### Fonctions

**Linking size of organisms and particles to carbon export and recycling**

### Emploi-type

Post-doc

### Présentation de Sorbonne Université

Pour transmettre les connaissances, comprendre le monde et relever les défis du 21e siècle, une nouvelle université est née le 1er janvier 2018, issue de la fusion entre les universités Paris-Sorbonne et Pierre et Marie Curie. Sorbonne Université est une université pluridisciplinaire, de recherche intensive et de rang mondial. Ancrée au cœur de Paris, présente en région, elle est engagée pour la réussite de ses étudiants et s’attache à répondre aux enjeux scientifiques du 21e siècle. [www.sorbonne-universite.fr](http://www.sorbonne-universite.fr)

### Présentation de la structure

**The Laboratoire d'Océanographie de Villefranche** (LOV ; [http://lov.obs-vlfr.fr/](http://lov.obs-vlfr.fr/)) is located close to Nice, on the French Riviera. It belongs to one of the three marine stations of Sorbonne Université. With about 90 permanent staff, the LOV generates and analyses a large quantity of marine data, including imaging, genomic, and satellite data to study the ocean.

**The COMPLEx (COMPutational PLankton Ecology) team** gathers about forty members studying marine plankton by collecting data with quantitative imaging instruments and high throughput genomics that informs advanced numerical analysis methods (modeling, statistics, machine learning). Plankton encompasses all organisms roaming with marine currents. Those organisms are responsible for producing some of the oxygen we breathe, storing the carbon we emit, feeding the fish we eat; plankton is therefore a major building block of Earth’s ecosystem. COMPLEx strongly interacts with the Quantitative Imaging Platform of Villefranche (PIQv; [https://sites.google.com/view/piqv](https://sites.google.com/view/piqv)), which oversees the operation of the tools that the team develops. Those tools include imaging sensors, such as the Underwater Vision Profiler or the ZooScan, as well as an increase number of software packages to process and control the quality of the data generated by the instruments, sort images taxonomically ([https://ecotaxa.obs-vlfr.fr/](https://ecotaxa.obs-vlfr.fr/)) or store and distribute data on the abundance of marine snow particles. The team has a long experience of interactions with engineers and computer scientists, in academia and the private sector, to develop these tools.

The person hired for this position will work within the context of project CALIPSO

### Missions and main activities

**Mission** : The person hired for this position will work within the context of the international project CALIPSO Challenge 3 ([https://calipsovesri.org/](https://calipsovesri.org/)), for a period of 24 months. The aim is to study the role of size of organisms and particles in marine carbon cycle including carbon remineralization and export.

**Main activities**:

- Extract traits from plankton images and omics data to simplify functional groups models
- Identify and calibrate relationships between physiological traits and size-carbon density in biogeochemical models
- Integrate the above results in general BGC models
- Extract particles characteristics (size and “composition”) from particle imaging data in ECOTAXA and ECOPART
- Develop models (AI based) to map global particle size and composition at global scale
- Include these particle properties in global biogeochemical models to refine carbon export and remineralization

**Other activities** : The post-doc is expected to contribute to the achievement of the CALIPSO objectives at large, participate in the cross-fertilizing activities among the different challenges of the project, attend the CALIPSO regular meetings to present progress

**Supervision of personnel** : No
Knowledge and skills*

Transversal knowledge required:
- Basic knowledge in numerical ecology, marine biology, oceanography and/or oceanography;
- Good writing skills and oral expression in english (at least B2)
- Scientific rigor and curiosity

Technical skills:
- Required: PhD in marine biology, marine biogeochemistry or oceanography
- Required: good programming skills (preferentially in Matlab, R or Python)
- Required: experience in statistical analysis, ideally in machine learning techniques
- Required: publication of at least one research article in a scientific journal as first author
- Optional: previous experience biogeochemical modelling

Peoples skills:
- Both autonomy and teamwork abilities
- Collaboration in an international context

Exposition aux risques professionnels, conditions particulières d’exercice et formations réglementaires

Exposition aux risques professionnels:
☑ Non
☐ Oui : *si oui, indiquer les informations relatives aux risques physiques (port de charge, machines dangereuses, vibrations...), biologiques, chimiques, rayonnements ionisants ou non ionisants. Si l’agent est exposé aux produits dangereux dont les CMR, il doit impérativement disposer d’une Fiche Individuelle d’Exposition téléchargeable sur intranet dans la rubrique « Prevention-des-risques-professionnels/fiche-individuelle-d-exposition-aux-agents-chimiques-dangereux ».

Special conditions:
Contract for a minimum of 24 months. Gross salary between 4375€ and 5833€ per month depending on initial diplomas and experience. Paid vacation up to 55 days per year.
The laboratory is located in Villefranche-sur-mer, close to Nice, and has direct access to the sea.

*Conformément à l’annexe de l’arrêté du 18 mars 2013 (NOR : MENH1305559A)

For more information of to apply (with a CV and cover letter), please write to lionel.guidi@imev-mer.fr.