

iFAST: The International Forum on Advanced Environmental Sciences and Technology

A series of distinguished seminars by eminent scientists

8 a.m. CDT, 9 a.m. EDT, Wednesday, Sept. 2, 2026

1 p.m. GMT, 9 p.m. China, Wednesday, Sept. 2, 2026



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Scott C. Doney is the Joe D. and Helen J. Kington Professor in Environmental Change at the University of Virginia and a leading marine scientist specializing in ocean biogeochemistry, carbon cycling, climate change and ocean acidification. His research integrates numerical modeling, satellite remote sensing and data science to understand how marine ecosystems and ocean carbon cycles respond to natural and human-driven environmental change. He earned his doctorate in chemical oceanography from the MIT–Woods Hole Oceanographic Institution Joint Program and has held research positions at the National Center for Atmospheric Research and Woods Hole Oceanographic Institution. From 2022 to 2024, he served as assistant director for ocean climate science and policy in the White House Office of Science and Technology Policy. Doney is a member of the National Academy of Sciences and a Fellow of the American Geophysical Union, AAAS, and the Association for the Sciences of Limnology and Oceanography.

Marine Carbon Dioxide Removal

Abstract Scenarios to stabilize global climate and meet international climate agreements require rapid reductions in human carbon dioxide (CO₂) emissions, often augmented by substantial carbon dioxide removal (CDR) from the atmosphere. While some ocean-based removal techniques show potential promise as part of a broader CDR and decarbonization portfolio, no marine approach is ready yet for deployment at scale because of gaps in both scientific and engineering knowledge. Marine CDR spans a wide range of biotic and abiotic methods, with both common and technique-specific limitations. Further targeted research is needed on CDR efficacy, permanence and additionality as well as on robust validation methods — measurement, monitoring, reporting and verification — that are essential to demonstrate the safe removal and long-term storage of CO₂. Engineering studies are needed on constraints including scalability, costs, resource inputs, energy demands and technical readiness. Research on possible co-benefits, ocean acidification effects, environmental and social impacts, and governance is also required.



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