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Mapping chromatic diversity to primary productivity: a new, imaging-based approach to identify carbon sinks in the oceans

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Sixty-five years ago, when scientists first warned that carbon dioxide in the atmosphere was increasing as a result of fossil fuel consumption, they warned that the increase was small but could become significant if fuel consumption kept growing. In the decades since, the concentration of carbon dioxide increased so much that we are now living in a climate emergency. To establish the right policies to mitigate this emergency and project future climate change, it is critical to account for all the sources and sinks of carbon on our planet, yet we still lack key technologies to do so accurately, especially in the ocean. This is because the oceans are vast, difficult and expensive to survey, and thus scientists have large knowledge gaps regarding how some habitats on the bottom of the ocean remove carbon from the water. Recent developments in the field of underwater computer vision, however, have opened up a new avenue through which we might be able to estimate how habitats on the seafloor might be using carbon: by using their colors. Here, the scientists propose to leverage a brand-new underwater imaging technology that 'removes the water' from underwater images, obtaining the colors of seafloor habitats as if they were photographed in air, and establish a link between those colors and how much carbon that seafloor habitat can remove from the water. If such a link can be established, the understanding of the role of ocean habitats like seagrass meadows, coral reefs, sponge reefs, rocky reefs, and kelp forests, etc., in the Earth's climate will be improved, and consequently that can help influence policy worldwide to promote the protection, conservation, and restoration of these habitats.

Projektbeteiligte

Prof. Dr. Oscar Puebla
Universität Oldenburg
ICBM
Fish Ecoogy and Evolution
Oldenburg

Prof. Derya Akkaynak
University of Haifa
Marine Technologies
Marine laboratory (mabada yamit)
Eilat
Israel