

24-MONTH POST-DOCTORAL POSITION AVAILABLE AT CNRM (CNRS AND MÉTÉO-FRANCE) IN TOULOUSE, FRANCE

SUBJECT: Exploring the sensitivities of the West African monsoon to climatic change and physical parametrizations with an academic model in the AMMA-2050 project

STARTING DATE : around 1st January 2017

NET SALARY : from 2100 to 3200 €/m, depending on experience

Applicants must contact Françoise Guichard (francoise.guichard@meteo.fr), Philippe Peyrillé (philippe.peyrille@meteo.fr), Dominique Bouniol (dominique.bouniol@meteo.fr) no later than 15 October 2015

THE AMMA-2050 PROJECT

AMMA-2050 stands for African Monsoon Multi-disciplinary Analysis-2050. It is part of the Future climate for Africa (FCFA) program, funded by the UK Department for International Development (DFID) and the Natural Environment Research Council (NERC) in UK, and involves researchers from UK, Sénégal, Burkina Faso, Côte d'Ivoire, and France.

“West Africa is a region on Earth where rainfall displays a very high variability. In the recent past, it was hit by periods of prolonged and severe droughts which have had strong consequences on the livelihoods of many people. These populations are growing and are increasingly vulnerable to changes in the climate trends. AMMA-2050 aims to improve the understanding of the variability of future climate. In particular, it investigates how physical processes cause ‘high impact weather events’ such as heavy rain events and how these may change in the short to medium-term future climate.”

FCFA: <http://www.futureclimateafrica.org/>

AMMA-2050: <https://www.ceh.ac.uk/our-science/projects/african-monsoon-multi-disciplinary-analysis-2050>

POSTDOC SUBJECT AND REQUIRED QUALIFICATIONS

Several scientific questions are addressed through the use of different types of models in the project, from global coarse-resolution to convection-permitting regional climate models and also more simple academic models. The Postdoc will work with the latter to explore basic sensitivities of the West African monsoon to climatic changes in a simplified framework, and to help in the interpretation of more complex climate simulations, in particular those performed within AMMA-2050. More precisely, he/she will use the two-dimensional monsoon model developed by Peyrillé et al (J. Atmos. Sci. 2007, 2016) to analyse the sensitivity of the simulated monsoon to climatic changes (SST, CO₂, larger-scale circulations...), physical parametrizations (turbulence, convection and clouds in particular) and numerical choices (e.g. grid size). With the help of the supervisors, the Postdoc will perform and analyse the simulations with the aim of identifying the mechanisms accounting for the changes in the simulated monsoon system (position, strength, variability...) - the exploitation of energy, water and momentum budgets should be especially useful for this purpose. If possible, he/she will also explore whether these mechanisms are also operating in more complex simulations.

The candidate will hold a PhD degree in atmospheric sciences with experience in physical processes and modelling. Experience with convective processes and their parametrizations, as well as on the tropical dynamics would be greatly appreciated. Good programming skills (FORTRAN90, Unix shell, graphic softwares...) are required. Fluency in English is necessary.

THE LABORATORY

The Centre National des Recherches Météorologiques (CNRM) is the research centre of Météo-France, the French weather service and also an unité mixte de recherche (UMR) du CNRS. The laboratory hosts approximately 275 permanent positions (one third being research scientists), and about 60 students and visitors. The mesoscale meteorology group leads studies on mesoscale and microscale processes of the atmosphere and its interfaces. Research topics are cloud physics, boundary layer, soil-vegetation-atmosphere transfers, remote-sensing of continental surfaces, mesoscale predictability, high-impact weather events and climate change impacts. Research seeks to improve the representation of the mesoscale processes within numerical weather prediction and climate models through development and improvement of physical parametrizations.

HOW TO APPLY

Applicants will send the following to : Françoise Guichard (francoise.guichard@meteo.fr), Philippe Peyrillé (philippe.peyrille@meteo.fr), Dominique Bouniol (dominique.bouniol@meteo.fr)

[1] a curriculum vitae (including research experience, publications and conferences, computing skills and different language practice...)

[2] a brief statement of research interests

[3] names and contact details (email + telephone number) of three referees