Abstract #707923

Both ‘glassy’ and ‘frosty’ forams show the low deglacial $^{14}C/C$ anomaly

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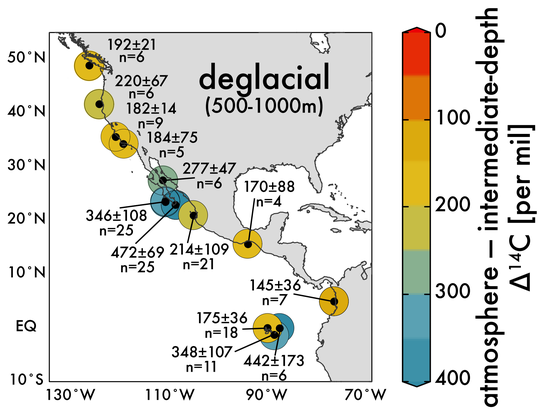
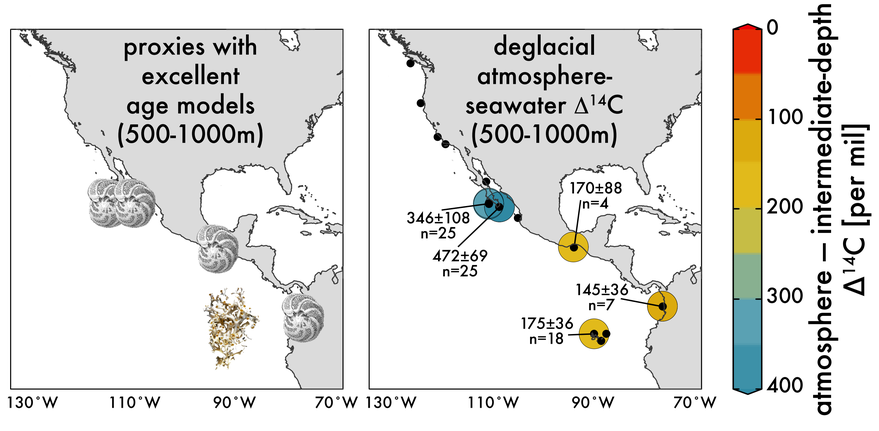
Prior work suggests extremely low seawater $^{14}C/C$ (shown as $\Delta^{14}C$) in the intermediate-depth Eastern Tropical North Pacific (ETNP) during the last deglaciation

[Marchitto et al. 2007; Stott et al. 2009; Lindsay et al. 2016; Rafter et al. 2018]

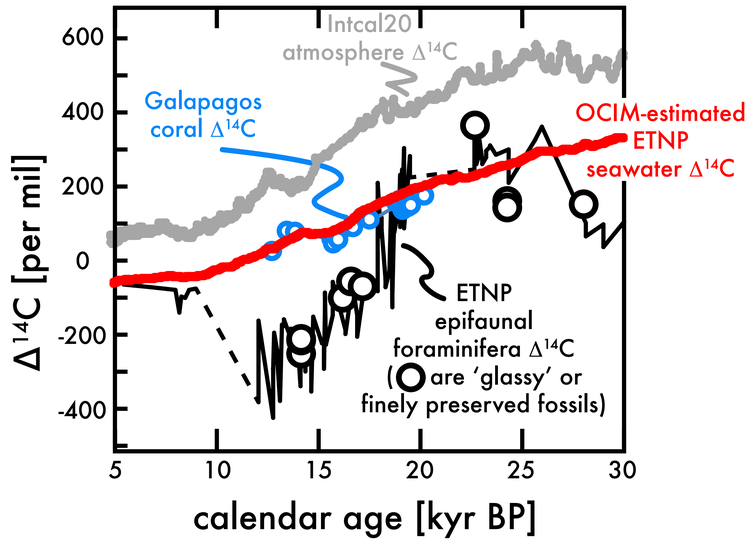


Looking only at records with excellent age models reveals a heterogeneous pattern of deglacial seawater $\Delta^{14}C$—very low anomalies are only observed in foram records near Gulf of California. Deep-sea coral record and others do not show this lowering. Are there problems with the foraminifera $\Delta^{14}C$?

[Marchitto et al. 2007; Rafter et al. 2018; Zhao et al. 2018; Chen et al. 2020; Rafter unpublished]



Full glacial-interglacial views of seawater $\Delta^{14}C$ at two sites with excellent age models.



New, unpublished ‘glassy’ (presumably well-preserved) $\Delta^{14}C$ (circles) indicate that large differences in proxy-reconstructed seawater $\Delta^{14}C$ were real and persisted throughout the deglaciation—no problem with the foram proxy.

Differences between benthic foraminifera ^{14}C ages for the pristine ‘glassy’ and the presumably altered ‘frosty’ fossils (presumed to have been overprinted with authigenic carbonate after burial) were significant (frosty being 708 years older; n=7), but these were nowhere near previously published results (>6,000 years!) [Wycech et al. 2016].

These results argue for a more holistic interpretation of ETNP ^{14}C proxy records than recent work dismissing foraminifera ^{14}C measurements in favor of deep-sea coral ^{14}C results [Chen et al. 2020].

(Scanning Electron Microscope images are unavailable due to Covid-19 lockdown.)

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