



## Planktonic foraminifera, evolution, and making sense of Cenozoic paleoceanography

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*As major contributors to pelagic carbonate flux, planktonic foraminifera play a key role in the marine carbon cycle through the alkalinity pump. Beyond this direct palaeoceanographic significance, planktonic foraminifera are also one of our most important archives of past climates and oceans through their stable isotope and trace metal geochemistry. Evolution and extinction can affect both aspects, influencing the role of planktonic foraminifera in the marine carbon cycle and their fidelity as environmental proxies. Even so, we have yet to fully integrate evolutionary thinking into paleoceanographic approaches and interpretations, leaving a critical evolutionary gap in the interpretation of many records. In this talk, I will discuss examples of how this gap can systematically affect our inferences and understanding of past and future oceans using new high resolution isotopic records from the Eocene and reconsiderations of existing data. Ultimately, the evolutionary history of species, and whether populations move, adapt or die in the face of environmental perturbations can have major effects on what we measure of past ocean conditions, and has shaped the biogeochemical importance of these carbonate producers over time.*