

Project Title: **Isotopic and Model Constraints on the Climatic Impact of the Opening South Atlantic**

Lead Institution/Department: University of Bristol, School of Geographical Sciences

Primary Supervisor: Rachel Flecker

Co-Supervisor: Ian Parkinson, School of Earth Sciences

Co-Supervisor: Markus Adloff, School of Geographical Sciences

Scholarship: A fully funded PhD studentship including UK or international fees, annual stipend, and a research budget, is available at the University of Bristol. Study will begin in September 2025 and is funded for four years. The deadline for applications is 31st January 2025.

Project aims and methods

The opening/closure of ocean basins is often coincident with major climate transitions. These are driven, at least in part, by changes to ocean circulation resulting from the new palaeogeography. However, successions recording the birth/death of ocean basins may also include evaporites or organic-rich sediments indicating abrupt, extreme environmental changes during the transition from/to continental to fully marine conditions. Both the evaporite mineral, gypsum ($\text{CaSO}_4 \cdot \text{H}_2\text{O}$), and the carbon in organic-rich sediments have the potential to perturb the carbon cycle and hence drive climatic change via a different process. This project will investigate the climatic impact of the regionally extensive salt giant and substantial organic-rich successions associated with the early Cretaceous opening of the South Atlantic. The aim of this project is to generate high-resolution radiogenic Os and Sr and stable U isotope records through key lithological and faunal transitions during the opening of the South Atlantic that are preserved onshore in Angola and offshore Brazil. These novel isotopic records will be used to constrain the timing of connectivity and quantify exchange. The analytical results will then be used to define Earth system model experiments that evaluate the amplitude of the associated carbon cycle perturbations and their climatic consequences.

Candidate Requirements

This project would suit a candidate with a background in geology, environmental science or physical geography and a keen interest in lab work, fieldwork and climate modelling. As we value a diverse research environment, we welcome and encourage student applications from under-represented groups.

Useful Links

Please contact r.flecker@bristol.ac.uk for informal enquiries.

- <https://www.bristol.ac.uk/geography/courses/postgraduate/>
- <https://www.bristol.ac.uk/study/postgraduate/research/geographical-sciences-physicalgeography/>

How to Apply: Please apply to the “Geography (PhD)” programme at <https://www.bristol.ac.uk/study/postgraduate/apply/>