



Imperial College
London



UNIVERSITY OF
BIRMINGHAM



University of
Reading



Science for Humanitarian Emergencies & Resilience (SHEAR)

PhD Studentship:

Extended-range hydrometeorological forecasting for improved flood early warning in Bangladesh

Supporting earlier flood preparedness in Bangladesh

Supervisors: Dr Liz Stephens & Professor Hannah Cloke
(elisabeth.stephens@reading.ac.uk, h.i.cloke@reading.ac.uk)

Department of Geography and Environmental Science
University of Reading

Project description

Bangladesh is located downstream of three major world rivers, with flooding from these rivers affecting millions of people directly, as well as causing huge damage to agricultural lands. Currently the Flood Forecasting and Warning Centre (FFWC) in Bangladesh provides deterministic flood forecasts out to 5 days, with experimental probabilistic forecasts out to 10 days using forecasts from the European Centre for Medium-Range Weather Forecasts (ECMWF).

This project will tackle the key scientific questions that will enable the FFWC to provide warnings further head of time. Working together with FFWC, the student will carry out research to understand the main drivers of uncertainty involved in probabilistic sub-seasonal to seasonal river flow predictions in Bangladesh for improved early warning and early action to floods.

The PhD student will use reanalysis and reforecast archives from the Global Flood Awareness System held at the ECMWF, and compare with river flow records held by the FFWC and other relevant flood observational datasets. The Global Flood Awareness System is an operational forecasting system funded by the European Commission's Copernicus Emergency Management Service.

Topics for consideration include, but are not limited to:

- The limit of predictability of the South Asian monsoon
- Land surface controls on floods flows including soil moisture, snow melt and evaporation
- Parameterisation and physics of river routing models, particularly related to backwater effects at major river confluences
- Improving statistical characteristics of probabilistic forecasts



The student will undertake a placement period within Bangladesh with the Red Cross Red Crescent Climate Centre (RCCC) to inform the implementation of the Forecast-based Financing pilot project in the Bogra district of Bangladesh.

Project Advisors: Christel Prudhomme (ECMWF), Hassan Ahmadul (RCCC)



A river-level gauge in Kazla, Bangladesh on 28 July 2016. Photo credit: Olaf Neussner / German Red Cross)

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.



Imperial College
London



UNIVERSITY OF
BIRMINGHAM



University of
Reading

US
UNIVERSITY
OF SUSSEX

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 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.