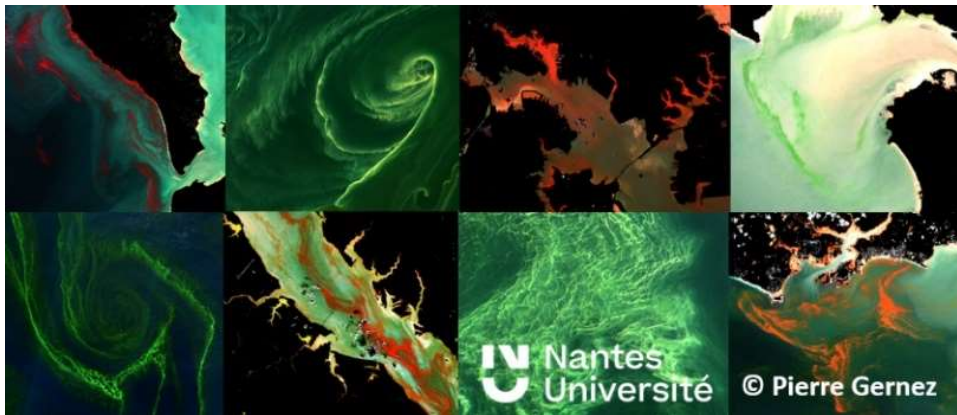


Postdoc position: Remote sensing and ecology of coastal red tides

Full Time, 18-month position, with a start between September – December 2024.

Nantes University, France.

Application deadline: until filled, no later than 31 July 2024.



Scientific supervision and collaborations

The main supervisor will be Dr. Pierre Gernez: <https://www.univ-nantes.fr/pierre-gernez>

The postdoc candidate will join and interact with a team of young dynamic researchers studying phytoplankton remote sensing and ecology at Nantes University. The work will be done in collaboration with plankton ecologists from other labs in France.

Scientific objectives

The main objective will be to study the ecology and biodiversity of phytoplankton red tides using satellite remote sensing. Available datasets of inherent optical properties (IOPs) acquired on phytoplankton laboratory cultures will be used to characterize the bio-optical properties of bloom-forming species, develop class and/or genus-specific algorithms for phytoplankton identification based on optical bloom types clustering and inversion of diagnostic pigments.

The developed algorithms will be applied to high-resolution satellite data (in priority: Sentinel-2/MSI, Sentinel-3/OLCI, Landsat-8/9/OLI), in conjunction with field observations (data from the REPHY national network for phytoplankton monitoring, and from citizen science), to create time-series of red tide events along the French coastline in coastal areas influenced by river inputs. Time-series of phytoplankton blooms will be analyzed to study the spatio-temporal dynamics of coastal red tides, in terms of phenology and long-term inter-annual variations.

For more details about the data and scientific methods, the reading of the following references is recommended:

- <https://doi.org/10.1016/j.rse.2023.113486>
- <https://doi.org/10.1364/OL.420344>
- <https://doi.org/10.1093/plankt/fbad061>
- <https://doi.org/10.1016/j.hal.2023.102426>
- <https://doi.org/10.1016/j.marpol.2018.01.022>

Main tasks and duties

- Process and analyze large satellite ocean colour remote sensing datasets.
- Characterize bio-optical properties of bloom-forming species.
- Develop remote sensing algorithms relevant to red tides studies.
- Perform numerical analysis of satellite-derived time-series of coastal blooms.
- Participate to field work: measurement of above-water reflectance and particulate absorption (field sampling performed on small boats operating within a single day, as part of phytoplankton monitoring programs; participation to about 5 – 10 days per year).
- Prepare, write and publish peer-reviewed manuscripts.
- Contribute to the preparation and writing of project reports and deliverables.
- Participate in scientific meetings and workshops.

Required qualifications

- Ph. D. in environmental sciences, marine ecology, oceanography, marine optics, ocean colour remote sensing, or closely related science discipline.
- Strong statistical skills and knowledge: proficiency in applying statistical methods, including clustering, time-series analysis, and spectral libraries.
- Strong computer programming skills in Python, R, or equivalent.
- Knowledge of field bio-optical measurements, including experience with UV-VIS spectrophotometer (for absorption) and radiometer (for reflectance) measurements.
- Good problem-solving skills; attention to detail; ability to learn quickly, to work efficiently and independently.
- Strong organizational skills and capacity to work effectively in a team environment.
- Effective oral and written communication skills.
- Willingness to stay abreast of advances in a range of disciplines related to phytoplankton ecology and ocean colour remote sensing.

Salary

Net monthly salary 2250 EUR, including health insurance and social benefits.

Eligibility

The Ph. D. diploma must have been obtained **within the past 3 years**, or planned before the end of 2024.

Living in Nantes, France

The city of Nantes has a reputation for offering a high quality of life, with a strong historical and cultural heritage. It is often referred to as one of the best places to live in France. Access to culture is inexpensive. The practice of two sports at the university costs only 60 EUR per year.

How to apply

An email with the following materials should be sent to pierre.gernez@univ-nantes.fr

1. Cover letter with a description of present and future research interests,
2. CV including a list of publications,
3. A list of two references and their contact information.