

William James Pringle

1516 Marigold Way Apt 601, South Bend, IN 46617

+1 574-208-2192 wpringle@nd.edu

www.linkedin.com/in/williampringle

www.researchgate.net/profile/William_Pringle

RESEARCH WORK EXPERIENCE

Postdoctoral Research Associate with Prof. Joannes Westerink **May 2016 – Present**

Dept. Civil and Environmental Engineering & Earth Sciences, University of Notre Dame, South Bend, IN.

Projects with Duties and Publications:

1) **Advancing ADCIRC U.S. Atlantic and Gulf Coast Grids and Capabilities to Facilitate Coupling to the National Water Model in ESTOFS Operational Forecasting** **Oct 2018 - Present**

Sponsors: National Oceanic and Atmospheric Administration (NOAA) (\$344k)

- Incorporating density effects into a global surge and tide model to improve high-resolution coastal ocean forecasting along U.S. coastlines (ESTOFS model).

2) **Coupled ice, tide, wind-wave, and storm surge modeling in Western Alaska** **Sep 2018 - Present**

Sponsors: Western Alaska LCC (\$89k); National Oceanic and Atmospheric Administration (NOAA) (\$193k)

- Analyzed Western Alaska storm driven surge and the effect of ice coverage [1].

- Personally provided on-demand surge forecasts during Feb and Mar 2019 to National Weather Service Alaska Regional Forecast Offices.

3) **U.S. IOOS Coastal and Ocean Modeling Testbed - Puerto Rico/U.S. Virgin Islands** **Sep 2017 - Aug 2018**

Sponsor: Southern Universities Research Association / NOAA (\$139k)

- Coupled density stratification into a high-resolution 2D ADCIRC model to improve the simulation of coastal water levels across the frequency spectrum (12-min to 1-yr periods) [2].

- Comprehensively analyzed Hurricane Irma and Maria storm surge and waves using ADCIRC and SWAN [3].

4) **Tides and Storm Surge in the Indian Ocean and South China Sea** **May 2016 - Jan 2018**

Sponsors: U.S. Office of Naval Research (\$159k); FM Global Insurance (\$52k)

- Conducted a rigorous sensitivity assessment of large-scale tidal modeling in the Indian and Western Pacific Oceans to internal dissipation, bathymetry, and ocean boundary conditions [4,5].

Other Duties and Achievements:

1) Developed [OceanMesh2D](#) [6], an automatic unstructured mesh generating toolbox implemented in MATLAB geared towards creating highly multiscale ocean meshes [7] that range from local to global in scale.

2) Integrated my [ADCIRC](#) model (coded in FORTRAN) developments into release version through GitHub and was nominated for “ADCIRC Man-of-the-year” at the 2018 ADCIRC User’s Group Meeting.

3) Contracts awarded during my tenure from the following sponsors: NSF (\$1.6 million), NOAA (\$1.67 million total), FM Global Insurance (\$264k), and the U.S. Army Corps of Engineers (\$85k).

Graduate Student with Dr. Nozomu Yoneyama & Dr. Nobuhito Mori **Apr 2011 – Mar 2016**

Urban Flood Control Laboratory, Disaster Prevention Research Institute, Kyoto University, Japan.

Duties, Achievements and Publications:

1) Developed a 2D-3D two-way coupled multiscale tsunami model ([2CLOWNS](#), coded in FORTRAN) [8].

2) Validated 2CLOWNS model for solitary wave shoaling and breaking on a plane beach slope [9], and used it to investigate interaction of a tsunami with a large-scale caisson breakwater [10].

3) The 2CLOWNS model was also used by my colleagues in a series of tsunami assessment publications [11-15].

4) Worked part-time on a \$1.45 million Japan Nuclear Regulation Authority project (Aug 2015 – Feb 2016) under which my 2CLOWNS model was used and further developed.

EDUCATION

PhD, Engineering

Mar 2016

Department of Urban Management, Graduate School of Engineering, Kyoto University, Kyoto, Japan.

Thesis: “*Two-Way Coupled Multiscale Tsunami Modeling from Generation to Coastal Zone Hydrodynamics*”.

ME, Civil Engineering

Mar 2013

Department of Urban Management, Graduate School of Engineering, Kyoto University, Kyoto, Japan.

BE (Hons), Civil Engineering

Dec 2010

College of Engineering, University of Canterbury, Christchurch, New Zealand.

PUBLICATIONS

- [1] Joyce, B., **Pringle, W.**, Westerink, J., Wirasaet, D., van der Westhuysen, A., Grumbine, R (2019). High Resolution Modeling of Western Alaskan Tides and Storm Surge under Varying Sea Ice Conditions. *Ocean Modelling*, *accepted pending minor revisions*.
- [2] **Pringle, W.**, Gonzalez-Lopez, J., Joyce, B., Westerink, J., van der Westhuysen, A. (2019). Baroclinic Coupling Improves Depth-Integrated Modeling of Coastal Sea Level Variations around Puerto Rico and the U.S. Virgin Islands. *J. Geophysical Research: Oceans*, 124 (3), 2196-2217. doi:10.1029/2018JC014682
- [3] Joyce, B., Gonzalez-Lopez, J., van der Westhuysen, A., Yang, D., **Pringle, W.**, Cox, A (2019). U.S. IOOS coastal and ocean modeling testbed: Hurricane-induced winds, waves and surge for deep-ocean, reef fringed islands in the Caribbean. *J. Geophysical Research: Oceans*, 124 (4), 2876-2907. doi:10.1029/2018JC014687
- [4] **Pringle, W.**, Wirasaet, D., Suhardjo, A., Westerink, J., Kennedy, A., Nong, S. (2018). Finite-Element Barotropic Model for the Indian and Western Pacific Oceans: Tidal Model-Data Comparisons and Sensitivities. *Ocean Modelling*, 129, 13-38. doi:10.1016/j.ocemod.2018.07.003
- [5] **Pringle, W.**, Wirasaet, D., Westerink, J. (2018). Modifications to Internal Tide Conversion Parameterizations and Implementation into Barotropic Ocean Models. *EarthArXiv*. doi:10.31223/osf.io/84w53
- [6] Roberts, K., **Pringle, W.**, Westerink, J. (2019). OceanMesh2D 1.0: MATLAB-based software for two-dimensional unstructured mesh generation in coastal ocean modeling. *Geoscientific Model Development*, 12, 1847-1868. doi:10.5194/gmd-12-1847-2019
- [7] Roberts, K., **Pringle, W.**, Westerink, J., Contreras M., Wirasaet, D. (2019). On the automatic and *a priori* design of unstructured mesh resolution for coastal ocean circulation models. *EarthArXiv*, doi:10.31223/osf.io/nwde7, and under review at *Ocean Modelling*.
- [8] **Pringle, W.**, Yoneyama, N. (2013). The Application of a Hybrid 2D/3D Numerical Tsunami Inundation-Propagation Flow Model to the 2011 off the Pacific Coast of Tohoku Earthquake Tsunami. *J. Japan Soc. Civ. Eng. Ser. B2 Coast. Eng.* 69, I 306–I 310 (in Japanese). doi:10.2208/kaigan.69.I_306
- [9] **Pringle, W.**, Yoneyama, N., Mori, N. (2016). Two-Way Coupled Long Wave - Rans Model: Solitary Wave Transformation and Breaking on a Plane Beach. *Coastal Engineering*, 114, 99-118. doi:10.1016/j.coastaleng.2016.04.011
- [10] **Pringle, W.**, Yoneyama, N., Mori, N. (2018). Multiscale Coupled Three-dimensional Model Analysis of the Tsunami Flow Characteristics around the Kamaishi Bay Offshore Breakwater and Comparisons to a Shallow Water Model. *Coastal Engineering Journal*, 60 (2), 200-224. doi:10.1080/21664250.2018.1484270
- [11] Nagashima, H., Yoneyama, N., **Pringle, W.** (2016). Application of a Hybrid 2DH-3D Model to Salt Water Behavior Caused by a River-Runup Tsunami. *J. Japan Soc. Civ. Eng. Ser. B1 Hydr. Eng.* 72, I_385-I_390 (in Japanese). doi:10.2208/jscejhe.72.I_385
- [12] Nagashima, H., Ishido, A., Yoneyama, N., **Pringle, W.** (2016). Numerical Study on the Tsunami Reduction Factor in Matsushima Bay during the Great East Japan Earthquake. *J. Japan Soc. Civ. Eng. Ser. B3 Ocean Eng.* 72, I_151-I_156 (in Japanese). doi:10.2208/jscejoe.72.I_151
- [13] Mori, N., Yoneyama, N., **Pringle, W.** (2015). Effects of the Offshore Barrier against the 2011 off the Pacific Coast of Tohoku Earthquake Tsunami and Lessons Learned, in: Santiago-Fandiño, V., Kontar, Y.A., Kaneda, Y. (Eds.), *Post-Tsunami Hazard: Reconstruction and Restoration*. Springer International Publishing, pp. 121–132. doi:10.1007/978-3-319-10202-3
- [14] Nagashima, H., Sasaki, S., **Pringle, W.**, Yoneyama, N. (2015). Numerical Assessment of Critical Locations for Tsunami Inundation. *J. Japan Soc. Civ. Eng. Ser. B3 Ocean Eng.* 71, I_509–I_514 (in Japanese). doi:10.2208/jscejoe.71.I_509
- [15] Yoneyama, N., Tanaka, Y., **Pringle, W.**, Nagashima, H. (2015). The Development of Three Dimensional Numerical Analysis for Tsunami Driven Debris in Real Scale Scenarios and its Basic Verification. *J. Japan Soc. Civ. Eng. Ser. B2 Coast. Eng.* 71, I_1027-I_1032 (in Japanese). doi:10.2208/kaigan.71.I_1027

TEACHING EXPERIENCE

- 1) “*Engineering Programming (CE-20230)*”, Course Lecturer, Civil & Env. Eng., University of Notre Dame. **Fall Semesters 2016 & 2017, Spring Semester 2018.**
- 2) “*Coastal Hazards and relation to Real Estate*”, in: Dr. Dave Hutchison, Real Estate Fundamentals (Finance 30700), Mendoza College of Business, University of Notre Dame. **Oct 2018.**
- 3) “*2010/2011 Christchurch Earthquakes*”, in: Dr. Kevin Walsh, Resiliency and Sustainability of Engineering Systems (CE-20230), Civil & Env. Eng., University of Notre Dame. **Sep 2017.**
- 4) “*Natural Hazards: Tsunamis*”, in: Dr. Sameh Kantoush, Natural Disaster Science I, Institute for Liberal Arts and Sciences, Kyoto University. **Nov 2015.**

PRESENTATIONS

Seminars:

- 1) “*High-Resolution Global Storm Tide Modeling Incorporating Density Stratification*”. Environmental Science Division, Argonne National Laboratory. **Mar 2019**
- 2) “*Two-way Multiscale Coupling for Tsunami Modeling: Application to the Kamaishi Offshore Breakwater*”. Environmental Fluid Dynamics Group, University of Notre Dame. **Sep 2017**
- 3) “*Two-way Model Coupling for Tsunamis*”. Civil Engineering Department, College of Engineering, University of Canterbury, Christchurch, New Zealand. **Sep 2015**

Conferences:

- 1) **Pringle, W.**, Roberts, K., Westerink, J. *Simulations of Global Storm Tide and Circulation using ADCIRC*, in: ADCIRC User’s Group Meeting, ERDC, Vicksburg, MS, USA, **May 2019**.
- 2) **Pringle, W.**, Roberts, J., Westerink, J., Wirasaet, W. *Global Tide and Surge Modelling with Locally High Resolution Coastal Insets (keynote)*, in: 20th International Conference on Fluid Flow Problems (FEF), Chicago, USA, **Apr 2019**.
- 3) **Pringle, W.**, Westerink, J. *Coupling 3D Ocean Baroclinicity into 2D Depth-integrated Coastal Ocean Models*, in: 17th Symposium on the Coastal Environment, American Meteorological Society Annual Meeting, Phoenix, AZ, USA, **Jan 2019**.
- 4) **Pringle, W.**, Westerink, J. *Incorporating 3D Baroclinic Processes for Accurate Depth-integrated Coastal Circulation Modelling*, in: 36th International Conference on Coastal Engineering, Baltimore, MD, USA, **Jul 2018**.
- 5) **Pringle, W.**, Westerink, J. *Coupling Large-scale Baroclinicity into a 2D Coastal Ocean Model*, in: 8th International Symposium on Environmental Hydraulics, Notre Dame, IN, USA, **Jun 2018**.
- 6) **Pringle, W.**, Westerink, J. *Exploring Baroclinic Mode 2D ADCIRC to Capture Inter/Intra-annual Sea Surface Variations*, in: ADCIRC User’s Group Meeting, NOAA Center for Weather and Climate Prediction, College Park, MD, USA, **Apr 2018**.
- 7) **Pringle, W.**, Westerink, J. *Large-scale Tidal Dynamics Modelling in the Indian and Western Pacific Ocean Basins*, in: 4th Young Coastal Scientists and Engineers Conference – Americas. Dauphin Island, AL, USA, **Aug 2017**.
- 8) **Pringle, W.**, Suhardjo, A., Wirasaet, D., Westerink, J., Kennedy, **May 2017**. *Tides and Storm Surge in the Indian Ocean and South China Sea*, in: ADCIRC User’s Group Meeting. Norwood, MA, USA
- 9) Suhardjo, A., **Pringle, W.**, Westerink, J. *Modeling Dissipative Effects on Tides of Large Scale Coastal and Oceanic Regions in the Indian and Western Pacific Ocean*, in: 15th Symposium on the Coastal Environment, American Meteorological Society Annual Meeting. Seattle, WA, USA, **Jan 2017**.
- 10) **Pringle, W.**, Yoneyama, N. *Analysis of Flow Behavior around the Kamaishi Bay Offshore Tsunami Breakwater during the 2011 Tohoku Earthquake Tsunami*, in: Australasian Coasts and Ports Conference. Auckland, New Zealand, **Sep 2015**.
- 11) **Pringle, W.**, Yoneyama, N. *Solitary wave runup on a plane beach using a two-way coupled depth-averaged shallow water - RANS VOF model*, in: 19th IAHR-APD Congress, Hanoi, Vietnam, **Sep 2014**.

ACADEMIC SCHOLARSHIPS AND SERVICE

Reviewer for the following journals (SJR quartile ranking)

Jun 2017 – Present

- *Journal of Waterway, Port, Coastal, and Ocean Engineering* (Q2)
- *Ocean Modelling* (Q1)
- *Computer Methods in Applied Mechanics & Engineering* (Q1)

MEXT Japanese Government Scholarship

Apr 2011 – Mar 2016

Japan Ministry of Education, Culture, Sports, Science and Technology. Free tuition and monthly stipend over five years during my graduate studies.

University of Canterbury Summer Research Scholarship (\$25,000)

Nov 2009 – Feb 2010

OTHER QUALIFICATIONS

Certification: Global COE (Centers of Excellence) Program, Kyoto University

Mar 2016

“*Sustainability/Survivability Science for a Resilient Society Adaptable to Extreme Weather Conditions*”.