

## Research and Summary of Highlights

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I am a broadly trained biogeochemist and oceanographer, who combines cross-disciplinary expertise and knowledge in the fields of organic and trace element geochemistry. My primary research interests are the study of organic carbon (OC), nitrogen, lipid biomarkers and trace elements (TEs) in rivers, estuaries and marine environments. The geochemistry of OC and that of TEs in the ocean are deeply interlinked, from their sources and sinks (e.g. river outflow, primary production, remineralization of sinking particles) to the internal cycling controlling their distributions. Thereby, I integrate sampling, analytical techniques and data analysis from the TEs and OC realms to gain a comprehensive understanding of their cycling, fluxes, source to sink characterization and their role in the ecosystem. I have also been working in the environmental hygiene area developing methods to trace pharmaceuticals in health care centers and monitor their containment.

**Work Experience and Knowledge:** marine chemistry, trace metal and organic carbon biogeochemistry, environmental chemistry, biology, occupational and environmental health

**Skills:** \*Field work / sample collection \*Sample processing and analytical techniques (IRMS, RPO, GC-FID, GC-MS, HPLC-MS/MS, ICP-HR-MS, etc.) \*Python & MATLAB programming languages \*Teaching, Canvas & Connect web-based learning system \*Languages: English (TOEFL) & Spanish.

## 1. Personal Information

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**Position:** Assistant Professor, Coastal and Ocean Processes

## 2. Education

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### 2.1. Post-secondary Degrees

Degree	Institution	Dates
<b>Ph.D. in Oceanography</b> - Thesis: On the biogeochemical processes controlling trace metal distributions in the Canadian Arctic Ocean and Arctic Rivers - Advisor: <u>Kristin Orians</u> / External examiner: <u>Edward A. Boyle</u>	Department of Earth, Ocean, and Atmospheric Sciences, University of British Columbia, Canada	2014-2019/11 <i>Conferred - 2020/05</i>
<b>B.Sc. in Biology</b> (Licentiate degree 5 yrs.) – Honors: <i>Summa Cum Laude</i> (GPA: 9.3/10)	National University of La Plata, Argentina	2007-2012/09

### 2.2. Related Studies

Program/Position	Institution	Dates
<b>GEOTRACES Summer School</b> - Biogeochemical cycles of trace metals - Workload: Six days	European Institute for Marine Studies, Brest, France	2017/08
<b>Workshop</b> - Lipoproteins and Respiratory Pigments in Invertebrates - Workload: 8 hours	National University of La Plata, Argentina	2009/10

### 3. Academic Positions / Research Appointments (13 yr.)

Institution	Position	Activities Developed	Date
Virginia Institute of Marine Science (VIMS) / William & Mary	Assistant Professor	—	2024/02-Present
Woods Hole Oceanographic Institution, USA - Marine Chemistry & Geochemistry Department <u>Supervisor:</u> Valier Galy	NSERC Postdoctoral Fellow at WHOI	<ul style="list-style-type: none"> <li>- Studying the cycling and biogeochemistry of organic carbon (OC) in the Rio de La Plata estuary, characterizing the OC isotopic composition.</li> <li>- Unraveling the complex processes which control carbon cycling and transport along the river-ocean mixing endmembers.</li> <li>- Sample processing (e.g. solvent extraction, column chemistry, methylation, vacuum line) and analysis of OC, ON, <math>\delta^{13}\text{C}</math>, <math>\Delta^{14}\text{C}</math>, <math>\delta^{15}\text{N}</math> from bulk sediments and compound-specific lipids.</li> <li>- OC thermal stability analysis by ramped pyrolysis/oxidation technique (RPO) and glycerol dialkyl glycerol tetraethers by HPLC-MS.</li> </ul>	2021/05-2023/10
University of British Columbia, Canada - Earth, Ocean and Atmospheric Sciences Department <u>Supervisor:</u> Maria Maite Maldonado	Postdoctoral Researcher	<ul style="list-style-type: none"> <li>- Studied the cycling of particulate organic carbon, nitrogen and particulate trace elements (Al, V, Fe, Mn, P) in the Canadian Arctic Ocean.</li> </ul>	2020/01-2021/05
University of British Columbia, Canada - Earth, Ocean and Atmospheric Sciences Department <u>Supervisor:</u> Kristin Orians	Ph.D. Candidate	<ul style="list-style-type: none"> <li>- Processed and analyzed freshwater and seawater samples for dissolved and particulate trace metals (dTM &amp; pTM) by magnesium-induced coprecipitation and isotope dilution method coupled with ICP-HR-MS.</li> <li>- Studied how gradients in environmental conditions and bedrock geology influence the distribution of dTM &amp; pTM as well as Pb isotopes in small rivers draining the Canadian Arctic Archipelago.</li> <li>- Investigated the sources, sinks and internal cycling of dissolved Pb, Mn and Fe in the Canadian Arctic Ocean.</li> </ul>	2014/09-2019/11
University of British Columbia, Canada - Occupational and Environmental Health Lab <u>Supervisor:</u> Matty Jeronimo	Graduate Research Assistant	<ul style="list-style-type: none"> <li>- Maintained and troubleshooted HPLC-MS/MS and ion-chromatography equipment.</li> <li>- Developed and optimized a method for analyzing pharmaceuticals by HPLC MS/MS. Sampled, extracted and analyzed pharmaceuticals.</li> <li>- Extracted and analyzed nitrates and nitrites</li> </ul>	2014/05-2019/12

Luleå University of Technology, Sweden <u>Supervisor:</u> Sven Knutsson	<b>Research Internship</b>	by ion-exchange chromatography, organophosphates, levoglucosan, glycols and BETX by GC-MS.  - Assessed the effects of freeze-thawing on contaminated sediment dewaterability performance.	2013/09-2013/12
National University of La Plata, Argentina - Environmental Chemistry and Biogeochemistry Lab <u>Supervisor:</u> Eric D. Speranza	<b>Research Assistant</b>	- Determined total solids and organic matter content from different types of samples. - Extracted lipids from fishes, suspended particulate matter, plankton and plants. - Fractioned and purified sterols and fatty acids using solid phase extraction (SPE) cartridges. - Analyzed and quantified different lipid classes using thin-layer chromatography, acyl-fatty acids by GC-FID and sterols by GC-MS.	2011/09-2013/08

## 4. Awards & Recognitions

Award	Awarding Institution	Amounts (\$USD)	Date
27 <sup>th</sup> Dissertation Symposium in Chemical Oceanography	University of Hawaii, USA	-----	2021/10
Thomas S. Byrne Scholarship - Outstanding scientific paper in oceanography	University of British Columbia, Canada (UBC)	500	2019/06
W. H. Mathews Scholarship - Academic Award	University of British Columbia, Canada (UBC)	7,700	2019/04
Chih-Chuang and Yien-Ying Wang Hsieh Memorial Scholarship – Academic Award	University of British Columbia, Canada (UBC)	4,250	2019/04
Travel Award	UBC Postdoctoral Fellow Office	390	2018/08
Travel Award	University of British Columbia, Canada (UBC)	390	2018/08
Outstanding Teaching Assistant Award	University of British Columbia, Canada (UBC)	390	2017/09
Teaching Recognition	University of British Columbia, Canada (UBC)	-----	2015&2017
Faculty of Science Graduate Award	University of British Columbia, Canada (UBC)	2,700	2013/12

## **5. Contributions to Teaching**

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### **5.1. Teaching Experience (9 yr.)**

*With over eleven years of experience as a professor, sessional instructor, course co-coordinator, and teaching assistant, I have taught a wide range of geosciences and biology courses, including Oceanography, Climate Measurement and Analysis, The Ocean Ecosystem, and Chemical Oceanography, at the National University of La Plata and The University of British Columbia. My teaching experience spans introductory courses for first-year students to advanced courses for near-graduates. In my roles, I have developed and organized course content, delivered lectures, led laboratory sessions, and implemented various innovative teaching strategies, such as using microscope cameras, live projections, blogs, and participation incentives to create a more dynamic learning environment and enhance student engagement. Additionally, I have successfully delivered online courses and co-organized poster sessions for students to present their final projects. My commitment to teaching excellence has been recognized multiple times through various awards.*

University	Course Name	Role	Class Size	Date & Sessions
W&M - Batten School of Coastal and Marine Sciences, USA	MSCI 401b: Fundamentals of Chemical Oceanography	Instructor	15	2025/01-2025/05 (1 term; Spring)
University of British Columbia, Canada	EESC 106: The Catastrophic Earth	Sessional Instructor	45-79	2020/07-2021/08 (4 term; Fall, Spring & Summer)
University of British Columbia, Canada	EESC 303: Oceanography	Sessional Instructor	37-45	2020/07-2020/12 (2 term; Summer & Fall)
University of British Columbia, Canada	EOSC 442: Climate Measurement and Analysis	Co-coordinator	30-40	2014/09-2018/04 (8 terms; Fall & Spring)
University of British Columbia, Canada	EOSC 315: The Ocean Ecosystem	Teaching Assistant	105	2016/01-2016/05 (Spring 2016)
University of British Columbia, Canada	EOSC 114: The Catastrophic Earth	Teaching Assistant	180-250	2014/09-2019/12 (14 terms; Fall, Spring & Summer)
National University of La Plata, Argentina	Second year course: Introduction to Taxonomy	Undergrad. Teaching Assistant	~30	2011/02-2013/09

## **6. Mentorship**

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### **6.1. Graduate Students Mentored**

Name	Degree	Co-Advisor	Institution	Date
Athira C. Rajendran	Ph.D.	-	Virginia Institute of Marine Science / W&M	2024/09 - (target: 2029)
Victoria Grisson	M.S.	-	Virginia Institute of Marine Science / W&M	2024/09 - (target: 2027)

## 6.2. Student committee service

Name	Degree	Advisor	Institution	Date
Julia Abrao Teixeira	M.S.	Piero Mazzini	Virginia Institute of Marine Science / W&M	2023 - (target: 2025)
Evan R. Flynn	Ph.D.	Steven A. Kuehl	Virginia Institute of Marine Science / W&M	2021 - (target: 2025)

## 6.3. Non-Graduate Student Mentorship

Name	Mentee Role	PI Role	Institution	Date
Ilythia Morley	Graduate Teaching Assistant	Advisor	University of British Columbia, Canada / EESG department	2021/05-2021/07
Tina Deenik	Graduate Teaching Assistant	Advisor	University of British Columbia, Canada / EESG department	2021/01-2021/05
Denae Weighill	Undergraduate Teaching Assistant	Advisor	University of British Columbia, Canada / EESG department	2020/09-2020/12
Tina Deenik	Graduate Teaching Assistant	Advisor	University of British Columbia, Canada / EESG department	2020/07-2020/09

## 7. Fellowships & Grants

Granting agency	Project title	Amounts (\$USD)	Role <sup>1</sup>	Date
Natural Sciences and Engineering Research Council of Canada - Postdoctoral Fellowship	Carbon cycling along river-ocean endmembers: A case study of the Rio de La Plata estuary	69,469	PI	2021/05-2023/05
Northern Scientific Training Program - Canadian Polar Commission	Distribution and cycling of dissolved aluminum, gallium, and lead isotopes in the Canadian Arctic Ocean	2,200	PI	2015/04
National Inter-University Council, Argentina	Sterols and fatty acids as organic and anthropogenic sources biomarkers in Del Plata basin	5,150	PI	2011/09-2013/08

1: PI= Primary investigator; CI= Co-investigator

## 8. Research & Academic Presentations

### 8.1. Peer Reviewed Publications

(\*) supervised by Colombo M.; (#) committee member

[22] Teixeira J.A.<sup>#</sup>, Piero L.F., Cai N., **Colombo M.**, Qin Q., Seeley M.E. and Zhang J. (2025) Distribution and Fate of Microplastics from the Chesapeake Bay to the Mid-Atlantic Bight: A Lagrangian Particle Tracking Approach. *Continental Shelf Research (Under Review – CSR-D-25-00212)*.

- [21] Rogalla B., Allen S.E., **Colombo M.**, Myers P.G. and Orians K.J. (2025) Modelling dissolved Pb concentrations in the Western Arctic Ocean: the continued legacy of anthropogenic pollution. *Journal of Geophysical Research: Oceans* 130 (4), e2025JC022415.
- [20] Jensen L. and **Colombo M.** (2024) Shelf-basin connectivity drives dissolved Fe and Mn distributions in the western Arctic Ocean: A synoptic view into polar trace metal cycling. *Oceanography* 37 (2):60–71.
- [19] **Colombo M.**, LaRoche J., Desai D., Li J. and Maldonado M.T. (2023) Control of particulate manganese (Mn) cycling in halocline Arctic Ocean waters by putative Mn-oxidizing bacterial dynamics. *Limnology and Oceanography* 68 (9), 2070-2087.
- [18] Speranza E.D., Jeronimo M. and **Colombo M.** (2023) Initial assessment of multi-compound antineoplastic drug surface contamination in Argentinean health care centers: insights into occupational exposures in South America. *Journal of Oncology Pharmacy Practice* 2023, o(o).
- [17] Rogalla B., Allen S.E., **Colombo M.**, Myers P.G. and Orians K.J. (2023) Continental and glacial runoff fingerprints in the Canadian Arctic Archipelago, the Inuit Nunangat ocean. *Journal of Geophysical Research: Biogeosciences* 128 (5), 1-22.
- [16] **Colombo M.**, Li J., Rogalla B., Allen S.E. and Maldonado M.T. (2022) Particulate trace element distributions along the Canadian Arctic GEOTRACES section: shelf water interactions, advective transport and contrasting biological production. *Geochimica et Cosmochimica Acta* 323, 183-201.
- [15] Rogalla B., Allen S.E., **Colombo M.**, Myers P.G. and Orians K.J. (2022) Sediments in sea ice drive the Canada Basin surface Mn maximum: insights from an Arctic Mn ocean model. *Global Biogeochemical Cycles* 36 (8), 1-27.
- [14] Krisch S., Hopwood M.J., Roig S., Gerringa L.J.A., Middag R., Rutgers van der Loeff M., Petrova M.V., Lodeiro P., **Colombo M.**, Cullen J.T., Jackson S. and Achterberg E.P. (2022) Arctic – Atlantic exchange of Iron, Manganese, Cobalt, Nickel, Copper and Zinc with a focus on Fram Strait. *Global Biogeochemical Cycles* 36 (5), 1-23.
- [13] Grenier M., Brown K.A., **Colombo M.**, Belhadj M., Baconnais I., Pham V., Soon M., Myers P.G., Jeandel C. and François R. (2022) Controlling factors and impacts of river-borne neodymium isotope signatures and rare earth element concentrations supplied to the Canadian Arctic Archipelago. *Earth and Planetary Science Letters* 578, 1-12.
- [12] **Colombo M.**, Rogalla B., Li J., Allen S.E., Orians K.J. and Maldonado M.T. (2021) Canadian Arctic Archipelago shelf-ocean interactions: a major iron source to Pacific derived waters transiting to the Atlantic. *Global Biogeochemical Cycles* 35 (10), 1-17.
- [11] De Vera J., Chandan P., Pinedo Gonzales P., John S., Jackson S.L., Cullen J.T., **Colombo M.**, Orians K.J. and Bergquist B.A. (2021) Anthropogenic lead pervasive in Canadian Arctic seawater. *Proceedings of the National Academy of Sciences* 118 (24), 1-6.
- [10] Astrakianakis G., Hon C.Y., Jeronimo M., Griffiths A., **Colombo M.**, Kramer D. and Demers P.A. (2020) The Application of Novel Field Measurement and Field Evaluation Protocols for Assessing Healthcare Workers' Exposure to Antineoplastic Drugs. *Journal of Occupational and Environmental Hygiene* 17 (9), 373-382.

[9] **Colombo M.**, Jackson S.L., Cullen J.T. and Orians K.J. (2020) Dissolved iron and manganese in the Canadian Arctic Ocean: on the biogeochemical processes controlling their distributions. *Geochimica et Cosmochimica Acta* 277, 150-174.

[8] Speranza E.D., **Colombo M.**, Heguilor S., Tatone L.M. and Colombo J.C. (2020) Alterations in the sterol signature of detritivorous fish along pollution gradients in the Río de la Plata basin: from plant to sewage-based diet. *Environmental Research* 184, 109351.

[7] **Colombo M.**, Brown K.A., De Vera J., Bergquist B.A. and Orians K.J. (2019) Trace Metal Geochemistry of Remote Rivers in the Canadian Arctic Archipelago. *Chemical Geology* 527, 479-491.

[6] **Colombo M.**, Rogalla B., Myers P.G., Allen S.E. and Orians K.J. (2019) Tracing Dissolved Lead Sources in the Canadian Arctic: Insights from the Canadian GEOTRACES program. *ACS Earth and Space Chemistry* 3 (7), 1302-1314. *Editor's Choice paper by the American Chemical Society (ACS)*.

[5] Speranza E.D., **Colombo M.**, Skorupka C.N. and Colombo J.C. (2018) Early diagenetic alterations of sterol biomarkers during particle settling and burial in polluted and pristine areas of the Rio de la Plata Basin. *Organic Geochemistry* 117, 1-11.

[4] **Colombo M.**, Jeronimo M., Astrakianakis G., Apte C. and Hon C.Y. (2017) Wipe Sampling Method and Evaluation of Environmental Variables for Assessing Surface Contamination of 10 Antineoplastic Drugs by Liquid Chromatography/Tandem Mass Spectrometry. *Annals of Work Exposures and Health* 61, 1003-1014.

[3] Speranza E.D., **Colombo M.**, Tatone L.M., Cappelletti N., Migoya M.C. and Colombo J.C. (2016) Fatty acid alterations in the detritivorous Prochilodus lineatus promoted by opportunistic feeding on sewage discharges in the Río de la Plata estuary. *Journal of Fish Biology* 89, 2024-2037.

[2] Rostmark S.C., **Colombo M.**, Knutsson S. and Öberg G. (2016) Removal and re-use of tar-contaminated sediments by freeze-dredging at a coking plant Lulea, Sweden. *Water Environment Research* 88, 847-851.

[1] Jeronimo M., **Colombo M.**, Astrakianakis G. and Hon C.Y. (2015) A surface wipe sampling and LC-MS/MS method for the simultaneous detection of six antineoplastic drugs commonly handled by healthcare workers. *Analytical and Bioanalytical Chemistry* 407, 7083-7092.

## 8.2. Contributed Scholarly Papers and Conference Proceedings

(\*) supervised by Colombo M.; (#) committee member

[22] Jensen L., Grisson V.<sup>\*</sup>, **Colombo M.** and Foukal N. (2026) Tracing Arctic freshwater to the North Atlantic: nutrients, trace metals, and oxygen isotopes reveal freshwater sources to the Labrador Sea. Ocean Sciences Meeting, Glasgow, Scotland (international; oral).

[21] Ringard A., Ryan-Keogh T.J., Bucciarelli E., Richon C., Aumont O., Blain S., Sherrell R.M., Twining B.S., Achterberg E.P., Baudet C., Browning T.J., **Colombo M.**, Fietz S., Li J., Milne A., Viljoen J.J. and Planquette H. (2026) Unveiling Oceanic Biogenic Metal Quotas using particulate Field Data. Ocean Sciences Meeting, Glasgow, Scotland (international; oral).

[20] Krisch S., Achterberg E.P., Biester H., Boyle E.A., **Colombo M.**, Cullen J.T., Fitzsimmons J.N., van de

Flierdt T., Heimbürger-Boavida L.-E., Hopwood M.J., Jensen L.T., Lodeiro P., Middag R., Myers P.G., Olivelli A., Rehkämper M., Rember R., Rijkenberg M.J.A., Rogalla B., Rutgers van der Loeff M., and De Vera J. (2026) Closing the Arctic lead budget. Ocean Sciences Meeting, Glasgow, Scotland (international; oral).

[19] Rosenheim B.E., Galy V., Buck K., **Colombo M.**, Hein C., Ward N., Richey J., Kampel M. and Moura J.M. (2025) Understanding the spatial and temporal dynamics of the Amazon estuary and the Guianas mudbanks. Geological Society of America meeting, Texas, USA (national; oral presentation).

[18] Lu T., Boehman B., **Colombo M.**, Hein C., Rosenheim B.E. and Galy V. (2025) Selective Transformation and Preservation of Terrestrial Organic Carbon in the Amazon River–Estuary Continuum. American Geophysical Union annual meeting, Washington, DC, USA (international; oral presentation).

[17] Jensen L., Buck N., Grisson V. <sup>\*</sup>, **Colombo M.** and Foukal N. (2025) Trace metals and macronutrients in the Labrador Coastal Current. Arctic-Subarctic Ocean Fluxes Meeting, Barcelona, Spain (international; oral presentation).

[16] Flynn E. <sup>#</sup>, Kuehl S., Harris C., Galy V. and **Colombo M.** (2025) Decoding impacts of modern human development on terrestrial organic carbon sequestration seaward of the Ayeyarwady-Thanlwin rivers. European Geosciences Union General Assembly, Vienna, Austria (international; oral presentation).

[15] Galy V., Boehman B., **Colombo M.**, Hein C., Lu T. and Rosenheim B.E. (2024) Glacial-Interglacial swings in organic carbon burial offshore the Amazon River. American Geophysical Union annual meeting, Washington, DC, USA (international; oral presentation).

[14] Rosenheim B.E., Galy V., Boehman B., Hein C., **Colombo M.**, Ward N., Richey J., Aller R., de Souza Moura J.M., Kampel M., West J. and Rugama-Montenegro R. (2024) New constraints on carbon cycling and biogeochemistry of the Amazon-Guianas Mudbanks. American Geophysical Union annual meeting, Washington, DC, USA (international; oral presentation).

[13] Rogalla B., Allen S.E., **Colombo M.**, Myers P.G. and Orians K.J. (2023) Tracing the influence of continental and glacial runoff on ocean biogeochemistry in Inuit Nunangat. 57<sup>th</sup> Canadian Meteorological and Oceanographic Society (CMOS) Congress, St. John's, NL, Canada (national; oral presentation).

[12] **Colombo M.**, Li J., Rogalla B., Desai D., La Roche J., Allen S.E. and Maldonado M.T. (2022) Particulate trace element dynamics in the Canadian Arctic Ocean. Ocean Sciences Meeting, Online (international; oral).

[11] Rogalla B., **Colombo M.**, Li J., Allen S.E., Orians K.J. and Maldonado M.T. (2022) Shelf-ocean interactions in the Canadian Arctic Archipelago as a major source of iron to Pacific derived waters transiting to the North Atlantic. Ocean Sciences Meeting, Online (international; oral).

[10] Rogalla B., Allen S.E., **Colombo M.**, Myers P.G. and Orians K.J. (2021) The role of sediment in sea ice for Mn in the Canada Basin. 55<sup>th</sup> Canadian Meteorological and Oceanographic Society (CMOS) Congress, Online from Victoria, BC, Canada (national; oral presentation).

- [9] Rogalla B., Allen S.E., **Colombo M.**, Myers P.G. and Orians K.J. (2021) Dirty sea ice drives higher Mn concentrations in the Canada Basin. European Geosciences Union (EGU) General Assembly (international; oral presentation).
- [8] **Colombo M.**, Jackson S.L., Cullen J.T. and Orians K.J. (2019) Contrasting the distributions of dissolved iron and manganese in seawater of the Canadian Arctic Ocean. Goldschmidt, Barcelona, Spain (international; oral presentation).
- [7] Rogalla B., **Colombo M.**, Allen S.E., Orians K.J. and Myers P.G. (2019) Spatial and Vertical Variations of Origin of Water Masses in Baffin Bay. International Union of Geodesy and Geophysics General Assembly, Montreal, Canada (international; oral presentation).
- [6] **Colombo M.** and Orians K.J. (2018) The Distribution of Mn, Ga and Pb in the Canadian Arctic Ocean. Goldschmidt, Boston, USA (international; poster).
- [5] **Colombo M.**, Brown K. and Orians K.J. (2018) Trace Metal Distribution in Remote Rivers in the Canadian Arctic Archipelago: Geochemical Characterization of a Pristine Environment. Ocean Sciences Meeting, Portland, USA (international; poster).
- [4] Maldonado M.T., Li J., LaRoche J., Desai D., **Colombo M.**, Beaupré-Laperrière A., Orians K.J. and Mucci A. (2018) A Hypothetical Role of Manganese-oxidizing Bacteria on the Distribution of Particulate Metals in the Canadian Arctic Ocean. Ocean Sciences Meeting, Portland, USA (international; oral presentation).
- [3] **Colombo M.**, Knutsson S., Rostmark S.C. and Öberg G. (2014) Sustainable management of contaminated sediments: reducing energy demand, climate impact and water pollution in coastal cities. Water Initiative for the Future. Kingston, Canada (national; poster).
- [2] **Colombo M.**, Speranza E.D., Cappelletti N. and Colombo J.C. (2013) Sterols analysis by solid phase extraction (SPE) and gas chromatography. Proceedings of the XIX National Organic Chemistry Symposium. Mar del Plata, Argentina (national; poster).
- [1] **Colombo M.**, Speranza E.D, Tatone L.M. and Colombo J.C. (2013) Sterols analysis as organic sources biomarkers in Del Plata basin. Proceedings of the XIX National Organic Chemistry Symposium. Mar del Plata, Argentina (national; poster).

### 8.3.Invited Scholarly Papers and Talks

- [5] **Colombo M.** (2024) Trace element and organic carbon cycling in disparate environments. Ocean and Earth Sciences Seminar Series, Old Dominion University, USA. October 2024.
- [4] **Colombo M.** (2023) Biogeochemistry Across Boundaries. Physical Oceanography Seminar, University of British Columbia, Canada. November 2023 (oral presentation).
- [3] **Colombo M.** (2021) On the biogeochemical processes controlling trace metal distributions in the Canadian Arctic Ocean and Arctic Rivers. 27<sup>th</sup> Dissertation Symposium in Chemical Oceanography, Lihue, Hawaii, USA. October 2021 (oral presentation).

[2] Colombo M. (2021) Trace elements as tracers of biogeochemical processes in the Canadian Arctic Ocean. Workshop: Introduction to Biogeochemistry, National University of La Plata, Argentina. July 2021 (oral presentation)

[1] Colombo M. (2020) Lead as a transient tracer of Anthropogenic pollution & Benthic Fe and Mn inputs in the CAA and subsurface Baffin Bay waters. Workshop: Introduction to Biogeochemistry, National University of La Plata, Argentina. November 2020 (oral presentation).

## 8.4. Work in Progress

Flynn E.R., Galy V., Colombo M. and Kuehl S.A. (2025) Decoding terrestrial organic carbon processing and dispersal on a high-energy, river-dominated margin. To be submitted: *Global Biogeochemical Cycles*.

Ringard A., Ryan-Keogh T.J., Bucciarelli E., Blain S., Richon C., Aumont O., Sherrell R.M., Twining B.S., Achterberg E.P., Browning T.J., Colombo M., Fietz S., Li J., Milne A., Viljoen J.J., Baudet C. and Planquette H. (2026) Unveiling oceanic biogenic metal ratios using particulate field data. (*In progress*).

Krisch S., Achterberg E.P., Biester H., Boyle E.A., Colombo M., Cullen J.T., Fitzsimmons J.N., van de Flierdt T., Heimbürger-Boavida L.-E., Hopwood M.J., Jensen L.T., Lodeiro P., Middag R., Myers P.G., Olivelli A., Rehkämper M., Rember R., Rijkenberg M.J.A., Rogalla B., Rutgers van der Loeff M. and De Vera J. (2025) Closing the Arctic lead budget: A review. (*In progress*).

## 9. Professional Engagement

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### 9.1. Editorial Board Services, Review Panels, Program Reviews, Etc.

#### Ad hoc Proposal Reviews:

Year	Agency	Reviewed
2024	NSF Office of Polar Programs (OPP) - Arctic Observing Network Program	1

#### Journal Article Reviews:

Year	Journal	Articles reviewed
2025	Journal of Geophysical Research: Biogeosciences	1
	Geophysical Research Letters	1
2024	Journal of Geophysical Research: Oceans	1
	Geochimica et Cosmochimica Acta	1
2023	Global Biogeochemical Cycles	1
2022	Global Biogeochemical Cycles	1
2021	Geochimica et Cosmochimica Acta	1
	Chemical Geology	1
2020	Nature Communications	1
	Science of the Total Environment	1
2019	Journal of Occupational and Environmental Hygiene	1

## 10. Fieldwork Record

<i>Field Campaign</i>	<i>Position</i>	<i>Activities Developed</i>	<i>Date</i>
NE Greenland Cruise (EGNOG) <u>Chief scientist:</u> <i>Nicholas Foukal</i>	Biogeochemistry Sampling Team - Lead PI	<ul style="list-style-type: none"> <li>- Coordinated the biogeochemistry sampling strategy for the East Greenland Coastal Current expedition (September 2025).</li> <li>- Coordinated the purchasing of sampling equipment and supplies.</li> <li>- Lead sampling efforts: 240 dissolved trace elements (TEs), 46 particulate TEs, 200 nutrients, 190 oxygen isotopes, 30 TE isotopes and 21 DOC samples.</li> <li>- Coordinated the biogeochemistry sampling strategy for the Labrador Coastal Current expedition (September 2024).</li> <li>- Coordinated the purchasing of sampling equipment and supplies.</li> <li>- The team successfully sampled 137 dissolved trace elements (TEs), 65 Total dissolvable TEs, 137 nutrient and 65 oxygen isotopes samples.</li> </ul>	2025/09 (3 weeks)
Labrador Coastal Current Cruise <u>Chief scientist:</u> <i>Nicholas Foukal</i>	Biogeochemistry Sampling Team - Lead PI	<ul style="list-style-type: none"> <li>- Coordinated the biogeochemistry sampling strategy for the Labrador Coastal Current expedition (September 2024).</li> <li>- Coordinated the purchasing of sampling equipment and supplies.</li> <li>- The team successfully sampled 137 dissolved trace elements (TEs), 65 Total dissolvable TEs, 137 nutrient and 65 oxygen isotopes samples.</li> </ul>	2024/09 (3 weeks)
MUDBENCS – Amazon coastal research cruise <u>Chief scientist:</u> <i>Brad Rosenheim</i> Canadian Arctic GEOTRACES Cruise <u>Chief</u> <u>scientist:</u> <i>Roger</i> <i>Francois</i>	Postdoctoral Researcher  Researcher	<ul style="list-style-type: none"> <li>- Sampled, filtered, and processed seawater for trace metal analyses</li> <li>- Deployed multi and gravity core sampling devices and processed sediment core samples.</li>   <li>- Sampled, filtered, and processed seawater and river samples for trace metal analyses, operated and deployed the trace metal rosette.</li> </ul>	2023/06 (3 weeks)  2015/07 (3 months)