

Dr. Damian L. Arévalo-Martínez

Publication list

Articles submitted for peer-review

Xu, P., **Arévalo-Martínez, D. L.**, Midelboe, M., Pohlmann, M., Bange, H. W., and Löscher, C. R.: Variability of microbial diversity and nitrogen cycling in the eastern tropical Pacific Ocean during two La Niña years, *Under review for mSystems*

Xu, P., Reeder, C. F., **Arévalo-Martínez, D. L.**, Carreres-Calabuig, J. A., Posth, N. R., and Löscher, C. R.: Impact of deoxygenation on microbial diversity and function in the tropical South Atlantic Ocean, *Under review for The ISME Journal*

Articles in peer-reviewed journals

Holthusen, L. A., Bange, H. W., Badewien, T. H., Muchowski, J. C., Santl-Temkiv, T., Spicker Schmidt, J., Wurl, O., and **Arévalo-Martínez, D. L.**: Biogeochemical Shifts During Arctic Spring: Surfactants in the Sea-Surface Microlayer Reduce CH₄ and N₂O Emissions During the Onset of Sea Ice Melt, *Accepted for publication in The Cryosphere*

Sommer, M., Bange, H. W., Eisnecker, P., Schulz, G., Stoltenberg, I., and **Arévalo-Martínez, D. L.**: N₂O Emissions from the Eastern Tropical Indian Ocean, *Geophysical Research Letters*, 52, e2025GL117627, <https://doi.org/10.1029/2025GL117627>

2025 Voss, M., Holtermann, P., Ahmerkamp, S., **Arévalo-Martínez, D. L.**, et al.: Coastal Zones of the Baltic Sea in the Anthropocene: Current State and the Impact of Climate Change, *Estuarine, Coastal and Shelf Science*, 326, 109504.

2025 Holthusen, L. A., Bange, H. W., **Arévalo-Martínez, D. L.**, Badewien, T. H., Meyerjürgens, J., Hofer, J., Schlangen, I., Marín-Arias, C., Löscher, C. R., and Wurl, O.: Glacial meltwater drives high CH₄ supersaturation in Maxwell Bay, King George Island (Southern Ocean), *Limnology and Oceanography Letters*, <https://doi.org/10.1002/lol2.70045>

2025 Zhang, J., **Arévalo-Martínez, D. L.**, Zhan, L., Chen, L., Zhao, J., Ye, W., Liu, J., Wu, M., and Li, Y.: Distribution patterns of N₂O during the summer season in Prydz Bay, eastern Southern Ocean, *Acta Oceanologica Sinica*, 44(4), 1–11, <https://doi.org/10.1007/s13131-024-2455-z>

2024 **Arévalo-Martínez, D. L.**: Offshore aquaculture greenhouse gas emissions based on ocean net primary productivity, *Nature Food*, <https://doi.org/10.1038/s43016-024-01005-x>

2024 Bange, H. W., Mongwe, N. P., Shluter, J., D., **Arévalo-Martínez, D. L.**, Bianchi, D., Lauvset, S. K., Liu, C., Löscher, C. R., Martins, H., Rosentreter, J., Schmale, O., Steinhoff, T., Upstill-Goddard, R.C., Wanninkhof, R., Wilson, S. T., and Xie, H.: Advances in understanding of air-sea exchange and cycling of greenhouse gases in the surface ocean, *Elementa: Science of the Anthropocene*, 12(1):00044, <https://doi.org/10.1525/elementa.2023.00044>

2023 Campen, H. I., **Arévalo-Martínez, D. L.**, and Bange, H. W.: Carbon monoxide cycling in the Fram Strait (Arctic Ocean), *Biogeosciences*, 20, 1371–1379, <https://doi.org/10.5194/bg-20-1371-2023>

- 2023** Ye, W., **Arévalo-Martínez, D. L.**, He, H., Li, Y., Wen, J., Zhang, J., Liu, J., Wu, M., and Zhan, L.: Significant methane undersaturation during austral summer in the Ross Sea (Southern Ocean), *Limnology and Oceanography Letters*, <https://doi.org/10.1002/lol2.10315>
- 2023** **Arévalo-Martínez, D. L.**, Haroon, A., Bange, H. W., Erkul, E., Jegen, M., Moosdorf, N., Schneider von Deimling, J., Berndt, C., Böttcher, M. E., Hoffmann, J., Liebetrau, V., Mallast, U., Massmann, G., Micallef, A., Michael, H. A., Paasche, H., Rabbel, W., Santos, I., Scholten, J., Schwalenberg, K., Szymczycha, B., Thomas, A. T., Virtasalo, J. J., Waska, H., and Weymer, B.: Ideas and perspectives: Land-ocean connectivity through groundwater, *Biogeosciences*, 20, 647–662, <https://doi.org/10.5194/bg-20-647-2023>
- 2022** Furbo Reeder, C., **Arévalo-Martínez, D. L.**, Carreres-Calabuig, J. A., Sanders, T., Posth, N. R., and Löscher, C. R.: High diazotrophic diversity but low N₂ fixation activity in the Northern Benguela upwelling system confirming the enigma of nitrogen fixation in oxygen minimum zone waters, *Frontiers in Marine Science*, 9, 868261, <https://doi.org/10.3389/fmars.2022.868261>
- 2022** Thomas, D. N., **Arévalo-Martínez, D. L.**, Crocket, K. C., Große, F., Grosse, J., Schulz, J., Sühring, R., and Tessin, A.: A changing Arctic Ocean, *Ambio*, <https://doi.org/10.1007/s13280-021-01677-w>
- 2021** Sabbaghzadeh, B., **Arévalo-Martínez, D. L.**, Glockzin, M., Otto, S., and Rehder, G.: Meridional and Cross Shelf Variability of N₂O and CH₄ in the South Eastern Atlantic, *Journal of Geophysical Research Oceans*, 126, e2020JC016878, <https://doi.org/10.1029/2020JC016878>
- 2021** Rees, A. P., Bange, H. W., **Arévalo-Martínez, D. L.**, Artioli, Y., Ashby, D., Brown, I. J., Campen, H., Clark, D., Kitidis, V., Lessin, G., Tarran, G. A., and Turley, C.: Biogeochemical Pathways and Emissions of Nitrous Oxide (N₂O) and Methane (CH₄) in a Changing Arctic Ocean, *Ambio*, <https://doi.org/10.1007/s13280-021-01633-8>
- 2021** Krahmhann, G., **Arévalo-Martínez, D. L.**, Dale, A. W., Dengler, M., Engel, A., Glock, N., Grasse, P., Hahn, J., Hauss, H., Hopwood, M., Kiko, R., Loginova, A., Löscher, C. R., Maßmig, M., Roy, A.-S., Salvattecchi, R., Sommer, S., Tanhua, T., and Mehrstens, H.: Climate-Biogeochemistry Interactions in the Tropical Ocean: Data collection and legacy, *Frontiers in Marine Science*, 8(723304), doi: 10.3389/fmars.2021.723304
- 2021** Campen, H., **Arévalo-Martínez, D. L.**, Artioli, Y., Brown, I. J., Kitidis, V., Lessin, G., Rees, A. P., and Bange, H. W.: The role of a changing Arctic Ocean and climate for the biogeochemical processes of dimethyl sulphide (DMS) and carbon monoxide (CO), *Ambio*, [10.1007/s13280-021-01612-z](https://doi.org/10.1007/s13280-021-01612-z)
- 2020** Wilson, S. T., Al-Haj, A. N., Bourbonnais, A., Frey, C., Fulweiler, R. W., Kessler, J. D., Marchant, H. K., Milucka, J., Ray, N. E., Suntharalingham, P., Thornton, B. F., Upstill-Goddard, R. C., Weber, T. S., **Arévalo-Martínez, D. L.**, Bange, H. W., Benway, H. M., Bianchi, D., Borges, A. V., Chang, B. X., Crill, P. M., del Valle, D. A., Farías, L., Joye, S. B., Kock, A., Labidi, J., Manning, C. C., Pohlman, J. W., Rehder, G., Sparrow, K. J., Tortell, P. D., Treude, T., Valentine, D. L., Ward, B. B., Yang, S., and Yurganov, L. N.: Ideas and perspectives: A strategic assessment of methane and nitrous oxide measurements in the marine environment, *Biogeosciences*, 17, 5809–5828, <https://doi.org/10.5194/bg-17-5809-2020>

- 2020** Frey, C., Bange, H. W., Achterberg, E. P., Jayakumar, A., Löscher, C. R., **Arévalo-Martínez, D. L.**, León-Palmero, E., Sun, M., Xie, R. C., Oleynik, S., and B. ward: Regulation of nitrous oxide production in low-oxygen waters off the coast of Peru, *Biogeosciences*, 17, 2263–2287, <https://doi.org/10.5194/bg-17-2263-2020>
- 2020** Ma, X., Bange, H. W., Eirund, G. K., and **D. L. Arévalo-Martínez**: Nitrous oxide and hydroxylamine measurements in the Southwest Indian Ocean, *Journal of Marine Systems*, 209(103062), <https://doi.org/10.1016/j.jmarsys.2018.03.003>
- 2019** Morgan, E., Lavric, J., **Arévalo-Martínez, D. L.**, Bange, H. W., Steinhoff, T., Seifert, T. and M. Heimann: Air-Sea Fluxes of Greenhouse Gases and Oxygen in the Northern Benguela Current Region During Upwelling Events, *Biogeosciences*, 16, 4065–4084
- 2019** Fischer, T., Kock, A. **Arévalo-Martínez, D. L.**, Dengler, M., Brandt, P., and H. W. Bange: Gas exchange estimates in the Peruvian upwelling regime biased by multi-day near-surface stratification, *Biogeosciences*, 16, 2307–2328
- 2019** Ji, Q., Altabet, M. A., Bange, H. W., Graco, M. I., Ma, X., **Arévalo-Martínez, D. L.**, and D. S. Grundle: Investigating the effect of El Niño on nitrous oxide distribution in the Eastern Tropical South Pacific, *Biogeosciences*, 16, 2079–2093
- 2019** Bange, H. W., **Arévalo-Martínez, D. L.**, de la Paz, M., Farias, L., Kaiser, J., Kock, A., Law, C. S., Rees, A. P., Rehder, G., Tortell, P. D., Upstill-Goddard, R. C., and S. T. Wilson: A harmonized nitrous oxide (N₂O) ocean observation network for the 21st century, *Frontiers in Marine Science*, 6(157), <https://doi.org/10.3389/fmars.2019.00157>
- 2019** **Arévalo-Martínez, D. L.**, Steinhoff, T., Brandt, P., Körtzinger, A., Lamont, T., Rehder, G., and H. W. Bange: N₂O emissions from the northern Benguela upwelling system, *Geophysical Research Letters*, 46, <https://doi.org/10.1029/2018GL081648>
- 2019** Korth, F., Kock, A., **Arévalo-Martínez, D. L.**, and H. W. Bange: Hydroxylamine as a potential indicator of nitrification in the open ocean, *Geophysical Research Letters*, 46, <https://doi.org/10.1029/2018GL080466>
- 2018** Wilson, S. T., Bange, H. W., **Arévalo-Martínez, D. L.**, et al.: An intercomparison of oceanic methane and nitrous oxide measurements, *Biogeosciences*, 15(19), 5891–5907
- 2018** Lutterbeck, H. E., **Arévalo-Martínez, D. L.**, Löscher, C. R., and H. W. Bange: Nitric oxide (NO) in the oxygen minimum zone off Peru, *Deep Sea Research II*, 156, 148–154
- 2017** Köhn, E. E., Thomsen, S., **Arévalo-Martínez, D. L.**, and T. Kanzow: Submesoscale CO₂ variability across an upwelling front off Peru, *Ocean Science*, 13, 1017–1033
- 2017** **Arévalo-Martínez, D. L.**, Kock, A., Steinhoff, T., Brandt, P., Dengler, M., Fischer, T., Körtzinger, A., and H. W. Bange: Nitrous oxide during the onset of the Atlantic Cold Tongue, *Journal of Geophysical Research Oceans*, 122, 171–184, <http://doi.org/10.1002/2016JC012238>
- 2017** Lennartz, S. T., Marandino, C., von Hobe, M., Cortes, P., Quack, B., Simo, R., Booge, D., Pozzer, A., Steinhoff, T., **Arévalo-Martínez, D. L.**, Kloss, C., Bracher, A., Röttgers, R., Atlas, E., and K. Krüger: Oceanic emissions unlikely to account for the missing source of atmospheric carbonyl sulfide, *Atmospheric Chemistry and Physics*, 17, 385–402

2016 Arévalo-Martínez, D. L., Kock, A., Löscher, C. R., Schmitz, R. A., Bange, H. W., and L. Stramma: Influence of mesoscale eddies on the distribution of nitrous oxide in the eastern tropical South Pacific, *Biogeosciences*, 13, 1105–1118

2016 Kock, A., Arévalo-Martínez, D. L., Löscher, C. R., and H. W. Bange: Extreme N₂O accumulation in the coastal oxygen minimum zone off Peru, *Biogeosciences*, 13, 827–840

2015 Arévalo-Martínez, D. L., Kock, A., Löscher, C. R., Schmitz, R. A., and H. W. Bange: Massive nitrous oxide emissions from the tropical South Pacific Ocean, *Nature Geoscience*, 8, 530–533

2013 Arévalo-Martínez, D. L., Beyer, M., Krumbholz, M., Piller, I., Kock, A., Steinhoff, T., Körtzinger, A., and H. W. Bange: A new method for continuous measurements of oceanic and atmospheric N₂O, CO and CO₂: performance of off-axis integrated cavity output spectroscopy (OA-ICOS) coupled to non-dispersive infrared detection (NDIR), *Ocean Science*, 9, 1071–1087

2008 Arévalo-Martínez, D. L., and A. Franco-Herrera: Oceanographic features of the upwelling in front of Gaira's Inlet, Magdalena Department, minor dry season 2006, *Bulletin of Marine and Coastal Research*, 37(2), 131–162, <https://doi.org/10.25268/bimc.invemmar.2008.37.2.195> [in Spanish]

Articles in conference proceedings

2024 Quack, B., Arévalo-Martínez, D. L., Bange, H., Becker, K., Böhme, W., Booge, D., Engel, A., Hepach, H., Karnatz, J., Marandino, C., Müller, T., Pontiller, B., Scheidemann, L., Hieronymi, M., Röttgers, R., Schulz, G., Caldeira, R., Cardoso, C., Reis, J., Rosa, A., Diogoul, N., Brehmer, P., Atlas, E., Löscher, C., Xu, P., Potin, P., Auganaes, S., Krüger, K., Ball, S., Offin, A., Pickering, J., Assiri, Y., Brown, L., Carpenter, L. J., Chance, R., Jones, M., Loades, D., Weddell, K., Bösch, T., Latsch, M., and F. Wittrock: Pan-Atlantic connectivity of marine biogeochemical and ecological processes and the impact of anthropogenic pressures, Status Conference Research Vessels 2024, Forschungszentrum Jülich, Jülich, Germany, pp. 473–482

2020 Arévalo-Martínez, D. L., Steinhoff, T., and H. W. Bange: Surface variability of climate-relevant trace gases (N₂O, CO₂, CO) in the tropical eastern South Pacific Ocean, Status Conference Research Vessels 2020, Forschungszentrum Jülich, Jülich, Germany, pp. 149–152

2015 Steinhoff, T., Arévalo-Martínez, D. L., Bange, H. W., Bell, T., Booge, D., Eirund, G. K., Körtzinger, A., and C. Marandino: Surface dynamics of CO₂, N₂O, DMS and isoprene in the Indian Ocean [in German], Statusseminar Meeresforschung mit FS SONNE 2015, 12–13 February 2015, Bremen, Germany, Tagungsband Statusseminar Meeresforschung mit FS SONNE 2015, pp. 236–238

Book chapters

2024 Bange, H. W., Arévalo-Martínez, D. L., Bikkina, S., Marandino, C. A., Sarin, M., and Tegtmeier, S.: Air-sea exchange and its impacts on biogeochemistry in the Indian Ocean. In: Ummenhofer, C. C., and Hood, R. R. (eds.), *The Indian Ocean and its role in the global climate system*, Elsevier, 329–357 p., 2024

2023 Arévalo-Martínez, D. L., and Kock, A.: N₂O in the ocean. In: German Climate Observing Systems: Inventory report on the Global Climate Observing System (GCOS), German Meteorological Service, pp. 99-101, 2023

In Press Arévalo-Martínez, D. L., Bange, H. W., Kaiser, J., Kessler, J., Pohlmann, J. W., Rehder, G., Thornton, B. F., and Zhang, G.: Underway measurements of methane and nitrous oxide concentrations in surface seawater (SOP6). In: Wilson et al., Standard Operating Protocols (SOP) for dissolved methane and nitrous oxide measurements.

Selected presentations

2025 Arévalo-Martínez, D. L.: Greenhouse gas fluxes across the land-ocean continuum: challenges and ways forward [**Invited Talk**] In: IOW-Colloquium, 09/05, Warnemünde, Germany

2025 Arévalo-Martínez, D. L.: Nitrous oxide emissions from the Baltic Sea: Overview and Perspectives [**Invited Talk**] In: Baltic Sea Nitrogen Cycling Network Seminar Series, 10/04, Online

2025 Arévalo-Martínez, D. L.: Nitrous oxide dynamics in a seasonally stratified coastal eutrophic basin [**Invited Talk**] In: Research Division Seminar GEOMAR, 20/02, Kiel, Germany

2024 Arévalo-Martínez, D. L.: Monitoring of greenhouse gases across the land-ocean continuum [**Invited Talk**] In: Scoping Workshop: The future of observing and modeling estuaries and river plumes, 26–27/11, Lecce, Italy

2024 Arévalo-Martínez, D. L.: Turning around the tides: Will the Arctic Ocean be a sink or a source of nitrous oxide? [**Invited Talk**] In: International Symposium on Polar Sciences – The 40th Anniversary of CHINARE, 29/10–01/11, Shanghai, China

2024 Arévalo-Martínez, D. L., Bange, H. W., Dotsios, N., van Erk, M. R., van Helmond, A. G. M., ter Horst, P. A. G., van Kessel, M. A. H. J., Lenstra, W., Lücker, S., Rigutto, I., Schrammeck, S., Zygadlowska, O., Jetten, M. S. M. and Slomp, C. P.: Dynamics of N₂O under coastal hypoxia: the case of Lake Grevelingen (The Netherlands). [**Talk**] In: European Geosciences Union General Assembly, 14–19/04, Vienna, Austria

2023 Arévalo-Martínez, D. L., van Erk, M., Bange, H. W., van Helmond, A. G. M., ter Horst, P. A. G., Lenstra, W., Rigutto, I., Schrammeck, S., Zygadlowska, O., Jetten, M. S. M. and Slomp, C. P.: N₂O fluxes across sediment-water-air interfaces in anthropogenically impacted coastal regions: the case of Lake Grevelingen (The Netherlands). [**Poster**] In: ASLO 2023 Aquatic Sciences Meeting, 04–09/06, Palma de Mallorca, Spain

2022 Arévalo-Martínez, D. L.: Bad breath from the ocean?: An update on air-sea fluxes of N₂O and CH₄ in low-oxygen regions. [**Invited Talk**] In: Netherlands Earth System Science Centre (NESSC) Theme Meeting, 10/10, online

2022 Arévalo-Martínez, D. L., Holthausen, L.: Are we losing a sink for atmospheric trace gases? Nitrous oxide in the Arctic marine ecosystem. [**Invited Talk**] In: APECS-ARICE Webinar Series, 28/02, online

2020 Arévalo-Martínez, D. L., Löscher, C. R., Bastian, D., Brown, I., Kitidis, V. A., Rees, A. P., Schaffer, J., Torres-Valdés, S. and Bange, H. W.: Sources and sinks of N₂O in the

subpolar and polar North Atlantic. **[Talk]** In: Ocean Sciences Meeting 2020, 16-21/02, San Diego, USA

2020 Arévalo-Martínez, D. L.: Nitrous oxide at ocean interfaces: what we know and ways forward. **[Invited talk]** In: Environmental Geology & Geochemistry Seminar (EGGS) Lecture Series, 13/02, Princeton University, Princeton, NJ, USA

2019 Arévalo-Martínez, D. L., Löscher, C. R., Brown, I., Rees, A. P., Kitidis, V. A. and Bange, H. W.: Nitrous Oxide Cycling in the Fram Strait. **[Talk]** In: 27th IUGG General Assembly, 08-18/07, Montreal, Canada

2018 Arévalo-Martínez, D. L.: The “bad” breath of the ocean: Greenhouse gas emissions from Eastern Boundary Upwelling Ecosystems. **[Keynote talk]** In: Ocean Deoxygenation: Drivers and Consequences -Past, Present, Future-, 03–07/9, Kiel, Germany

2017 Arévalo-Martínez, D. L., Xiao, Ma, Eirund, Gesa K. and Bange, H. W.: Nitrous oxide in the Southwest Indian Ocean. **[Talk]** In: Good Hope for Earth Science - 2017 Joint IAPSO-IAMAS-IAGA Assembly, 27/08–01/09, Cape Town, South Africa

2015 Arévalo-Martínez, D. L., Kock, A., Körtzinger, A., Steinhoff, T. and Bange, H. W.: Nitrous oxide emissions from eastern boundary ecosystems: case studies from the Peru and Benguela upwelling regions. **[Talk]** In: SOLAS Open Science Conference, 07–11/09, Kiel, Germany

2015 Arévalo-Martínez, D. L., Kock, A., Steinhoff, T., Morgan, E. J., Körtzinger, A. and Bange, H. W.: Improving N₂O and CO measurements in the surface ocean: application of OA-ICOS. **[Invited talk]** In: Marine Applications and Perspectives of Cavity Enhanced Optical Detection Schemes, 20–21/04, Kiel, Germany

2014 Arévalo-Martínez, D. L., Bange, H. W., Kock, A., Körtzinger, A. and Steinhoff, T.: Nitrous oxide in the eastern tropical South Pacific. **[Talk]** In: Ocean Sciences Meeting 2014, 23–28/02, Honolulu, Hawaii, USA

2014 Arévalo-Martínez, D. L., Bange, H. W., Kock, A., Lennartz, S. T. and Xiao, M.: Improving nitrous oxide measurements in the ocean. **[Invited talk]** In: InGOS 2nd Periodic Project Meeting, 14–16/10, Florence, Italy