

PRISM 4

The logo consists of the text "PRISM 4" in a bold, sans-serif font. Below the text is a square divided into four quadrants. The top-left quadrant shows a map of the world with the Americas highlighted. The top-right quadrant shows a line graph with a red vertical line. The bottom-left quadrant shows a scallop. The bottom-right quadrant shows a binary map of the world.

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Figure 1 consists of two panels, (a) and (b), showing the latitudinal distribution of ΔT (°C) for the 1982/83 and 1999/00 El Niño events, respectively. Both panels include a time series plot at the top and a latitude axis from -10 to 70. The shaded areas represent the 95% confidence interval.

Panel (a) shows the 1982/83 event with a green shaded area. A green arrow indicates a shift from 3.025 to 3.264. Data points are labeled with years: 502, 672, 1006, 396, 606, 609, 410, 552, 610, 907.

Panel (b) shows the 1999/00 event with a blue shaded area. A blue arrow indicates a shift from 3.200 to 3.210. Data points are labeled with years: 662, 999, 1313, 1308, Yorktown, 982, 642.

Data-Model Comparison

Figure 10 consists of four panels, each showing the difference in sea surface temperature (ΔSST) in degrees Celsius versus latitude in degrees North ($^{\circ}N$). The y-axis ranges from -4 to 10, and the x-axis ranges from -10 to 70. Each panel includes a legend with four entries: PRISM4 (red square), COSMO-Toronto (red square), PRISM4 (blue circle), and a specific model (blue circle). The panels are labeled as follows:

- Top-left: PRISM4, COSMO-Toronto. The model is labeled "Atmospheric temperature atmospheric warm-up (1.38°C)".
- Top-right: PRISM4, WRC-CG3.3. The model is labeled "Atmospheric temperature atmospheric warm-up (1.38°C)".
- Bottom-left: PRISM4, ER-Earth. The model is labeled "Atmospheric temperature atmospheric warm-up (1.38°C)".
- Bottom-right: PRISM4, HadCM3. The model is labeled "Atmospheric temperature atmospheric warm-up (1.38°C)".

In all panels, the PRISM4 data points are shown as red squares with error bars, and the model data points are shown as blue circles with error bars. The model data points are connected by a blue line. The panels show varying trends of ΔSST with latitude, with some models showing a significant increase in ΔSST at higher latitudes.

Preliminary data-model comparison between PRISM4 Δ SST and four PlioMIP2 Eoi(400) simulations. Anomalies for PRISM data are PRISM4 SST minus NOAA v5 Pre Industrial. Model anomalies are MODEL Pliocene SST minus MODEL control. In each plot the gradient between Site 1313 and Site 642 is shown by a red line. These same sites are highlighted blue for the CCSM4-Toronto, EC-Earth, MRI-CGCM2.3 and HadCM3 runs.

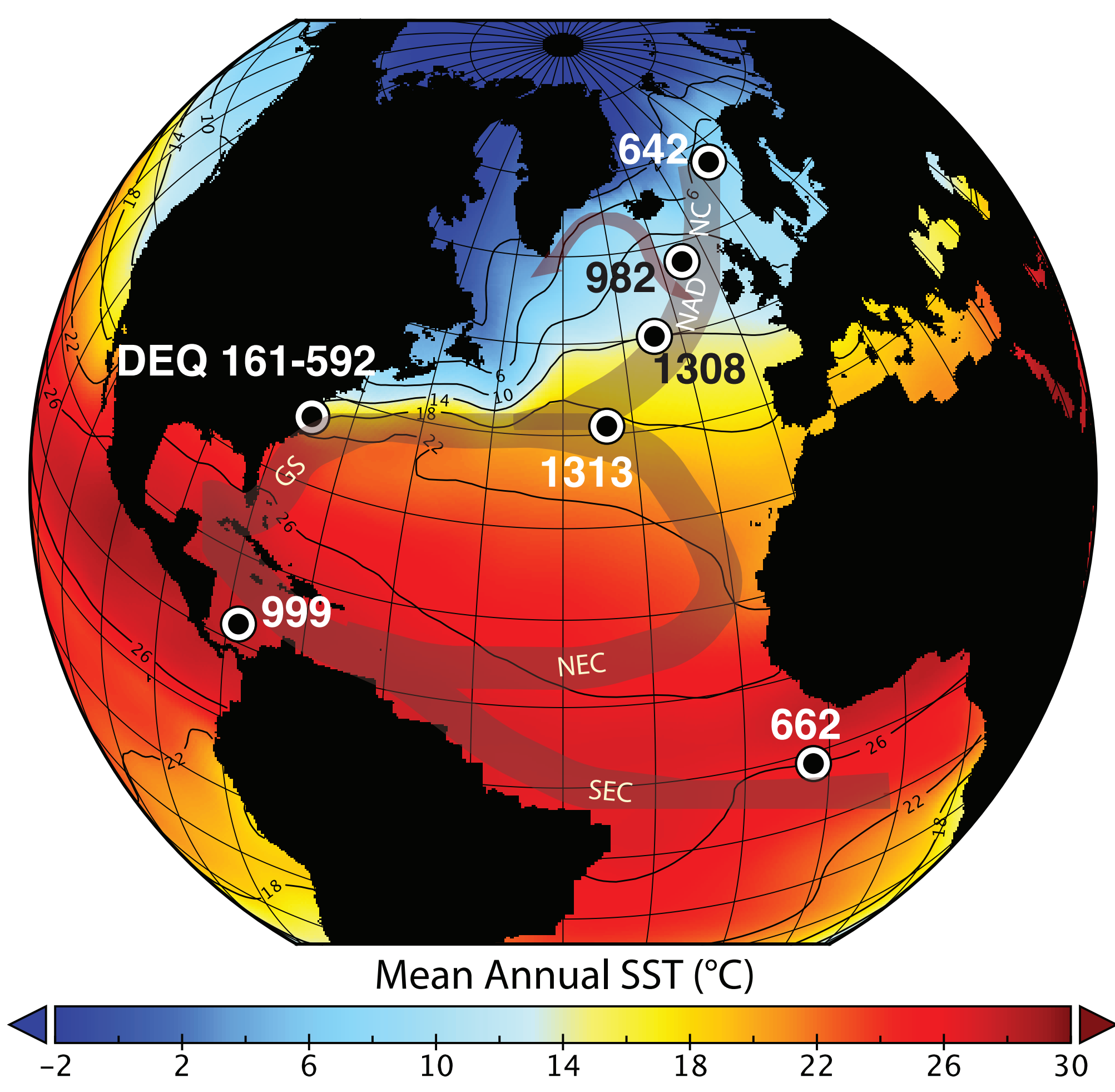
CCSM4-Toronto	Chandan, D. & Peltier, W.R., <i>Climate of the Past</i> 13, 919-942 (2017).
	Chandan, D. & Peltier, W.R., <i>Climate of the Past</i> 14, 825-856 (2018).
HadCM3	Hunter, S., <i>et al.</i> , <i>Climate of the Past</i> (in prep).
MRI-CGCM2.3	Kamae, Y., <i>et al.</i> , <i>Climate of the Past</i> 12, 1619-1634 (2016).
EC-EARTH	Zheng, J., <i>et al.</i> , <i>Climate of the Past Discussions</i> , cp-2018-59, (in review)

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Localities



References:

Bachem, P. E., et al., *Earth and Planetary Science Letters* 446, 113-122 (2016).

Dowsett, H. J., et al., *U.S. Geological Survey data release*, 10.5066/7F959GIS (2017).

Herbert, T. D., et al., *Science*, 328, 1530-1534 (2010).

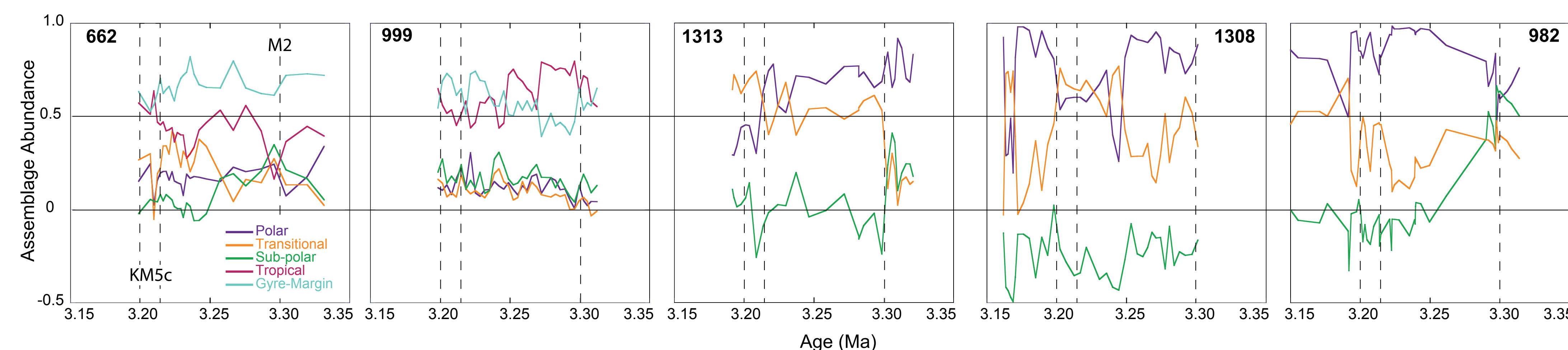
Lisiecki, L. E. and Raymo, M. E., *Paleoceanography*, 20, 10.1029/2004PA001071 (2005).

Naafs, B. D. A., et al., *Earth and Planetary Science Letters*, 298(3-4), 434-442 (2012).

Ward, L.W. and Blackwelder, U.S., *Geological Survey Bulletin*1482-D (1980).

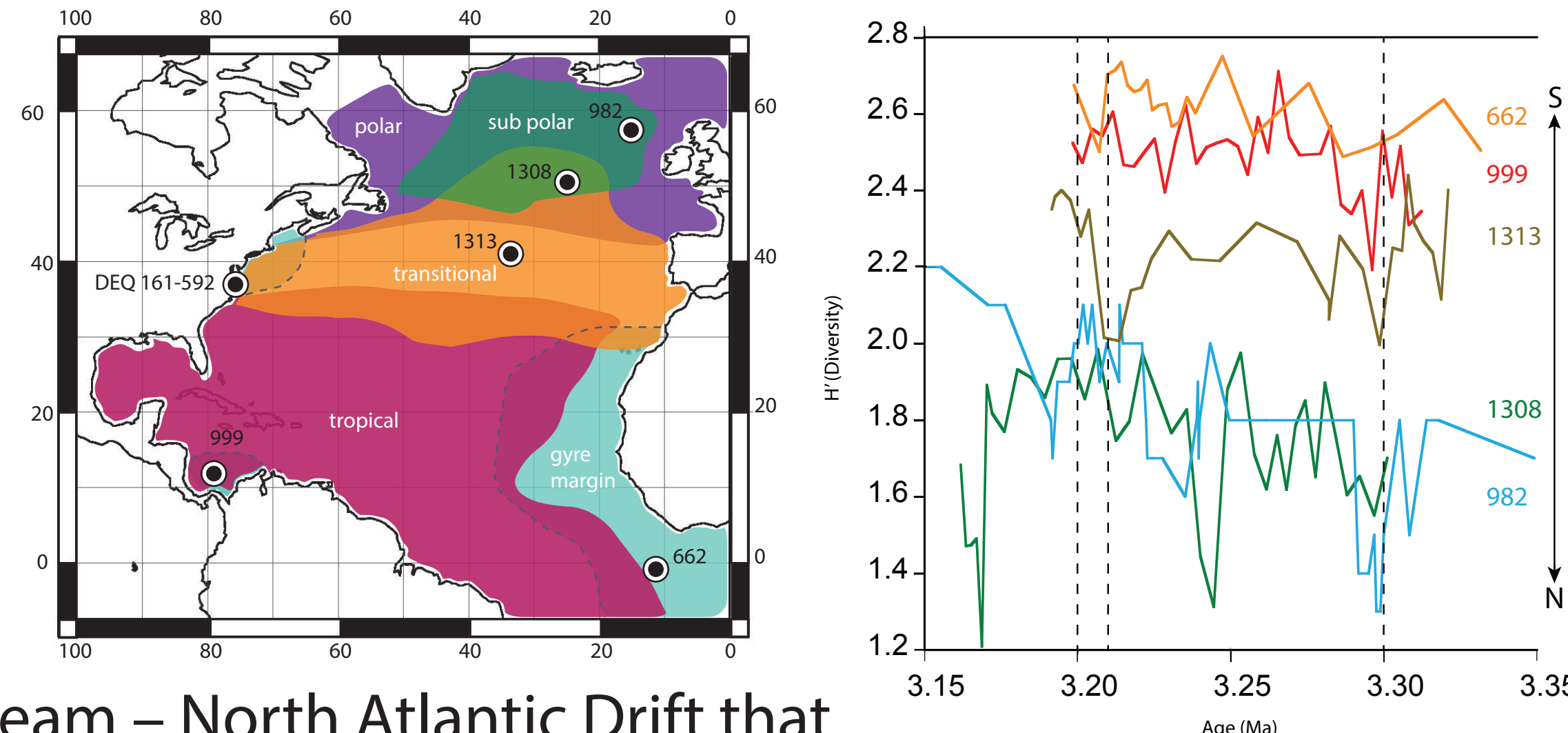
58,000 planktonic foraminifer specimens were identified and assigned to 45 species. These data are used to reconstruct diversity, seasonality and productivity. Assemblages are dominated by *Gl. puncticulata*, *G. bulloides*, *N. incompta*, *N. atlantica*, *Gs. sacculifer* and *Gt. glutinata*. Variations are consistent with alkenone based SST changes. An additional 22 taxa have maximum occurrences between 10% and 25% in at least one sample. The remaining 16 taxa are minor constituents. Multiple examples of faunal abundance patterns tracking environmental changes other than temperature (e.g. seasonality and productivity) argue for increased efforts to understand complex paleoecological relationships in the context of data-model comparison.

Faunal Assemblages

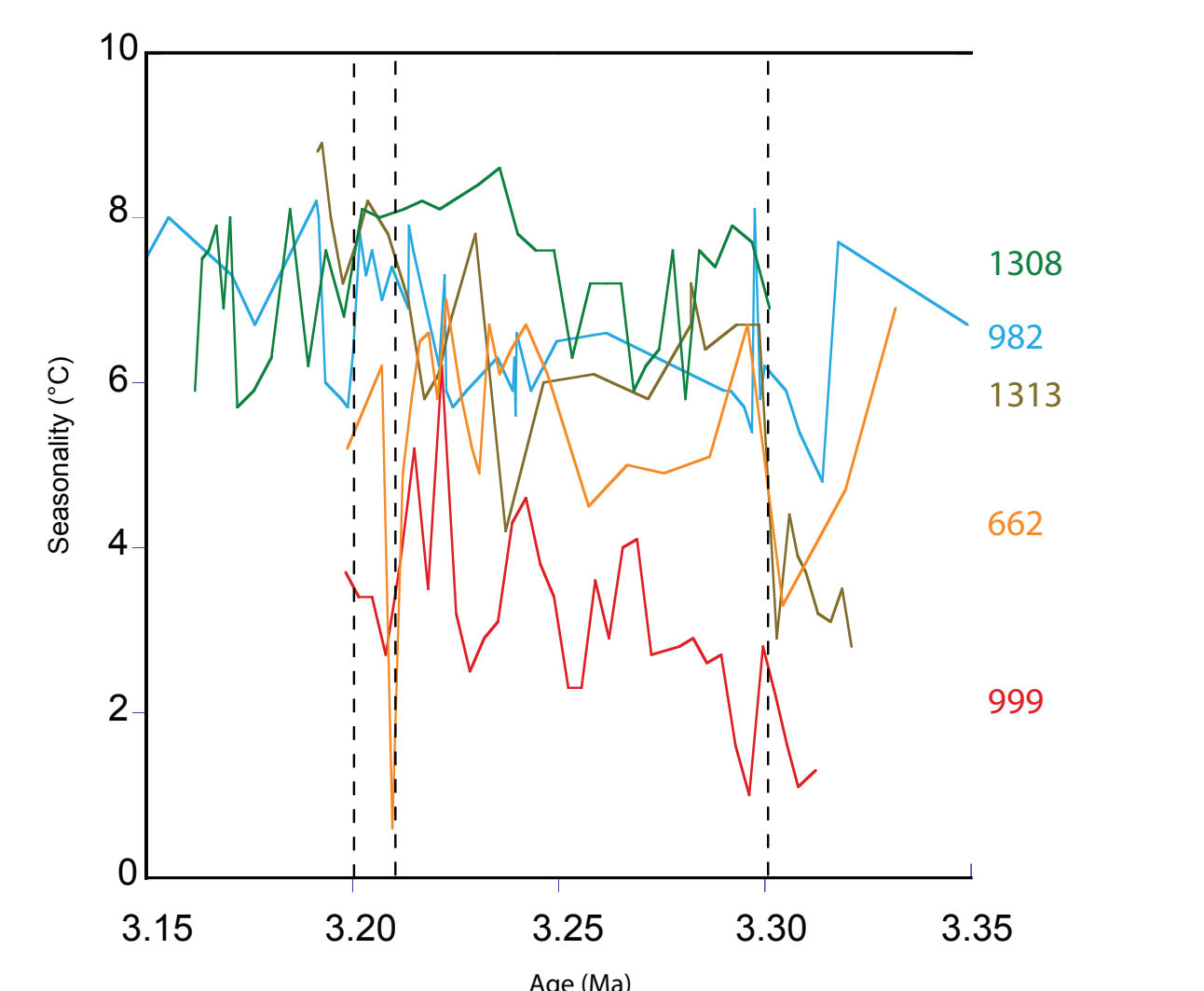


Assemblages indicate intermittent connections between the Atlantic and Pacific via the CAS along with a Gulf Stream – North Atlantic Drift that migrated north over the M2–M1 transition, exhibited high-frequency migrations north and south during M1 and KM6, and attained its most northern position by KM5.

Diversity



Seasonality



Productivity

