

XINPING HU

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EDUCATION

2007 Ph.D. in Oceanography, Old Dominion University
1997 B.S. in Chemistry, Peking University, China

PROFESSIONAL EXPERIENCE

08/2020 – **HRI Chair, Ecosystem Science and Modeling**, Harte Research Institute for Gulf of Mexico Studies
09/2018 – **Associate Professor**, Department of Physical and Environmental Sciences, Texas A&M University - Corpus Christi
09/2012 – 08/2018 **Assistant Professor**, Department of Physical and Environmental Sciences, Texas A&M University - Corpus Christi
02/2012 – 10/2012 **Assistant Research Scientist**, Department of Marine Sciences, University of Georgia
02/2007 – 01/2012 **Post Doctoral Associate**, Department of Marine Sciences, University of Georgia
08/2000 – 12/2006 **Graduate Research Assistant**, Department of Ocean, Earth and Atmospheric Sciences, Old Dominion University
09/1997 – 04/2000 **Research Assistant**, Institute of Oceanology, Chinese Academy of Sciences

AWARDS AND HONORS

Endowed Ruth A. Campbell Professor in Coastal and Marine System Science (2018)
Outstanding Doctoral Mentor, Texas A&M University–Corpus Christi (2017)
National Science Foundation Early Career Development (CAREER) Award (2017-2022)
Outstanding Ph.D. Student, Old Dominion University (2007)

PROFESSIONAL SOCIETIES

American Geophysical Union
Association for the Sciences of Limnology and Oceanography
Coastal & Estuarine Research Federation

RESEARCH INTERESTS

Ocean Carbon Cycle
Ocean and Estuarine Acidification
Stable Isotope Biogeochemistry

PUBLICATIONS

Peer-Reviewed Publications in International Journals (“_” denotes student author)

- X. Hu.** 2020. Effect of organic alkalinity on seawater buffer capacity - A numerical exploration. *Aquatic Geochemistry*. **26**, 161-178.
- X. Hu, H. Yao, C.J. Staryk, M.R. McCutcheon, M.S. Wetz, L. Walker.** 2020. Disparate responses of carbonate system in two adjacent subtropical estuaries to the influence of Hurricane Harvey – A case study. *Frontiers in Marine Science*. **7**, 26. doi:10.3389/fmars.2020.00026
- H. Wang, X. Hu, M.Z. Wetz, K. Hayes, K. Lu.** 2020. Photochemical degradation of organic carbon in a eutrophic, semiarid estuary. *Limnology and Oceanography Letters*. **5**, 246-253.
- H. Yao, M.R. McCutcheon, C.J. Staryk, X. Hu.** 2020. Hydrologic controls on CO₂ chemistry and flux in subtropical lagoonal estuaries of the northwestern Gulf of Mexico. *Limnology and Oceanography*. **65**, 1380-1398.
- M.R. McCutcheon, C.J. Staryk, X. Hu.** 2019. Characteristics of the carbonate system in a semi-arid estuary that experiences summertime hypoxia. *Estuaries and Coasts*. **42**, 1509-1523.
- K. Fennel, S. Alin, L. Barbero, W. Evans, T. Bourgeois, S. Cooley, J. Dunne., R.A. Feely, J.M. Hernandez-Ayon, X. Hu, S. Lohrenz, F. Muller-Karger, R. Najjar, L. Robbins, E. Shadwick, S. Siedlecki, N. Steiner, A. Sutton, D. Turk, P. Vlahos, Z.A. Wang,** 2019. Carbon cycling in the North American coastal ocean: A synthesis. *Biogeosciences*, **16**, 1281-1304.
- D. Turk, H. Wang, X. Hu, D.K. Gledhill, Z.A. Wang, L.-Q. Jiang and W.-J. Cai.** 2019. Time of emergence of surface ocean carbon dioxide trends in the North American coastal margins in support of ocean acidification observing system design. *Frontiers in Marine Science*, **6**, 91.
- H. Wang, X. Hu, M.S. Wetz, and K.C. Hayes.** 2018. Oxygen consumption and organic matter remineralization in two subtropical, eutrophic coastal embayments. *Environmental Science & Technology* **52**, 13,004-13,014.
- H. Wang X. Hu, N.N. Rabalais, J. Brandes.** 2018. Drivers of oxygen consumption in the northern Gulf of Mexico hypoxic waters – A stable carbon isotope perspective. *Geophysical Research Letters* **45**, 10,528-10,538.
- N. Spalt, D. Murgulet, and X. Hu.** 2018. Relating estuarine geology to groundwater discharge at an oyster reef in Copano Bay, TX. *Journal of Hydrology* **564**, 785-801.
- X. Hu, M.F. Nuttall, H. Wang, H. Yao, C.J. Staryk, M.R. McCutcheon, R.J. Eckert, J.A. Embesi, M.A. Johnston, E.L. Hickerson, G.P. Schmahl, D. Manzello, I.C. Enochs, S. DiMarco, L. Barbero.** 2018. Seasonal variability of carbonate chemistry and decadal changes in waters of a marine sanctuary in the Gulf of Mexico. *Marine Chemistry* **205**, 16-28.
- A.E. Scherer, C.E. Bird, M.R. McCutcheon, X. Hu, and D.L. Smee.** 2018. Two-tiered defense strategy may compensate for predator avoidance costs of an ecosystem engineer. *Marine Biology* **165**, 131.
- P. A. Montagna, X. Hu, T.A. Palmer, and M.S. Wetz.** 2018. Effect of hydrological variability on the biogeochemistry of estuaries across a regional climatic gradient. *Limnology and Oceanography* **63**, 2465-2478.
- D. Murgulet, M. Trevino, A. Douglas, N. Spalt, X. Hu and V. Murgulet.** 2018. Temporal and spatial fluctuations of groundwater-derived alkalinity fluxes to a subtropical coastal embayment. *Science of the Total Environment* **630**, 1343-1359.

- R.G. Najjar, M. Herrmann, R. Alexander, E.W. Boyer, D.J. 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, R.C. Zimmerman. 2018. Carbon budget of tidal wetlands, estuaries, and shelf waters of Eastern North America. *Global Biogeochemical Cycles*, **32**, 389-416.
- G.G. Laruelle, W.-J. Cai, **X. Hu**, N. Gruber, F.T. Mackenzie, and P. Regnier. 2018. Continental shelves as a variable but increasing global sink for atmospheric carbon dioxide. *Nature Communications* **9**, 454.
- H. Yao and **X. Hu**. 2017. Responses of carbonate system and CO₂ flux to extended drought and intense flooding in a semiarid subtropical estuary. *Limnology and Oceanography* **62**, S112-S130. (Special Issue on Headwaters to oceans: Ecological and biogeochemical contrasts across the aquatic continuum).
- H. Wang, **X. Hu**, W.-J. Cai, and B. Sterba-Boatwright. 2017. Decadal *f*CO₂ trends in global ocean margins and adjacent boundary current-influenced areas. *Geophysical Research Letters* **44**, 8962-8970.
- J.J. Reimer, W.-J. Cai, L. Xue, R. Vargas, S. Noakes, **X. Hu**, S.R. Signorini, J.T. Mathis, R.A. Feely, A.J. Sutton, C. Sabine, S. Musielewicz, B. Chen and R. Wanninkhof. 2017. Time series *p*CO₂ at a coastal mooring: internal consistency, seasonal cycles, and interannual variability. *Continental Shelf Research* **145**, 95-108.
- X. Hu**, Q. Li, W.-J. Huang, B. Chen, W.-J. Cai, N.N. Rabalais, and R.E. Turner. 2017 Effects of eutrophication and benthic respiration on water column carbonate chemistry in a traditional hypoxic zone in the Northern Gulf of Mexico. *Marine Chemistry* **190**, 33-42.
- V. Schoepf*, **X. Hu***, M. Holcomb, W.-J. Cai, Q. Li, Y. Wang, H. Xu, M.E. Warner, T.F. Melman, K.D. Hoadley, D.T. Pettay, Y. Matsui, J.H. Baumann, A.G. Grotoli. 2017. Coral calcification under environmental change: A direct comparison of the alkalinity anomaly and buoyant weight technique. *Coral Reefs* **36**, 13-25 (* denotes equal contribution).
- H. Wang, **X. Hu**, and B. Sterba-Boatwright. 2016. A new statistical approach for interpreting oceanic *f*CO₂ data. *Marine Chemistry* **183**, 41-49.
- X. Hu**, W.-J. Cai, N.N. Rabalais, J. Xue. 2016. Coupled oxygen and dissolved inorganic carbon dynamics in coastal ocean and its use as a potential indicator for detecting water column oil degradation. *Deep-Sea Research* **129**, 311-318.
- Cai, W.-J., Y. Ma, B. M. Hopkinson, A. G. Grotoli, M. E. Warner, Q. Ding, **X. Hu**, X. Yuan, V. Schoepf, H. Xu, C. Han, T. F. Melman, K. D. Hoadley, D. T. Pettay, Y. Matsui, J. H. Baumann, S. Levas, Y. Ying, and Y. Wang. 2016. Microelectrode characterization of coral daytime interior pH and carbonate chemistry. *Nature Communications* **7**, 11144 doi:10.1038/ncomms11144.
- L. Xue, W.-J. Cai, **X. Hu**, C.L. Sabine, S. Jones, A.J. Sutton, L.-Q. Jiang, J.J. Reimer. 2016. Sea surface carbon dioxide at the Georgia time series site (2006-2007): air-sea flux and controlling processes. *Progress in Oceanography* **140**, 14-26.
- J. Xue, W.-J. Cai, **X. Hu**, W.-J. Huang, and S.E. Lohrenz. 2015. Temporal variation and stoichiometric ratios of organic matter remineralization in bottom waters of the northern Gulf of Mexico during late spring and summer. *Journal of Geophysical Research - Oceans* **120**, 8304-8326.

- K.D. Hoadley, D.T. Pettay, A.G. Grottoli, W.-J. Cai, T.F. Melman, V. Schoepf, **X. Hu**, Q. Li, H. Xu, Y. Wang, Y. Matsui, J.H. Baumann, M.E. Warner, 2015. Physiological response to elevated temperature and pCO₂ varies across four Pacific coral species: Understanding the unique host+symbiont response. *Scientific Reports* **5**, 18371.
- W.-J. Huang, W.-J. Cai, Y. Wang, **X. Hu**, B. Chen, S. E. Lohrenz, S. Chakraborty, R. He, J. Brandes and C. S. Hopkinson. 2015. The response of inorganic carbon distributions and dynamics to upwelling favorable winds on the northern Gulf of Mexico during summer. *Continental Shelf Research* **111**, Part B. 211-222.
- ***X. Hu**, J. Beseres Pollack, M.R. McCutcheon, P.A. Montagna, and Z. Ouyang. 2015. Long-term alkalinity decrease and acidification of estuaries in Northwestern Gulf of Mexico. *Environmental Science & Technology* **49**, 3401-3409.
- S. Levas, A.G. Grottoli, M.E. Warner, W.J. Cai, J. Bauer, V. Schoepf, J.H. Baumann, Y. Matsui, C. Gearing, T.F. Melman, K.D. Hoadley, D.T. Pettay, **X. Hu**, Q. Li, H. Xu, Y. Wang. 2015. Organic carbon fluxes mediated by corals at elevated pCO₂ and temperature. *Marine Ecology Progress Series* **519**, 153-164.
- N.N. Rabalais, W.-J. Cai, J. Carstensen, D.J. Conley, B. Fry, **X. Hu**, Z. Quinones-Rivera, R. Rosenberg, C.P. Slomp, R.E. Turner, M. Voss, B. Wissel, and J. Zhang. 2014. Eutrophication-driven deoxygenation in the coastal ocean. *Oceanography* **27**, 66-77.
- X. Hu** and W.-J. Cai. 2013. Estuarine acidification and minimum buffer zone - a conceptual study. *Geophysical Research Letters* **40**, 5176-5181.
- V. Schoepf, A.G. Grottoli, M.E. Warner, W.-J. Cai, T.F. Melman, K.D. Hoadley, D.T. Pettay, **X. Hu**, Q. Li, H. Xu, Y. Wang, Y. Matsui, J.H. Baumann. 2013. Coral energy reserves and calcification in a high-CO₂ world at two temperatures. *PLOS ONE* **8**, e75049. doi:10.1371/journal.pone.0075049.
- Z.A. Wang, R. Wanninkhof, W.-J. Cai, R.H. Byrne, **X. Hu**, T.-H. Peng, and W.-J. Huang. 2013. The Marine Inorganic Carbon System along the Gulf of Mexico and Atlantic Coast of the United States. *Limnology Oceanography* **58**, 325-342.
- E.N. Powell*, **X. Hu***, W.-J. Cai, K. A. Ashton-Alcox, K. Hubbard, and S. Walker. 2012. Geochemical controls on carbonate shell taphonomy in the northern Gulf of Mexico sediments. *Palaios* **27**, 571-587. (* denotes equal contribution).
- C.S. Hopkinson, W.-J. Cai, and **X. Hu**, 2012. Carbon sequestration in wetland dominated coastal systems - a global sink of rapidly diminishing magnitude. *Current Opinion Environmental Sustainability* **4**, 186-194.
- X. Hu**, D.J. Burdige, R.C. Zimmerman. δ¹³C is a signature of light availability and photosynthesis in seagrass. 2012. *Limnology and Oceanography* **57**, 441-448.
- X. Hu** and W.-J. Cai. 2011. The impact of denitrification on the atmospheric CO₂ uptake potential of seawater. *Marine Chemistry* **127**, 191-198.
- W.-J. Cai, **X. Hu**, W.-J. Huang, M.C. Murrell, J.C. Lehrter, S. E. Lohrenz, W.-C. Chou, W. Zhai, J.T. Hollibaugh, Y. Wang, P. Zhao, X. Guo, K. Gundersen, M. Dai and G.-C. Gong. 2011. Acidification of subsurface coastal waters enhanced by eutrophication. *Nature - Geoscience* **4**, 766-770.
- X. Hu**, W.-J. Cai, Y. Wang, X. Guo, and S. Luo. 2011. Geochemical environments of continental shelf-upper slope sediments in the northern Gulf of Mexico. *Palaeogeography, Palaeoclimatology, Palaeoecology* **312**, 265-277.

- X. Hu** and W.-J. Cai. 2011. An assessment of ocean margin anaerobic processes on oceanic alkalinity budget. *Global Biogeochemical Cycles* **GB3003**, doi:10.1029/2010GB003859.
- L.-Q. Jiang, W.-J. Cai, R.A. Feely, Y. Wang, X. Guo, D.K. Gledhill, **X. Hu**, F. Arzayus, F. Chen, J. Hartmann, and L. Zhang. 2010. Carbonate mineral saturation states along the U.S. southeastern coast. *Limnology and Oceanography* **55**, 2424-2432.
- D.J. Burdige, **X. Hu**, and R.C. Zimmerman. 2010. The wide spread occurrence of coupled carbonate dissolution/precipitation in surface sediments on the Bahamas Bank. *American Journal of Science* **310**, 492-521.
- W.-J. Cai, **X. Hu**, W.-J. Huang, L.-Q. Jiang, Y. Wang, T.-H. Peng, and X. Zhang. 2010. Surface ocean alkalinity distribution in the western North Atlantic Ocean margins. *Journal of Geophysical Research* **115**, C08014, doi:10.1029/2009JC005482.
- W.-J. Cai, L. Chen, B. Chen, Z. Gao, S.H. Lee, J. Chen, D. Pierrot, K. Sullivan, Y. Wang, **X. Hu**, W.-J. Huang, Y. Zhang, S. Xu, A. Murata, J.M. Grebmeier, E.P. Jones, and H. Zhang, 2010. Decrease in the CO₂ uptake capacity in an ice-free Arctic Ocean basin. *Science* **329**, 556-559.
- X. Hu**, W.-J. Cai, Y. Wang, S. Luo, and X. Guo. 2010. Pore-water geochemistry of two contrasting brine-charged seep sites in the northern Gulf of Mexico continental slope. *Marine Chemistry* **118**, 99-107.
- L.-Q. Jiang, W.-J. Cai, Y. Wang, J. Diaz, P. Yager, and **X. Hu**. 2009. Pelagic community respiration on the continental shelf off Georgia, USA. *Biogeochemistry* **98**, 101-113.
- X. Hu** and D.J. Burdige. 2008. Effect of O₂ input into sediment on carbonate dissolution - a simulation experiment. *Journal of Marine Research* **66**, 489-527.
- D.J. Burdige, R.C. Zimmerman and **X. Hu**. 2008. Rates of carbonate dissolution in permeable sediments estimated from pore water profiles: the role of seagrasses. *Limnology and Oceanography* **53**, 549-565.
- X. Hu** and D.J. Burdige. 2007. Enriched stable carbon isotopes in the pore waters of carbonate sediments dominated by seagrasses: evidence for coupled carbonate dissolution and reprecipitation. *Geochimica et Cosmochimica Acta* **71**, 129-144.

Publications in Progress ("_" denotes student author)

H. Yao et al. Carbon budgets in northwestern Gulf of Mexico coastal estuaries. (submitted)

Refereed Book Chapters/Technical Publications

- H. Wang and **X. Hu**. 2020. Multidecadal variations of sea surface CO₂ fugacity (*f*CO₂) in the Oyashio Current-influenced ocean margin In: C.-T.A. Chen and X. Guo (Editors), *Asia Pacific Marginal Seas*. Springer. pp. 245-263.
- X. Hu**. 2019. Ocean acidification studies in the Gulf of Mexico: Current status and future research needs. In: L. McKinney, M. Besonen and K. Withers (Editors), *Proceedings: The Gulf of Mexico Workshop on International Research*. U.S. Department of the Interior Bureau of Ocean Energy Management, New Orleans, LA, pp. 97-110.
- Johnston, M.A., T.K. Sterne, R.J. Eckert, M.F. Nuttall, J.A. Embesi, R.D. Walker, **X. Hu**, E.L. Hickerson. and G.P. Schmahl. 2017. Long-Term Monitoring at East and West Flower Garden Banks: 2016 Annual Report. Marine Sanctuaries Conservation Series ONMS-17-09. U.S.

Department of Commerce, National Oceanic and Atmospheric Administration, Flower Garden Banks National Marine Sanctuary, Galveston, TX. 132 pp.

- M.F. Nuttall, T.K. Sterne, R.J. Eckert, **X. Hu**, J.A. Embesi, E.L. Hickerson, M.A. Johnston, and G.P. Schmahl. 2017. Long-Term Monitoring at Stetson Bank, Flower Garden Banks National Marine Sanctuary, 2015 Annual Report. U.S. Marine Sanctuaries Conservation Series ONMS-17-06. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Flower Garden Banks National Marine Sanctuary, Galveston, TX. pp. 98.
- M.A. Johnston, R.J. Eckert, T.K. Sterne, M.F. Nuttall, **X. Hu**, J.A. Embesi, E.L. Hickerson. and G.P. Schmahl. 2016. Long-Term Monitoring at East and West Flower Garden Banks: 2015 Annual Report. U.S. Marine Sanctuaries Conservation Series ONMS-16-02. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Flower Garden Banks National Marine Sanctuary, Galveston, TX, pp. 86.

Non-Refereed Publications

- X. Hu**, M.R. McCutcheon, D. Murgulet, A. Douglas, C.V. Lopez. 2019. Evaluating groundwater exported acidity in Copano Bay. Scientific report submitted to Texas General Land Office October 2019; p. 50; GLO Contract No. 17-180-000-9817.
- X. Hu**, H. Wang. 2018. Mechanistic modeling of bottom water dissolved oxygen dynamics in Baffin Bay, Contract #1729. Department of Physical and Environmental Sciences, Texas A&M University-Corpus Christi, Corpus Christi, TX, 24 p.
- X. Hu**, M.R. McCutcheon, C.J. Staryk. 2018. Ocean and coastal acidification monitoring. Final Report to the Coastal Bend Bays and Estuaries Program, Contract #1605. Department of Physical and Environmental Sciences, Texas A&M University-Corpus Christi, Corpus Christi, TX, 24 p.
- P.A. Montagna, M.S. Wetz, and **X. Hu**. 2017. Monitoring mid-coastal estuaries - 2016. Final Report to the Texas Water Development Board, Contract #1600011924. Texas A&M University-Corpus Christi, Corpus Christi, TX, 51 p.
- M.S. Wetz and **X. Hu**. 2015. Spatial-temporal distribution of organic matter and carbonate chemistry parameters in Texas mid-coast estuaries: 2014-2015. Final Report to the Texas Water Development Board, Contract #1448311639. Texas A&M University-Corpus Christi, Corpus Christi, TX, 12 p.
- L.L. Robbins, R. Wanninkhof, L. Barbero, **X. Hu**, S. Mitra, S. Yvon-Lewis, W.-J. Cai, W.-J. Huang, T. Ryerson. 2014. Air-sea exchange. In: H.M. Benway, P. Coble (Eds.), Report of The U.S. Gulf of Mexico Carbon Cycle Synthesis Workshop, March 27-28, 2013, Ocean Carbon and Biogeochemistry Program and North American Carbon Program, pp. 17-20.
- C. Pilskaln, D.J. Burdige, W.-J. Cai, E. Canuel, **X. Hu**. 2012. Sediment-water exchange. In: Najjar, R.G., Friedrichs, M.A.M., Cai, W.-J. (Eds.), 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.
- X. Hu**. 2007. Seagrass-Mediated Carbonate Dissolution and Early Diagenesis in the Great Bahamas Bank Sediments. Ph.D. Dissertation, Old Dominion University.

FUNDED RESEARCH

External Funding (since 2012)

Current

- National Oceanic and Atmospheric Administration – “Ocean Acidification at a Crossroad – Enhanced Respiration, Upwelling, Increasing Atmospheric CO₂, and their interactions in the northwestern Gulf of Mexico” – (08/01/2019/08/31/2022) (**PI**, \$1,464,315)
- National Science Foundation – “CAREER: The Impact of Hydrologic State on CO₂ Flux and Acidification in Subtropical Estuaries” – (05/01/2017-04/30/2022) (**PI**, \$459,668)
- National Science Foundation – Supplemental Funding to “CAREER: The Impact of Hydrologic State on CO₂ Flux and Acidification in Subtropical Estuaries” – (05/01/2019-04/30/2022) (**PI**, \$47,665)

Past

- Texas General Land Office – “Evaluating Groundwater Exported Acidity in Copano Bay” – (10/1/2016-8/31/2019) (**PI**, \$98,206)
- National Oceanic and Atmospheric Administration – “The Hydrological Switch: A Novel Mechanism Explains Eutrophication and Acidification of Estuaries” – (09/01/2015 – 08/31/2019) (**co-PI**, \$1,265,000, Hu portion - \$243,632)
- Gulf Research Program of the National Academies of Sciences, Engineering, and Medicine – “Ocean and Coastal Acidification Monitoring at Aransas Ship Channel” (04/01/2018-03/31/2019) (**PI**, \$9,814)
- National Science Foundation – “RAPID: Capturing the Signature of Hurricane Harvey on Texas Coastal Lagoons” (10/01/2017-08/31/2019) (**co-PI**, \$182,790, Hu portion - \$54,330)
- Coastal Bend Bays and Estuaries Program - "Mechanistic Modeling of Bottom Water Dissolved Oxygen Dynamics in Baffin Bay" – (09/01/2016-04/30/2018) (**PI**, \$50,110)
- Coastal Bend Bays and Estuaries Program – “Ocean and Coastal Acidification Monitoring” – (11/1/2015-03/31/2018) (**PI**, \$65,000)
- Texas Water Development Board - "Water Quality Monitoring of Mid-Coast Estuaries." - (4/1/2016-3/31/2017) (**co-PI**, \$19,500)
- Texas Sea Grant – "Identification of Organic Matter Sources Contributing to Hypoxia Formation in Two Eutrophic South Texas Estuaries: Relationships to Watershed Land use Practices." - (02/01/2014-01/31/2016) (**co-PI**, \$272,693, Hu portion - \$128,709)
- Gulf Research Initiative – “Dynamics of Dissolved Inorganic Carbon and Dissolved Oxygen Following Natural or Manmade Petroleum Carbon Release into Marine Environments” - (01/01/2013-8/31/2016) (**co-PI**, **TAMUCC PI**, \$288,441)
- Texas Water Development Board – "Water Quality Monitoring of Mid-Coast Estuaries." - (07/01/2014-06/30/2015) (**co-PI**, \$20,000)
- National Science Foundation - "MRI: Acquisition of Elemental Stable Isotope Chemistry (ESIC) Mass Spectrometer" - (06/1/2013-05/31/2016) (**co-PI**, \$419,259)

Internal Funding (since 2012)

- TAMUCC Texas Comprehensive Research Fund – “Quantifying Estuarine CO₂ Flux Using Chamber and Eddy Covariance Methods” – (09/01/2018-08/31/2019) (**PI**, \$20,000)
- TAMUCC Texas Research Development Fund – “Alkalinity Decline and Acidification in Dewatering Estuaries” – (09/01/2014-08/31/2015) (**PI**, \$20,000)

TAMUCC Research Enhancement Fund - "Estuarine Minimum Buffer Zone - a Proof of Concept" - (09/01/2013-08/31/2014) (PI, \$5,000)

PRESENTATIONS (since 2012, “_” indicates student author)

- X. Hu** and M.R. McCutcheon. 2020. Buffer capacity of estuaries in the northwestern Gulf of Mexico. NOAA OA Community Meeting and Mini-Symposium, Miami, FL. (Presenter McCutcheon on Hu's behalf)
- L.M. Dias and **X. Hu**. 2019. Carbonate system dynamics in Galveston Bay. 25th Biannual Conference of the Coastal and Estuarine Research Federation, Mobile, AL.
- M.R. McCutcheon, H. Yao, C.J. Staryk, and **X. Hu**. 2019. Temporal variability and driving factors of the carbonate system in an estuary with long-term acidification. 25th Biannual Conference of the Coastal and Estuarine Research Federation, Mobile, AL.
- M.R. McCutcheon, H. Yao, C.J. Staryk, and **X. Hu**. 2019. Temporal variability and driving factors of the carbonate system in the tidal inlet of a semiarid estuary. 2019 ASLO Aquatic Sciences Meeting, San Juan, Puerto Rico.
- X. Hu**. 2018. Effect of organic alkalinity on seawater buffer capacity - A numerical exploration. American Geophysical Union Fall Meeting, Washington, DC.
- M.R. McCutcheon and **X. Hu**. 2018. Temporal variability and driving factors of the carbonate system in the tidal inlet of a semiarid estuary. Gulf Estuarine Research Society 2018 Fall Meeting, Galveston, TX.
- L.M. Dias; **X. Hu**, and D. Murgulet. 2018. Factors influencing the alkalinity of a south Texas estuary. Gulf Estuarine Research Society 2018 Fall Meeting, Galveston, TX.
- X. Hu**. 2018. Two tales of one storm. Harvey Research Symposium. Port Aransas, TX.
- H. Yao, **X. Hu**, P.A. Montagna. 2018. CO₂ flux in northwestern Gulf of Mexico estuaries – a hydrological control? ASLO 2018 Summer Meeting. Victoria, Canada.
- M.R. McCutcheon, **X. Hu**. 2018. Understanding uncertainties in the changing carbon budget of estuaries: A case study in the northwestern Gulf of Mexico. ASLO 2018 Summer Meeting. Victoria, Canada.
- X. Hu**. 2018. Temporal Variations in Carbonate Chemistry and Decadal Acidification in Flower Garden Banks Marine Sanctuary. Mini-Symposium: 2016 Flower Garden Banks Localized Mortality Event. Galveston, TX.
- X. Hu**, C.J. Staryk, M.R. McCutcheon, H. Yao, M.S. Wetz, P.A. Montagna. 2018. Extreme weather event induced changes in estuarine CO₂ flux and carbon cycle. Ocean Sciences Meeting. Portland, OR.
- H. Wang and **X. Hu**. 2018. Decadal *f*CO₂ Trends in Western Boundary Current- and Eastern Boundary Current-influenced Areas. Ocean Sciences Meeting. Portland, OR.
- X. Hu**, H. Wang, M.S. Wetz, and K.C. Hayes. 2017. Modeling of dissolved oxygen and pH dynamics in Baffin Bay. 24th Biannual Conference of the Coastal and Estuarine Research Federation. Providence, RI.
- C.J. Staryk, M.R. McCutcheon, and **X. Hu**. Seasonal hypoxia and high buffer capacity in a shallow subtropical estuary. 24th Biannual Conference of the Coastal and Estuarine Research Federation. Providence, RI.
- H. Wang, N.N. Rabalais, and **X. Hu**. 2017. Multi-decadal acidification enhanced by eutrophication in the northern Gulf of Mexico. 24th Biannual Conference of the Coastal and Estuarine Research Federation. Providence, RI.

- K.C. Hayes, M.S. Wetz, H. Wang, and **X. Hu**. Identification of organic matter sources contributing to hypoxia in two eutrophic South Texas estuaries. 24th Biannual Conference of the Coastal and Estuarine Research Federation. Providence, RI.
- H. Yao and **X. Hu**. 2017. Hydrologic control on CO₂ fluxes in subtropical estuaries. 24th Biannual Conference of the Coastal and Estuarine Research Federation. Providence, RI.
- M.R. McCutcheon and **X. Hu**. 2017. CO₂ flux and long-term *p*CO₂ trends of the estuaries of the Northwestern Gulf of Mexico. 24th Biannual Conference of the Coastal and Estuarine Research Federation. Providence, RI.
- H. Wang and **X. Hu**. 2017. Multi-decadal *f*CO₂ trends in Western Boundary Current- and Eastern Boundary Current-Dominated Margins. Ocean Carbon Hot Spots Workshop (U.S. CLIVAR), Moss Landing, CA.
- M.R. McCutcheon and **X. Hu**. 2017. CO₂ flux and long-term *p*CO₂ trends of the estuaries of the Northwestern Gulf of Mexico. Gordon Research Conference on Chemical Oceanography, New London, NH.
- H. Yao and **X. Hu**. 2017. Hydrologic control on CO₂ fluxes in subtropical estuaries. Gordon Research Conference on Chemical Oceanography, New London, NH.
- K.C. Hayes, M.S. Wetz, E.K. Cira, H. Wang, and **X. Hu**. 2017. Is Baffin Bay 'Eutrophic'?. 2017 Texas Bays and Estuaries Meeting, Port Aransas, TX.
- H. Wang, **X. Hu**, M.S. Wetz, and K. Hayes. 2017. Numerical Modeling of Oxygen Dynamics in Baffin Bay. 2017 Texas Bays and Estuaries Meeting, Port Aransas, TX.
- H. Yao and **X. Hu**. 2017. Hydrologic control on subtropical estuarine CO₂ fluxes. 2017 Texas Bays and Estuaries Meeting, Port Aransas, TX.
- H. Yao and **X. Hu**. 2017. Hydrologic control on subtropical estuarine CO₂ fluxes. Joint NACP and AmeriFlux Principal Investigators Meeting, North Bethesda, MD.
- X. Hu**. 2017. Dealkalization of estuaries in the northwestern Gulf of Mexico. NOAA Ocean Acidification Program PI meeting, Seattle, WA.
- H. Wang, K.C. Hayes, M.S. Wetz, and **X. Hu**. 2016. Identification of organic matter that drives oxygen consumption in Baffin Bay, TX. Gulf Estuarine Research Society 2016 Fall Meeting, Pensacola, FL.
- M.R. McCutcheon and **X. Hu**. 2016. Estimating air-sea CO₂ flux and long-term *p*CO₂ trends of the northwestern Gulf of Mexico estuaries. Gulf Estuarine Research Society 2016 Fall Meeting, Pensacola, FL.
- X. Hu**, N.N. Rabalais, R.E. Turner. 2016. Eutrophication, storm, and benthic respiration: a case study on carbonate chemistry in the northern Gulf of Mexico. Gulf Estuarine Research Society 2016 Fall Meeting, Pensacola, FL.
- X. Hu**, H. Yao, and C.J. Starky. 2016. Mysterious alkalinity loss during a drought year (2014) in the Mission-Aransas Estuary. 12th Texas Bays and Estuaries Meeting, Port Aransas, TX.
- H. Wang, K.C. Hayes, M.S. Wetz, and **X. Hu**. 2016. A stable isotope study on organic matter driving oxygen consumption in two south Texas estuaries. 12th Texas Bays and Estuaries Meeting, Port Aransas, TX.
- K.C. Hayes, E.K. Cira, H. Wang, **X. Hu**, and M.S. Wetz. 2016. Spatial and temporal distribution of organic carbon and nitrogen in a eutrophic estuary (Baffin Bay, TX) . 12th Texas Bays and Estuaries Meeting, Port Aransas, TX.

- M.R. McCutcheon and **X. Hu**. 2016. Long-term trends and spatial variability of $p\text{CO}_2$ in the Texas estuaries. 12th Texas Bays and Estuaries Meeting, Port Aransas, TX.
- M. Trevino, D. Murgulet, **X. Hu**, A. Douglas, and N. Spalt. 2016. Alkalinity dynamics in groundwater affected secondary bay in south Texas. 12th Texas Bays and Estuaries Meeting, Port Aransas, TX.
- H. Wang, **X. Hu**, W.-J. Cai, and N.N. Rabalais. 2016. Comparison of $f\text{CO}_2$ trends in a river dominated and an ocean dominated ocean margins. Ocean Sciences Meeting, New Orleans, LA.
- H. Wang, **X. Hu**, and N.N. Rabalais. 2016. What Drives Oxygen Consumption in the Northern Gulf of Mexico? – A Stable Isotope Perspective. Ocean Sciences Meeting, New Orleans, LA.
- H. Yao and **X. Hu**. 2016. Seasonality of Carbonate Chemistry and CO_2 Flux in a Northwestern Gulf of Mexico Estuary. Ocean Science Meeting, New Orleans, LA.
- M.R. McCutcheon and **X. Hu**. 2016. Exploring relationships of calcification rate with respiration rate and predator cue presence in juvenile *Crassostrea virginica*. Ocean Sciences Meeting, New Orleans, LA.
- W.-J. Huang, W.-J. Cai, Y. Wang, and **X. Hu**. 2016. Spatial and Temporal Distributions of Carbonate Saturation State on the Mississippi River Dominated Northern Gulf of Mexico. Ocean Sciences Meeting, New Orleans, LA.
- Q. Wang, M Evans, H. Bacosa, **X. Hu**, and Z. Liu. 2016. The Fate of Crude Oil during Photooxidation under Natural Sunlight. Ocean Sciences Meeting, New Orleans, LA.
- J. Reimer, W.-J. Cai, S. Noakes, **X. Hu**, B. Chen, A.Z. Wang, L. Jiang, and J. Salisbury. 2016. $p\text{CO}_2$ time series ground truthing and internal consistency at the Gray's Reef mooring (NDBC-41008) in the South Atlantic Bight. Ocean Sciences Meeting, New Orleans, LA.
- X. Hu**, C.J. Staryk, and H. Yao. 2015. Acidification of a Shallow Subtropical Estuary - Reduced Freshwater Inflow, Hypoxia, and Ocean Acidification. 23rd Biannual Conference of the Coastal and Estuarine Research Federation. Portland, OR.
- H. Wang, K. Heyes, M.S. Wetz, **X. Hu**. 2015. A Stable Isotope Study on Organic Matter Driving Oxygen Consumption in Two South Texas Estuaries. 23rd Biannual Conference of the Coastal and Estuarine Research Federation. Portland, OR.
- H. Wang, B. Sterba-Boatwright, and **X. Hu**. 2015. A new statistical approach interpreting or ocean $f\text{CO}_2$ record. Gordon Research Conference on Chemical Oceanography, Holderness, NH.
- H. Yao and **X. Hu**. 2015. Alkalinity dynamics in a South Texas estuary. 2015 Texas Bays and Estuaries Meeting. Port Aransas, TX.
- M.R. McCutcheon and **X. Hu**. 2015. Investigating nonconsumptive predator effects on the eastern oyster. 2015 Gulf of Mexico Graduate Student Symposium, Dauphin Island, AL.
- H. Wang, **X. Hu**, W.-J. Cai, N.N. Rabalais, W.-J. Huang, and J. Xue. 2015. Evidence of Cross-shelf Inorganic Carbon Export in the Northern Gulf of Mexico. Gulf of Mexico Oil Spill & Ecosystem Science Conference. Houston, TX.
- X. Hu**, H. Bacosa, and Z. Liu. 2015. Photo-oxidation of Louisiana Sweet Crude Oil in Gulf Waters - A Preliminary Result. Gulf of Mexico Oil Spill & Ecosystem Science Conference. Houston, TX.

- X. Hu.** 2014. Long-term alkalinity decrease and acidification of estuaries in southwestern United States. Coastal CARBON Synthesis (CCARS) Community Workshop. Woods Hole, MA.
- M.R. McCutcheon, X. Hu, J. Beres Pollack, P.A. Montagna, and Z. Ouyang.** 2014. Long-term alkalinity decline in dewatering Texas estuaries". 2014 Texas Bays and Estuaries Meeting. (1st Prize student poster).
- X. Hu.** 2014. "Exploring Estuarine Acidification and Minimum Buffer Zone" Ocean Sciences Meeting, Honolulu, HI.
- H. Wang, X. Hu, R.E. Turner, W. Cai, N. Rabalais.** 2014. Stable Isotope Composition of Remineralizing Organic Carbon In The Northern Gulf of Mexico Continental Shelf Sediments. Gulf of Mexico Oil Spill & Ecosystem Science Conference. Mobile, AL.
- J. Xue, W. Cai, X. Hu, W. Huang.** 2014. Relative rates and stoichiometry ratios of organic matter respiration in bottom water of the northern Gulf of Mexico during summertime. Gulf of Mexico Oil Spill & Ecosystem Science Conference. Mobile, AL.
- N.N. Rabalais, L.M. Smith, R.E. Turner, E.B. Overton, X. Hu, W. Cai.** 2014. Deepwater Horizon Oil Spill and Gulf of Mexico Shelf Hypoxia. Gulf of Mexico Oil Spill & Ecosystem Science Conference. Mobile, AL.
- X. Hu, W.-J. Cai, and N.N. Rabalais.** 2013. Organic carbon remineralization stoichiometry - a useful indicator for detecting oil degradation in water column. Gulf of Mexico Oil Spill & Ecosystem Science Conference. New Orleans, LA.
- X. Hu.** Estuarine Acidification – Controls and Implications, Harte Institute for Gulf of Mexico Studies, Corpus Christi, TX. (April 12, 2013).
- V. Schoep, X. Hu, A.G. Grottoli, W.-J. Cai, M.E. Warner, T. Melman, H. Xu, Q. Li, Y. Wang, K. Hoadley, D.T. Pettay, J. Baumann, and Y. Matsui.** 2012. Coral calcification under elevated $p\text{CO}_2$ and temperature: A Comparison of the buoyant weight and alkalinity anomaly method. Third Symposium on Ocean in a High CO_2 world. Monterey, CA.

INVITED TALKS

- "Carbonate Chemistry of Estuaries along a Climatic Gradient" - OneNOAA Science Seminar Series (January 16, 2020).
- "Ocean Acidification in the northwestern Gulf of Mexico" - Gulf of Mexico Coastal Ocean Observing Network (G-CAN) Webinar (August 21, 2019).
- "Decadal changes in the carbonate chemistry in northern Gulf of Mexico waters – Rising CO_2 , "leaked" nutrient and potential sea changes" - T.W. Bennett Symposium, University of Southern Mississippi, Ocean Springs, MS (March 21, 2019).
- "Disparate Responses of Estuarine and Ocean Acidification to Aerobic Respiration" - Gulf Coast Research Lab, University of Southern Mississippi, Ocean Springs, MS (Sept 13, 2018).
- "Estuarine Acidification - Through the Looking Glass" - Department of Oceanography, Texas A&M University, College Station, TX (April 16, 2018).
- "Estuarine Acidification, A Subtropical (Texas) Flavor" - Gulf of Mexico Coastal Ocean Observing Network (G-CAN) Webinar (May 18, 2017).
- "Ocean Acidification – Myths, Facts, and a Case Study in a South Texas Estuary" - Harte Institute for Gulf of Mexico Studies, Corpus Christi, TX. (February 19, 2016).

"Estuarine Acidification in the Context of Ocean Acidification a Theoretical Exploration" - TAMU Galveston Marine Biology Seminar Series, Department of Marine Biology - TAMU Galveston, Galveston, TX. (November 21, 2013).

"Estuarine Acidification in the Context of Ocean Acidification a Theoretical Exploration" - UTMSI Technician Seminar Series, University of Texas Marine Science Institute, Port Aransas, TX. (October 25, 2013).

"Estuarine Acidification – Controls and Implications" - Harte Institute for Gulf of Mexico Studies, Corpus Christi, TX. (April 12, 2013).

TEACHING EXPERIENCE (Evaluation average 4.40/5.00)

Instructor of record at Texas A&M University – Corpus Christi for

2019	CHEM1411	General Chemistry	58 undergraduate students
	*ESCI4490	Ocean and Estuarine Acidification	15 undergraduate students
	*CMSS6590	Ocean and Estuarine Acidification	1 graduate students
2018	CHEM4344	Chemical Oceanography	7 undergraduate students
	CHEM5362	Chemical Oceanography	5 graduate students
2017	CMSS6357	Global Biogeochemical Cycles and Change	8 graduate students
	CHEM4344	Chemical Oceanography	9 undergraduate students
	CHEM1411	General Chemistry	51 undergraduate students
2016	CHEM4344	Chemical Oceanography	13 undergraduate students
	CHEM1411	General Chemistry	52 undergraduate students
2015	CHEM1411	General Chemistry Lab	23 undergraduate students
	CHEM4344	Chemical Oceanography	20 undergraduate students
	CHEM5490	Chemical Oceanography	2 graduate students
	*CMSS6357	Global Biogeochemical Cycles and Change	4 graduate students
2014	CHEM1411	General Chemistry Lab	23 undergraduate students
	*CHEM4344	Chemical Oceanography	18 undergraduate students
	*CHEM5490	Chemical Oceanography	2 graduate students
2013	#CMSS6102	Seminar in Coastal Marine System Science	14 graduate students
	*CHEM5421	Aquatic Chemistry	3 graduate students
	*CHEM4490	Aquatic Chemistry	3 undergraduate students
	#CHEM4344	Chemical Oceanography	14 undergraduate students

* Developed courses; # Significantly revised courses from prior instructors.

Guest lecturer at Texas A&M University-Corpus Christi for

2017 CMSS6307 Coastal and Marine Systems

2016 CMSS6307 Coastal and Marine Systems

2015 CMSS6307 Coastal and Marine Systems

ADVISING AND MENTORING

Graduate Students Supervised

Doctor of Philosophy – Dissertation Advisor

- 2017 – present Larissa Dias, Coastal and Marine System Science
2015 – present Melissa McCutcheon, Coastal and Marine System Science
2014 – 2019 Hongming Yao, Coastal and Marine System Science
2013 – 2018 Hongjie Wang, Coastal and Marine System Science

Master of Science – Thesis Advisor

- 2020 – present EvaLynn Jundt, Coastal and Marine System Science
2017 – 2019 Corrie Clark, Chemistry
2013 – 2015 Melissa McCutcheon, Environmental Science

Graduate Committee Appointments

- Current Lily Walker (Coastal and Marine System Science Ph.D.)
Nin Gan (Marine Biology Ph.D.)
William Wolfe (Environmental Science M.S.)
- Past Kenneth Hayes (Environmental Science M.S., graduated 2020)
Warren Duengan (Environmental Science M.S., graduated 2020)
Sebastian Rubiano (Chemistry M.S., graduated 2019)
I-Shuo Huang (Marine Biology Ph.D., graduated 2018)
Cody Lopez (Environmental Science M.S., graduated 2018)
Jamie Smith (Coastal and Marine System Science M.S., graduated 2018)
Lixin Wang (Environmental Science M.S., graduated 2016)
Melissa Trevino (Environmental Science M.S., graduated 2016)
Lee Schroer (Environmental Science M.S., graduated 2014)

Undergraduate Students Supervised

- 2018 Esteban De La Rosa (TAMUCC)
2015-2016 Lucas Martinez (TAMUCC)
2014 Anthony Guzman (Welch, TAMUCC)
2013 Matina Granieri (NSF-REU, Temple University)

High School Students Supervised

- 2019 Elizabeth Clark, Will Chesnut (Flour Bluff High School)
2018 Terrion Frank, Altio Saavedra (Foy Moody High School)

Visiting Scholars Supervised

- 2013-2014 Irma Kasaulya (U.S. Fulbright Scholar, Pattimura University, Indonesia)
2013-2014 Zhangxian Ouyang (Visiting Scholar, Sun Yat-sen University, China)

PROFESSIONAL ACTIVITIES (external)

- 2020 Invited NOAA Panelist

2019 Invited Sea Grant Panelist
 2018-2019 Invited NSF Panelist
 2018-present **Associate Editor**, “Frontier in Marine Science”.
 2017-present **Guest Speaker**, “Aquatic Science”, Foy Moody High School, Corpus Christi, TX
 2017-present **Steering Committee Member**, Gulf of Mexico Coastal Acidification Network
 2016 **Guest Speaker**, 4th Grade's "Ocean Planning Week", Windsor Park Elementary School, Corpus Christi, TX

Manuscript Reviews for

Aquatic Geochemistry
 Aquatic Microbial Ecology
 Biogeosciences
 Chemical Geology
 Continental Shelf Research
 Deep-Sea Research I
 Deep-Sea Research II
 Elementa: Science of the Anthropocene
 Environmental Science and Pollution Research
 Environmental Science & Technology
 Estuaries and Coasts
 Estuarine, Coastal and Shelf Science
 Geochimica et Cosmochimica Acta
 Geophysical Research Letters
 Global Biogeochemical Cycles
 Journal of Geophysical Research
 Journal of Marine Systems
 Journal of Oceanography
 Limnology and Oceanography
 Limnology and Oceanography: Methods
 Marine and Freshwater Research
 Marine Chemistry
 Marine Pollution Bulletin
 Paleogeography, Paleoclimatology, Palaeoecology
 Rapid Communications in Mass Spectrometry
 Royal Society Open Science
 Science
 Scientific Reports
 Terrestrial Atmospheric and Oceanic Sciences
 The ISME Journal

Grant Proposal Reviews for

National Science Foundation
National Oceanic and Atmospheric Administration
Sea Grant Programs (New Hampshire, New York/Connecticut, Georgia, Louisiana)
Schmidt Ocean Institute
Fonds de recherche du Québec

PROFESSIONAL ACTIVITIES (internal)

University

2019-2020 Member, Promotion & Tenure Task Force, Texas A&M University-Corpus Christi
2019- Member, University Curriculum Committee, Texas A&M University-Corpus Christi
2019-2020 Chair, Curriculum Subcommittee of the Graduate Council, Texas A&M University-Corpus Christi
2016- Member, Environmental Council, Texas A&M University-Corpus Christi
2016- Member, Graduate Council, Texas A&M University-Corpus Christi

College

2017-2020 Wes Tunnel Distinguished Lecturers Selection Committee - College of Science and Engineering, Texas A&M University-Corpus Christi
2014-2017 Member, Strategic Plan Steering Committee - College of Science and Engineering, Texas A&M University-Corpus Christi

Department & Program

2016- Member, Course & Curriculum Committee, Coastal Marine System Science Program
2016-2017 Library Liaison, Coastal Marine System Science Program
2014-2015 Search Committee Chair – Environmental Chemistry Faculty Position
2014-2015 Search Committee Member – Marine Chemistry Faculty Position
2014 Search Committee Member – Visiting Assistant Professor in Environmental Sciences
2013-2014 Search Committee Co-Chair – Two Chemistry Faculty Positions
2013-2014 Search Committee Member – Chair for the Department of Physical and Environmental Sciences, Marine Microbial Ecologist Position

Administrative Appointments

2017-2019 Coordinator, Coastal & Marine System Science Program - Department of Physical & Environmental Sciences, Texas A&M University-Corpus Christi
2017 Coordinator, Chemistry M.S. Program - Department of Physical & Environmental Sciences, Texas A&M University-Corpus Christi