

CURRICULUM VITAE - RICHARD A. LUETTICH, JR.

ADDRESS: Business

University of North Carolina at Chapel Hill
Institute of Marine Sciences
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EDUCATION:

1979 B.C.E. Civil Engineering, with Highest Honors, Georgia Institute of Technology.
1981 M.S. Civil Engineering, Georgia Institute of Technology.
1987 Sc.D. Civil Engineering, Massachusetts Institute of Technology.

RESEARCH AND PROFESSIONAL EXPERIENCE:

2004 - pres Director, Institute of Marine Sciences, UNC Chapel Hill
1999 - pres. Professor of Marine Sciences and Environmental Sciences and Engineering,
University of North Carolina at Chapel Hill.
1997 - 1999 Associate Professor of Marine Sciences and Env. Sciences & Eng., UNC Chapel Hill.
1993 - 1997 Associate Professor of Marine Sciences, UNC Chapel Hill.
1987 - 1993 Assistant Professor of Marine Sciences, UNC Chapel Hill.
1981 - 1987 RA/TA, Dept. of Civil Eng., Massachusetts Institute of Technology.
1980 - 1981 Hydrologist, US Geological Survey, Regional Office, Atlanta, Ga.
1979 - 1980 RA, Dept. of Civil Eng., Georgia Institute of Technology.

RESEARCH INTERESTS:

My research has dealt broadly with modeling and measurement of circulation and transport in coastal waters. My modeling efforts have emphasized the development and application of unstructured grid solution techniques that are optimized for geometrically complex systems such as sounds, estuaries, inlets and inundated regions. I have co-developed the ADCIRC circulation and storm surge model that is widely used by the academic, government and private sectors and has been applied extensively for modeling storm surge in the Southern Louisiana and New Orleans areas. In addition to storm surge, I've pursued interdisciplinary modeling applications such as physically mediated larval dispersal. I am currently working with the IT community to adapt ADCIRC to the "Grid computing" environment to allow timely, high resolution, ensemble-based storm surge forecasts. My measurement activities have focused on process based studies in coastal waters, often to understand the role of physics in areas of water quality (e.g., phytoplankton blooms, dissolved oxygen depletion) and fisheries recruitment. More recently I have actively participated in the development of pieces of the SEACOOS component of the national Coastal Ocean Observing System effort.

EXTRAMURAL ACTIVITIES AND HONORS:

1975 Graduated 3rd in class of 330 from Cony High School, Augusta, Maine. Selected as the outstanding male in graduating class.
1979 B.C.E. degree with highest honors.
1980 Who's Who in American Colleges and Universities.
1982 Georgia Tech Sigma Xi award for outstanding M.S. Thesis in Engineering.
1987 - pres., Member Amer. Geophys. Union, candidate for Sec. of Phys. Ocean. Section, 1997&1999.
1991 DOE, Ocean Margins Program, Physical Oceanography Review Panel.
1992 Visiting Scientist, Proudman Oceanographic Laboratory, UK.
1992 - 1999, Editorial Board, Journal of Marine Environmental Engineering.

1992 - pres., Adjunct faculty member, Dept. of Civil Engineering, North Carolina State University.
 1992 - pres., Affiliate Scientist., Center Coastal & Land-Margin Res., Oregon Graduate Institute.
 1995 NOAA, Mid Atlantic Bight National Under Sea Research Program Review Panel.
 1997 - pres., N.C. Scientific Advisory Council on Water Resources and Coastal Fisheries Management.
 2000 NSF, Physical Oceanography Review Panel
 2001 - pres., Member Estuarine Research Federation
 2002 - pres., Elected member of the Carteret County Board of Education
 2003 NSF, Information Technology Research Review Panel
 2003 Naval Research Laboratory, External Review Panel
 2004 NC Water Resources Research Technical Review Panel
 2005 Army COE Inst Water Resources, Working Group on science for post-Katrina/Rita planning for greater New Orleans and Coastal Louisiana
 2005 - pres, Army COE Louisiana Coastal Protection and Restoration design team.
 2006 - pres, National Academy of Engineering/National Research Council panel on New Orleans Regional Hurricane Protection Projects
 2006 AGU Panel of Experts on Hurricane Science
 2006 NSF, Cyber Infrastructure Review Panel
 2006 – pres, Member American Meteorological Society, AMS Committee on Coastal Environment
 2006 – pres, Ocean.US, IOOS Modeling and Analysis Steering Team
 2007 – pres, National Academy of Engineering/National Research Council panel on Louisiana Coastal Area Protection

Reviewer for The American Naturalist, Advances in Water Resources, Continental Shelf Research, Ecologia, Env. Fluid Mechanics, Env. Science & Technology, EOS, Estuaries, Estuarine and Continental Shelf Sciences, Int. J. Numerical Methods in Fluids, J. Atmospheric & Oceanic Technology, J. of the Eliza Mitchell Society, J. Geophysical Research, J. Hydraulic Engineering, J. Marine Systems, J. Physical Oceanography, J. Waterway, Port, Coastal & Ocean Engineering, Limnology & Oceanography, Marine Geology, Marine Ecology Progress Series, Ocean Dynamics, Ocean Engineering, UNESCO, Sea Grant (CA, DE, GA, LA, MD, ME, RI, TX), DOE, EPA, NOAA NURP, NOPP, NSF, Gulf of Maine Marine Research Program, Hudson River Foundation, NC National Estuarine Research Reserve, NC Water Resources Research Institute, Florida Bay Research Program.

COURSES TAUGHT:

MASC 155, Turbulent Boundary Layers, Summer 1993.
 MASC 253, Coastal Circulation, Fall 1994, 1996, 1998, 2002.
 MASC 256, Transport and Flow in Tidal Inlets, Spring 1997.

STUDENTS SUPERVISED:

Major Advisor:	Lucy O'Keef	PhD, Physics, April 1992
	Shending Hu	, Marine Sciences (1989-92)
	Roger Grenier	PhD, Civil Eng., NC St. University 1996
	Zhe Shang	, Marine Sciences (1993-95)
	James Hench	PhD, Marine Sciences 2002
	Janelle Reynolds-Fleming	PhD, Marine Sciences 2003
	Sarah Carr	PhD, Marine Sciences 2006
	May Becker	PhD, Marine Sciences 2006
	Tony Whipple	MS, Marine Sciences (exp 2007)
	Mark Ciccarello	MS, Marine Sciences (exp 2007)
Thesis Committee Member:	John Schultz	MS, Marine Sciences, 1988
	Seok-Yun Kim	PhD, Marine Sciences, 1990

James E. Camp	MS, Marine Sciences, 1990
Sankey Blanton	MS, Marine Sciences, 1991
Wei Wang	PhD, Marine Sciences, 1991
Duncan Young	BS, Env Sci & Eng, 1995
Andre Fortunato	PhD, ESE, Oregon Grad. Inst, 1995
Scott Kucera	MS, ESE, 1995
Hunter Lenihan	PhD, Marine Sciences, 1996
Jesse McNinch	PhD, Marine Sciences, 1997
Todd Roessler	MS, Marine Sciences, 1998
Steve Knowles	PhD, Marine Sciences, 1999
William Sweet	MS, MEAS, NC St. University, 2000
Jun Yong Park	PhD, Marine Sciences, 2000
Daniel Giffin	PhD, Coastal Res. Mgt., East Car. Univ., 2003
Brian Blanton	PhD, Marine Sciences, 2003
Alfredo Arechavaleta	PhD, Marine Sciences, 2005
Ethan Kubatko	PhD, Civil Eng, Univ. Notre Dame, 2005
Matt Ogburn	PhD, Marine Sciences, Duke University,
Amy Haase	PhD, MEAS, NC St. University
Greg Dusek	MS, Marine Sciences,

Interns Supervised:	Blair Larsen	Univ. Virginia, summer 1987
	Jay Chervenak	Wake Forest Univ., summer 1988
	Leatrice Bradford	Hampton Univ., summer 1989
	Ron Birkhahn	Wittenberg Univ., summer 1991
	Myron Pitcavage	Wilkes Univ., summer 1993
	Duncan Young	UNC, summer 1994
	Crystal Williams	NC St. Univ., summer 1991, 1993-97
	T.J. Lampkin	West Carteret High Sch., summer 1997
	Ryan Paerl	East Carteret High Sch., summer 1999, 00
	Gaylin Wells	Rochester Institute of Tech, summer 2002 – 04
Ben Laroque	UNC, summer 2007	

Post Doctoral Associates:	Jesse McNinch	1997-98
	Christopher Buzzelli	1999-01
	Jason Fleming	2002-03, 05-07
	James Hench	2003-04
	Cristina Forbes	2007-
	Janelle Fleming	2006-

SPONSORED RESEARCH:

- 1987-88 Turbulent Vertical Mixing Rates in the North Carolina Sounds, \$5,000, UNC Coordinating Committee for Marine Progress Grants.
- 1988-90 Regulation and Utilization of Planktonic Primary Production in Pamlico Sound, N.C., \$60,578, (with H. Pearl), North Carolina Sea Grant.
- 1987-90 Fates and Effects of Herbicides and Pesticides in Estuaries, \$20,000, EPA, (subcontract to Duke University Marine Lab).
- 1988-89 Development of a Two-Dimensional Numerical Model for Estimating the Long Term Fate of Dredged Material, \$116,093, (with J. Westerink, Texas A&M Univ.), US Army Corps of Engineers Waterways Experiment Station.

- 1990-92 In Situ Variability of Large Aggregates over a Fluid Mud Bed: Shear Effects, Settling Velocities and Response to Storms, \$100,917, (with J. Wells), NSF Ocean Sciences.
- 1990-94 Two and Three-Dimensional Tidal and Storm Surge Circulation Computations for the Western Atlantic Shelf and Gulf of Mexico, \$375,302, (with J. Westerink, Notre Dame Univ.), US Army Corps of Engineers Waterways Experiment Station.
- 1991 Development and Application of a Computer Model for Predicting Water Level and Circulation in Coastal Water Bodies, \$3,000, UNC Junior Faculty Development Award.
- 1992-94 Development and Application of the Direct Stress Solution Technique for Modeling Three-Dimensional Circulation in Shallow Waterbodies, \$90,000, NSF Ocean Sciences.
- 1992-94 Response of Large Aggregates to Storms: Extension of Current NSF Research to the North Sea, \$16,000, (with J. Wells), NSF International Program.
- 1992-95 Tidal and Storm Surge Circulation Computations for Oregon Inlet, NC, \$85,056, Army Research Office.
- 1992 RESEED, Recruitment Experiment Study under Estuarine Energetic Dynamics, \$25,000, (with C. Peterson), NOAA CIFO program.
- 1993-94 REU Supplement to Development and Application of the Direct Stress, \$4,838, NSF Ocean Sciences
- 1994-95 The Role of Floating Macroalgal Habitat in Promoting the Biodiversity of the Sargassum Ecosystem, \$24,765., (with C. Peterson, M. Hay, N. Lindquist) NOAA CIFO program.
- 1994-99 Enhancements of the ADCIRC Model for the Analysis of Coastal Inlet Hydrodynamics, \$370,000, (with J. Westerink, Notre Dame Univ.), US Army Corps of Engineers Waterways Experiment Station.
- 1995-96 Development of Second Generation Long Wave Hydrodynamic Databases for US Coastal and Continental Margin Waters, \$114,721., US Army Corps of Engineers Waterways Experiment Station.
- 1995-96 Implementation of a High Resolution Coastal Ocean Model for Operational Forecasting of Extratropical Storm Surge Along the US East Coast with Initial Emphasis on the North Carolina Coast, \$6,800., University Center for Atmospheric Research/COMET.
- 1995-97 The Physical/Hydrographic Characteristics of Shelf-Estuary Exchange Through a Barrier Island Inlet, \$42,000, NOAA SABRE program.
- 1996-97 The Role of Floating Sargassum Habitat in Mediating Predator-Prey Interactions among Pelagic Fishes on the Continental Shelf of North Carolina, \$5,000, NOAA National Undersea Research Center, (1 of 4 co-PIs).
- 1997-98 An Interdisciplinary Observational Program for the Neuse River Estuary, NC, \$347,000, North Carolina Department of Environment and Natural Resources, (lead PI with 10 co-PIs).
- 1997-98 Exchange Through a Barrier Island Inlet: Modeling and Synthesis, \$7,784, NOAA SABRE program.
- 1997-99 Development and Application of a Prognostic Three-Dimensional Baroclinic Capability in the ADCIRC Hydrodynamic Model, \$131,972, Office of Naval Research.
- 1997-98 Distance Learning Initiative at Carolina in Marine Sciences (LINC IMS), \$30,000, UNC Chancellor's Instructional Technology Grant.
- 1998-02 Geological and Physical Transport Processes on a Cape Attached Shoal, \$250,000, NSF Ocean Sciences (with J. Wells)
- 1998-02 CISNet for the Neuse River Estuary: A Program for Evaluating Nitrogen Driven Eutrophication Associated with Changing Land Use in a Coastal Watershed, \$620,300, EPA (lead PI with 2 co-PIs)

- 1999-01 Neuse River Estuary Modeling and Monitoring Project: Phase II Monitoring, \$295,333, North Carolina Water Resources Research Institute, (lead PI with 5 co-PIs).
- 1999-04 Development of a Surface Water Object-Oriented Modeling System (SWOOMS) for the Neuse River Estuary, North Carolina, \$987,884, EPA, (lead PI with 6 co-PIs).
- 2000-04 ADCIRC Hydrodynamic Circulation and Transport Code Development and Applications, \$147,741 UNC portion, (with J. Westerink, Notre Dame Univ.), US Army Corps of Engineers Waterways Experiment Station.
- 2001-04 Limited-Area Operational Coastal Ocean Models: Assimilation of Observations from Fixed Platforms on the Continental Shelf and Far-field Forcing from Open Ocean Models, \$442,177, National Ocean Partnership Program, (one of 7 co-PIs)
- 2001-05 A Multidisciplinary Study of Selective Tidal-Stream Transport: Bio-Physical Coupling and Behavioral Mechanisms, \$99,063, NSF.
- 2001-06 Atlantic Coastal Environmental Indicators Consortium (ACE INC), EPA, 2001-06, \$5,941,293 (co-Project Director with 8 co-PIs)
- 2002-06 Modular Data Assimilation Application with the ADCIRC Circulation Model, \$15,000 UNC portion, NSF-ITR (with J. Muccino, Arizona State Univ., A. Bennett, Oregon State Univ.).
- 2003-07 Impacts of anthropogenic change on the ecology of human pathogens in a eutrophying estuary: the Neuse River Estuary, NC, \$1,600,000, NSF-EID (one of 7 co-PIs).
- 2004-06 North Carolina Contribution to SURA SCOOP: Data Distribution and Archiving, Model to Model Interfacing and Model Availability in an Open Grid Computing Environment, \$213,883, Southeastern Universities Research Association.
- 2005-06 ADCIRC Model Enhancement and Establishment of a Validation Data Site on Bogue Banks, NC, \$32,000, US Army Corps of Engineers, Wilmington District.
- 2006-07 MORPHOS - 3D Long-wave Hydrodynamics Modeling, \$174,842, US Army Corps of Engineers, Engineering Research and Development Center
- 2006-07 Development of a Grid Based Storm Surge and Inundation Modeling System, \$185,190, Southeastern Universities Research Association.
- 2006-07 Lake Pontchartrain Hurricane Forecast System, \$294,558, US Army Corps of Engineers, New Orleans District.
- 2006-09 Wave and Circulation Computations on Unstructured Grids, \$134,102, Office of Naval Research.
- 2006-09 CMG Collaborative Research: Adaptive Numerical Methods for Shallow Water Circulation with Applications to Hurricane Storm Surge Modeling, \$167,279, NSF.
- 2007-09 A High Resolution Near-Shore Wave Model for the Mid-Atlantic Coast, \$55,973, University Center for Atmospheric Research/COMET
- 2007 Wave-Circulation Model Coupling and Testing in the Near Shore Environment, \$143,000, US Army Corps of Engineers, Engineering Research and Development Center
- 2008-2010 A Prototype Operational Modeling System for Waves, Coastal Currents, Inundation and Hydrologic Flooding for Eastern North Carolina, \$1,499,573, National Oceanic and Atmospheric Administration Coastal Services Center

PROPOSALS PENDING:

- 2008-2014 Center of Excellence in Coastal Hazards, \$18 million, Department of Homeland Security

SELECTED CONFERENCE PRESENTATIONS:

- 1986 American Society of Civil Engineers, Water Forum 86, Long Beach, CA.

- 1987 Symposium on Sedimentation and Erosion, The Agricultural University of Wageningen, The Netherlands. (Invited)
- 1989 American Geophysical Union, Fall Meeting, San Francisco, CA.
- 1990 American Geophysical Union, Fall Meeting, San Francisco, CA.
- 1991 Nearshore and Estuarine Cohesive Sediment Transport Workshop, St. Petersburg, FL, (Invited)
- 1991 25th Canadian Meteorological & Oceanographic Soc. Congress, Winnipeg, Canada
- 1991 1st US National Congress on Computational Mechanics, Chicago, IL.
- 1991 2nd Conf. on Estuarine and Coastal Modeling, Tampa, FL.
- 1992 6th National Conf. on Undergraduate Research, Univ. Minnesota, Minneapolis, MN.
- 1992 IX International Conf. on Computational Methods in Water Resources, Denver, CO.
- 1992 JONSMOD'92, Copenhagen, Denmark (Invited).
- 1993 SIAM Conf. on Mathematical & Computational Issues in Geoscience, Houston, TX. (Invited).
- 1993 3rd International Conf. on Estuarine and Coastal Modeling, Chicago, IL.
- 1994 X International Conf. on Computational Methods in Water Resources, Heidelberg, Germany.
- 1994 JONSMOD'94, Brussels, Belgium (Invited).
- 1995 SIAM Conf. on Math. & Computational Issues in Geosciences, San Antonio, TX. (Invited).
- 1995 Next Generation Environmental Models, Computational Methods, Bay City, MI.
- 1995 Coastal 95, Cancun, Mexico.
- 1995 4th International Conf. on Estuarine and Coastal Modeling, San Diego, CA.
- 1996 7th Pacific Congress on Marine Science and Technology, Honolulu, HI.
- 1996 XI International Conf. Computational Methods in Water Resources, Cancun, Mexico. (Invited).
- 1996 AMS 15th Conf. On Weather Analysis and Forecasting, Norfolk, VA.
- 1996 3rd Asian-Pacific Conf. on Computational Mechanics, Seoul, Korea. (Invited)
- 1996 Tidal Science 1996, London, England.
- 1997 ASLO 97 Aquatic Sciences Meeting, Santa Fe, NM.
- 1997 51st Interdepartmental Hurricane Conference, Miami, FL.
- 1997 SIAM Conf. on Math. & Computational Issues in Geosci., Albuquerque, NM. (Plenary speaker).
- 1997 5th International Conference on Estuarine and Coastal Modeling, Alexandria, VA.
- 1997 Nutrients in the Neuse River, Working Toward Solutions, New Bern, NC.
- 1999 Coastal Ocean Modeling, Gordon Research Conference, New London, NH. (invited)
- 1999 15th Biennial Estuarine Research Federation Conference, New Orleans, LA.
- 1999 6th International Conf. on Estuarine and Coastal Modeling, New Orleans, LA, (session chair)
- 2000 North Carolina Water Resources Research Inst. Annual Conference (session chair)
- 2000 Physical of Estuaries and Coastal Seas Conference, Norfolk, VA
- 2001 North Carolina Water Resources Research Inst. Annual Conference (session organizer & chair)
- 2001 16th Biennial Estuarine Research Federation Conference, Tampa, FL
- 2001 7th International Conf. on Estuarine and Coastal Modeling, Tampa, FL (session chair)
- 2001 US Navy Finite Element Modeling Workshop, Washington, DC (invited)
- 2002 AGU Ocean Sciences Conference, Honolulu, HI (session chair)
- 2002 EPA Science Forum 2002, Washington, DC (invited)
- 2003 Coastal Ocean Modeling, Gordon Research Conference, New London, NH (session chair)
- 2003 8th International Conf. on Estuarine and Coastal Modeling, Monterey, CA, (session chair)
- 2004 58th Interdepartmental Hurricane Conference, Charleston, SC, (invited) – March 2004
- 2004 Oxygen Dynamics in Chesapeake Bay Revisited, College Park, MD, (invited) – August 2004
- 2004 Physics of Estuaries and Coastal Seas Conference, Merida, Mexico – October 2004
- 2005 18th Biennial Estuarine Research Federation Conference, Norfolk, VA
- 2005 9th International Conf. on Estuarine and Coastal Modeling, Charleston, SC, (session chair)
- 2005 American Geophysical Union, Fall meeting, San Francisco, CA (Invited Union session speaker)
- 2006 American Geophysical Union, Conf. of Experts, Washington, DC, Jan 2006, (Invited speaker)
- 2006 NOAA Coastal Inundation Conference, Jacksonville, FL, Feb 2006, (Keynote speaker)

- 2006 North Carolina Water Resources Research Inst., Annual Conference, (Keynote speaker)
 2006 North Carolina Sea Grant Symposium, Coastal Science Serving NC: 1976-2006, (invited speaker)
 2007 Coastal Ocean Modeling, Gordon Research Conference, New London, NH (invited speaker)
 2007 10th International Conf. on Estuarine and Coastal Modeling, Newport, RI

REFEREED PUBLICATIONS: (60 total)

- 1986 Luettich, R.A. Jr. and D.R.F. Harleman, "A Comparison of Water Quality Models and Load Reduction Predictions", Chapter 13 in Modeling and Managing Shallow Lake Eutrophication, L. Somlyódy and G.van Straten [ed.], Springer-Verlag., pp. 323-340.
- 1989 Luettich, R.A. Jr. and T.W. Sturm, "Thermally-Induced Density Currents in Non-Rectangular Channels", *Journal of Hydraulic Engineering*, ASCE, 115(10):1332-1351,
- 1990 Luettich, R.A., Jr., and D.R.F. Harleman, "A Comparison Between Measured Wave Properties and Simple Wave Hindcasting Models in Shallow Water", *Journal of Hydraulic Research*, 28(3):299-308.
- 1990 Luettich, R.A., Jr., D.R.F. Harleman, and L. Somlyódy, "Dynamic Behavior of Suspended Sediment Concentrations in a Shallow Lake Perturbed by Episodic Wind Events", *Limnology and Oceanography*, 35(5):1046-1063.
- 1991 Shanahan, P., R.A. Luettich, Jr. and D.R.F. Harleman, "Water Quality Modeling: Application to Lakes and Reservoirs: Case Study of Lake Balaton, Hungary", Water Quality Modeling Volume IV, Decision Support Techniques for Lakes and Reservoirs, B. Henderson-Sellers [ed.], CRC Press, pp. 69-114.
- 1991 Luettich, R.A. Jr. and J.J. Westerink, "A Solution for the Vertical Variation of Stress, Rather than Velocity, in a 3-Dimensional Circulation Model", *International Journal for Numerical Methods in Fluids*, 12:911-928.
- 1992 Luettich, R.A., Jr., S. Hu, J.J. Westerink and N.W. Scheffner, "Modeling 3-D Circulation Using the DSS Technique", Estuarine and Coastal Modeling II, M. Spaulding [ed.], ASCE, pp. 632-643
- 1992 Westerink, J.J., J.C. Muccino and R.A. Luettich, Jr., "Tidal and Hurricane Storm Surge Computations for the Western North Atlantic and Gulf of Mexico", Estuarine and Coastal Modeling II, M. Spaulding [ed.], ASCE, pp. 538-550.
- 1992 Westerink, J.J., R.A. Luettich, Jr., A.M. Baptista, N.W. Scheffner and P. Farrar, "Tide and Storm Surge Predictions Using a Finite Element Model", *Journal of Hydraulic Engineering*, ASCE, 118(10):1373-1390.
- 1993 Luettich, R.A., Jr., J.T. Wells and S.-Y. Kim, "In Situ Variability of Large Aggregates: Preliminary Results on the Effects of Shear", Near Shore and Estuarine Cohesive Sediment Dynamics, A. Mehta [ed.], Coastal and Estuarine Studies series, vol. 42, pp. 447-466, American Geophysical Union press.
- 1993 Luettich, R.A., Jr., W.W. Kirby-Smith and W. Hunnings, "PSWIMS, a Profiling Instrument System for Remote Physical and Chemical Measurements in Shallow Water Systems", *Estuaries*, 16(2):190-197.
- 1994 Kolar, R.L., W.G. Gray, J.J. Westerink and R.A. Luettich, Jr., "Shallow Water Modeling in Spherical Coordinates: Equation Formulation, Numerical Implementation and Application", *Journal of Hydraulic Research*, 32(1):3-24.
- 1994 Westerink, J.J., R.A. Luettich, Jr. and J. Muccino, "Modeling Tides in the Western North Atlantic Using Unstructured Graded Grids", *Tellus*, 46a(2):178-199.
- 1994 DeVries, M.C, R.A. Tankersley, R.B. Forward, Jr., W.W. Kirby-Smith and R.A. Luettich, Jr., "The Abundance of Estuarine Crab Larvae is Associated with Tidal Hydrologic Variables", *Marine Biology*, 118:403-413.

- 1994 Grenier, R.R., Jr., R.A. Luettich, Jr. and J.J. Westerink, "Comparison of 2D and 3D Models for Computing Shallow Water Tides in a Friction-Dominated Tidal Embayment", Estuarine and Coastal Modeling III, M. Spaulding et al. [eds.], ASCE, pp. 58-70.
- 1994 Westerink, J.J., R.A. Luettich, Jr., J.K. Wu, and R.L. Kolar, "The Influence of Normal Flow Boundary Conditions on Spurious Modes in Finite Element Solutions to the Shallow Water Equations", *International Journal for Numerical Methods in Fluids*, 18:1021-1060.
- 1994 Cantekin, M.E., J.J. Westerink and R.A. Luettich, Jr., "Low and Moderate Reynolds Number Transient Flow Simulations using Space Filtered Navier-Stokes Equations", *Numerical Methods for Partial Differential Equations*, 10:491-524.
- 1994 Luettich, R.A., Jr., S. Hu, and J.J. Westerink, "Development of the Direct Stress Solution Technique for Three-Dimensional Hydrodynamic Models using Finite Elements", *International Journal for Numerical Methods in Fluids*, 19:295-319.
- 1994 Blain, C.A., J.J. Westerink and R.A. Luettich, Jr., "The Influence of Domain Size on the Response Characteristics of a Hurricane Storm Surge Model", *Journal of Geophysical Research*, 99(C9):18,467-18,479.
- 1995 Luettich, R.A., Jr., and J.J. Westerink, "Continental Shelf Scale Convergence Studies with a Barotropic Tidal Model", Quantitative Skill Assessment for Coastal Ocean Models, D. Lynch and A. Davies [eds.], Coastal and Estuarine Studies series, vol. 48, pp. 349-371, American Geophysical Union press, Washington, D.C.
- 1995 Grenier, R.R., Jr., R.A. Luettich, Jr., and J.J. Westerink, "A Comparison of the Frictional Characteristics of Two-Dimensional and Three-Dimensional Tidal Models", *Journal of Geophysical Research*, 100(C):13,719-13,735.
- 1996 Peterson, C.H., H.C. Summerson and R.A. Luettich, Jr., "Response of Bay Scallops to Spawner Transplants: A Test of Recruitment Limitation", *Marine Ecology Progress Series*, 132:93-107.
- 1996 Grenier, R.R., Jr. and R.A. Luettich, Jr., "The Influence of Turbulence Closure Strategy on Numerical Modeling of Shallow Water Tides", Estuarine and Coastal Modeling IV, M. Spaulding et al. [eds.], ASCE, pp. 143-155.
- 1997 Werner, F.E., J.A. Quinlan, B.O. Blanton and R.A. Luettich, Jr., "The Role of Hydrodynamics in Explaining Variability in Fish Populations", *Journal of Sea Research*, 37:195-212.
- 1998 Blain, C.A., J.J. Westerink and R.A. Luettich, Jr., "Grid Convergence Studies for the Prediction of Hurricane Storm Surge", *International Journal for Numerical Methods in Fluids*, 26:1-33.
- 1998 Fortunato, A.B., A.M. Baptista and R.A. Luettich, Jr., "A Three-Dimensional Model of Tidal Currents at the Mouth of the Tagus Estuary", *Continental Shelf Research*, 17(14):1689-1714.
- 1998 Hench, J.L. and R.A. Luettich, Jr., "Analysis and application of Eulerian finite element methods for the transport equation", Estuarine and Coastal Modeling V, M. Spaulding et al. [eds.], ASCE, pp. 138-152.
- 1998 Luettich, R.A., Jr., J.L. Hench, C.D. Williams, B.O. Blanton, F.E. Werner, "Tidal circulation and larval transport through a barrier island inlet", Estuarine and Coastal Modeling V, M. Spaulding et al. [eds.], ASCE, pp. 849-863.
- 1999 Churchill, J.H., J.O. Blanton, J.L. Hench, R.A. Luettich, Jr., F.E. Werner, "Flood tide circulation near Beaufort Inlet, North Carolina: implications for larval recruitment", *Estuaries*, 22(4):1057-1070.
- 1999 Blanton, J.O., J. Amft, R.A. Luettich, Jr., J.L. Hench, and J.H. Churchill, "Tidal and sub-tidal fluctuations in temperature, salinity and pressure for the winter 1996 larval ingress experiment - Beaufort Inlet, NC", *Fisheries Oceanography*, 8(Suppl. 2), 134-152.

- 1999 Churchill, J.H., R.B. Forward, R.A. Luettich, Jr., J.L. Hench, W.F. Hettler, L.B. Crowder and J.O. Blanton, "Circulation and larval fish transport within a tidally dominated estuary", *Fisheries Oceanography*, 8(Suppl. 2), 173-189.
- 1999 Luettich, Jr., R.A., J.L. Hench, C.W. Fulcher, F.E. Werner, B.O. Blanton and J.H. Churchill, "Barotropic tidal and wind driven larval transport in the vicinity of a barrier island inlet", *Fisheries Oceanography*, 8(Suppl. 2), 190-209.
- 1999 Werner, F.E., B.O. Blanton, J.A. Quinlan and R.A. Luettich, Jr., "Physical oceanography of the North Carolina continental shelf during the fall and winter seasons: implications to the transport of larval menhaden", *Fisheries Oceanography*, 8(Suppl. 2), 7-21.
- 2000 Hench, J.L. and R.A. Luettich, Jr., "Tidal inlet circulation: observations, model skill and momentum balances", *Estuarine and Coastal Modeling VI*, M. Spaulding et al. [eds.], ASCE, 811-826.
- 2000 Hench, J.L., J.T. Bircher, and R.A. Luettich, Jr., "A Portable Retractable ADCP boom-mount for small boats", *Estuaries*, 23(3), 392-399.
- 2000 Luettich, R.A., Jr., J.E., McNinch, H.W. Paerl, C.H. Peterson, J.T. Wells, M. Alperin, C.S. Martens, and J.L. Pinckney, "Neuse River Estuary modeling and monitoring project stage 1: hydrography and circulation, water column nutrients and productivity, sedimentary processes and benthic-pelagic coupling", Report UNC-WRRI-2000-325B, Water Resources Research Institute of the University of North Carolina, Raleigh, NC, 172p.
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