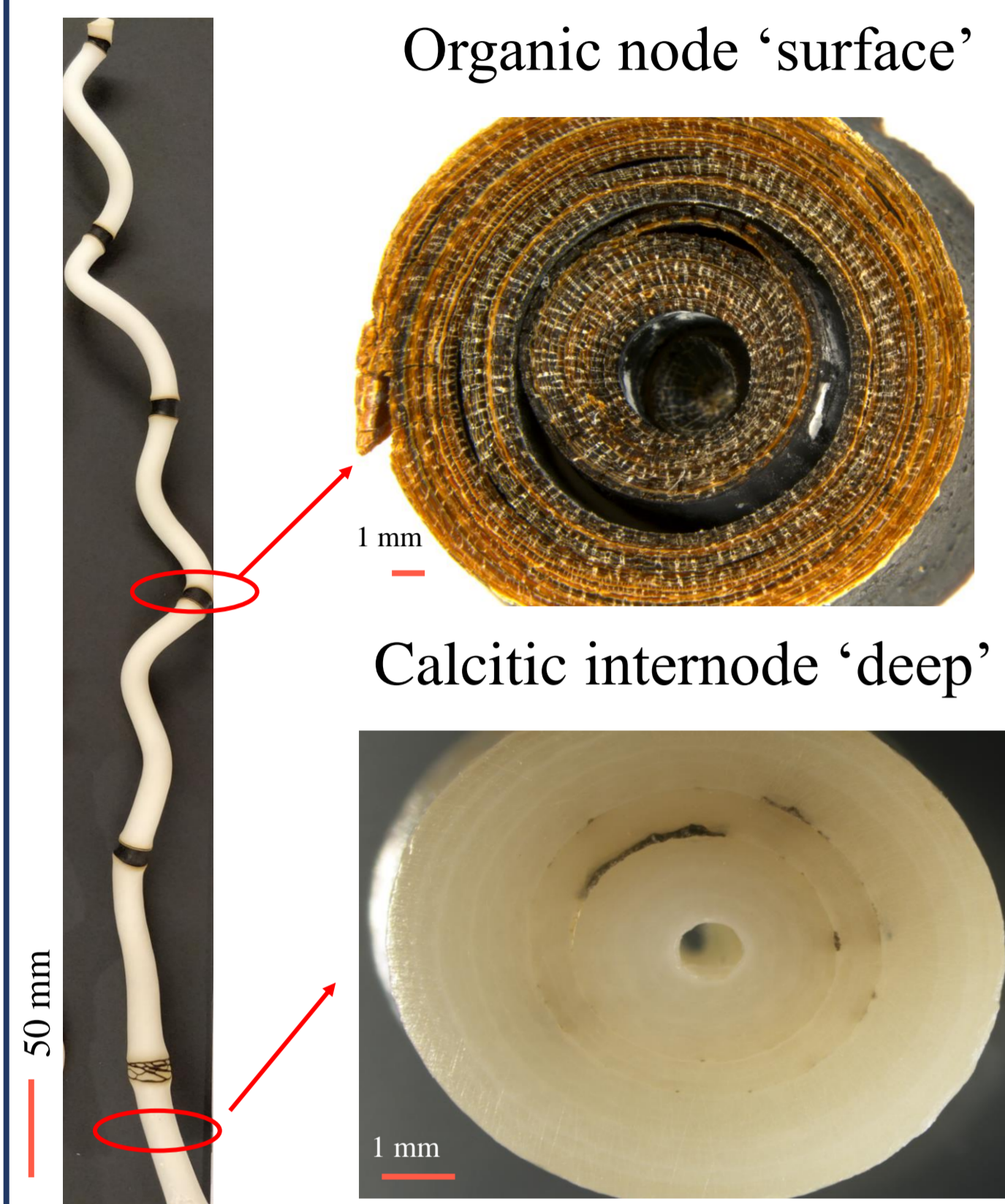
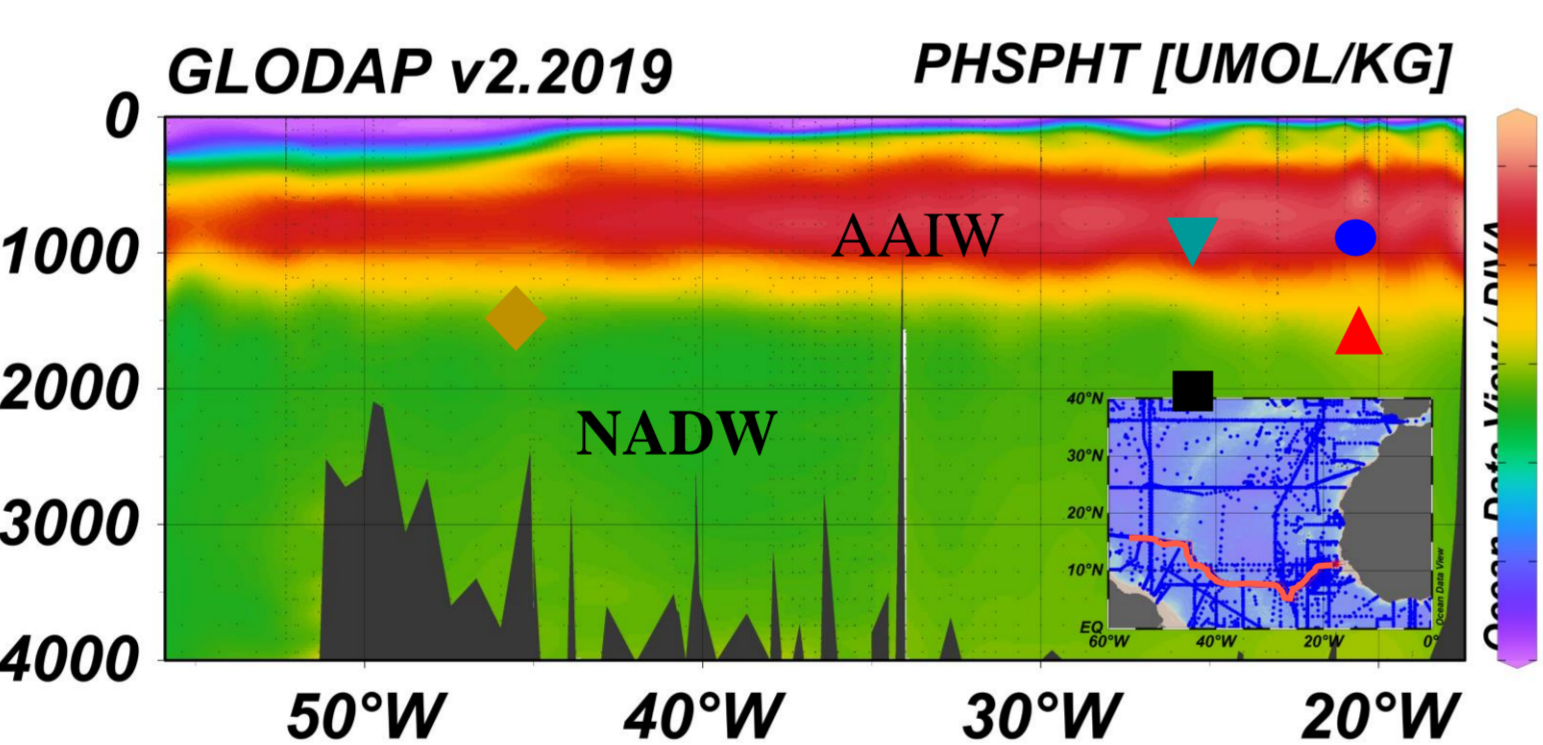
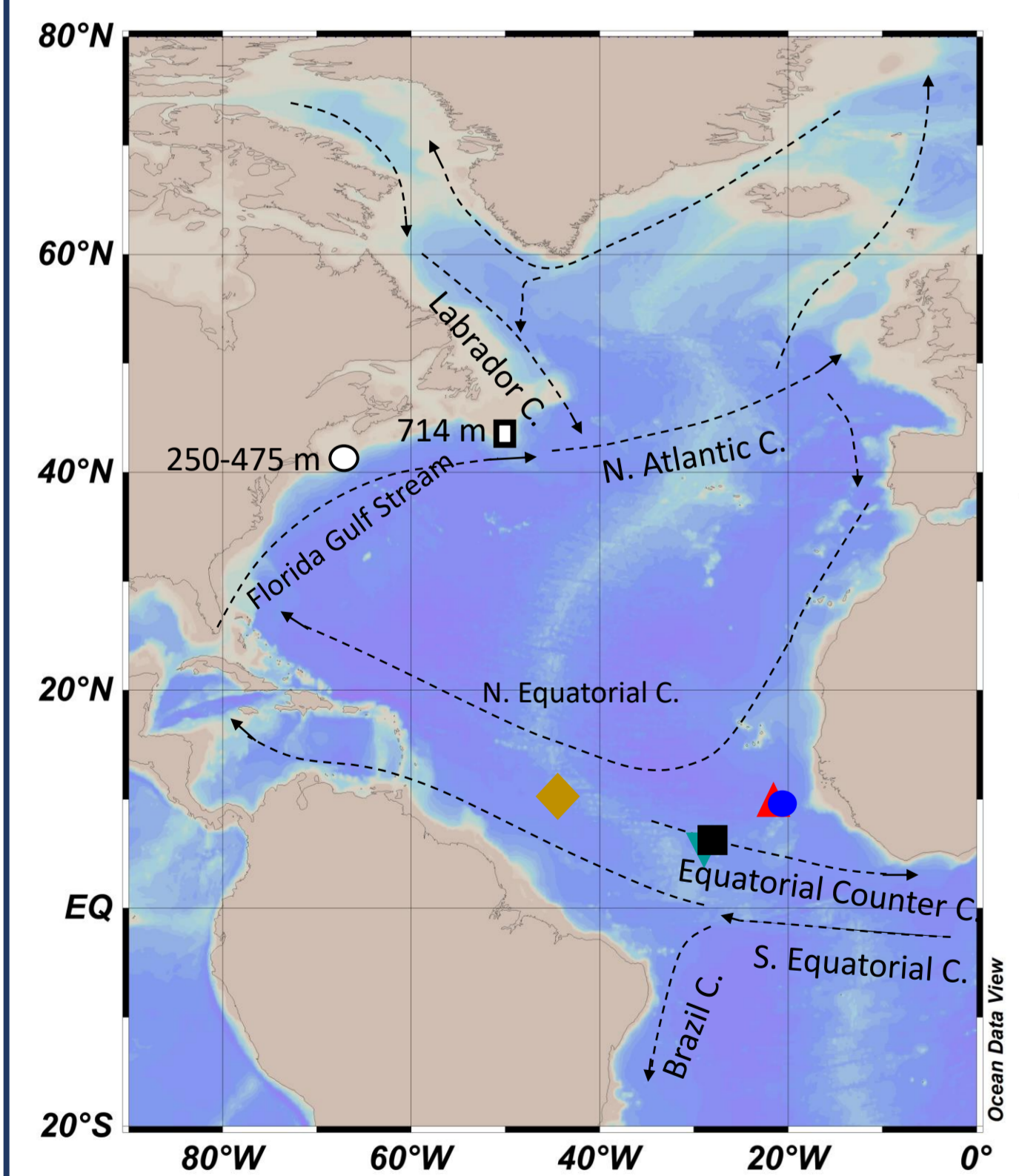


Introduction



- Radiocarbon in seawater used as proxy of ocean ventilation and circulation
- Long-lived deep-sea bamboo corals serve as a potential archive for reconstructing continuous high-resolution seawater radiocarbon content back to hundreds of years
- Bomb ^{14}C further provides a way to generate chronology for bamboo corals due to their distinct skeletal structure which can record both surface and deep-water chemistry

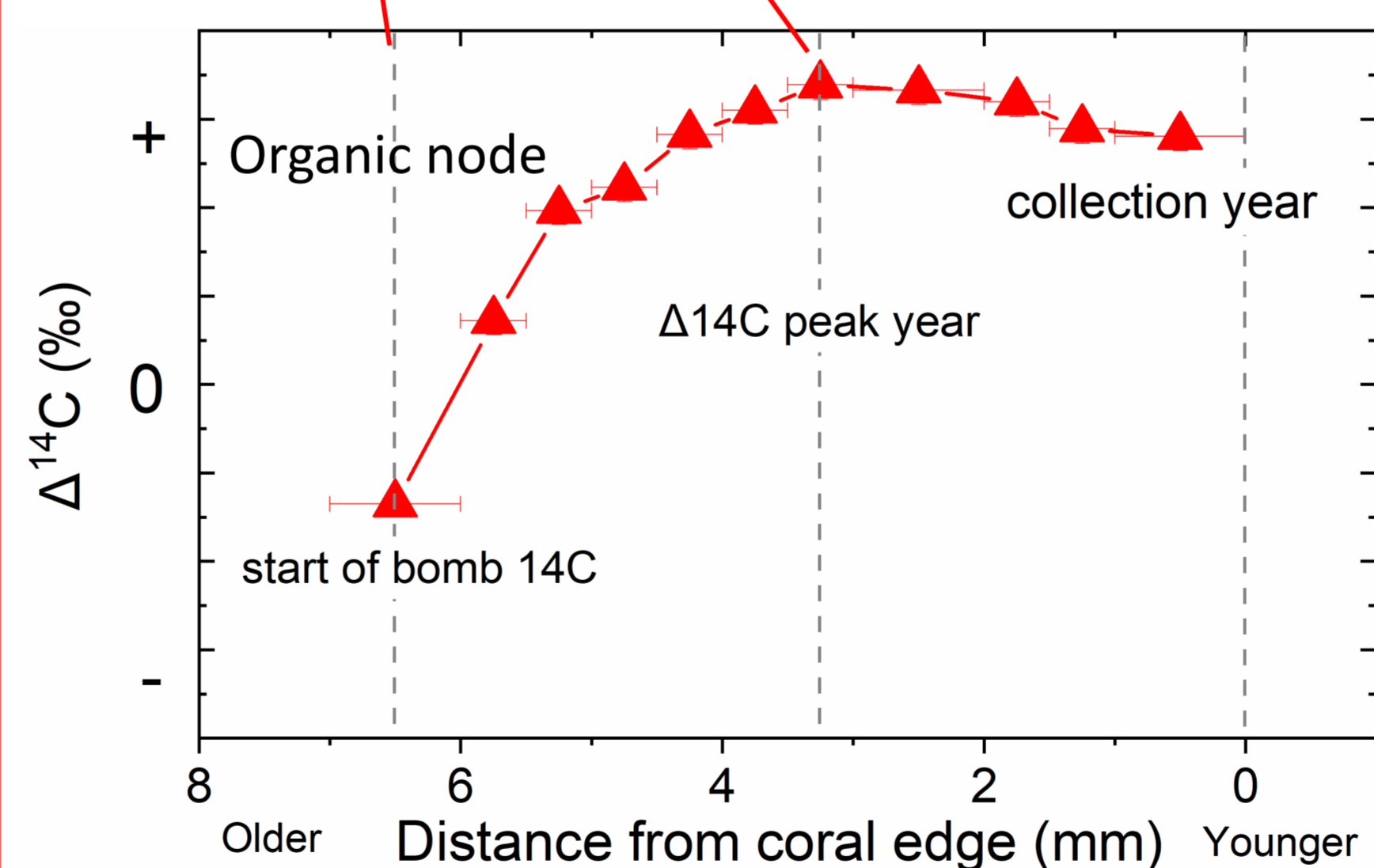
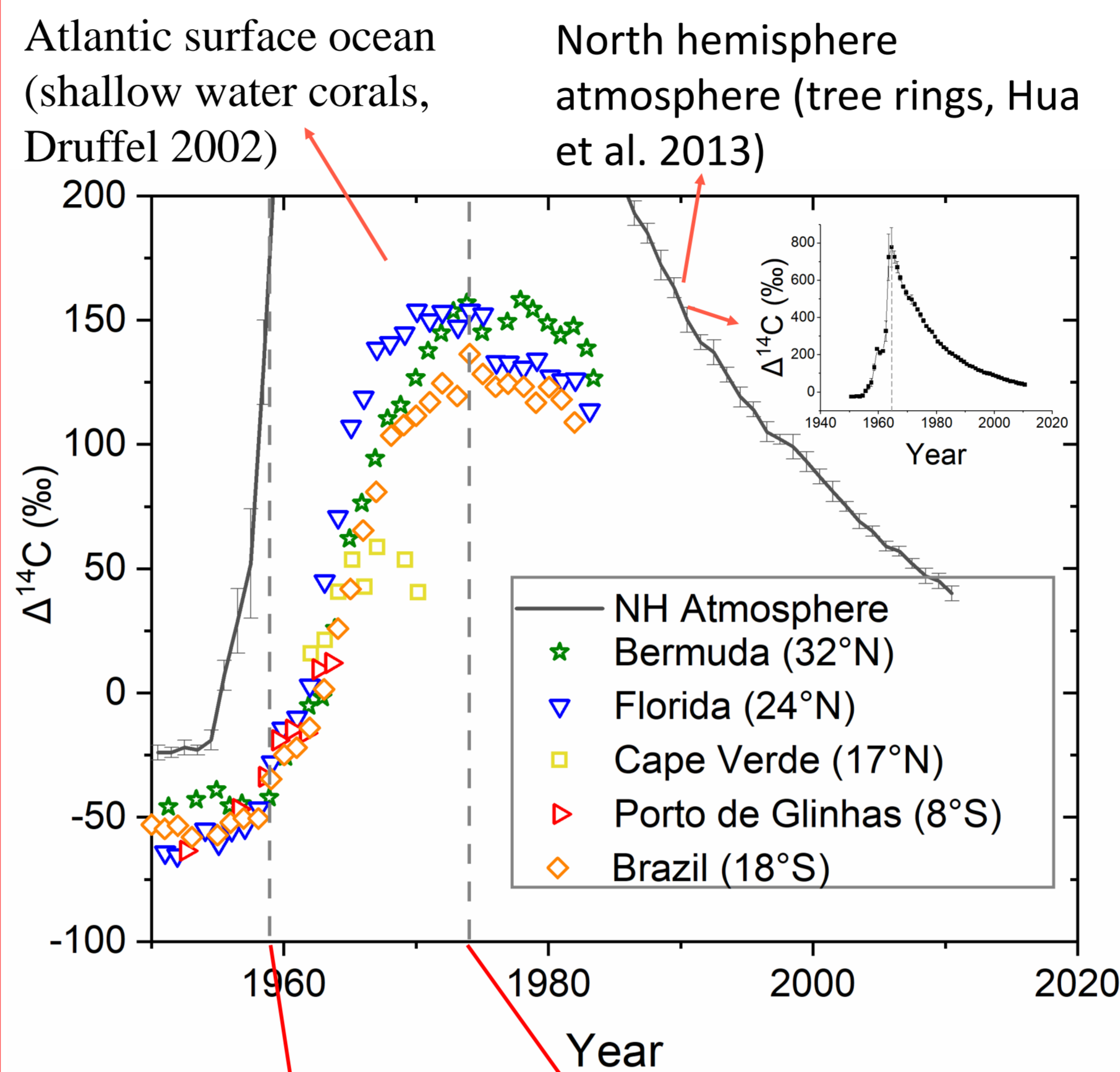


- Five bamboo corals were collected in 2013 (coloured symbols)
- Bamboo corals from North Atlantic are shown in white symbols (Sherwood et al 2008)

References

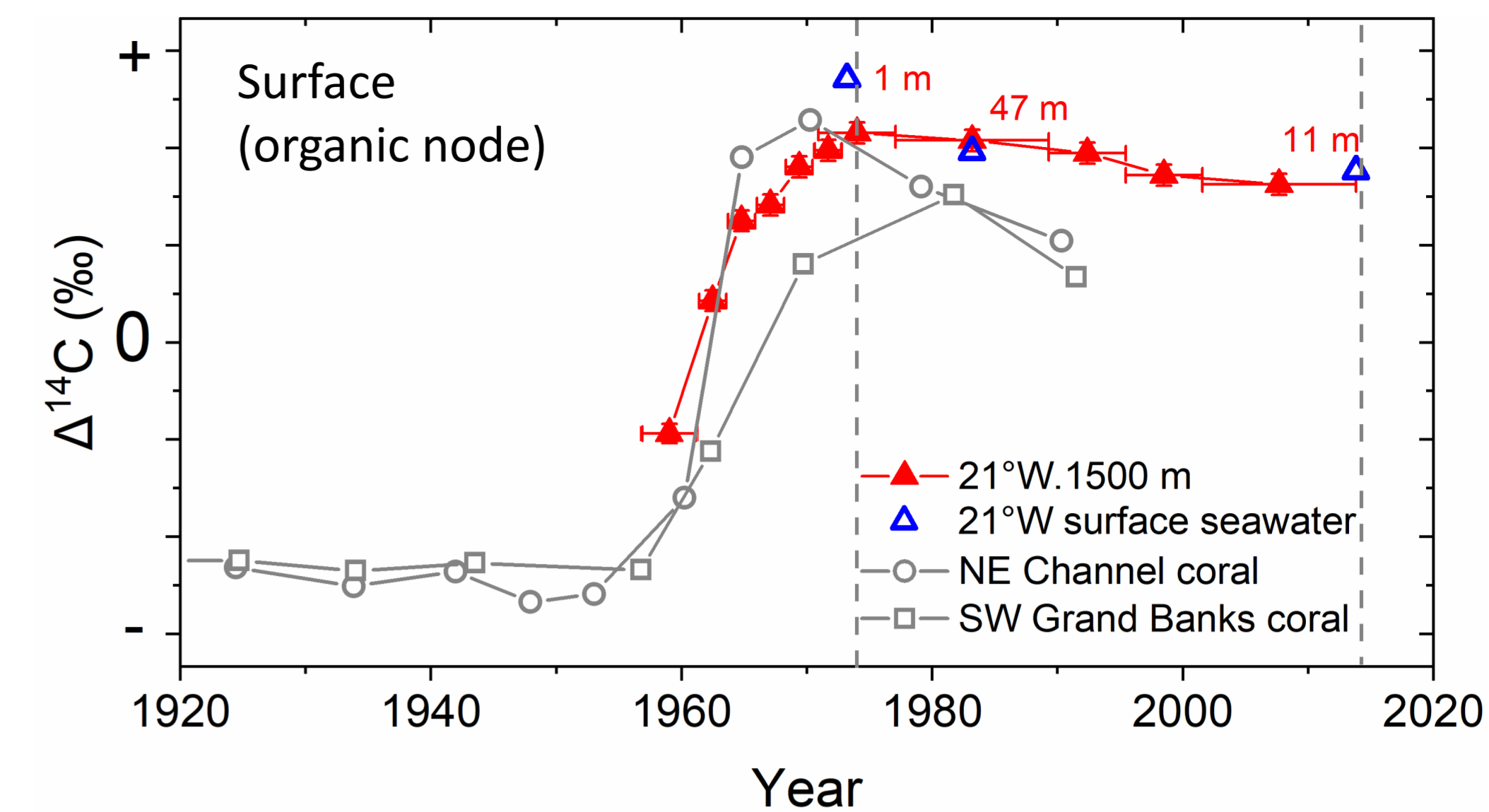
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Bomb radiocarbon dating

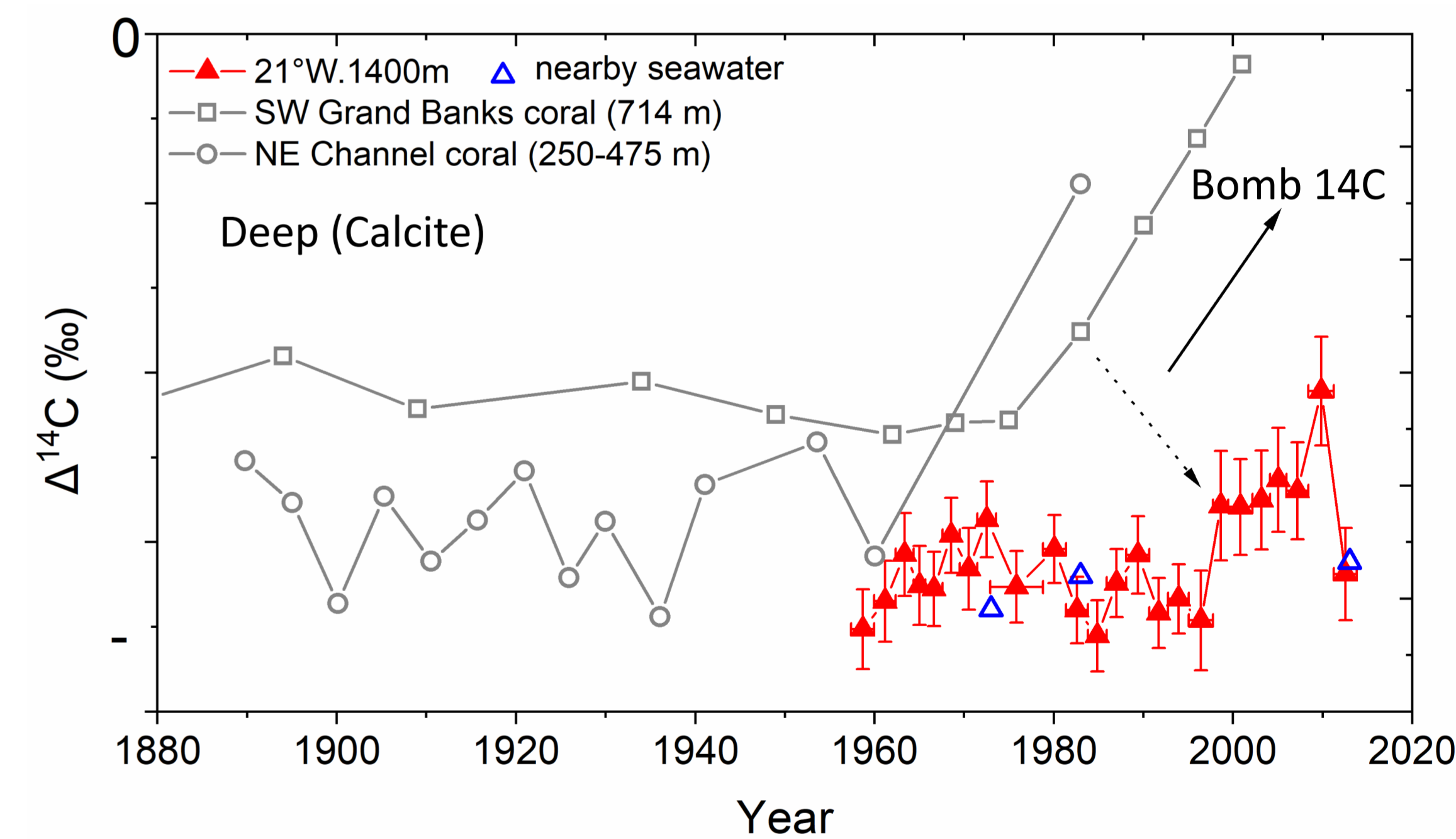


- $\Delta^{14}\text{C}$ (uncorrected for age) of bamboo coral's bottom organic node (from centre to edge)
- Two stages of growth rate were generated (0.2 mm/yr and 0.08 mm/yr) through three tie points
- This average growth rate is 0.12 mm/yr which is within growth rate range of previous studies (0.01-0.4 mm/yr, Frenkel et al. 2017, Noé et al. 2008)

Radiocarbon in the surface and deep ocean



- $\Delta^{14}\text{C}$ (age corrected) recorded by coral organic node in this study (red triangle) is consistent with nearby seawater (GEOSECS, GLODAP_2 2019, Chen et al. 2015).
- Peak $\Delta^{14}\text{C}$ in bamboo corals from low and high latitude Atlantic are similar



- Deep ocean $\Delta^{14}\text{C}$ (age corrected) recorded by coral calcite in this study is consistent with nearby seawater (data from GEOSECS, GLODAP_2 2019, Chen et al. 2015)
- All deep-sea bamboo corals here show an increase in $\Delta^{14}\text{C}$ at depth, which may be related to bomb radiocarbon reaching the site
- The low latitude $\Delta^{14}\text{C}$ increase occurs >10 years later than the high latitude sites
- The next steps are to analyse corals from different depths and sites to explore this bomb radiocarbon signal