

Curriculum Vitae
(September 2024)

KYEONG PARK

Department of Marine and Coastal Environmental Science
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EDUCATION

B.S. (1985) in Mineral and Petroleum Engineering, Seoul National University (Korea)
M.S. (1987) in Marine Environmental Sciences, State University of New York at Stony
Brook, NY
Ph.D. (1993) in Marine Science, College of William and Mary, VA

ACADEMIC POSITIONS

Primary Appointments

Professor (2014-present), Department of Marine and Coastal Environmental Science, Texas
A&M University at Galveston (TAMUG), TX (Tenured: September 3, 2014)
Department Head, Department of Marine Sciences (2014-2020) and Department of Marine
and Coastal Environmental Science (2020-2022), TAMUG, TX
Professor (2012-2014), Department of Marine Sciences, University of South Alabama, AL
Associate Professor (2003-2012), Department of Marine Sciences, University of South
Alabama, AL (Tenured: August 15, 2006)
Senior Marine Scientist (2003-2014), Dauphin Island Sea Lab, AL
Associate Professor (1999-2003), Department of Oceanography, Inha University, Korea
Assistant Professor (1995-1999), Department of Oceanography, Inha University, Korea

Other Appointments

Graduate Faculty (2015-present), Marine Biology-IDP, Texas A&M University at Galveston,
TX
Graduate Faculty (2014-present), Department of Oceanography, Texas A&M University,
TX
Visiting Scientist (May-August 2014), Department of Environmental Engineering,
Chungnam National University, Korea: Brain Pool Program of the National Research
Foundation (NRF) of Korea
Affiliate Professor (2013-2014), School of Fisheries, Aquaculture, and Aquatic Sciences,
Auburn University, AL
Faculty Researcher (2001-2002), School of Marine Science (SMS)/Virginia Institute of
Marine Science (VIMS), College of William and Mary (CWM), VA
Visiting Research Associate Professor (2000-2001), SMS/VIMS, CWM, VA

Visiting Scientist (January-February 1999), SMS/VIMS, CWM, VA
Post-doctoral Research Associate (1993-1995), SMS/VIMS, CWM, VA

RESEARCH INTERESTS

Observational and modeling studies of physical transport processes (residual circulation, scalar transport, turbulent mixing, wind-driven flow, estuary-shelf exchange, estuarine plume dynamics, along-shelf and across-shelf transport, bottom boundary layer dynamics, sediment transport, etc.) in tidal rivers, estuaries and coastal seas
Modeling studies of water quality (anoxia/hypoxia, eutrophication, pollutant dispersion, etc.) and living resources (larval transport, etc.) in tidal rivers, estuaries and coastal seas

EXPERIENCE (since 2010)

Member (2022-2027), Advisory Committee, *Development of AI-based Marine Search and Rescue Decision Support System*, Korea Environment Institute, Korea
Member (2020-2021), Science & Technology Committee for White Paper on the U.S. Beach Water Quality Monitoring, American Shore and Beach Preservation Association (ASBPA)
Panelist (2019), 2019 Regional Ocean Acidification Observing Optimization Study (OOS-OA19), April 30 - May 2, 2019, Washington, D.C.
Consultant (2017-2018), Review of the *Four Major Rivers Restoration Project* by Korea National Institute of Environmental Research, The Board of Audit and Inspection of Korea
Member (2017-2018), Review Committee, *Development of Integrated Estuarine Management System*, Myoungji University, Korea
Candidate (2/24/2017-2/24/2020), Fulbright Specialist Roster
Panelist (2015), Workshop on Environmental and Ecological Modeling in terms of Coastal Environmental Management in Geum River Estuary, Korea (hosted by Myongji University), April 30, 2015, Seoul National University, Korea
Member (2014), Organizing Committee, GCOOS Ecological Modeling Workshop, Houston, TX, April 7-9, 2014
Panelist (2013-2014), 2014 NSF Graduate Research Fellowship Program (GRFP)
Member (2012-2014), GCOOS (Gulf of Mexico Coastal Ocean Observing System) Modeling Task Team
Member (2012-2014), Team for the Development of an Ocean Monitoring System for the Five Gulf States, GOMURC (Gulf of Mexico University Research Collaborative)
Lecturer (2012), 2012 GGSG Intensive Course on Estuarine Dynamics: *Importance of Water Column Stratification on Material Transport in Estuarine and Coastal Environment*, May 29, 2012 (4-hr lecture), Gyeong-Gi Sea Grant Program, Inha University and Ministry of Land, Transport and Maritime Affairs, Korea
Member (2012), Review Committee for Mobile Bay Hydrodynamic and Water Quality Model, Mobile Bay National Estuary Program
Member (2012), Evaluation Committee, *Environmental Impact Assessment for Construction of a Tidal Power Plant in Karolim Bay, Korea*, Korea Environment Institute, Seoul, Korea

Member (2011), Advisory Committee for Development of DO Criteria, Florida Department of Environmental Protection
Lecturer (2011), 2011 GGSG Intensive Course on Estuarine Dynamics: *Water Quality Modeling in Coastal and Estuarine Waters*, Jul 27-28, 2011 (14-hr lecture over 2 days), Gyeong-Gi Sea Grant Program, Inha University and Ministry of Land, Transport and Maritime Affairs, Korea
Chair (2010-2011), Gulf of Mexico Research Initiative: *MESC study on the Impacts of the Deepwater Horizon events on Alabama's coastal resources - Theme #2: Physical distribution, dispersion and dilution of contaminants under the action of ocean currents and tropical storms*, Marine Environmental Sciences Consortium, Dauphin Island, AL
Member (2010-2011), Advisory and Evaluation Committee, *Study of Development of USN Ocean Cluster for Coastal Waters: a Case Study for Soonchun Bay*, Korea Hydrographic and Oceanographic Administration, Inchon, Korea

ADVISING STUDENTS

As advisor/mentor:

Four Ph.D. and 11 M.S. students, and four post-docs

Five REUs (Research Experiences for Undergraduates, NSF) and four TAMU Undergraduate Research Scholars

Committee member or external examiner:

21 Ph.D. (including 1 dissertation examiner) and 20 M.S. students

COURSES TAUGHT

Graduate *Physical Oceanography, Estuarine and Coastal Hydrodynamics, Application of Estuarine and Coastal Hydrodynamics, Estuarine and Coastal Water Quality Modeling, and Biological-Physical Interactions in the Sea*

Undergraduate *Introductory Physical Oceanography, Introduction to Estuarine and Coastal Hydrodynamics, Introduction to Tides and Waves, Introduction to Applied Physical Oceanography, Introductory Geophysical Fluid Dynamics, Oceanographic Experiences, Seminar in Marine Science, and Marine Science Matters*

DISSERTATION AND THESIS

Park K (1987) Leaching behavior of incineration residues from municipal solid wastes. M.S. Thesis, Marine Sciences Research Center, State University of New York at Stony Brook, Stony Brook, NY (advisor: Frank J. Roethel).

Park K (1993) A model study of hydrodynamic and water quality characteristics of the Rappahannock Estuary, Virginia. Ph.D. Dissertation, School of Marine Science/Virginia Institute of Marine Science, College of William and Mary, Gloucester Point, VA (advisor: Albert Y. Kuo).

PEER-REVIEWED PUBLICATIONS IN JOURNALS / BOOKS (since 2010)

: Name indicates author was a student or a post-doc of mine at the time of research.

: [CA] indicates corresponding author.

- Dzwonkowski B, **Park K** (2010) Influence of wind stress and discharge on the mean and seasonal currents on the Alabama shelf of the northeastern Gulf of Mexico. *Journal of Geophysical Research*, 115, C12052, doi:10.1029/2010JC006449.
- Kim C-K, **Park K**, Powers SP, Graham WM, Bayha KM (2010) Oyster larval transport in coastal Alabama: dominance of physical transport over biological behavior in a shallow estuary. *Journal of Geophysical Research*, 115, C10019, doi:10.1029/2010JC006115.
- Carassou L, Dzwonkowski B, Hernandez FJ, Powers SP, **Park K**, Graham WM, Mareska J (2011) Environmental influences on juvenile fish abundances in a river-dominated coastal system. *Marine and Coastal Fisheries*, 3(1), 411-427, doi:10.1080/19425120.2011.642492.
- Dzwonkowski B, **Park K** [CA], Ha HK, Graham WM, Hernandez FJ, Powers SP (2011) Hydrographic variability on a coastal shelf directly influenced by estuarine outflow. *Continental Shelf Research*, 31(9), 939-950, doi:10.1016/j.csr.2011.03.001.
- Dzwonkowski B, **Park K**, Jiang L (2011) Subtidal across-shelf velocity structure and surface transport effectiveness on the Alabama shelf of the northeastern Gulf of Mexico. *Journal of Geophysical Research*, 116, C10012, doi:10.1029/2011JC007188.
- Ha HK, Maa JP-Y, **Park K**, Kim YH (2011) Estimation of high-resolution sediment concentration profiles in bottom boundary layer using pulse-coherent acoustic Doppler current profilers. *Marine Geology*, 279(1-4), 199-209, doi:10.1016/j.margeo.2010.11.002.
- Jo HR, Lee HJ, **Park K** (2011) Role of winter waves in sand transport at the mouth of Garolim Bay, west coast of Korea. *Geosciences Journal*, 15(4), 379-386, doi:10.1007/s12303-011-0038-4.
- Dzwonkowski B, **Park K** (2012) Subtidal circulation on the Alabama shelf during the Deepwater Horizon oil spill. *Journal of Geophysical Research*, 117, C03027, doi:10.1029/2011JC007664.
- Ha HK, **Park K** (2012) High-resolution comparison of sediment dynamics under different forcing conditions in the bottom boundary layer of a shallow, micro-tidal estuary. *Journal of Geophysical Research*, 117, C06020, doi:10.1029/2012JC007878.
- Kim C-K, **Park K** [CA] (2012) A modeling study of water and salt exchange for a micro-tidal, stratified northern Gulf of Mexico estuary. *Journal of Marine Systems*, 96-97, 103-115, doi:10.1016/j.jmarsys.2012.02.008.
- Kim C-K, **Park K**, Powers SP (2013) Establishing restoration strategy of eastern oyster via a coupled biophysical transport model. *Restoration Ecology*, 21(3), 353-362, doi:10.1111/j.1526-100X.2012.00897.x.
- Lee J, Webb BM, Dzwonkowski B, **Park K**, Valle-Levinson A (2013) Bathymetric influences on tidal currents at the entrance to a highly stratified, shallow estuary. *Continental Shelf Research*, 58, 1-11, doi:10.1016/j.csr.2013.03.002.
- Dzwonkowski B, **Park K**, Lee J, Webb BM, Valle-Levinson A (2014) Spatial variability of flow over a river-influenced inner shelf in coastal Alabama during spring. *Continental Shelf Research*, 74, 25-34, doi:10.1016/j.csr.2013.12.005.
- Jeong YH, Yang JS, **Park K** [CA] (2014) Changes in water quality after the construction of an estuary dam in the Geum River Estuary Dam System in Korea. *Journal of Coastal Research*, 30(6), 1278-1286, doi:10.2112/jcoastres-d-13-00081.1.

- Park K**, Powers SP, Bosarge GS, Jung H-S (2014) Plugging the leak: Barrier island restoration following Hurricane Katrina enhances habitat quality for oysters in Mobile Bay, Alabama. *Marine Environmental Research*, 94, 48-55, doi:10.1016/j.marenvres.2013.12.003.
- Park K**, Shen J, Kuo AY (2014) Discussion of “Adaptive time stepping-operator splitting strategy to couple implicit numerical hydrodynamic and water quality codes” by Gaurav Savant and R.C. Berger. *Journal of Environmental Engineering*, 140(4), 07014001, doi:10.1061/(ASCE)EE.1943-7870.0000777.
- Twilley RR, Brandt S, Breaux D, Cartwright J, Chen J, Easson G, Fitzpatrick P, Fridley K, Graves S, Harper S, Kaiser C, Maestre A, Maskey M, McAnally W, McCorquodale J, Meselhe E, Miller-Way T, **Park K**, Pereira J, Richardson T, Tao J, Ward A, Wiggert J, Williamson D (2014) Simulation management systems developed by the Northern Gulf Coastal Hazards Collaboratory (NG-CHC): An overview of cyberinfrastructure to support the coastal modeling community in the Gulf of Mexico. In: *Remote Sensing and Modeling: Advances in Coastal and Marine Resources* (Finkl CW, Makowski C, eds.), Coastal Research Library (CRL) 9, Springer, New York, pp. 365-394.
- Dzwonkowski B, **Park K**, Collini R (2015) The coupled estuarine-shelf response of a river-dominated system during the transition from low to high discharge. *Journal of Geophysical Research: Oceans*, 120, 6145-6163, doi:10.1002/2015JC010714.
- Kroetz AM, Powers SP, Drymon JM, **Park K** (2015) Anthropogenic modifications to a barrier island influence Bonnethead (*Sphyrna tiburo*) movements in the northern Gulf of Mexico. *Animal Biotelemetry*, 3(1), 1-12, doi:10.1186/s40317-015-0067-2.
- Tzeng MW, Dzwonkowski B, **Park K** (2016) Data processing for a small-scale long-term coastal ocean observing system near Mobile Bay, Alabama. *Earth and Space Science*, 3(12), 510-522, doi:10.1002/2016EA000188.
- Du J, **Park K**, Shen J, Dzwonkowski B, Yu X, Yoon BI (2018) Role of baroclinic processes on flushing characteristics in a highly stratified estuarine system, Mobile Bay, Alabama. *Journal of Geophysical Research: Oceans*, 123(7), 4518-4537, doi:10.1029/2018JC013855.
- Du J, Shen J, **Park K**, Wang YP, Yu X (2018) Worsened physical condition due to climate change contributes to the increasing hypoxia in Chesapeake Bay. *Science of the Total Environment*, 630, 707-717, doi:10.1016/j.scitotenv.2018.02.265.
- Dzwonkowski B, Fournier S, **Park K**, Dykstra SL, Reager JT (2018) Water column stability and the role of velocity shear on a seasonally stratified shelf, Mississippi Bight, northern Gulf of Mexico. *Journal of Geophysical Research: Oceans*, 123(8), 5777-5796, doi:10.1029/2017JC013624.
- Dzwonkowski B, Fournier S, Reager JT, Milroy S, **Park K**, Shiller AM, Greer AT, Soto I, Dykstra SL, Sanial V (2018) Tracking sea surface salinity and dissolved oxygen on a river-influenced, seasonally stratified shelf, Mississippi Bight, northern Gulf of Mexico. *Continental Shelf Research*, 169, 25-33, doi:10.1016/j.csr.2018.09.009.
- Du J, **Park K**, Dellapenna TM, Clay JM (2019) Dramatic hydrodynamic and sedimentary responses in Galveston Bay and adjacent inner shelf to Hurricane Harvey. *Science of the Total Environment*, 653, 554-564, doi:10.1016/j.scitotenv.2018.10.403.
- Du J, **Park K**, Dellapenna TM, Clay JM (2019) Corrigendum to “Dramatic hydrodynamic and sedimentary responses in Galveston Bay and adjacent inner shelf to Hurricane Harvey” [*Sci. Total Environ.* 653 (2019), 554-564]. *Science of the Total Environment*, 697, 134219, doi:10.1016/j.scitotenv.2019.134219.

- Du J, **Park K** (2019) Estuarine salinity recovery from an extreme precipitation event: Hurricane Harvey in Galveston Bay. *Science of the Total Environment*, 670, 1049-1059, doi:10.1016/j.scitotenv.2019.03.265.
- Du J, **Park K**, Shen J, Zhang YJ, Yu X, Ye F, Wang Z, Rabalais NN (2019) A hydrodynamic model for Galveston Bay and the shelf in the northern Gulf of Mexico. *Ocean Science*, 15, 951-966, doi:10.5194/os-15-951-2019.
- Gancel HN, Carmichael RH, **Park K**, Krause JW, Rikard S (2019) Field mark-recapture of calcein-stained larval oysters (*Crassostrea virginica*) in a freshwater-dominated estuary. *Estuaries and Coasts*, 42, 1558-1569, doi:10.1007/s12237-019-00582-6.
- Shin H-J, Lee G-H, Kang K, **Park K** (2019) Shift of estuarine type in altered estuaries. *Anthropocene Coasts*, 2, 145-170, doi:10.1139/anc-2018-0013.
- Coogan J, Dzwonkowski B, **Park K**, Webb B (2020) Observations of restratification after a wind mixing event in a shallow highly stratified estuary. *Estuaries and Coasts*, 43, 272-285, doi:10.1007/s12237-019-00689-w.
- Dzwonkowski B, Coogan J, Fournier S, Lockridge G, **Park K**, Lee T (2020) Compounding impact of severe weather events fuels marine heatwave in the coastal ocean. *Nature Communications*, 11, 4623, doi:10.1038/s41467-020-18339-2.
- Du J, **Park K**, Yu X, Zhang YJ, Ye F (2020) Massive pollutants released to Galveston Bay during Hurricane Harvey: Understanding their retention and pathway using Lagrangian numerical simulations. *Science of the Total Environment*, 704, 135364, doi:10.1016/j.scitotenv.2019.135364.
- Coogan J, Dzwonkowski B, Lehrter J, **Park K**, Collini RC (2021). Observations of dissolved oxygen variability and physical drivers in a shallow highly stratified estuary. *Estuarine, Coastal and Shelf Science*, 259, 107482, doi:10.1016/j.ecss.2021.107482.
- Du J, **Park K**, Jensen C, Dellapenna TM, Zhang WG, Shi Y (2021). Massive oyster kill in Galveston Bay caused by prolonged low-salinity exposure after Hurricane Harvey. *Science of the Total Environment*, 774, 145132, doi:10.1016/j.scitotenv.2021.145132.
- Dzwonkowski B, Fournier S, Lockridge G, Coogan J, Liu Z, **Park K** (2021). Cascading weather events amplify the coastal thermal conditions prior to the shelf transit of Hurricane Sally (2020). *Journal of Geophysical Research: Oceans*, 126, e2021JC017957, doi:10.1029/2021JC017957.
- Gancel HN, Carmichael RH, Du J, **Park K** (2021). Use of settlement patterns and geochemical tagging to test population connectivity of eastern oysters (*Crassostrea virginica*). *Marine Ecology Progress Series*, 673, 85-105, doi:10.3354/meps13796.
- Hannides A, Elko N, Briggs TR, Kim S-C, Mercer A, **Park K**, Rosov B, Searcy R, Walther M (2021). An ASBPA White Paper: U.S. beach water quality monitoring. *Shore & Beach*, 89(3), 26-35, doi:10.34237/1008933.
- Huang W, Ye F, Zhang YJ, **Park K**, Du J, Moghimi S, Myers E, Pe'eri S, Calzada JR, Yu HC, Nunez K, Liu Z (2021). Compounding factors for extreme flooding around Galveston Bay during Hurricane Harvey. *Ocean Modelling*, 158, 101735, doi:10.1016/j.ocemod.2020.101735.
- Dellapenna TM, Hoelscher C, Hill L, Critides L, Salgado V, Bell M, Al Mukaimi ME, Du J, **Park K**, Knap AH (2022). Hurricane Harvey delivered a massive load of mercury-rich sediment to Galveston Bay, TX, USA. *Estuaries and Coasts*, 45, 428-444, doi:10.1007/s12237-021-00990-7.

Dzwonkowski B, Fournier S, Lockridge G, Coogan J, Liu Z, **Park K** (2022). Hurricane Sally (2020) shifts the ocean thermal structure across the inner core during rapid intensification over the shelf. *Journal of Physical Oceanography*, 52(11), 2841-2852, doi:10.1175/JPO-D-22-0025.1.

Summers E, Du J, **Park K**, Kaiser K (2023). How does buoyancy behavior impact microplastic transport in an estuarine environment? *Science of the Total Environment*, 899, 165687, doi:10.1016/j.scitotenv.2023.165687.

Huang W, Ye F, Zhang YJ, Du J, **Park K**, Yu H-C, Wang Z (2024). Hydrodynamic responses of estuaries and bays along Texas-Louisiana coast during Hurricane Harvey. *Ocean Modelling*, 187, 102302, doi:10.1016/j.ocemod.2023.102302.

Summers E, Du J, **Park K**, Kaiser K (2024). Quantifying the connectivity of microplastic pollution in the Texas-Louisiana-Texas coastal area. *ACS ES&T Water*, 4(6), 2482-2494, doi:10.1021/acsestwater.3c00839.

PUBLISHED SOFTWARE

Kuo AY, **Park K**, Mo C (1991) VIMS HEM-1D (One-Dimensional Hydrodynamic-Eutrophication Model), an one-dimensional eutrophication model, with built-in graphical interface, and pre- and post-processors.

Park K, Kuo AY (1993) VIMS HEM-2D (Two-Dimensional Hydrodynamic-Eutrophication Model), a vertical two-dimensional eutrophication model.

Kuo AY, **Park K** (1994) VIMS TPM (Tidal Prism Model), a tidal-average eutrophication model coupled with sediment process model, with built-in graphical interface, and pre- and post-processors.

: Listed as a tool for TMDL (Total Maximum Daily Load) development by USEPA in 1997 (*EPA841-B-97-006* and *EPA/600/R-05/149*)

Hamrick JM, **Park K**, Kuo AY, Shen J (1995) VIMS HEM-3D (Three-Dimensional Hydrodynamic-Eutrophication Model, also referred to as EFDC, Environmental Fluid Dynamics Code), a three-dimensional eutrophication model coupled with sediment process model.

: Listed as a tool for TMDL development by USEPA in 1997 (*EPA841-B-97-006* and *EPA/600/R-05/149*)

: Adopted as a tool for water quality and quantity management for the Four Major Rivers Restoration Project by Korea National Institute of Environmental Research and Korea Water Resources Corporation in 2011

Tzeng MW, Dzwonkowski B, **Park K** (2015) Data processing for a small-scale long-term coastal ocean observing system near Mobile Bay, Alabama: a Geoscience Papers of the Future (GPF) Software Set. Zenodo, doi:10.5281/zenodo.32741.

11 Conference proceedings

33 Reports / Dataset / Metadata

102 Invited Seminars / Lecture

112 Abstracts

43 research projects with total budget of >\$5.8M