

Job title	PhD Intraseasonal descriptors of the rainy seasons in Southern Africa: observations and meso-scale modeling
Ref	2018-11-IMVULA
Job type (PhD, Post-doc, Engineer)	PhD thesis
Contract duration (months)	36 months
Qualifications (Master degree, PhD...)	Master2 (MSc) in climate or atmospheric sciences
Job hours (full time/ part time)	Full time
Employer	UBFC – Université de Franche-Comté
Host Laboratory	Biogéosciences – CNRS / université de Bourgogne Franche-Comté
URL Host Laboratory	http://biogeosciences.u-bourgogne.fr/fr/ http://climatologie.u-bourgogne.fr/
Address Host Laboratory	6 boulevard Gabriel 21000 Dijon
Job description	<p>Intraseasonal descriptors of rainfall (that is, onset and cessation dates, number and length of dry and wet spells, number of rainy days and associated amounts) are key features of the climate variability in most tropical regions. They are also a relevant view of climate variability to assess its impacts on the societies and environment –like agronomy and hydrology. In spite of their importance, they are still poorly documented in Southern Africa, a semi-arid region prone to strong rainfall variability both in time and space, and where water is often the limiting factor for agronomic yields. This PhD thesis attempts to fill this gap, with a focus on intraseasonal high-impact weather events.</p> <p>Using in-situ observations, the first part of this thesis will attempt to analyze the intraseasonal spells associated with high-impacts, like climate extremes (either drought or heavy rainfall). Focus will be given on their probability and their association with the large-scale modes of climate variability known to influence the Southern African region. This first step will also consist in selecting a few case studies that will be modeled in the second step of the work.</p> <p>Step 2 will use state-of-the-art ensemble ERA-5 global reanalyses to force a non-hydrostatic limited area model, namely the Weather Research and Forecasting (WRF) model, over Southern Africa and its surroundings, at high spatial resolution (cloud-resolving model: CRM). The aim here is to quantify the added-value of the downscaling procedure, but also the biases of both global and regional models, as well as their internal variability. To that end, super-ensemble simulations will be performed, using both global and regional ensembles.</p>

	<p>The results will be published in leading international journals in climate and atmospheric sciences, and will be presented in international conferences.</p> <p>This thesis is part of a collaborative work hosted at Biogéosciences laboratory on the campus of the University of Burgundy in Dijon, France. It also involves researchers from South Africa (Univ. of Cape Town, SAEON, NRF), UK (Coventry Univ.) and Norway (Univ. Bergen).</p>
Supervisor(s)	Benjamin Pohl (benjamin.pohl@ubfc.fr) – Main supervisor (HDR) Julien Pergaud (julien.pergaud@u-bourgogne.fr)
Candidate profile	<p>Master / MSc in climate or atmospheric sciences.</p> <p>Required skills: knowledge of climatology (ideally in the tropics) and climate variability and/or atmospheric physics ; good bases in statistics (multivariate analyses, signal processing) ; advanced skills for code scripting (statistics with softwares like python, matlab or R ; high-performance and parallel computing in linux environments).</p> <p>English (fluent written and spoken).</p>
Keywords	rainfall variability – intraseasonal descriptors – Southern Africa – regional climate modeling – WRF
Application deadline	Application deadline June 15th 2018
Starting date	PhD start between October 1 st and December 1 st 2018
Application	<p>PhD Position</p> <p>Please send the following documents (all in one PDF file) by e-mail to job-application@ubfc.fr:</p> <ol style="list-style-type: none"> 1) For EU candidates: Copy of your national ID card or of your passport page where your photo is printed. For non-EU candidates: Copy of your passport page where your photo is printed. 2) Curriculum Vitae (1 page). 3) Letter of motivation relatively to the position (1 page). 4) Copy of your Master degree if already available. 5) Copy of your final marks and ranks. 6) Coordinates of reference persons (maximum 3, at least your master thesis supervisor): Title, Name, organization, e-mail. <p>If you have questions regarding the application, please contact the supervisors.</p>