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Science for Humanitarian Emergencies & Resilience (SHEAR)

PhD Studentship:

A model for impact-based flood early warning in Uganda

Linking data on hazard, vulnerability and exposure to develop impact-based early warning in Uganda

Supervisors: Professor Ros Cornforth & Dr Liz Stephens

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Walker Institute

University of Reading

Project description

The initial Forecast-based Financing pilot project in North Eastern Uganda required considerable human resource to establish danger thresholds for which flood forecasting systems would be required to forecast (Coughlan de Perez et al. 2016). A new approach is therefore needed to establish country-wide danger thresholds for scaling out Forecast-based Financing to all areas of Uganda which have sufficient forecast skill (as being evaluated by the FATHUM postdoc). This research will involve the development of measures of vulnerability and resilience in Uganda, for example, based on an exploration of crop yield and livelihoods data.

This PhD project will work towards a model for national-scale impact-based forecasting of flood risk by answering the following questions:

1. What are the key indicators of flood vulnerability across different parts of Uganda?
 - Working alongside the Uganda Red Cross Society (URCS) and the FATHUM project team to determine the criteria for flood vulnerability which can be addressed using anticipatory measures, to include the Vulnerability and Capacity Assessment (VCA) carried out by URCS and analysis of historical disaster impacts (e.g. through Red Cross Disaster Relief Emergency Fund (DREF) reports).
2. How can a GIS tool be developed that integrates all components of risk: hazard, exposure, and vulnerability, which would support Forecast-based Financing action planning?
 - Identify the criteria for spatially explicit flood vulnerability and capacity assessment

- Identifying key datasets for mapping flood vulnerability across Uganda
 - Building national-scale flood hazard maps from locally and globally available resources
 - Linking flood inundation mapping with population and settlement information, administrative areas and vulnerability classifications to delineate (an appropriate number of) possible action areas
3. How can this GIS analysis be linked to forecasts in real-time to enable decision-relevant impact-based probabilistic flood forecasting?
- GloFAS, or local hydrological forecasting systems, will be combined with the GIS tool to create a probabilistic decision support tool for Forecast-based Action by the Uganda Red Cross. This tool will highlight in real time the areas that could see impact, and in which early actions would be worth taking.

The student will undertake a placement period with Makerere University, linking with the Uganda Red Cross and Irene Amuron of the Red Cross Red Crescent Climate Centre.

Project Advisors: Shuaib Lwasa (Makerere U.), Erin Coughlan de Perez (Red Cross Red Crescent Climate Centre), Dai Clegg (Evidence for Development) Dr John Seaman (Evidence for Development) with support from Dr Celia Petty (Evidence for Development)



Uganda Red Cross Society (URCS) carried out a humanitarian distribution on 29 April 2016 in response to forecast flood-danger in the east of the country. *Photo credit: Denis Onyodi/URCS*



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Skills and experience:

This project would be suitable for students with a degree in geography, meteorology, or environmental science. Students with previous experience in GIS would be preferred.

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.

Contact:

For informal discussion about this studentship please contact Professor Ros Cornforth, University of Reading r.j.cornforth@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 r.j.cornforth@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.