

## Job Offer

### Job Summary

<b>Title, Job Position</b>	<b>Make Our Planet Great Again Post doc to uncover ocean deoxygenation impacts on zooplankton and particle dynamics in the tropical Atlantic</b>
<b>Research Field</b>	Biological Oceanography, Marine biogeochemistry, Data science
<b>Employer</b>	Sorbonne Université
<b>Location:</b>	Laboratoire d'Océanographie de Villefranche, Villefranche-sur-Mer, France
<b>Application Deadline / Timezone</b>	2 December 2022 18:00 AM Paris (GMT+01 :00) Online interviews to be conducted on the 9.12. and 13.12. to 16.12. 2022
<b>Salary</b>	Depending on skills and experience (Gross salary about 2514€/month without experience)
<b>Type of Contract</b>	Temporary (fixed term) 22 months
<b>Job Status</b>	Full-time (includes up to 54 days of vacation)
<b>Envisaged Starting Date</b>	01-02-2023

### Hiring Organization

#### Organisation

**Sorbonne Université** (SU) was created on January 1st, 2018 from the merger of Paris-Sorbonne and Pierre and Marie Curie (UPMC) universities. As a public institution, it fulfills the public service calling of French higher education, research and innovation. SU is a multidisciplinary and research-intensive university with world-famous origins. The University's 53,500 students, 3,400 professor-researchers and 3,600 administrative and technical staff members who help it run every day contribute to a University that is diverse, creative, innovative, and with a global outlook.

#### Organisation Type

Higher Education Institute

#### Departments

Laboratoire d'Océanographie de Villefranche sur mer (LOV) : Équipe COMPLEX

<https://lov.imev-mer.fr/web/team-complex/>

The **COMPLEX team** of the **LOV laboratory** studies the ecology of marine plankton and the oceanic components of biogeochemical cycles. To perform such studies, we develop quantitative imaging approaches and use metagenomics, at sea and in the laboratory. The team gathers marine ecologists, ecophysiologicalists and biogeochemists and has a strong numerical ecology background, complemented by collaborations with researchers from computer sciences.

### Offer Description

## Description

The post-doc will be recruited by SU at the LOV to participate in the Make Our Planet Great Again project “Tropical Atlantic Deoxygenation: Gateway dynamics, ecosystem impacts and feedback mechanisms” (MOPGA-TAD) led by Dr. Rainer Kiko. This project has started in December 2019 and will continue until end of November 2024.

Ocean “deoxygenation disrupts marine ecosystems, affects fish stocks and aquaculture and leads to loss of habitat and biodiversity.” (Kiel Declaration; Oschlies et al. 2019). Ocean deoxygenation in the recent past was to a large extent caused by global warming, but residual effects might be linked to enhanced oxygen demand in deeper water layers. Ocean deoxygenation affects the highly dynamic upwelling ecosystems of the Eastern Tropical Atlantic (ETA). These ecosystems are regions of intense oceanic productivity and critical for food supply to millions of people. Ocean deoxygenation in these regions might continue due to increased stratification, feedbacks in plankton dynamics, increased respiratory demand and a slowing-down of oxygen supply via the equatorial current system. A sustained observation system for plankton and particle dynamics in the ETA and particularly at the equatorial gateway to the ETA was set up via the MOPGA-TAD project, activities of the TRIATLAS project and international partners. In particular, Underwater Vision Profiler data, but also Multinet sample data analyzed using the Zooscan-approach were obtained at high spatial and temporal resolution and this particle and zooplankton data are now available via the EcoTaxa (<https://ecotaxa.obs-vlfr.fr>) and Ecopart (<https://ecopart.obs-vlfr.fr/>) platforms. These data collection efforts now enable us to elucidate how equatorial current dynamics and biological oxygen demand impact atmospheric carbon uptake, oxygen distribution and available habitat for fish in the ETA.

The post-doc will now have the chance to conduct a synoptic analysis of all gathered data using classic biological oceanographic techniques (transect analysis, lagrangian statistics), but also machine learning and/or biogeochemical model-data comparison approaches to assess plankton and particle impacts on the oxygen distribution in the tropical Atlantic. He/She will analyze how oxygen content and demand in the tropical Atlantic are driven by primary productivity, particle and plankton abundance and particle flux. The spatial and temporal analysis of all data will aim to elucidate feedback mechanisms between wind forcing, current dynamics, upwelling activity, plankton and particle dynamics on the oxygen content of the tropical Atlantic. To this end, machine learning approaches to generate gridded plankton and particle distribution data will be co-developed in our team. The resulting products will be used to estimate biogeochemical rates, also under future ocean conditions and to assess current biogeochemical models to better understand expected global change impacts on the carbon cycle and oxygen distribution of the tropical Atlantic upwelling systems.

The post-doc will work in close interaction with the marine ecologists and biogeochemists of the LOV in Villefranche-sur-mer, as well as with biological and physical oceanographers and biogeochemical model developers at the GEOMAR Helmholtz Center for Ocean Research Kiel. Further international collaborations will also be supported and the post-doc will benefit from our large network of collaborators in Europe and beyond.

## Faculty sponsors

Dr. Rainer Kiko, [rainer.kiko@imev-mer.fr](mailto:rainer.kiko@imev-mer.fr), <https://lov.imev-mer.fr/web/member/rainer-kiko/>

Prof. Dr. Lars Stemmann, [lars.stemmann@imev-mer.fr](mailto:lars.stemmann@imev-mer.fr), <https://lov.imev-mer.fr/web/member/lars-stemmann/>

## Appointment Term

Appointment until end of November 2024, starting as soon as possible.

**Keywords:** *Plankton, Carbon fluxes, Ocean Deoxygenation, Data Science*

## Related bibliography

Clements DJ, Yang S, Weber T, McDonnell AMP, Kiko R, Stemmann L, Bianchi D (2022) Constraining the Particle Size Distribution of Large Marine Particles in the Global Ocean With In Situ Optical Observations and Supervised Learning. *Global Biogeochemical Cycles* 36:e2021GB007276.

- Drago L, Panaiotis T, Irisson J-O, Babin M, Biard T, Carlotti F, Coppola L, Guidi L, Hauss H, Karp-Boss L, Lombard F, McDonnell AMP, Picheral M, Rogge A, Waite AM, Stemmann L, Kiko R (2022) Global Distribution of Zooplankton Biomass Estimated by In Situ Imaging and Machine Learning. *Frontiers in Marine Science* 9.
- Kiko R, Biastoch A, Brandt P, Cravatte S, Hauss H, Hummels R, Kriest I, Marin F, McDonnell AMP, Oschlies A, Picheral M, Schwarzkopf FU, Thurnherr AM, Stemmann L (2017) Biological and physical influences on marine snowfall at the equator. *Nature Geoscience* 10:852.
- Kiko R, Brandt P, Christiansen S, Faustmann J, Kriest I, Rodrigues E, Schütte F, Hauss H (2020) Zooplankton-Mediated Fluxes in the Eastern Tropical North Atlantic. *Front Mar Sci* 7.
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- Soviadan YD, Benedetti F, Brandão MC, Ayata S-D, Irisson J-O, Jamet JL, Kiko R, Lombard F, Gnandi K, Stemmann L (2022) Patterns of mesozooplankton community composition and vertical fluxes in the global ocean. *Progress in Oceanography* 200:102717.

## Profile Requirements

### Required Education Level

Expertise in biological or biogeochemical oceanography or limnology, including ecological data analysis and statistics, ideally using machine learning approaches.

### Skills / Qualifications

- Applicants **must hold or be very close to completion of a Ph.D.** in Marine biogeochemistry, Marine Ecology, Biological Oceanography or a related field
- Proficiency in **biological oceanography, machine learning and/or biogeochemical modelling**
- Applicants should have **excellent writing and communication skills** necessary to write scientific publications, and deliver presentations, seminars, supervise meetings and/or teach lectures to a non-specialist audience. At least one publication in a relevant field as first author would be a plus.
- Applicants should **collaborate effectively with a team of scientists of diverse backgrounds**, and showcase good communication skills to closely interact with an interdisciplinary team (including computer scientists, biologists and oceanographers).
- Strong self-motivation and ability to work independently on pre-set tasks

### Specific Requirements

- This position involves a significant amount of computer code development, at least at first. Therefore, the candidate will have prior scientific programming experience (e.g. Python programming) but also a certain enthusiasm for coding and a strong motivation to use this code to explore marine ecology/biogeochemistry question.

### Required Languages

Scientific & technical English (B2 level for written and oral). French and/or German would be a plus, but not mandatory.

### Required Research Experience

Completed or almost completed PhD

## Work Location

### Institute

Laboratoire d'Océanographie de Villefranche sur mer (LOV) : Équipe COMPLEX

**Country:** France

**Location:** LOV, 181 chemin du Lazaret, 06230 Villefranche sur mer

### How to apply?

#### Required Application Materials

1. Cover letter with current and future research interests
2. Most recent curriculum vitae
3. Copy of up to three significant publications
4. Names and contact for two to three referees

#### How to submit

Interested candidates should:

- Contact for additional information about the offer: Rainer Kiko; available after 28.10.2022
- Submit the required application materials as one PDF to: Rainer Kiko, rainer.kiko@imev-mer.fr

### Selection Procedure

#### Selection process

The Institute's selection process is based on an email submission. Candidates are evaluated by faculty reviewers, both in their own academic fields and from other disciplines. Reviewers will evaluate candidates according to their academic accomplishments and their potential for research.

The selection process is organized in four stages.

1. Eligibility check: candidate's compliance with the requirements of the offer will be checked on the basis of the information provided by the applicant.
2. Evaluation of CV: applicant's CV and cover letter will be evaluated and ranked according to their merit.
3. Interviews of candidates: **short listed** candidates will be invited for an interview conducted by the selection committee.
4. Final decision: the selected candidate will be proposed the position. A reserve list of candidates may be identified in case of withdrawal of the selected candidate.