



Post-doctoral position in Atmospheric Geochemistry

As part of the French Regional Program CLIMIBIO (Planning Agreement between the national and regional governments 2015-2020, <http://climibio.univ-lille.fr/>), the “University of the Opal Coast” is looking for a post-doctoral researcher to contribute to a Project in Atmospheric Geochemistry, in the North of France.

Description

Trace elements as iron (Fe) serve as essential micronutrients in surface ocean waters. Fe in atmospheric dust deposition represents the main source of bioavailable Fe in HNLC (High Nutrient Low Chlorophyll) zones (e.g. the Southern Ocean). If natural emissions (soil dust) are the most important sources of atmospheric Fe, the aqueous solubility of natural Fe-bearing particles is very limited. Conversely, anthropogenic Fe-rich particles, as fly-ashes (combustion aerosols), display a higher solubility. Then, how human activities impact the transport of bioavailable iron to the oceans remains a fundamental question addressed in atmospheric and oceanographic studies a moment ago.

With the recent advances in mass spectrometry, it is now possible to measure precisely small differences in Fe isotopic compositions, as they occur in many physical, geochemical and biological processes. If the isotopic signature of radiogenic isotopes, such as lead, has been widely used to assess the contribution of pollution aerosols to transport and deposition fluxes in the low troposphere, the use of non-traditional heavy stable isotopes, such as Fe, is still mostly unknown for atmospheric process studies. Now, if reported values for Fe isotopic fractionations in natural aerosols (soil dust: $\delta^{56}\text{Fe} \approx +0.08\%$ /IRMM-014) are close to those of igneous rocks, our previous works showed $\delta^{56}\text{Fe}$ reaching +0.14‰ in urban aerosols influenced by industrial emissions. In the present Project we will tentatively assess the isotopic imprint of atmospheric transport on anthropogenic Fe, by simulating cloud processes affecting industrial and urban Fe-bearing particles.

This Project is funded by the Region « Hauts de France » and the French Ministry for Higher Education and Research (CPER “Climibio”)

Candidate Profile

The ideal applicant will have:

- . a PhD in Analytical Chemistry or Geochemistry
- . Experience with isotopes studies and traces analyses
- . Experience with advanced instrumentation, such as mass spectrometry
- . Experience of field studies
- . Knowledge of security rules in the lab and on the field
- . Interest on presenting results at conferences and lead the writing of papers for peer-reviewed journals
- . Ability to communicate and work with multiple students and scientists
- . Ability to travel to field studies and to the different regional partners' sites (about 120 km away from Dunkirk): Driver's license for private car.

Location:

Dunkerque (Dunkirk) – North of France

Duration: 12 months, starting no later than January 1st 2017.

Monthly Take-home Pay: about 2000 €

Application:

To apply, send to Pascal Flament, Université du Littoral – Côte d'Opale, Dunkerque, France (pascal.flament@univ-littoral.fr):

- A Curriculum Vitae, including a publication list
- A motivation letter
- A selection of 2-3 publications in PDF
- The name and contact information of 2 references.