

Appendix 1

ONE Planet Undergraduate Research Experience Placement (REP) Scheme	
Placement title: Research intern, Reconstructing mid-Holocene rainfall changes using a speleothem from the Pacific island Niue.	
Proposed placement length (max 8 weeks): 8 weeks	
One Planet Research Theme: Climate & Climate Change <input checked="" type="checkbox"/> Earth System Processes <input checked="" type="checkbox"/> Anthropocene <input type="checkbox"/> Environmental Informatics <input type="checkbox"/>	
Supervisor: Ola Kwiecien School/Department: Geography and Environmental Sciences University: Northumbria	
Placement Description: This placement offers hands-on involvement in an active research project with focus on past environmental changes in the west Pacific Ocean. The student will build upon speleothem-based evidence from the same study site to allow easy comparison and to improve data interpretation. Disentangling the drivers of hydrological changes in the Pacific Ocean is vital for understanding ocean-atmosphere interaction, and regional responses to global warming. Stable oxygen and carbon isotopes from stalagmites are key elements in reconstructing past rainfall changes. Stalagmites grow from dripwater and thus act as powerful archives of environmental information. Their exceptional suitability for radiometric dating and sensitivity against hydrological changes make these cave deposits ideal for reconstructing past floods and droughts. The student will conduct subsampling on a mid-Holocene stalagmite at sub-annual resolution. This allows evaluation of ENSO changes in unprecedented detail. This laboratory focussed placement offers training and experience in tasks from sample preparation to isotope analysis and data evaluation. These transferable skills can be applied across many environmental archives. Offered lab skills are applicable in soil science, analytical chemistry, etc. Results arising from this placement will contribute to future publications; student contribution will be credited.	
Timescale: 8 weeks full time equivalent from 1 August to 30 September 2022. Final timetable will be discussed with project lead prior to starting work. The anticipated workload is given below: Weeks 1-4: Sampling for mass spectrometry: The student will be inducted into the labs & trained in sampling techniques. Focus is on weighing stalagmite microsamples from Niue Island, Pacific. The student will learn to use micro-sampling equipment, and sample preparation for analysis. Weeks 5-8: Mass spectrometry and examination of results: The student will be introduced to isotope ratio mass spectrometry and the analysis of carbon and oxygen isotope ratios from carbonates. Focus is on hands on training in the laboratory, the reduction of raw results, discussion of potential errors, and interpretation of final output.	
Itemised Budget for the Project: Laboratory consumables	
1 x sampling needle	£580
Total	£580
Prerequisites: <u>Essential:</u> 1. Demonstrable passion for environmental science, particularly palaeoclimate, environmental change, geochemistry. 2. Quick to grasp new tasks and work independently. 3. Exceptional eye for detail and steady hands. <u>Desirable:</u> Prior experience with geochemistry is helpful. <u>For more information,</u> please contact Ola Kwiecien (ola.kwiecien@northumbria.ac.uk).	