

# Are fjords losing their breath in the Anthropocene?

Sustainable Norwegian fjords in the Anthropocene

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## Background and motivation

I joined the SEAS program because I care about sustainable oceans. In the Anthropocene, humans play a decisive role in the health of ecosystems worldwide. Norwegian fjords, beautiful and full of riches, are no exception and already we can witness the weight of the Anthropocene on them. Cities, fish farms, agriculture and industries are disrupting natural processes that up to now worked indifferently to humans. Add climate change to this and we have the perfect sustainability storm brewing over Norwegian fjords.

## Project description

To keep fjords sustainable, we need to understand how these threats will affect them. The major problem they face is low aquatic oxygen levels and this project intends to study the effects on fjord oxygen of the natural and anthropogenic factors by measuring and simulating the history of fjord oxygen levels and what future climate scenarios will mean to fjord oxygen levels.

## My research looks for answers to three main questions:

- What is driving the observed changes in oxygen in Byfjorden and Masfjorden basins?
- What is the impact of anthropogenic factors on these changes?
- How will climate change affect the oxygen levels in fjords?



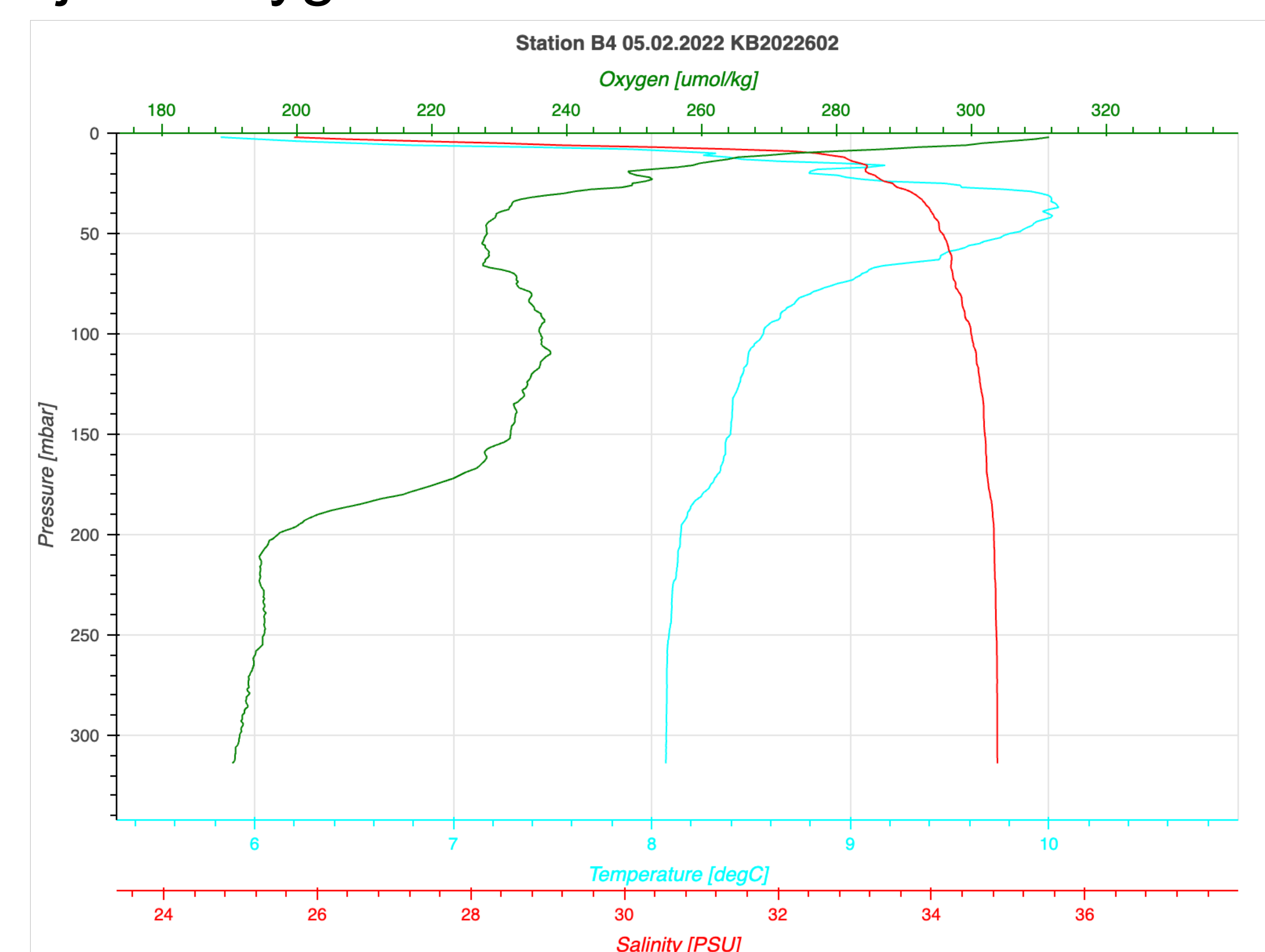
Masfjorden water samples from Cruise KB2022614, with varying levels of dissolved oxygen, increasing from left to right. Photo credits: João Bettencourt.

## How will my research contribute to marine sustainability?

The outcomes of my research will help us to better prepare the actions that will need to be taken to sustainably manage the Norwegian fjords during the Anthropocene.

## Activities:

- Research cruises in Byfjorden/Masfjorden to collect oxygen samples
- Co-lead of the project “*Glider surveys of hydrography and dissolved oxygen distribution in Masfjorden*” (BCCR FTI)
- Co-organizer the 1<sup>st</sup> Multidisciplinary Fjord Workshop
- Member of the EU Science Diplomacy Alliance



Oxygen and hydrographic profiles measured at Station 4 in Byfjorden. Cruise KB2022602.

## My research goals are:

- Gather data on fjord oxygen levels and hydrographic and biogeochemical variables
- Find a relationship between fjord oxygen levels and observed hydrographic and biogeochemical trends
- Develop a model of fjord oxygen dynamics that accounts for anthropogenic factors
- Estimate future trends of fjord oxygen levels due to climate and societal changes (urbanization and industrial pressures)

## Supervisory team

Supervisor: Prof. Elin Darelius (GFI)

Co-supervisors: Dr. Mari Myksvoll (IMR/UiB); Prof. Are Olsen (GFI)



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