

*[Paleoceanography]*

Supporting Information for

**Stable oxygen isotopes and Mg/Ca in planktic foraminifera from modern surface sediments of the Western Pacific Warm Pool: Implications for thermocline reconstructions**

**Martina Hollstein1\*, Mahyar Mohtadi1, Yair Rosenthal², Paola Moffa Sanchez³, Delia Oppo4, Gema Martínez Méndez1, Stephan Steinke5, Dierk Hebbeln1**

1MARUM – Center for Marine Environmental Sciences, University of Bremen, Bremen, Germany

2Institute of Marine and Coastal Sciences, Rutgers, State University of New Jersey, USA.

3School of Earth and Ocean Sciences, Cardiff University, Cardiff, UK

4Department of Geology and Geophysics, Woodshole Oceanographic Institution, Massachusetts, USA

5Department of Geological Oceanography, Xiamen University, Xiamen, China

\*Corresponding author: Martina Hollstein ([mhollstein@marum.de)](mailto:mhollstein@marum.de))

**Contents of this file**

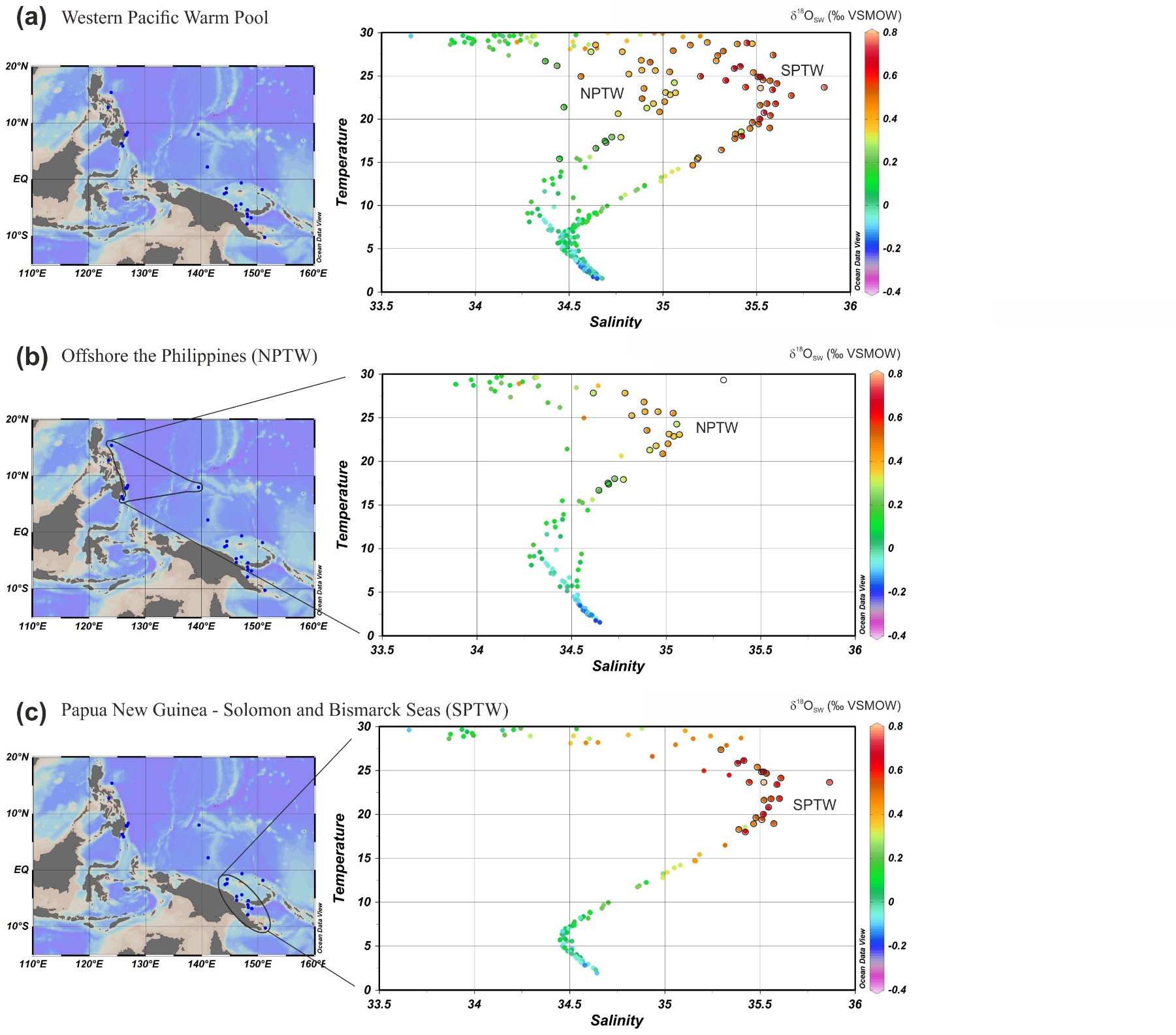
Figures S1 to S8

**Additional Supporting Information (Files uploaded separately)**

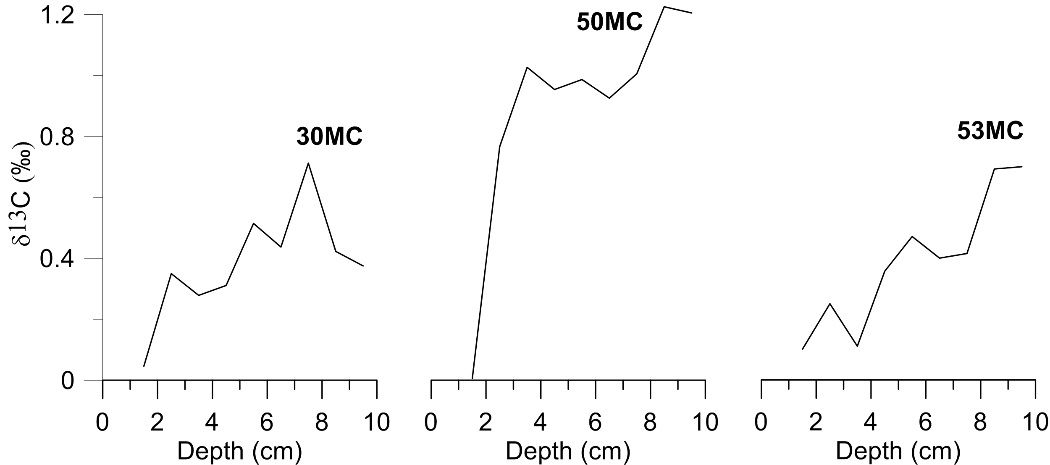
Captions for Tables S1 to S3

**Introduction**

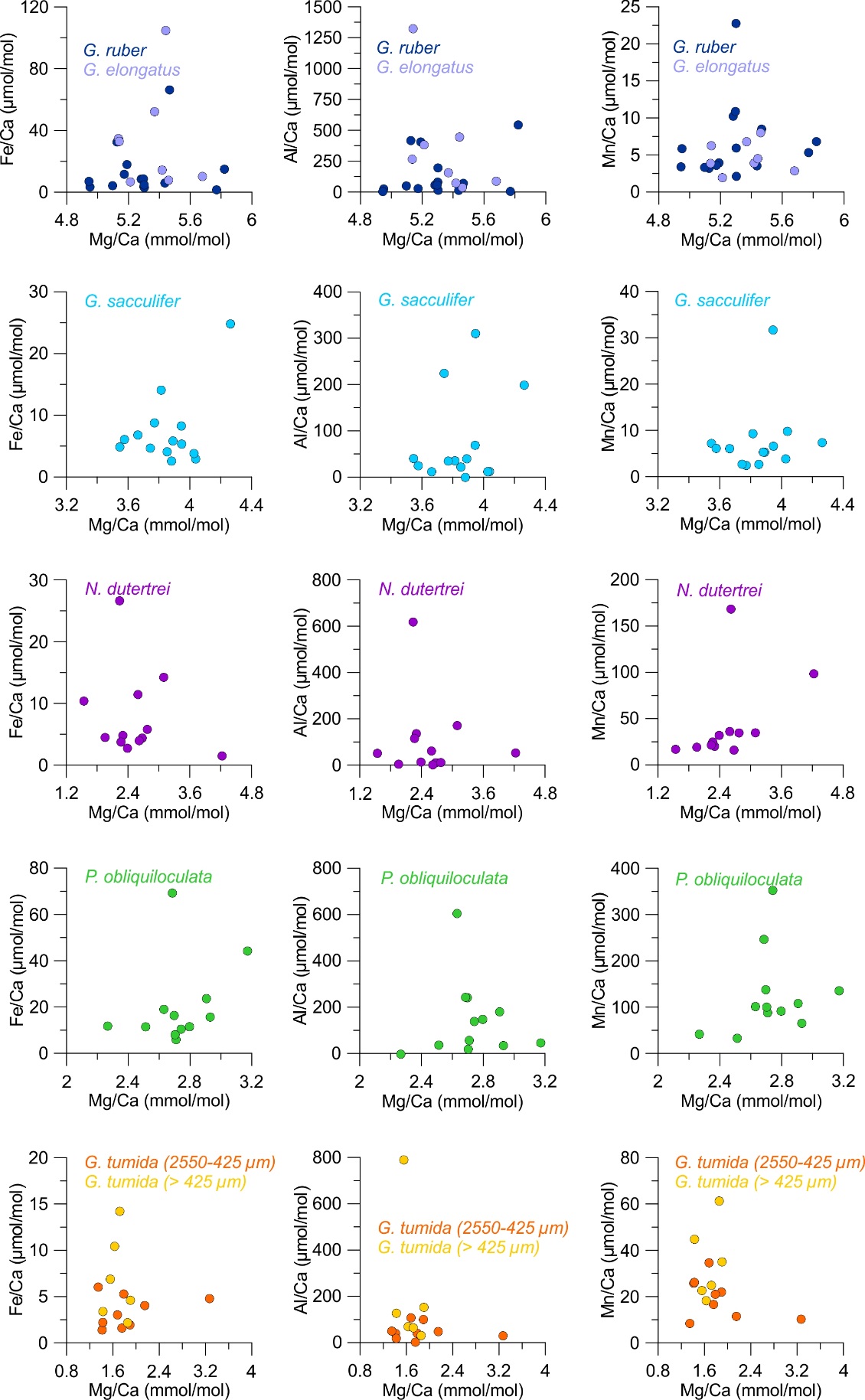
Additional figures are provided below. Tables showing water column data and Mg/Ca and δ18O-derived temperatures are provided separately.

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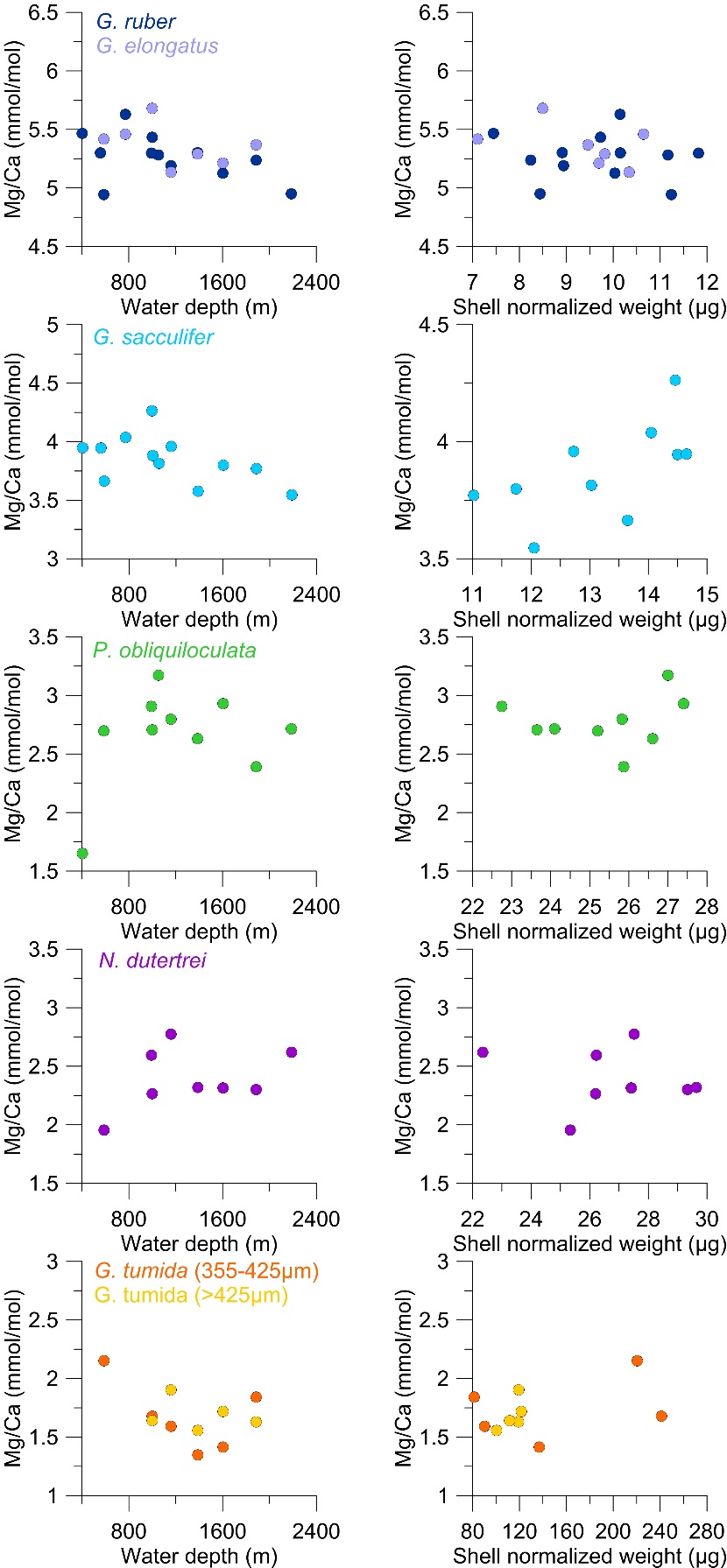
**Figure S1.** Temperature-salinity diagrams for SO-228 and RR-1313 stations. Colors represent δ18OSW. Black surrounded dots indicate samples used to calculate the δ18OSW-salinity regressions of subsurface of (a) the Western Pacific Warm Pool, (b) offshore the Philippines, (c) offshore Papua New Guinea.



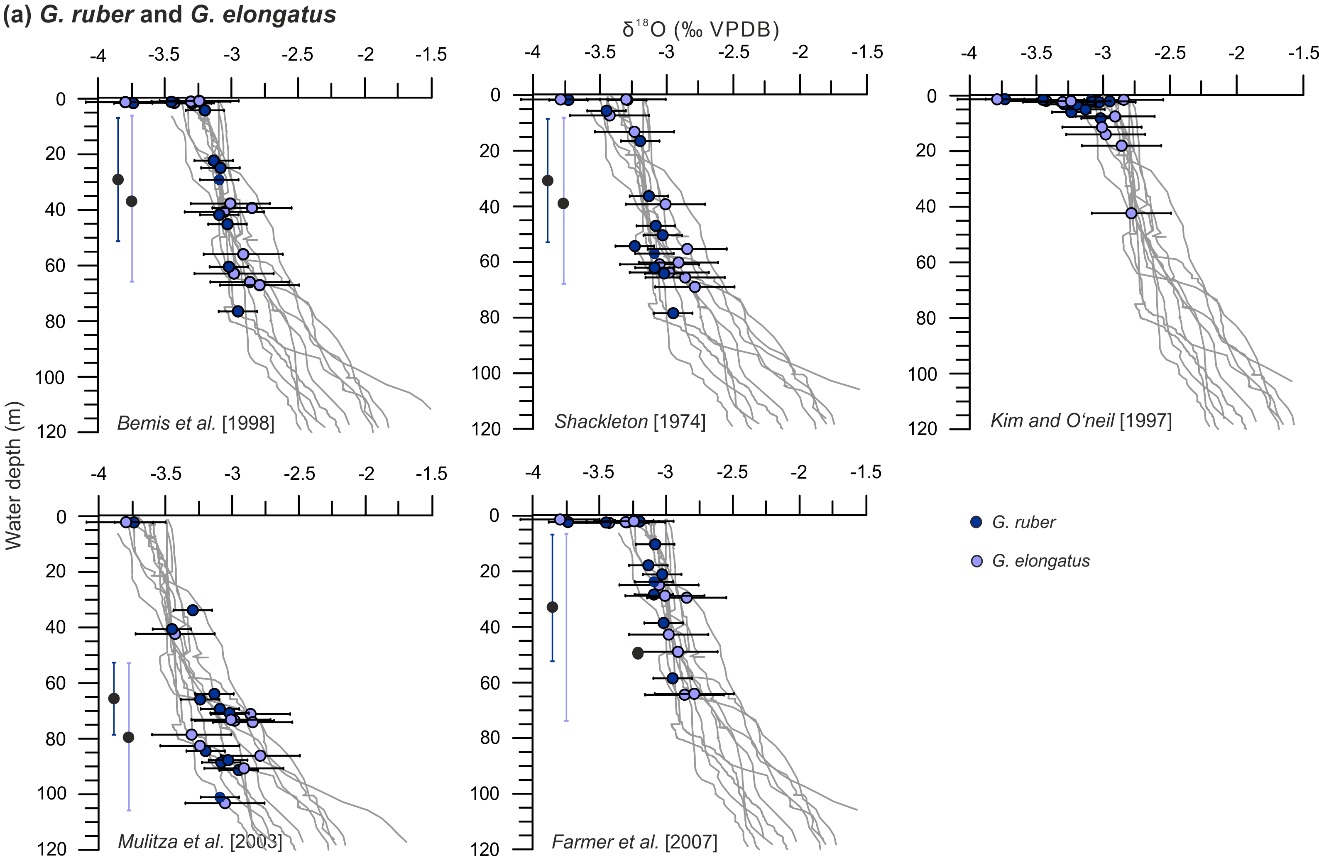
**Figure S2.** Shell δ13C of *G. ruber* in samples from RR-1313 multicores. Rapid drops in δ13C are indicative for the Suess effect.

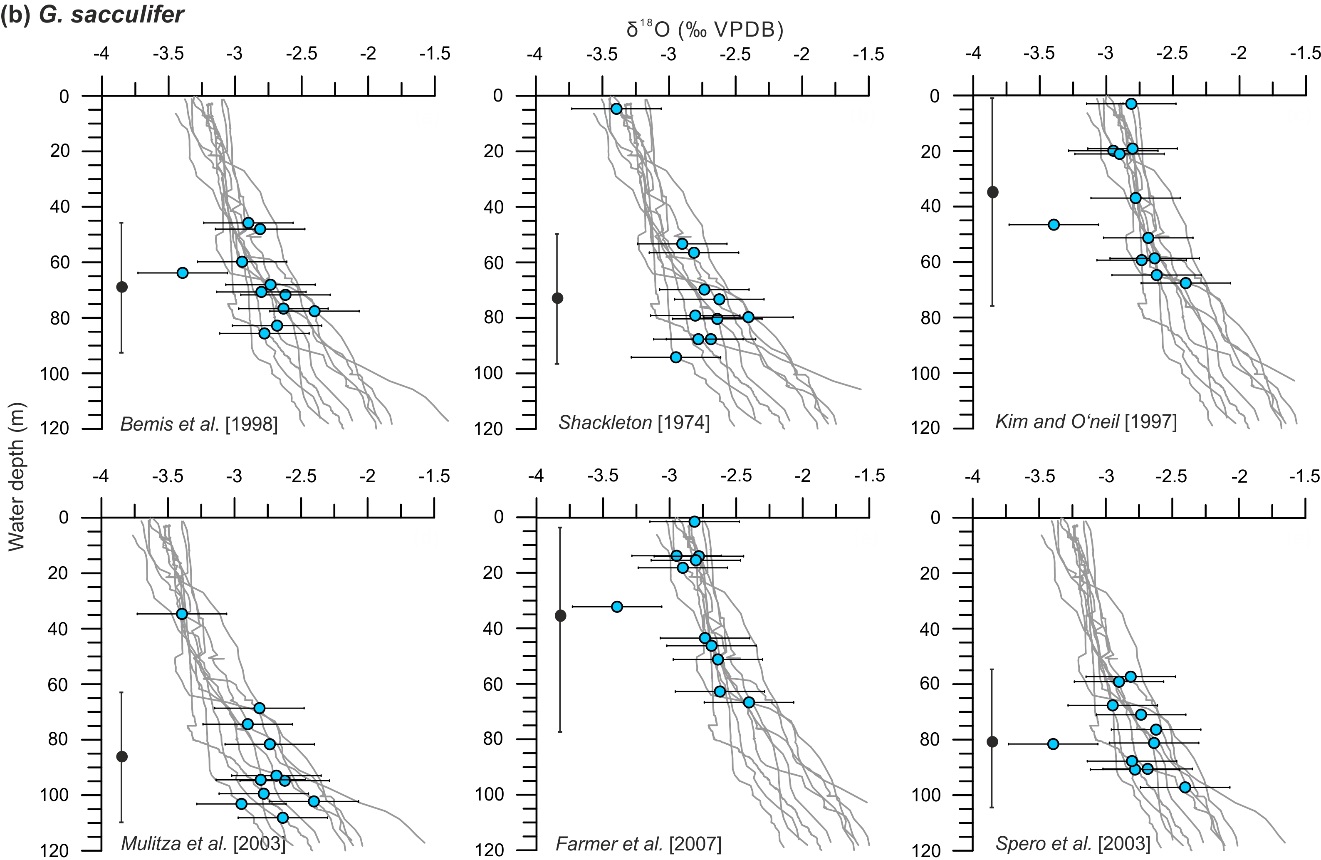


**Figure S3.** Fe/Ca (left), Al/Ca (middle) and Mn/Ca (right) of each species and sample versus Mg/Ca. Note the different scaling of the axes for individual species. Results from replicate measurements are shown separately.

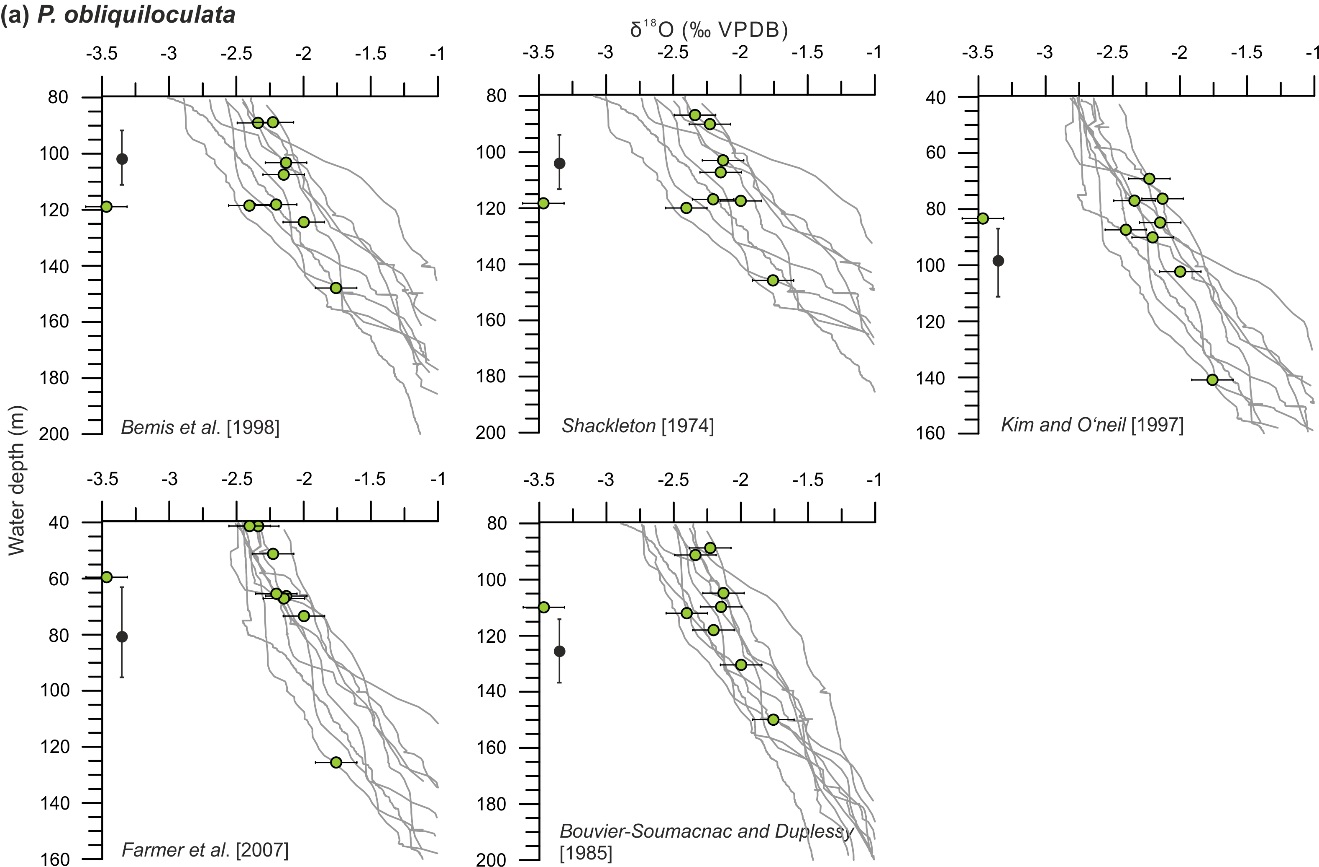
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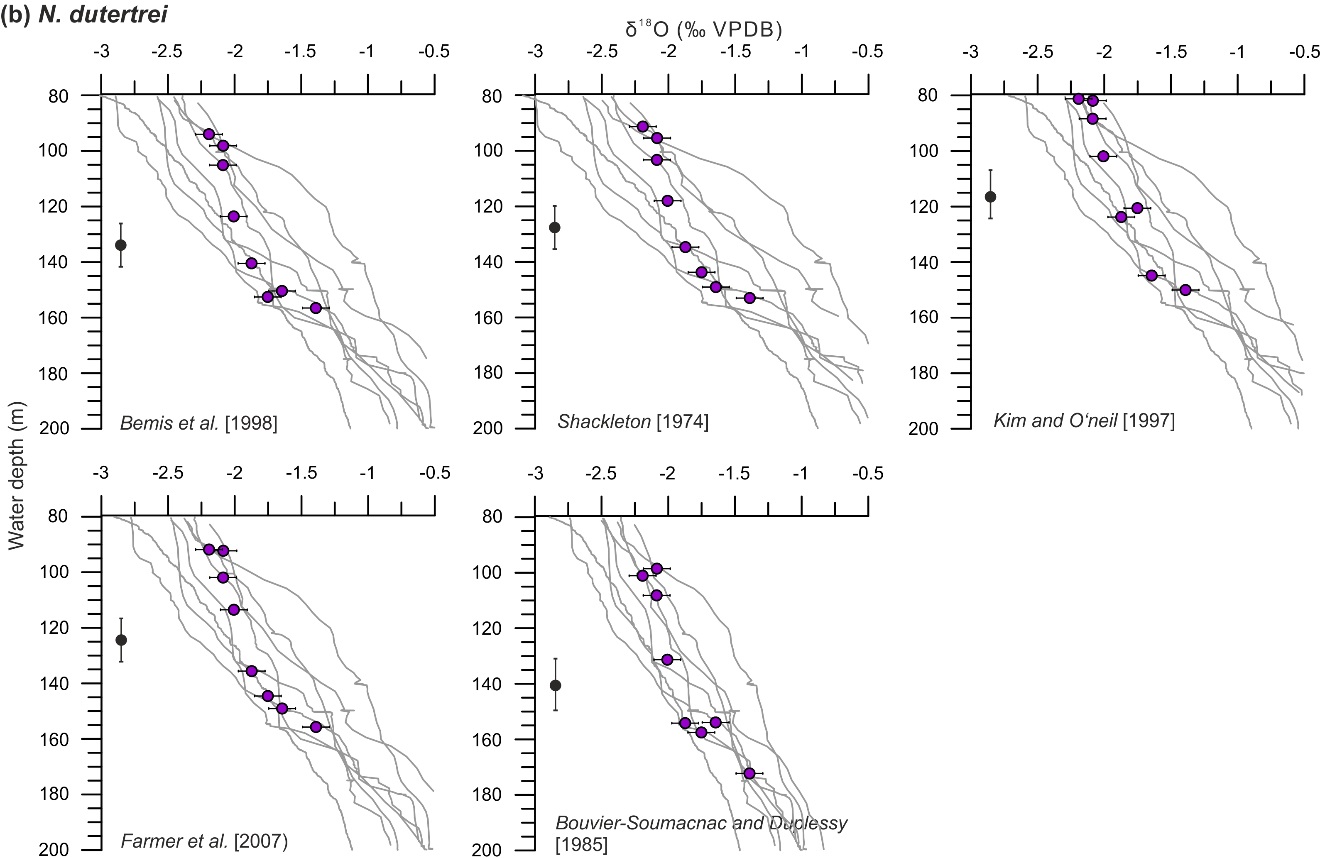
**Figure S4.** Shell Mg/Ca of each species and sample versus water depth at the respective core sites (left) and shell normalized weight (right).



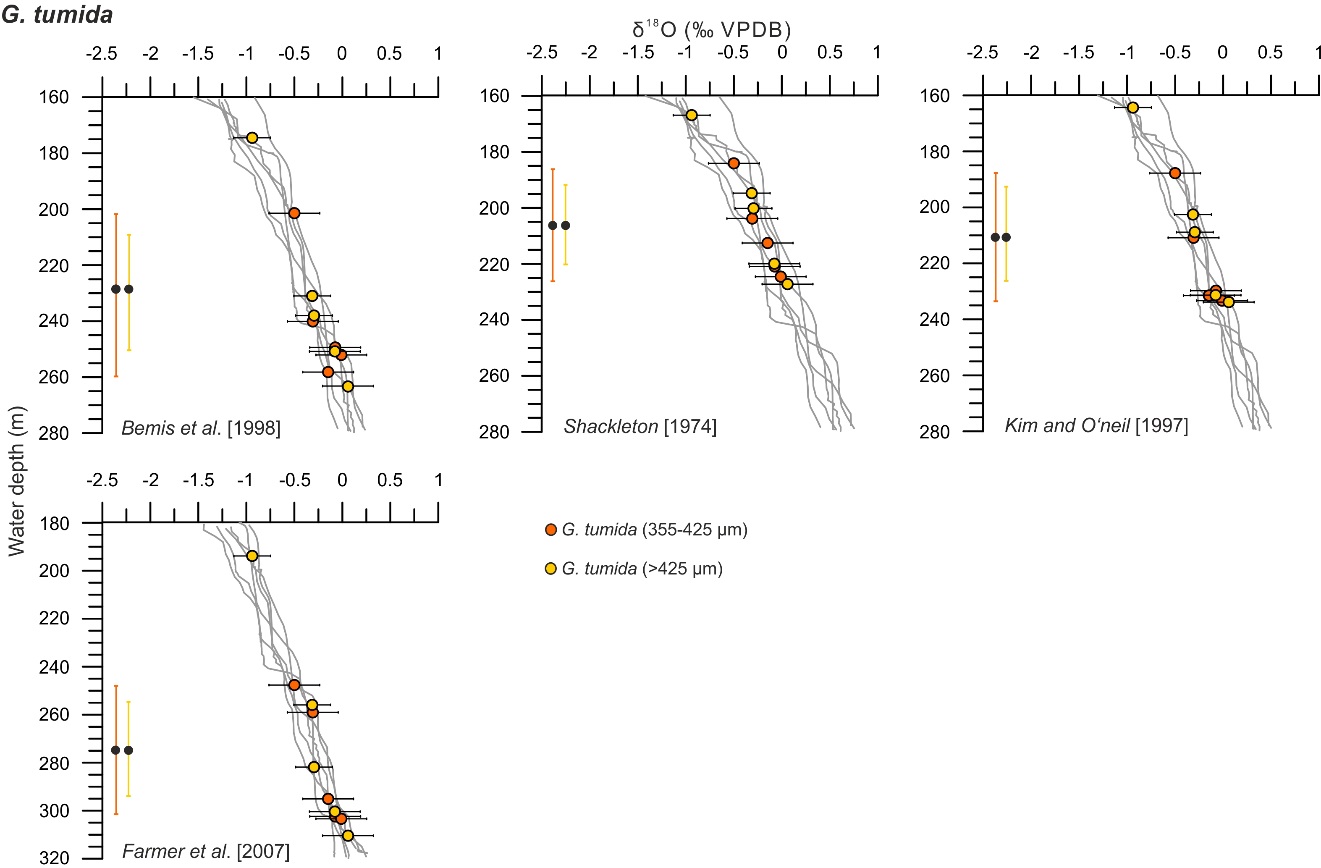


**Figure S5.** Shell δ18O derived calcification depth estimates for (a) *G. ruber*, *G. elongatus* and (b) *G. sacculifer*. Colored dots show shell δ18O. Gray lines indicate depth profiles of predicted δ18O calcite using the noted paleotemperature equations. CTD temperature and seawater δ18O calculated from salinity via δ18O-salinity regressions from the study area were implemented in the equations. Horizontal bars indicate 1σ error ranges for shell δ18O, vertical bars on black dots show exemplarily average uncertainties in calcification depth derived by projecting shell δ18O with added/subtracted standard deviations on an average δ18Ocalcite profile.

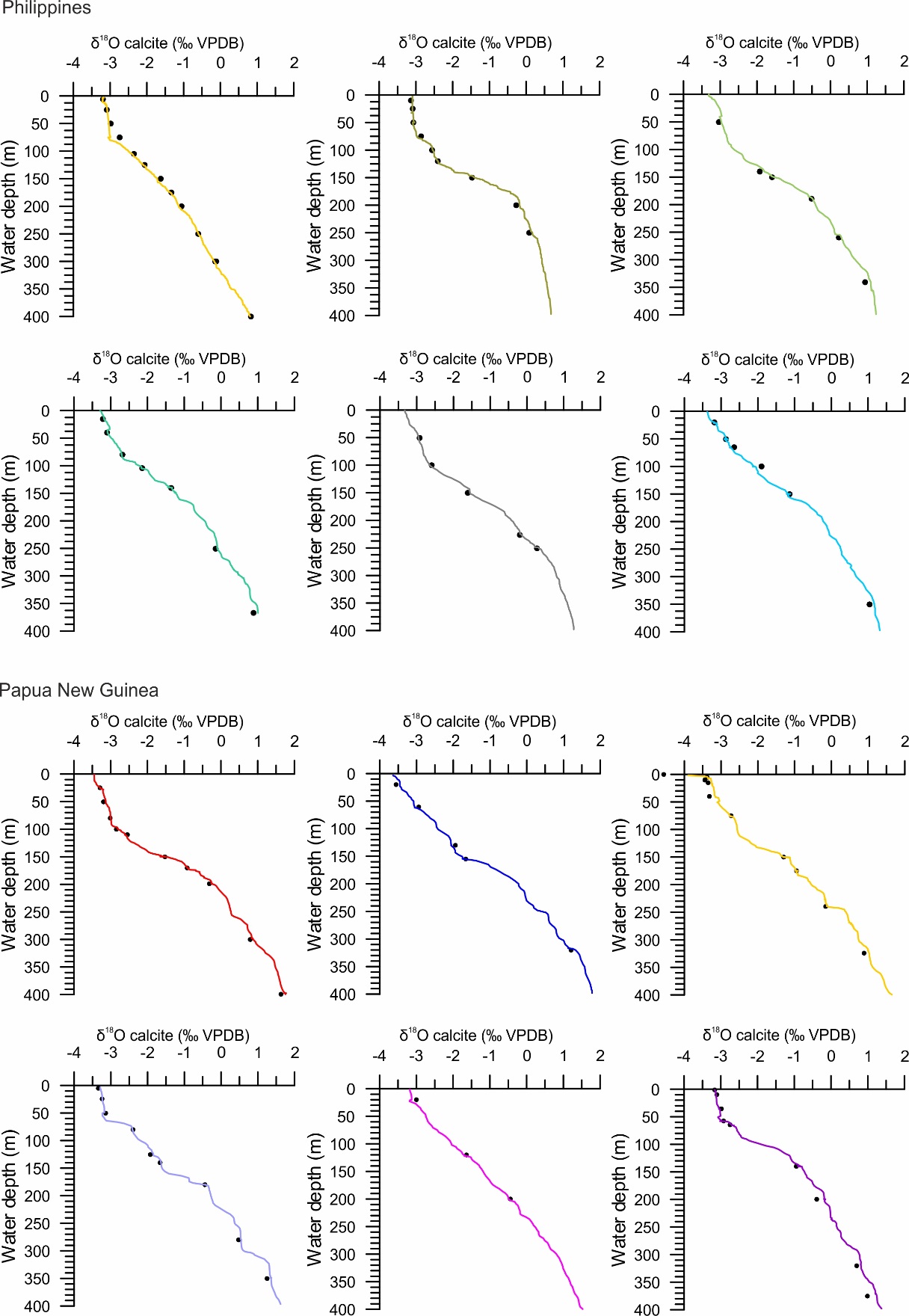




**Figure S6.** Shell δ18O derived calcification depth estimates for (a) *P. obliquiloculata* and (b) *N. dutertrei*. Colored dots show shell δ18O. Gray lines indicate depth profiles of predicted δ18O calcite using the noted paleotemperature equations. CTD temperature and seawater δ18O calculated from salinity via δ18O-salinity regressions from the study area were implemented in the equations. Horizontal bars indicate 1σ error ranges for shell δ18O, vertical bars on black dots show exemplarily average uncertainties in calcification depth derived by projecting shell δ18O with added/subtracted standard deviations on an average δ18Ocalcite profile.



**Figure S7.** Shell δ18O derived calcification depth estimates for *G. tumida*. Colored dots show shell δ18O. Gray lines indicate depth profiles of predicted δ18O calcite using the noted paleotemperature equations. CTD temperature and seawater δ18O calculated from salinity via δ18O-salinity regressions from the study area were implemented in the equations. Horizontal bars indicate 1σ error ranges for shell δ18O, vertical bars on black dots show exemplarily average uncertainties in calcification depth derived by projecting shell δ18O with added/subtracted standard deviations on an average δ18Ocalcite profile.



**Figure S8.** Comparison of δ18O predicted calcite calculated from δ18Osw measured in water samples (dots) and from CTD salinity (colored lines) at different stations offshore the Philippines and Papua New Guinea. δ18O values were converted to the VPDB scale by subtracting 0.27 ‰ [[*Hut*, 1987](#_ENREF_2)]. The temperature equation of *Bemis et al.,* [1998] was used to predict equilibrium δ18O calcite. Profiles from all stations used to estimate foraminiferal calcification depths are shown. The standard deviation for δ18OSW measurements is smaller than the symbol size and therefore error bars are not shown in the figure.

**Table S1.** SO-228 and RR-1313 CTD temperature, salinity and δ18OSW

**Table S2.** Measured δ18OSW versus δ18OSW calculated from CTD salinity. Results for all stations where vertical profiles of δ18O were used to estimate the calcification depth of severeal planktic foraminifera are shown.

**Table S3**. Mg/Ca versus δ18O-derived calcification temperatures. Mg/Ca-temperatures are based on our newly established species-specific regressions; δ18O-temperatures were calculated with the equation of *Bemis et al*. [1998].