



# **Ocean Solutions for the Climate Crisis: Understanding Marine Carbon Dioxide Removal**

Featuring

**Emanuele Di Lorenzo, Phd**

Professor, Brown University  
Chairman and Founder, Ocean Visions  
Chair, Ocean Vital Signs Network Advisory  
Board

**31 MAY, 2024 | 04.00 p.m.**

Aula Prodi, Piazza S.Giovanni in Monte, 2  
Alma Mater Studiorum - Università di Bologna

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## **About the Speaker**

Dr. Emanuele Di Lorenzo is a Professor in the Department of Earth, Environmental, and Planetary Sciences at Brown University. He is internationally recognized for his work and leadership in understanding ocean climate and its impact on marine ecosystems and coastal communities. His research has recently led him to find equitable and practicable ocean-based solutions to climate by co-founding in 2019 the Ocean Visions and in 2022 the United Nations Ocean Decade Center on Ocean-Climate Solutions.

# Ocean Solutions for the Climate Crisis: Understanding Marine Carbon Dioxide Removal



BROWN



ALMA MATER STUDIORUM  
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## *Abstract*

Focusing on the nexus of innovation and environmental stewardship, this lecture explores the pivotal role of marine Carbon Dioxide Removal (CDR) in combating climate change. We delve into the latest advancements in marine CDR research, shedding light on both the promise it holds and the myriad challenges it faces. These challenges span technical intricacies, societal acceptance, and policy frameworks essential for effective Measurement, Reporting, and Verification (MRV) processes and for preserving the marine ecosystem functions. Our journey through the complex terrain of marine CDR underscores the urgent need for a coherent and actionable strategy to understand the ocean's carbon sequestration capabilities.

Central to our narrative is the collaborative endeavor led by Ocean Visions, a nonprofit organization that exemplifies the power of partnership. By bringing together leading engineering and science research universities, Ocean Visions spearheads a united effort towards developing and implementing ocean-based solutions to climate change. This initiative not only highlights the significance of interdisciplinary collaboration but also marks a significant step towards establishing a Global Ecosystem for Ocean Solutions (GEOS). With the United Nations Decade of Ocean Science for Sustainable Development underway, we discuss the strategic initiatives of the GEOS program and the new UN Center on Ocean Climate Solutions hosted by Ocean Visions. These efforts aim to catalyze international support and resources, fostering a unified response to the ocean's role in global climate regulation.

The lecture ends with the unveiling of the new Ocean Vital Signs Network (OVSN), a visionary project designed to enhance our understanding of carbon dynamics across various scales in space and time. From localized marine CDR experiment to regional and global impacts, the OVSN seeks to bridge gaps in our knowledge, facilitating a comprehensive view of the ocean's carbon cycle. This initiative stands as a testament to the collaborative spirit and scientific rigor required to navigate the complexities of climate change and ocean science. By synthesizing diverse research efforts and data sources, the OVSN aims to provide invaluable insights for policymakers, researchers, and the global community, paving the way for informed decision-making and effective climate action.