Assessing rates and patterns of sediment supply to Llyn Tegid, North Wales.

Background

Predicted impacts of climate change include an increase in the frequency of extreme events, including floods. This has implications for population and infrastructure safety, economic activities (agriculture, industry, tourism) and contamination distribution. The short length of instrumented records of river discharge, especially in small, upland catchments means that alternative records of flood events need to be reconstructed and interrogated if we are to be able to effectively manage these implications. Llyn Tegid, located in the Afon Dyfrdwy (Dee) catchment, north Wales, is an important site for tourism and conservation and suffers from periodic algal blooms which may be related to sediment supply from the upper catchment. This project will use a novel combination of desk-based, documentary, geomorphological and sedimentological methods in order to quantify the nature of flooding in, and sediment supply to Llyn Tegid from the the Afon Twrch, Afon Lliw and Afon Dyfrdwy (Dee) catchments.

Although the project could be tailored to suit applicants' individual interests, the main objectives of this project would be to:

1) Construct a flood chronology for the Afon Twrch, Lliw and Dyfrdwy catchments by combining documentary records (newspaper, school log books, personal diaries) with geomorphological mapping and dating of boulder berms using lichenometry - see Foulds et al., (2014).

2) Reconstruct historical river channel change and sediment dynamics using historical maps and aerial photography.

3) Analyse sediment cores from Llyn Tegid using geochemical techniques in order to identify evidence of flooding

4) Monitoring suspended sediment inputs from one tributary (Afon Twrch) using a nephelometer (provided by NRW and Snowdonia National Park)

Foulds, S. A., Griffiths, H. M., Macklin, M. G., & Brewer, P. A. (2014). Geomorphological records of extreme floods and their relationship to decadal-scale climate change. *Geomorphology*, *216*, 193-207.

Personal specification:

Essential:
An undergraduate degree (II:i or higher) in any Physical Geography or Earth Science related subject. Experience in using GIS software packages and evidence of having studied fluvial geomorphology.

Desirable:
A Masters degree awarded at the Merit level or higher in any Physical Geography or Earth Science related subject. Field experience of ground survey, sediment coring and geomorphological mapping.

Further information:
For further information specific to the project, please contact Hywel Griffiths (hmg@aber.ac.uk)

For application forms and procedures, please go to the Department's Postgraduate Student webpage and the University's Postgraduate Student webpage.

Your application form needs to be accompanied by two references (although these can be sent separately following the form if time is tight) and a research proposal, typically ~ 1500 words outlining your project.