

Lifting the lid on Marine Heatwaves: a typology for the vertical structure of ocean temperature extremes.

Join this hybrid UCT-SANCOR Seminar on:



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13h00 SAST



UCT Oceanography
Seminar Room or Online



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Overview

Life is ubiquitous throughout the ocean, with species abundance and richness often greatest below the surface. As a result, ocean extremes throughout the water column may impact marine organisms and ecosystems, yet marine heatwaves (MHWs) are typically defined from surface observations. Growing recognition of subsurface processes—such as nutrient recycling, oxygen variability, and carbon transport—has prompted increased attention to subsurface MHWs, which exhibit diverse vertical structures linked to distinct physical drivers. Warming may be confined to the mixed layer, extend through the full water column, intensify at the thermocline, or occur only at depth or near the seafloor. Drawing on existing literature and new analyses, we propose a unified naming convention—mixed layer, deep, thermocline, full-depth, submerged, and benthic MHWs—to distinguish these structures. By providing a common language, this framework supports improved detection, attribution, and assessment of the ecological and biogeochemical impacts of subsurface ocean extremes.

About the speaker

UCT alumnus, Neil Malan, is a senior research associate at the Climate Research Centre of the University of New South Wales. He is a physical oceanographer who works on shelf-open ocean interactions, ocean extremes, and physical-biological coupling.