

The University of Glasgow and Macquarie University (Sydney, Australia) are pleased to offer a fully-funded joint Glasgow-Macquarie PhD studentship in the following area:

**The age(s) and source(s) of post-contact sediment in eastern Australia**

**Glasgow Supervisors:** Professor Paul Bishop and Dr Derek Fabel;

**Macquarie Supervisors:** Associate Professor Damian Gore and Dr Kira Westaway.



**Rationale:** Much of inland SE Australia, like many areas that experienced European colonisation, is blanketed with a layer, up to a metre or more thick, of sandy and gravelly material overlying dark, organic-rich soils known as swampy meadow deposits, associated with swampy valley bottoms drained by 'chains of pond' (Eyles, 1977; Prosser, 1991; Mactaggart et al., 2008). Europeans cleared *Eucalyptus* woodland and forest for livestock grazing in the early 19<sup>th</sup> century, leading, it is argued, to major geomorphological impacts on slopes and in rivers (Eyles, 1977; Prosser, 1991;

Wasson et al., 1998): drainage lines incised and gullies propagated up drainage lines, destroying the valley-bottom chains of ponds and generating the high volumes of post-contact sediment (PCS) (also known as post-settlement alluvium [PSA]) (Wasson et al., 1998; Fanning, 1999). A contrary voice has recently claimed, however, that much of the landscape disturbance in inland SE Australia pre-dated the arrival of the Europeans and that, by implication, the PCS pre-dated the Europeans (Butzer and Helgren, 2005). This debate is the focus of this PhD.

Two questions thus underpin this research:

1. Is the 'PCS' the result of the erosion of topsoils or subsoils (or both)? and
2. Did this erosion pre- or post-date the arrival of Europeans in Australia?

Preliminary optically stimulated luminescence data indicate that 'PCS' in the Lachlan River catchment was not derived by the erosion of topsoil (Muñoz-Salinas et al., 2011) and may pre-date the early 19<sup>th</sup> century (Kinnaird et al., 2011). Glasgow is developing capabilities in the analysis of meteoric cosmogenic beryllium-10, which has the potential to answer question 1 (the source of the sediment). Macquarie has the capability to address the timing issue (question 2) using optically stimulated luminescence. The collaboration is thus ideal for addressing an important current debate in land management in areas in which the arrival of Europeans led to major changes in land-use practices.

**References:**

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- Fanning P. 1999. Recent landscape history in arid western New South Wales, Australia: a model for regional change. *Geomorphology* **29**: 191–209.
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**About you:** We are seeking a dynamic candidate, able to function across institutions and across disciplines, but with strengths in geomorphology, sediment transport, and/or analytical/environmental chemistry or physics.

**About us:** In Glasgow, the student will join the Graduate Schools of the School of Geographical and Earth Sciences (up to 20 new PhD students starting in autumn 2011) and the broader College of Science and Engineering; both of these have thriving post-graduate research communities. The Glasgow Earth Systems Research Group (ESRG) is a vibrant research group that has weekly meetings and one or two research ‘away-days’ annually. ESRG is supported by state-of-the-art laboratories on the Glasgow campus and at the Scottish Universities Environmental Research Centre in Glasgow’s southern suburbs, including the only AMS system in the world dedicated solely to the geosciences.

In Macquarie, you will join the Department of Environment and Geography, which has recently been identified by Thomson Reuters as having the best Environmental Science and Ecology group in Australia and the 14th best in the world in terms of research citations and impact. Facilities for field sampling and laboratory analysis are excellent, including luminescence and geochemical laboratories. Macquarie University is located in Sydney, which is Australia's largest city.

**How to apply:** In the first instance please contact Professor Paul Bishop ([paul.bishop.3@glasgow.ac.uk](mailto:paul.bishop.3@glasgow.ac.uk)) and Associate Professor Damian Gore ([damian.gore@mq.edu.au](mailto:damian.gore@mq.edu.au)) to discuss your interest in this project; please include a CV with this initial contact, showing us your relevant skills and experience. The closing date for full applications to both Universities for this studentship is July 29 2011.

**Administrative arrangements:** This joint PhD studentship is funded by the University of Glasgow (1.5 years) and Macquarie University (1.5 to 2 years) (see [http://www.hdr.mq.edu.au/information\\_about/research\\_degrees/cotutellejoint\\_degree](http://www.hdr.mq.edu.au/information_about/research_degrees/cotutellejoint_degree) where co-tutelle and joint PhDs are briefly described). The student is expected to spend at least one year in each institution; travel between the two institutions is supported by a return airfare provided by Macquarie University, with the University of Glasgow covering any other necessary travel. The Macquarie University funding for this studentship is for all nationalities, whereas the University of Glasgow component is open to applicants from the EU and UK only; a non-EU/non-UK applicant will need to show proof of support for 1.5 years of international student fees at the University of Glasgow before they can be offered the studentship. You must apply to both Macquarie University and University of Glasgow for admission to this studentship. The entry requirements for Macquarie University for the award of a scholarship (studentship) are at [http://www.hdr.mq.edu.au/information\\_about/scholarships](http://www.hdr.mq.edu.au/information_about/scholarships), where there is a link to the Application procedure. The same information for the University of Glasgow is at <http://www.gla.ac.uk/colleges/scienceengineering/graduateschool/prospectivestudents/essentialinformation/>, where there are links to English language requirements and the application procedure. As noted above, both supervisors should be contacted initially. Professor Paul Bishop can address queries related to the University of Glasgow ([paul.bishop.3@glasgow.ac.uk](mailto:paul.bishop.3@glasgow.ac.uk)) and Associate Professor Damian Gore

([damian.gore@mq.edu.au](mailto:damian.gore@mq.edu.au)) will handle queries related specifically to Macquarie University. The closing date is 29th July, 2011, and the start date is late September 2011 (precise date to be advised).