## Review figures:

***Table 1 - 2*** *Palaeotemperature equations*

| Reference | | Material | Calibration Temperature (°C) | | Equation | | | | | | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Original | Rearranged or reformated | | Minimum | Maximum | a | b | (c - sw) | c | $(c - sw)^2$ | VSMOW to VPDB (‰) | |
| McCrea, 1950 | | Synthetic calcite | | | 16 | 5.17 | o | 0.09 | o | -0.2 | |
| Epstein *et al.*, 1953 | (Epstein & Mayeda, 1953) | Mollusk Shell | 7.2 | 29.5 | 16.50 | 4.30 | o | 0.14 | o | -0.27 | Conversion is -0.27‰ as it was directly standardized with PDB-derived $CO_2$ |
| - | Craig, 1965 | Mollusk Shell | | | 16.90 | 4.20 | o | 0.13 | o | -0.20 | |
| - | Shackleton and Opdyke, 1973 | Mollusk Shell | 7.2 | 29.5 | 16.90 | 4.38 | o | 0.13 | o | | Minor variant published in Malaizé and Caley, 2009 |
| - | Anderson and Arthur, 1983 | Mollusk Shell | 7.2 | 29.5 | 16.00 | 4.14 | o | 0.13 | o | | Revision with $\delta^{18}Ow$ referenced to VSMOW |
| O'Neil *et al.*, 1969 | Shackleton, 1974 | Synthetic calcite | 0 | 500 | 16.90 | 4.38 | o | 0.10 | o | -0.20 | Quadratic approximation from the original 1000lnα notation, calibrated with *Uvigerina* |
| - | Hays and Grossman, 1991 | Synthetic calcite | 0 | 60 | 15.70 | 4.36 | o | 0.12 | o | | Minor variant with correction of Friedman and O'Neil, 1977 (Grossman, 2012) |
| Horibe and Oba, 1972 | | Cultured mollusck *Patinopecten yessoensis* (Mutsu Bay, Japan) | 4.5 | 23.3 | 17.04 | 4.34 | o | 0.16 | o | -0.20 | |
| Erez and Luz, 1983 | | Cultured *Globigerinoides sacculifer* (50-90% growth under lab. Conditions) | 14 | 30 | 16.998 | 4.52 | o | 0.028 | o | | Minor variant in literature |
| - | Pearson, 2012 | Cultured *Globigerinoides sacculifer* (50-90% growth under lab. Conditions) | 14 | 30 | 17.00 | 4.52 | o | 0.03 | o | -0.22 | Overestimation of temperatures by 2°C |
| Bouvier-Soumagnac and Duplessy, 1985 | | *Orbulina universa* cultured | | | 16.40 | 4.67 | o | - | x | -0.20 | |
| Bouvier-Soumagnac and Duplessy, 1985 | | *Orbulina universa* (Indian Ocean) | | | 15.40 | 4.81 | o | - | x | -0.20 | |
| Grossman and Ku, 1986 | | Biogenic aragonite | 2.6 | 22 | 20.60 | 4.34 | o | - | x | 0.20 | |
| - | Hudson and Anderson, 1989 | Biogenic aragonite | 2.6 | 22 | 19.70 | 4.34 | o | - | x | - | water values cast in terms of VSMOW (Grossman, 2012) |
| Kim and O'Neil, 1997 | Bemis *et al.*, 1998 | Synthetic calcite | 10 | 40 | 16.10 | 4.64 | o | 0.09 | o | -0.27 | Quadratic approximation using a least square regression from the original 1000lnα notation, offset of ~ - 2°C for photosymbiotic species (if analogous with modern calcification in low-pH microenvironment |
| - | Peeters *et al.*, 2002 | Synthetic calcite | 10 | 40 | 15.20 | 4.60 | o | 0.09 | o | -0.27 | Quadratic approximation from the original 1000lnα notation, offset of ~ - 2°C for photosymbiotic species (if analogous with modern calcification in low-pH microenvironment |
| - | Grossman 2012 | Synthetic calcite | 10 | 40 | 13.70 | 4.54 | o | 0.09 | o | | Quadratic approximation from the original 1000lnα notation, using 1000lnα = 10.44 |
| Bemis *et al.*, 1998 | | Cultured *Orbulina universa* | 15 | 25 | 14.90 | 4.80 | o | - | x | -0.27 | High light (HL) = (>380 μEinst $m^{-2}$ $s^{-1}$) |
| Bemis *et al.*, 1998 | | Cultured *Orbulina universa* | 15 | 25 | 16.50 | 4.80 | o | - | x | -0.27 | Low Light (LL) = (20-30 μEinst $m^{-2}$ $s^{-1}$) |
| Bemis *et al.*, 1998 | | Cultured *Globigerina bulloides* (11-chambered shell) | 14.5 | 24 | 12.60 | 5.07 | o | - | x | -0.27 | Mass balance relationship, where δ18O values of the first 10 chambers are estimated at the experimental temperature via interpolation of 10-chambered shells collected at 16°C (Spero and Lea, 1996) and 22°C (Bemis et al., 1998) |
| Bemis *et al.*, 1998 | | Cultured *Globigerina bulloides* (12-chambered shell) | 14.5 | 24 | 13.20 | 4.89 | o | - | x | -0.27 | Mass balance relationship, where δ18O values of the first 10 chambers are estimated at the experimental temperature via interpolation of 10-chambered shells collected at 16°C (Spero and Lea, 1996) and 22°C (Bemis et al., 1998) |
| Bemis *et al.*, 1998 | | Cultured *Globigerina bulloides* (13-chambered shell) | 14.5 | 24 | 13.60 | 4.77 | o | - | x | -0.27 | Mass balance relationship, where δ18O values of the first 10 chambers are estimated at the experimental temperature via interpolation of 10-chambered shells collected at 16°C (Spero and Lea, 1996) and 22°C (Bemis et al., 1998) |
| Lynch-Stieglitz *et al.*, 1999 | | In-situ *Cibicidoides* and *Planulina* (*Surface sediments, Little Bahama Bank*) | 4.1 | 25.6 | 16.10 | 4.76 | o | - | x | -0.27 | |
| - | Cramer *et al.*, 2011 | In-situ *Cibicidoides* and *Planulina* (*Surface sediments, Little Bahama Bank*) | 4 | 26 | 16.10 | 4.76 | o | - | x | -0.27 | |
| Mielke, 2001 | Spero *et al.*, 2003 | Cultured *Globorotalia menardii* | ? | ? | 14.90 | 5.13 | o | - | x | -0.27 | |
| Spero *et al.*, unpublished | Spero *et al.*, 2003 | Cultured *Globigerinoides sacculifer* | ? | ? | 12.00 | 5.57 | o | - | x | -0.27 | High light (HL) |
| Mulitza *et al.*, 2003 | | In-situ *Globigerinoides sacculifer* | 16 | 31 | 14.91 | 4.35 | o | - | x | -0.27 | High light (HL) |

**Figure 1:** Example of a table format for summarizing palaeotemperature calibrations including the calibration temperature minimum and maximum, material and format of the equation. The o and x in (c-sw) and (c-sw)^2 columns denote either their presence or absence from the formula. From Metcalfe (2013).

## Review References

Metcalfe, B. (2013, December 17). Planktonic foraminifera: From production to preservation of the oceanographic signal. Amsterdam, Netherlands: Vrije Universiteit Amsterdam. https://research.vu.nl/en/publications/planktonic-foraminifera-from-production-to-preservation-of-the-oc