

Ke Chen

Postdoctoral Investigator
Department of Physical Oceanography
Woods Hole Oceanographic Institution

kchen@whoi.edu
+1 508.289.2308
www.whoi.edu/people/kchen/

EDUCATION:

- 2011 Ph.D., Physical Oceanography, North Carolina State University
- 2007 M.S., Physical Oceanography, Ocean University of China
- 2004 B.S., Oceanography, Ocean University of China

PROFESSIONAL EXPERIENCE:

- 2014 - Postdoctoral Investigator, Woods Hole Oceanographic Institution
- 2012 - 2014 Postdoctoral Scholar, Woods Hole Oceanographic Institution
- 2011 - 2012 Postdoctoral Research Associate, Department of Marine Earth and Atmospheric Science, North Carolina State University
- 2007 - 2011 Research Assistant, Department of Marine Earth and Atmospheric Science, North Carolina State University

AWARDS AND HONOURS:

- 2016 Award Participant, Ocean Observing Initiative Coastal Observatories Workshop
- 2012 Postdoctoral Scholarship, Woods Hole Oceanographic Institution
- 2010 Williams/Tobias Award, North Carolina State University
- 2004-2006 Present Graduate Scholarship, Ocean University of China
- 2003 Excellent Youth League Member, Ocean University of China
- 2003 Undergraduate Scholarship, Ocean University of China

RESEARCH INTERESTS:

Coastal Ocean Dynamics; Shelf-Slope Processes; Coastal and Large-Scale Connections; Physical-Biological Interactions; Mesoscale Rings/Eddies; Numerical Modeling and Data Assimilation

PUBLICATIONS:

- Chen, K.**, G. Gawarkiewicz, Y.-O. Kwon and W. G. Zhang, 2015: The Role of Atmospheric Forcing versus Ocean Advection during the Extreme Warming on the Northeast U.S. Shelf in 2012. *Journal of Geophysical Research* (highlighted as cover article), doi: 10.1002/2014JC010547.
- Chen K.**, and R. He, 2015: Mean Circulation in the Coastal Ocean off Northeastern North America from a Regional-scale Ocean Model. *Ocean Sciences*, doi: 10.5194/os-11-1-2015.
- Li. Y., R. He, **K. Chen**, D.J. McGillicuddy, 2015: Variational Data Assimilative Modeling of the Gulf of Maine in Spring and Summer 2010. *Journal of Geophysical Research*, doi:10.1002/2014JC010492.
- Chen, K.**, R. He, B. Powell, G. Gawarkiewicz, A. Moore, and H. Arrango, 2014: Data Assimilative

Modeling Investigation on Gulf Stream Warm Ring Interaction with Continental Shelf and Slope. *Journal of Geophysical Research*, doi: 10.1002/2014JC009898.

Chen, K., G. Gawarkiewicz, S. Lentz, and J. Bane, 2014: Diagnosing the Warming of the Northeastern US Coastal Ocean in 2012: A linkage between the atmospheric jet stream variability and ocean response. *Journal of Geophysical Research*, doi: 10.1002/2013JC009393.

He, R., **K. Chen**, K. Fennel, G. Gawarkiewicz, D. McGillicuddy, 2011: Seasonal and Interannual Variability of Physical and Biological Dynamics at the Shelfbreak Front of the Middle Atlantic Bight: Nutrient Supply Mechanisms. *Biogeosciences*, doi:10.5194/bg-8-2935-2011.

Chen, K., and R. He, 2010: Numerical Investigation of the Middle Atlantic Bight Shelfbreak Frontal Circulation Using a High-Resolution Ocean Hindcast Model. *Journal of Physical Oceanography*, doi:10.1175/2009JPO4262.1.

He, R. and **K. Chen**, T. Moore, M. Li, 2010: Mesoscale Variations of Sea Surface Temperature and Ocean Color Patterns at the Mid-Atlantic Bight Shelfbreak, *Geophysical Research Letters*, doi: 10.1029/2010GL042658.

Submitted:

Chen, K., Young-Oh Kwon, and Glen Gawarkiewicz, Interannual Variability of Winter-Spring Temperature in the Middle Atlantic Bight: Relative Contributions of Atmospheric and Oceanic Processes, *Journal of Geophysical Research*, submitted.

AWARDED GRANTS:

Collaborative Research: Physical-Biological Processes of Gulf Stream Warm Core Rings: Vertical Nutrient Delivery and Ecosystem Response, **lead-PI**, with P. Gaube, National Science Foundation (OCE-1558960, \$398,810), 2016-2019.

Physical and Biological Exchange Processes and Lagrangian Pathways between Deep Ocean and Shelf Regions of the Northwestern Atlantic, **co-PI**, with I. Rypina, J. Llopiz and L. Pratt, National Science Foundation (OCE-1558806, \$772,970), 2016-2019.

Interactions between the East China Sea and North Pacific: Interannual-to-decadal Variability, **co-PI**, with Y.-O. Kwon, T. Joyce, B. Gan, and Z. Yao, WHOI-OUC Joint Center (\$182,791), 2016-2017.

Interannual Variability of Winter-Spring Temperature in the Middle Atlantic Bight: Linkages to Large-Scale Atmospheric and Oceanic Changes, **lead-PI**, with Y.-O. Kwon and G. Gawarkiewicz, National Science Foundation (OCE-1435602, \$768,030), 2014-2017.

Impact of extreme Climate Variability on the Circulation and Heat Budget in the Coastal Ocean of Northeast U.S., **lead-PI**, with G. Gawarkiewicz and D. McGillicuddy, Coastal Ocean Institute, Woods Hole Oceanographic Institution, 2014.

Pending:

The Northwestern North Atlantic: a Retrospective Analysis of Observations from the CV Oleander on the Shelf and Slope, **co-PI**, with M. Andres, National Science Foundation, submitted in February 2016.

PARTICIPATION IN RESEARCH PROJECTS:

3-D Model Forecast of the Vertical and Horizontal Distributions of Oil Plumes Arising From the Deep Water Horizon Spill, R. He (PI), National Science Foundation, 2010.

Rapid Environmental Assessment Using an Integrated Coastal Ocean Observation Modeling System, O. Schofield, S. Glenn, J. Wilkin, G. Gawarkiewicz, R. He, D. McGillicuddy, K. Fennel and M. Moline (co-PIs), Office of Naval Research, 2006-2011.

CONFERENCE PRESENTATIONS AND INVITED TALKS:

Chen, K., G. Gawarkiewicz, S. Lentz, J. Bane, Y. -O. Kwon, and W. G. Zhang, Heat Balance in the Northwest Atlantic Coastal Ocean: the Role of Atmospheric Forcing versus Ocean Advection during an Extreme Warming, Ocean Sciences Meeting, New Orleans, LA, 2016 (**invited author** to the session "Coastal Seas and Deep Ocean Connections: Observing and Modeling for Process and Climate Studies").

Chen, K., Recent Extreme Temperature Variability in the Middle Atlantic Bight, Middle Atlantic Bight Physical Oceanography and Meteorology Meeting, Cape May, NJ, 2015.

Chen, K., G. Gawarkiewicz, Y.-O. Kwon, and G. W. Zhang, Heat balance in the Northeast U.S. coastal ocean: the role of atmospheric forcing versus ocean advection during an extreme case in 2012, Gordon Research Conference, Biddeford, ME, 2015.

Chen, K., Shelfbreak Biophysical Interactions and Recent Extreme Climate Variability in the Middle Atlantic Bight, University of Delaware, Newark, 2015 (**invited talk**).

Chen, K., Shelfbreak Circulation in the Middle Atlantic Bight and Its Interaction with the Gulf Stream Warm Core Ring, University of Miami & Atlantic Oceanographic and Meteorological Laboratory, Miami, 2015 (**invited talk**).

Chen, K., G. Gawarkiewicz, S. Lentz, J. Bane, Diagnosing the Warming of the Northeastern U.S. Coastal Ocean in 2012: Integrated Data Analysis and Numerical Modeling, Ocean Sciences Meeting, Honolulu, HI, 2014.

Chen, K., Middle Atlantic Bight Shelfbreak Circulation Dynamics and Biophysical Interactions, Graduate School of Oceanography/University of Rhode Island, Narragansett, RI, 2013 (**invited talk**).

Chen, K., G. Gawarkiewicz, S. Lentz, J. Bane, Diagnosing the warming in the Northeast US coastal ocean in 2012: Atmospheric forcing or ocean advection?, MABPOM meeting, Narragansett, RI, 2013.

Chen, K., G. Gawarkiewicz, S. Lentz, J. Bane, Diagnosing the warming in the Northeast US coastal ocean in 2012: Atmospheric forcing or ocean advection?, RARGOM meeting, Portsmouth, NH, 2013.

Chen, K., G. Gawarkiewicz, S. Lentz, J. Bane, Diagnosing the warming in the Northeast US coastal ocean in 2012: A linkage between remote atmospheric forcing and local response, Gordon Research Conference, Biddeford, ME, 2013.

Chen, K., Numerical investigation of the Middle Atlantic Bight shelfbreak frontal circulation and its interaction with a Warm Core Ring, School for Marine Science and Technology, University of Massachusetts Dartmouth, New Bedford, MA, 2013 (**invited talk**).

Chen, K., Numerical investigation of the Middle Atlantic Bight shelfbreak frontal circulation and its interaction with a Warm Core Ring, PO/WHOI department seminar, Woods Hole, MA, 2013.

Chen, K., and R. He, Data-Assimilative Modeling Investigation of Gulf Stream Warm-Core Ring Interaction with the Mid-Atlantic Bight Continental Shelf and Slope, Ocean Science Meeting, Salt Lake City, UT, 2012.

Chen, K., Middle Atlantic Bight Shelfbreak Circulation Dynamics and Biophysical Interactions, AOPe/WHOI department seminar, Woods Hole, MA, 2012.

Chen, K., R. He, B. Powell, A. Moore, Data-Assimilative Modeling Investigation of Gulf Stream Warm-Core Ring Interaction with the Mid-Atlantic Bight Continental Shelf and Slope, Gordon Research Conference, South Hadley, MA, 2011.

Chen, K., Numerical Investigation of the Middle Atlantic Bight Shelfbreak Frontal Circulation, Marine Earth and Atmospheric Science department seminar, North Carolina State University, Raleigh, NC, 2010.

Chen, K., R. He, K. Fennel, Numerical Investigation of the Middle Atlantic Bight Shelfbreak Circulation and Ecosystem Dynamics, Ocean Science Meeting, Portland, OR, 2009.

Chen, K. and R. He, Investigation of MAB Shelfbreak Circulation and Biophysical Interactions, Mid-Atlantic Bight Physical Oceanography Meteorology & Southeast Coastal Oceanography and Meteorology Conference, Raleigh, NC, 2009.

Chen, K. and R. He, Investigation of Northeastern North America Coastal Circulation Using a Nested Regional Circulation Hindcast Model, AGU Fall Meeting, San Francisco, CA, 2008.

Chen, K. and R. He, High Resolution, Coupled biophysical Modeling Experiments for the MAB Shelfbreak: 2006 Hindcast, MABPOM Meeting, Woods Hole, MA, 2008.

PROFESSIONAL WORKSHOPS:

- Jan 2016 NSF Ocean Observing Initiative (OOI) Coastal Observatories Workshop, Arlington, VA
- Aug 2014 Coupled Ocean-Atmosphere-Wave-Sediment Transport (COAWST) Modeling System Workshop, Woods Hole, MA
- Jan 2013 Cooperative Institute for the North Atlantic Region (CINAR) Shelfbreak Ecosystem Workshop, Providence, RI
- Mar 2011 NSF Ocean Observing Initiative (OOI) Pioneer Array Science Workshop, Providence, RI
- Jul 2010 Gulf of Mexico Pilot Prediction Project Meeting, Jet Propulsion Laboratory, Pasadena, CA
- Jul 2010 Workshop on the ROMS 4-Dimensional Variational (4D-Var) Data Assimilation Systems for Advanced ROMS Users, Santa Cruz, CA

FIELDWORK AND LAB EXPERIENCE:

- Mar 2012 NCSU Slocum glider deployment/recovery, R/V Explorer, Savannah, GA
- Mar 2012 NCSU Slocum glider deployment/recovery, R/V Seahawk, Wilmington, NC
- Aug 2011 NCSU Slocum glider ballasting and deployment, Wilmington, NC
- Mar 2008 Physical and biogeochemical survey, Sargasso Sea, R/V Cape Hatteras

- Jun-Jul 2006 Comprehensive oceanic survey, East China Sea, R/V Dongfanghong
- Apr 2006 Geophysical Fluid Dynamics experiment “Simulation of Quasi-Geostrophic Rossby Waves” in Key Laboratory of Physical Oceanography, Ocean University of China
- Jun 2005 Geophysical Fluid Dynamics experiment “Simulation of Internal Waves in a Two-Layer Stratified Fluid”, in Key Laboratory of Physical Oceanography, Ocean University of China
- May 2005 SC cross-section survey, Yellow Sea

TEACHING EXPERIENCE:

Teaching Assistant/Lecturer, NCSU, MEA 744: Dynamics of Shelf Circulation. Taught lectures and coordinated homework assignment. Fall 2012.

Co-lecturer, NCSU, MEA 611: Special Topics – Coastal Ocean Modeling. Served as lecturer and led tutorial sessions. Spring 2010.

Co-lecturer, NCSU, MEA 811: Special Topics – Coastal Circulation Dynamics. Served as lecturer and led group discussions. Fall 2009.

Mentor/Co-advisor, NCSU: Advised and oversaw junior group members/graduate students in Ocean Observing and Modeling Group. 2009-2012.

Mentor/Co-advisor, WHOI: co-advised summer student E. McCorkle (University of Washington, 2015, G. Gawarkiewicz primary).

SERVICE:

Professional:

Proposal reviewer: National Science Foundation, National Oceanic and Atmospheric Administration

Journal reviewer/referee: Advances in Meteorology, Applied Mathematical Modeling, Biogeosciences, Continental Shelf Research, Estuarine Coastal and Shelf Science, Geophysical Research Letters, Journal of Atmospheric and Oceanic Technology, Journal of Geophysical Research, Journal of Physical Oceanography, Ocean Modeling

Book reviewer: Monitoring and Modeling the Deepwater Horizon Oil Spill: A Record-Breaking Enterprise, Geophysical Monograph Series, AGU/geopress, Washington, D.C.

Others:

- 2014 Volunteer, Geophysical Fluid Dynamics Laboratory Open Days, Woods Hole Oceanographic Institution
- 2013 Public Presentation, South Shore Science Center, MA
- 2011 Graduate Student Recruitment Service, North Carolina State University
- 2010 Volunteer and Organizer, Fundraising for Yushu earthquake, North Carolina State University
- 2009 Conference Volunteer, Mid-Atlantic Bight Physical Oceanography Meteorology (MABPOM) & Southeast Coastal Oceanography and Meteorology (SECOM) Conference, Raleigh, NC

PROFESSIONAL AFFILIATIONS:

American Geophysical Union

American Meteorological Society

Association for the Sciences of Limnology and Oceanography

American Association for the Advancement of Science