Postdoctoral researcher in statistical climatology "Climate projections for France: downscaling, uncertainties, and extreme events" (W/M)

Hosting institution : Laboratoire de Météorologie Dynamique - Département de Géosciences - Ecole Normale Supérieure - 24 rue Lhomond 75005 Paris

Supervisors: Aglaé Jézéquel (LMD) and Mathieu Vrac (LSCE)

Context

The Laboratoire de Météorologie Dynamique (LMD: https://www.lmd.ipsl.fr/en/home-2/) studies climate, planetary atmospheres and the ocean by combining theoretical approaches, instrumental developments for observation and numerical modelling. It is at the forefront of research on dynamic, physical and biogeochemical processes enabling the study of the evolution and prediction of oceanic, meteorological and climatic phenomena. The LMD is clearly positioned both in fundamental research on the processes, dynamics and biogeochemistry of the ocean, atmosphere and climate, and in applied research, particularly on issues relating to the anticipation of global warming and its consequences.

The LMD has an interdisciplinary scope that includes marine biology, marine chemistry, oceanography, and experts in atmospheric dynamics and physics. Our scientists and students often play a leading role in international projects focusing on Antarctica, the Arctic, the world's oceans, the atmosphere and climate. This position will be supervised by Aglaé Jézéquel.

Although based at LMD-ENS in Paris, this position will be partially supervised by Mathieu Vrac, within the 'Extrêmes : 'Statistiques, Impacts et Régionalisation' (ESTIMR) team at the 'Laboratoire des Sciences du Climat et de l'Environnement' (LSCE, Gif-sur-Yvette).

The post doc is funded by the French ANR MOCAPH research program ('A modelling chain from climate and atmospheric pollutants to health impacts and associated costs'), whose goal is to inform public decisions related to climate change mitigation in France. It aims to 1) quantify the expected consequences of a lack of ambitious climate change mitigation actions on health and inequalities (impact axis); 2) model and compare mitigation scenarios in terms of co-benefits for public health and social inequalities, in order to identify the net-zero emission scenarios that are most beneficial to health (optimisation of scenarios and co-benefits). It is part of the PEPR TRACCS ('TRAnsforming Climate Modelling for Climate Services', https://pepr-traccs.fr/en/homepage/) programme, which brings together the French climate modelling community. The MOCAPH project brings together specialists in climate, air pollution, health, economics, transport and housing from major French research organisations (ENS-PSL, Inserm, CNRS, Inrae, Mines-PSL, etc.).

MISSIONS AND ACTIVITIES

Mission

The main task of the position is part of MOCAPH's WP1, which is in charge of climate model simulations. Its main objective is to retrieve, generate and provide relevant data on meteorological variables, in line with the sectoral mitigation scenarios explored in other WPs, which are essential for estimating health impacts. To this end, the post-doc will implement

downscaling and/or bias correction methods (~8km x 8km) on multiple simulations from the latest generation of global climate models (CMIP6), and compare different model outputs (dynamic and statistical downscaling at different spatial scales). This work will build on the statistical developments carried out as part of the EXTENDING targeted project of the TRACCS PEPR. The work carried out as part of the post-doc will also contribute to updating the current climate change projections for metropolitan France.

Main activities

The post-doc will be responsible for:

- Developing a new high-resolution (8km x 8km) climate projection dataset for France by downscaling/bias correcting the latest generation of global climate models (CMIP6);
- Comparing this dataset with other datasets including dynamic downscaling, such as data from the EXPLORE2 project, based on regional climate models, as well as with very fine-scale data from the Urbclim urban climate model for 10 French cities to explore uncertainties regarding different climate futures, particularly for extreme events, following the French Environment Ministry 'Trajectories of Adaptation to Climate Change' (TRACC);
- Discussions with other MOCAPH WPs on the use, interpretation and limitations of climate data, particularly in relation to estimating the health impact of climate change;
- Writing scientific articles and presenting results at conferences.
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Education and skills

Diploma : PhD in climate science, applied mathematics or statistics

Professional experience: Up to 5 years of postdoctoral research following completion of the PhD

Pre-requisite knowledge :

- Knowledge of statistics.
- Knowledge of climate science.
- Minimum level of scientific English: B2.

Technical skills :

Essential technical skills:
- Data analysis or statistical modelling skills.
- Proficiency in R and/or Python.
- Writing scientific articles
- Oral communication.

Desirable optional skills:
- Experience in analysing/using climate simulation data such as CMIP6.
- Experience in processing/manipulating very large data sets.

- Knowledge of tools for processing NetCDF file formats.
- Knowledge of extreme value theory.

Behavioral skills :

- Motivation and scientific curiosity, particularly in an interdisciplinary context.
- Autonomy and organisational skills.
- Rigour in code development, documentation and testing.

Interpersonal skills:

- Good interpersonal skills and ability to work in a team.
- Availability and responsiveness.

OTHER INFORMATION

Start date: from 1 December 2025, as soon as possible (pending on administrative deadlines).

Place of work: 24 rue Lhomond, 75005 Paris

Working conditions:
37.5 hours per week; 49 days of holiday/RTT per year
Partial remote working possible

Type of contract :
24-month fixed-term contract – Remuneration based on pay scale and experience

The ENS is a disability-friendly institution committed to diversity and inclusion.

SUBMITTING APPLICATIONS BY EMAIL

Please send your complete application (CV, cover letter)
by email to: aglae.jezequel@lmd.ens.fr before 23/10/2025.