



Australian Research Council  
Funding announcement Thursday 2 August 2018

- Four UOW researchers were awarded Future Fellowships totalling \$3.27M

A/Prof Timothy Cohen

*Title: Climate extremes and landscape responses across continental Australia*

ARC funding - \$849,125

This project aims to determine the magnitude, frequency and duration of dry and wet extremes across the Australian continent over the last thousand years and examine landscape responses to such climate extremes. Using terrestrial records from key lake locations the research will construct a record of mega-lakes and mega-droughts and determine whether such climatic phenomena are becoming more frequent or severe through time. The project is to develop palaeoclimatic data at sub-centennial resolution, examining the spatial coherence of the climate extremes. It will integrate this with both the historical record and global climate modelling, allowing us to assess the dominant oceanographic and atmospheric conditions that lead to such extremes.

Dr Nicholas Deutscher

*Title: Novel techniques for interpreting atmospheric variability and its drivers*

ARC funding - \$738,125

The project aims to improve understanding of causes of variability in atmospheric greenhouse gases, therefore leading to better knowledge of how the processes will evolve in a changing climate. Novel measurement techniques will be used to gain unprecedented detail about the spatial and temporal variability of atmospheric greenhouse gases. With the use of regional and global scale models, the measurements will be used to understand greenhouse gas fluxes and provide independent verification of current estimates. Expected outcomes include improved methods for verifying greenhouse gas emissions, which will contribute to improved emissions inventories and accounting promised under international agreements.

Dr Yi Du

*Title: Functional two-dimensional materials for photocatalysis*

ARC funding - \$878,125

This project aims to explore and tailor two-dimensional materials and heterostructures by new synthetic strategies, and to develop a comprehensive understanding of the effects of crystalline and electronic structures on photocatalysis at the atomic level. We expect to provide deep insight into catalytic mechanisms by bridging the current gap between realistic systems and theoretical calculations. An expected outcome is new approaches to precise control structural and electronic properties of two-dimensional materials at the atomic level for diverse photocatalytic applications. This is an important scientific frontier and has great prospects for broad scientific applications, such as clean hydrogen energy generation and carbon sequestration.



UNIVERSITY  
OF WOLLONGONG  
AUSTRALIA

Dr Michael Morley

*Title: Early human dispersal: identifying the key environmental drivers*

ARC funding - \$803,672

Did environmental or human evolutionary processes drive the dispersal of early humans eastwards from Africa into Southeast Asia—and beyond into Australia? This project aims to resolve this important question by examining archaeological sediments using an innovative Earth-science approach, providing direct links between cultural and environmental records. The results will reveal the environment-types favoured by early humans moving into this region in the deep past. Expected outcomes of the project include a greater understanding of the role of environmental change on the colonisation of new environments, especially pertinent given that modern climate change affects those living in marginal environments today—such as the Australian interior.