SPITFIRE

NERC SCIENCE OF THE ENVIRONMENT

SPITFIRE Doctoral Training Partnership (DTP)

Research Experience Placement Project 2018

Lead Supervisor:	Dr James Blake
Email:	jarib@ceh.ac.uk
University/Research Organisation:	Centre for Ecology & Hydrology
Department:	Hydro-Climate Risks
Project Title:	LANDWISE: LAND management in loWland catchments for Integrated flood riSk rEduction

Total Student Support Costs: £2500	£2500 (£200 for 10 weeks plus £500 research and training support grant)
Based on a minimum of £200/week full time for a minimum of 8 weeks and maximum of 10 weeks and a £500 Research and Training Support Grant.	

Proposed Start Date: 09/07/18	Proposed End Date: 14/09/18
Projects should run over the summer vacation and we recommend that projects will have terminated by 21 September 2018.	

Brief Summary – please provide a brief summary (maximum 300 words) of the project.

This should include:

- *Project outline;*
- *Links to staff/School/Centre activity as appropriate;*
- *Supervisory arrangement;*
- *How space/equipment/supporting resource demands will be met;*
- *Elements of the project that will incorporate elements other than computer/modelling e.g. fieldwork and data collection;*
- *How the project will enhance the skills of the appointed student;*
- *Any intellectual property rights concerns that may arise from the work.*

CEH are major partners in the new NERC-funded LANDWISE Natural Flood Management (NFM) project, led by the University of Reading. The project aim is to evaluate the effectiveness of land management based NFM measures at reducing flood risk in lowland catchments using integrated field soil surveys, remote sensing and numerical hydrological modelling. Activities are focussed on the Thames catchment, west of Maidenhead.

CEH are leading the field soil survey work package, which includes an initial summer campaign measuring soil hydrological variations with land management. This will involve site visits to liaise with local landowners and agree on sampling locations/access, field soil sampling and laboratory quantification of soil physical and hydrological properties (soil texture, organic matter, moisture and bulk density) using a range of methods (sieving, laser particle sizer, furnace loss on ignition and oven drying). There will also be desk based data analysis that will include the use of spreadsheets and GIS.

A member of CEH technical staff, alongside Dr James Blake, will be working on these surveys almost full time over the summer so would this would be an excellent opportunity to accommodate a closely supervised student to provide research experience and development of new skills.

In addition, CEH has a wider interest in NFM led by Dr Gareth Old, with ongoing monitoring of river flows, nutrients and suspended sediments in the Evenlode catchment (a tributary of the Thames, upstream of Oxford). It may also be possible for the student to undertake activities in this area, depending on their interests.

CEH has suitable office space available and all necessary field and laboratory equipment and training will be provided, including meeting health and safety requirements. No intellectual property right issues are anticipated. LANDWISE data will be made publically available through the NERC Environmental Information Data Centre.

Please give an indicative timescale for the student's work over the length of the project: (maximum 150 words).

This should include:

- *The broad tasks the student will undertake;*
- *An indicative timescale for these tasks.*

- Spatial analysis and creating maps in ArcGIS to guide soil sampling at specific sites (1 week)
- Fieldwork across the West Thames catchment to liaise with land owners, help identify field survey locations and undertake soil sampling (4 weeks)
- Laboratory analysis of collected soil samples (4 weeks)
- Transcription of laboratory data, quality control and descriptive statistics. Potential for extended statistical analysis of soil property variation across land management types according to the student's expertise and interests (1 week)

These figures provide approximate time breakdowns, in reality the tasks will be undertaken throughout the placement rather than sequentially.

Proposed procedure for appointing students, including selection criteria:

Please identify specific criteria that should be considered for the selection of placement students e.g. specific quantitative skills that may be required, subject knowledge etc. If a student has been pre-selected, or the research area has been led by the student, please provide the student's contact details, and a summary of their suitability for the SPITFIRE DTP REP programme.

Proposed selection criteria:

- Interest in the natural environment, ideally soils, agriculture and/or hydrology
- Interest in field and laboratory working environments
- Good numeracy and communication skills
- Ability to work as part of a team
- Ability to undertake routine procedures efficiently on a daily basis
- Aptitude to work in a methodical way, repeating tasks with a high level of precision and attention to detail
- Willingness to travel within the West Thames catchment (CEH transport provided)
- Physically fit and healthy (field work will require physical activity for extended periods in varying weather conditions)

University of Reading, on behalf of CEH, are currently trawling quantitative STEM subject undergraduate students for potential interest in this placement. Notwithstanding this, CEH would seek to appoint the most able applicant, based on the above criteria, once the project has been confirmed and advertised more widely through the SPITFIRE DTP.