Postdoctoral research position in data analysis

Thonon-les-Bains, France

Thematic: Cyanobacterial blooms in the alpine region

Duration of the contact
15-month fixed-term contact (might be extended depending on professional experience)

Start date
June 2025

Place of work
INRAE - UMR CARRTEL, Thonon-les-Bains, France

How to apply
Applications (Cv and cover letter) must be sent **by April 30, 2025** to:
Orlane ANNEVILLE (INRAE): orlane.anneville@inrae.fr
Stéphan JACQUET (INRAE): stephan.jacquet@inrae.fr

Tasks and objectives of the person to be recruited
The candidate will work as part of the INTERREG Alpine space DiMark project (https://www.alpine-space.eu/project/dimark/). His/her main tasks will be to develop a model to improve our knowledge on the development of cyanobacterial blooms, identify the environmental conditions associated with these blooms and propose a predictive tool. The work will begin with the compilation and standardization of time-series from the DiMark project lakes. The next step will be to analyse the data by using traditional and innovative methods based on machine learning.

Expected outcomes
- Predictive model for cyanobacterial blooms
- Advanced scientific results to be presented in top-level international conferences and journals

Qualifications
- PhD in a field involving limnology, oceanography, applied math or similar
- Demonstrated data analysis skills, especially in machine learning (using R, MatLab and/or Python)
- Knowledge of the ecology of phytoplankton is highly desirable -
- Good written and oral communications skills in English

DiMark Project: DiMark Transnational Network for Linking Digital Earth Observation to Freshwater Markers for Better Understanding of Water-connected Climate Change Adaptation and Risk Prevention in Alpine Region

Project duration: 36 months (01.09.2024 – 31.08.2027)

Alpine lakes are facing anthropogenic challenges led by touristic pressures and eutrophication, worsening over time with climate change. Frequent cyanobacterial and algal blooms caused by eutrophication make waters unsuitable for drinking, recreation, and industry. Blooms are accompanied by decreased biodiversity and oxygen depletion, posing a risk to water ecosystem; cyanotoxins in blooms pose also a health risk. The challenges mentioned above can be addressed using novel satellite-based solutions and improved cooperation between academia and decisionmakers.

The project objective is to improve freshwater management, using novel ecosystem-based approaches for climate change adaptation and disaster risk prevention. The project will develop two innovative ready-to-use solutions:

(1) an online visualisation tool with maps of the Alpine area for inspecting and comparing the water state, based on important freshwater markers, and

(2) a model for cyano-risk prevention, enabling sustainable lake management while minimising health risk.

Solutions will be developed using a multi-stakeholder co-development process, including academia, policy, SME, NGO and citizen stakeholders. The DiMark Transnational Network and Alpine lakes management strategy will enhance the sustainability of project results. The innovative aspect of the DiMark project is linking freshwater markers to satellite data. Establishing these links in a transnational approach is essential because some countries have experts for satellite data analyses,while others have experts for freshwater markers. In addition, water state depends on watersheds stretched across more countries (including border Alpine lakes). The project's main beneficiaries will be national/regional lake managers, decision makers and citizens who will experience better water quality and safety.

Main results/changes are:

(i) improved water quality,

(ii) better response in case of water disaster management and

(iii) improved lake biodiversity.

PROJECT PARTNERS:

1. National Institute of Biology, Slovenia
2. Slovenian Environment Agency, Slovenia
3. University of Innsbruck, Austria
4. Austrian Agency for Health and Food Safety, Austria
5. Edmund Mach Foundation, Italy
6. Regional Agency for Environmental Protection and Prevention of Veneto, Italy
7. National Research Council, Italy

8. University of Konstanz, Germany
9. French National Research Institute for Agriculture, Food and Environment, France
10. E-institute, institute for comprehensive development solutions, Slovenia
11. Swiss Federal Institute of Aquatic Science and Technology, Swiss

The project is co-funded by the European Union through the INTERREG Alpine Space programme.