

'The BIG Questions' Lecture Series



Ocean Global Change Biology – Unravelling a Gordian Knot

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The findings from ocean modelling simulations, time-series observations and biological manipulation experiments together point to a future ocean in which life will be confronted by a complex matrix of changing conditions. The rapidity and magnitude of concurrent change in oceanic properties represents a major challenge in assessing and subsequently projecting how the diversity, productivity and stability of marine life – from cells to biomes – will be altered in the coming decades. Individual organisms will encounter concurrent changes in multiple biologically-influential properties. What will be the cumulative effect of this mix of potentially beneficial and detrimental influences? What capacity is there in organismal 'hard-wiring' to acclimate or adapt to such rapid environmental changes? How will wide-ranging susceptibility to change across trophic levels alter the structure and functioning of foodwebs?

The many permutations of a changing ocean on marine biota - from multi-stressors, synergisms, antagonisms, differential vulnerability, migration, micro-evolution – are currently tangled up in a Gordian knot. In this presentation I will discuss the constraints imposed on our research and its progress by such a knot. I will consider the prospects of unravelling this knot by gradualism or whether we can cut into it – short-circuiting this major set of challenges by developing new tools and techniques, identifying underlying fundamental principles and exploring better ways to capitalise on community-based science. Such a multi-stranded approach offers the best way to better understand the many ramifications of climate change on global ocean biology.

Venue: large conference room, GEOMAR westshore

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