

Wen Long

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PROFILE HIGHLIGHTS

- State of the Art Federal Funded Projects for Coastal Ocean Environment Nowcasts and Forecasts (2006.4-present)
- Conducting Interdisciplinary Research of Hydrodynamics and Environment Ecological Modeling (2006.4-present)
- 11 Years of Experience on Computational Fluid Dynamics with Focus on Hydrodynamics (1997. 9 – 2008. 8)
- Independent Research and Critical Thinking
- Consulting Experience on Practical Coastal and Ocean Engineering Projects
- Certified Software Engineer (China) since 1998

EDUCATION

2000 – May 2006 **Ph.D in Civil Engineering** (Coastal/Ocean Engineering)
University of Delaware, Newark, DE
Thesis: Boussinesq Modeling of Waves, Currents and Sediment Transport
Adviser: Prof. James T. Kirby

1997 - 2000 **Masters of Engineering in Fluid Mechanics**
Tianjin University, Tianjin, China
Thesis: Nonlinear Dispersive Shallow Water Wave Model and Its Applications in Engineering
Adviser: Prof. Jianhua Tao

1993 - 1997 **Bachelor of Engineering in Engineering Mechanics**
Tianjin University, Tianjin, China
Thesis: Improvements on 2-D Boussinesq Equations and the Applications of Numerical Wave Basin Model
Adviser: Prof. Jianhua Tao

Bachelor of Engineering in Electrical Engineering (Radio/Wireless Technology)
Tianjin University, Tianjin, China
Thesis: Multi-purpose Timer Design
Adviser: Prof. ZhenYe Zhao

RESEARCH EXPERIENCE

2006 - present **Assistant Research Scientist** – University of Maryland Center for Environmental Science

- Develop Chesapeake Bay Regional Ocean Modeling System (ChesROMS)--a community modeling system for Chesapeake Bay

<http://ches.communitymodeling.org/models/ChesROMS/index.php>

- Research on ChesROMS model validation from year 1991 to 2005
- Research on Chesapeake Bay physics, ecology and water quality nowcast/forecast system
- Research on Chesapeake Bay Harmful Algal Bloom (Red Tide) nowcasts and forecasts (federal funded project MERHAB)
- Research on Chesapeake Bay physics climatology and internal variability
- Research on extending Fennel water column biogeochemistry model, on going
- Research on coupling ChesROMS with meteorology model WRF and hydrology model SWAT, on going

2000 - 2006 **Research Assistant** – Center for Applied Coastal Research, University of Delaware

- Research on Phase-resolving Sediment Transport and Nearshore Morphological Model (2003.9-2006.4)
- Research on Unsteady Oscillatory Boundary Layer Flow Integration Theory (2003.3-2006.4)
- Flooding and Drying Algorithm Research for Wave Current Modeling (2005.2-2005.6)
- Water Quality Modeling Term project: Delaware River Estuary Program (2005.4-2005.5)
- Eutrophication and Sediment Flux Modeling Term project: Carbon Diagenesis Modeling based on MERL data (2004.11-2004.12)
- Research on Shock Capturing Morphology Updating Scheme (2004.6-2004.8)
- Participated Nearshore Community Model Project Funded by National Oceanographic Partnership Program Led by Principal Investigator Prof. James T. Kirby (2002.8-2004.7)
- Independently Developed Fully New 2-Dimensional Boussinesq Wave Model FUNWAVE Version 2.0 (Available at <http://www.coastal.udel.edu/~longmtm/funwave/>) (2001.7-2004.9)
- Developed Parallel Compute Simulation Model Using MPI for Solving Chemical Ingredients Dynamics in Biological Cells (2001.3-2001.5)

1997 – 2000 **Research Assistant** – CFD group, Dept. of Mechanics, Tianjin University, Tianjin, China

- High Order Compact Difference Schemes for Water Wave Simulation Using Boussinesq Equation (2000.5)
- Parabolic Mild-Slope Equation Solutions and Application to Yangtze River Estuary, Shanghai, China (1997.9 -1998.9)
- Boussinesq Wave Simulation in Yangtze River Estuary Deep Water Channel Project, Shanghai, China (1997.9-1998.9)
- Random Wave Field under Typhoon Condition of ZhuHai Harbor, GuangDong, China (1998.12)
- Navigational Condition Investigation on HaiHe River Channel Project of Tianjin Harbor, Tianjin, China (1998.6-1999.2)
- East Bank Wharf Development Project of Tianjin Harbor, Tianjin, China (1999.10)

1995 – 1997 **Undergraduate Research** – CFD group, Dept. of Mechanics, Tianjin University, Tianjin, China

- Development of high order Boussinesq model

- Development of high order accuracy finite difference method based on Hermit polynomials

1996 – 1997 **Undergraduate Research** – Dept. of Electrical Engineering, Tianjin University, Tianjin, China

- Design of multi-purpose timer for lights and feeding of a chicken farm

TEACHING EXPERIENCE

2003 **Teacher's Assistant** - Dept. of Civil & Environmental Engineering, University of Delaware

- TA of CIEG305-Fluid Mechanics for undergraduate students, grading, discussion, WebCT

1997 **Teacher's Assistant** - Dept. of Mechanics, Tianjin University, Tianjin China

- TA of Computational Fluid Dynamics for undergraduate students, grading, discussion and computer support

INDUSTRIAL EXPERIENCE

May - Oct 1997 **Summer Intern** – Zhongli Inc, Tianjin, China

- Design and modeling of nonlinear electrical circuit of high-voltage lightning surge resister

April - Jun 2000 **Assistant R&D Engineer**– Motorola Inc, Tianjin Economic Technological Development Area, Tianjin, China

- **New employee orientation and training, power system**

INTERNATIONAL CONFERENCE ORAL PRESENTATIONS

AGU Ocean Science Meeting 2008, Orlando, Florida, Mar 2-7, ChesROMS: Operational Modeling of Chesapeake Bay Physics and Ecology

Estuarine Research Federation 2007, Providence, Rhode Island, Nov 4-8, Internal Variability of the Chesapeake Bay Physics

30'th International Conference on Coastal Engineering, San Diego, California, Sept 2006, 'Cross Shore Sandbar Migration Predicted by a Time Domain Boussinesq Model Incorporating Undertow'

29'th International Conference on Coastal Engineering, Lisbon, Portugal, Sept 2004, 'Modeling Cross-shore Sediment Transport processes with a Time Domain Boussinesq Model'

Coastal Sediments'03, Clearwater, Florida, May, 2003, 'Cross-shore sediment transport model based on the Boussinesq equations and an improved Bagnold formular'

INVITED TALKS

Isaac Newton Institute for Mathematical Sciences (Cambridge University, UK) Workshop on Geophysical Granular & Particle Laden Flows, Bristol, UK, Oct 27-31, 2003, 'Moving towards 2-Phase Bottom Boundary Layer Flow Modeling for Sediment Transport'

COAA (Chinese-American Oceanic and Atmospheric Association) 2004 Annual Meeting, College Park, University of Maryland, Oct 23, 2004, 'Modeling Cross-shore Sediment Transport Processes With a Time Domain Boussinesq Model'

Dept. of Hydraulic Engineering, Tsinghua University, Beijing, China, Jan 1st, 2007, 'Boussinesq Wave Modeling of Waves, Currents and Sediment Transport'

Univ of Maryland Center for Environmental Science, 2007 Spring Seminars Series, Cambridge, Maryland, Mar 28, 2007, 'Boussinesq Wave Modeling'

Dept of Civil and Coastal Engineering, Univ of Florida, 2007 Spring Seminar Series, Gainesville, Florida, Apr 09, 2007, 'Phase-resolving Bedload Transport Modeling'

COAA (Chinese-American Oceanic and Atmospheric Association) 2007 Annual Meeting, College Park, University of Maryland, May 05, 2007, 'Numerical Schemes for Bed Level Updating in Sediment Transport'

POSTER PRESENTATIONS

2006 Regional Ocean Modeling System (ROMS) Workshop, Madrid, Spain, Nov 6-10, 2006 'ChesROMS: a ROMS-based Community Model for the Chesapeake Bay'

2007 Gordon Research Conference: Coastal Ocean Modeling, New London, New Hampshire, June 17-22, 2007 'ChesROMS: a ROMS-based Community Model for the Chesapeake Bay'

PUBLICATIONS

a) Papers already published

- [1] Long, W. and J. T. Kirby, A numerical scheme for morphological bed level calculations, *Coastal Engineering*, 55, pp 167–180, in press, doi:[10.1016/j.coastaleng.2007.09.009](https://doi.org/10.1016/j.coastaleng.2007.09.009), 2008,
- [2] Long, W., J. T. Kirby, and T.-J. Hsu., Cross shore sandbar migration predicted by a time domain Boussinesq model incorporating undertow, *Proceedings 30th International Conference on Coastal Engineering*, San Diego, USA, Sept. 2006
- [3] Long, W., T.-J. Hsu and J. T. Kirby, Modeling cross-shore sediment transport processes with a time domain Boussinesq model, *Proceedings 29th International Conference on Coastal Engineering*, Lisbon, Sept. 2004
- [4] Long, W. and J. T. Kirby, Cross-shore sediment transport model based on the Boussinesq equations and an improved Bagnold formula, *Proceedings Coastal Sediments'03*, Clearwater Beach, May 2003
- [5] Tao, J. .H. and W. Long, The critical angle of wave refraction and multiple refractions by harbor approach channel and basin, *XXIX IAHR Congress*, Sept. 16-21, 2001. Beijing, China

- [6]] Long, W., J. H. Tao, Influence of navigational channels and basins upon wave field in harbor area and analysis of damage by typhoon waves to a revetment in Zhuhai Port, China Harbor Engineering, pp39-41, 46, No.4 Aug., 2000, in Chinese.
- [7] Qin, Wenting, Wen Long and Jianghua Tao, High accuracy scheme for nonlinear Boussinesq equations and verification, Journal of Hydrodynamics A, pp32-38, in Chinese, 2002
- [8] Tao, Jianhua, Guang Han and Wen Long, Numerical methods for waves in large shallow water area, Proceedings of the 9'th National Conference on Coastal Engineering, Beijing, in Chinese, 1999

b) Papers in preparation

- [1] Long, W., R. R. Hood, J. Xu, L. Lanerolle, T. F. Gross, R. G. Murtugudde and C. W. Brown, Internal variability of the Chesapeake Bay physics, in preparation
- [2] Long, W., J. T. Kirby and A. Del Guzzo, Flooding and drying algorithm for wave and circulation model, to submit
- [3] Xu, J., R. R. Hood, W. Long., L. Lanerolle, T. F. Gross, R. G. Murtugudde and C. W. Brown, Modeling the interannual variability in Chesapeake Bay, to submit
- [4] Brown, C. W, W. Long, R. R. Hood, K. Wilcox, the Chesapeake Bay Ecological Prediction System, to submit

SELECTED GRADUATE COURSEWORK

- Ocean Fluid Mechanics, Geophysical Fluid Dynamics, Water Wave Mechanics, Water Wave Spectra
- Nearshore Hydrodynamics, Coastal Structures, Hydrodynamic Stability
- Sediment Transport Mechanics, Two-Phase Flow & Particle Technique
- Eutrophication and Sediment Flux Modeling, Advanced Water Quality Engineering
- Engineering Mathematics, Advanced Engineering Analysis
- Computational Fluid Dynamics, Principle of Parallel Computer Architecture

RESEARCH INTERESTS

- Environmental Fluid Mechanics, Ecological Modeling; Water Quality Modeling
- Earth System Modeling, Ocean-Atmosphere-Land interaction.
- Ocean Fluid Dynamics Modeling, Sediment Transport and Morphology
- Computational Fluid Dynamics

TECHNICAL SKILLS

- Computer languages and software design: Fortran, C, C++, Matlab, Visual Basic, MPI, Unix/Linux Shell, Perl, GIS
- Numerical Modeling, PDE/ODE solution, Time Series Analysis
- Analog and Digital Electrical Circuit Design

LEADERSHIP SKILLS

- 2001.7-2002.7, President – University of Delaware Chinese Students and Scholars Association (500 member group on campus, <http://udel.edu/stu-org/CSSA/>), Mission, Organization, Planning, Chinese Culture Promotion, Clubs

PROFESSIONAL ACTIVITIES

- Reviewer for Journal of Hydraulic Research
- Reviewer for Computers and Fluids
- Reviewer for Journal of Marine Science
- Reviewer for Journal of Geophysical Research - Oceans
- Reviewer for International Journal for Numerical Methods in Fluids
- Reviewer for Coastal Engineering
- Member - American Geophysical Union
- Member – Estuarine Research Federation
- Member – Association of Coastal Engineers

HOBBIES:

- Calligraphy, Basketball, Chess, Travel