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Evaluating diagenetic influences on planktic foraminiferal shells from Walvis Ridge

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The Paleocene-Eocene Thermal Maximum (PETM; ca. ~56 Ma) has been linked to a rapid release of isotopically light carbon into the atmosphere and oceans, as evidenced by a large, negative carbon isotope ($\delta^{13}C$) excursion (CIE) measured globally. However, the magnitude of the CIE differs – both within and between – different sedimentary archives. This makes it challenging to estimate the size of the CIE in the global dissolved inorganic carbon reservoir. One potential reason for CIE discrepancies in marine carbonates is that these archives have likely undergone differing extents and/or styles of diagenetic alteration. It should be possible to avoid these effects by employing *in situ* isotopic analyses to target only the most well-preserved material. One challenge to this approach is identifying well-preserved material. To this end, I present scanning electron microscopy data for planktic foraminifera from Ocean Drilling Program Sites 1262 and 1263 at Walvis Ridge in the southeast Atlantic Ocean. Analysis of shell surface and subsurface texture throughout the PETM stratigraphy at both sites suggests that the extent of recrystallization varied over the event, with water depth, and correlates with existing bulk $\delta^{13}C$ data. The deeper Site 1262 shows more extensive diagenetic alteration throughout the section than the shallower Site 1263. Both sites exhibit peak alteration during the CIE. Thus, it seems reasonable to suspect that post-depositional diagenetic alteration has influenced the size of the CIE at the Walvis Ridge sites. With this in mind, we present a plan to disentangle primary from diagenetic $\delta^{13}C$ values in our samples. This will involve conducting *in situ* $\delta^{13}C$ analyses using secondary ion mass spectrometry and elemental mapping using laser ablation inductively coupled plasma mass spectrometry mapping.