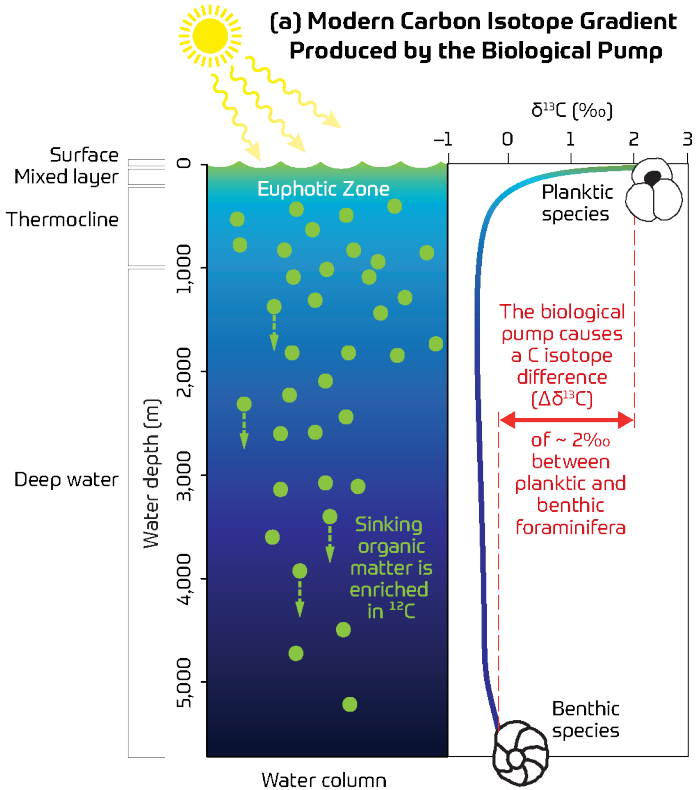

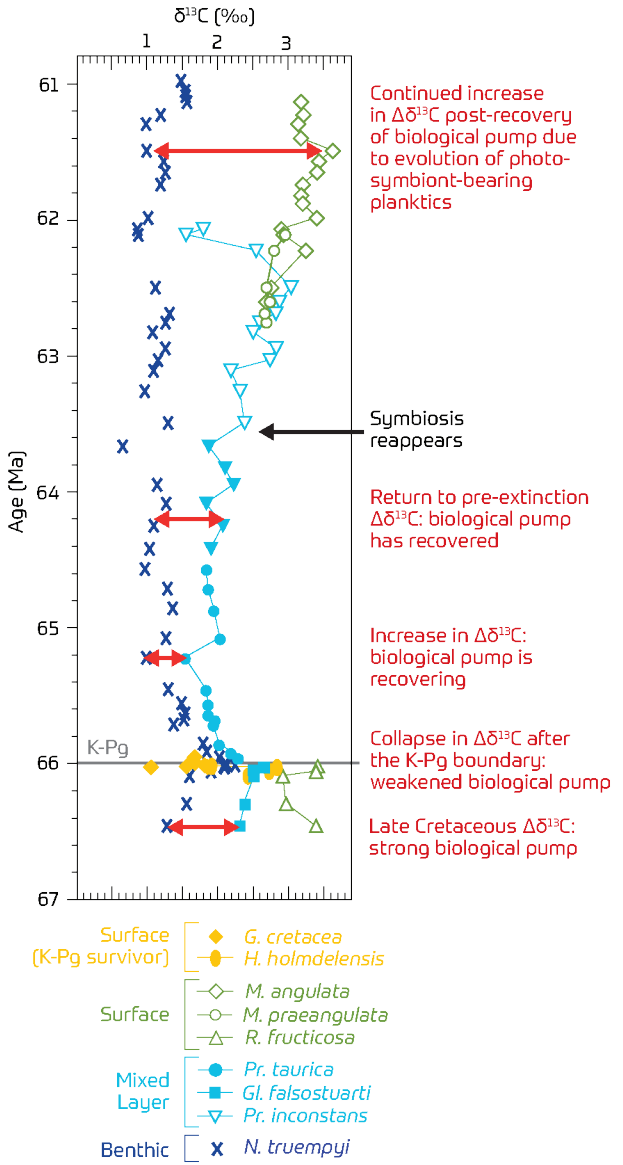

Export production, the removal of organic matter from the euphotic zone to the deep sea, is primarily driven by the biological pump, in which organic matter such as fecal pellets sink via biological processes combined with gravity. Photosynthesis favors ^{12}C over ^{13}C, enriching organic matter in ^{12}C and resulting in lower $\delta^{13}C$ values. Thus, the functioning of the biological pump results in a carbon isotope gradient from ^{13}C-enriched surface waters to ^{13}C-depleted bottom waters, as recorded by the carbon isotope difference between planktic and benthic foraminifera ($\Delta\delta^{13}C$) (a). Hence, foraminifera can be used to reconstruct past changes in the biological pump, as illustrated by a reduction in $\Delta\delta^{13}C$ at the Cretaceous-Paleogene (K-Pg) boundary in Ocean Drilling Program (ODP) Site 1262 cores. The reduction in $\Delta\delta^{13}C$ indicates a decline in strength of the biological pump (b). Development of more detailed records of past changes in the biological pump will allow us to investigate the feedbacks between the climate system, the marine carbon cycle, and evolution and diversity. *Sources: (a) Original graphic by Chris Lowery and Rosalind Coggon. (b) Modified from Birch et al. (2016), https://doi.org/10.1130/G37581.1*