. Yang, 1998. Real-time physical oceanographic monitoring in West Florida. Invited presentation at the Marine Technology Society Ocean Community Conference '98, Baltimore, MD, November 19, 1998.

Luther, M. E., 1999. The West Florida Coastal Ocean Monitoring and Prediction System (COMPS). presented at the 13th Annual Governor's Hurricane Conference, June 7-11, 1999, Tampa, Florida.

Luther, M. E., D. Burwell, M. Haines, N. Schmidt, M. Vincent, R. Weisberg and H. Yang. The coastal ocean monitoring and prediction system for west Florida. presented at the International Union of Geodessey and Geophysics XXII General Assembly, Birmingham, UK, 19-30 July 1999.

Luther, M. E., D. Burwell, M. Haines, N. Schmidt, M. Vincent, R. Weisberg and H. Yang.

Real-Time Physcial Oceangoraphic Monitoring in Tampa Bay and the West Florida Coastal Ocean, Estuarine Research Federation '99, September 25-30, 1999, New Orleans, LA.

Vincent, M., D. Burwell, M. Luther, and B. Galperin, 1999. The Tampa Bay nowcast-forecast system. presented at the 6th International Conference on Estuarine and Coastal Modeling, New Orleans, LA, November 3-5, 1999, by M. Vincent.

Burwell, D., M. Vincent, M. Luther, and B. Galperin, 1999. Modeling of estuarine residence times. presented at the 6th International Conference on Estuarine and Coastal Modeling, New Orleans, LA, November 3-5, 1999, by D. Burwell.

Luther, M. E., R. H. Weisberg, and C. R. Merz, 2000. The coastal ocean monitoring and prediction system for west Florida. presented at the American Meteorological Society Annual Conference, Long Beach, CA, 9-14 January, 2000.

Zhang, H., M.E. Luther, D.M. Legler, S.D. Meyers and R. He. High frequency wind forcing from NSCAT in a model of the Indian Ocean circulation. Presented at the 2000 Ocean Sciences Meeting, American Society of Limnology and Oceanography, American Geophysical Union, San Antonio, Texas, January 24-28, 2000.

Soloviev, A., M. E. Luther, and R. H. Weisberg, 2000. Response of the Coastal Ocean to Hurricanes Floyd and Irene at the South Florida Ocean Measurement Center. Presented at the American Meteorological Society Conference, Ft. Lauderdale, FL, May 31, 2000.

Schmidt, N, E.K. Lipp, M.E. Luther and J.B. Rose. Exploring the combined impacts of NAO and ENSO on Florida's climate and coastal water quality. Presented at the Chapman Conference, The North Atlantic oscillation, University of Vigo (Ourense Campus) Ourense, Galicia, Spain, November 28 – December 1, 2000.

Luther, M. E., R. H. Weisberg, and A. V. Soloviev, 2001. Energetic supertidal oscillations with ~10-hr period off southeast Florida. Presented at The Oceanography Society Conference, Miami, Apr. 2, 2001.

Luther, M. E., M. S. Vincent, D. C. Burwell, and B. Galperin, 2001. Numerical modeling of proposed fresh water withdrawals and desalination concentrate discharges in Tampa Bay, Florida. Presented at the 16th Biennial Conference of the Estuarine Research Federation, St. Pete Beach, FL, Nov. 8, 2001.

Schmidt, N., and M. E. Luther, 2001. ENSO impacts on salinity in Tampa Bay, Florida. Presented at the 16th Biennial Conference of the Estuarine Research Federation, St. Pete Beach, FL, Nov. 7, 2001.

Luther, M. E., 2002. Impacts of fresh water diversions and concentrate discharge from a seawater desalination facility on water quality in Tampa Bay, Florida. Presented at the American Meteorological Society Third Symposium on Environmental Applications, Orlando, FL, Jan. 15, 2002.

Schmidt, N., and M. E. Luther, 2002. ENSO Impacts on Fresh Water Input and Salinity in Tampa Bay, Florida. Presented at the 2002 Ocean Sciences Meeting, Honolulu, HI, Feb. 14, 2002.

Luther, M. E., R. H. Weisberg, and A. Soloviev, 2002. Internal Tides on the Shelf off Southeast Florida. Presented at the 2002 Ocean Sciences Meeting, Honolulu, HI, Feb. 13, 2002.

Peebles, E. B., and M. E. Luther, 2002. Spawning and Habitat Responses of the Bay Anchovy *Anchoa mitchilli* to ENSO-related Variation in Inflows to Florida Estuaries. Presented at the 2002 Ocean Sciences Meeting, Honolulu, HI, Feb. 14, 2002.

Meyers, S. D., and M. E. Luther; Simulations of Altered Freshwater Flow Into Tampa Bay and Impact on Salinity. Eos Trans. AGU, 83(47), Fall Meet. Suppl., Abstract OS21D-12, 2002.

Presented at the American Geophysical Union Fall Meeting, San Francisco, CA, Dec. 2002.

Gilbert, S. A., S. Meyers, and M. Luther; Wind-Driven Waves in Tampa Bay, Florida. Eos Trans. AGU, 83(47), Fall Meet. Suppl., Abstract OS72A-0341, 2002. Presented at the American Geophysical Union Fall Meeting, San Francisco, CA, Dec. 2002.

Luther, M. E., S. D. Meyers, S. A. Gilbert, V. Subramanian, and M. E. Hansen, 2003. An Integrated Observing and Modeling System for Tampa Bay, Florida. Presented at the EPA Conference on Emerging Technologies, Tools, and Techniques To Manage Our Coasts in the 21st Century, January 27-31, 2003.

Luther, M. E., S. D. Meyers, S. A. Gilbert, V. Subramanian, L. M. Wetzell, M. S. Vincent, and D. C. Burwell, 2003. An Integrated Observing and Modeling System for Tampa Bay, Florida. Presented at The Oceanography Society Conference, New Orleans, LA, June 2003.

Luther, M. E., S. D. Meyers, S. A. Gilbert, V. Subramanian, L. M. Wetzell, M. S. Vincent, and D. C. Burwell, 2003. An Integrated Observing and Modeling System for Tampa Bay, Florida. Presented at the International Union of Geodesey and Geophysics, Sapporo, Japan, July 2003.

Luther, M. E., B. Galperin, S. D. Meyers, S. A. Gilbert, V. Subramanian, L. M. Wetzell, M. A. Vincent, and M. E. Hansen, 2003. An Integrated Observing and Modeling System for Tampa Bay, Florida. Presented at the Fourth Tampa Bay Area Scientific and Information Symposium (BASIS4), St. Petersburg, FL, October 2003.

Sopkin, K. L., M. E. Luther, S. A. Gilbert, V. Subramanian, J. Scudder, and L. M. Wetzell, 2003. Heat fluxes in Tampa Bay, FL. Eos Trans. AGU, 84(46), Fall Meet. Suppl., Abstract A42A-0743, 2003. Presented at the American Geophysical Union Fall Meeting, San Francisco, CA, Dec. 2003.

Luther, M. E., R. Heinmiller, and P. Bogden, 2004. Telemetry technologies for coastal ocean observing systems. Presented at the ASLO/TOS Ocean Research Conference, Honolulu, HI, Feb. 15-20, 2004.

Luther, M. E., R. Weisberg, C. Merz, S. Meyers, V. Subramanian, S. Gilbert, L. Wetzell, R. Cole, J. Donovan, J. Scudder, M. Vincent, and D. Burwell, 2003. Real-time ocean observations in the Eastern Gulf of Mexico. Presented at the Clean Gulf Conference, New Orleans, LA, Nov. 20, 2003.

Luther, M. E., R. Weisberg, C. Merz, S. Meyers, V. Subramanian, S. Gilbert, L. Wetzell, R. Cole, J. Donovan, J. Scudder, M. Vincent, and D. Burwell, 2004. The Tampa Bay Physical Oceanographic Real-Time System (PORTS). Presented at the Industry-IOOS Workshop, Houston, TX, Mar. 2, 2004.

Luther, M. E., R. Weisberg, C. Merz, S. Meyers, V. Subramanian, S. Gilbert, L. Wetzell, R. Cole, J. Donovan, J. Scudder, M. Vincent, and D. Burwell, 2004. The Tampa Bay Physical Oceanographic Real-Time System (PORTS) and the Coastal Ocean Monitoring and Prediction System (COMPS). Presented at the NOAA-Gulf of Mexico Coastal Ocean Observing System Harmful Algal Bloom Workshop, St. Petersburg, FL, April 13, 2004.

Luther, M. E., 2004. Success stories from Ocean Observing Systems. Presented to the US House of Representatives Ocean Caucus, The Capitol, Washington, DC, Mar. 30, 2004.

Luther, M. E., 2004. Private sector involvement in the Southeast and Gulf of Mexico Coastal Ocean Observing Systems. Presented to the National Association of Maritime Organizations, New York, NY, July 30, 2004.

Luther, M. E., 2004. Applications of Tampa Bay PORTS data. Presented to Gen. Jack Kelly, Deputy Administrator of NOAA, and other NOAA administrators, Dept. of Commerce

Building, Washington, DC, Aug. 4, 2004.

Luther, 2004. Integrated Coastal Ocean Model/Data Products for Tampa Bay, West Florida, and the Southeast US. Presented at the Global Ocean Data Assimilation Experiment Conference, St. Petersburg, FL, Nov. 1, 2004.

Luther, M. E., 2005. Successes from real-time ocean observing systems. Presented at the American Meteorological Society Conference, San Diego, CA, Jan. 10, 2005.

Luther, M. E., 2005. Integrated Coastal Ocean Model/Data Products for Tampa Bay, West Florida, and the Southeast US. Presented at the International Association for Science, Technology, and Society, Baltimore, MD, Feb. 11, 2005.

Luther, M. E., 2005. The US Integrated Ocean Observing System. Presented at the European Geosciences Union Conference, Vienna, Austria, Apr. 27, 2005.

Computer-Produced Motion Pictures

Spatially unstable waves in the Gulf Stream, 4 min., 1982, 16mm color film.

A model of the Indian Ocean forced by FGGE winds, 6 min., 1985, 16mm color film.

Interannual Variability in the Somali Current 1954-1976, 55 min., 1987, 16mm color film.

Numerous videotapes on aspects of Indian Ocean circulation.

Grants and Contracts Awarded

"Mixed Layer Parameterizations in Models of the Indian Ocean Circulation," M. E. Luther, Principal Investigator. Institute for Naval Oceanography; $64,773; May 1, 1991 to March 31, 1992.

"Modelling of Tidal Propagation in Rivers Using Data Assimilation," M. E. Luther, Principal Investigator. Florida Department of Natural Resources; $10,000; May 1, 1991 to January 15, 1992.

"Mixed Layer Parameterizations in Models of the Indian Ocean Circulation," M. E. Luther, Principal Investigator. Office of Naval Research; $121,623; January 1, 1992 to December 31, 1993.

"Modelling Primary Production in the Arabian Sea," M. E. Luther, Principal Investigator. National Science Foundation; $259,569; December 15, 1992 to December 14, 1995.

"Incorporation of SeaWiFS Data into Coupled Physical/Biological Models of the Arabian Sea," M. E. Luther, Principal Investigator, John C. Brock, Co-Investigator. National Aeronautics and Space Administration; $550,438; April 1, 1993 to September 30, 1997.

"Upwelling and Mixed-Layer Dynamics in the Arabian Sea," M. E. Luther, Principal Investigator. Office of Naval Research; $601,525; January 1, 1994 to September 30, 1998.

"Modelling chemical tracer distribution in the Indian Ocean," M. E. Luther, Principal Investigator, R. A. Fine, Co-Investigator. National Science Foundation; $323,357; January 1, 1994 to June 30, 1997.

"Satellite Data Products for Florida Waters on CD-ROM," M. E. Luther, Principal Investigator. Florida Department of Environmental Protection; $30,700; June 9, 1993 to February 21, 1994.

"Tampa Bay PORTS Cooperative Agreement," M. E. Luther, Principal Investigator. Greater Tampa Bay Marine Advisory Council-PORTS, Inc.; $232,176 (as of 7/23/04); March 7,

1994 to March 6, 2009.

"Support of research activities of a Marine Engineering Institute at the University of South Florida," M. E. Luther, Co-Principal Investigator (among many others); Office of Naval Research; $2,000,000 ($85,816 for Luther's portion); June 1, 1994 to May 31, 1996.

"Biophysical interactions in the surface layer of the equatorial Pacific Ocean," M. E. Luther, Principal Investigator. National Aeronautics and Space Administration; $22,000; 9-1-94 to 8-31-95.

"The design of a modeling strategy for Florida Bay," Boris Galperin, Principal Investigator, M. E. Luther, M. A. Haines, and A. F. Blumberg, Co-Investigators. U.S. Dept. of the Interior/Everglades National Park; $41,070; 8-30-94 to 8-29-95.

"A study to determine the use of satellite imagery in mapping the discolored water phenomena occurring in Florida Bay," M. E. Luther, Principal Investigator. Florida Department of Environmental Protection; $15,000; February 15 to October 31, 1995.

"The Northeastern Gulf of Mexico Circulation Modeling Study," Y. Hsueh (FSU), Principal Investigator, R. Weisberg, USF Co-Principal Investigator, M. Luther, Co-Investigator; Minerals Management Service; $753,156 total USF sub-contract; October 1, 1995 to March 31, 2000.

"Development of an Integrated End-to-End Marine Contaminant Management System," M. E. Luther, Principal Investigator, B. Galperin, E. VanVleet, N. Schmidt, M. Vincent, and C. Friel, Co-Investigators; Environmental Protection Agency; $588,777; October 1, 1996 to March 31, 2000.

"Regional Assessments and Applications for Effects of Seasonal-to-Interannual Climate Variability," M. E. Luther, Principal Investigator; National Oceanic and Atmospheric Administration, through a subcontract with the Univ. of Miami; $30,000; January 1, 1997 to December 31, 1997.

"Observations and Modeling of the West Florida Shelf Circulation," R. H. Weisberg, Principal Investigator, M. E. Luther, Co-Principal Investigator; Office of Naval Research; $2,971,084; October 1, 1997 to July 31, 2003.

"A Real-Time Oceanographic Data System for Florida," P. R. Betzer, M. E. Luther, and R. H. Weisberg, Co-Principal Investigators; Florida Department of Environmental Protection; $400,000; October 29, 1997 to September 30, 1998.

"Characterization of Changes in Salinity and Tidal Residual Circulation in Tampa Bay due to Desalination Concentrate Discharge," M. E. Luther, Principal Investigator; S & W Water, LLC; $110,000; October 29, 1999 to December 31, 2000.

"A Real-Time Oceanographic Data System for Florida." Funded $300,000 for 5.3 positions for Coastal Ocean Modeling and Prediction Systems (COMPS). P. R. Betzer, A. C. Hine, M. E. Luther, and R. H. Weisberg, Co-Principal Investigators. (Annually recurring E&G funds).

"I-4 Corridor funding for the Coastal Ocean Modeling and Prediction System (COMPS)." Funded $ 69,276.00 for engineer position and $ 78,520.50 for expenses. P. R. Betzer, M. E. Luther, and R. H. Weisberg, Co-Principal Investigators. (Annually recurring E&G funds).

"Real-time monitoring in Brooker Creek Preserve," M. Luther, Principal Investigator; Pinellas County; $39,450; April 1, 2000 to September 30, 2000.

" Salinity and Residence Time in McKay Bay in the USF College of Marine Science Three-Dimensional Hydrodynamic Circulation Model of Tampa Bay." M. E. Luther, Principal Investigator; Southwest Florida Water Management District; $69,943.00; 06/01/01 to 12/31/04. (one person-month)

"Coupling of a Wave Model and Water Quality Model with the USF 3-Dimensional Hydrodynamic Circulation Model for Tampa Bay." M. E. Luther, Principal Investigator; US Geological Survey; $40,000; 06/01/01 to 06/30/03.

"Air-water turbulent flux measurements in Tampa Bay." M. E. Luther, Principal Investigator; Florida Department of Environmental Protection; $160,533; January 1, 2002 to June 30, 2004. (one person-month)

"The Alliance For Coastal Technologies (ACT):Partnership Activities at the University of South Florida." M. E. Luther, Principal Investigator; National Oceanic and Atmospheric Administration through subcontract with the Univ. of Maryland; $915,656; May 1, 2002 to April 30, 2005. (two person-months)

"An autonomous genosensor for environmental water quality." J. Paul, PI; M. Luther, Co-PI (with others); National Science Foundation; $1.29M ($288,973 Luther's portion); 10/01/02 to 9/30/06 (one person-month).

"The Southeast Atlantic Coastal Ocean Observing System (SEA-COOS)." R. Weisberg and M. Luther, Co-PIs (with others); Office of Naval Research through subcontract from UNC-CH; $1,384,046; 10/1/02 to 8/31/04. (one person-month)

"To Establish a Regional Node for the National Virtual Ocean Data System (NVODS) at the University of South Florida College of Marine Science;" Subcontract #: S030021; Texas A&M Research Foundation; PI-Mark Luther; 10/01/2002 to 08/31/2003; $19,834

"Coordinated Regional Benefit Studies of Coastal Ocean Observing Systems;" ONR subcontract through Woods Hole Oceanographic Institution; PI - K. Weiand, COBA, Co-PI - M. Luther, D. Colie; 9/15/02-7/31/04; $49,939.

"Flushing/Residence Times for Discharges from the Piney Point Phosphate Plant in the USF College of Marine Science Three-Dimensional Hydrodynamic Circulation Model;" Florida Department of Environmental Protection; M. Luther, PI; $30,000; 4/9/03-2/14/06.

"Enhancements to the Coastal Ocean Monitoring and Prediction System for West Florida: A Component of The Integrated Ocean Observing System;" NOAA National Ocean Service; M. Luther and R. Weisberg, Co-Principal Investigators; $1,938,943; 8/1/04 to 7/31/06.

"An Integrated Circulation, Water Quality, Wave and Sediment Transport Model for Tampa Bay, Florida;" US Geological Survey, M. Luther, Principal Investigator; $40,079; 5/1/04 to 8/31/05.

Consultant Services

Oceaneering, Inc., 1994 (assisted with prediction of Indian Ocean currents for salvage of a downed Navy jet off the coast of Somalia)

Greater Tampa Bay Marine Advisory Council - PORTS, Inc., 1995-present (provide management services for the Tampa Bay Physical Oceanographic Real-Time System)

Post, Buckley, Schuh, and Jernigan, Inc., 1998-present (provided simulations of salinity and circulation changes in Tampa Bay from proposed water supply projects; assist in design and implementation of a comprehensive hydro-biological monitoring plan for permitted water supply projects)

Tampa Bay Water, a Regional Water Supply Authority, 1998-present (provide expert testimony on the effects of water supply projects on the Tampa Bay estuary)

Nova Southeastern University, 1998-present (provide coordination of design and implementation of a real-time environmental observing array for the South Florida Ocean Measurement Center)

ENSR, 1999-2000 (evaluated environmental effects of a proposed natural gas pipeline to be built through Tampa Bay)

Conrod Associates, 2000-2001 (provide field instrumentation for real-time monitoring of the Brooker Creek Preserve, Pinellas County)

Marine Desalination Systems, LLC, 2001-present (provide analyses of oceanographic data for the Tampa Bay region)

Taiwan National Center for Ocean Research, 2001 (provide optical instrumentation for calibration of satellite remote sensing of ocean color)

Woods Hole Group, 2001 (provide installation and retrieval of oceanographic instrumentation in Tampa Bay, Florida)

S and W Water, LLC, 2001 (provided expert testimony in permit hearing for Big Bend desalination facility)

Carnival Cruise Lines, 2002 (provided analyses of oceanographic data in support of legal proceedings)

The Boeing Company, 2004-present (provided advise on demonstration projects for the Integrated Ocean Observing System)

Janicki Environmental, Inc., 2004-present (participated in review of St. Johns River Water Management District modeling program for Indian River Lagoon; collaborating in coupled hydrodynamic-water quality model of Tampa Bay using ECOM3D and CEQUAL-ICM for application to Piney Point phosphate discharges and to Tampa Bay Water's Downstream Augmentation Program)

Industrial Economics, Inc., 2005-present (provided simulations of hydrodynamics in Tampa Bay during Hurricanes Frances and Jeanne for analysis of phosphate process water spill trajectory and fate)

Water Resource Solutions, 2005-present (provided summary of hydrodynamic conditions and residence times in Safety Harbor, Tampa Bay, in support of desalination discharge permitting)

KEN W. WATSON, Ph.D.
President/Principal Hydrologist

EDUCATION / CREDENTIALS

B.S. Soil Science, University of Florida, 1977
M.S. Soil Physics, University of Kentucky, 1979
Ph.D. Soil Physics, University of Kentucky, 1983
Post Doctoral Research Associate, Oak Ridge National Laboratories Environmental Sciences Division, 1983-1986
Courtesy Professor, University of South Florida, Geology Dept., 2005-

Continuing Education

University of South Florida
Hydrology of Islands/Coasts, 1988
Florida and Island Hydrology, 1990
Analytical and Semi-analytical Models, 1992
Mathematics of Flow Nets and Analytic Elements, 1994

Risk Assessment (American Petroleum Institute)
Risk Analysis
Stochastic Methods (Monte Carlo) in Risk Analysis
Visual ModFlow
hspf modeling using BASINS

PROFESSIONAL AFFILIATIONS

Certified and registered Professional Hydrologist – Groundwater
American Institute of Hydrology
National Groundwater Association
American Water Resources Association

FIELDS OF SPECIALIZATION

- Water Use/Consumptive Use Permitting
- Surface water quality and permitting
- Minimum Flows and Levels
- Total Maximum Daily Loads
- Water conservation and Best Management Practices in Agriculture
- Human health and ecological risk assessments
- Modeling
    - Hydrologic and solute transport modeling in porous and fractured media (analytical and numerical)
    - Hydrologic, hydraulic and hydrodynamic modeling of surface waters
    - Mixing zone modeling
    - Statistics and stochastic modeling
- Groundwater and surface water hydrology

- Irrigation and drainage system design
- Saturated and unsaturated hydraulic conductivity determinations
- Wetland investigations
- Expert Witness in groundwater modeling and applied mathematics
- Investigation of groundwater, surface water, soil and sediment and contamination
- Investigation of remedial alternatives

EXPERIENCE SUMMARY

As a Principal Hydrologist at HSW (1988 to present), Dr. Watson is the officer/manager in charge of water resources investigations, surface water modeling studies, groundwater studies, hydrologic and solute transport modeling projects and human health risk assessments, contamination assessments/corrective actions of industrial facilities, and numerous underground storage tank projects. He is also involved in specific investigations dealing with establishing minimum flows and levels in water bodies in west-central Florida for the Southwest, St. Johns River and Suwannee River Water Management Districts. Dr. Watson is continually called upon to provide quantitative expertise with respect to groundwater, surface water and unsaturated zone hydrology, and the transport of contaminants in surface and-subsurface waters, and has qualified as an expert in administrative hearings in the fields of groundwater modeling and applied mathematics. As president of HSW, he is in charge of corporate technical development.

Dr. Watson has been involved in numerous projects where travel times, recovery rates, capture zones, mixing zones, and other quantitative analyses of dynamic processes are required. He investigated the transport of sulfate from a gypsum stack in central Florida; calculated the travel time of a solvent plume from an industrial landfill in central Florida to a nearby public water supply wellfield; performed a capture zone analysis for public supply wells in Hillsborough County, Florida; and conducted numerical and statistical modeling studies of public water supply wellfields, saltwater intrusion, and contaminant migration. He is well versed in the most recent versions of modeling codes (groundwater - MODFLOW, MODPATH, MT3DMS, WinFLOW, and WinTRAN; surface water – hspf (BASINS), XP-SWMM, HEC-RAS, CE-QUAL-W2, and CORMIX; and the statistical packages SPSS and SAS) and has written specialty codes for hydrologic and statistical evaluations. He has also performed numerous human health risk evaluations and reviewed ecological risk assessments. He currently manages very diverse projects that include contamination assessment and remediation of DNAPL sites at the Kennedy Space Center, underground storage tank sites, human health risk assessments, water conservation in agriculture, and groundwater and surface water modeling tasks.

Dr. Watson recently prepared a detailed drainage model for TECO's Big Bend Facility using XP-SWMM. This model was used because of its ability to model surface water conveyance and pumping systems, which was necessary because of the blending of process and surface waters at the facility. He currently manages and plays key technical roles in several water resource projects involving minimum flows and levels in surface water bodies located in the SWFWMD, SJRWMD, and SWRWMD. For SWFWMD, he is performing a variety of statistical analysis and modeling tasks to assist with establishing MFLs in estuarine systems. For the SRWMD, Dr. Watson is part of and manages a Peer review team for MFLs in rivers in that District. This includes peer review of the surface water models used for setting MFLs (e.g., hspf and HEC-RAS).

After receiving his Ph.D., Dr. Watson held a Research Associate position (1983 – 1986) with Oak Ridge National Laboratories (ORNL). Under sponsorship of the Office of Health and Environmental Research and the University of Tennessee, Dr. Watson participated in studies of the transport rates of trace contaminants from shallow land waste disposal sites, biodegradation of TCE, solidification techniques, geostatistics and various review committees dealing with hazardous waste disposal.

Dr. Watson also spent 16 months (1979 – 1980) at the U.S. Department of Agriculture research station in Beltsville, Maryland, where he investigated the transport of nitrogen in the vadose zone. Measurement techniques were developed for sampling in the vadose zone, and models to describe transport in the vadose zone were investigated.

Before co-founding HSW Environmental Consultants, Inc. (HSW), Dr. Watson was a senior consultant with the firm of Geraghty & Miller, Inc. (G&M) in Tampa, Florida, where he was manager of numerous projects and assisted the professional staff in several G&M offices on numerical modeling studies (1986 – 1988). Projects involved the assessment and remediation of contaminated soil and groundwater, the implementation of complex numerical modeling codes to predict the transport and recovery rates of contaminants, and provision of expert testimony related to modeling efforts. As manager of the computer department at G&M's Tampa office, an in-depth knowledge of verified numerical modeling codes (e.g., MODFLOW, MOC, MT3D, and ATD123) also was required.

Dr. Watson has compared various modeling strategies for determining solute travel times to water supply wells, and developed stochastic modeling techniques for water flow and solute transport problems. He has applied complex numerical transport models to hazardous waste areas; developed solution sampling techniques for unsaturated soil systems; developed field measurement techniques and instrumentation for unsaturated hydraulic conductivity determinations; investigated modeling techniques for biodegradation of TCE; and designed a spray irrigation system for the removal of VOCs.

PROJECT EXPERIENCE

Modeling & Solute Transport

- Performed a detailed drainage and hydraulic conveyance model of Tampa Electric's Big Bend plant using SWMM.

- Evaluated MFLs set on the St. Johns River using extreme value frequency analysis techniques.

- Currently managing and member of a peer review panel evaluating MFLs in the Suwannee River Water Management District, including the appropriate use of statistical, hydrologic, hydraulic, and hydrodynamic models (e.g., hspf (BASINS), and HEC-RAS). The surface water bodies evaluated thus far (November 2005) include Madison Blue Springs, Lower Suwannee River, Manatee Springs, and Fanning Springs. The panel will review reports on Alapaha, Wacasassa, and Upper Santa Fe Rivers in 2006.

- Developed and performed residence time modeling for estuarine systems in support of minimum flows and levels on the Alafia River in west central Florida.

- Project officer and lead modeler for water resource evaluation of the Belleair Wellfield. Developed a pumping optimization model and performed trend analysis and water level and water quality data.

- Served as project officer and lead modeler for modeling of selecting hydrogeologic settings in Pinellas County, Florida for locating of a brackish-water reverse osmosis water treatment facility.

- Compared various modeling strategies for determining solute travel times to water supply wells.

- Developed stochastic modeling techniques for water flow and solute transport problems.

- Applied complex numerical transport models to hazardous waste areas.

- Investigated modeling techniques for biodegradation of TCE.

- Investigated potential salt-water encroachment in the Northwest Hillsborough County area and developed a conceptual model of the transition zone in that region of the county.

Contamination Assessment & Remediation

- Project manager and project officer for numerous contamination assessment and remediation investigations for solid waste management units at the Kennedy Space Center that include the contaminants: chlorinated VOCs including DNAPL, petroleum compounds, PCBs, PAHs, and metals.

- Serving as project officer for the preparation of annual reports for several wellfields operated by Tampa Bay Water. Work included statistical evaluation of groundwater level and water quality trends.

- Principal investigator for 1.5 million dollar cleanup of chlorinated solvent site at facility in Orlando, Florida

- Served as project manager on various contamination assessments for hydrocarbon and inorganic contamination at service stations, industrial complexes, and military bases.

- Served as project manager for an Alternative Concentration Level demonstration.

Risk Assessment

- Lead scientist for numerous human health risk assessments for sites at the Kennedy Space Center and other industrial clients.

Statistical Analysis

- Performed statistical evaluations of pumping and other stresses on water levels in and around the Cross Bar Ranch Wellfield.
- Performed a variety of descriptive, parametric, and non-parametric analyses procedures to evaluate water level and water quality trends as well as the relationships between water level changes and environmental stresses.
- Performed trend analysis and regression analysis of water flow and level data for several rivers in west central Florida in support of establishing minimum flows and levels for these water bodies.
- Performing frequency and duration analyses for flow and levels on the Saint Johns River in support of establishing minimum flows and levels on a section of that river.
- Provided peer review to the EPA for establishing statistical procedures for determining cleanup of RCRA facilities.

Expert Testimony

- Provided expert testimony on the G-I Aquifer Wellhead Protection Rule. Qualified as an expert in groundwater flow modeling and applied mathematics.

Water Resources, Wellfield, Development & Management

- Project officer for water resource evaluation of the Belleair Wellfield. Developed a pumping optimization model and performed trend analysis and water level and water quality data.
- Served as project officer on a wellhead protection program for Hillsborough County, Florida.
- Evaluated potential water savings alternatives in agriculture for the Southwest Florida Water Management District.
- Project manager for hydrologic studies and annual wellfield reports for the Tampa Bay Water from 1990 – current.
- Manage peer review team and perform peer review related to the establishment of MFLs on surface rivers for the Suwannee River Water Management District.
- Evaluated proposed MFLs for the St. Johns River against 10 water resource values for the St Johns River Water Management District.

Engineering Design

- Designed spray irrigation system for the removal of VOCs.

- Provided conceptual and quantitative design of various remediation systems including pump and treat, air sparge, soil vapor extraction, exfiltration galleries, and bioremediation.

Other Relevant Experience

- Developed a solution sampling technique for unsaturated soil systems.
- Developed field measurement techniques and instrumentation for unsaturated hydraulic conductivity determinations.
- Simulated the transport of sulfate from a gypsum stack cooling pond.
- Simulated the transport of VOCs from several landfill sites to a municipal wellfield.
- Served as project officer for the preparation of the annual Groundwater Quality Assessment Reports for the Department of Energy's Y-12 Plant in Oak Ridge, Tennessee.
- Involved with unsaturated zone studies of wetlands that involved the installation and use of piezometers.

SELECTED PUBLICATIONS AND PRESENTATIONS

Radcliff, D., T. Hayden, K.W. Watson, P. Cowley, and R.E. Phillips. 1980. Simulation of soil water within the root zone of a corn crop. Agronomy Journal 72: p. 19-24.

Southworth, G.R., K.W. Watson, and J.L. Keller. 1987. Comparison of models that describe the transport of organic compounds in macroporous soils. Env. Tox. And Chem. Vol 6, p. 251-257.

Watson, K.W. 1979. In-situ unsaturated hydraulic conductivitiy measurements on two Kentucky soils. M.S. thesis, Agronomy Department, University of Kentucky.

Watson, K.W. 1982. Effect of conventional tillage and no-tillage on the infiltration and initial distribution of added water. Agronomy Abstracts p. 167 American Society of Agronomy, Madison, Wisconsin.

Watson, K.W. 1983. Stochastic modeling of the initial distribution of surface applied water and dissolved solutes. Ph.D. presentation, Agronomy Department, University of Kentucky.

Watson, K.W. and R.E. Phillips, in review. Estimating pore water velocity distribution parameters using solute tracer data. Soil Science Society of America Journal.

Watson, K.W. and R.E. Philips. 1984. Estimating pore water velocity p.d.f. parameters using solute tracer data. Transactions, AUG 65 (16), p. 206.

Watson, K.W. and R.J. Luxmoore. 1984. Estimating macropore distribution to total water flow in a forest watershed. Agronomy Abstracts, p. 177. American Society of Agronomy, Madison, Wisconsin.

Watson, K.W. and G.R. Southworth. 1985. Comparison of three transport codes for describing the

movement of reactive organic compounds. Transactions, AUG 66 (8), p. 264.

Watson, K.W. and R.J. Luxmoore. 1986. Estimating macroporosity in a forest watershed by use of a tension infiltrometer. Soil Science Society of America volume 50: p. 578-582.

Watson, K.W., January 1997. What's New in Water Quality Permitting. Environmental Permitting Short Course. Florida Chamber of Commerce, Orlando, Florida.

Watson, K.W., June 1996. Wellhead Protection in Florida. Environmental Permitting Short Course. Florida Chamber of Commerce, Marco Island, Florida.

Watson, K.W., January and July 1998-2006. Water Quality Permitting, including application of CORMIX and PLUMES mixing zone models. Frequency Analysis in Minimum Flows and Levels (2005), and Facilitation of Basin Management Action Plan (BMAPs) for the Tampa Bay Estuary Program (2006). Environmental Permitting Short Course. Florida Chamber of Commerce, Marco Island and Orlando, Florida.

Griffin, T.W. and Watson, K.W., 2002. A Comparison of Field Techniques for Confirming DNAPLs, Manuscript in Press for Ground Water Monitoring and Remediation. Spring 2002.

Griffin, T.W. and Watson, K.W., 2002. DNAPL Site Characterization – A Comparison of Field Techniques. In proceedings from Remediation of Chlorinated and Recalcitrant Compounds, Battelle Press, May 2002.

Griffin, T.W., Bardsley, D.S., and Watson, K.W., 2002. Confined Aquifer Horizontal Recovery Wells for Contaminant Source Reduction. In proceedings from Remediation of Chlorinated and Recalcitrant Compounds, Battelle Press, May 2002.

Watson, K.W., C. P. Neubauer, C.P. Robison, S.H. Emery and C.L.Westergard (2005). Frequency Analysis Evaluation of Proposed Withdrawals from the St. Johns River on Ten Water Resource Values. Extended Abstract, AWRA Annual Resources Conference, Seattle, Washington, 2005.