

## **Job Announcement for Postdoctoral Research Scientist in Weather and Climate Modelling and Prediction**

The IGAD Climate Prediction and Applications Centre (ICPAC) is a specialized institution of the Intergovernmental Authority on Development (IGAD) with responsibility for the provision of timely early warning information and supporting specific sector applications to enable the Greater Horn of Africa (GHA) cope with various risks associated with extreme climate variability and change for poverty alleviation, environment management and sustainable development of member countries. ICPAC is partnering with the GCRF African Science and Weather Information and Forecasting Techniques (Africa SWIFT) project, which aims to develop sustainable research capability in tropical weather forecasting to enhance the livelihood of African populations and improve their economies. The main focus areas of this partnership are (1) Sub-Seasonal to Seasonal (S2S) Prediction and (2) Forecast verification at short-to-medium range (3-10 days) and S2S timescales. The work will identify sources of predictability for African rainfall on sub-seasonal timescales, assess the skill of operational S2S prediction systems, build research capability in the region to inform the development of operational forecast products on the sub-seasonal timescale for decision making across a range of sectors, support training school and material on best practices for forecast evaluation.

For the execution of the project in these two work packages, ICPAC is seeking one candidate for postdoctoral scientist position to support its climate diagnostic, modelling and prediction team. The candidate is expected to have solid computational skill, experience working with the WRF model, and knowledge of S2S prediction. The appointment is for one year with a possible extension depending on performance and fund availability.

### **Required Skills**

Experience in regional climate modelling, regional climate analysis and uncertainty analysis.

Programming experience in the Weather Research and Forecasting (WRF) model

Skill in FORTRAN and shell scripting

Solid statistical programming and data visualization experience with NCL, R, MATLAB, CDO, NCO, Ferret

Experience in statistical evaluation of climate model outputs.

Knowledge of S2S data archive

Experience working in Linux/Unix environment

### **Responsibilities**

- To improve ICPAC's operational S2S forecasting, utilize available S2S archive to assess forecast skill using existing and new advances in statistical methods and metrics for S2S forecast evaluation;

- Evaluate onset and cessation and assess their reproduction in customized WRF hindcast data at ICPAC, and their predictability from S2S data archive; Inter-compare forecasting skill of other existing onset and cessation algorithms;

- Develop statistics on the frequency of dry and wet spells and assess their representativeness;

- Using S2S archive, identify and integrate model uncertainties for real-time forecasting

- Make use of resources of the project (satellite data, S2S archive, diagnostic tools) for WRF model evaluation and bias

- Participate in training and documenting best practices in forecast evaluation.
- Using in-house WRF hindcast simulations, identify model performance and their biases in reproducing past observations and design methods to correct S2S forecasts;
- Assess model representation of large-scale circulation features (easterly jet, meridional advance and intensity of westerlies, monsoon trough, subtropical highs, location and intensity of ITCZ, subtropical westerly jet, etc.) and their associations with GHA rainfall at S2S timescales;
- Using WRF hindcast data, investigate the intraseasonal variability of the Somali low level jet (SLLJ) and its concurrent associations with local rainfall and its time-lag relationships with regional SST and other large scale drivers;
- Based on wavelet analysis/mode decomposition, identify the intraseasonal components of the major large scale drivers and their relationships with local climate;
- Based on model sensitivity simulations, assess the impact of IOD type regional SST patterns on local climate for ENSO and non-ENSO years;
- Improve existing algorithm of onset, cessation, dry-spell, wet-spell, and effective growing length for major seasons in the GHA and evaluate their predictability to enhance their utility as operational forecast products;
- Report on results of S2S forecast evaluation; Document best practices in S2S predictability and prediction and develop training materials;
- Conduct regional training to build the capacity of ICPAC's member state countries (11 NMHSs) in S2S prediction over GHA
- Publish research results

### **Required Qualification**

Ph.D. in atmospheric science, environmental science and engineering;  
 Excellent skill in working with climate data and relevant computing skills.  
 Knowledge/background on climate and climate drivers of the Eastern Africa.  
 Strong organizational skill and ability to work in a team environment  
 Experience working at a regional climate institution(s) on weather and climate prediction  
 A record of publications.

To apply, please submit a letter of interest and a statement of research, curriculum vitae, and the names, addresses (mailing and email addresses) of three references by 26th October, 2017. Please address all correspondence to:

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 IGAD Climate Prediction & Applications Centre (ICPAC)  
 P.O. Box 10304-00100, Nairobi, Kenya  
 E-mail: [director@icpac.net](mailto:director@icpac.net)

With a copy to:

Dr. Zewdu Segele  
 GFCS Climate Modelling and Diagnostics Expert  
 IGAD Climate Prediction and Application Centre (ICPAC)  
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E-mail:[zsegele@icpac.net](mailto:zsegele@icpac.net)

Applications will be reviewed immediately. The successful applicant is expected to be available for work within two weeks of notification.