Exciting PhD Opportunity!

We seek **two** PhD students to join a well-funded project investigating drought and its impact on riparian vegetation in the Southwestern USA (Arizona and California). The overall project combines a range of methods (stable isotopes, remote sensing, numerical modeling of rainstorms and watershed moisture, dendrochronology, and forest inventories) to explore the regional expression of climate and climate change and its influence on riparian forests. The project, funded by the US Department of Defense's Strategic Environmental Research and Development Program, emphasizes the importance of riparian forests in drought-prone landscapes as thermal and moisture refugia for various threatened and endangered species. We're looking for applications from motivated, curious students. More detail below.

Project: Detection of forest water stress due to climate change in drought-prone regions of the Southwestern USA

Lead Institution: Cardiff University (UK)
Main Supervisor: Michael Singer, School of Earth & Ocean Sciences, Cardiff University (and UCSB)
Co-Supervisors: Kelly Caylor, UCSB, Dar Roberts, UCSB, John Stella, SUNY-ESF
Project Enquiries (*please contact me before applying*): singerm2@cardiff.ac.uk

Image Caption: Riparian forest along an intermittent stream, SE Arizona. Credit: AZFirescape.

Image Caption: Riparian forest along a perennial stream in Southern California.

Project Background, Aims, and Methods
The two successful PhD students will join a large team of 4 PIs, one postdoc and 3 other PhD students in the USA on this 4-year, well-funded project that includes travel to remote and beautiful landscapes, opportunities to present your research at international conferences, and substantial interdisciplinary collaboration. The project will develop a set of novel water stress indicators, metrics derived from remote sensing, tree-ring isotopes, and characterization of trends in water forest health surveys, which express the state of the riparian forest in response to climatic stress affecting subsurface water availability. It also includes modeling of water fluxes and their availability to vegetation under various climate scenarios.

Candidate
Candidates with a range of experience will be considered. Desirable skills and experience include (one or several): numerical modeling (Python, Matlab, and/or Fortran), analysis of stable isotope ratios ($\delta^{18}O$, $\delta^{13}C$), hydrological data analysis (time series, water balance, spatial interpolation, stochastic methods), dendrochronology, forest ecology, land/water conservation management. Most of all, you should be self-motivated, intellectually curious, and interested in regional expressions of drought and climate change.

Funding
The PhD studentship covers Cardiff University fees and a stipend of ~£15K/year for 3.5 years. It also includes all expenses related to travel to the USA for fieldwork, lab work, and/or project meetings, as well as attendance/presentation at international conferences.

http://www.cardiff.ac.uk/study/postgraduate/funding/view/phd-in-earth-and-ocean-science-detection-of-forest-water-stress-due-to-climate-change-in-drought-prone-regions-of-the-southwestern-usa