MARIA ROSABELLE ("ROSS") ONG

(Paleo)Climate scientist and marine geochemist
Columbia University, Lamont-Doherty Earth Observatory, American Museum of Natural History
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EDUCATION

Ph. D. Earth and Environmental Sciences, *Columbia University*, New York, NY, USA, Oct. 2025
M. Phil. Earth and Environmental Sciences, *Columbia University*, New York, NY, USA, Feb. 2023
M.A. Earth and Environmental Sciences, *Columbia University*, New York, NY, USA, Jun. 2021
B.S. Biology, *cum laude, University of the Philippines Manila,* Manila, Philippines, Oct. 2007

RESEARCH EXPERIENCE

Sep. 2019 – present **Ph.D. Candidate,** *Columbia University, Lamont Doherty Earth Observatory, American Museum of Natural History*, New York, NY, USA

Dec. 2015 – Sep. 2019 **Research Assistant,** *Asian School of the Environment / Earth Observatory of Singapore, Nanyang Technological University*, Singapore

PREVIOUS PROFESSIONAL EXPERIENCE

2014 – 2015 **Water Quality Analyst,** *Resorts World Sentosa Pte. Ltd.,* Singapore
2011 – 2014 **Service Manager / Executive,** *CPG FM Pte. Ltd.*, Singapore

PUBLICATIONS (IN REFEREED JOURNALS)

Walter, R. M., Sayani, H. R., Felis, T., Cobb, K. M., Abram, N. J., Arzey, A. K., Atwood, A., Brenner, L. D., Dassié, E. P., DeLong, K. L., Ellis, B., Emile-Geay, J., Fischer, M. J., Goodkin, N. F., Hargreaves, J. A., Kilbourne, K. H., Krawcyzk, H. A., McKay, N. P., Moore, A. L., Murty, S. A., **Ong, M. R.,** Ramos, R. D., Reed, E. V., Samanta, D., Sanchez, S. C., Zinke, J., and the PAGES CoralHydro2K Project Members (2023). The CoralHydro2K Database: a global, actively curated compilation of coral $\delta^{18}O$ and Sr/Ca proxy records of tropical ocean hydrology and temperature for the Common Era. *Earth System Science Data, 15*(5), 2081-2116. https://doi.org/10.5194/essd-15-2081-2023

Ong, M. R., Goodkin, N. F., Guppy, R., Hughen, K. A. (2022). *Colpophyllia natans* from Tobago, a novel paleoclimate archive for reconstructing sea surface temperatures in the tropical Atlantic. *Paleoceanography and Paleoclimatology, 37*(12), e2022PA004483. https://doi.org/10.1029/2022PA004483

- Featured and highlighted in a commentary by Thirumalai and Maupin (2023), https://doi.org/10.1029/2023PA004723

Kaushal, N., Tanzil, J. T. I., Zhou, Y., **Ong, M. R.,** Goodkin, N. F., Martin, P. (2022). Environmental Calibration of Coral Luminescence as a Proxy for Terrigenous Dissolved Organic Carbon Concentration in Tropical Coastal Oceans. *Geochemistry, Geophysics, Geosystems, 23*(10), e2022GC010529. https://doi.org/10.1029/2022GC010529

Goodkin, N. F., Samanta, D., Bolton, A., **Ong, M. R.**, Phan, K. H., Vo, S. T., Karnauskas, K. B., Hughen, K. A., (2021). Natural and Anthropogenic Forcing of Multi-decadal to Centennial Scale Variability of Sea Surface Temperature in the South China Sea. *Paleoceanography and Paleoclimatology, 36*(10), e2021PA004233. https://doi.org/10.1029/2021PA004233

Goodkin, N. F., Bolton, A., Hughen, K. A., Karnauskas, K. B., Griffin, S., Phan, K. H., Vo, S. T., **Ong, M. R.**, Druffel, E. R. M. (2019). East Asian Monsoon variability since the sixteenth century. *Geophysical Research Letters, 46*(9), 4790-4798. https://doi.org/10.1029/2019GL081939

He, S., Goodkin, N. F., Jackisch, D., **Ong, M. R.**, Samanta, D. (2018). Continuous real-time analysis of the isotopic composition of precipitation during tropical rain events: Insights into tropical convection. *Hydrological Processes*. 32(11), 1531-1545. https://doi.org/10.1002/hyp.11520

PUBLICATIONS *(Submitted and In-Preparation)*

Jung, J., [et al., including **Ong, M. R.**] (*Accepted*). Equatorial upwelling of phosphorus drives Atlantic N_2 fixation and *Sargassum* blooms. *Nature Geoscience.*

Ong, M. R., Goodkin, N. F., Guppy, R., Hughen, K. A. (*in preparation*). Western Tropical Atlantic Hydroclimate Reveal Interannual ENSO-AMM Drought Patterns and Interhemispheric SST Gradient-Driven ITCZ Shifts

Ong, M. R., Goodkin, N. F., Guppy, R., Hu, H. M., Shen, C. C., Hughen, K. A. (*in preparation*). Stationary Interdecadal Variability in the North Atlantic Oscillation Revealed in a 185-Year Coral-Based Sea Surface Temperature Record from the Western Tropical North Atlantic

Ong, M. R., Goodkin, N. F., Gordon, A. L., Guppy, R., Hughen, K. A. (*in preparation*). Coral $\Delta^{14}C$ from Tobago Reveals a Possible Shift in Surface Water Circulation in the Tropical North Atlantic since the early 2000s.

DATASET CONTRIBUTIONS

Ong, M. R., Goodkin, N. F., Guppy, R., Hughen, K. A. (2022). NOAA/WDS Paleoclimatology – Tobago coral Sr/Ca, extension and SST data from 1988-2016 CE [Dataset]. NOAA National Center for Environmental Information. https://doi.org/10.25921/9xbw-sk21

Jung, Jonathan; Duprey, Nicolas N.; Foreman, Alan D. [et al., including **Ong, M. R.**] (2025). Equatorial upwelling of phosphorus drives Atlantic N2 fixation and Sargassum blooms [Dataset]. Dryad. https://doi.org/10.5061/dryad.jm63xsjkq

CONFERENCE PRESENTATIONS / ABSTRACTS (*Oral Presentation)

Ong, M. R., Goodkin, N. F., Guppy, R., Hughen, K. A. Annual Coral $\Delta^{14}C$ from Tobago Reveals a Possible Shift in Surface Water Circulation in the Tropical North Atlantic since the early 2000s. *AGU Fall Meeting 2024.* Washington D.C., USA. Dec. 9-13, 2024

Ong, M. R., Goodkin, N. F., Guppy, R., Hughen, K. A. A Coral-based Multiproxy Investigation of Regional Hydroclimate Variability in the Tropical Atlantic since the 1960s. *Ocean Sciences Meeting 2024.* New Orleans, LA, USA. Feb. 18-23, 2024.

Humphries, C., Goodkin, N. F., Brenner, L. D., **Ong, M. R.,** Ramos, R. D. Potential use of coral Ba/Ca off Palaui Island, Philippines, as a proxy to study past climate and investigate the impacts of ENSO. *Ocean Sciences Meeting 2024.* New Orleans, LA, USA. Feb. 18-23, 2024.

Goodkin, N. F.*, Ramos, R. D., Murty, S. A., Samanta, D., Chen, M., Kannad, A., **Ong, M. R.,** and the MarGe Laboratory Group. An Integrated Review of the Climate Driven Variations in the Indo-Pacific using a Multi-Proxy, Multi-Geographical Approach in Scleractinian Corals. *AGU Fall Meeting 2023.* San Francisco, CA, USA. Dec. 11-15, 2023.

Ong, M. R., Goodkin, N. F., Fraser, A. G., Guppy, R., Hughen, K. A. Investigating the Utility of Coral Ba/Ca from Tobago as a Proxy for River Discharge and Regional Hydroclimate Variability in the Tropical Atlantic. *AGU Fall Meeting 2022*. Chicago, IL, USA. Dec. 12-16, 2022.

Goodkin, N. F., Kannad, A., Yambing, J. R., **Ong, M. R.,** Kilbourne, K. H., Hughen, K. A. Examination of the North Atlantic Oscillation and the Ability to Improve Marine Reconstructions Using Spatially Diverse Coral Records. *AGU Fall Meeting 2022*. Chicago, IL, USA. Dec. 12-16, 2022.

***Ong, M. R.,** Goodkin, N. F., Guppy, R., Hughen, K. A. *Colpophyllia natans,* a potential new paleoclimate archive for reconstructing sea surface temperatures in the tropical North Atlantic. *Ocean Sciences Meeting 2022* (Virtual). Feb. 24 – Mar. 4, 2022.

Goodkin, N. F., Samanta, D., Bolton, A., **Ong, M. R.**, Hoang, P. K., Vo, S.T., Karnauskas, K. B., Hughen, K. A. A novel identification of anthropogenic changes in South China Sea seasonal sea surface temperatures over the past 400 years. *Ocean Sciences Meeting 2022* (Virtual). Feb. 24 – Mar. 4, 2022.

***Ong, M. R.,** Tan, A. S. Y., Gan, M. C., Kho, P., Tanzil, J. T. I., Lee, J. N., Goodkin, N. F. Annual coral $\delta^{18}O$ variability from the Singapore-Malay Peninsula reveals impacts from ENSO. *14th International Coral Reef Symposium (ICRS).* Bremen, Germany (Virtual). Jul. 18-23, 2021 *(Abstract accepted and withdrawn)*

*Goodkin, N. F., Samanta, D., Hughen, K. A., **Ong, M. R.,** Bolton, A., Karnauskas, K. Vietnam climate experienced multi-decadal variability over the past 400 years and decoupling of seasonal SST with anthropogenic warming. *14th International Coral Reef Symposium (ICRS)*. Bremen, Germany (Virtual). Jul. 18-23, 2021

***Ong, M. R.**, Reconstructing Long-Term Climate Variability using Slow Growing Brain Corals from the Caribbean. *12th Annual RGGS Second Year Student Symposium.* Virtual Presentation. Dec. 10, 2020.

***Ong, M. R.**, Reconstructing Long-Term Climate Variability using Slow Growing Brain Corals from the Caribbean. *LDEO First Year Colloquium.* Virtual Presentation. Apr. 17, 2020.

Ong, M. R., Tanzil, J. T. I., Goodkin, N. F. Coral $\delta^{18}O$ reconstructs sea surface salinity in the Singapore Straits revealing impacts from ENSO. *MSRDP Mid-term Symposium*. Nanyang University of Singapore, Singapore. Feb. 21-22, 2019.

Ong, M. R., Tanzil, J. T. I., Goodkin, N. F. Coral $\delta^{18}O$ reconstructs sea surface salinity in the Singapore Straits revealing impacts from ENSO. *EOS 2019 Scientific Annual Meeting*. Nanyang Technological University, Singapore. Jan. 10-11, 2019

Ong, M. R., Tanzil, J. T. I., Goodkin, N. F. Coral $\delta^{18}O$ reconstructs sea surface salinity in the Singapore Straits revealing impacts from ENSO. *AGU Fall Meeting 2018*. Washington D.C., USA. Dec. 10-14, 2018.

Loke, D, Goodkin, N. F., Bolton, A., **Ong, M. R.** 240-Year record of Sr/Ca and Ba/Ca from a coral off central Vietnam reveals impacts of monsoonal upwelling and La Niña rains. *AGU Fall Meeting 2018*. Washington D.C., USA. Dec. 10-14, 2018.

***Ong, M. R.**, Tanzil, J. T. I., Goodkin, N. F. Using coral Sr/Ca and $\delta^{18}O$ to track environmental changes in the Singapore Straits. *4th Asia Pacific Coral Reef Symposium*. Cebu, Philippines. Jun. 04-08, 2018.

He, S., Goodkin, N.F., Jackisch, D., **Ong, M. R.** Continuous real-time measurements of δ-values of precipitation during rain events: Insights into tropical convection. *AGU Fall Meeting 2017*. New Orleans, LA, USA. Dec. 11-15, 2017.

Jackisch, D., He, S., **Ong, M. R.**, Goodkin, N. F. Continuous and simultaneous measurements of precipitation and vapor isotopes over two monsoon seasons during 2016-2017 in Singapore. *AGU Fall Meeting 2017*. New Orleans, LA, USA. Dec. 11-15, 2017.

Jackisch, D., He, S., **Ong, M. R.**, Goodkin, N. F. Simultaneous measurements of stable isotope composition in precipitation and vapour during NE monsoon in Singapore. *AOGS 14th Annual Meeting*. Singapore. Aug. 06-11, 2017.

He, S., Goodkin, N. F., Jackisch, D., **Ong, M. R.** Continuous real-time analysis of isotopic composition of precipitation during tropical rain events using a diffusion sampler. *Advances in Stable Isotope Techniques and Applications Conference.* Canada. June 2017.

INVITED PRESENTATIONS AND LECTURES (*Oral Presentation)

***Ong, M. R.,** Untapping a New Climate Archive: *Colpophyllia natans* Climate Reconstructions in the Tropical Atlantic. *University of New Mexico – Center for Stable Isotopes Brown Bag Seminar.* Virtual Presentation. April 03, 2023.

***Ong, M. R.,** Decolonizing Paleontology: A Case Study. *Seminar in Race, Climate Change, Environmental Justice: On Geology's Colonial Legacies (Spring 2023).* Guest Lecture. Feb. 16, 2023.

***Ong, M. R.**, Corals and Climate Change. *Lerner Gray Committee Meeting.* Virtual Presentation. May 05, 2020.

***Ong, M. R.**, Ramos, R. D., Corals as archives of past climate. *National Marine Biology and Museum and Aquarium*, Checheng, Pingtung, Taiwan, R.O.C., Sep. 2017

HONORS AND AWARDS

2023	**Sydney Anderson Travel Award,** *Richard Gilder Graduate School, American Museum of Natural History.* ($2,500)
2020 – 2021	**Kenneth and Linda Ciriacks Graduate Fellowship in Earth and Environmental Sciences,** *Columbia University (GSAS).*
2019	**Lerner-Gray Fund for Marine Research,** *American Museum of Natural History*.
2019	**Richard Gilder Graduate School Graduate Fellow,** *American Museum of Natural History*.
2019	**Dean's Fellow**, *Department of Earth and Environmental Sciences, Columbia University.*

RESEARCH GRANTS AWARDED

01/2023-12/2024	Goodkin, N. F. (Lead PI) and **Ong, M. R.** (Co-PI). Reconstructing Florida Current transport to better understand Atlantic Meridional Overturning Circulation (AMOC) behavior in a warming world. *LDEO – The Climate Center.* $12,000.

ACADEMIC SERVICE, SCIENTIFIC AND EDUCATIONAL OUTREACH

2022 – present	**Journal Reviewer.** AGU *Geochemistry, Geophysics, Geosystems,* AGU *Paleoceanography and Paleoclimatology*, Association for the Sciences of Limnology and Oceanography (ASLO), *Limnology and Oceanography: Methods,* EGU *Climate of the Past*
Nov. 2025	**Reviewer.** *First-Time Presenter Feedback Program*, American Geophysical Union. *(upcoming)*
Jul. 14, 2025	**Panelist (Speaker).** *Lang Science Program*, Designing and Presenting Scientific Posters (10th Grade), American Museum of Natural History.
Apr. 11, 2025	**Guest Scientist (Speaker).** *The Science and Nature Program*, Fellowship of the Young Scientist (3rd Grade), American Museum of Natural History.
Fall 2024	**Mentor.** *DEES Application Mentorship Program***.** Columbia University
Jun. 2023	**Guest Reviewer / Judge.** *Billion Oyster Project's 9th Annual Student Symposium*, Billion Oyster Project. New York Harbor School, Governor's Island, New York, NY.
Apr. 2021	**Chat Moderator.** *Frontiers Lecture: Unlocking Climate Data in Corals.* AMNH EarthFest Online. Livestream on Zoom.
Apr. 2021	**Chat Moderator.** *Astronomy Online: From Sun to Sea Life.* AMNH EarthFest Online. Livestream on Zoom.
Aug. 2020	**Speaker.** *Corals and Climate Change.* American Museum of Natural History (AMNH) Learn with Me Online Program. Livestream on YouTube.
Summer 2020	**Volunteer.** *Lamont Summer Mentorship Program,* Columbia University.
Apr. 2020	**Participant.** *Rotunda Magazine.* Featured in an article (for field work done in Trinidad and Tobago funded by the Niarchos Foundation).

TEACHING EXPERIENCE

Oct. 13, 2025	**Guest Lecturer (Virtual).** Introduction to Paleoceanography, *Florida Atlantic University*
Spring 2022	**Teaching Assistant.** Chemistry of Continental Waters, *Columbia University*
Spring 2021	**Teaching Assistant.** Earth's Oceans and Atmosphere, *Columbia University*

FIELD EXPERIENCE

Jul. 2023	**Participant.** Coral core collection. Fort Lauderdale, Florida, *USA.*
Oct. 2019	**Participant.** Coral core collection. Kelleston Drain, Speyside and St. Giles Island, *Trinidad and Tobago.*
2016 – 2019	**Participant.** Coral core collection and water sampling. Southern Islands, *Singapore Straits.*

PROFESSIONAL DEVELOPMENT / WORKSHOPS / CONFERENCES BY APPLICATION

Jan. 29-31, 2025	*Marine Data for Ocean Health 2025.* Copernicus Marine Team (Virtual).

Dec. 8, 2024	*Python for Satellite Remote Sensing: Analysis and Visualization for Earth Scientist.* AGU Fall Meeting 2024, Washington D.C.
Dec. 8, 2024	*Introduction to Radiocarbon: Theory and Best Practices for Ocean and Earth Sciences.* AGU Fall Meeting 2024, Washington D.C.
Aug. 21-23, 2023	*Paleo Data Assimilation Workshop.* Northern Arizona University (Virtual).
Jun. 5-8, 2023	*Teaching Development Program Sprint – Foundational Track.* Center for Teaching and Learning (CTL), Columbia University.
Dec. 11, 2022	*Introducing the Community Earth System Model (CESM2)* via an Interactive Hands-on Tutorial. AGU Fall Meeting 2022, Chicago, IL
Jun. 20–Jul. 01, 2022	*ISOCAMP 2022*. University of New Mexico – Center for Stable Isotopes.

PROFESSIONAL AFFILIATIONS / MEMBERSHIPS

2018 – Present	**Member**, American Geophysical Union
2020 – Present	**Member,** International Coral Reef Society
2022 – Present	**Member,** The Oceanography Society
Mar. 2018 – Present	**Rescue Diver,** Professional Association of Diving Instructors (PADI).
Sep. 2019 – Present	**Diving First Aid for the Professional Diver Provider,** DAN.

LABORATORY SKILLS

Experienced in chemical analysis using: (1) ThermoFisher iCAP 6000/7400 Inductively Coupled Plasma Optical Emission Spectrometer (ICP-OES), (2) Kiel IV Carbonate Device, (3) Thermo MAT 253/+ mass spectrometer, (4) Thermo Finnigan Gas Bench II, (5) Delta V Isotope Ratio Mass Spectrometer and (6) Picarro Diffusion Sampler – Cavity Ring-Down Spectrometer.

COMPUTER SKILLS

Knowledge in using Python, MATLAB, Kaleidagraph, QGIS 3, and OceanDataView (ODV). Proficient in Microsoft Office Suite, Adobe Photoshop, QAnalyseries, Datagraph. Well-versed in both MAC OS and Windows OS platforms.

STUDENTS SUPERVISED

Kyle Chang (BSc, Science Volunteer, AMNH, New York, NY, USA, Fall 2024 – Spring 2025)
Cate Humphries (BSc, Barnard College, New York, NY, USA, Summer 2023 – Spring 2024)
Rosy Arora (BSc, Georgetown University, Washington D.C. USA, Summer 2022, Summer Intern)
Alexandra G. Fraser (BSc, Bard College, New York, USA, Summer 2022, NSF REU Summer Internship Program at AMNH)
Adam Vasquez (BSc, Vassar College, New York, USA, Summer 2022, NSF REU Summer Internship Program at AMNH)
Ong Chai Kee (MSc, Universiti Malaysia Terrengganu, Malaysia, Summer AY 2017-2018)
Syamil Sahar (MSc, Universiti Malaysia Sarawak, Malaysia, 2nd Sem AY 2017-2018, AY 2018-2019)
Tiffany Lee Wan Qi (BSc, Nanyang Technological University, Singapore, 2nd Sem, AY 2017-2018)
Deborah Loke Wai Yee (BSc, Nanyang Technological University, Singapore, Final Year Undergraduate Student, AY 2017-2018)
Wanling Goh (Student Intern, Singapore American School, Singapore Summer Internship, AY 2016-2017)
Revadi Devi Thyartan (MSc, Swinburne University of Technology, Malaysia, AY 2016-2017)
Aloysius Teng Min Ren (BSc, National University of Singapore, Singapore, Undergraduate Summer & Fall Internship, AY 2015-2016)
Gan Min Chong (MSc, Universiti Malaysia Terrengganu, Malaysia, 2nd Sem AY 2015-2016)