



Imperial College
London



UNIVERSITY OF
BIRMINGHAM



University of
Reading



Science for Humanitarian Emergencies & Resilience (SHEAR)

PhD Studentship:

Application of global scale forecasting systems for local scale early warning in Zambia

Improved early warning to support Forecast-based Financing preparedness actions in Zambia

Supervisors: Dr Liz Stephens & Professor Hannah Cloke

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Department of Geography and Environmental Science, Department of Meteorology

University of Reading

Project description

Zambia experienced floods in 2009 which affected over half a million people, with flooding along the Zambezi and Kwando Rivers which displaced over 102000 households. The Forecast-based Financing project that began in July 2017 is part of a bigger project of response preparedness targeting disaster prone districts in Zambia. This project has identified that a lack of modern technology has denied communities the benefits of up to date weather information. Initial discussions between the FATHUM (Forecasts for Anticipatory Humanitarian Action) project team and WARMA ([Zambia Water Resources Management Authority](#)) have highlighted the lack of any flood forecasting capabilities in-country.

As such, through linking WARMA and the members of the FATHUM project team the PhD student will, for selected Zambian river basins:

- develop statistical forecasts of river flow based on observed upstream flows (where available)
- evaluate the skill of the Global Flood Awareness System using reforecasts and forecast archives held at the European Centre for Medium-Range Weather Forecasts (ECMWF) and river flow archives held by WARMA and remotely sensed data sources (where available)
- Identify factors that lead to bias in the magnitude or timing of flood peaks
- Identify the factors that influence the limit of predictability of floods in Zambia, including river basin size, climatic zone and water management



- Development of post-processing tools to improve the forecasts, which can be adopted by WARMA hydrologists

The student will undertake 3 placement periods in total within WARMA, hosted by Beauty Shamboko. The student will work alongside the WARMA hydrologists from selected catchments, feeding local expertise into an understanding of model accuracy and error and undertaking field visits where appropriate. The student will present the results of the PhD to catchment hydrologists and train them in the new tools as appropriate.

Project Advisory Team: Beauty Shamboko (Zambia Water Resources Management Authority, WARMA), Fredrik Wetterhall (ECMWF)



Damaged crops as a result of flooding in Zambia in 2007/8. Photo credit: James Zulu, Zambia Red Cross Society

Skills and experience:

This project would be suitable for students with a degree in meteorology, physical geography or environmental science. Students will be required to work in a unix programming environment with R, python or similar, previous experience is desirable but not essential as training will be provided.

Eligibility and funding:

Students must hold an undergraduate degree (equivalent of upper second-class honours) and preferably a Masters qualification in a relevant discipline.

Due to visa restrictions the student must spend at least 50% of their time at the University of Reading, the exact proportion will be set by the supervisors based on the student's previous experience and the budget available for placements. The student must work on this project full-time.

Applicants from the UK, South Asia or sub-saharan Africa are eligible for a stipend of approximately £14553 per annum (tax free) and tuition fees at the UK / EU or overseas student rate for a period of three years with a possible further half year extension.



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Contact:

For informal discussion about this studentship please contact Dr Liz Stephens, University of Reading elisabeth.stephens@reading.ac.uk.

How to apply:

To be considered for the studentship, please submit a CV, a cover letter highlighting your relevant background and experience, and two referees, to elisabeth.stephens@reading.ac.uk.

Should you be selected for this post you will be invited to submit a formal application through the University of Reading online application system. Details of this and more can be found here: <http://www.reading.ac.uk/graduateschool/gs-homepage.aspx>.

Deadline: 15 October 2017 or until the position is filled.