



**Coast  
Clim** Coastal Ecosystem  
and Climate Research



## Summer of extensive field work coming up

**FINLAND: Investigating carbon cycling in shallow environments across 50 km of coastline**

August will be a busy month for many CoastClim-researchers as they will conduct an extensive field campaign across 50 km of coastline in the Hango-Ekenäs archipelago, Finland, to explore how carbon cycling in shallow areas vary with environmental gradients in e.g. salinity and wave exposure. The work is conducted by MSc-students, PhD-students and senior researchers and the expertise involved is truly multidisciplinary and ranges from marine ecology to sediment and water biogeochemistry to atmospheric sciences. The team of 16 will investigate how the carbon is distributed in shallow coastal environments (how much is stored in plants, reed, bladderwrack, plankton, animals, seafloor?) and how much greenhouse gases and VOCs these shallow

environments emit. The aim is to understand how changes in biodiversity and environmental variables influence different parts of the carbon cycle.

### **SWEDEN: Exploring VOC Emissions from Baltic Sea Cyanobacteria**

In July, the Cyano-VOC project, led by Matthew Salter, Sneha Aggarwal, and Elias Broman, will conduct a sampling campaign to analyze volatile organic compounds (VOCs) emitted from cyanobacteria blooms during the summer in the Baltic Sea. The project aims to gain a better understanding of the extent of VOC emissions from these cyanobacteria and their impact on atmospheric chemistry and climate. To achieve this, state-of-the-art mass spectrometry techniques will be combined with RNA and DNA techniques (omics) to identify and quantify the cyanobacteria species present, as well as to determine the genes involved in the biosynthesis of VOCs in cyanobacteria.



### **FINLAND: How do heatwaves impact the seafloor?**

A team of CoastClim researchers and a collaborator from University of Rostock, Germany, is undertaking a project in August to understand how marine heatwaves impact coastal environments such as seagrass meadows. The researchers will use a newly developed

Hotfloor system, heated underwater chambers, to simulate a realistic heatwave of 6°C for 3 weeks that heats up the seafloor. The system is developed in collaboration with [Roth Finland](#). The team will investigate how, for example, animals and plants respond to heating, and how different measures of carbon cycling (e.g. greenhouse gas emissions and oxygen production and respiration) are affected by the heating event. This project will help predict how climate change could impact our coastal environments. [Read more about the first experiment that was conducted in 2021 \(Swedish\)](#).

### **SWEDEN: Searching for herring larvae**

Are there any spawning herring left in the Stockholm archipelago? That is what Henrik Svedäng is trying to find out through a series of trawl sampling for herring larvae onboard research vessel Electra this summer. Through DNA analysis of the larvae, the expeditions can also shed light on the level of homing behaviour in different subpopulations of herring.





*Who are we?*

## Meet a CoastClim researcher:

### ***Who are you?***

My name is Erik Gustafsson and I work as a researcher at the Stockholm University Baltic Sea Centre. My background is in physical oceanography, but my research is focused on modelling of carbon and nutrient cycling as well as peculiarities of the inorganic carbon system in the Baltic Sea.

### ***What are you doing in CoastClim and why?***

My role in CoastClim is mainly to develop ecosystem models that can be used 1) to provide full spatial coverage of e.g. carbon stocks and greenhouse gas fluxes for larger areas than what is covered by measurements, and 2) to perform sensitivity experiments on how different stocks and fluxes can potentially be impacted by climate change, changes in external nutrient loads, and also restoration of coastal ecosystems. Overarching goals are on one hand to quantify climate relevant fluxes (carbon sequestration and greenhouse gas emission) on larger scales, but on the other hand to estimate the anthropogenic influence on those fluxes and the potential to do something about them.

### ***My recommendation to you...***

... is to enjoy the short Scandinavian summer while it lasts – eat new potatoes, take a swim, pick some wild strawberries, take a stroll on a gravel road by a

meadow, build a birdhouse, sit down with a cold beverage of choice on a warm evening.

[Meet the team](#) working in CoastClim!

### CoastClim researchers out and about

In April, researchers from CoastClim attended the [FINMARI Researcher day](#) - you can [watch the talks](#). FINMARI (Finnish Marine Research Infrastructure) is a large network connecting major marine research institutions with complementing research infrastructures in Finland. Tvärminne

Zoological Station is an important member of FINMARI and CoastClim is utilizing infrastructure supported by the network.

In June, a large team of CoastClim researchers participated in the ASLO (Association for the Sciences of Limnology and Oceanography) [Aquatic Sciences meeting](#) in Palma de Mallorca, Spain. The conference was a perfect venue to share our on-going research and meet old and new collaborators!



## Short news at a glance

- During the annual Swedish Politician's Week in **Almedalen**, Stockholm University Baltic Sea Centre will present results from CoastClim and discuss blue carbon and carbon accounting. The talk is given by Christoph Humborg on **June 30<sup>th</sup>** and you can [follow the event online](#) (in Swedish).
- **[Baltic Sea Parliamentary Conference](#)** (BSPC) hold their annual meeting in Berlin in **August** and Christoph Humborg will be presenting the latest research from CoastClim on marine coastal ecosystems and climate change. Since 1991 the BSPC is a platform for cooperation, commitment and competence in political dialogue of parliaments, governments and civil society in the Baltic Sea Region.
- **Ole Johansson**, DSc (Tech) (h.c.), Chair of the Board of the Walter and Andrée de Nottbeck Foundation received an [honorary doctorate from the University of Helsinki](#) in May. Mr Johansson has played a significant role in generating long term support from the business sector towards the interdisciplinary research within the framework of CoastClim.

- **New CoastClim publication by Henrik Svedäng (2023). "The development of fish stocks and fisheries in the Baltic Sea since the last glaciation"**  
Oxford Research Encyclopedia of Climate Science.



## On our way to understand how future phytoplankton blooms affect carbon cycling

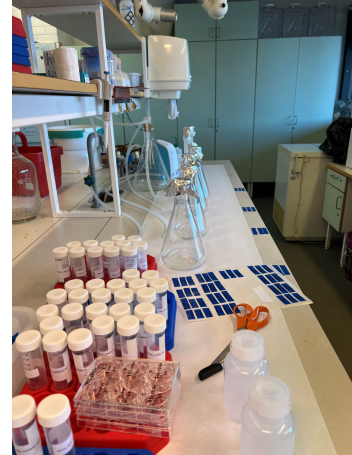
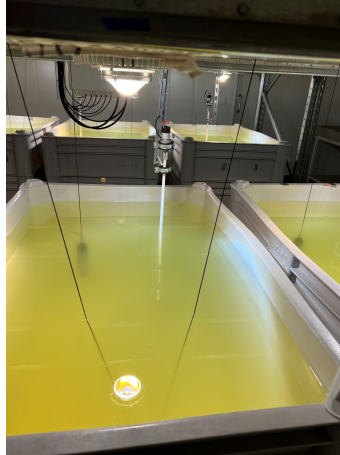
Multidisciplinary team of CoastClim researchers has been running experiments to elucidate the effects of changes in phytoplankton communities on carbon sequestration and gas emissions to the atmosphere. First experiment on the spring phytoplankton communities was a success! Now Aleksandra, Catharina, Per, Tjardo, Märta, Maija and Roseline are preparing for the summer round on cyanobacteria bloom.

The team is aiming to identify the fate of carbon flow in plankton. Shifts in

phytoplankton dominance can influence greenhouse gas emissions, because phytoplankton species differ in their characteristics, such as carbon storage capacity, potential to produce methane, and the overall composition of the emitted gases.

Stay tuned for the early outcomes this winter!

This project is funded by the [KONE Foundation](#), utilises [FINMARI](#) research infrastructure and is open for transnational access within the [AQUACOSM-plus](#).



## Available position

### **Technician in instrumentation, marine measurements technology and sensor systems (permanent position)**

The department of Geological Sciences at Stockholm University is looking for a Technician that will be responsible for the development and operation of various scientific instruments in their laboratories, as well as measurement instruments and sensor infrastructure on various research vessels, including Stockholm University's (SU) research vessel RV Electra. The position is based at the Department of Geological Sciences (IGV) and includes part-time work at SU's Baltic Sea Centre, which operates RV Electra.

For more information, please contact Prof Magnus Mörth ([magnus.morth@geo.su.se](mailto:magnus.morth@geo.su.se), or Prof Christoph Humborg ([christoph.humborg@su.se](mailto:christoph.humborg@su.se)).

Apply before 6 August 2023.



## Spread the word!

Do you need information about CoastClim?  
We have flyers available in three languages: English, Swedish and Finnish.  
Get in contact with us at [coastclim@helsinki.fi](mailto:coastclim@helsinki.fi)



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