

Curriculum Vitae

Z. A. Wang

Zhaohui ‘Aleck’ Wang, PhD

Associate Scientist

Marine Chemistry & Geochemistry Department

Woods Hole Oceanographic Institution (WHOI)

MS #8, McLean 203

Woods Hole, MA 02543

Email: zawang@whoi.edu

Tel: (508)289-3676

Fax: (508)457-2183

Education

1998 – 2003 Ph.D., Marine Science, University of Georgia, Athens, GA.

Advisor: Dr. Wei-Jun Cai, Department of Marine Science, University of Georgia.

Dissertation: Biogeochemical Changes of Chemical Signals in the Georgia “Land-to-Ocean Continuum”

1996 – 1998 M.Sc., Oceanography, University of New Hampshire, Durham, NH.

Advisor: Dr. Theodore C. Loder III, Department of Earth Sciences, University of New Hampshire, Durham, NH.

Thesis: The Annual and Seasonal Variations of Nitrogen in Massachusetts Bay

1990 – 1994 Marine Chemistry, Xiamen University, Xiamen, China

Professional Experience

Woods Hole Oceanographic Institution	Assistant Scientist	2009-present
University of South Florida	Postdoc/Research Associate Mentor: <u>Dr. Robert H. Byrne</u>	2003-2009
State Oceanic Administration of China	Project Manager	1994-1996

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, American Society of Limnology and Oceanography

Member, American Chemical Society

Research Interests

Aquatic carbonate chemistry, CO₂ systems in coastal and riverine environments, carbon cycling, ocean acidification

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

Professional Activities

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

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

Instructor: Ocean Acidification Short Course (OCB sponsored), Woods Hole, MA. November 2009.

Journal reviewer: Marine Chemistry; Limnology and Oceanography Method; Environmental Science and Technology; Proceedings of the Royal Society B (Biological Sciences); Continental Shelf Research; Biogeosciences; Aquatic Geochemistry; Journal of Marine Systems; Journal of Geophysical Research

Proposal reviewer: NSF, DOE, NOAA

Papers in Refereed Journals

(Submitted)

Signorini S. R., Mannino, A., Friedrichs, M., Najjar, R., Xue, J., Cai, W-J, Salisbury, J., and **Wang, Z.A.** Surface ocean $p\text{CO}_2$ seasonality and sea-air CO₂ flux estimates for the US East Coast. J. Geophys. Res.: *(in revision)*.

Wang, Z.A., Hoering, K., Chu, S. High-frequency spectrophotometric measurements of total dissolved inorganic carbon in seawater. Environ. Sci. Technol.: *(in revision)*.

(Published or in press)

Wang, Z. A., Wanninkhof, R., Cai, W.-J., Byrne, R.H., Hu, X., Peng, T.-H., Huang, W.J. 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. Limnology and Oceanography 58 (1): 325-342.

Wang, Z. A., D. J. Bienvenu, P. J. Mann, H. Hoering, J. Poulsen, R. G. M. Spencer, and R. M. Holmes. 2013b. Inorganic carbon speciation and fluxes in the Congo River. Geophys. Res. Lett. 40: 1–6. doi:10.1002/grl.50160

Wang, Z. A., Liu, X., Byrne, R. H., Wanninkhof, R. H., Bernstein, R. E., Kaltenbacher, E. A., Patten, J. 2007. Simultaneous spectrophotometric flow-through measurements of pH, carbon dioxide fugacity, and total inorganic carbon in seawater. Analytica Chimica Acta, 596: 23-36.

John, D. E., **Wang, Z. A.**, Liu, X., Byrne, R. H., Corredor, J. E., López, J. M., Cabrera, A., Bronk, D. A., Tabita, F. R., Paul, J. P. 2007. Phytoplankton carbon fixation gene

- (RuBisCO) transcripts and air-sea CO₂ flux in the Mississippi River plume. The ISME Journal: 1-15.
- Liu, X., **Wang, Z. A.**, Byrne, R. H., Kaltenbacher, E., Bernstein, R. E. 2006. Spectrophotometric measurements of pH in-situ: laboratory and field evaluations of instrumental performance. Environ. Sci. Technol.: 40, 5036-5044.
- Wang, Z. A.**, Cai, W. J., Wang, Y., Ji, H. 2005. The southeastern continental shelf of the United States as an atmospheric CO₂ source and an exporter of inorganic carbon to the ocean. Continental Shelf Research, 25: 1917-1941.
- Zhai, W., Dai, M., Cai, W., Wang, Y., **Wang, Z. A.** 2005. High partial pressure of CO₂ and its maintaining mechanism in a subtropical estuary: the Pearl River estuary, China. Mar. Chem., 93: 21-32.
- Wang, Z. A.**, Cai, W. J. 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.
- Cai, W. J., Dai, M., Wang, Y., Zhai, W., Huang, T., Chen, S., Zhang, F., Chen, Z., **Wang, Z. A.** 2004. The biogeochemistry of inorganic carbon and nutrients in the Pearl River estuary and the adjacent Northern South China Sea. Continental Shelf Research, 24: 1301-1319.
- Cai, W. J., **Wang, Z. A.**, Wang, Y. 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: 1849.
- Wang, Z. A.**, Cai, W. J., Wang, Y., Upchurch, B. L. 2003. A long pathlength liquid-core waveguide sensor for real-time pCO₂ measurements at sea. Mar. Chem., 84: 73 – 84.
- Wang, Z. A.**, Wang, Y. C., Cai, W. J., Liu, S. Y. 2002. A long pathlength spectrophotometric pCO₂ sensor using a gas-permeable liquid-core waveguide. Talanta, 57: 69-80.

Other Publications

- Wang, Z. A.**, Cahill, B., Cai, W.-J., Fennel, K., Friedrichs, M., McGillis, W., Salisbury, J., Schaaf, C., Signorini, S. 2012. Air-sea exchange. Najjar, R.G., Friedrichs, M., Cai, W.-J. (Editors), Report of the U.S. East Coast Carbon Cycle Synthesis Workshop, January 19-20, 2012. pp. 10-11.
- Wang, Z.A.**; Byrne, R.H. 2010. Summer-time CO₂ 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.

Invited Lectures

- 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. Invited.
- Coastal CO₂ System: From Sensor Development to Observational Studies. April 2010. Departmental Seminar, Department of Oceanography, Dalhousie University, Canada.
- Coastal CO₂ System: From Instrumentation to Observation. March 2010. MIT EAPS Weekly Seminar, Boston, MA.

Seminars at WHOI

- The Marine Inorganic Carbon System along the Gulf of Mexico and Atlantic Coasts of the United States: Latitudinal trends, Mixing, and Shelf-ocean exchange. March 2012. Marine Chemistry and Geochemistry Seminar, WHOI, Woods Hole, MA.
- Temporal and Spatial Variabilities of the Inorganic Carbon System in the Mackenzie River and Beyond. October 2011. Global River Workshop, Woods Hole, MA.
- Spatial variations of the riverine carbonate system in Mackenzie River. October 2010. ETBC River Workshop. Woods Hole, MA.
- Riverine DIC Fluxes and Coastal CO₂ System. July 2010. WHOI AOP&E Weekly Seminar, Woods Hole, MA.
- Distributions of the CO₂ System along the US Atlantic and Gulf of Mexico Coast - Data from Gulf of Mexico and East Coast Carbon Cruise (GOMECC). April 2010. WHOI Biology Weekly Seminar, Woods Hole, MA.
- Simultaneous Spectrophotometric Measurements of the CO₂ System Parameters in Seawater. October 2009. AOP&E Seminar, WHOI, Woods Hole, MA.

Papers Presented at Meetings and Published Abstracts

- Wang, Z.A.**, Hoering, H., Lawson, G. 2012. Ocean Acidification in the Northwest Atlantic between 2003 and 2011. Poster. Third International Symposium on the Ocean in a High CO₂ World, September 24-27, 2012. Monterey Bay, CA, USA.
- Maas, A.E., **Wang, Z.A.**, Lawson, G.L. 2012. Impact of Ocean Basin on Pteropod Exposure and Response to High CO₂ and Low O₂. Talk. Third International Symposium on the Ocean in a High CO₂ World, September 24-27, 2012. Monterey Bay, CA, USA.
- Almeida, J.L. Ward, B., Shutler, J., Gentemann, C., **Wang, Z.A.**, Bresnahan, P.J. 2012. On the Inclusion of the Ocean's Diurnal Warming Effect for the Global Air-sea Net Budget Estimation. Poster. SOLAS Open Science Conference 2012, May 07 – 10, 2012. Cle Elum, WA, USA.

- Wang, Z.A.**, Hoering, K. 2012. Temporal and Spatial Variabilities of the Riverine Inorganic Carbon System in the Mackenzie River and Beyond. Poster. Ocean Science 2012, February 19 – 24, 2012. Salt Lake City, UT, USA.
- Hoering, K., **Wang, Z.A.**, Luttazi, C., Lawson, G. 2012. Direct Observation of Ocean Acidification in the Northwest Atlantic between 2003 and 2011. Poster. Ocean Sciences 2012, February 19 – 24, 2012. Salt Lake City, UT, USA.
- Edebeli, J., **Wang, Z.A.** 2012. Simplified Spectrophotometric Method for Measuring Sea Water Alkalinity. Poster. Ocean Science 2012, February 19 – 24, 2012. Salt Lake City, UT, USA.
- Wang, Z. A.**, Wanninkhof, R., Peng, T.-H., Cai, W.-J., Hu, X., Byrne, R.H. 2011. The Marine Inorganic Carbon System along the Gulf of Mexico and Atlantic Coast of the United States: Shelf-ocean exchange and Ocean Acidification Status. Talk. AGU Fall Meeting 2011, December 5 – 9, 2011. San Francisco, CA, USA.
- Wang, Z. A.**, Wanninkhof, R., Cai, W.-J., Hu, X., Peng, T.-H., Byrne, R.H. 2010. Distributions of the CO₂ System along the US Atlantic and Gulf of Mexico Coast. Talk. Ocean Science 2010, February 22 – 26, 2012. Portland, OR, USA.
- Wang, Z. A.**, Byrne, R. H. 2008. Summer-time CO₂ Fluxes and Carbon System Behavior in the Mississippi River and Orinoco River Plumes. Talk. Ocean Science 2008, March 02 – 07, 2008. Orlando, FL, USA.
- Wang, Z. A.**, Wiebe, W. J., Cai, W. J. and Sheldon, J. 2002. Distributions and fluxes of inorganic nitrogen in the five Georgia river estuaries of the Southeastern United States: river flow control vs. intertidal marsh effect. Ocean Sciences Meeting, Honolulu, HI. See abstract in EOS. Trans. AGU, 83(4), Ocean Sciences Meet. Suppl., Abstract OS21P-10, 2002.
- Wang, Z. A.**, Wang, Y., Cai, W. J. 2002. Spectrophotometric *p*CO₂ measurements based on a long pathlength liquid-core waveguide in the South Atlantic Bight. Ocean Sciences Meeting, Honolulu, HI. See abstract in EOS. Trans. AGU, 83(4), Ocean Sciences Meet. Suppl., Abstract OS12A-121, 2002.
- Wang, Y., Zhai, W., **Wang, Z.**, Lu, Z., Dai, M., Cai, W. 2002. Biogeochemical studies of carbon in the South China Sea. Ocean Sciences Meeting, Honolulu, HI. See abstract in EOS. Trans. AGU, 83(4), Ocean Sciences Meet. Suppl., Abstract OS11C-35, 2002.
- Dai, M., Zhai, W., Cai, W., Huang, T., **Wang, Z.**, Huang, B., Callahan, J., Li, X., Lu, Z., Xu, X., Lin, X., Zhang, F., Ruan, W., Shang, S., Wang, Y., Qu, L., Hong, H. 2002. Biogeochemical response to a river plume induced phytoplankton bloom in the Pearl River Estuary, South China Sea. See abstract in EOS. Trans. AGU, 83(4), Ocean Sciences Meet. Suppl., Abstract OS11C-36, 2002.

Supervision and Mentoring

Student advising:

Thesis advisor for Sophie Chu (WHOI-MIT Joint Program student), 2011 – present
WHOI Summer Student Fellow: Jacinta Edebeli

Guest Students:

Charles Zhu, Yale University, 2010

Curriculum Vitae

Z. A. Wang

Cris Luttazi, Kingston University, 2010, 2011

Mohammad M. Uddin, University of New Hampshire, 2011

Kelly Knorr, University of Rhode Island, 2012

Robert "Nick" Tuttle, Drexel University, 2012

Yujuan Zhou, Ocean University of China, 2012

Lab Personnel: Katherine Hoering, Research Assistant II

Visiting Scholar: Dr. Quanlong Li from Xiamen University, China. 2011-2012