Xingchen (Tony) Wang

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EDUCATION

Ph.D. in Geosciences, Princeton University 2016

B.S. in Geochemistry, **Nanjing University** 2010

APPOINTMENTS

Boston College, Department of Chemistry 2020 – Present
Assistant Professor (courtesy appointment)

Boston College, Department of Earth and Environmental Sciences 2020 – Present
Assistant Professor

California Institute of Technology, Division of Geological and Planetary Sciences 2016 – 2019
Postdoctoral Scholar

Max Planck Institute for Chemistry Summer 2016
Visiting Scholar

Princeton University, Department of Geosciences 2010 – 2016
Graduate Research Assistant

HONORS & AWARDS

Simons Foundation Postdoctoral Fellowship	2017 – 2019
Postdoctoral Fellowship in Geobiology, California Institute of Technology	2016 – 2017
Charlotte Elizabeth Procter Honorific Fellowship, Princeton University	2014 – 2015
Schlanger Fellowship, International Ocean Discovery Program	2014 – 2015
Princeton Energy and Climate Scholars, Princeton University	2013 – 2015
HSBC Scholarship, Nanjing University	2009 – 2010
People's Scholarship, Nanjing University	2006 – 2008

RESEARCH GRANTS

National Science Foundation, "Collaborative Research: US GEOTRACES GP17-ANT: Nitrogen isotope dynamics on the Amundsen Sea continental margin", 2023-2026, $328,355. Role: Principal Investigator.

USACE Engineer Research and Development Center, "Sediment transport and water quality in watersheds and coastlines of the United States", 2020-2024, $6,190,374. Role: Co-Principal Investigator for Research Area 2 ($668,087 to Wang).

VPR Capital Equipment Fund (Boston College), "Acquisition of an Elemental Analyzer for the Center for Isotope Geochemistry", 2019-2020, $64,986. Role: Principal Investigator.

Simons Foundation, "N isotopes in stromatolites: Linking the N cycle to the origins of life", 2017-2019, $255,000. Role: Principal Investigator.

National Science Foundation, "Collaborative Research: Identifying the Role of Basin-scale Climate Variability in the Decline of Atlantic Corals", 2015-2018, $264,801. Role: co-writer of the proposal as a graduate student.

U.S. Science Support Program, "Exploring the late Pleistocene marine nitrogen cycle in the South Pacific using nitrogen isotopes of fossil corals from Tahiti", 2014-2015, $30,000. Role: Principal Investigator.

PEER-REVIEWED PUBLICATIONS

(* indicates students/postdoc advised by Wang on the paper)

30. **Wang, X. T.**, ***Y. Wang**, A. Auderset, D. M. Sigman, H, Ren, G. H. Haug, Z. Su, Y. G. Zhang, B. Rasmussen, A. L. Sessions, W. F. Fischer, Oceanic nutrient rise and the late Miocene inception of Pacific oxygen-deficient zones, ***Proceedings of the National Academy of Sciences***, 119 (45), e2204986119 (2022).

29. Auderset, A., S. Moretti, B. Taphorn, P. Ebner, E. Kast, **X. T. Wang**, R. Schiebel, D. M. Sigman, G H. Haug, A. Martinez-Garcia, Enhanced ocean oxygenation during Cenozoic warm periods, ***Nature***, 609, 77–82 (2022).

28. Aronson, H., D. Monteverde, B. D. Barnes, B. R. Johnson, M. J. Zawaski, D. R. Speth, **X. T. Wang**, J. Johnson, S. Webb, J. S. Magyar, A. L. Sessions, V. J. Orphan, W. W. Fischer, Sulfur cycling at natural hydrocarbon and sulfur seeps in Santa Paula Creek, CA, ***Geobiology***, 00, 1-19 (2022).

27. Kast, E. R., M. L. Griffiths, Z. C. Rao, K. Shimada, M. A. Becker, S. L. Kim, H. M. Maisch, R. A. Eagle, C .Clark, A. Neumann, T. Lüdecke, J. N. Leichliter, A. Martínez-García, A. Akhtar, **X. T. Wang**, G. H. Haug, D. M. Sigman, Cenozoic megatooth sharks occupied extremely high trophic positions, ***Science Advances***, 8 (25), eabl6529 (2022).

26. ***Dong, S.**, **Wang, X. T.**, A. Subhas, J. F. Adkins, W. M. Berelson, Suspended carbon and nitrogen along a North Pacific transect: concentrations, isotopes, and C:N ratios, ***Limnology and Oceanography***, 2021,1-14 (2021).

25. Hilkert, A., J. K. Böhlke, S. J. Mroczkowski, K. L. Fort, K. Aizikov, **X. T. Wang**, S. H. Kopf, C. Neubauer, Exploring the potential of Electrospray-Orbitrap for stable isotope analysis using nitrate as a model. ***Analytical Chemistry***, 93 (26), 9139–9148 (2021).

24. Li, G., W. W. Fischer, M. P. Lamb, A. J. West, T. Zhang, V. Galy, **X. T. Wang**, S. Li, G. Li, L. Zhao, J. Ji, Coal fly ash is a major carbon flux in the Changjiang (Yangtze) River basin. ***Proceedings of the National Academy of Sciences***, 118 (21), e1921544118 (2021).

23. Phillips, A. A., D. R. Speth, L. G. Miller, **X. T. Wang**, F. Wu, P. M. Medeiros, D. R. Monteverde, M. R. Osburn, W. M. Berelson, H. L. Betts, R. S. Wijker, S. W. Mullin, H. A. Johnson, V. J. Orphan, W. F. Fischer, Microbial succession and dynamics in meromictic Mono Lake, CA. ***Geobiology***, (2021).

22. Sigman, D. M., F. Fripiat, A. S. Studer, P. C. Kemeny, A. Martinez-Garcia, M. P. Hain, X. E. Ai, **X. T. Wang**, H. A. Ren, G. H. Haug, The Southern Ocean during the ice ages: A review of the Antarctic surface isolation hypothesis, informed by the North Pacific. ***Quaternary Science Reviews***, 254, 106732 (2021).

21. ***Zhang, R.**, **X. T. Wang**, H. A. Ren, J. Huang, M. Chen, D. M. Sigman, Dissolved organic nitrogen cycling in the South China Sea from an isotopic perspective. ***Global Biogeochemical Cycles***, e2020GB006551 (2020).

20. Li, T., L. F. Robinson, T. Chen, **X. T. Wang**, A. Burke, J. W. B. Rae, A. Pegrum-Haram, T. D.J. Knowles, G. Li, H. C. Ng, M. G. Prokopenko, G. Rowland, A. Samperiz, J. Stewart, J. Southon, P. T. Spooner, Rapid shifts in physical and biological processes of the Southern Ocean during deglacial CO_2 events. ***Science Advances***, 6 (42), eabb3807 (2020).

19. Neubauer, C., A. Cremiere, **X. T. Wang**, N. Thiagarajan, A. L. Sessions, J. F. Adkins, N. F. Dalleska, A. V. Turchyn, J. A. Clegg, A. Moradian, M. J. Sweredoski, S. D. Garbis, J. M. Eiler, Stable Isotope Analysis of Intact Oxyanions Using Electrospray Quadrupole-Orbitrap Mass Spectrometry. ***Analytical Chemistry***, 92, 3077–3085 (2020).

18. Sims, Z. C., A. L. Cohen, V. H. Luu, **X. T. Wang**, D. M. Sigman, Uptake of groundwater nitrogen by a near shore coral reef community on Bermuda. ***Coral Reefs***, 39, 215–228 (2020).

17. ***Duprey, N. N.**, **X. T. Wang**, T. Kim, J. Cybulski, H. B. Vonhof, P. J. Crutzen, G. H. Haug, D. M. Sigman, A. Martinez-Garcia, D. M. Baker, Megacity development and the demise of coastal coral communities: evidence from coral skeleton δ^{15}N records in the Pearl River Estuary. ***Global Change Biology***, 26, 1338-1353 (2020).

16. Kast, E. R., D. A. Stolper, A. Auderset, J. A. Higgins, H. Ren, **X. T. Wang**, A. Martinez-Garcia, G. H. Haug, D. M. Sigman, Nitrogen isotope evidence for expanded ocean suboxia in the early Cenozoic. ***Science***, 364, 386-389 (2019).

15. **Wang, X. T.**, A. L. Cohen, V. Luu, H. Ren, Z. Su, G. H. Haug, D. M. Sigman, Natural forcing of the North Atlantic nitrogen cycle in the Anthropocene. ***Proceedings of the National Academy of Sciences***, 115, 10606-10611 (2018).

14. Studer, A. S., D. M. Sigman, A. Martinez-Garcia, L. M. Thole, E. Michel, S. L. Jaccard, J. Lippold, A. Mazaud, **X. T. Wang**, L. F. Robinson, J. F. Adkins, G. H. Haug, Increased nutrient supply to the Southern Ocean during the Holocene and its implications for the pre-industrial atmospheric CO_2 rise. ***Nature Geoscience***,, 11, 756–760 (2018).

13. Lueders-Dumont, J. A., **X. T. Wang**, O. P. Jensen, D. M. Sigman, B. B. Ward, Nitrogen isotopic analysis of otolith-bound organic matter in modern and fossil fish otoliths. ***Geochimica et Cosmochimica Acta***, 224, 200-222 (2018).

12. Meng, X, L. Liu, **X. T. Wang**, W. Balsam, J. Chen, J. Ji, Mineralogical evidence of reduced East Asian summer monsoon rainfall on the Chinese loess plateau during early Pleistocene interglacials. ***Earth and Planetary Science Letters***, 486, 61-69 (2018).

11. Tornabene, C., R. C. Martindale, **X. T. Wang**, M. F. Schaller, Detecting photosymbiosis in fossil Scleractinian corals. ***Scientific Reports***, 7, 9465 (2017).

10. Ren, H., Y. Chen, **X. T. Wang**, G. T. F. Wong, A. L. Cohen, T. M. DeCarlo, M. A. Weigand, H. S. Meng, D. M. Sigman, 21st century rise in anthropogenic nitrogen deposition on a remote coral reef. ***Science***, 356, 749-752 (2017).

9. ***Duprey, N.**, **X. T. Wang**, P. D. Thompson, J. Pleadwell, L. J. Raymundo, K. Kim, D. M. Sigman, D. M. Baker, Life and death of a sewage treatment plant recorded in a coral skeleton δ^{15}N record. ***Marine Pollution Bulletin***, 120, 109-116 (2017).

8. **Wang, X. T.**, D. M. Sigman, M. G. Prokopenko, J. F. Adkins, L. F. Robinson, S. K. Hines, J. Chai, A. S. Studer, A. Martinez-Garcia, T. Chen, G. H. Haug, Deep-sea coral evidence for lower Southern Ocean surface nitrate concentrations during the last ice age. ***Proceedings of the National Academy of Sciences***, 114, 3352–3357 (2017).

7. Frankowiak, K., **X. T. Wang**, D. M. Sigman, A. M. Gothmann, M. V. Kitahara, M. Mazur, A. Meibom, and J. Stolarski, Photosymbiosis and the expansion of shallow-water corals. ***Science Advances***, 2, e1601122 (2016).

6. **Wang, X. T.**, D. M. Sigman, A. L. Cohen, D. J. Sinclair, R. M. Sherrell, K. M. Cobb, D. V. Erler, J. Stolarski, M. V. Kitahara, H. Ren, Influence of open ocean nitrogen supply on the skeletal δ^{15}N of modern shallow-water scleractinian corals. ***Earth and Planetary Science Letters***, 441, 125-132 (2016).

5. Erler, D.V., **X. T. Wang**, D. M. Sigman, S. R. Scheffers, A. Martinez-Garcia, G. H. Haug, Nitrogen isotopic composition of organic matter from a 168 year-old coral skeleton: Implications for coastal nutrient cycling in the Great Barrier Reef Lagoon. ***Earth and Planetary Science Letters***, 434, 161-170 (2016).

4. Li G., **X. T. Wang**, Z. Yang, A. J. West, C. Mao, J. Ji, Dam-triggered organic carbon sequestration makes the Changjiang (Yangtze) river basin (China) a significant carbon sink. ***Journal of Geophysical Research-Biogeosciences***, 120, 39-53 (2015).

3. Erler, D.V., **X. T. Wang**, D. M. Sigman, S. R. Scheffers, B. O. Shepherd, Controls on the nitrogen isotopic composition of shallow water corals across a tropical reef flat transect. ***Coral Reefs***, 34, 329-338 (2015).

2. **Wang, X. T.**, D. M. Sigman, A. L. Cohen, D. J. Sinclair, R. M. Sherrell, M. A. Weigand, D. V. Erler, H. Ren, Isotopic composition of skeleton-bound organic nitrogen in reef-building symbiotic corals: A new method and proxy evaluation at Bermuda. ***Geochimica et Cosmochimica Acta***, 148, 179-190 (2015).

1. **Wang, X. T.**, M. G. Prokopenko, D. M. Sigman, J. F. Adkins, L. F. Robinson, H. Ren, S. Oleynik, B. Williams, G. H. Haug, Isotopic composition of carbonate-bound organic nitrogen in deep-sea scleractinian corals: A new window into past biogeochemical change. ***Earth and Planetary Science Letters***, 400, 243-250 (2014).

OTHER PUBLICATIONS

1. Contributing author, Fusion energy via magnetic confinement. *Energy Technology Distillates*, Andlinger Center For Energy and the Environment, Princeton University (2016).

SELECTED NEWS COVERAGE

"The origins of ocean 'dead zones'", *Boston College News*, December, 2022

"Jurassic Shark? Not exactly. But "Megatooth" sharks devoured prey at will about 40 million years after dinosaurs went extinct", *Boston College News*, July, 2022

"Impact of coal burning on Yangtze River is comparable to natural processes", *Caltech News*, May, 2021

"Deep-sea corals reveal secrets of rapid carbon dioxide increase as the last ice age ended", *Boston College News*, November, 2020

"Princeton geoscientists find new fallout from 'the collision that changed the world", *Princeton University News*, April 25, 2019

"Scientists studied skeleton of 130-year-old brain coral to learn about nitrogen pollution", *MSN.com*, October 2, 2018

"130-year-old brain coral reveals encouraging news for open ocean", *Princeton University News*, October 1, 2018

"Carbon 'leak' may have warmed the planet for 11,000 years, encouraging human civilization", *Princeton University News*, July 30, 2018

"Deep-sea corals reveal why atmospheric carbon was lower during the ice ages", *Princeton Research*, March 16, 2017

"Cold Climates and Ocean Carbon Sequestration", *Caltech News*, March 14, 2017

"Global warming could be breaking up this 200 million year old relationship", *Washington Post*, November 2, 2016

"Can an Ancient Friendship Help Save Corals?", *Discover Magazine*, November 2, 2016

"When corals met algae: Symbiotic relationship crucial to reef survival dates to the Triassic", *Princeton University News*, November 2, 2016

TEACHING EXPERIENCE

Boston College, Department of Earth and Environmental Sciences

EESC 2204: Environmental Systems: Geochemistry (Fall 2021, Fall 2022), Instructor

EESC/CHEM 3320: Introduction to Geochemistry (Spring 2021, Spring 2022), Instructor

EESC 5230: Stable Isotope Biogeochemistry (Spring 2021, Spring 2022), Instructor

EESC 5563: Paleoceanography and Paleoclimatology (Fall 2020), Instructor

EESC 6691: Earth System Seminar (Fall 2021, Fall 2022), Instructor

California Institute of Technology, Division of Geological and Planetary Sciences

GE-140: Stable Isotope Biogeochemistry (Spring 2018), Guest Lecturer

International Geobiology Training Course

Geochemistry section (Summer 2017, 2018), Teaching Assistant

Princeton University, Department of Geosciences

GEO 102: Climate: Past, Present, and Future (Fall 2013), Teaching Assistant

SERVICE

Committees

Search Committee (2022-2023), Assistant Professor in Ice Sheet Dynamics, Boston College

Graduate Committee (2020-2022), Department of Earth and Environmental Sciences, Boston College

Advisory Committee (2020-present), Center for Isotope Geochemistry, Boston College

Search Committee (2021), Assistant Director of Center for Isotope Geochemistry, Boston College

Selection committee (2020), VPR Capital Equipment Fund, Boston College

Search Committee (2020), Director of Center for Isotope Geochemistry, Boston College

Reviewer

National Science Foundation (ad hoc and panel), Royal Society (UK), Environmental Science & Technology, Geochimica et Cosmochimica Acta, Geology, Geophysical Research Letters, Global Biogeochemical Cycles, Limnology & Oceanography, Nature Climate Change, Nature Communications, Nature Geosciences, Paleoceanography & Paleoclimatology, Proceedings of the National Academy of Sciences, Science Advances, The ISME Journal, etc.

Editor

Earth System Science Data, Ocean Section (2022-Present)

Session Convener

“Development and application of coral proxies for ocean change”, AGU Fall Meeting, San Francisco, CA, USA, 2019

“Nitrogen cycling in the ocean: From genes to ecosystems and from the past to the future”, Xiamen Symposium on Marine Environmental Sciences, Xiamen, China, 2019

“Development and application of coral proxies for ocean change”, AGU Fall Meeting, New Orleans, LA, USA, 2017

“Nutrient biogeochemistry in the ocean”, Goldschmidt Conference, Paris, France, 2017

“Nutrient cycling in past oceans”, AGU Fall Meeting, San Francisco, CA, USA, 2016

INVITED SEMINARS

School of the Earth, Ocean and Environment, University of South Carolina	2023
Department of Earth and Environmental Sciences, Boston College	2022
Woods Hole Oceanographic Institution	2022
School for Marine Science and Technology, UMass Dartmouth	2021
Department of Chemistry, Boston College	2020
Department of Oceanography, Texas A&M University	2019
Woods Hole Oceanographic Institution	2019
Department of Earth and Planetary Sciences, Harvard University	2019
Department of Earth and Environmental Sciences, Boston College	2019
Department of Earth Sciences, University of Minnesota	2019
College of Marine Science, University of South Florida	2018
Scripps Institute of Oceanography, University of California, San Diego	2018
Department of Ocean Science, Hong Kong University of Science and Technology	2018
Division of Geological and Planetary Sciences, California Institute of Technology	2017
School of Earth and Space Sciences, University of Science and Technology of China	2017
Department of Earth Sciences, University of Southern California	2017
MARUM, University of Bremen	2016
School of Earth Sciences and Engineering, Nanjing University	2015

SELECTED CONFERENCE PRESENTATIONS

(* indicates students/postdoc advised by Wang)

***Kong, T.** et al., Large climate-driven changes in nutrient consumption in the eastern equatorial Pacific over the past 200,000 years: Evidence from a new foraminifera-bound nitrogen isotope record, AGU Fall Meeting, Dec 2022. Oral presentation.

***Chen, J.** et al., Isotopic evidence for hydrological control of anthropogenic nitrogen input into the Atchafalaya River, AGU Fall Meeting, Dec 2022. Oral presentation.

***LeBlanc, D.** et al., Investigating Plio-Pleistocene ice sheet dynamics, ocean circulation, and nutrient cycling changes in the subpolar North Atlantic, International Conference on Paleoceanography, Sep 2022. Poster presentation.

***Donnelly, H.** et al., Coral nitrogen isotopes as a symbiosis proxy: An experimental study, International Coral Reef Symposium, Jul 2022. Poster presentation.

***Landry, K.** et al., Isotopic evidence for recent expansion of water-column denitrification in Cocos Ridge, eastern equatorial Pacific, Ocean Carbon & Biogoechemistry workshop, Jun 2022. Poster presentation.

Wang, X. T. et al., Nutrient rise drove ocean deoxygenation over the past eight million years, Ocean Science Meeting, Feb 2022. Oral presentation.

***Kong, T.** et al., Revisiting glacial-interglacial changes in pelagic denitrification in the South Pacific, AGU Fall Meeting, Dec 2021. Oral presentation.

Wang, X. T. et al., Oceanic nutrient rise and the late Miocene inception of Pacific oxygen-deficient zones, Goldschmidt Conference (Virtual), Jul 2021. Oral presentation.

***Wang, Y.** et al., Nitrogen isotopic composition of modern and Plio-Pleistocene fossil shells from the two sides of the Isthmus of Panama, AGU Fall Meeting (Virtual), Dec 2020. Poster presentation.

Wang, X. T. et al., A major change in the ocean's nutrient cycling in the late Miocene, AGU Fall Meeting (Virtual), Dec 2020. Poster presentation.

***Wang, Y.** et al.,, A seasonally resolved coral nitrogen isotope record from the Florida Keys: Implications for the impact of anthropogenic nitrogen on the Gulf of Mexico, Goldschmidt Conference (Virtual), Jun 2020. Oral presentation.

Wang, X. T. et al., Nitrogen isotopes of ancient proteins: New analytical capabilities and potential applications in paleobiology, North American Paleontological Convention, Riverside, CA, USA, Jun 2019. Oral presentation.

***Hughes, E. R.** et al., Sulfur isotope composition of organic matter from the Monterey formation: Implications for California margin redox conditions in the late Miocene, AGU Fall Meeting, Washington, D.C., USA, Dec 2018. Poster presentation.

Wang, X. T., et al., Natural forcing of the North Atlantic nitrogen cycle in the Anthropocene, AGU Fall Meeting, Washington, D.C., USA, Dec 2018. Oral presentation.

Wang, X. T., et al., Deep-sea coral evidence for lower Southern Ocean surface nitrate concentrations during the last ice age, Ocean Science Meeting, Portland, OR, USA, Feb 2018. Oral presentation.

Wang, X. T. et al., Assessing the impact of anthropogenic N on the North Atlantic with Bermuda corals, Xiamen Symposium on Marine Environmental Sciences, Xiamen, China, Jan 2017. Oral presentation.

Wang, X. T. et al., Assessing the impact of anthropogenic N on the North Atlantic with Bermuda corals, Goldschmidt Conference, Yokohama, Japan, Jun 2016. Oral presentation.

Wang, X. T. et al., Nitrogen isotopes in coral skeleton-bound organic matter: Influences in the modern ocean and application to fossil Tahiti corals from the last deglaciation, International Coral Reef Symposium, Honolulu, HI, USA, Jun 2016. Oral presentation.

Wang, X. T. et al., The nitrogen isotopes of fossil Tahiti corals from the last deglaciation, AGU Fall Meeting, San Francisco, CA, USA, Dec 2015. Poster presentation.

Wang, X. T. et al., Nitrogen isotopes of coral skeleton-bound organic matter: Influences in the modern ocean. Ocean Sciences Meeting, Honolulu, HI, USA, Feb 2014. Oral presentation.

Wang, X. T. et al., Nitrogen isotopes of coral skeleton-bound organic matter: Proxy evaluation at Bermuda. Goldschmidt Conference, Florence, Italy, Aug 2013. Oral presentation.

PROFESSIONAL AFFILIATIONS

Geochemical Society

American Geophysical Union

Association for the Sciences of Limnology and Oceanography