Curriculum Vitae

Kelin Hu, Ph.D.

Research Assistant Professor
Department of River-Coastal Science and Engineering
Tulane University
107 Tulane River and Coastal Center, New Orleans, LA 70130
khu1@tulane.edu
225-348-6264

Education

2003	*Ph.D.*, Physical Geography, East China Normal University, Shanghai, China
	Dissertation: 2D numerical simulation of suspended sediment under waves and currents in the Yangtze estuary, advised by Prof. Pingxing Ding
1998	*B.Sc.*, Physics, East China Normal University, Shanghai, China

Awards and Honors

2003	*Excellent College Graduate*, Shanghai Municipal Education Commission, China
1998	*Excellent College Graduate*, Shanghai Municipal Education Commission, China

Appointments

Jan 2019 -	*Research Assistant Professor,* Department of River-Coastal Science and Engineering, Tulane University
Jul 2018 - Jan 2019	*Research Scientist,* The Water Institute of the Gulf
Feb 2013 - Jun 2018	*IT Consultant / Research Scientist*, Center for Computation & Technology, Louisiana State University
Oct 2011 - Jan 2013	*Senior Post-doctoral Researcher,* advised by Prof. Q. Jim Chen, Department of Civil & Environmental Engineering, Louisiana State University
Apr 2009 - Jul 2009	*Associate Professor*, State Key Laboratory of Estuarine and Coastal Research, East China Normal University, Shanghai, China
Oct 2008 - Sep 2011	*Post-doctoral Researcher,* advised by Prof. Q. Jim Chen, Department of Civil & Environmental Engineering, Louisiana State University

Jul 2003 - Mar 2009	*Lecturer*, State Key Laboratory of Estuarine and Coastal Research, East China Normal University, Shanghai, China
Nov 2007 - Dec 2007 & Sep 2005 - Apr 2006	*Visiting Researcher*, advised by Prof. H.J. de Vriend, Faculty of Civil Engineering and Geosciences, Section of Hydraulic Engineering, Delft University of Technology, the Netherlands.
Feb 2002 - Oct 2002	*Visiting Graduate Assistant*, advised by Dr. Q. Jim Chen, Department of Civil Engineering, University of South Alabama

Research Experience

- Developed a computer modeling system to predict storm surges (ADCIRC/FVCOM/DELFT3D), hurricane waves (SWAN), and corresponding wetland erosion and sedimentation (DELFT3D) under unstructured meshes and curvilinear grids for gulf-scale and regional applications; developing new cyberinfrastructure (CI) tools to improve and integrate these models; doing numerical experiments on ecosystem restoration and flood risks reduction in the Northern Gulf Coast; operation of the ADCIRC Surge Guidance System (ASGS) on HPC clusters; improvement of a parametric hurricane wind model based on the asymmetric Holland-type vortex models; analysis of directional spectra of hurricane-generated waves in the Gulf of Mexico; numerical study of vegetation impact on reducing storm surge by wetlands; numerical modeling of salt marsh morphological change induced by Hurricane Sandy.

- 2D/3D simulations of tidal current, salinity and sediment transport in the area of Yangtze estuary and Hangzhou bay; prediction of storm-induced wind-waves in the Yangtze estuary; development of a model system, which includes storm-induced wind model, hydrodynamic model and sediment model, for simulating and predicting water levels, waves and morphological changes during a storm event in the Yangtze estuary; supported by the national projects in China.

Research Interests

Modeling of storm surge, hurricane waves, sediment transports and morphological changes in coastal and estuarine areas.

Research Skills

- Ability in major scientific programming languages, such as Fortran, C and Matlab;
- Familiar with related scientific codes and software products, such as Delft3D, SWAN, ADCIRC, FVCOM, ECOMSED and DHI MIKE.

Grant

2009 - 2011   Numerical study on estuarine decadal-scale morphological evolutions: the Jiuduansha shoals in the Yangtze estuary (PI), *Youth Science Foundation Project, National Natural Science Foundation of China (Grant No. 40806033)*, ￥200,000 (~ $32,000).

Reviews

As a peer reviewer (> 50 times) for journals and conferences including Scientific Reports, Estuarine, Coastal and Shelf Science, Journal of Coastal Research, Ocean Engineering, Ocean Modelling, Limnology and Oceanography, Journal of Hydrologic Engineering, Applied Ocean Research, Deep-Sea Research Part I: Oceanographic Research Papers, Journal of Waterway, Port, Coastal, and Ocean Engineering, Lakes & Reservoirs: Research & Management, International Journal of Sediment Research, International Journal of Digital Earth, Journal of Water Resource and Protection, Frontiers of Earth Science, Climate Risk Management, Journal of Hydro-environment Research, Water Science and Engineering, Management of Environment Quality, ASME International Mechanical Engineering Congress & Exposition, etc.

Presentations

Oral presentations & talks

Aug 2018   Modeling of the effect of land-building projects on storm surge and hurricane waves in coastal Louisiana, 2018 International Conference on Coastal Engineering, Baltimore, MD

Jun 2016   Delft3D modeling of water quality in Breton Sound estuary, LA, 2016 State of the Coast Conference, New Orleans, LA

Mar 2016   Modeling water quality in Breton Sound estuary, LA, 10th LA Water Symposium, Baton Rouge, LA

Aug 2015   Prediction of Hurricane Winds, Katrina & Rita: A Decade of Research & Response, Baton Rouge, LA

Dec 2014   Modeling of Sediment Transport and Water Quality in Breton Sound, LA, 2014 ICCE/IAHS International Symposium, New Orleans, LA

Mar 2014   Delft3D modeling of hurricane-induced surge and waves in coastal Louisiana, 2014 State of the Coast Conference, New Orleans, LA

Aug 2013   Modeling of hurricane-induced surge, waves and salinity change in coastal Louisiana, 2013 Engineering Mechanics Institute Conference, Evanston, IL.

Nov 2012	Lectures (3 times) on the introduction of SWAN and Delft3D for the CE 7701 course (Applied Coastal Modeling, instructed by Dr. Q. Jim Chen) at Louisiana State University (LSU)
Jul 2012	Delft3D tutorial at LSU for coastal modelers from LSU, the University of Louisiana at Lafayette, the University of New Orleans, the U.S. Geological Survey (USGS), and T. Baker Smith, LLC
Jun 2011	Directional spectra of extreme waves, 54th Annual Conference on Great Lakes Research, Duluth, MN
Nov 2010	Modeling of storm surge and hurricane waves for Louisiana coast, seminar in the Department of Civil & environmental Engineering, LSU
Apr 2009	The effect of deep waterway constructions on hydrodynamics and salinities in Yangtze estuary, China, 10th International Coastal Symposium, Lisbon, Portugal
Jun 2009	Interaction of storm surge and hurricane waves: modeling and measurements, 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, Blacksburg, VA
Sep 2008	Simulation of morphological changes in an estuary with the decreasing riverine sediment supply: Jiuduansha shoals, Yangtze estuary, China, 31th International Conference on Coastal Engineering, Hamburg, Germany
Apr 2007	Modelling of storm surge in the coastal waters of Yangtze estuary and Hangzhou bay, China, 9th International Coastal Symposium, Gold Coast, Australia
Sep 2004	Modeling of Typhoon wind-waves around the Yangtze Estuary, China, 29th International Conference on Coastal Engineering, Lisbon, Portugal

Poster presentations

Dec 2017	A numerical study of hydrodynamics and sediment transport in Fourleague Bay, Louisiana, 2017 AGU Fall Meeting, New Orleans, LA
Jun 2016	Modeling eastern oyster growth and production under scenarios of river diversion and sea-level rise, 2016 State of the Coast Conference, New Orleans, LA
Feb 2016	Hurricane-induced sediment transport and morphological change in Jamaica Bay, New York, 2016 AGU Ocean Sciences Meeting, New Orleans, LA
Jun 2012	Simulation of waves and surge in Terrebonne Bay during Tropical Storm Lee, 2012 State of the Coast Conference, New Orleans, LA
Jun 2010	Testing of fully-coupled storm surge and wave models for coastal Louisiana, 2010 State of the Coast Conference, Baton Rouge, LA
Sep 2006	Storm surge computations for the waters of Yangtze Estuary and Hangzhou Bay, China, 30th International Conference on Coastal Engineering, San Diego, CA

Publications

Book chapters & reports

Wang, H., Chen, Q., **Hu, K.**, Snedden, G.A., Hartig, E.K., Couvillion, B.R., Johnson, C.L., Orton, P.M., 2017. Numerical modeling of the effects of Hurricane Sandy and potential future hurricanes on spatial patterns of salt marsh morphology in Jamaica Bay, New York City. *USGS Open-File Report* 2017-1016. https://doi.org/10.3133/ofr20171016.

Tao, J., Benger, W., **Hu, K.**, Mathews, E., Ritter, M., Diener, P., Kaiser, C., Zhao, H., Allen, G., and Chen, Q., 2013. An HPC framework for large scale simulations and visualizations of oil spill trajectories. In: *Coastal Hazards*, Huang, W., Wang, K., and Chen, Q. (ed.), ASCE, ISBN 978-0-7844-1266-4, PP. 13-23, doi: 10.1061/9780784412664.002.

Hu, K., Q. Chen, and P. J. Fitzpatrick, 2012. Assessment of a parametric surface wind model for tropical cyclones in the Gulf of Mexico (http://dx.doi.org/10.5772/51288). In: *Advances in Hurricane Research - Modelling, Meteorology, Preparedness and Impacts*, Hickey, K. (ed.), InTech, ISBN 980-953-307-559-9, doi: 10.5772/51288.

Peer-reviewed journal articles

Liu, K., Chen, Q., **Hu, K.**, Xu, K., Twilley, R.R., 2018. Modeling hurricane-induced wetland-bay and bay-shelf sediment fluxes. *Coastal Engineering* 135, 77-90.

Hu, K., Chen, Q., Wang, H., Hartig, E.K., and Orton, P.M., 2018. Numerical modeling of salt marsh morphological change induced by Hurricane Sandy. *Coastal Engineering* 132, 63-81.

Wang, H., Chen, Q., LaPeyre, M. K., **Hu, K.**, and LaPeyre, J. F., 2017. Predicting the impacts of Mississippi River diversions and sea-level rise on spatial patterns of eastern oyster growth rate and production. *Ecological Modelling* 352, 40-53.

Wang, H., Chen, Q., **Hu, K.,** and LaPeyre, M. K., 2017. A modeling study of the impacts of Mississippi River diversion and sea-level rise on water quality of a deltaic estuary. *Estuaries and Coasts* 40(4), 1028-1054.

Xu, K., Mickey, R.C., Chen, Q., Harris, C.K., Hetland, R.D., **Hu, K.**, Wang, J., 2016. Shelf sediment transport during hurricanes Katrina and Rita. *Computers & Geosciences* 90, 24-39.

Hu, K., Chen, Q., Wang, H., 2015. A numerical study of vegetation impact on reducing storm surge by wetlands in a semi-enclosed estuary. *Coastal Engineering* 95, 66-76.

Hu, K., Chen, Q., and Kimball, K.S., 2012. Consistency in hurricane surface wind forecasting: An improved parametric model, *Natural Hazards* 61, 1029-1050.

Hu, K., and Chen, Q., 2011. Directional spectra of hurricane-generated waves in the Gulf of Mexico. *Geophysical Research Letters*, 38, L19608, doi:10.1029/2011GL049145.

Du, P., Ding, P., and **Hu, K.**, 2010. Simulation of three-dimensional cohesive sediment transport in Hangzhou Bay, China. *Acta Oceanologica Sinica*, 29(2): 98-106.

Hu, K., Ding, P., Wang, Z., and Yang, S., 2009. A 2D/3D hydrodynamic and sediment transport model for the Yangtze Estuary, China. *Journal of Marine Systems* 77, 114-136.

Hu, K., and Ding, P., 2009. The effect of deep waterway constructions on hydrodynamics and salinities in Yangtze estuary, China. *Journal of Coastal Research*, SI 51, 961-965.

Hu, K., and Ding, P., 2007. Numerical study of wave diffraction effect introduced in the SWAN Model. *China Ocean Engineering*, 21(3): 495-506.

Hu, K., Ding, P., Ge, J., and Kong, Y., 2007. Modelling of storm surge in the coastal waters of Yangtze estuary and Hangzhou bay, China. *Journal of Coastal Research*, SI 50, 527-533.

Chen, Q., Gu, H., Zhou, J., Meng, Y., and **Hu, K.**, 2007. Trends of soil organic matter turnover in the salt marsh of the Yangtze River estuary. *Journal of Geographical Sciences*, 17(1): 101-113.

Chen, Q., Zhao, H., **Hu, K.**, and Douglass, S.L., 2005. Prediction of wind waves in a shallow estuary. *Journal of Waterway, Port, Coastal and Ocean Engineering*, 131(4): 137-148.

Hu, K., Ding, P., Zhu, S., and Cao, Z., 2000. 2-D current field numerical simulation integrating Yangtze Estuary with Hangzhou Bay. *China Ocean Engineering*, 14(1): 89-102.

Conference papers (abstracts)

Wang, Q., Chen, J., **Hu, K.**, 2016. Storm surge prediction for Louisiana coast using artificial neural networks. In: Hirose A., Ozawa S., Doya K., Ikeda K., Lee M., Liu D. (eds) *Neural Information Processing*. ICONIP 2016. Lecture Notes in Computer Science, vol 9949. Springer, Cham.

Chen, Q., **Hu, K.**, and Kennedy, A., 2010. Numerical modeling of observed hurricane waves in deep and shallow waters (http://journals.tdl.org/ICCE/article/viewFile/1410/pdf_361). *Proceedings of the 32nd International Conference on Coastal Engineering* (online), ASCE, Shanghai, China.

Fitzpatrick, P., Lau, Y., Chen, J., Chawla, A., Shean, S., **Hu, K.**, Tolman, H.L., Twilley, R.R., Hill, C.M., and Cable, J.E., 2010. An integrated modeling and data analysis approach to understanding Louisiana's wetland resilience to hurricane landfall. *29th Conference on Hurricanes and Tropical Meteorology*, AMS, Tucson, Arizona. (Abstract)

Hu, K., Ding, P., Yang, S., and Kong, Y., 2009. Simulation of morphological changes in an estuary with the decreasing riverine sediment supply: Jiuduansha shoals, Yangtze estuary, China. *Proceedings of the 31th International Conference on Coastal Engineering*, ASCE, Hamburg, Vol. III, 2208-2217.

Hu, K., Ding, P., and Chen, Q., 2005. Modeling of typhoon wind-waves around the Yangtze estuary, China. *Proceedings of the 29th International Conference on Coastal Engineering*, ASCE, Lisbon, Vol. I, 946-958.

Ding, P., **Hu, K.**, and Kong, Y., 2005. Prediction model of storm-induced erosion and deposition in the Yangtze estuary. *Proceedings of the 29th International Conference on Coastal Engineering*, ASCE, Lisbon, Vol. III, 2269-2279.

Ding, P., **Hu, K.**, and Kong, Y., 2004. Numerical modeling of erosion/deposition due to typhoon Jelawat in the North Passage of Yangtze estuary. *Proceedings of Asian and Pacific Coasts, 2004*, Edited by Yoshimi Doda，Wataru Kioka and Kazou Nadaoka, World Scientific Publishing Co. Pte. Ltd., 116-117. (In-depth abstract)

Hu, K., Ding, P., Zhu, S., and Kong, Y., 2003. Numerical simulation of typhoon waves around the waters of the Yangtze estuary —— A case study of Typhoon Rusa and Typhoon Sinlaku. *Proceedings of the International Conference on Estuaries and Coasts*, Hangzhou, China, Zhejiang University Press, Vol. II, 929-936.

Chen, Q., **Hu, K.**, and Douglass, S.L., 2002. A test of the curvilinear SWAN model under unsteady conditions. *AGU Fall Meeting Abstracts*. (Abstract)