There’s a ‘dead zone’ in Gulf – and it can reach UAE

ABU DHABI 17 June 2019: A recent study conducted at New York University Abu Dhabi (NYUAD) has shown that the rapid warming of the Arabian Gulf could cause the intensification and expansion of the Arabian Sea dead zone, bringing the oxygen-depleted waters closer to the UAE’s shores.

Researchers used computer modeling and simulation to show that the warming of the Arabian Gulf results in the deoxygenation and loss of bioavailable nitrogen in the Arabian Sea. This can potentially reduce marine habitat for species intolerant to hypoxic conditions and limit the growth of phytoplankton in the North Indian Ocean.

The video illustrates how the ocean model reproduces chlorophyll concentrations at the ocean surface (which is an indicator of plankton biomass) and oxygen at depth in the Arabian Sea

The oxygen-saturated waters of the Arabian Gulf sink to intermediate depths (200-300m) ventilating the world’s thickest Oxygen Minimum Zone (OMZ). Becoming more buoyant, the warmer Gulf waters are less prone to do so.

The warming of the Arabian Gulf is predicted to continue in the future, causing the intensification of the dead zone due to its lack of ventilation. Humans can take part in reducing the ocean’s deoxygenation and halt the expansion of the dead zone through working to reduce CO2 emissions.

- The massive dead zone in the Arabian Sea is found to be the largest in the world

- The study shows that the warming of the Arabian Gulf could result in the intensification of the dead zone
- Oxygen Minimum Zone refers to naturally occurring, persistent oceanic oxygen deficiency at mid-water depths

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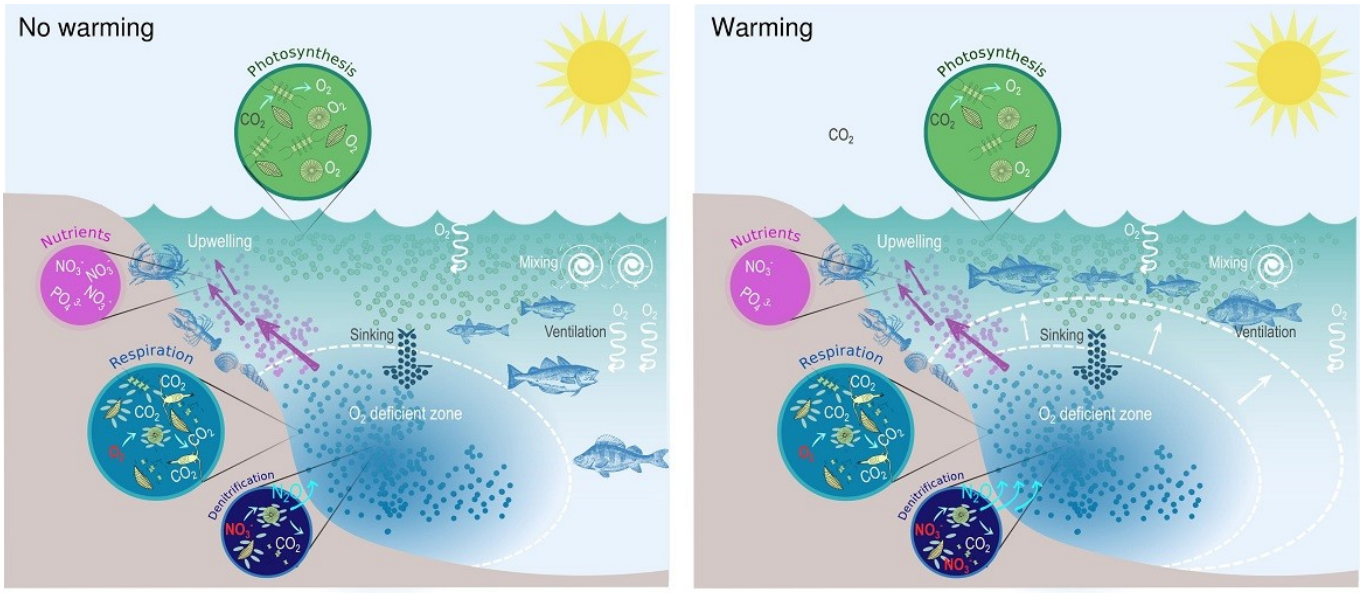
As marginal seas like the Arabian Gulf are not well represented in global climate models, the study is the first to show that local temperature changes in a semi-enclosed sea, like the Arabian Gulf, can have important consequences for oxygen and marine habitats not only locally but also for ecosystems thousands of kilometers away.

The findings, therefore, imply that temperature changes can lead to biases in global climate models at a scale much larger than the scale of the semi-enclosed seas themselves.



The research was led by senior scientist at NYUAD's Center for Prototype Climate Modeling Zouhair Lachkar, and co-authored by NYU Professor of Mathematics, Atmosphere, and Ocean Science K. Shafer Smith and Deputy Director at the Institute of Research for Development, Marina Levy.