**ONE Planet Doctoral Training Partnership**

**Project title:** The development and evolution of Caribbean coral reef islands  
*(Ref: OP20230)* Ref will be allocated at advertisement stage.

**One Planet Research Theme:**  
Climate & Climate Change ☒ | Earth System Processes ☒ | Anthropocene ☒ | Environmental Informatics □

**Lead Supervisor:**  
Dr Holly East (Department of Geography and Environmental Sciences, Northumbria University)

**Key Research Gaps and Questions:**  
How and when did reef island formation occur?  
What are the key controls on reef island evolution?  
Which organisms on the adjacent coral reefs are most important for reef island building?  
What is the degree of reef-to-island connectivity?

**Project Description:**

Coral reef islands are low-lying (<3 m above mean sea level) accumulations of sediment, produced entirely by organisms living on the surrounding coral reefs and in seagrass beds. They provide numerous key ecosystem services, both ecological and socioeconomic, to some of the world’s poorest countries. However, due to their low-lying nature, they are frequently considered to be among the most vulnerable environments to climate change, particularly to sea level rise.

In order to better predict how reef islands may respond to future environmental change, it is important to understand how they have responded to past environmental changes, including in sea level. Our understanding of past reef island evolution is improving for the Indian and Pacific Oceans, but remains severely limited for the Caribbean. This knowledge gap is particularly pertinent as the Caribbean region has its own unique sea level history, which means lessons learned from other regions are unlikely to apply.

For this PhD project, you will reconstruct the development and evolution of reef islands (i.e. sand cays) in Honduras. You will undertake marine ecological surveys to determine the degree of reef-to-island connectivity. The project will involve both geomorphological and ecological analyses, including of island morphology, core records and marine ecology. You will undertake fieldwork in collaboration with Operation Wallacea (as CASE partner) at their marine site in Honduras.

**Prerequisites:**

A keen interest in undertaking fieldwork in tropical marine environments is essential. A good knowledge of geomorphology and/or ecology is desirable.

For more information, please contact Dr Holly East (holly.east@northumbria.ac.uk).