**Shan Zou**

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| Broomfield, CO 80023 | Cell: 303-264-9472 |

**Education**

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| **Johns Hopkins University, Baltimore, MD** | 2003—2007 |
| **Ph.D. in Civil Engineering, Advisor: Robert A. Dalrymple** |  |
| **University of Delaware, Newark, DE** | 2000 – 2003 |
| **Master of Civil Engineering, Advisor: Robert A. Dalrymple** |  |
| **Ocean University of China, Qingdao, China** | 1989 – 1993 |
| **Bachelor of Science in Physical Oceanography** |  |

**SUMMARY OF QUALIFICATIONS**

* Senior coastal, hydraulic, and hydrologic engineer with about 20 years of experience with coastal resiliency, restoration and protection, riverine and urban flooding, and hazard mitigation plan development, such as design and optimization of hydraulic controls
* Extensive experience and expert of hydrodynamic, wave, and sediment transport of numerical modeling
* One of the original developers of Smoothed Particle Hydrodynamics (SPHysics) model for waves and sediment transport application
* Extensive knowledge and experience in hydraulic and hydrologic modeling system for flood plain and risk analysis

**PROFESSIONAL EXPERIENCE**

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| **Senior Engineer** | 2019 – present |
| **Project Engineer** | 2011 – 2019 |
| **Staff Engineer** | 2009 – 2011 |
| **Arcadis, US Inc.** |  |
| 11001 W. 120th Ave, Suite 200, Broomfield, CO 80021 |  |
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* Develop the proposal, engineering solutions, and study plan for coastal, riverine, and urban flood risk analysis
* Expand the model capabilities for surface water modeling group
* Perform the advanced data analysis and quality control to validate the models
* Conduct field survey and data collection for oceanographic, meteorological and sediment data
* Develop and apply the numerical models for storm surge, water waves, sediment transport, and water quality
* Evaluate the flood risk, erosion and scour vulnerability for petroleum pipeline, bridges in flood plain and coastal structures.
* Develop the technical solutions for flood control or restoration design alternatives such as flood gate, wall, levee system, surge barrier, berms, wetland, and breakwaters etc.
* Brief the model results to internal or external technical review and write the technical reports, conference papers, and publications

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| **Engineer** | 2007 – 2009 |
| **Everest International Consultants, Inc.** |  |
| 444 W Ocean Blvd, Long Beach, CA 90802 |  |

* Apply the hydrodynamics model and design the coastal protection structures to stabilize the shoreline.
* Use water quality model and tools to evaluate the contaminants and sediment transport along coastal California.
* Propose the wetland restoration and mitigation plan for the federal, state, and local agencies.

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| **Research Assistant****Assistant Engineer** | 1997 – 20001993 – 1997 |
| **Nanjing Hydraulic Research Institute** |  |
| 34 Hujuguan Road, Nanjing, China |  |

* Apply the numerical models of tidal flows and sediment transport
* Conduct physical models for tidal hydraulics and short-waves
* Set up the observation stations for meteorological, water waves and ship wakes in lakes and navigational channel

**Selected Project Work**

* Coastal Master Plan 2012, 2017 (Louisiana CPRA)
* Lower Barataria Sediment Diversion (Louisiana CPRA)
* Inner Harbor Navigation Canal (IHNC) Surge Barrier Study (USACE)
* Comite River Diversion Project (USACE)
* Pipeline Scour Analysis and Protection Designs (Exxon-Mobile)
* Port of San Francisco Seawall Resiliency Project
* Port of Los Angeles/Long Beach Dredge Material Management Plan
* Coastal Flooding Mitigation Measures (New York City Mayor’s Office)
* Wind Wave and Ship Waves Study in Newark Bay and Passaic River (Oxy Chemical)
* Living Breakwaters Design and shoreline Stability Study (New York Governor’s Office of Storm Recovery)
* FEMA flooding risk mapping (Mid-Atlantic, NY, NJ, FL, TX, LA)

**Model and Software Skills**

**Coastal Engineering:**

Storm surge (ADCIRC, Delft3D), waves (SWAN, STWAVE, FUNWAVE, REFDIF, CGWAVE, WHAFIS), shoreline (GENESIS, SBEACH, XBEACH).

**Hydraulic and Hydrology:**

hydraulic (HEC-RAS, HEC-GeoRAS, HEC-HMS, HEC-GeoHMS, HEC-SSP, RMA2, RMA4, ADH), water quality (EFDC, WASP, FVCOM), CFD (Flow3D, SPHYSICS).

**Software:**

Fortran, Matlab, ArcGIS, Parallel Computing (MPI and OpenMP), AutoCAD, VB, Python, Microsoft Office, Windows, and Linux

**Publications, Technical Papers and Presentations**

**S. Zou**, Wave model applications for flood mitigation design, invited presentation in FUNWAVE workshop, University of Delaware, 2017.

Z. Cobell, H. Zhao, H.J. Roberts, F.R. Clark, and **S. Zou**. Surge and Wave Modeling for the Louisiana 2012 Coastal Master Plan. Journal of Coastal Research: Special Issue 67 - Louisiana's 2012 Coastal Master Plan Technical Analysis, pages 88, 108, 2013

Atkinson, J, H. Roberts, S. Hagen, **S. Zou**, P. Bacopoulos, S. Medeiros, J. Weishampel, Z. Cobell, “Deriving Frictional Parameters and Performing Historical Validation for an ADCIRC Storm Surge Model of the Florida Gulf Coast”, Florida Watershed Journal, 2011.

**Zou, S**., H. Roberts, J, Atkinson, B. Blanton, L. Stillwell, J. Hanson, M. Forte, and R. Luettich, “Mesh Development of an ADCIRC Storm Surge Model for the Mid-Atlantic Region”, American Water Resources Association Annual Conference, 2010

Dalrymple, R.A., M. Gómez-Gesteira, B.D. Rogers, A. Panizzo, **S. Zou**, A.J.C. Crespo, G. Cuomo, and M. Narayanaswamy. ”Smoothed Particle Hydrodynamics for Nonlinear Water Waves" in Advances in Numerical Simulation of Nonlinear Waves, Q. Ma, ed., World Scientific Press, 2008.

**Zou, S**., and R A. Dalrymple. "Numerical Simulation of Sediment Suspension Under Oscillatory Flow by SPH-SPS Method". 30th Intl. Conference on Coastal Engineering. World Scientific Press, 2006.

**Zou, S**., and R.A. Dalrymple. "Smoothed Particle Hydrodynamics Simulation on Sediment Suspension Under Breaking Waves". Symposium on Ocean Wave Measurements and Analysis. ASCE, 2005.

**Zou, S**., and R.A. Dalrymple. "Sediment Suspension Modeling by Smoothed Particle Hydrodynamics". 29th Intl. Conference on Coastal Engineering. World Scientific Press, 2004.

Dalrymple, R.A., O. Knio, D.T. Cox, M. Gesteira, and **S. Zou**. "Using a Lagrangian Particle Method for Deck Overtopping". Proc. Waves 2001. ASCE, 2001.

Chen, Guoping, S. Qiao, J. Du, and **S. Zou**. Wind Wave Spectrum Estimation by the Maximum Entropy Method. Journal of Nanjing Hydraulic Research Institute, 1999.

Qiao S., J. Du, G. Chen, and **S. Zou**. Calculation Method and Characteristics of Wind−Wave in Lake. Journal of Nanjing Hydraulic Research Institute, 1996.