

# MARIA ROSABELLE (“ROSS”) ONG

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## EDUCATION

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**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

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Sep. 2019 – Oct. 2025 **Ph.D. Candidate**, *Columbia University, Lamont Doherty Earth Observatory, American Museum of Natural History*, New York, NY, USA  
Dec. 2015 – Aug. 2019 **Research Assistant**, *Asian School of the Environment / Earth Observatory of Singapore, Nanyang Technological University*, Singapore

## PREVIOUS PROFESSIONAL EXPERIENCE

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

## PUBLICATIONS (IN REFEREED JOURNALS)

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- Jung, J., Duprey, N. N., [and 40 others including **Ong, M. R.**] (2025). Equatorial upwelling of phosphorus Drives Atlantic N<sub>2</sub> fixation and *Sargassum* blooms. *Nature Geoscience*.  
<https://doi.org/10.1038/s41561-025-01812-2>
- 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., Krawczyk, 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  $\delta^{18}\text{O}$  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., Huguen, 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., Huguen, 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 (*In-Preparation*)

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

## DATASET CONTRIBUTIONS

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- Jung, J., Duprey, N. N., [and 40 others including **Ong, M. R.**] (2025). Equatorial upwelling of phosphorus drives Atlantic N<sub>2</sub> fixation and Sargassum blooms [Dataset]. Dryad. <https://doi.org/10.5061/dryad.jm63xsjkq>
- Ong, M. R.**, Goodkin, N. F., Guppy, R., Huguen, 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>

## CONFERENCE PRESENTATIONS / ABSTRACTS (\*Oral Presentation)

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- Ong, M. R.**, Goodkin, N. F., Guppy, R., Hu, H. M., Shen, C. C., and Huguen, K. A. Non-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. *Ocean Sciences Meeting 2026*. Glasgow, Scotland. Feb. 22-27, 2026 (*Upcoming*)
- Ong, M. R.**, Goodkin, N. F., Guppy, R., Huguen, K. A. Annual Coral  $\Delta^{14}\text{C}$  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., Huguen, 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 Palau 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., Yaming, 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  $\delta^{18}\text{O}$  variability from the Singapore-Malay Peninsula reveals impacts from ENSO. 14<sup>th</sup> *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. 14<sup>th</sup> *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. 12<sup>th</sup> *Annual RGGGS 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  $\delta^{18}\text{O}$  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  $\delta^{18}\text{O}$  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  $\delta^{18}\text{O}$  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  $\delta^{18}\text{O}$  to track environmental changes in the Singapore Straits. *4<sup>th</sup> 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  $\delta$ -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 14<sup>th</sup> 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)

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**\*Ong, M. R.**, Ocean Time Capsules: Corals as Recorders of Past Environments. *American Museum of Natural History, Physical Sciences Jamboree*. Keynote Speaker. Nov. 14, 2025.

**\*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 Lecturer/Speaker. 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

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

2019

**Dean's Fellow**, *Department of Earth and Environmental Sciences, Columbia University.*

## RESEARCH GRANTS AWARDED

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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

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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 (10<sup>th</sup> Grade), American Museum of Natural History.

Apr. 11, 2025      **Guest Scientist (Speaker).** *The Science and Nature Program*, Fellowship of the Young Scientist (3<sup>rd</sup> Grade), American Museum of Natural History.

Fall 2024      **Mentor.** *DEES Application Mentorship Program*, Columbia University

Jun. 2023      **Guest Reviewer / Judge.** *Billion Oyster Project's 9<sup>th</sup> 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

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Oct. 13, 2025      **Guest Lecturer** (3-hour virtual lecture). Introduction to Paleocceanography, *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

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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

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Oct. 20-22, 2025      AIMES/PAGES/IGAC Workshop on Historical and Paleoclimate Aerosol Radiative Effects. Lamont-Doherty Earth Observatory, New York, USA



Jan. 29-31, 2025	<i>Marine Data for Ocean Health 2025</i> . Copernicus Marine Team (Virtual).
Dec. 8, 2024	<i>Python for Satellite Remote Sensing: Analysis and Visualization for Earth Scientist</i> . AGU Fall Meeting 2024, Washington D.C.
Dec. 8, 2024	<i>Introduction to Radiocarbon: Theory and Best Practices for Ocean and Earth Sciences</i> . AGU Fall Meeting 2024, Washington D.C.
Aug. 21-23, 2023	<i>Paleo Data Assimilation Workshop</i> . Northern Arizona University (Virtual).
Jun. 5-8, 2023	<i>Teaching Development Program Sprint – Foundational Track</i> . Center for Teaching and Learning (CTL), Columbia University.
Dec. 11, 2022	<i>Introducing the Community Earth System Model (CESM2) via an Interactive Hands-on Tutorial</i> . AGU Fall Meeting 2022, Chicago, IL
Jun. 20–Jul. 01, 2022	<i>ISOCAMP 2022</i> . University of New Mexico – Center for Stable Isotopes.

## PROFESSIONAL AFFILIATIONS / MEMBERSHIPS

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

## LABORATORY SKILLS

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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

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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

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**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 Terengganu, Malaysia, Summer AY 2017-2018)  
**Syamil Sahar** (MSc, Universiti Malaysia Sarawak, Malaysia, 2<sup>nd</sup> Sem AY 2017-2018, AY 2018-2019)  
**Tiffany Lee Wan Qi** (BSc, Nanyang Technological University, Singapore, 2<sup>nd</sup> 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 Terengganu, Malaysia, 2<sup>nd</sup> Sem AY 2015-2016)