

ARCTIC 2023 – PROJECTS SELECTED FOR IMPLEMENTATION

Global Ocean Oxygen Decade – Global Ocean Observing System (GOOD- IMDOS)

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ABSTRACT

Following the successful pilot phase in year 2022, we propose to participate in the Iceland-Svalbard legs over the next 4 years to monitor changes in oxygen levels, planktonic ecosystems and microplastic pollution in the Atlantic Sector of the rapidly changing Nordic Seas. Ocean deoxygenation is a major threat to marine ecosystems, it is proceeding rapidly with a roughly 2% loss of oxygen inventory over the past 50 years, and there are systematic differences between low deoxygenation rates simulated by models and high observational estimates, indicating a lack of process understanding. Model-data discrepancies are most pronounced in deep waters, indicating that polar regions may be key regions to improve understanding, where, until now relatively few data are available.

We will focus on the role of climate change and ocean pollution in the Atlantic sector of the Arctic Ocean, in particular on the role of warming and meltwater on upper-ocean stratification, deoxygenation and the resulting impacts on marine ecosystems. A 5-year strategic observing program via Ponant Science on Le Commandant Charcot is supposed to contribute to the UN Decade of the Ocean for Sustainable Development endorsed programme GOOD (Global Ocean Oxygen Decade), and the Global Ocean Observing System (GOOS, here focusing on expanding global observations of marine litter as part of the Integrated Marine Debris Observing System, IMDOS).

Building on the very positive experience during our 2022 cruise participation, we suggest a multi-faceted citizen science program offering small groups of passengers 1-1.5h to participate in ongoing research activities.