

Curriculum Vitae

Z. A. Wang

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Zhaohui 'Aleck' Wang, PhD

Associate Scientist (tenured)
Department of Marine Chemistry & Geochemistry
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Education

- 1998-2003 Ph.D., Marine Science, University of Georgia, Athens, GA.
Advisor, Professor Weijun Cai.
- 1996-1998 M.Sc., Oceanography, University of New Hampshire, Durham, NH.
Advisor, Professor Theodore Loder.
- 1990-1994 Marine Chemistry, Xiamen University, Xiamen, China.

Professional Experience

2018-Present	Associate Scientist (tenured)	Woods Hole Oceanographic Institution
2013-Present	Associate Scientist (not-tenured)	Woods Hole Oceanographic Institution
2009-2013	Assistant Scientist	Woods Hole Oceanographic Institution
2003-2009	Postdoc Research Associate	University of South Florida (Mentor, Professor Robert Byrne)
1994-1996	Project Manager	State Oceanic Administration of China

Selected Awards

- 2003: Dissertations Symposium on Chemical Oceanography (DISCO XVIII) Invited Participant
- 2003: Dissertation Completion Assistantships, University of Georgia
- 2002: Student Travel Grant Award, American Geophysical Union
- 1996-1998: Departmental Tuition Scholarship, Department of Earth Science, University of New Hampshire.

Professional Affiliations

- Member, American Geophysical Union
Member, Association for the Sciences of Limnology and Oceanography
Member, American Chemical Society
Member, Geochemical Society

Research Interests

Aquatic/marine chemistry and biogeochemistry: CO₂ system (carbonate chemistry); Effects of ocean acidification on marine chemistry, biology and ecology; Carbon transformation and exchange at biogeochemical interfaces (e.g., water-air and land-ocean); Carbon exports

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from coastal wetlands; Blue carbon; Riverine inorganic carbon/CO₂ fluxes and biogeochemistry

Sensing technologies: Development of new methodology and in-situ sensors for measurements of the aquatic CO₂ system (pH, $p\text{CO}_2/f\text{CO}_2$, dissolved inorganic carbon, and total alkalinity), nutrients, and trace metals

Professional Activities and Service

WHOI:

Chair, WHOI Sensor Workshop. 2017.

Lead author, WHOI Research Theme White Paper: Sensors. 2016.

Mentor committee member: Dr. David Paul Nicholson, 2016-present

Outside WHOI:

Committee member of OCB Workshop 'Lateral Carbon Fluxes in Tidal Wetlands.' Aug 21-23, 2018. Woods Hole, MA.

Session chair. Changing Ocean Biogeochemistry in a High CO₂ World: Observations across Time and Space. 2018 Ocean Sciences Meeting. Portland, OR. February 11-16, 2018.

Session co-chair. Advancing Ocean Biogeochemistry with in Situ Technologies and Observation Networks. 2018 Ocean Sciences Meeting. Portland, OR. February 11-16, 2018.

Co-chair, Plenary Session: Carbon fluxes in coastal wetlands: What is state-of-the-art? Ocean Carbon Biogeochemistry program Summer Workshop. June 26-29, 2017. Woods Hole, MA.

Committee Member of the 4th Ocean Acidification PI Workshop Organizing Committee, 2017-2018.

2nd State of the Carbon Cycle Report (SOCCR-2) contributing writer, 2016-2018

NSF Graduate Research Fellowship Program review panelist, 2016

Member of Editorial Committee, Acta Oceanologica Sinica (Journal), China, 2016-present

Northeast Coastal Acidification Network (NECAN) Scientific Committee member. 2015-present

WHOI representative for the Northeastern Regional Association of Coastal Ocean Observing Systems (NERACOOS) Board, 2012-present.

Session co-chair. Coastal Wetlands as an Important Interface between Land, Sea, and Atmosphere: Capturing Temporal and Spatial Variability in Chemical Fluxes. 2016 Ocean Sciences Meeting. New Orleans, LA. February 21-26, 2016.

Session co-chair. Recent Advances in In Situ Biogeochemical Instrumentation, Sensors, and Observatory Science. 2016 Ocean Sciences Meeting. New Orleans, LA. February 21-26, 2016.

Session chair. Carbon Cycling and Fluxes in Coastal Vegetated Wetlands. 2014 Joint Aquatic Sciences Meeting. Portland, OR. May 18-23, 2014.

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Session co-chair. The Carbonate System Chemistry of Coastal Ecosystems: Physical, Chemical and Biological Drivers. 2013 AGU Fall Meeting. San Francisco, CA. Dec. 09-13, 2013.

Panelist for the Northeast Coastal Acidification Network (NECAN), 2013-2014

Group leader: East Coast CO₂ flux group, U.S. East Coast Carbon Cycle Synthesis Workshop, Ocean Carbon Biogeochemistry (OCB) and North America Carbon Program (NACP). January 19-20, 2012.

Member for Ocean Observatories Initiative instrument selection board, Consortium for Ocean Leadership, 2011

Journal reviewer: Environmental Science and Technology; The ISME Journal; Marine Chemistry; Limnology and Oceanography; Limnology and Oceanography: Methods; Deep Sea Research; Proceedings of the Royal Society B (Biological Sciences); Continental Shelf Research; Biogeosciences; Aquatic Geochemistry; Journal of Marine Systems; Nature Scientific Reports; Journal of Geophysical Research; Methods in Oceanography

Proposal reviewer: NSF, DOE, NOAA

Participation in Education

Teaching

Invited lecturer, Seawater chemistry and ocean acidification, Sixth Intergovernmental Oceanographic Commission (IOC) Sub-Commission for the Western Pacific (WESTPAC) Summer School on Monsoon Onset Monitoring and its Social & Ecosystem Impacts (MOMSEI), Oct 2015. Phuket, Thailand.

Invited lecturer, Carbonate chemistry in natural waters (lecture for graduate students), College of Chemistry and Chemical Engineering Ocean University of China, Qingdao, China. 2011-2017

Invited lecturer, Training course on Basic Oceanography organized by IOC Sub-Commission for the Western Pacific (WESTPAC), Phuket Marine Biological Center (PMBC), Phuket, Thailand. May 2015.

Instructor, Ocean Acidification Short Course (Ocean Carbon Biogeochemistry program sponsored), Woods Hole, MA. November 2009.

Teaching Assistant, General Oceanography Lab (MARS1010L), Department of Marine Sciences, University of Georgia, Athens, GA. 1998-2000.

Teaching Assistant, Marine Biology Lab (MARS1020L), Department of Marine Sciences, University of Georgia, Athens, GA. 1998-2000.

Advising and Mentoring

WHOI Summer Student Fellowship Selection Committee, 2016-present

WHOI Postdoctoral Scholar (WHOI fellowship): Dr. Kristina Brown, 2014-2017 and Dr. Adam Subhas, 2017-present

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Postdoc Investigator: Dr. Eyal Wurgaft, 2017-present

MIT-WHOI Joint Program Student:

Mallory Ringham, MIT-WHOI Joint Program student, 2016-present

Sophie Chu, MIT-WHOI Joint Program student, 2011-2017

Visiting PhD student

Shuzhen Song, East China Normal University, 2016-present

Haorui Liang, Ocean University of China, 2017-present

PhD dissertation committee member, Elliott Roberts, Xiamen University, 2014-present

WHOI Summer Student Fellow:

Maxwell Furigay, Trinity College, 2018

Stacey Felgate, University of the Highlands and Islands, 2016

Lloyd Anderson, Bowdoin College, 2015

Alterra Sanchez, San Diego State University, 2013

Jacinta Edebeli, University of Massachusetts Amherst, 2011

Undergraduate Intern Students:

Mackenzie Fiss, North Carolina State University, 2018

Katie Carter, Bowdoin College, 2015

Dmitro Martynowych, Scranton University, 2014

Lenna Quackenbush, Worcester Polytechnic Institute, 2013

Yue Qiu, Oberlin College, 2013

Yujuan Zhou, Ocean University of China, 2012-2013

Robert "Nick" Tuttle, Drexel University, 2012

Kelly Knorr, University of Rhode Island, 2012

Mohammad M. Uddin, University of New Hampshire, 2011

Cris Luttazi, Kingston University, 2010, 2011

Charles Zhu, Yale University, 2010

High School Intern Student:

Juliette Parmenter, Meridian Academy, 2014

Lab Personnel:

Katherine Hoering, Research Associate II, 2010-2016

Zoe Sandwith, Research Assistant III, 2015-2018

Kate Morkeski, Research Assistant III, 2016-present

Visiting Scholars

Dr. Quanlong Li, Xiamen University, China. 2011-2012

Dr. Minhan Dai, Xiamen University, China, 2014, 2015

Dr. Peisong Yu, The Second Institute of Oceanography, State Oceanic Administration of China. 2014 – 2015 and 2016 – 2017

Dr. Chunlin Ning, The First Institute of Oceanography, State Oceanic Administration of China. 2014 – 2015.

Dr. Enrique García Luque, Department of Physical Chemistry, University of Cadiz, Spain. 2016.

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Mr. Yabin Men, Chief Senior Engineer, National Ocean Technology Center, State Oceanic Administration of China. 2016-2017.

Dr. Xuwei Xu, The Second Institute of Oceanography, State Oceanic Administration of China. 2017.

Dr. Boaz Lazar, the Fredy and Nadine Hermann Institute of Earth Sciences, the Hebrew University, Israel. 2017.

Patents

Wang, Z. A. and F. N. Sonnichsen. System and Method to Measure Dissolved Gases in Liquid. 2018. US Patent No: 10,067,111.

Papers in Refereed Journals

(* Advised students, postdocs, visiting scholars; # Corresponding author)

32. Fennel, K., Alin, S., Barbero, L., Evans, W., Bourgeois, T., Cooley, S., Dunne, J., Feely, R. A., Hernandez-Ayon, J. M., Hu, X., Lohrenz, S., Muller-Karger, F., Najjar, R., Robbins, L., Shadwick, E., Siedlecki, S., Steiner, N., Sutton, A., Turk, D., Vlahos, P., and Wang, Z. A.: Carbon cycling in the North American coastal ocean: A synthesis, *Biogeosciences Discuss.*, <https://doi.org/10.5194/bg-2018-420>, in review, 2018.
31. Yu, P.*, **Z. A. Wang**#, M. Zheng, J. Pan, Y. Bai, and C. Liang. Effects of typhoons on surface seawater $p\text{CO}_2$ and sea-air CO_2 fluxes in the northern South China Sea. *Journal of Geophysical Research-Oceans (in revision)*.
Contribution: I supervised Dr. Yu, a visiting scholar in my lab. I co-led the paper and wrote a significant part of it.
30. Chu, S. N.*, **Z. A. Wang**#, K. D. Kroeger, M. E. Gonneea, and N. K. Ganju. 2018. Deciphering the dynamics of inorganic carbon export from intertidal salt marshes using high-frequency measurements. *Marine Chemistry*. <https://doi.org/10.1016/j.marchem.2018.08.005>.
Contribution: This is one chapter of my PhD student Chu's dissertation. I am the corresponding author. I led and funded the project, and co-wrote the paper.
29. Liu, Q., Y. Wu, L. Liao, D. Zhang, Y. Yuan, **Z.A. Wang**#, X. Xu#. 2018. Shift of bacterial community structures in sediments from the Changjiang (Yangtze River) estuary to the East China Sea linked to environmental gradients. *Geomicrobiology Journal (in press)*.
28. Najjar, R.G, M. Herrmann, R. Alexander, E. W. Boyer, D. Burdige, D. Butman, W.-J. Cai, E. A. Canuel, R. F. Chen, M. A. M. Friedrichs, R. A. Feagin, P. Griffith, A. L. Hinson, J. R. Holmquist, X. Hu, W. M. Kemp, K. D. Kroeger, A. Mannino, S. L. McCallister, W. R. McGillis, M. R. Mulholland, C. Pilskaln, J. Salisbury, S. Signorini, P. St-Laurent, H. Tian, M. Tzortziou, P. Vlahos, **Z. A. Wang**, and R. C. Zimmerman. 2018. Carbon budget of tidal wetlands, estuaries, and shelf waters of eastern North America. *Global Biogeochemical Cycles*, 32. <https://doi.org/10.1002/2017GB005790>.
27. Fassbender, A.J. et al. 2017. Perspectives on Chemical Oceanography in the 21st century: Participants of the COME ABOARD Meeting examine aspects of the field in the context of 40 years of DISCO. *Marine Chemistry*, 196: 181-190.
<http://dx.doi.org/10.1016/j.marchem.2017.09.002>

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26. Bergan, A. J., G. L. Lawson, A. E. Maas, and **Z. A. Wang**. 2017. The effect of elevated carbon dioxide on the sinking and swimming of the shelled pteropod *Limacina retroversa*. ICES Journal of Marine Science. doi:10.1093/icesjms/fsx008.
Contribution: I led carbonate chemistry analysis and helped to write the chemistry part of the paper.
25. **Wang, Z. A.**, G. L. Lawson, C. H. Pilskaln, and A. E. Maas. 2017. Seasonal controls of aragonite saturation states in the Gulf of Maine. Journal of Geophysical Research: Oceans 122. doi: 10.1002/2016jc012373.
24. Maas, A. E., G. L. Lawson, and **Z. A. Wang**. 2016. The metabolic response of thecosome pteropods from the North Atlantic and North Pacific oceans to high CO₂ and low O₂. Biogeosciences 13 (22): 6191-6210. doi: 10.5194/bg-13-6191-2016.
Contribution: Co-PI of the project; led carbonate chemistry analysis and wrote part of the paper.
23. Chu, S. N.*, **Z. A. Wang**, S. C. Doney, G. L. Lawson, and K. A. Hoering. 2016. Changes in anthropogenic carbon storage in the Northeast Pacific in the last decade, Journal of Geophysical Research: Oceans, 121(7): 4618-4632, doi: 10.1002/2016jc011775.
Contribution: This is one chapter of my PhD student Chu's dissertation. I am the corresponding author. I led and funded the project, and co-wrote the paper.
22. **Wang, Z. A.**, K. D. Kroeger, N. K. Ganju, M. E. Gonneea, and S. N. Chu. 2016. Intertidal salt marshes as an important source of inorganic carbon to the coastal ocean. Limnol. Oceanogr. 61: 1916-1931. doi: 10.1002/lno.10347.
21. **Wang, Z. A.**, F. N. Sonnichsen, A. M. Bradley, K. A. Hoering, T. M. Lanagan, S. N. Chu, T. R. Hammar, and R. Camilli. 2015. In situ sensor technology for simultaneous spectrophotometric measurements of seawater total dissolved inorganic carbon and pH. Environ. Sci. Technol. 49: 4441-4449. doi: 10.1021/es504893n
20. Gledhill, D. K., M. M. White, J. Salisbury, H. Thomas, I. Mlsna, M. Liebman, B. Mook, J. Gear, A. C. Candelmo, R. C. Chambers, C. J. Gobler, C. W. Hunt, A. L. King, N. N. Price, S. R. Signorini, E. Standoff, C. Stymiest, R. A. Wahle, J. D. Waller, N. D. Rebeck, **Z. A. Wang**, T. L. Capson, J. R. Morrison, S. R. Cooley, and S. C. Doney. 2015. Ocean and Coastal Acidification off New England and Nova Scotia. Oceanography 28: 182-197.
Contribution: Helped to write Introduction and the regional carbonate chemistry part.
19. McGillis, W. R., D. Y. Hsueh, Y. Zheng, M. Markowitz, R. Gibson, G. Bolduc, F. J. Fevrin, J. E. Thys, W. Noel, J. Paine, **Z. A. Wang**, K. Hoering, R. Hakimdavar, and P. J. Culligan. 2015. Carbon transport in rivers of southwest Haiti. Appl. Geochem. 63: 563-572. doi: 10.1016/j.apgeochem.2015.09.004.
Contribution: Led carbonate chemistry analysis and data synthesis; contributed to writing the paper.
18. Mann, P. J., R. G. M. Spencer, B. J. Dinga, J. R. Poulsen, P. J. Hernes, G. Fiske, M. E. Salter, **Z. A. Wang**, K. A. Hoering, J. Six, and R. M. Holmes. 2014. The biogeochemistry of carbon across a gradient of streams and rivers within the Congo Basin. J. Geophys. Res. – Biogeosciences. 119: 687-702. doi:10.1002/2013JG002442.

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Contribution: Led carbonate chemistry analysis and data synthesis; contributed to writing the paper.

17. Voss, B. M., B. Peucker-Ehrenbrink, T. I. Eglington, G. Fiske, **Z. A. Wang**, K. A. Hoering, D. B. Montluçon, C. Lecroy, S. Pal, S. Marsh, S. L. Gillies, A. Janmaat, M. Bennett, B. Downey, J. Fanslau, H. Fraser, G. Macklam-Harron, M. Martinec, and B. Wiebe. 2014. Tracing river chemistry in space and time: Dissolved inorganic constituents of the Fraser River, Canada. *Geochimica et Cosmochimica Acta*, 124: 283–308. doi: 10.1016/j.gca.2013.09.006.
Contribution: Led carbonate chemistry analysis and data synthesis; contributed to writing the paper.
16. Signorini, S. R., A. Mannino, R. G. Najjar, M. a. M. Friedrichs, W. J. Cai, J. Salisbury, **Z. A. Wang**, H. Thomas, and E. Shadwick. 2013. Surface ocean $p\text{CO}_2$ seasonality and sea-air CO_2 flux estimates for the North American east coast. *J. Geophys. Res. – Oceans* 118: 1–22. doi:10.1002/jgrc.20369.
Contribution: This is an OCB synthesis activity; Co-led the CO_2 flux group for data mining and synthesis; Contributed to writing the paper.
15. Li, Q.*, Wang, F., **Wang, Z. A.**, Yuan, D., Dai, M., Chen, J., Dai, J., and Hoering, K. A. 2013. Automated spectrophotometric analyzer for rapid single-point titration of seawater total alkalinity. *Environ. Sci. Technol.* 47: 11139-11146. doi: 10.1021/es402421a.
Contribution: Li was my visiting scholar; I supervised and partially funded the project; I wrote a significant part of the paper.
14. **Wang, Z. A.**, Chu, S. N. and Hoering, H. A. 2013c. High-frequency spectrophotometric measurements of total dissolved inorganic carbon in seawater. *Environ. Sci. Technol.* 47: 7840-7847. doi: DOI: 10.1021/es400567k.
13. **Wang, Z. A.**, D. J. Bienvenu, P. J. Mann, H.A. Hoering, J. R. Poulsen, R. G. M. Spencer, and R. M. Holmes. 2013b. Inorganic carbon speciation and fluxes in the Congo River. *Geophys. Res. Lett.* 40: 511-516. doi: 10.1002/grl.50160.
12. **Wang, Z. A.**, R. Wanninkhof, W. J. Cai, R. H. Byrne, X. P. Hu, T. H. Peng, and W. J. Huang. 2013a. The marine inorganic carbon system along the Gulf of Mexico and Atlantic coasts of the United States: Insights from a transregional coastal carbon study. *Limnol. Oceanogr.* 58: 325-342. doi: 10.4319/lo.2013.58.1.0325.
11. **Wang, Z.A.** and Byrne, R.H. 2010. Summer-time CO_2 fluxes and carbonate system behavior in the Mississippi River and Orinoco River Plumes in *Proceedings of OceanObs'09: Sustained Ocean Observations and Information for Society (Annex)*, Venice, Italy, 21-25 September 2009, Hall, J., Harrison, D.E. & Stammer, D., Eds., ESA Publication WPP-306, doi:10.5270/OceanObs09.
10. **Wang, Z. A.**, X. W. Liu, R. H. Byrne, R. Wanninkhof, R. E. Bernstein, E. A. Kaltenbacher, and J. Patten. 2007. Simultaneous spectrophotometric flow-through measurements of pH, carbon dioxide fugacity, and total inorganic carbon in seawater. *Anal. Chim. Acta* 596: 23-36. doi: 10.1016/j.aca.2007.05.048.

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9. John, D. E., **Z. A. Wang**, X. W. Liu, R. H. Byrne, J. E. Corredor, J. M. Lopez, A. Cabrera, D. A. Bronk, F. R. Tabita, and J. H. Paul. 2007. Phytoplankton carbon fixation gene (RuBisCO) transcripts and air-sea CO₂ flux in the Mississippi River plume. *ISME J.* 1: 517-531. doi: 10.1038/ismej.2007.70.
Contribution: Led sampling and analysis of carbonate chemistry; Led interpretation of carbon data and wrote the chemistry part of the paper.
8. Liu, X. W., **Z. A. Wang**, R. H. Byrne, E. A. Kaltenbacher, and R. E. Bernstein. 2006. Spectrophotometric measurements of pH in-situ: Laboratory and field evaluations of instrumental performance. *Environ. Sci. Technol.* 40: 5036-5044. doi: 10.1021/es0601843.
Contribution: Led field-testing of the in-situ sensor; wrote a significant part of the paper.
7. **Wang, Z. A.**, W. J. Cai, Y. C. Wang, and H. W. Ji. 2005. The southeastern continental shelf of the United States as an atmospheric CO₂ source and an exporter of inorganic carbon to the ocean. *Cont. Shelf Res.* 25: 1917-1941.
6. Zhai, W. D., M. H. Dai, W. J. Cai, Y. C. Wang, and **Z. A. Wang**. 2005. High partial pressure of CO₂ and its maintaining mechanism in a subtropical estuary: the Pearl River estuary, China. *Mar. Chem.* 93: 21-32.
Contribution: Conducted sampling and analysis of all CO₂ parameters; helped interpret the carbon data and contributed to writing the paper.
5. **Wang, Z. A.**, and W. J. Cai. 2004. Carbon dioxide degassing and inorganic carbon export from a marsh-dominated estuary (the Duplin River): A marsh CO₂ pump. *Limnol. Oceanogr.* 49: 341-354.
4. Cai, W. J., M. H. Dai, Y. C. Wang, W. D. Zhai, T. Huang, S. T. Chen, F. Zhang, Z. Z. Chen, and **Z. A. Wang**. 2004. The biogeochemistry of inorganic carbon and nutrients in the Pearl River estuary and the adjacent Northern South China Sea. *Cont. Shelf Res.* 24: 1301-1319.
Contribution: Conducted sampling and analysis of CO₂ parameters; helped interpret the carbon data and contributed to writing the paper.
3. Cai, W. J., **Z. A. Wang**, and Y. C. Wang. 2003. The role of marsh-dominated heterotrophic continental margins in transport of CO₂ between the atmosphere, the land-sea interface and the ocean. *Geophys. Res. Lett.* 30(16), 1849. doi: 10.1029/2003GL017633.
Contribution: Conducted sampling and analysis of all CO₂ parameters; helped synthesize and interpret the carbon data and contributed to writing the paper.
2. **Wang, Z. A.**, W. J. Cai, Y. C. Wang, and B. L. Upchurch. 2003. A long pathlength liquid-core waveguide sensor for real-time pCO₂ measurements at sea. *Mar. Chem.* 84: 73-84.
1. **Wang, Z. A.**, Y. H. Wang, W. J. Cai, and S. Y. Liu. 2002. A long pathlength spectrophotometric pCO₂ sensor using a gas-permeable liquid-core waveguide. *Talanta* 57: 69-80.

Other Publications

- i. Contributing author. 2nd State of the Carbon Cycle Report (SOCCR-2) 2018. Chapter 15: Tidal Wetlands and Estuaries.

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- ii. Contributing author. 2nd State of the Carbon Cycle Report (SOCCR-2) 2018. Chapter 16: Oceans and Continental Shelves.
- iii. **Wang, Z. A.**, Cahill, B., Cai, W.-J., Fennel, K., Friedrichs, M., McGillis, W., Salisbury, J., Schaaf, C., and S. Signorini, S. 2012. Air-sea exchange. In: Najjar, R.G., Friedrichs, M., Cai, W.-J. (Editors), Report of the U.S. East Coast Carbon Cycle Synthesis Workshop, January 19-20, 2012, Ocean Carbon and Biogeochemistry Program and North American Carbon Program, pp. 11-12.
- iv. **Wang, Z. A.** Biogeochemical changes of chemical signals in the Georgia “land-to-ocean continuum”. 2003. University of Georgia, Athens, GA. Ph.D. Thesis. doi: 10.13140/RG.2.1.1131.4809.
- v. **Wang, Z. A.** The annual and seasonal variations of nitrogen in Massachusetts Bay. 1998. University of New Hampshire, Durham, NH. M.S. Thesis.

Invited Lectures

- Advancing coastal carbon science with in-situ sensors: the role of tidal marshes in the coastal carbon cycle. June 2018. Second Institute of Oceanography, State Oceanic Administration of China, Hangzhou, China.
- The role of tidal salt marshes in the coastal carbon cycle. June 2018. Ocean University of China, Qingdao, China.
- Advancing ocean carbon and acidification research with in-situ sensing technologies. June 2018. First Institute of Oceanography, State Oceanic Administration of China, Qingdao, China.
- Carbonate Chemistry in Northeastern U.S. Shelf Waters: Sensitivity, Control and Linkage to Pteropods. Workshop: Coastal ocean acidification in the North Atlantic region, from science to outreach, A Sea Grant - NART regional integration project. UConn Avery Point, Groton, CT. April 10-12, 2018.
- Resolving the Intricacies of Lateral Exports of Inorganic Carbon and Alkalinity from Coastal Salt Marshes. February 2018. Scripps Institute of Oceanography, La Jolla, CA.
- How much did we miss? – Intertidal Salt Marshes as an Important Source of Inorganic Carbon to the Coastal Ocean. August 2016. College of Environmental Science & Engineering, Ocean University of China. Qingdao, China.
- The Marine CO₂ system and Ocean Acidification. Sixth IOC Sub-Commission for the Western Pacific (WESTPAC) Summer School on Monsoon Onset Monitoring and its Social & Ecosystem Impacts (MOMSEI). October 26-30, 2015. Phuket, Thailand.
- Simultaneous, in-situ measurements of seawater carbon dioxide system parameters – The development and potential application. The 3rd Ocean Acidification PI Workshop. June 2015. Woods Hole, MA.
- Carbonate Chemistry in Seawater and Its Role in Climate Change. May 2015. Phuket Marine Biological Center (PMBC), Thailand.

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The U.S. Northeast Coast: A Coastal Ocean Acidification Sensitive Region. Workshop “Latitude 41 under Siege: Impact of Nutrient Pollution & OA on Coastal Waters, Estuaries and Marine Life”. February 12, 2015. University of Connecticut Avery Point, CT.

The Paradox of Salt Marshes as a Source of Alkalinity and Low pH, High Carbon Dioxide Water to the Ocean. The 2nd Xiamen Symposium on Marine Environmental Sciences. January 07 – 09, 2015. Xiamen, China.

High-frequency spectrophotometric measurements of seawater CO₂ system parameters – The need, development, and potential application. The 2nd Seafloor Observation Symposium of China. November 08 – 10, 2014. Xiamen, China.

Thousands of Miles of Carbonate Chemistry. September 2014. Ocean University of China, Qingdao, China.

The marine CO₂ system in the Northeast Coast of the United States: Ocean Acidification and Controlling Processes. April 2014. University of Massachusetts Boston. Boston, MA.

Ocean Acidification of the Shelf Waters of NECAN: The marine inorganic carbon system along the Atlantic and Gulf of Mexico coasts of the United States. November 2013. Northeastern Regional Association of Coastal and Ocean Observing Systems (NARACOOS) Webinar Series.

Towards a Better Understanding of Changes and Drivers of the CO₂ System in Aquatic Environments. June 2013. College of Chemistry and Chemical Engineering, Ocean University of China. Qingdao, China.

Real-time Measurements of the Marine CO₂ System. June 2013. Shandong Institute of Marine Instruments. Qingdao, China.

The Marine Inorganic Carbon System along the Gulf of Mexico and Atlantic Coasts of the United States. December 2011. School of Marine Science, University of Maine. Orono, ME.

Coastal CO₂ System: From Sensor Development to Observational Studies. December 2010. The Second Institute of Oceanography, State Oceanic Administration of China. Hangzhou, China.

Distributions of the CO₂ System along the US Atlantic and Gulf of Mexico Coast. December, 2010. State Key Laboratory of Estuarine and Coastal Research, East China Normal University. Shanghai, China.

Inorganic carbon fluxes in rivers and coastal oceans. December, 2010. College of Chemistry and Chemical Engineering, Ocean University of China. Qingdao, China.

Coastal CO₂ System: From Sensor Development to Observational Studies. April 2010. Department of Oceanography, Dalhousie University, Canada.

Coastal CO₂ System: From Instrumentation to Observation. March 2010. Department of Earth, Atmospheric and Planetary Sciences, MIT. Boston, MA.

Major Expeditions and Cruises (last 10 years)

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- Sept 9 – 16, 2017. LUMCON, Chauvin, LA. R/V Pelican. The Role and Mechanisms of Nuclei-induced Calcium Carbonate Precipitation (NICP) in the Coastal Carbon Cycle: A First In-depth Study. Chief Scientist and PI.
- Jun 17 – 23, 2016. Woods Hole, MA. R/V Armstrong Science Verification Cruise, South New England Shelf Break. Shelf break processes. Co-PI.
- Apr 18 – May 07, 2015. Phuket, Thailand. R/V Chakratong Tongyai, Andaman Sea. Effects of internal waves on water column physics, chemistry and coral reef biology in Andaman Sea. Co-PI.
- Jan, 2014 – Jul, 2015. Woods Hole, MA. R/V Tioga. Five seasonal cruises in the Gulf of Maine. Ocean Acidification Susceptibility of New Hampshire Coastal Waters. Co-PI.
- May – Oct, 2013. Woods Hole, MA. R/V Tioga. Three seasonal cruises in the Gulf of Maine. Ocean acidification: Are Deep Waters of the Gulf of Maine Already Corrosive to Pteropods? PI and Chief Scientist.
- Aug 09 – Sept 18, 2012. Newport, OR – Los Angeles, CA. R/V New Horizon, North Pacific. Ocean acidification: Horizontal and Vertical Distribution of Thecosome Pteropods in Relation to Carbonate Chemistry in the Northwest Atlantic and Northeast Pacific. Co-PI, Chemistry team leader.
- Aug 07 – Sept 01, 2011. Woods Hole, MA – Woods Hole, MA; R/V Oceanus, North Atlantic. Ocean acidification: Horizontal and Vertical Distribution of Thecosome Pteropods in Relation to Carbonate Chemistry in the Northwest Atlantic and Northeast Pacific. Co-PI, Chemistry team leader.
- Sept 2011. Sampling in the Mackenzie River Delta. Arctic Research Initiative: Towards Long-term Monitoring of the CO₂ System in Arctic Rivers. PI.
- Jun 2010. Sampling in the Mackenzie River Delta. Arctic Research Initiative: Towards Long-term Monitoring of the CO₂ System in Arctic Rivers. PI.
- July 10 – August 04, 2007. Galveston, TX – Boston, MA. R/V Ronald H. Brown. Gulf of Mexico and East Coast Carbon (GOMECC) cruise.
- March 10 – 30, 2006. Honolulu, HI – Kodiak, AK, USA. R/V Thomas G. Thompson. NOAA CLIVAR/CO₂ Repeat Hydrography P16N Cruise in the North Pacific Ocean.
- January 11 – February 24, 2005. Punta Arenas, Chile - Fortaleza, Brazil. R/V Ronald H. Brown. NOAA CLIVAR/CO₂ Repeat Hydrography A16S Cruise in the South Atlantic Ocean.

Conference Papers and Abstracts

(* Supervised students, postdocs, visiting scholars)

Wang, Z.A. Lateral exports of inorganic carbon and alkalinity from tidal salt marshes. PIE-LTER Annual Science Meeting. Woods Hole, MA. Mar. 6-8, 2018.

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- Song, S.* , **Z.A. Wang**, K.D. Kroeger, M.E. Gonneea, D. Li. Contribution and composition of organic alkalinity in export of alkalinity from intertidal salt marshes. Ocean Sciences Meeting 2018. Portland, OR. Feb. 11-16, 2018.
- Najjar, R. et al. Carbon Budget of Tidal Wetlands, Estuaries, and Shelf Waters of Eastern North America. Ocean Sciences Meeting 2018. Portland, OR. Feb 11-16, 2018.
- Wang, Z. A.**, S. Chu, K.D. Kroeger, M.E. Gonneea, and N.K. Ganju. Resolving the Intricacies of Lateral Exports of Inorganic Carbon and Alkalinity from Coastal Salt Marshes (Invited). AGU Fall Meeting 2017. New Orleans, LA. Dec. 11-15, 2017.
- Song, S.* , **Z.A. Wang**, K.D. Kroeger, M.E. Gonneea, D. Li. Alkalinity export from intertidal salt marshes: evaluating the contribution and composition of organic alkalinity. Coastal & Estuarine Research Federation 2017. Providence, RI. Nov. 5-9, 2017.
- Wang, Z. A.**, G. L. Lawson, C. H. Pilskaln, and A. E. Maas. Seasonal Controls of Aragonite Saturation States in an Ocean Acidification Vulnerable Shelf Region – the Gulf of Maine, USA. Gordon Research Conferences, Chemical Oceanography. Colby-Sawyer College, New London, NH. Jul 23 – 28, 2017.
- Wang, Z. A.**, Chu, S. N, Kroeger, K. D., Gonneea, M.E., and Ganju, N. K. Intertidal Salt Marshes as an Important Source of Inorganic Carbon to the Coastal Ocean. OCB Summer Workshop. Woods Hole, MA. Jun 26-29, 2017.
- Chu, S. N.* , **Z. A. Wang**, K. D. Kroeger, M. E. Gonneea, and N. K. Ganju. Revealing the intricacies of lateral inorganic carbon fluxes from intertidal salt marshes using high-frequency measurements. OCB Summer Workshop. Woods Hole, MA. Jun 26-29, 2017.
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- Maas, A.E., Tarrant, A.M., Bergan, A.J., **Wang, Z.A.**, and Lawson, G.L. The Response of the Thecosomatous Pteropod *Limacina retroversa* to CO₂ in the Gulf of Maine: Seasonality and Sensitivity. ICES/PICES 6th Zooplankton Production Symposium. Bergen, Norway. May 9-13, 2016.
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- Wang, Z. A.**, K. D. Kroeger, N. K. Ganju and S. N. Chu. Evaluating the Roles of Intertidal Salt Marshes to the Coastal CO₂ System and Coastal Carbon Budget. 2016 Ocean Sciences Meeting. New Orleans, LA, US. Feb. 21-26, 2016.
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- Kroeger, K.D., Pohlman, J.W., Ganju, N., Spivak, A., **Wang, Z.A.**, Green, A., Brooks, T.W., Baldwin, S., Moseman-Valtierra, S., and Tang, J. 2014. Salt Marsh Carbon Budgets: The Role of Tidal Exchanges of Dissolved and Particulate Organic Carbon. Joint Aquatic Sciences Meeting. Portland, OR. May 18-23, 2014.
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- Maas, A.E.*, **Wang, Z.A.**, and Lawson, G.L. 2012. Impact of Ocean Basin on Pteropod Exposure and Response to High CO₂ and Low O₂. Third International Symposium on the Ocean in a High CO₂ World. Monterey Bay, CA, USA. September 24-27, 2012.
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