



## *Supplement of*

# **The Early–Middle Pleistocene Transition in the Gulf of Cadiz (NE Atlantic) – an interplay between subtropical gyre and extremely cold surface waters**

**Aline Mega et al.**

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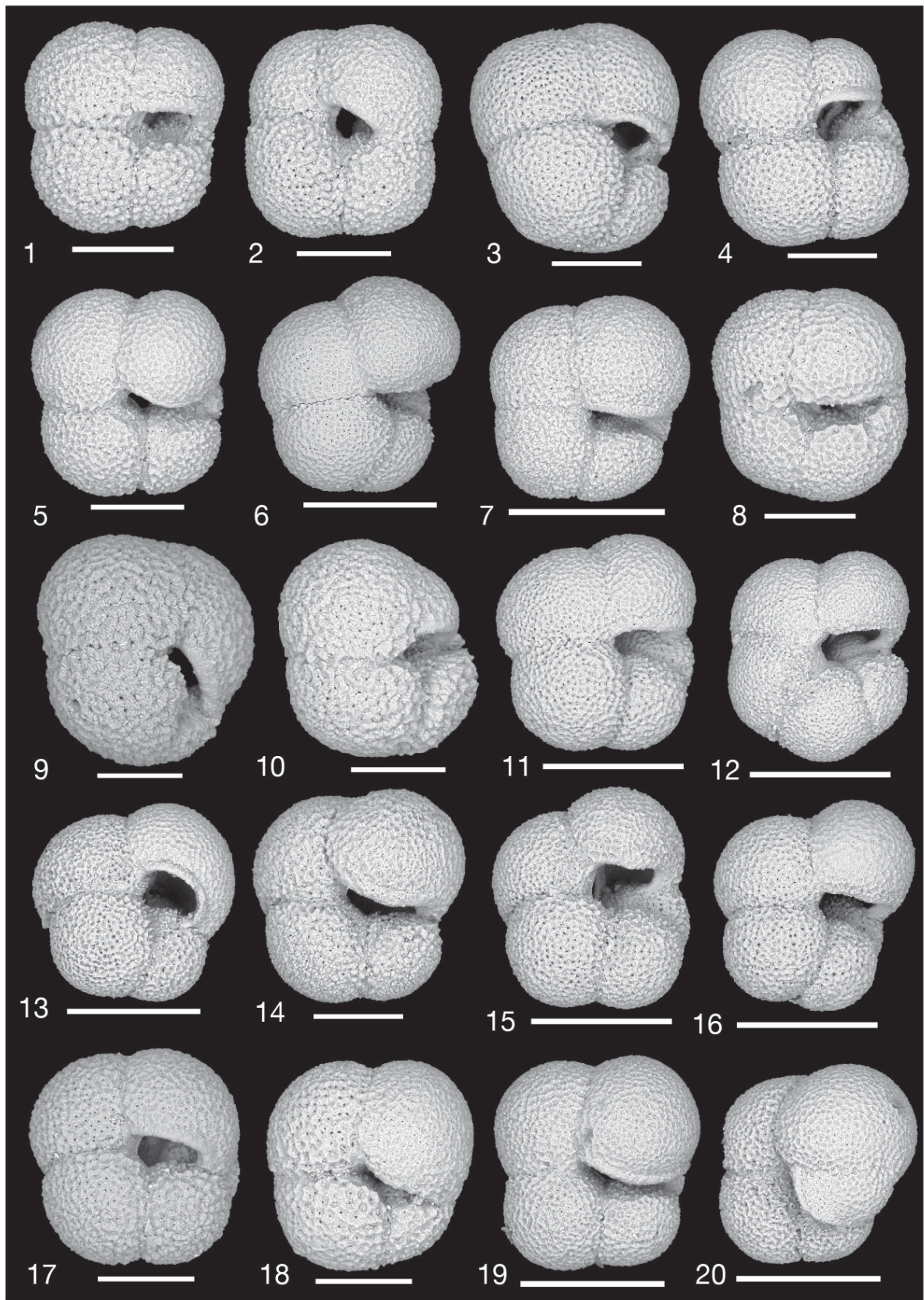
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**Supplementary Table 1** Province assemblage means for the different Marine Isotopic Stages (MIS) at IODP Site U1387

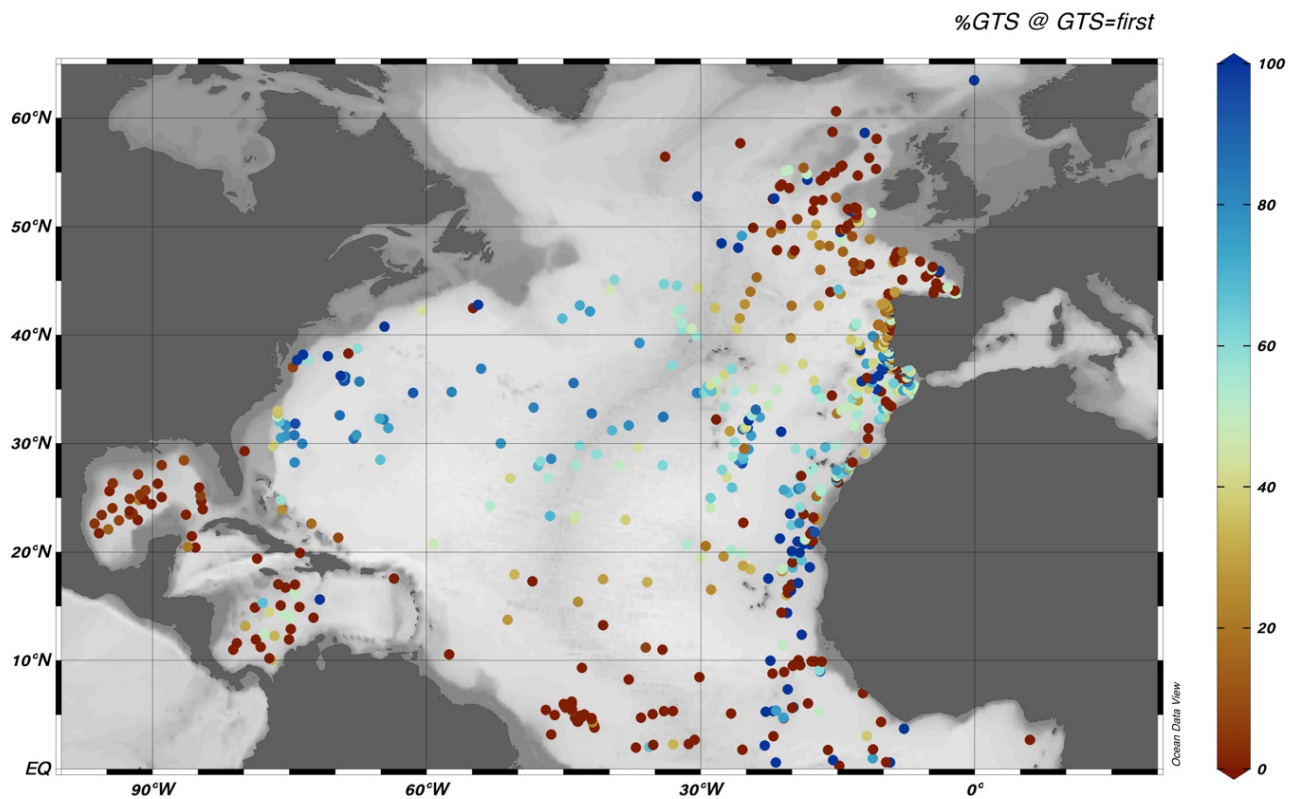
| <b>MIS</b> | <b>%<br/>Tropical+Subtropical<br/>Species</b> | <b>%<br/>Transitional<br/>Species</b> | <b>%<br/>Polar+Subpolar<br/>Species</b> |
|------------|-----------------------------------------------|---------------------------------------|-----------------------------------------|
| 18         | 12.78                                         | 57.74                                 | 29.48                                   |
| 19         | 20.97                                         | 45.75                                 | 32.84                                   |
| 20         | 24.92                                         | 46.84                                 | 28.25                                   |
| 21         | 26.93                                         | 38.06                                 | 34.92                                   |
| 22         | 19.72                                         | 30.33                                 | 49.90                                   |
| 23         | 23.56                                         | 31.28                                 | 45.09                                   |
| 24         | 16.25                                         | 43.04                                 | 40.67                                   |
| 25         | 27.04                                         | 41.13                                 | 31.83                                   |
| 26         | 19.73                                         | 41.80                                 | 38.47                                   |
| 27         | 21.42                                         | 47.15                                 | 31.44                                   |
| 28         | 16.92                                         | 35.03                                 | 48.05                                   |

**Supplementary figure 1:** SEM images of *N. pachyderma* from IODP Site U1387

1-2: U1387B-21X-1 52-54 cm, scale bar 100µm, 790.25 ka; 3-5: U1387B-22X-3 52.5-54.5 cm; scale bar 100µm; 863.92 ka; 6: U1387B-22X-3 78-80 cm, scale bar 200µm, 866.01 ka; 7-10: U1287B-22X-3 102-104 cm, scale bar 100µm, 867.92 ka; 11-12: U1387B-22X-3 120-122 cm, scale bar 200µm, 869.36 ka; 13: U1387A-23X-2 88-90 cm, scale bar 200µm, 890.80 ka; 14: U1387B-24X-CC 21-23 cm, scale bar 100µm, 958.41 ka; 15-18: U1387B-24X-CC 26-28 cm; 15, 16 scale bar 200µm, 17, 18 scale bar 100 µm, 958.54 ka; 19-20: U1387B-25X-6 125-127 cm, scale bar 200µm, 1001.26 ka



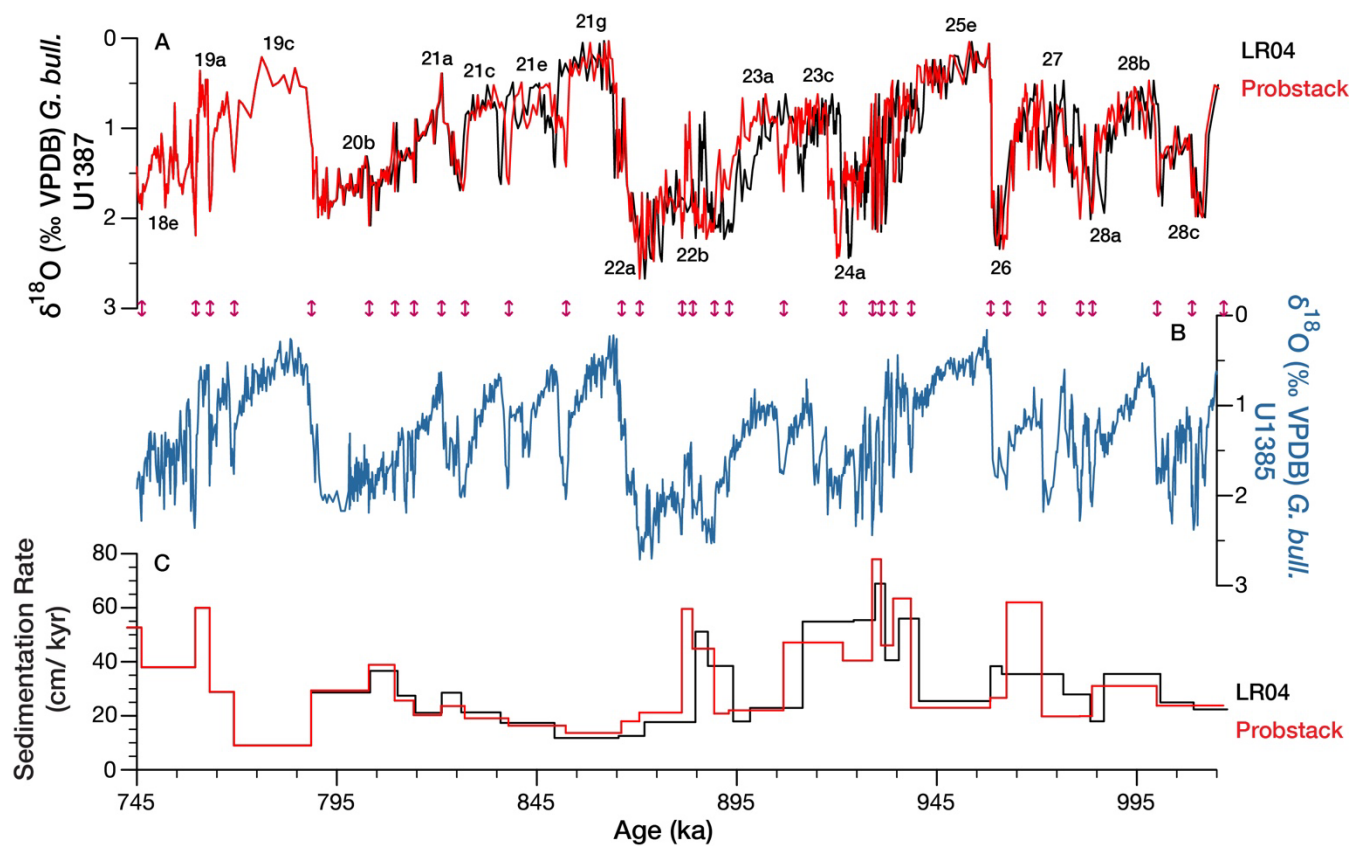
**Supplementary figure 2:** % GTS pattern in the North Atlantic calculated based on the % *G. truncatulinoides* left and % *G. truncatulinoides* right data available in the Salgueiro et al. (2014) surface sample database; stations with just a total 0.1% *G. truncatulinoides* (left and right combined) contribution to the total fauna were excluded. Note that not all samples might fulfill the minimum of 20 *G. truncatulinoides* specimens counted criteria, i.e., the cut-off level for reliable data defined by Kaiser et al. (2019). The overall pattern already depicted in figure 2 of Billups et al. (2016) is confirmed, especially the boundary in the NE Atlantic (around 36°N), which can be attributed to the Azores Current and Azores Front. The additional evidence of % GTS values along the eastern boundary of the North Atlantic subtropical gyre makes us confident that the % GTS proxy can be applied in our study region.



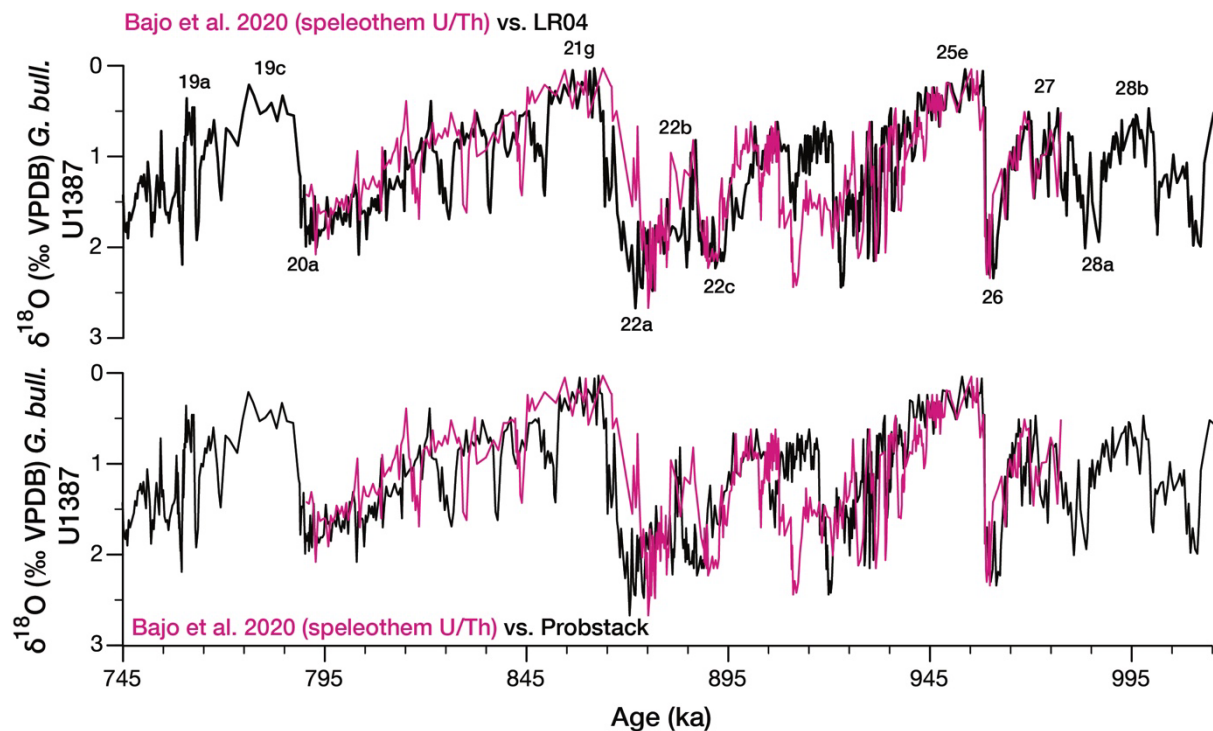
Map made with ODV software (Schlitzer, 2023).

### Supplementary figure 3: Probstack related age model and sedimentation rates

A:  $\delta^{18}\text{O}$  (‰) *G. bulloides* from IODP Site U1387 for the Probstack (Ahn et al., 2017) related age model (red) and the LR04 age model (black). Marine Isotopic Stages and Substages are indicated numbers and letters. B:  $\delta^{18}\text{O}$  (‰) *G. bulloides* from IODP Site U1385 on its Probstack related age model (Hodell et al., 2023b). Arrows between A and B indicate the tuning points between the two records, which remain at the same stratigraphic positions as for the tuning to the U1385 LR04 related age model. C: Sedimentation rates (cm/kyr) for IODP Site U1387 related to Probstack (red) and LR04 (black).



**Supplementary figure 4:** Comparison of the Bajo et al. (2020b) Corchia speleothem tuned age model with the LR04 (upper panel) and Probstack (lower panel) age models of this study



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