We invite applications from qualified and highly motivated students for a **3.5-year PhD Fully Funded Studentship** as part of the [NERC SUPER Doctoral Training Partnership](https://www.nerc.supergroup.ac.uk/). The student will undertake focused research to **understand carbon connectivity across the land-ocean continuum using a seascape approach** at the University of St Andrews in collaboration with Napier University, Heriot Watt University and NatureScot (CASE partner).

The Project

Globally, intertidal (Blue Carbon) and subtidal sedimentary environments provide a nature-based solution (NbS) to climate change through the capture and long-term storage of organic carbon (OC). In Scotland it is estimated that subtidal marine sediments store 178 ± 36 Mt OC while saltmarsh and seagrass soils store 1.05 Mt OC and 0.088 Mt OC respectively. Though these environments are clearly important both for OC storage and biodiversity, many of these ecosystems are under growing natural and anthropogenic pressure with seagrass and saltmarsh extent decreasing annually and marine sediments being regularly disturbed (e.g., trawling). The loss and disruption of these environments will reduce these ecosystems’ ability to capture OC and will facilitate the release of stored OC to the wider environment and potentially back to the atmosphere, worsening the climate crisis.

Yet our ability to quantify the potential OC losses and the reduction in the magnitude of the climate regulation service provided by these habitats is limited as to date research has focused on the role that individual habitats play in the global carbon cycle and not the wider system (e.g., all ecosystems within an estuarine setting). In reality, all the ecosystems across the land-ocean interface are intrinsically linked to one another and the wider terrestrial and marine environments.

Without a system (or seascape) understanding of how OC is transferred, captured, and stored both spatially and temporally across estuarine habitats it is not possible to quantify the climate mitigation service or develop effective management strategies as a loss of OC from one environment may represent a gain for another and the collective contribution of interconnected habitats may surpass that of any individual ecosystem.

This project will use two contrasting estuaries (provisionally Dornoch Firth and Tynemouth Bay) as natural laboratories to explore OC interactions both spatially and temporally across the land-ocean interface (Carbon-scapes). This approach will consider multiple habitats ranging from the terrestrial environment, traditional blue carbon habitats (saltmarsh, seagrass, kelp), subtidal sediments and in environments currently underrepresented in blue carbon research such as intertidal flats, oyster beds and sand dunes.

This multi-habitat comparative assessment will combine long-term monitoring, spatial analysis, and state-of-the-art geochemical techniques to develop (i) a contemporary OC budget for each
estuary and (ii) an understanding of the co-development of these habitats and their OC stores through time (last 150 years). This will be achieved by:

- The quantification of OC stored and buried in individual habitats.
- The quantification of seasonal (summer, winter) OC transfers between environments.
- The development of historical understanding of land management practices over the last 150 years.

**Funding**

The scholarship will cover home tuition fees (funding may be available for international fee and this will be discussed at interview), a yearly stipend of £18,622 per year (in the 2023/24 academic year, subject to increase annually), and a research training support grant (RTSG) of £7,375 and a training support grant (TSG) of £9,050.

**How to Apply**

Applicants must fit the entry requirements of the University of St Andrews alongside the following eligibility criteria: 1) An upper second class (2:1) undergraduate or master’s degree in any areas of geography, marine science, earth science or environmental sciences; 2) evidence of a strong level of written English; 3) An interest to work and develop skill both in the field and laboratory. The University of St Andrews strives for equal opportunities. Applications of any background are welcome.

Candidates must submit an online application by Friday 9 February 2024 at the following link: https://www.st-andrews.ac.uk/study/apply/postgraduate/research/. The candidate should apply to the programme “PhD Geography (Science)”, School of Geography and Sustainable Development. The application should include:

- Statement of Purpose (max 800 words)
- CV
- Transcripts (undergraduate and/or master’s degrees).
- Example of academic writing in English (e.g. your undergraduate or MSc dissertation, conference paper or similar)
- Names and contact details of two referees
- Evidence of English language capability: English language test scores as per Profile 6-D, unless exempt, see English language requirements.

In a statement of purpose (max 800 words), applicants must: 1) specify their interest in the topic of the research project; and 2) outline their skills and experience that make them suited to undertake the research outlined. Please note you are not required to submit a research proposal as part of this application. **Shortlisted applicants will be interviewed in late February or early March.**

This is an excellent opportunity for a highly motivated PhD student to work on a cutting-edge project at the land-ocean interface using state of the art analytical techniques. The studentships start on the 27 September 2024. For informal enquiries, please contact Dr Craig Smeaton (cs244@st-andrews.ac.uk). For enquiries about the application process please contact Helen Olaez at gsdgradmin@st-andrews.ac.uk. Please include ‘SUPER DTP PhD studentships’ in the subject line of your email.
About the School of Geography and Sustainable Development, University of St Andrews

The successful applicant will conduct their PhD in the School of Geography & Sustainable Development at St Andrews, which is well-known for world-leading research in a number of areas and has three research groups: Environmental Change (ECRG), Population and Health (PHRG), and Geographies of Sustainability, Society, Inequalities, and Possibilities (GOSSIP). It further hosts the Bell-Edwards Geographic Data Institute (BEGIN), which specialises in analysis and modelling of geographic data. According to the Research Excellence Framework (REF) 2021, 94% of research conducted in SGSD was classified as world-leading or internationally excellent, with an internationally excellent research environment in the School. The School also has a well-established reputation for high teaching quality and was ranked fourth in the UK by The Times Good University Guide 2024 and the Guardian University Guide 2024. The School has 44 academic staff, 11 postdoctoral fellows and 44 PhD students, supported by 3 technicians and 9 administrative staff.

Postgraduate Research Study in the School of Geography and Sustainable Development

The School’s 44 PhD students (in St Andrews these are called research postgraduates, PGRs) are a vital part of its research culture. PGRs are engaged across the research interests of the School and all PGRs are members of Research Group(s). In addition to regular supervision and research group meetings, PGRs gather monthly for Lunch&Learn sessions with discussions related to PhD life and future careers, and there is a programme of social activities throughout the year, led by the PGR Reps. PGR Reps are members of the Postgraduate Committee which oversees PGR matters for the School and is chaired by the Director of Postgraduate Studies.

PGRs are provided with desk space, co-located with staff in the Irvine Building. All incoming PGRs are provided with a laptop. PGRs have access to all the facilities of the University, including social, sporting and library facilities. PGRs also have the opportunity to undertake skills training provided by the Centre for Educational Enhancement and Development (CEED) at St Andrews including their GradSkills Programme.

PGR students are also expected to contribute to teaching within the School, typically taking on demonstrating, tutoring and marking duties for undergraduate courses throughout their studies. This is paid additionally and separately from the stipend.

Progress through the PhD is monitored via the Annual PGR Conference and Review Meetings which take place in April. Through this process, together with supervision and training, the School achieves outstanding rates of PhD completion. Our PGR graduates have gone on to jobs in academia, industry, government, and consultancy in the UK and internationally.

Note about finances for international applicants

Given the high cost of living in the UK, the stipend in this call will cover cost of living expenses for the successful candidate (one person) but is not sufficient to additional cover costs for any of their dependants. If you are considering bringing dependants, please be aware that you need an alternative source of funding. Also note that the stipend does not cover visa or relocation costs and that you will be required to cover those yourself. See here for an approximate estimate of costs: cost of living expenses.