

## 12-month Postdoc position in Statistical Climatology at LSCE-IPSL

Extremes – uncertainty modelling – Bias correction

### Scientific context:

The motivation of the REMEMBER project is to understand and model the Mediterranean climate system and specifically the processes leading to **heavy precipitation, floods, heat waves, droughts and sea-level rise**, not only as separate processes within each Earth compartment, but as coupled mechanisms with feedback loops. This is crucial to characterize how these processes will respond to climate change, in order to make decision on development of adaptation strategies.

If those characterizations – through various **statistical indicators** – are a primary need to understand the information content of the regional models, the evaluation and modelling of their **uncertainties** are essential. Those can be achieved with so-called “model-merging” approaches that quantify the global uncertainties and variabilities associated with an ensemble of models outputs, and define combinations of those outputs to create new outputs, more relevant and realistic in comparison to observations. If different model-merging techniques were more or less successful on global climate models, very few have been applied on RCMs simulations and none on indicators results.

However, regional climate simulations are often biased and **correction methods** have to be applied to provide relevant information for end-users. Modelling the full climate systems by coupling sophisticated models of the different compartments is an a priori necessity to accurately simulate the regional climate but biases of each model can propagate and therefore affect the simulated regional climate. It is thus necessary to quantify the potential added-value of fully coupled regional climate system models with respect to stand-alone de-biased regional climate models to provide relevant indicators and tailor information to the needs of policy makers and society actors.

### Postdoc work:

The successful candidate will be involved in three different but related scientific questions:

1. **Identification of relevant diagnostics and indicators** to characterize and evaluate regional climate simulations in terms of heavy precipitation, floods, heat waves, droughts and sea-level rise. Those indicators will rely on statistical properties (e.g., spatial and temporal variability and dependences, features of extreme events) to summarize the high-resolution climate simulations.
2. **Uncertainty associated with the diagnostics and indicators** will then be studied within the so-called “model-merging” approaches. This will provide quantitative estimate of the uncertainties associated with the relevant indicators for heavy precipitation and floods, heat-waves and droughts and sea-level rise.
3. **De-biasing procedures** will then be applied to standalone and coupled regional climate models.

### Required skills:

The hired postdoc has to be familiar with the main issues related to climate modelling (without necessarily being a modeller). She/he has to possess solid statistical bases and a

strong interest for climate and multidisciplinary studies. The knowledge of R or Matlab would be appreciated.

Where:

The work will take place at “Laboratoire des Sciences du Climat et de l’Environnement” (LSCE, Orme des Merisiers, Saclay) with some regular contacts with colleagues from other labs, both in IPSL (LMD, LATMOS) and in Météo-France (CNRM, Toulouse).

Salary: Between 2 000 and 3 000 € per month depending on experience

Start: Spring or (at the max) Summer 2014.

End: 12 months later.

Applications:

A detailed CV (including the list of publications), a motivation letter as well as the names of 2 or 3 reference persons (NO letter is asked for the moment) should be sent to Mathieu Vrac at [mathieu.vrac@lsce.ipsl.fr](mailto:mathieu.vrac@lsce.ipsl.fr) before January 31, 2014.