2016 YCCSA SUMMER SCHOLARSHIP PROJECT SUBMISSION

This form is for prospective project supervisors to submit their projects to be included in the YCCSA Summer Scholarships Programme for 2016.

It is the purpose of the Summer School that any projects submitted are interdisciplinary in nature.

Date	
Supervisors' Names and Departments	*Andreas Heinemeyer (Env/SEI-Y)* *Marina Knight (Math)*
Project Title	*Making statistical sense of long-term experimental data: upland carbon and water responses to climate change and management*
Project Description	*As part of a five-year £1m defra funded project on upland peatland management effects on carbon and water cycles and water quality we have gathered a huge amount of data (four years so far). Notably, this data is from real heather dominated peatland sites with a paired catchment design of control (burnt) vs. treatment (mown). Importantly, there is not only plot level replication within the catchment sites (for different managements), but also the paired design is replicated at the landscape scale (3 sites overall).* *Crucially, there are many time series data to be tested for significant differences regarding the different management, but also in relation to overall climatic impacts. As part of the experimental design we imposed a pre-treatment period of monitoring about one-year before imposing different management within the treatment catchments. Therefore, we can deploy a before/after comparison (BACI) in relation to testing for natural fluctuations versus management impacts by the treatment (see references).* *The challenge is to adapt existing approaches to the specific experimental design and to allow accounting for autocorrelations and multi-variable influences across space and time (see references). The project would ideally be tackled in a team of 2-3 people but could be done by 1-2 (by reducing the amount of variable to be tested). For more information on the project, please see: http://peatland-es-uk.york.ac.uk/.*
Required Skills	*In addition to good statistical skills and an interested in time series analysis, the student(s) would benefit from database skills such as using R and visual tools such as Matlab (for example).* *Knowledge in ecology would be beneficial, but necessary information will be provided.* *The student will have the opportunity to join the field researchers on their field trips to capture the experimental layout in real.*
Project Dates	*Start dates are flexible but ideally students will work over a similar period, starting ideally around Monday, 11 July 2016 and finishing around Friday, 9 September 2016.*
Other Information	*This project is a unique opportunity to gain insight into evidence based science as part of a*

	large UK government funded project.
References	Environmental Impact Assessment: "Pseudoreplication" in Time? Allan Stewart-Oaten, William W. Murdoch, Keith R. Parker Source: Ecology, Vol. 67, No. 4 (1986), pp. 929-940. A protocol for data exploration to avoid common statistical problems Alain F. Zuur, Elena N. Leno and Chris S. Elphick; Methods in Ecology & Evolution (2009), doi: 10.1111/j.2041-210X.2009.00001.x. BACI design: //www.stat.sfu.ca/~cschwarz/CourseNotes

When complete, please email the form to sarah.christmas@york.ac.uk