Kyungmin Park

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RESEARCH INTERESTS

Numerical Models, Data Analysis, Coastal Ocean Dynamics, Coastal Flooding, Marine Energy

EDUCATION

Georgia Institute of Technology   Atlanta, Georgia
Doctor of Philosophy in Ocean Science and Engineering   2022
▪ Overall GPA: 4.0 / 4.0 (100 / 100)

Pusan National University   Busan, Korea
Master of Science in Naval Architecture and Ocean Engineering   2017
▪ Overall GPA: 4.5 / 4.5 (100 / 100)

Tongmyong University   Busan, Korea
Bachelor of Engineering in Naval Architecture and Ocean Engineering   2015
▪ Overall GPA: 4.24 / 4.5 (97.9 / 100)

HONORS AND AWARDS

Allianz Climate Risk Research Award, *Allianz,* 2021 [link]
President's Award for Excellent Academic Record and Extracurricular Activity, *Tongmyong University*, 2015
Excellence Paper Award in Busan Future Scientist, *Federation of Busan Science and Technology*, 2014
Winner in Solar Boat Race, *Human and Solar Powered Vessel Festival*, 2014
Best Hull Form Design Award, *Korea Research Institute of Ship and Ocean Engineering,* 2014
Scholarship for Top Student, *Tongmyong University*, 2013
Excellence Award in the Creative Design Competition, *Pusan National University*, 2013
Silver Medal in the Capstone Design, *Southeast Industry-University Cooperation*, 2013
Excellence Award in Leisure Boat and Marina Design Competition, *Chosun University,* 2013
Creativity Design Award in National Yacht Model Design and Performance Competition, *Gyeongnam Changwon-Science & Technology Promotion Agency,* 2013
2nd Place in Solar Boat Race, *Human and Solar Powered Vessel Festival (HSPVF),* 2013
Scholarship, *Korea Student Aid Foundation*, 2012

RESEARCH EXPERIENCE

1. Di Lorenzo Research Group, Georgia Institute of Technology   Atlanta, Georgia
Graduate Research Assistant   Aug. 2018-Present
  ▪ Conducted a NOAA UFS project to evaluate a coastal ocean model (SCHISM)
  ▪ Investigated multiple drivers of extreme water levels through numerical models and observations
  ▪ Leveraged collaborations with diverse institutes to analyze coastal sea levels using interdisciplinary knowledge and skills
  ▪ Communicated with coastal stakeholders (e.g., City of Savannah and Chatham County, Georgia, USA) for coastal management plans
  ▪ Published 1 paper

2. Virginia Institute of Marine Science   Gloucester Point, Virginia
Visiting Scientist   Jan. 2022-Present
  ▪ Developed a hydrodynamic (SCHISM)-hydrological (NWM)-wave (WWM3) coupled model on HPC Linux systems for compound flood simulations, which covers the entire U.S. east coast and Gulf of Mexico.
  ▪ Utilized GIS/DEM data to generate unstructured grids and to visualize coastal vulnerability index
  ▪ Built codes (Python, MATLAB) for surface forcing/boundary conditions (interpolated from global-scale models and observations) and post-processing (e.g., visualization, data analysis)

3. Euro-Mediterranean Center on Climate Change   Lecce, Italy
Research Intern   May 2019-Aug. 2019
  ▪ Developed a city-scale (~10m) hydrodynamic model (SHYFEM) for a 3-day forecast system on the Georgia coast (https://savannah.cmcc.it)
  ▪ Conducted comparative analyses against available observations such as high-density water level sensors, buoys, tide gauges, CTDs and satellites to evaluate and validate model results
  ▪ Calibrated model configurations (e.g., initial/boundary conditions, bathymetry, parameters) for improved accuracy

4. Global Core Research Center for Ship and Offshore Plants   Busan, Korea
Researcher   Mar. 2017-Mar. 2018
  ▪ Developed Eulerian (OpenFOAM)-Lagrangian (LIGGGHTS) coupled model to analyze a liquid-gas-particle mixture flow
  ▪ Published 2 papers

5. Computational Thermo-Fluids Laboratory, Pusan National University   Busan, Korea
Graduate Research Assistant   Jan. 2015-Feb. 2017
  ▪ Analyzed turbulent channel flows according to Reynolds numbers using the Direct Numerical Simulation
  ▪ Investigated flow characteristics around cylinders such as separated shear layers, vortex shedding and a bluff body wake using the Large Eddy Simulation
  ▪ Led an industrial project (POSCO company) to optimize internal flow in a blast furnace using a simulation of air-molten iron mixture flows in a porous medium

▪ Gave 1 conference presentations and published 1 paper

6. Korea Research Institute of Ship and Ocean Engineering   Daejeon, Korea
Research Intern   Sept. 2014-Dec. 2014
▪ Evaluated the hydrodynamic performance of ships and propellers using Computational Fluid
  Dynamics, towing tanks and circulating water channel experiments

7. Design and Building Solar Boat Group, Tongmyong University   Busan, Korea
Leader   Jan. 2013-Aug. 2014
▪ Led a group of more than ten teammates for solar boat construction from the initial design to
  production
▪ Optimized a hull form design to save energy using Computational Fluid Dynamics and field tests
▪ Won 14 awards in 8 competitions, gave 1 conference presentation and published 1 paper

TEACHING EXPERIENCE
1. Introduction to Oceanography (EAS 4300), Georgia Institute of Technology   Atlanta, Georgia
   Graduate Teaching Assistant   Jan. 2020-May 2020

JOURNAL PUBLICATIONS
In preparation
1. K. Park, et al. (2022). "Delayed coastal inundations caused by ocean dynamics post-Hurricane
   Matthew"

Published
2. K. Park, et al. (2022). "The contribution of hurricane remote ocean forcing to storm surge along the
   Southeastern U.S. coast.", *Coastal Engineering,* Vol.173, pp.104098.
3. K. Park, et al. (2019). "Effects of the Size and Friction Coefficient of Particles on a Liquid-Gas-
   Particle Mixture Flow in Dam Break." *AIP Advances*, Vol.9, No.1, pp. 015208.
4. K. Park, et al. (2018). "CFD-DEM based Numerical Simulation of Liquid-Gas-Particle Mixture
   Flow in Dam Break." *Communications in Nonlinear Science and Numerical Simulation*, Vol.59,
   pp.105-121.
5. K. Park, et al. (2016). "Characteristics of Interface between Two-phase Fluids Flow in a Furnace
   with Porous Medium." *Journal of Computational Fluids Engineering*, Vol.21, No.1, pp.110-116.
6. D. Park and K. Park (2014). "An Analysis on the Design and Speed Performance of a One-man
   Boat." *Journal of the Korean Society of Marine Environment & Safety*, Vol. 20, No. 5, pp. 552-557.

CONFERENCE PRESENTATIONS (Asterisk: speaker)
1. K. Park*, et al. (2022). "Timing and regional dynamics of extreme water level drivers in the U.S.
   southeast coast" Ocean Sciences Meeting 2022
2. K.M. Cobb*, K. Park, et al. (2022). "Research to Action Frameworks for Equitable Coastal
   Resilience: A Case Study from Savannah, Georgia" 102nd American Meteorological Society
   Annual Meeting

3. K. Park*, et al. (2020). "Drivers of Coastal Flooding along South-Atlantic Bight during Hurricanes Dorian and Matthew." Ocean Sciences Meeting 2020
4. K. Park* and H. Yoon (2016). "Study on Characteristics of Dam Break Flow containing Particles using DEM-CFD Method." Proceeding of The Korean Society of Mechanical Engineers 2016
5. J. Jung*, K. Park, et al. (2015). "Large Eddy Simulation of Gravity Current Flow Past Circular Cylinder." Proceeding of The Korean Association of Ocean Science and Technology Societies 2015
6. D. Park, K. Park*, et al. (2014). "Design of One-man Solar Boat (Kwife & Captain)." Proceeding of The Society of Naval Architects of Korea 2014

PROFESSIONAL ACTIVITIES

Journal reviewer: Journal of Hydrology, Journal of Geophysical Research: Oceans

INVITED PRESENTATIONS

1. K. Park (2023), "Impacts and Dynamics of Hurricane-induced Ocean Adjustments along the U.S. Southeast coast", NOAA Coastal Ocean Modeling Science Seminar
2. K. Park (2022), "Coupled Model Development for Advanced Forecasting and Analysis of Extreme Water Levels", NOAA Unifying Innovations in Forecasting Capabilities Workshop 2022
3. K. Park (2022), "New framework for the coastal hazard assessment", Coastal Equity and Resilience Hub 2022 (with stakeholders on the Georgia coast)
4. K. Park (2022), "Timing and regional dynamics of extreme water level drivers in the U.S. southeast coast." Interdisciplinary Marine Science Seminar, Virginia Institute of Marine Science
5. K. Park (2021), "Coastal flooding forecast using the coupled model." College of Sciences Advisory Board Meeting, Georgia Institute of Technology

TECHNICAL SKILLS

Programming and data analysis	MPI, Python, MATLAB, FORTRAN, C++
Numerical models	SCHISM, SHYFEM, ROMS, WRF-Hydro, WWM3, SWAN OpenFOAM, Fluent
Geographic information	ArcGIS, QGIS, SMS, OpenStreetMap, Google Earth Pro
Computer-aided design	Rhino, CATIA, Auto-CAD, Photoshop