CALL FOR APPLICATION
18-MONTH POST-DOCTORAL FELLOWSHIP AT CNRM (TOULOUSE, FRANCE)

Applications are invited for a **18-month postdoctoral position** in the climate research group of the CNRM in Toulouse (France) to work on the following subject: "Development and application of process-based and teleconnection diagnostics to assess the ability of climate models to simulate the mid-latitude atmospheric dynamics and teleconnections". The deadline for application is **April 15th 2018**. The position will start as early as possible, and no later than November 1st 2018.

Framework:

The Centre National de Recherches Météorologiques (CNRM) is a joint Météo-France and CNRS center for meteorological and climate research located in Toulouse, one of the most liveable and vibrant cities in France. It is one of the leading climate science research institutes in Europe and provides a highly international and interdisciplinary environment for conducting scientific research as well as access to state of the art scientific facilities.

The proposed postdoctoral fellowship is funded by the European Union through the Horizon 2020 APPLICATE project (https://applicate.eu/) focusing on the Arctic climate and its potential linkages with the northern mid-latitudes. The weather and climate of the Arctic have been changing rapidly in recent years and these profound transformations are projected to continue in the decades to come. Such changes may have significant impacts on northern mid-latitudes through both atmospheric and oceanic linkages (e.g., Overland et al. 2016, Douville 2009, Douville et al. 2017). Yet, global climate models still show serious deficiencies in the simulation of the mid-latitude atmospheric dynamics and/or teleconnections at various timescales. Developing related metrics (e.g., Cattiaux et al. 2016) and assessing the current-generation climate models might therefore be helpful for understanding the spread of the northern mid-latitude response in global climate projections (e.g., Cattiaux et al. 2013, Cattiaux and Cassou 2013, Peings et al. 2017).

The main objective of the postdoctoral fellowship is to contribute to the 1st workpackage of the APPLICATE project dedicated to the development and application of advanced diagnostics to be used to constrain weather and climate models. The task is here exclusively on climate models and encompasses the application of such metrics to evaluate CMIP5 and CMIP6 models and, possibly, constrain their global climate projections.

Work description:

The proposed work will mainly consist in the following tasks :

1) Develop and (mainly) apply process-oriented diagnostics for investigating changes in the equator-to-pole temperature gradients in the lower troposphere, upper troposphere and lower stratosphere, and their impact on mid-latitude jet streams, storm tracks and blocking across the Northern Hemisphere;
2) Develop and (mainly) apply teleconnection diagnostics to quantify interannual

lead-lag relationships between Arctic sea ice/Siberian snow cover and the modes of mid-latitude atmospheric variability (e.g. lead-lag correlations or composites, maximum covariance analysis);

3) Apply these diagnostics to both CMIP5 and CMIP6 to evaluate models and document projected changes in a warmer climate;

4) Look for possible emergent constraints, i.e., statistical relationships between model performances (metrics) and model responses (to climate change) ;

5) Write project reports and scientific articles, and give presentations in APPLICATE meetings and international conferences.

Required qualifications:

1) A Ph.D. in atmospheric sciences or an engineer diploma obtained before the date of the application.

2) Experience with mid-latitude atmospheric dynamics and teleconnections.

3) Strong programming skills in post-processing and visualization softwares (e.g., CDO, NCL, R), as well as experience in handling large data sets.

4) Strong communication and organizational skills and an ability to effectively communicate results of scientific research in APPLICATE meetings and international workshops.

Moreover, an experience in using climate diagnostic packages such as ESMValTool (https://www.esmvaltool.org/) will be welcome.

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.cnrm.meteo.fr/) within the climate research group. The opened position will start as soon as possible, possibly as early as June 2018 and no later than November 1st 2018, for a 18-month duration. The net salary is commensurate with qualifications and experience, ranging from 2500€ to 3500€, after most of the taxes and health insurance premiums have been deducted.

For full consideration, an application letter including a detailed statement of research interest, along with a curriculum vitae (including research experience, publications and conferences, programming skills and different language practises) and the names, telephone and email address of 2 referees should be sent by email before April 15th 2018 to:
herve.douville@meteo.fr
and
julien.cattiaux@meteo.fr

For more details about this call, please contact:

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Related references :

Cattiaux, J., H. Douville, Y. Peings (2013) European temperatures in CMIP5: origins of present-day biases and future uncertainties. Clim. Dyn., 41, 2889-2907, doi:10.1007/s00382-013-1731-y.

Cattiaux J., C. Cassou (2013) Opposite CMIP3/CMIP5 trends in the wintertime Northern Annular Mode explained by combined local sea ice and remote tropical influences. Geophys. Res. Lett., 40, 3682–3687, doi:10.1002/grl.50643.

Cattiaux, J., Y. Peings, D. Saint-Martin, N. Trou-Kechout, and S. J. Vavrus (2016), Sinuosity of midlatitude atmospheric flow in a warming world, Geophys. Res. Lett., 43, doi:10.1002/2016GL070309.

Douville H. (2009) Stratospheric polar vortex influence on Northern Hemisphere winter climate variability. Geophys. Res. Lett., 36, L18703, doi:10.1029/2009GL039334.

Douville H., Y. Peings, D. Saint-Martin (2017) Snow-(N)AO relationship revisited over the whole 20th century. Geophys. Res. Lett., 44, 569-577, doi:10.1002/2016GL071584.

Overland JE. et al. (2016) Nonlinear response of mid-latitude weather to the changing Arctic, Nat. Clim. Change, 6, 992-999, doi:10.1038/NCLIMATE3121.

Peings, Y., J. Cattiaux, S. Vavrus and G. Magnusdottir (2017) Changes in the mid-latitude atmospheric circulation in the CESM Large Ensemble, J. Climate, 30, 5943-5960. doi:10.1175/JCLI-D-16-0340.1.