

ANNUAL REPORT ON GEOTRACES ACTIVITIES IN NORWAY

April 1st, 2019 to March 31st, 2020

New GEOTRACES or GEOTRACES relevant scientific results

See under publications below

GEOTRACES or GEOTRACES relevant cruises (NTNU Marine Chemistry)

Two cruises in The Nansen Legacy program to Arctic (the Barents sea); Trace metal (including Fe, Hg and others) sampling.

New projects and/or funding

Submitted applications (to Research Council Norway)

- AtoMS: An Autonomous trace-Metal-clean seawater Sampler to study iron and mercury dynamics in the Arctic (Coordinator: NTNU Chemistry Dept.)
- BEST-Siberian: Bio-essential and toxic elements transformation and transport in the Arctic under pressure of Siberian Continental Shelf permafrost thawing (BEST-Siberian) (Coordinator: NTNU Marine Chemistry)
- SINC: Particle Settling in Changing Ocean: Impacts of enhancing terrestrial materials inputs on the biological carbon pump – SINC. (Coordinator: NTNU Marine Chemistry.)

EU-Horizon proposal

- Blue Growth and mitigation potentials for the impact of multi-stressors in the Black Sea *Integrated multitrophic aquaculture & carbon capture BlueBlack* (Coordinator: NTNU Marine Chemistry.)

NordForsk proposal

- S-Perma: Scenario building on the potential impact of permafrost thawing on the Arctic & Atlantic biogeochemistry and socio-ecology. (Coordinator: NTNU Marine Chemistry)

New GEOTRACES or GEOTRACES-relevant publications (published or in press)

- Costa, K. M., Hayes, C. T., Anderson, R. F., Pavia, F. J., Bausch, A., Deng, F., et al. (2020). 230Th normalization: New insights on an essential tool for quantifying sedimentary fluxes in the modern and Quaternary ocean. *Paleoceanography and Paleoclimatology*, 35, e2019PA003820. <https://doi.org/10.1029/2019PA003820>
- Hopwood, et al., Ardelan, MV..... (2020) Fe(II) stability in coastal seawater during experiments in Patagonia, Svalbard, and Gran Canaria, *Biogeosciences*, 17, 1327–1342
- Sanchez, N. et al.,and Ardelan, MV.: (2020) Response of the microbial food web to gradients of organic matter and grazing pressure and multi-stressor effect in incubation experiments in three different marine ecosystems: Patagonia, Arctic and Mediterranean, *PANGAEA*,
- Hopwood, et al., ... Ardelan, MV (2020) Experiment design and bacterial abundance control extracellular H₂O₂ concentrations during four series of mesocosm experiments. *Biogeosciences*, 17, 1309–1326, <https://doi.org/10.5194/bg-17-1309-2020>.

- Basallote MD. Et al., ... Ardelan MV(2020) Trace metal mobility in sub-seabed sediments by CO₂ seepage under high-pressure conditions. *Science of The Total Environment*,700, 134761, <https://doi.org/10.1016/j.scitotenv.2019.134761>.
- Sanchez N, et al., ... Ardelan MV (2019) Weddell-Scotia Confluence Effect on the Iron Distribution in Waters Surrounding the South Shetland (Antarctic Peninsula) and South Orkney (Scotia Sea) Islands During the Austral Summer in 2007 and 2008. *Front. Mar. Sci.* 6:771.
- Kleiven, Wanda; Johnsen, Geir; Ardelan, Murat Van. (2019) Sea surface microlayer and elemental composition in phaeo-, chloro-, and rhodophytes in winter and spring. *Journal of Phycology*.(<https://doi.org/10.1111/jpy.12851>)
- Sanchez,N. et al., ... Ardelan,MV (2019) Iron cycling in a mesocosm experiment in a north Patagonian fjord: Potential effect of ammonium addition by salmon aquaculture. *Estuarine, Coastal and Shelf Science*. vol. 220: 107-119. (<https://doi.org/10.1016/j.ecss.2019.02.044>).
- Sanchez,N. et al., ...Ardelan,MV (2019) Effect of hydroxamate and catecholate siderophores on iron availability in the diatom *Skeletonema costatum*: Implications of siderophore degradation by associated bacteria. *Marine Chemistry*. vol. 209. (<https://doi.org/10.1016/j.marchem.2019.01.005>).
- Szymczak-Zyla, M. et al;.....Ardelan MV (2019) Present and Past Millennial Eutrophication in the Gulf of Gdańsk (Southern Baltic Sea). *Paleoceanography and Paleoclimatology*. vol. 34 (2). (<https://doi.org/10.1029/2018PA003474>)
- Borrero-Santiago, AR et al., Trace metal levels and toxicity in the Huelva Estuary (Spain): a case study with comparisons to historical levels from the past decades. *Environmental Chemistry and Ecotoxicology*.(<https://doi.org/10.1016/j.eneco.2019.07.002>) (Accepted with revisions)
- Borrero-Santiago, A.R., et al.,... Ardelan, M.V. 2020. Response of bacterial communities in Barents Sea sediments in case of a potential CO₂ leakage from carbon reservoirs. *Marine Environmental Research*. (Accepted with revisions)

Master Theses (at NTNU)

- Alisa Ilinskaya Effect of iron source on growth and iron uptake in Cyanobacteria *Synechococcus* sp. PCC 7002 wild type and mutants 2020. Supervisor: Murat Van Ardelan
- Simon Ross Stenger “The influence of sediment composition on trace element mobility in a CO₂ leakage scenario” MSc. Thesis. Environmental chemistry and toxicology program (NTNU). 2019. Supervisor: Murat Van Ardelan

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