

2-year postdoctoral fellowship to work on the calibration of climate model parameters using data assimilation

Université catholique de Louvain, Louvain-la-Neuve (Belgium)



SYSTEMATIC BIASES IN CLIMATE MODELS:
HOW TO OVERCOME THEM USING
TOOLS FROM DATA SCIENCES?

Summary of the project

General Climate Circulation Models (GCMs) have evolved considerably over the past decades through the successive addition of new components, an increase in spatial resolution, and the development of new physical parameterisations. Despite these developments, **systematic biases remain in these models**. For example, most models simulate sea surface temperatures (SST) that are too high in the Southern Ocean and too low in the North Atlantic, for reasons that remain poorly understood. SCOOT aims to understand the origin of, and ultimately reduce, **biases in SST in the North Atlantic through approaches inspired by statistics and data science**. Specifically, by proposing **new methods for parameter calibration inspired from recent advances in data assimilation**, SCOOT will offer credible alternative pathways to the manual tuning of GCMs. SCOOT is designed as a proof of concept for introducing **new best practices in the evaluation and calibration of GCMs**, ultimately applicable to configurations currently under development, such as very high-resolution eddy-resolving simulations.

Work description profile sought

The successful candidate will develop a parameter calibration approach based on an ensemble Kalman filter in the global climate model [EC-Earth3](#). He/she will first test the validity of the approach by performing “twin experiments” in which the model’s own data is assimilated. Then, he/she will assimilate real observations of satellite SST in the North Atlantic to determine the set of parameters leading to the lowest model biases in the region. He/she will finally make a critical evaluation of the results, including a thorough assessment of the benefits of the approach in other oceanic basins.

The successful candidate should have a PhD in climate modelling and/or data assimilation or related fields. Advanced programming, post-processing and data management/analysis skills are required. He/she should be fluent in English due to the multiple interactions planned with other project partners and should have demonstrated ability in team working.

Work environment and conditions

The Georges Lemaître Centre for Earth and Climate Research ([TECLIM](#)) / Earth and Life Institute of the Université catholique de Louvain (UCLouvain) is located in Louvain-la-Neuve, a pedestrian city and university campus located about 30 km from Brussels. The position is offered for **24 months, starting between March 1st and July 1st, 2021**. Only researchers **who did not spend more than 24 months in Belgium during the past three years**, and who have obtained their **PhD within the past 6 years**, are eligible to the position. The salary will be commensurate with experience, following the UCLouvain rates. The applicant will have the opportunity to frequently participate to international conferences and to make scientific visits to external labs. The work will be supervised by Prof. [François Massonnet](#).

How to apply?

Applicants should send before February 28, 2021 (i) a statement of research experience, qualification and interest, (ii) a complete CV including a list of publications, and (iii) two letters of recommendation via e-mail to François Massonnet (francois.massonnet@uclouvain.be).