

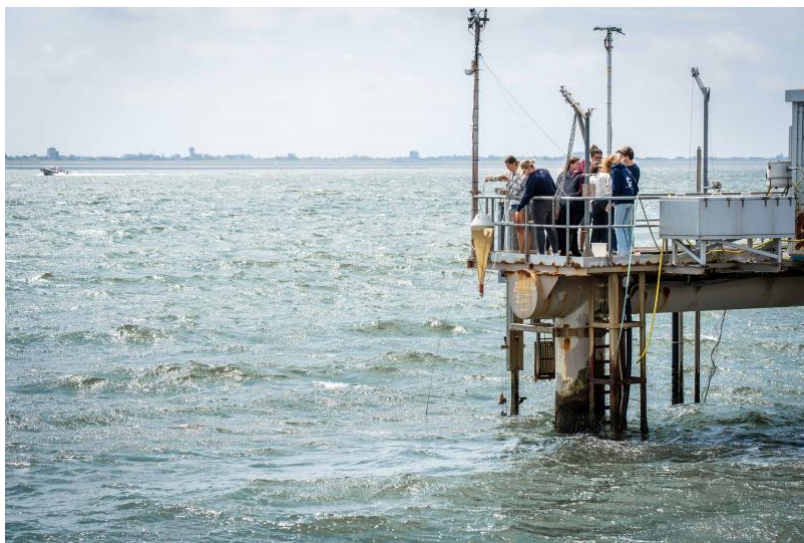


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Intelligent data sampling for phytoplankton monitoring – deadline September 2025

This is part of the IceLab Multidisciplinary Postdoctoral Fellow Programme at Umeå University – a competition-based scheme supporting three postdocs for a period of **2 years** (from six advertised projects).

Project E: DETERMINER – Determining appropriate monitoring frequency for phytoplankton



Join the DETERMINER project and apply your mathematical and statistical skills to explore a crucial issue impacting assessment in aquatic systems: phytoplankton monitoring frequency.

Phytoplankton constitute the base of aquatic ecosystems, and their importance is such that European directives govern their environmental status. Phytoplankton can experience short-term change (hourly scale), while currently, most monitoring programs have fortnightly or lower resolution. This creates a mismatch between the rate at which phytoplankton change status and our ability to detect that change promptly. How much information is lost through this depreciated sampling frequency remains unknown. DETERMINER aims to determine the optimal sampling frequency for detecting externally driven phytoplanktonic change while also providing autonomous solutions to optimise the cost of monitoring programmes.



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We're looking for a postdoctoral researcher to join this effort, combining tools from statistical learning, sparse data analysis, and time-frequency analysis to better understand how sampling frequency affects what we can detect in the data. Using high-resolution European and Baltic datasets, the project will tackle two key goals:

- A. To detect optimal sampling frequency based on high-frequency monitoring programs.
- B. To qualify the detectability of extreme events: marine heatwaves and phytoplankton blooms in a context of sampling frequency.

This postdoc will be placed in [IceLab](#) and connected to [UMF](#) and [MMS](#). Their administrative home will be MMS. You will work with a supportive, multidisciplinary team with expertise in monitoring, modelling, and statistical tools. You will also have the opportunity to join monitoring coastal campaigns and fieldwork in the Gulf of Bothnia to better understand how monitoring programs operate.

Specific Qualifications for Project E

To qualify for the scholarship, the candidate should have a PhD degree, or a foreign degree deemed equivalent in one of the following fields: Phytoplankton Ecology, Marine Biology, Mathematical Statistics, Signal Analysis, Dynamic Systems, or a comparable field. The ideal candidate has strong skills in building and implementing statistical models. The applicant should have documented knowledge of statistical learning with sparsity and time-frequency analysis. Documented experience with marine biology and phytoplankton ecology is highly meriting. The applicant additionally needs to have excellent skills in modern computer programming languages such as C++, Python, MATLAB or R.

We look for candidates who enjoy collaborating in interdisciplinary teams and are good at communicating science in English to researchers from different backgrounds – experimenters, engineers, and theorists. The candidate should have a solid drive to move their project forward independently and be able to think critically.

Contact Information Project E:

- [Dr. Léon Serre-Fredj](#), Umeå Marine Science Centre (UMF), Umeå University
- [Prof. Jun Yu](#), Department of Mathematics and Mathematical Statistics (MMS), Umeå University



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How to apply

A full application will include:

1. A cover letter clearly stating which project or projects you are particularly interested in and summarising your qualifications, your scientific interests, and your motives for applying (max two pages),
2. A curriculum vitae (CV) with a publication list,
3. Verified copy of doctoral degree certificate or documentation that clarifies when the doctorate is expected to be obtained
4. Certified copies of other diplomas, a list of completed academic courses and grades,
5. Copy of doctoral thesis,
6. Copies of relevant publications,
7. Contact information for at least two reference persons,
8. Other documents that the applicant wishes to claim.

Full details about the application procedure and a link to the application portal can be found [here](#). Deadline for applications is **18 September 2025**.