Beyond that contained in the Earth’s crust, the ocean holds by far the largest stock of carbon on our planet, dwarfing carbon in the atmosphere and soils.

How can we make most effective use of the ocean’s capacity to sequester carbon in delivery of net zero and beyond, while regenerating healthy ocean environments and essential ecosystem services? What can be achieved through restoration of natural ocean systems that contribute to removing carbon dioxide from the atmosphere, or the use of other climate repair solutions?

The ‘Beyond Net Zero – the role of the ocean in climate repair’ edition of the Oceans of Knowledge conference series, will explore these opportunities. The conference will set this critical future use of the ocean into the context of associated scientific, technological, engineering, operational and regulatory challenges. It will focus on the ocean data, information and knowledge needed to inform use of the ocean in climate repair.
**OCEANS OF KNOWLEDGE 2023  BEYOND NET ZERO: THE ROLE OF THE OCEAN IN CLIMATE REPAIR**

**08:30** Registration and Breakfast

**CLIMATE REPAIR AND THE OCEAN**

**09:30** Introduction and Welcome  
**Professor Ralph Rayner**, Grantham Research Institute on Climate Change and the Environment, London School of Economics

**09:40** Keynote Address: The Climate Crisis  
**Professor Sir David King**, Founder, Centre for Climate Repair, University of Cambridge/Chair, Climate Crisis Advisory Group

**10:00** An IPCC Perspective on The Role of Carbon Removal and Sequestration in Achieving Net Zero and Beyond  
**Dr Chris Jones**, Research Fellow, Earth System and Mitigation Science Team, UK Met Office and School of Geographical Sciences, University of Bristol

**10:20** Ocean-based Carbon Dioxide Removal Options for Climate Change Mitigation  
**Dr David Keller**, Senior Scientist, GEOMAR Helmholtz Centre for Ocean Research

**10:40** Questions and Discussion

**11:00** Break

**OCEAN CARBON DIOXIDE REMOVAL AND SEQUESTRATION**

Session Chair: **Bella Corpora**, Associate Director, Carbon Business Council

**11:20** Recovery of Natural Systems  
**Dr Brian von Herzen**, Executive Director, The Climate Foundation

**11:40** The Potential of Pelagic Sargassum  
**Dr Mar Fernandez**, Research Scientist, Alfred Wegener Institute

**12:00** Connecting Capital to Nature  
**Jordan Breigner**, SVP of Commercial Operations, Running Tide

**12:20** Alkalisation  
**Peter Chargin**, Vice President, Commercialization and Community & Government Relations, Planetary Technologies

**12:40** Questions and Discussion

**13:00** Lunch

**14:00** Driving Global Carbon Dioxide Drawdown via Direct Ocean Capture  
**Dr Harry Atwater**, Chief Scientist and Co-Founder, Captura and Chair, Division of Engineering and Applied Science, California Institute of Technology

**14:20** Carbon Capture and Storage  
**Stephen Fasham**, Chief Executive Officer, Covelya Group

**14:40** Questions and Discussion

**14:50** Break

**MONITORING, REPORTING AND VERIFICATION**

Session Chair: **Charlotte Powell**, Head of BioEnergy and Carbon Removals Innovation Team, Department for Energy Security and Net Zero

**15:00** A Policy Perspective  
**Dr Leo Mercer**, Policy Analyst, Grantham Research Institute on Climate Change and the Environment, London School of Economics

**15:20** The Legal and Regulatory Frameworks  
**Navraj Singh Ghaleigh**, Senior Lecturer in Climate Law, Edinburgh University

**15:40** Evaluating Impacts  
**Dr Vassilis Kitidis**, Marine Biogeochemist, Plymouth Marine Laboratory

**16:00** Requirements for Safe and Effective Implementation of Ocean-based Carbon Dioxide Removal.  
**Dr Christopher Pearce**, Principal Marine Geoscientist, National Oceanography Centre

**16:20** Questions and Discussion

**16:40** Break

**OCEAN INFORMATION NEEDS**

**16:50** A Panel Discussion Moderated by:  
**Dr Shaun Fitzgerald OBE**, Director, Centre for Climate Repair, Cambridge University

Comprising of:  
**Professor Ed Hill**, Chief Executive, National Oceanography Centre  
**Brad Ack**, Executive Director, Ocean Visions  
**Pete Chargin**, Vice President, Planetary Technologies  
**Professor Jerry Blackford**, Head of Science, Plymouth Marine Laboratory  
**Dr Jessica Cross**, Earth Scientist – Decarbonization and Carbon Removal, Pacific Northwest National Laboratory

**17:40** Closing Keynote  
**Brad Ack**, Chief Executive Officer, Ocean Visions

**18:00** Closing Remarks

**18:05** Networking Drinks Reception
BEYOND NET ZERO: THE ROLE OF THE OCEAN IN CLIMATE REPAIR

OCEANS OF KNOWLEDGE 2023

- Terrestrial biomass dumping
- Alkalization
- Fe/N&P fertilization

Ocean Negative Emission Technologies
- Artificial downwelling
- Artificial upwelling
- Blue carbon enhancement
- Mangroves
- Macrolalgae farms/marine biomass
- Seagrass
- Marine biomass for biochar
- Marine biomass for bioenergy with CCS

Direct CO₂ removal from seawater with CCS (carbon capture and storage)

CO₂ + H₂O → CO₂ + Storage