

**CALL FOR APPLICATION**  
**18-MONTH POSTDOCTORAL FELLOWSHIP AT CNRM**  
**(TOULOUSE, FRANCE)**

*Applications are invited for an 18-month postdoctoral position (with possible extension) starting as soon as 1 September 2020, in the climate research group of the CNRM in Toulouse, France to work on the following subject:*

**Self-organization of deep convection in the CNRM climate model:  
Connecting the RCE idealized framework to the real atmosphere**

*The deadline for application is 31 May 2020.*

*Context and objectives:*

Tropical convection organizes across a wide range of scales, driven by a variety of physical mechanisms. One type of organisation that arises in idealized numerical simulations, such as under the Radiative-Convective Equilibrium (RCE) hypothesis, is self-aggregation (e.g., Wing, 2019). This spontaneous organisation of deep convection has been studied in a wide range of models, from small-domain large-eddy simulations to global, Earth-scale simulations with climate models. This recently culminated in the RCE Model Intercomparison Project (RCMIP, Wing et al. 2018), which seeks to better characterize the robustness of self-aggregation and better understand the underlying mechanisms such as its surface temperature dependence. Self-aggregation has also been shown to be sensitive to the coupling with the surface ocean and to surface temperature gradients (e.g., Coppin and Bony, 2018). The relevance of self-aggregation for the real atmosphere remains an open but key question. Although a recent review argued positively in this direction (Holloway et al. 2017), Jakob et al. (2019) questioned the RCE numerical framework over small domain as RCE is only observed at large scales ( $> 5000$  km) and over period sufficiently long ( $> 1$  month).

The present postdoctoral fellowship addresses two main objectives: (i) contribute to a better understanding of the processes underlying self-aggregation, their dependence to surface temperature and their robustness and (ii) assess the relevance of self-aggregation for the understanding of convection organization in the real atmosphere (e.g., ITCZ, tropical intraseasonal variability). We expect a specific focus on the coupling between convection organisation, large-scale circulation in the tropics and the surface ocean, and possibly on its implications for climate sensitivity.

The successful applicant will have significant freedom to develop and implement its own strategy to tackle these two objectives. Depending on its background and interests, such strategies may include simulations from the RCEMIP ensemble, especially those performed with the CNRM model (CNRM-CM6, Roehrig et al. 2020, Voldoire et al. 2019), physics-perturbed ensembles with CNRM-CM6, intermediate model versions between CNRM-CM5 and CNRM-CM6, model hierarchies based on CNRM-CM6, possibly using intermediate configurations based on axisymmetric or non-axisymmetric aquaplanets or including a slab ocean model.

This position is funded by the Horizon 2020 European Union Programme, through the CONSTRAIN (Constraining uncertainty of multi-decadal climate projections) project (<https://constrain-eu.org>).

Required qualifications:

- 1) Ph.D. in atmospheric sciences obtained before the starting date of the contract;
- 2) Expertise in convection processes or climate modelling will be appreciated;
- 3) Expertise in Unix, Fortran, Python, and experience in high performance computing;
- 4) A good command of English.

Practical information:

The successful applicant will be contracted by Météo-France and will be based at the “Centre National de Recherches Météorologiques”, Toulouse, France (<http://www.umr-cnrm.fr/>) within the climate research group. The opened position will start as soon as possible, possibly as early 1 September 2020 for an 18-month duration (with possible extension). The gross salary is commensurate with qualifications and experience, ranging from 3280€ and 3890€. This includes French “Sécurité Sociale” (health insurance).

*For full consideration, applicants are asked to submit:*

- *a curriculum vitae (including research experience, publications and conferences, and computing skills);*
- *an application letter including a detailed statement of research interests;*
- *contact information for 2 referees.*

*Applications should be sent by email before 31 May 2020 to [romain.roehrig@meteo.fr](mailto:romain.roehrig@meteo.fr). Please note that attachments larger than ~5 Mo are not supported by our e-mail server.*

For more details about this call, please contact:

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