



convex
**SEASCAPE
SURVEY**

Annual Report Year Four

APRIL 2025 – MARCH 2026

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FOREWORD

by **Stephen Catlin**

Now at the completion of the fourth year of Convex Seascape Survey, it has been a real privilege to work with Professor Callum Roberts of University of Exeter leading the science on this exciting project.

When we began, the question of seabed carbon had been significantly overlooked. 'Blue carbon' had become shorthand for mangroves and seagrasses - visible, photogenic and close to shore. Yet some 95% of the ocean's organic carbon is not held in those coastal fringes at all. It lies in the seabed itself, in muds and sediments accumulated over millennia, largely unmapped, unmeasured and unprotected. The Convex Seascape Survey was created to close that gap.

Our research team was charged with some clear questions which this survey seeks to answer; What happens to carbon when it reaches the bottom of the sea? Where are the carbon rich deposits and how did they form? And what part does marine life play in locking that carbon away?

Thanks to the exhaustive work of our partners, the picture emerging is both more complex and more urgent than any of us anticipated. Our dedicated teams have mapped the global seascape, revealing a seabed that is far more variable, historically industrialised, and vulnerable than previously understood. The steady flow of academic publications, and the debate they are generating, speaks to the depth of that work.

Alongside the research sits an equally important duty: to make the knowledge useful not only to the science and policy world but also to our communities. For this reason, I was thrilled that the Convex Seascape Survey Education Programme was accredited this year by the Association of Science Education (ASE) and certified as Excellent.

As the impact of our warming world makes its presence felt in our lives, it becomes increasingly apparent that the health of our seabed is inextricably linked to the health of our climate. Our ambition for the final year is unchanged: to give twenty-first-century ocean policy the direction it needs, grounded in evidence that is open, rigorous and freely available to all.



Stephen Catlin, Founder and Life President
Convex Group Limited

PROJECT OVERVIEW



One of the critical, unsolved scientific questions of our time is how the ocean impacts climate change. The seascape is the ultimate sink for carbon emissions and, in a time of climate emergency, could be a vital ally in efforts to slow runaway planetary warming.

Blue Marine Foundation, the University of Exeter and Convex Insurance Group Limited have partnered on an ambitious, five-year global research programme: The Convex Seascape Survey. The programme gathers a pioneering collaboration of world-leading experts working to quantify and understand blue carbon stored in the coastal ocean floor. It will deliver new, reliable, open-source data which will educate, inspire and enable informed decisions on ocean use, to harness the power of the sea in the fight against climate change.

KEY SCIENTIFIC QUESTIONS

OBJECTIVES

WHAT WE WANT TO FIND OUT

Seascape carbon – where is it, how and when did it get there and where did it come from?

We will identify the origins of carbon on the world's continental shelves and explore how it has accumulated and altered over time, discover where the biggest stores are found, molecularly fingerprint where they came from, and put the size of these carbon stores into context in the global carbon cycle.

The historical impact and spread of human influences on the seabed.

We will map the spread of multiple different human activities disturbing the seabed over two and a half centuries to the present day. By overlaying disturbance maps with our maps of the distribution of carbon in the seascape, and experimental measures of the consequences of bottom disturbance in the field and laboratory, we will identify historic and contemporary patterns of human influence on blue carbon and determine its vulnerability to loss and re-release to the ocean and atmosphere. We will thereby make quantitative links between human pressures on the seascape and their impact on carbon dioxide emissions and identify potential management options to slow climate change.

The role of life and biodiversity on seascape carbon stores and benefits of protection.

We will study and monitor the effects on wildlife and habitats of protection from seabed-disturbing human influences at multiple representative locations worldwide. We will measure how long it takes for carbon capture and burial to recover following protection and quantify the complementary benefits of protected areas to wildlife and people, in terms of ecosystem services, economic benefit and increased human wellbeing.

OUTCOMES

WHAT WE ARE GOING TO ACHIEVE

We will gather, and make publicly accessible, high-quality data on seascape blue carbon. We will bring understanding and transparency to the capacity of the ocean as a carbon sink – which will support the vital value of a protected seascape and create a lasting legacy.

We will educate young people, the general public, governments and decision-makers in the UN climate change process and engage them in the immense value of a vibrant, living ocean.

We will develop a communication and education programme to raise global awareness and press coverage around this extraordinary story.

While this survey is all about the gathering of data, success could result in the proper integration of the ocean into political efforts to slow and stabilise climate change.



Photo: Naomi Hart

WORK PROGRAMMES

WORK PROGRAMME ONE: THE WHERE, WHEN, HOW AND WHAT OF BLUE CARBON IN THE SEASCAPE

Understanding seabed carbon deposition and accumulation through history and into the future.

- Task 1.1:** Data mining and synthesis.
 - Task 1.2:** Oceanographic modelling to predict carbon accumulation.
 - Task 1.3:** Field research.
 - Task 1.4:** Tracing the origins of blue carbon inputs to the seabed carbon sink.
 - Task 1.5:** Placing sediment carbon into context of global carbon.
-

WORK PROGRAMME TWO: HUMAN INFLUENCES ON SEASCAPE CARBON

The recent period of human global influence and domination of the planet has come to be known as the Anthropocene. In programme two we will explore the Anthropocene Seabed, documenting how human influence has grown in the ocean and shaped the seascape.

- Task 2.1:** Historical development and spread of human influences on the seabed.
- Task 2.2:** Contemporary intensity and distribution of bottom disturbance by human activities.
- Task 2.3:** Where are the world's remaining areas of pristine/intact seabed habitat?
- Tasks 2.4** The importance of sediment carbon and
– **2.6:** the impact of seabed disturbance.
- Task 2.4:** Viewing the impact of seascape disturbance from space.
- Task 2.5:** Measuring the impact of trawling on sediment and animals from within the water.
- Task 2.6:** Quantifying the global impact of seascape disturbance on sedimentary and atmospheric carbon.

WORK PROGRAMME THREE: LIFE AND BIODIVERSITY EFFECTS ON BLUE CARBON CAPTURE AND BURIAL, AND BENEFITS OF PROTECTION

Understanding how seascape protection recovers wildlife, rebuilds habitats, restores their blue carbon values and delivers wider economic and wellbeing benefits to human society.

- Task 3.1:** Monitoring and measuring uptake of carbon by seabed habitats and recovery of carbon stocks after protection.
 - Task 3.2:** Laboratory mesocosm experiments.
 - Task 3.3:** Evaluating the co-benefits of seabed protection from human impacts on wildlife and ecosystem services.
 - Task 3.4:** Economic values of protection.
 - Task 3.5:** Measuring, monitoring and minimising the project's carbon and environmental footprint.
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WORK PROGRAMME FOUR: COMMUNICATIONS, EDUCATION AND OUTREACH

Communicating and helping the public visualise this project is key to its success. Work programme four will showcase scientific findings and project progress through media and live education outreach sessions.

- Task 4.1:** Development of communications plan and assets.
- Task 4.2:** Development and creation of digital platform.
- Task 4.3:** Deliver outreach.
- Task 4.4:** Secure exclusive programme media partners.
- Task 4.5:** Conduct press campaigns with announcements.
- Task 4.6:** Promote conclusive results to create a legacy.

TIMELINE OF PROGRESS 2025-2026



April 2025

Presentation at Out of the Blue

European Geosciences Union conference

Artwork shown at See, Here, Now exhibition

New paper published on fish bioturbation

New paper published on
hydrodynamic modelling



May 2025

Session at Working Group on Fish Technology
and Fish Behaviour (WGFTFB)

Steering Committee meeting

June 2025

One Ocean Science Congress

United Nations Ocean Conference

European Space Agency symposium

New paper published
on seabed
protection



July 2025

Plymouth Marine Laboratory
trawling experiment

Science discussion days

Thelma Hulbert Open

August 2025

Recognised by the UN
Ocean Decade Programme

Canada fieldwork

Fieldwork featured on CTV News, Canada



September 2025

Australia fieldwork

Steering Committee meeting

New York Climate Week

New paper published on
wind-driven carbon
dioxide sinks

Antarctica fieldwork
featured on BBC
News



November 2025

COP30

COP themed live lesson

Everyman cinema
stakeholder event

Steering Committee meeting



October 2025

Blue Earth Summit

Media dinner

South Africa fieldwork

Pop-up art exhibition
at Nelson Mandela
University

Scientific
writing
workshop

Advisory
Group
meeting



December 2025

Association for Science
Education accreditation

New paper published on
carbon vulnerability

2026

February 2026

Steering Committee meeting

Convex kids' day

Ocean Sciences Meeting, Glasgow

March 2026

Project communication days

British Science Week live lessons



EXECUTIVE SUMMARY

The Convex Seascape Survey continues to deliver major scientific outputs, strengthen global collaborations, and reach critical fieldwork and modelling milestones. As the project enters its final year, the scale and maturity of the research effort is clearer than ever. Extensive sample processing, innovative methodological development, and a rapidly expanding publication pipeline are positioning the programme for a highly impactful conclusion.

We're thrilled that the project has been formally recognised as an official UN Ocean Decade Action, affirming its global relevance and opening new pathways to engage with the international blue carbon community. We were also recognised by Gideon Henderson, Defra Chief Scientific Advisor 2019-2025, who commented:

"The innovative research conducted by the Convex project, and the deep expertise of its scientists, were extremely useful to me and colleagues at Defra while I was Chief Scientific Advisor. The data and insights that the Convex team provide about blue carbon, and more widely about the ocean's

role in climate change, are critical to good policy making, and to our stewardship of our planet and of the ocean resources we depend on.

There is still much to learn about carbon and biodiversity on the seafloor, but Convex are making huge strides in increasing our knowledge and understanding of this vital environment."

To begin the year, our exciting new findings were presented at major international conferences including the European Geosciences Union General Assembly, the Working Group on Fish Technology and Fish Behaviour, the ESA Living Planet



The data and insights that the Convex team provide about blue carbon, and more widely about the ocean's role in climate change, are critical to good policy making, and to our stewardship of our planet and of the ocean resources we depend on. There is still much to learn about carbon and biodiversity on the seafloor, but Convex are making huge strides in increasing our knowledge and understanding of this vital environment.



Symposium, the One Ocean Science Congress, and the UN Ocean Conference. These engagements showcased emerging results and raised the profile of the Survey while fostering new relationships with other blue carbon projects. Outreach efforts included targeted events for senior journalists and insurance sector stakeholders, and the commissioning of artist in residence, Naomi Hart, to document the energy and tenacity of fieldwork in South Africa.

Our careful investigation of seabed environments has spanned the globe, from mesocosm experiments in Canada's Saguenay Fjord to collaborative sampling in Exmouth Gulf with the University of Western Australia. In October, the team undertook fieldwork in South Africa's Algoa Bay, an ecologically rich yet heavily used marine area, furthering investigations into the effects of protection and disturbance. To round off the impressive depth and reach of our fieldwork portfolio, preparations began for the final expeditions to Bermuda and Alaska in 2026; with logistics, vessels, permits and sampling plans in place.

We've made exciting advances toward understanding seabed processes. Firstly, the team has built and tested a flexible bio-geochemical modelling system for shelf seas, which is now ready for application to real world disturbance scenarios. This means we can see in far greater detail than before, how human activities are affecting carbon stored in these environments. Secondly, the team has produced the first observation based estimates of how dissolved carbon moves across continental shelves. When combined with earlier work on how CO₂ moves between the ocean and the atmosphere this gives us a clearer, evidence based picture of how human actions shape the carbon balance of coastal shelf seas.



Photo: Matt Jarvis

The scale and efficiency of sample processing has been staggering this year, supported by additional technician capacity and refined workflows. Thousands of samples collected during fieldwork have been processed, with wet chemistry and thermogravimetric reactivity analyses complete. Huge numbers of samples from South Africa, Iceland, New Zealand, Jersey, and Western Australia continue to be processed, feeding directly into the growing publication pipeline.

A surge in our scientific output has seen papers published on fish disturbance and mixing of bottom sediments (bioturbation), hydrodynamic controls on carbon accumulation, and the vulnerability of carbon stocks to disturbance. Manuscripts have also been submitted on European port dredging and aggregate extraction, carbon storage across gradients of protection, Patagonian shelf tidal processes, cross-shelf carbon exchange, and marine sediment microbiomes. With 70 submissions planned before project close, the programme is entering an intense period of scientific production.

Our education programme goes from strength to strength, with our high-quality ocean science materials now accredited by the Association for Science Education (ASE). We've reached over 1.4 million learners across 42 countries; including through three live lessons this year which gave students direct access to project scientists to ask questions about their experiences and specialist subject knowledge.

The Survey moves into its final year with strong momentum, rich datasets, and a rapidly expanding body of scientific outputs that will shape a better understanding of seafloor carbon. The report that follows shows our progress across the major programme pillars during the fourth year of project delivery and describes our main objectives moving forward. We hope you enjoy reading about our quest to shed light on how humanity can maximise the ocean's natural capacity to store carbon.

IMPACT

SOCIAL MEDIA

832,254

REACH

1.7 million

VIEWS

33%

FOLLOWER INCREASE

303 ARTICLES

26

NATIONAL
TITLES

TOTAL TV AND PRESS
REACH OF OVER

1 billion

ART

Convex Seascape Survey
artwork shared with

3,000 people in person

and over

200,000 people online and in print media

PRESENTATIONS, PANELS AND POSTER SESSIONS

AUDIENCE
OF OVER
5,000

European Geosciences Union, Austria | Out of the Blue, UK | Working Group on Fishing Technology and Fish Behaviour (WGFTFB), Italy | One Ocean Science Congress, France | UN Ocean Conference, France | European Space Agency Living Planet Symposium, Austria | Fisheries Society of the British Isles Symposium, Ireland | Southern African Marine Science Meeting, South Africa | New Carbon Consortium, UK | British Ecological Society Aquatic Group Meeting, UK | Media Dinner, London | Ocean screening film event, London | COP30, Brazil | UK Blue Carbon Forum, UK | Ocean Sciences Meeting, Scotland

EDUCATION

TOTAL POTENTIAL STUDENT REACH

1.4 million

Awarded Association of Science
Education accreditation

TESTIMONIALS

"We'd like to watch more live lessons. The researchers were brilliant- very knowledgeable. My class found the lesson interesting. They also really liked having their names mentioned. Thanks for a great interactive experience."

Anonymous teacher feedback

3X
LIVE
LESSONS

WATCHED BY

12,849

LEARNERS FROM
11 COUNTRIES

Austria, Canada, India,
Poland, Belgium, Lithuania,
Portugal, Spain, Vietnam,
United Kingdom, United States



GRANT MANAGEMENT AND UNIVERSITY MANAGEMENT

Photo: Adam Porter

Blue Marine Foundation is the grant recipient, with overall responsibility for ensuring the effective and timely delivery of the five-year programme and with ultimate responsibility for managing the budget. Blue Marine is well aligned with Convex Insurance, as an agile, effective and extremely well-regarded conservation organisation that is enviably globally networked. We have a great track record of delivering multi-partner projects of scale and especially of delivering public private partnerships. This is Blue's largest project to date, and it is our role to ensure real-world significance of the project and best reach of the data that we gather.

The University of Exeter, a member of the Russell Group of universities has responsibility for overseeing the science and research function of the project. The Research Management Group, under the guidance of Professor Callum Roberts oversees the delivery of world-leading results and all coordination with the partners of the scientific consortium (P6.)

ADVISORY GROUP REMIT AND MEMBERSHIP

Blue Marine manages an Advisory Group to provide strategic guidance over the lifetime of the Convex Seascape Survey. This includes members authenticating the science, sharing their knowledge and networks, as well as providing advice to identify any gaps, shifts, new research, technologies or collaborations, that the research and project teams may need to consider.



Dr Trisha Atwood,
Associate Professor at
Utah State University and
National Academies of
Sciences Gulf Research.
Early Career Fellow with
expertise in quantifying
marine sediment carbon.



Professor Hilary Kennedy,
Biochemist and person
responsible for getting
coastal ecosystems
recognised for their
importance for storing
carbon and mitigating
climate change.



Professor Bill Austin,
St Andrews University,
Scotland, current chair of
the Scottish Carbon Forum
and lead of the UN's Global
Ocean Decade Programme
on Blue Carbon (GOBC).



Dr Ruth Parker, Centre for
Environment, Fisheries and
Aquaculture Science. Shelf
sea biogeochemist and UK
policy expert.



Steve Crooks, Silvestrum
Associates, experienced
wetland scientist in the
response of coastal
wetland systems to human
impacts and climate
change and the translation
of this into effective policy.



Victor Brun, Science
Lead at Ocean & Climate
Platform. Works at the
intersection of science
and policy to promote the
sustainability of the ocean.



**Professor Michael
Depledge** (Chair) – expert
in oceans and human
health and government
advisor on chemical
pollution.



Dr Torsten Thiele, is an
expert in sustainable blue
finance and founder of
Global Ocean Trust.

WORK PACKAGE ONE:

Seascape carbon – where is it, how and when did it get there and where did it come from?

Workstream Objective: We will identify the origins of carbon on the world's continental shelves and explore how it has accumulated and altered over time, discover where the biggest stores are found and put their size into context within the global carbon cycle.

Workstream Lead:
University of Exeter

Workstream timeline:
July 2022 – June 2027

Key achievements over the year

- In collaboration with the University of Western Australia and Professor Jessica Meeuwig, we carried out a successful fieldwork campaign in the Exmouth Gulf. Researchers from work package one are investigating whether the sources of carbon in surface sediments differ in relation to protection, habitat or sediment type using environmental DNA and elemental analyses.
- A new research paper was published in the journal Marine Geology: 'Vulnerability of blue carbon stocks to disturbance in sediments with low burial efficiency'. Using the North Sea Fladen Ground as a case study, the team were able to assess factors influencing the long-term accumulation of carbon rich muds and their present exposure to human disturbances. Results show very low modern organic carbon accumulation rates, low organic matter reactivity, and that modern trawl events can potentially disturb sediments and carbon accumulated over at least the last ~2,300 years.
- The Patagonian paleotidal and relative sea-level change manuscript has been successfully revised and resubmitted to the Journal of Geophysical Research: Oceans. The broader Patagonian shelf portfolio of work is also being finalised, including the submission of a manuscript titled: 'Harmonising and mapping Patagonian Shelf seabed sediment data' to the journal of Earth System Science Data.
- The technical capability of the team has been expanded with appointment of an experienced postdoctoral researcher, Dr Mark Chatting, who will build understanding of the impact of non-fishing human disturbance on seabed carbon. Bringing expertise in big data analyses, Mark will integrate machine learning-driven sediment prediction.
- Woods Hole Oceanographic Institute in the USA provided us with Alaskan sediment grab samples, which are now being processed for environmental DNA analysis and are informing the design of our 2026 Alaska sampling campaign.
- We developed the first observation-based estimates of cross-continental shelf dissolved inorganic carbon (DIC) exchange. This approach combines satellite, in situ, and reanalysis observations to quantify carbon transport between shelf and open-ocean water. The manuscript: 'Decadal lateral exchange of inorganic carbon for two shelf seas' has been submitted to the journal Global Biogeochemical Cycles.

Key challenges

Challenge	Mitigation
Brazilian fieldwork fell through because the research vessel needed an extended period in dry dock for repair work.	Although a targeted field campaign was not possible for this work package, researchers took advantage of existing cores from the Fladen Ground and Iceland to address key questions around carbon accumulation. In parallel, we undertook a complete data mining and modelling exercise for the Patagonian shelf resulting in four manuscripts, submitted or in progress.
Some of our Western Australia cores have been impacted by problems with cold chain transport.	The team were able to amend the subsampling strategy to work around the affected samples.
Progress was initially slow with sub-sampling and analysing all the sediment cores collected.	A new core extruding site was established at the Streatham campus, and the stable isotope work was moved to an external lab to increase efficiency. Two temporary technicians have been appointed to increase capacity around bottlenecks.



Photos: Ben Harris

LOOKING AHEAD TO YEAR FIVE

- WP1.3** The portfolio of Patagonian shelf papers will be submitted to journals. The group have also started writing an overarching synthesis paper, drawing together insights from their hydrodynamic modelling and paleo-reconstruction work.
- WP1.3** The comparison of methods to assess carbon reactivity i.e. chemical reactivity vs thermogravimetric analysis, will be finalised and results submitted.
- WP1.3** Via a collaboration with the Quest team, machine learning will be integrated into the sediment carbon modelling work.
- WP1.4** WP1.4 Researchers will continue to process samples from New Zealand and Australia for eDNA extraction, uncovering the biological inputs to seabed carbon across these regions.
- WP1.4** Planning continues for a fieldwork campaign collecting sediment cores off the Alaskan coast scheduled for August 2026.
- WP1.5** Work will continue to refine carbon budget estimates for multiple shelf sea systems. The next phase of modelling will integrate disturbance impacts and observed fluxes, and will feed into a second manuscript to further describe the transport of carbon.

WORK PACKAGE TWO:

The historical impact and spread of human influences on the seabed

Workstream Objective: We will uncover historic and contemporary patterns of human influence on shelf sea carbon and determine its vulnerability to re-release into the atmosphere as a consequence of disturbance by bottom-towed fishing.

Workstream Lead:
University of Exeter

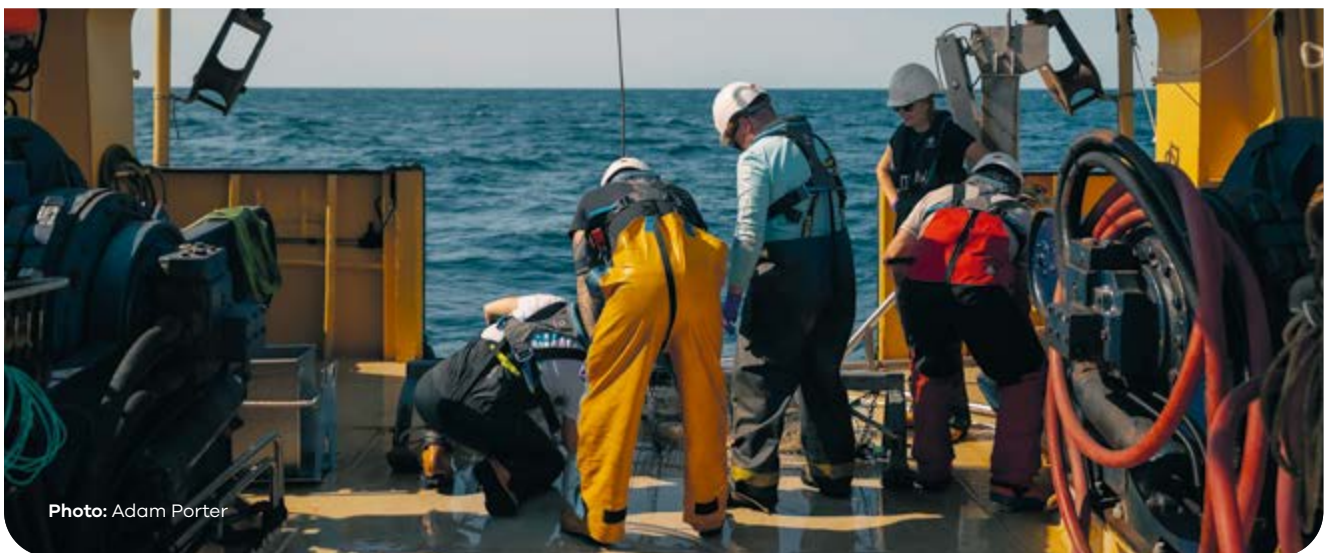
Workstream timeline:
April 2022 – June 2027

Key achievements for the year

- A new research paper has been accepted for publication: 'Estimating historic seabed carbon disturbance by port dredging and aggregate extraction in NW Europe'. The paper highlights the spread of the port dredging industry in the UK and shows that this led to a 30-fold increase in sedimentary organic carbon disturbance between the end of the 19th and the start of the 21st century. The paper also shows that sediment carbon disturbance by these industries is three orders of magnitude lower than by the fishing industry.
- Another major paper ready for submission, draws on extensive archival records to reconstruct the spatial spread of bottom trawling from the late 14th to the early 20th century, documenting the transition from small inshore operations to large, mechanised fleets. It reveals that between 1825 and 1925 trawlers had already swept approximately 14 million km² of seabed, resuspending 31.7 Gt and mixing 531 Gt of sediment.
- Our team created a three-year topic group within the UN Food and Agriculture Organisation to share and standardise global fishing gear parameter data. While other colleagues have been building a specialist network of researchers with information on historical trawling.
- The planned trawling experiment was completed by partners Plymouth Marine Laboratory and analysis of sediment and water samples has generated initial data.
- A new modular continental shelf-sea modelling framework that integrates efficient water-column physics with sediment transport processes and dedicated biogeochemical modules has been developed. The team successfully completed the targeted test and proof of concept simulations, focusing on integrating and adapting biogeochemical components.
- Drone protocols for detecting trawl-suspended sediments in the ocean water column have been finalised and successfully tested, enabling scaled up data collection and improved calibration with satellite products.
- Key datasets have been sourced for mapping and interpreting non-fishing disturbance of sediments and organic carbon stocks associated with activities in the oil, gas and offshore wind industries.

Key challenges

Challenge	Mitigation
We've experienced continued delays to the trawling experiment analysis because of staff sickness and extended leave at Plymouth Marine Laboratory.	We've been working closely with partners to re-distribute workloads and move the analysis and manuscript writing forward.
Issues were identified in the biogeochemical computer model affecting the transport of biogeochemical tracers across the sediment–water interface and within the water column.	The issues have been resolved while developing a more robust version of the model, however, it did cause some delay.
There is still a lack of historical trawl information for some global regions.	As the historical trawl network of collaborators comes together, work still underway to seek new collaborators from underrepresented areas.



LOOKING AHEAD TO YEAR FIVE

- 2.1** We plan to submit the research paper: 'The industrialisation of the seabed: Century-scale impacts of bottom trawling on shelf sea sediments' and finalise the pre-1950 data from international collaborators.
- 2.2** A manuscript will be submitted examining the global impact of oil and gas and offshore wind infrastructure on disturbance to continental shelf sedimentary organic carbon stocks.
- 2.4** We will collect field data for a proof-of-concept manuscript to validate the drone protocol for mapping trawling-induced suspended sediment plumes using natural proxies for trawling (e.g. river plumes and estuaries during tidal events).
- 2.5** The Plymouth Marine Laboratory team will continue to analyse the trawl experiment data and will complete the associated manuscript.
- 2.6** Teams will finalise and implement the remaining biogeochemical processes in the computer model, complete the compilation of datasets, and carry out validation across different locations in the Northwestern European Shelf. They will then carry out fully coupled disturbance-scenario simulations and assess system response timescales and recovery dynamics.

WORK PACKAGE THREE:

The role of life and biodiversity on seascape carbon stores and benefits of ocean protection

Workstream Objective: We will measure how marine life influences carbon burial and storage, how long it takes for carbon uptake to recover when the seabed is protected and quantify the complementary benefits to wildlife and people.

Workstream Lead:
University of Exeter

Workstream timeline:
April 2022 – June 2027

Key achievements for the year

- Two new research papers have been submitted: 'Recalibrating shifted ecological baselines for marine soft sediment environments' which calls for a paradigm shift in how we perceive soft sediment habitats, and 'Marine life and seabed carbon across a gradient of protection in Scotland' which demonstrates how biodiversity can bounce back after protection from trawling.
- Academics looking at carbon dynamics and biodiversity across a gradient of disturbance successfully completed a sampling campaign throughout Algoa Bay, South Africa. Working with colleagues from Nelson Mandela University, the team collected 16 cores and 84 grab samples and are now processing and analysing these in labs in South Africa, Australia and the UK.
- A new research paper was published: 'A functional assessment of fish as bioturbators and their vulnerability to local extinction'. The paper shows that 185 fish species across 62 families are bioturbators on the UK shelf.
- Academics looking at invertebrate bioturbation successfully completed a fieldwork campaign in the Saguenay Fjord, Canada. They collected grab samples and carried out mesocosm experiments. Data analyses and manuscript development are ongoing.
- A major trait based seabed ecosystem functioning manuscript has been submitted: 'Ecosystem functions emerge from spatially constrained trait combinations'. Several additional mesocosm related manuscripts are in the pipeline, including papers on benthic species richness, nutrient-carbon flux responses, and the Saguenay mesocosm experiment.
- Planning is in the final stages for a Bermuda sampling campaign in May 2026. Vessel and sampling logistics are now in place, permits have been granted, and risk assessments and diving protocols are complete.
- A detailed review of all of the project's carbon related data collected to date has established a clear picture of existing records, gaps and areas requiring standardisation.

Key challenges

Challenge	Mitigation
It was proving difficult to secure vessel time for ROV deployment in Algoa Bay to collect the remaining South Africa data. This was due to small weather windows and the availability of crew.	A new vessel and crew have been identified, and sampling will begin in April 2026.
It has been a challenge to collate a complete dataset on the carbon emissions of the project.	We've collated data stored in different locations and across different organisations to refine our estimates.
Identifying suitable gradients of disturbance in field sites while ensuring consistency of other factors such as seabed sediment grain size and depth, remains a challenge.	Moving to locations further offshore has remedied some of these issues and underwater cable protection zones have provided good proxies where strict marine protection didn't exist for conservation purposes.



Photo: Naomi Hart

LOOKING AHEAD TO YEAR FIVE

- 3.1** Algoa Bay underwater video surveys will continue into year five and will ideally be completed by early May 2026, depending on weather conditions. Planning for Bermuda fieldwork will continue, including ROV surveys, core sampling and Baited Remote Underwater Video surveys of fish populations.

3.2 The writing up of the three seabed bioturbation papers will continue with papers tackled in turn as data are returned from analytical labs.

3.3 As we move into the next year, we begin analysis of the carbon spend dataset. This will start with a detailed review of the carbon emissions generated through travel on the project.

WORK PACKAGE FOUR:

Communications, education and outreach

Workstream Objective: Utilising Convex's PR resources and Blue Marine Foundation's media, education and policy expertise, we will ensure global press, education and outreach opportunities are maximised around this exciting and inspiring project.

Workstream Lead: Blue Marine Foundation

Workstream timeline:
April 2022 – June 2027

Key achievements for the year

- Artist in residence Naomi Hart connected over 200,000 people with the Convex Seascape Survey through exhibitions in the Lake District and at the Thelma Hubert Open in South West England, and through online and press features. She also held a pop-up exhibition at Nelson Mandela University featuring field sketches created during our Algoa Bay research in South Africa.
- Our social media channels have flourished, with joint posts alongside our partner institutions and a collaboration with ocean influencer Madeline St Clair helping to boost follower numbers by 83%. High-profile ocean research institutions and museums have commented that they consider our social media channels to be excellent examples of great science communications and public engagement.
- We shared our progress with 5,000 people through presentations, panels and posters, at events such as the UN Ocean Conference and One Ocean Science Congress in France, the UK Blue Carbon Forum, the European Space Agency Living Planet Symposium and AGU's Ocean Sciences Meeting in Glasgow.
- An amazing 303 press articles saw our latest findings and exciting fieldwork expeditions reach over 1bn people, including coverage across multiple BBC platforms and in top-tier titles such as Forbes, The Independent, The Economist, The Guardian, and CTV News in Canada.
- Our total education reach has now exceeded 1.4m students. Our ever-popular live lessons were joined by nearly 13,000 learners this year, hosted by scientists from the University of Exeter and Nelson Mandela university in South Africa. We also delivered a new key stage one lesson pack. In Autumn 2025, our suite of teacher resources, activities and live lessons was accredited by the Association for Science Education, identifying them as high-quality, curriculum relevant and accurate resources for teachers.



Photo: Jade Rolph

EXPLORING SCIENCE THROUGH ART

In October 2025, artist Naomi Hart joined our fieldwork expedition to perform the first in-depth assessment of carbon storage in Algoa Bay, South Africa. She studied the team and the equipment they used, making dynamic field sketches.



Photos: Gail Fordham

Naomi says:

"I found a perch on a corner of a table, along with a spare box-lid which served perfectly as an easel, and sketched and painted the team performing all the research tasks: from 'weightlifting', charging and emptying the vibro-corer, to launching and recovering the mud-grab, and painstaking and meticulous forceps work with the sieves.

The fun of live-action sketching is that the subjects very rarely stand still. So, my skill comes in trying to capture them despite this and at the same time as being on a moving vessel, with salt spray coating me and the paper and wind trying to steal my work and return it to the ocean.

After a pop-up exhibition of my field sketches at Nelson Mandela University, I'll return to the UK and create three paintings, each representing one of the pieces of equipment I observed onboard. I hope to capture the 'feel' of the research, as well as the people involved, the team spirit and the hard work. I want to show the tiring, repetitive, back-breaking tasks, contrasting with the precision of careful measurements, some of



the incredible sea life found on the seabed, and the care and humanity shown when working with living creatures.

Most of my art uses project-specific, relevant media and materials. I've previously used samples of discarded mud from the research sites and heated them to different temperatures before grinding them with a pestle and mortar. This results in a colour palette of ochres, reds and browns.

I feel there's an appetite for real, tangible art and for learning about the messy, hard, nitty-gritty of fieldwork. I hope that my work plays some small part in increasing public trust in science and in raising the profile of the ocean as a nature based solution to climate change."

Key challenges

Challenge	Mitigation
The original budget did not include funds for attendance or sponsorship at global events such as COP or World Ocean Summit, nor did it allow for art-science collaborations.	This year we reviewed our budget and were able to direct more resource toward securing attendance at major conferences.
Securing CPD delivery opportunities with schools has been challenging. Despite expressing strong interest, schools were slow to commit to specific dates.	The CPD delivery plan for year four is in progress, but some of the dates will now fall into year five of the project.



LOOKING AHEAD TO YEAR FIVE

- 4.1** We will continue to work with artist Naomi Hart to build the South Africa fieldwork sketches into a larger piece for display at London Climate Action week and beyond. We'll also maximise visual assets collection during our final fieldwork expeditions in Bermuda and Alaska; content which will feed into upcoming project films.
- 4.4 & 4.5** We continue to work with our PR agency to maximise press coverage for our final fieldwork expeditions in Bermuda and Alaska. The lion's share of results will emerge in year five and our PR efforts will focus on seeking informed top-tier coverage for our most exiting findings.
- 4.3** Work will continue towards our goal of reaching five million school students. We look forward to broadcasting more live lessons in year five, providing continued professional development opportunities for teachers, and ensuring the legacy of our education programme following the project's close.
- 4.6** We plan to expand our presence at academic, ocean and conservation conferences during the final year of the project, with a view to sharing our final results and engaging ocean management decision makers. We have already secured opportunities at London Climate Action Week and Blue Earth Summit and are in discussion around COP31.

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As night settled, the research vessel turned toward shore. Gulls wheeled overhead, calling above the thrum of engines. Buckets brimmed with sediment, and the scientists' arms and backs ached. Fieldwork stretched long into the evening.

Beneath the waves, Algoa Bay's living mud continued its ancient work — sifting, burrowing, storing — a hidden system whose full role in carbon storage and climate resilience is only beginning to be understood.

— SHEREE BEGA,
THE MAIL AND GUARDIAN, DESCRIBING OCTOBER 2025 CONVEX
SEASCAPSE SURVEY FIELDWORK IN SOUTH AFRICA.

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2026/27 OBJECTIVES

Final fieldwork and data analyses across workstreams

Publication of the majority of our findings, with final project papers numbering 70

Presentation of the project and its conclusions on the global stage

Sharing our findings with policy makers to help inform ocean management

Continued education and outreach activities to raise the profile of the ocean as a natural climate mitigator



PROGRESS TIMELINE



May 2026

Bermuda fieldwork

Steering Committee meeting

2026

April 2026

Presentation at Out of the Blue

Advisory Group meeting

June 2026

London Climate Action Week

July 2026

Expert remineralisation workshop



August 2026

Alaska fieldwork

September 2026

Science discussion days

Steering Committee meeting

New York Climate Week

November 2026

COP31

COP themed live lesson

Steering Committee meeting

October 2026

Blue Earth Summit

Media dinner

Advisory Group meeting

Early 2027

British Science Week Live Lessons

Steering Committee meeting

Convex kids' day

World Ocean Summit

UN Ocean Decade Conference

End of Survey celebration



APPENDIX



WORK PACKAGE ONE

Task	Leads	Milestone				
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Task 1.1: Data mining and synthesis - mapping of seabed topography, carbon accommodation space and prior sampling effort	- James Scourse - Sophie Ward - Sarah Bradley					
Task 1.2: Oceanographic modelling to predict carbon accumulation - Hydrographic model development and application	- James Scourse - Sophie Ward					
Task 1.2: Oceanographic modelling to predict carbon accumulation - verification and refinement of hydrographic models of carbon burial based on field sample analyses	- James Scourse - Sophie Ward					
Task 1.2: Oceanographic modelling to predict carbon accumulation - projection of changes in carbon burial under future sea level rise	- James Scourse - Sophie Ward					
Task 1.3: Fieldwork - Identification of field sample sites and international project partners	- James Scourse - Sophie Ward - Sarah Bradley - Zoe Roseby - Torsa Sengupta					
Task 1.3: Fieldwork – Collection of fresh core samples to verify insights from models and data mining, and resampling of previously collected cores kept in collections worldwide	- James Scourse - Sophie Ward - Sarah Bradley - Zoe Roseby - Torsa Sengupta					
Task 1.4: Tracing the origins of blue carbon inputs to the seabed carbon sink - Analyses of samples for content and origin of buried carbon and testing.	- Dan Charman - Rod Wilson - Tom Roland - Jack Middelburg - Carlos Duarte					
Task 1.5: Placing sediment carbon into context of global carbon - data mining to identify three shelf-seas to develop and apply an existing carbon budget model to	Jamie Shutler					
Task 1.5: Placing sediment carbon into context of global carbon - development of carbon budget models for the three identified shelf-seas	Jamie Shutler					

● University of Sheffield
 ● University of Utrecht
 ● University of Exeter

● KAUST (King Abdullah University of Science and Technology)
 ● Bangor University

● University of Southampton/NOC
 ● Plymouth Marine Laboratory

On track Slow or delayed Extended Completed

Milestone/ Goal	Activities completed	Milestone changes
Task 1.1: Data mining and synthesis-mapping of seabed topography, carbon accommodation space and prior sampling effort	Completed on schedule in September 2023.	
Task 1.2: Oceanographic modelling to predict carbon accumulation. Hydrographic model development and application	This year saw several key modelling milestones. Dr Sophie Ward and co-authors revised and resubmitted the Patagonian palaeotidal and relative sea level change manuscript. Work also continued on the broader Patagonian shelf portfolio, including submission of a manuscript titled 'Harmonising and mapping Patagonian Shelf seabed sediment data' by Dr Zoe Roseby to Earth System Science Data. This paper compiles and harmonises sediment data for the shelf, which underpins the next stage of predictive modelling. Academics presented our research at AGU Ocean Sciences Meeting, where the team also engaged with community workshops on sedimentary blue carbon.	
Task 1.3: Fieldwork • Identification of field sample sites and international project partners • Collection of fresh core samples to verify insights from models and data mining, and resampling of previously collected cores kept in collections worldwide	The extensive wet chemistry and thermogravimetric reactivity analyses of surface sediment samples, aimed at assessing vulnerability of sedimentary carbon stocks to remineralisation, were finalised in collaboration with Prof Bill Austin's lab. The initial results were presented at the AGU Ocean Sciences Meeting by Dr Torsa Sengupta and are now being incorporated into a developing manuscript. Samples from the Celtic Deep were also provided by the Quest project team and University College Dublin to expand this research to compare different depositional settings. Academics also advanced work on high latitude carbon accumulation studies using North Icelandic Shelf piston and multicore samples. They have progressed total organic carbon, dry bulk density measurements and age depth modelling.	

Milestone/ Goal	Activities completed	Milestone changes
Task 1.4: Tracing the origins of blue carbon inputs to the seabed carbon sink Analyses of samples for content and origin of buried carbon and testing	The Alaska grab samples collected by the Woods Hole Oceanographic Institute have now been processed. The team has begun eDNA extractions and analytical work, generating preliminary results that are informing the sampling design for the upcoming Alaska field campaign in August 2026. A manuscript has been submitted titled 'Soils of the Sea: The missing microbiome in marine carbon'. It argues that we should view marine sediments through the same lens which we view soil on land and consider how policy frameworks could protect the health of these carbon-rich marine systems. Academics in this team have also continued methodological development associated with hydrocarbon and organic matter origin tracing, with further refinement of analytical workflows progressing alongside replicate TOC, grain-size, microbial biomass, and eDNA analyses that's already in progress.	
Task 1.5: Placing sediment carbon into context of global carbon. Data mining to identify three shelf seas to develop and apply an existing carbon budget model to	This year saw strong progress in refining observation based carbon budget estimates for multiple shelf sea systems. The manuscript 'Decadal lateral exchange of inorganic carbon for two shelf seas', has been submitted to the journal Global Biogeochemical Cycles. This work forms one of the key analytical foundations for task 1.5 providing improved constraints on the magnitude and variability of carbon transfer across shelf break boundaries.	

WORK PACKAGE TWO

Task	Leads	Milestone				
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Task 2.1: Historical development and spread of human influences on the seabed - scan of archives and other data sources for evidence of the spread of human influence on continental shelves	● Ruth Thurstan ● Callum Roberts ● Julie Hawkins					
Task 2.1: Historical development and spread of human influences on the seabed - collation of eye-witness evidence of the unimpacted state of the seabed	● Ruth Thurstan ● Callum Roberts ● Julie Hawkins					
Task 2.1: Historical development and spread of human influences on the seabed - evidence synthesis and mapping	● Ruth Thurstan ● Callum Roberts ● Julie Hawkins					
Task 2.2: Contemporary intensity and distribution of bottom disturbance by human activities - mapping and analyses of satellite data to determine patterns and intensity of fishing gear use and other forms of disturbance	● Kristian Metcalfe					
Task 2.2: Contemporary intensity and distribution of bottom disturbance by human activities - analyses and mapping of overlap in hotspots of vulnerable buried carbon (from Tasks 1.1-1.3) and human disturbance of the seabed	● Kristian Metcalfe					
Task 2.3: Where are the world's remaining areas of pristine/intact seabed habitat? - design and application of a citizen science programme (Comms/ Outreach)	● Ruth Thurstan ● Callum Roberts ● Julie Hawkins ○ Blue Marine					
Task 2.3: Where are the world's remaining areas of pristine/intact seabed habitat? - identification and verification of seabed habitats in potentially unimpacted sites - with Blue Marine Outreach	● Ruth Thurstan ● Callum Roberts ● Julie Hawkins					
Task 2.4: Viewing the impact of seascape disturbance from space – collation, analysis, and mapping of satellite data on sediment disturbing human activities	● Jamie Shutler					

Task	Leads	Milestone				
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Task 2.5: Measuring the impact of trawling on sediment and animals from within the water – deployment of a field experiment off Plymouth, UK, to determine the effects of trawling on sediment fauna and biogeochemistry	● Jamie Shutler ● Sarah Breimann ● Vas Kitidis ● Karen Tait ● Tim Smyth					
Task 2.6: Quantifying the global impact of seascape disturbance on sedimentary and atmospheric carbon - Earth systems models developed to investigate carbon budget for continental shelves and explore role in climate change mitigation	● Tim Lenton ● Paul Halloran ● Robert Marsh ● Jack Middelburg					

- University of Sheffield
- University of Utrecht
- University of Exeter

- KAUST (King Abdullah University of Science and Technology)
- Bangor University

- University of Southampton/NOC
- Plymouth Marine Laboratory
- Blue Marine



Milestone/ Goal	Activities completed	Milestone changes
Task 2.1: Historical development and spread of human influences on the seabed. • Scan of archives and other data sources for evidence of the spread of human influence on continental shelves • collation of eyewitness evidence of the unimpacted state of the seabed • seabed-evidence synthesis and mapping	Dr Ciaran McLaverty's manuscript 'The industrialisation of the seabed: Century-scale impacts of bottom trawling on shelf sea sediments' is ready for submission. The study draws on extensive archival records to reconstruct the spatial spread of bottom trawling from the late 14th to the early 20th century. Dr Ciaran McLaverty also presented ongoing work on post-1950 bottom trawling reconstruction at February's Ocean Sciences Meeting. In relation to this, Ellie Maynard has begun compiling information collected since the start of the project on historical bottom trawling gears, including their width and dimensions. This will form a key component of the next phase of the post-1950 study. Ellie Maynard's manuscript, 'Estimating historic seabed carbon disturbance by port dredging and aggregate extraction in NW Europe,' has received its first round of peer review comments and is being revised for resubmission.	
Task 2.2: Contemporary intensity and distribution of bottom disturbance by human activities • mapping and analyses of satellite data to determine patterns and intensity of fishing gear use and other forms of disturbance • analyses and mapping of overlap in hotspots of vulnerable buried carbon (from Tasks 1.3) and human disturbance of the seabed	Dr Mark Chatting is leading the workstream which focuses on mapping and interpreting non-fishing disturbance of sediments and organic carbon stocks associated with activities in the oil, gas and offshore wind industries. Key datasets required to carry out this assessment have been sourced, including information on the location, geometry, and deployment timeline of subsea structures related to these industries. In parallel, academics in task 2.2 continue to liaise with colleagues working under complementary tasks, including satellite and drone-based observation (task 2.4) and historical disturbance reconstruction (task 2.1). This ensures consistency across spatial datasets and improving alignment between past and present disturbance mapping.	
Task 2.3: Where are the world's remaining areas of pristine/intact seabed habitat? • design and application of a citizen science programme (Comms/ Outreach) • identification and verification of seabed habitats in potentially unimpacted sites	This part of the project is complete and there has been no further work in this in the past year.	

Milestone/ Goal	Activities completed	Milestone changes
Task 2.4: Viewing the impact of seascape disturbance from space – collation, analysis and mapping of satellite data on sediment disturbing human activities	Collaborative discussions between work packages have helped clarify how drone based surface observations can complement other data sources, particularly in regions where satellite visibility is variable or where vessel specific behaviours need fine scale classification. Dr Jenny Watts has finalised the drone data collection protocol and run the first deployments for the purposes of calibration and testing. Following these successful runs, the team will move to full data collection.	
Task 2.5: Measuring the impact of trawling on sediment and animals from within the water • deployment of a field experiment off Plymouth, UK, to determine the effects of trawling on sediment fauna and biogeochemistry • design of a simplified modular sampling programme to deploy internationally to measure effects of seabed disturbance on buried carbon • identification of international research sites and partners deployment and analyses of international field experiments	The team at Plymouth Marine Laboratory have continued compiling datasets from the three field expeditions carried out in summer 2025. The DIC/TA and macrofauna datasets are complete, and other samples are going through a prioritisation exercise to inform analysis time over the next few months. Alongside this, a draft manuscript is being prepared.	
Task 2.6: Quantifying the global impact of seascape disturbance on sedimentary and atmospheric carbon. Earth systems models developed to investigate carbon budget for continental shelves and explore role in climate change mitigation.	This year saw progress in developing and applying modelling frameworks to assess how seabed disturbance influences sedimentary carbon cycling and potential atmospheric CO₂ feedback. A key milestone was the continued advancement and internal testing of the new modular shelf sea modelling framework delivered by Dr Beatriz Arellano Nava. Elements of this work were presented at the Ocean Sciences Meeting, focusing on the water-column response. The focus will now move to fully configured disturbance scenario simulations that will quantify how different trawling intensities and disturbance regimes alter sediment resuspension, remineralisation rates and air sea carbon exchange.	

WORK PACKAGE THREE

Task	Leads	Milestone				
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Task 3.1: Monitoring and measuring uptake of carbon by seabed habitats and recovery of carbon stocks after protection - Identification of protected and control sites for field study, and of international research partners for collaboration (sites shared with Task 3.3)	- Callum Roberts - Ceri Lewis - Julie Hawkins - Carlos Duarte					
Task 3.1: Monitoring and measuring uptake of carbon by seabed habitats and recovery of carbon stocks after protection - Design of modular sampling programme to evaluate the effects of protection on biota (sampling design shared with Task 3.3)	- Callum Roberts - Ceri Lewis - Julie Hawkins - Carlos Duarte					
Task 3.1: Monitoring and measuring uptake of carbon by seabed habitats and recovery of carbon stocks after protection - Field research (sites shared with Task 3.3)	- Callum Roberts - Ceri Lewis - Julie Hawkins - Carlos Duarte					
Task 3.2: Laboratory mesocosm experiments - Laboratory mesocosm measurements of the effects of seabed biota on carbon capture and burial	- Ceri Lewis - Martin Solan - Jasmin Godbold - Technician					
Task 3.2: Laboratory mesocosm experiments - Laboratory mesocosm measurements of the effects of global change processes on seabed carbon capture and burial	- Ceri Lewis - Martin Solan - Jasmin Godbold - Technician					
Task 3.3: Evaluating the co-benefits of seabed protection from human impacts on wildlife and ecosystem services - evaluating the co-benefits of seabed protection from human impacts on wildlife and ecosystem services	- Ceri Lewis - Julie Hawkins - Carlos Duarte					
Task 3.4: Economic values of protection – economic cost-benefit analyses of change in ecosystem services under protected vs unprotected vs partially protected management regimes	Callum Roberts					
Task 3.5: Measuring, monitoring, and minimising the project's carbon and environmental footprint	Jamie Shutler					

University of Sheffield

University of Utrecht

University of Exeter

KAUST (King Abdullah University of Science and Technology)

Bangor University

University of Southampton/NOC

Plymouth Marine Laboratory

Blue Marine

On track

Slow or delayed

Extended

Completed

Milestone/ Goal	Activities completed
Task 3.1: Identification of protected and control sites for field study, and of international research partners for collaboration (sites shared with Task 3.3) Design of modular sampling programme to evaluate the effects of protection on biota (sampling design shared with Task 3.3)	With the Algoa Bay field campaign complete, the focus this quarter shifted to laboratory processing and integration of datasets. A major part of this work involved the extrusion and analysis of Algoa Bay sediment cores. In support of this, Dr Frederick Mokumo and Sabrina Sykes travelled to the UK to spend time in the University of Exeter laboratories. Their visit facilitated alignment of analytical methods between institutions, and the opportunity to develop consistent workflows. Planning for the Bermuda field campaign continues. Vessel and sampling logistics are now in place and permits have been granted, and risk assessments and diving protocols are also complete. We are working hard with collaborators on the island to address the challenges that the unique location presents in terms of sourcing and transportation of equipment and consumables.
Task 3.2: Laboratory mesocosm experiments - Laboratory mesocosm measurements of the effects of seabed biota on carbon capture and burial Task 3.2: Laboratory mesocosm experiments - Laboratory mesocosm measurements of the effects of global change processes on seabed carbon capture and burial	The processing and stable isotope analysis for the 2024 mesocosm experiment is fully complete, and the team have transferred their efforts to the processing and analysis of the Canadian samples. These have been ground and prepared in the carbon lab and sent to an external lab for analysis. Manuscript development on the mesocosm workstream has advanced, including submission of the joint University of Exeter/Southampton paper 'Ecosystem functions emerge from spatially constrained trait combinations' to Nature Comms Earth and Environment. Several additional mesocosm related manuscripts are also in development.
Task 3.5: Measuring, monitoring and minimising the project's carbon and environmental footprint	Dr Daniel Wilson completed a detailed review of all carbon related data collected to date across the Convex Seascapes Survey, establishing a clear picture of existing records, gaps and areas requiring standardisation. Building on the plan he presented earlier in the year, he has now begun systematically collating all project activity data into a unified dataset suitable for analysis.

- Blue Marine
 ● Unseen Studio Team
 ● Jamie Buchanon

On track

Completed

WORK PACKAGE FOUR

Task	Leads	Milestone				
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Task 4.1: Development and design of communications plan, plus creation of media assets such as video, infographics, social media assets and creation of media pack.	○ Jo Coumbe ○ Jade Rolph ○ Gail Fordham ○ Tim Bryant					
Task 4.1: Secure and onboard PR agency	○ Jo Coumbe ○ Jade Rolph ○ Gail Fordham ○ Tim Bryant					
Task 4.1: Deliver a comprehensive social media campaign	○ Jo Coumbe ○ Jade Rolph ○ Gail Fordham ○ Tim Bryant					
Task 4.2: Development and creation of digital platform	○ Jo Coumbe ○ Gail Fordham ● Unseen Studio					
Task 4.2: Website Phase I	○ Jo Coumbe ○ Gail Fordham ● Unseen Studio					
Task 4.2: Website Phase II	○ Jo Coumbe ○ Jade Rolph ○ Gail Fordham ● Unseen Studio					
Task 4.2: Development of digital assets (AR WalkWithWhales and seascape carbon animation)	○ Jo Coumbe ○ Jade Rolph ○ Gail Fordham ● Unseen Studio					
Task 4.3: Secure education partner, build educational materials and develop yearly outreach programme strategy	○ Jade Rolph ○ Gail Fordham ○ Victoria Turner ● Jamie Buchanon					
Task 4.4: Secure exclusive programme media partners using Blue Marine's extensive media network, as well as enlisting celebrity ambassadors.	○ Jo Coumbe ○ Charles Clover ○ Jade Rolph ○ Gail Fordham					
Task 4.5: Conduct press campaigns with announcements matched to key Convex dates and global ocean events, minimum 1 x press releases per quarter	○ Jo Coumbe ○ Charles Clover ○ Jade Rolph ○ Gail Fordham					
Task 4.6: Promote conclusive results to create a legacy	○ Jo Coumbe ○ Jade Rolph ○ Gail Fordham					

Milestone/ Goal	Activities completed	Milestone changes
4.1: Design and development of communications plan	We continue to work closely with the project PR agency to ensure all press opportunities are harnessed. Communications days held near Bristol facilitated the planning of a publication timeline and press activity over the remainder of the project.	
4.1: Creation of media assets (incl. social media)	We released an excellent new project film exploring what environmental DNA is and how it can be used to trace carbon on the seafloor. Our artist in residence, Naomi Hart, shared our passion for the ocean with audiences in the UK and South Africa.	
4.2: Creation of digital platform	This work was completed in year three and no further activity took place, beyond updating website content and routine maintenance.	
4.3: Secure education partner, build educational materials and develop outreach programme strategy	The total potential reach of our education programme is now 1.4m students. Three live lessons attracted an audience of nearly 13,000 students. Lessons spanned key stages two and three and focussed on the ocean climate nexus, life as a marine scientist and benthic invertebrates. Our key stage one teacher resource pack was launched. Our teacher resources, activities and live lessons were accredited by the Association for Science Education (ASE). We also attended the ASE annual conference where we presented our resources to a live audience.	Following the success of CPD delivery in year three, we planned a similar programme for year four. Teachers showed lots of enthusiasm, but were slow to confirm dates and opportunities, which has resulted in much of the planned delivery being scheduled for year five.
4.4: Secure exclusive programme media partners using Blue Marine's extensive media network, as well as enlisting celebrity ambassadors	During year four we tested our first influencer collaboration, partnering with Maddie St Clair (known online as Mads Ocean) for a social media post. The post achieved twice the engagement and reach of comparable Convex Seascape Survey posts. This type of activity builds credibility and trust in the marine space and potential long-term brand awareness that we can't secure from self-promoted posts. Overall social media followers increased by 83% and our content was viewed 1.7m times this year.	In year three we decided to concentrate on using online ocean influencers to support high-profile findings in the final two years of the project, rather than recruiting formal ambassadors. We began this approach this year and our next collaboration is scheduled for early in year five.
4.5: Conduct press campaigns with announcements matched to key Convex dates and global ocean events	We achieved a press reach of over 1bn via 303 articles, including coverage from the BBC, CTV in Canada, The Guardian, Forbes, The Economist and The Independent.	

UN SUSTAINABLE DEVELOPMENT GOALS (SDGs):

The project contributes to a broad range of the UN SDGs. Of these, we make the most substantive contribution towards realising the following seven:



ROLES AND RESPONSIBILITY

Responsibility	Blue Marine Foundation	University of Exeter	Convex Group Ltd	Consortium partners
FINANCE	Grant recipients: overall financial responsibility; overseeing research spend, delivering outreach package	Regrant from BMF for research elements; management of research partner budgets and equipment	Project supporter and oversight. Ensuring BMF is managing budget	Specific research task agreements
PROJECT	Overall responsibility for delivering the programme on time and on budget, managing Exeter	Overall Responsibility for delivery of scientific aims and objectives of the project, managing delivery partners, data collection, sample management	Overview project	Specific research tasks delivery
PROJECT	Reporting to Steering Committee; Managing Project Advisory Board	Reporting to BMF; Managing Research Management Group and consortium	Project overview; Chairing Steering Committee	Managing specific research staff in delivery of tasks
PROJECT	Ensuring project is represented on world stage e.g., COP, United Nations OceanClimate Platform	Ensuring results are represented on world stage; representing project to global research community	Identifying opportunities for project on world stage and B2B groups	Presenting specific research task results
DATA	Overall responsibility for data management and reach	Ensuring collection and quality of the data. Peer to peer dissemination	Identifying opportunities to share data	Collection, quality and dissemination of specific data relating to tasks
PROJECT	Horizon scanning research and policy opportunities	Horizon scanning research and policy opportunities	Horizon scanning business best practise opportunities	Connecting Project to existing networks
NETWORKS	Project overview forums e.g., United Nations (OceanClimate, GOBC, UK Blue Carbon Forum, Verra Ocean Forum, DEFRA Carbon Monitoring Project	Research networks and opportunities for collaboration such as Sea Around Us Project, University of Western Australia	Commercial and business networks such as marine underwriters	Specific research networks
OUTREACH	Overall responsibility for outreach with an ambition of 5m school children and billions of opportunities to see. Managing digital and education delivery partners. All press and media production	Delivering education and press content.	B2B and industry sector outreach. Additional opportunities such as Pacific Ocean Row	Additional outreach opportunities

Responsibility	Blue Marine Foundation	University of Exeter	Convex Group Ltd	Consortium partners
TECHNOLOGY	Tech partner scoping such as Moonshot, Google X, Tidal X	Consideration of application of new tech opportunities	Identification of tech opportunities for project team to scope	
PARTNERS	Scoping and relationship management of general project and commercial partners e.g., United Nations groups, Fugro, OceanX	Scoping and delivery of research and data collection specific partnerships e.g., Sea Around Us Project, OceanXplorer, Quest	Connecting project to existing networks and previous Catlin Research Projects and Convex affiliations e.g., Biological Institute of Ocean Science, Bermudan School Network, SeaView	Management of delivery specific project partners e.g., research vessels, labs etc
CAPACITY BUILDING	Collaboration and best practise in blue carbon science, facilitating knowledge sharing and delivering workshop events	Representing project at research forums, peer to peer knowledge transfer Identifying Blue Carbon expertise in developing world, due diligence and delivery with local institution partners e.g., Nelson Mandela University, SA, CADICConicet, Argentina Training the next generation of blue carbon scientists in the UK and beyond	Blue carbon knowledge, blue economy expertise amongst networks.	Inputting expertise into Project planning and delivery thereby increasing seascape carbon expertise globally
EQUIPMENT	Identifying legacy opportunities	Procurement, storage and deployment of general project equipment e.g., carbon analyser, bioturbation tanks etc. Ensuring equipment use after the project	Identifying legacy opportunities	Design, procurement and deployment of specific project equipment e.g. trawl monitoring rig
SAMPLE COLLECTION	Identifying opportunities for collaboration and financial savings e.g. Fugro, OceanX	All sample handling, storage and logistics permits etc		Task specific sample management

FINANCE

Contribution Summary (US\$)

Project Inception to Date: Funded Contribution	Inception to 31-Mar-26	\$11,301,105
Project Inception to Date: Planned Expenditure	Inception to 31-Mar-26	\$11,639,110
Project Inception to Date: Actual Expenditure	Inception to 31-Mar-26	\$10,681,189
% Actual Spend of Funded Contribution	Inception to 31-Mar-26	95%
Projected Spend to next payment date	1-Apr-26 to 30-Jun-26	\$1,910,670
Next payment date		1-Jun-26
Next payment amount		\$1,590,000

Work Package Summary (US\$)

Work Package	Inception to Date Actual Expenditure	Inception to Date Planned Expenditure	Under/ (Over) Spend	% Spend to Date vs Planned Expenditure	Budget to next payment date (Jun 26)
WP1	698,663	754,047	55,384	93%	39,136
WP2	1,320,440	1,396,310	75,870	95%	64,805
WP3	834,998	973,861	138,863	86%	90,924
WP4	1,777,355	1,800,391	23,036	99%	108,748
Cross-Prog.	2,265,449	2,921,969	656,519	78%	357,934
Uni Mgmt	2,610,536	2,619,000	8,464	100%	202,385
Grant Mgmt	1,173,748	1,173,533	(215)	100%	88,817
Total	10,681,189	11,639,110	957,921	92%	952,749



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