Earth Syst. Sci. Data, 14, 2553–2611, 2022
https://doi.org/10.5194/essd-14-2553-2022

Open Access Earth System Science Data

World Atlas of late Quaternary Foraminiferal Oxygen and Carbon Isotope Ratios

Stefan Mulitza[1], Torsten Bickert[1], Helen C. Bostock[2,3], Cristiano M. Chiessi[4], Barbara Donner[1], Aline Govin[5], Naomi Harada[6], Enqing Huang[7], Heather Johnstone[1], Henning Kuhnert[1], Michael Langner[1], Frank Lamy[8], Lester Lembke-Jene[8], Lorraine Lisiecki[9], Jean Lynch-Stieglitz[10], Lars Max[1], Mahyar Mohtadi[1], Gesine Mollenhauer[8], Juan Muglia[11], Dirk Nürnberg[12], André Paul[1], Carsten Rühlemann[13], Janne Repschläger[14], Rajeev Saraswat[15], Andreas Schmittner[16], Elisabeth L. Sikes[17], Robert F. Spielhagen[12], and Ralf Tiedemann[8]

[1]MARUM – Center for Marine Environmental Sciences, University of Bremen, Bremen, Germany
[2]School of Earth and Environmental Sciences, University of Queensland, Brisbane, Australia
[3]National Institute of Water and Atmospheric Research (NIWA), Taihoro Nukurangi, Wellington, New Zealand
[4]School of Arts, Sciences and Humanities, University of São Paulo, São Paulo, Brazil
[5]LSCE-IPSL, Laboratoire des Sciences du Climat et de l'Environnement (CEA-CNRS-UVSQ), Paris-Saclay University, 91190, Gif-sur-Yvette, France
[6]Japan Agency for Marine-Earth Science and Technology, 2-15, Natsushima, Yokosuka, Kanagawa, 237-0061, Japan
[7]State Key Laboratory of Marine Geology, Tongji University, Shanghai 200092, China
[8]Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Bremerhaven, Germany
[9]Department of Earth Science, University of California, Santa Barbara, CA 93106, USA
[10]School of Earth and Atmospheric Sciences, Georgia Institute of Technology, Atlanta, GA, USA
[11]Centro para el Estudio de los Sistemas Marinos, CONICET, 2915 Boulevard Brown, U9120ACD, Puerto Madryn, Argentina
[12]GEOMAR Helmholtz Centre for Ocean Research, Wischhofstr. 1–3, Geb. 4, 24148, Kiel, Germany
[13]Bundesanstalt für Geowissenschaften und Rohstoffe, Stilleweg 2, 30655 Hanover, Germany
[14]Department of Climate Geochemistry, Max Planck Institute for Chemistry, Hahn-Meitner-Weg 1, 55128 Mainz, Germany
[15]Micropaleontology Laboratory, Geological Oceanography Division, National Institute of Oceanography, Goa, India
[16]College of Earth, Ocean, and Atmospheric Sciences, Oregon State University, Corvallis, OR, USA
[17]Department of Marine and Coastal Sciences, Rutgers University, New Brunswick, NJ, USA

Correspondence: Stefan Mulitza (smulitza@marum.de)

Received: 7 October 2021 – Discussion started: 25 November 2021
Revised: 13 April 2022 – Accepted: 26 April 2022 – Published: 8 June 2022

Abstract. We present a global atlas of downcore foraminiferal oxygen and carbon isotope ratios available at https://doi.org/10.1594/PANGAEA.936747 (Mulitza et al., 2021a). The database contains 2106 published and previously unpublished stable isotope downcore records with 361 949 stable isotope values of various planktic and benthic species of Foraminifera from 1265 sediment cores. Age constraints are provided by 6153 uncalibrated radiocarbon ages from 598 (47 %) of the cores. Each stable isotope and radiocarbon series is provided in a separate netCDF file containing fundamental metadata as attributes. The data set can be managed and explored with the free software tool PaleoDataView. The atlas will provide important data for paleoceanographic analyses and compilations, site surveys, or for teaching marine stratigraphy. The database can be updated with new records as they are generated, providing a live ongoing resource into the future.

1 Introduction

Stable oxygen and carbon isotope ratios measured on foraminiferal shells are often regarded as the foundation of Marine Geology and Paleoceanography. The importance of these proxies stems from their broad applicability in time and space, their established and efficient analytical methods and their great value for stratigraphy and paleoceanographic reconstructions (see review by Pearson, 2012). Since the pioneering work of (Urey, 1947), millions of foraminiferal isotope measurements have been performed representing time slices from the Middle Jurassic (e.g., Vetoshkina et al., 2014) into the Anthropocene (e.g., McGregor et al., 2007). Foraminiferal isotopes have substantially contributed to the reconstruction and understanding of the global climate evolution since the Early Cretaceous (Cramer et al., 2009) including the validation of the orbital theory of the ice ages (Hays et al., 1976), reconstructions of ice volume (Shackleton and Opdyke, 1973; Waelbroeck et al., 2002) and water mass structure, ocean circulation, and carbon cycling (Curry et al., 1988; Duplessy et al., 1988; Boyle and Keigwin, 1987).

Despite their importance for the understanding of the Earth system, foraminiferal isotope data have not been systematically catalogued globally or stored in a database in a consistent and standardized format. Foraminiferal isotope data are usually available in arbitrary data formats and scattered across different data repositories, which hinders an automated analysis. Harmonized data collections have the advantage that (i) information about data coverage can be immediately accessed and visualized, for example in the planning phase of research projects, (ii) data can be quickly compared for verification/quality control or to separate local signals from global signals, and (iii) that customized software can be used to visualize and analyze the data.

Here we present the first global atlas of foraminiferal stable isotope data (with uncalibrated radiocarbon ages where available). The data are stored in netCDF format (Rew and Davis, 1990) and can be directly analyzed and visualized with the free software tool PaleoDataView (PDV, Langner and Mulitza, 2019). In PDV, age information for a specific sediment core is linked to any downcore proxy series imported for that core within the same collection. This strategy ensures the long-term maintainability and consistency of the age models across different proxy records (e.g., stable isotope records of different species) in the same collection. The netCDF format also allows the data to be analyzed using programming languages such as MATLAB, R, Fortran, C++ and Python.

2 Data sources and harmonization

The database is provided as a collection of 2106 netCDF files with $\delta^{18}O$ and $\delta^{13}C$ data of species-specific foraminiferal carbonate and 598 netCDF files with raw radiocarbon ages (see references in Table A1). A detailed description of the attributes and variables in the netCDF files is provided in Sects. S1 and S2 in the Supplement. About 79 % of the files containing stable isotope records were derived from data downloaded either from PANGAEA (http://www.pangaea.de, last access: 19 May 2022) or NOAA's National Centers for Environmental Information (NCEI, http://www.ncdc.noaa.gov, last access: 19 May 2022). The remaining 21 % of the stable isotope files are based on data obtained directly from a stable isotope laboratory by one of the co-authors (8 %) or have been digitized from tables provided in papers, or paper supplements (6 %), or through personal communication (7 %). Radiocarbon data are not as frequently archived in public databases as stable isotope data. Only 62 % of the files containing radiocarbon data were obtained from NOAA or PANGAEA, whereas data in 32 % of the files were copied from tables in papers or paper supplements; 5 % of the files are based on data directly obtained from laboratories, while only 1 % were obtained through personal communication. The data set also includes 105 previously unpublished species-specific stable isotope downcore records including both $\delta^{18}O$ and $\delta^{13}C$ values and 45 species-specific isotope downcore records for which either $\delta^{13}C$ or $\delta^{18}O$ was previously unpublished (Sect. S3 in the Supplement). A table containing all data sources is available from Zenodo (https://doi.org/10.5281/zenodo.6337519, Mulitza et al., 2021b).

To generate the netCDF files, metadata, isotope data, and radiocarbon ages (if available) were first assembled in species- and site-specific Excel files in the format required by PDV. The species names were preserved as used in the original publication. If more than one stable isotope record of the same species was available for the same core, we added a suffix (e.g., size class or version) to the species name. The Excel files were then edited for units (mainly conversion from "cm" to "m" and years to kiloyears) and metadata were added. Unavailable data fields were filled with "NaN". Finally, the Excel files were converted to netCDF files using the PDV import tool. Stable isotope data and radiocarbon data were saved in separate files to allow the radiocarbon file to link to several proxy records from the same core via the core label. After import, the data were inspected and quality controlled in PDV. Every row of the downcore data fields is associated with a "use flag" indicating whether the values should be included in an analysis (use flag = 1) or not (use flag = 0). This flag can be used to exclude outliers (e.g., due to turbidites) or radiocarbon reversals in a later analysis of the data while maintaining the original data in the file. Isotope values without replicates were imported with a use flag set to "1". For replicate stable isotope measurements the use flags were set to "0" and an average of the replicates (use flag = 1) was added to the series with a comment "Mean of multiple measurements" in the same row. Raw radiocarbon ages were generally imported with a use flag set to "0" since the data are uncalibrated. Most of the data are archived with original downcore depth of the samples. If a composite depth scale was used (e.g., for International Ocean Discovery Program (IODP) and its predecessors Deep Sea Drilling Program (DSDP) and Ocean Drilling Program (ODP) cores), a comment was added and care was taken that available radiocarbon dates were imported on the same depth scale. The data are stored as raw data, with all documented corrections removed from the data. This includes a previously subtracted reservoir age and corrections applied to the stable isotope values (e.g., to account for species offsets). Variables to store downcore radiocarbon reservoir and stable isotope corrections that may be applied to the data at a later stage are already included in the netCDF files. These variables have been imported with default values of 0.4 ka (±0.1) for all radiocarbon reservoir ages and a stable isotope correction of "0" for all oxygen and carbon isotope ratios. Both reservoir ages and stable isotope corrections can be edited within PDV.

3 Data distribution

3.1 Spatial and vertical coverage

Stable isotope records are available from all major ocean basins (Fig. 1) but tend to cluster along continental margins, where higher sedimentation rates, and thus higher temporal resolutions, can be found compared to mid-ocean ridges or deep abyssal basins. About 65 % of the downcore records are from coring locations within 400 km of the coastline (Fig. 2). The deepest record in the atlas is from 5105 m water depth (EN066-29PG, eastern tropical Atlantic (Curry and Lohmann, 1983), the shallowest record from 50 m water depth (GeoB9503-5, Senegal mud belt, Mulitza, unpublished). However, the availability of records decreases in waters shallower than about 400 m (Fig. 3), where more dynamic sedimentation regimes exist, and below 3800 m due to carbonate dissolution which often prevents the production of reliable, continuous foraminiferal stable isotope records.

Records are available in all oceanic 5° latitude bands with the highest number in tropical latitudes and decreasing numbers towards high latitudes (Fig. 3). This pattern is likely the result of the year-round accessibility of low latitudes compared to high latitudes where, due to sea ice cover or harsh weather conditions in the cold season, expeditions are often constrained to the warm season. The largest fraction (∼47 %) of the stable isotope records was measured on material from the Atlantic, whereas about 9 % are from the Southern Ocean (Fig. 4). However, with 21 cores per million square kilometers, the Mediterranean has the highest density of cores followed by the Arctic Ocean (7.8 cores (million km^{-2})) and the Atlantic (7.5 cores (million km^{-2})). The Pacific and Indian oceans are currently only covered by 2 and 2.1 cores (million km^{-2}), respectively, which is likely a result of relatively low accumulation rates and poor carbonate preservation over large areas. In addition, the retrieval of sediment cores in the remote and deep central areas requires more ship time compared to the Atlantic and Mediterranean Sea.

3.2 Species distribution

The majority (61 %) of all stable isotope values available in this compilation were measured on planktic Foraminifera (see individual percentages for carbon and oxygen isotopes in Fig. 5). Among the planktic species, *Globigerinoides ruber* (37 %) and *Neogloboquadrina pachyderma* (28 %) are the most commonly used species, followed by *Globigerina bulloides* (17 %) and *Trilobatus sacculifer* (6 %). These species have a relatively broad geographical coverage and are considered as mixed-layer species in their respective environment (Schiebel and Hemleben, 2017). Isotope measurements on other planktic species (summarized under "other planktics") constitute about 12 % of all values in the atlas (Fig. 5); 75 % of the included planktic oxygen isotope values and 88 % of the included benthic oxygen isotope values are reported together with the corresponding carbon isotope value. Most of the benthic isotope values (70 %) were obtained from species of the genus *Cibicides/Cibicidoides*. Isotope values from the in-faunal genus *Uvigerina* constitute about 18 % of all benthic isotope values in the atlas. The grouping of the original species names into species/genus names used in Figs. 5 and 6 is provided in Sect. S4 in the Supplement.

3.3 Species-specific and latitudinal distribution of oxygen and carbon isotope values

In the current version, the atlas contains a total of 201 593 $\delta^{18}O$ values. The lowest $\delta^{18}O$ value (−7.51 ‰) is observed in the species *G. ruber* white (Fig. 6) from the Gulf of Mexico core LOUIS1924 under the influence of Mississippi freshwater discharge (Aharon, 2003). The highest planktic $\delta^{18}O$ value (6.31 ‰) can be observed in the tropical species *G. ruber* from core M31_2-78_PC6 (Red Sea, Geiselhart and Hemleben, 1998a). With latitude, planktic $\delta^{18}O$ values follow the typical bell-shaped pattern as expected from a dominant influence of sea surface temperature (Fig. 7). Benthic $\delta^{18}O$ values range from −2.85 ‰ from *Cibicides corpulentus* in core OC205-2-108GGC from the western tropical North Atlantic (Slowey and Curry, 1995) to 5.9 ‰ from *Uvigerina bifurcata* from South Atlantic site JR244-GC528(Roberts et al., 2016). Vertically, the $\delta^{18}O$ of benthic foraminiferal species increases with water depth over the upper 800 m as expected from decreasing temperatures within the main thermocline (Fig. 8). Planktic $\delta^{18}O$ values do not show clear visual trends with water depth (not shown). Planktic and benthic $\delta^{18}O$ values converge towards polar regions as expected

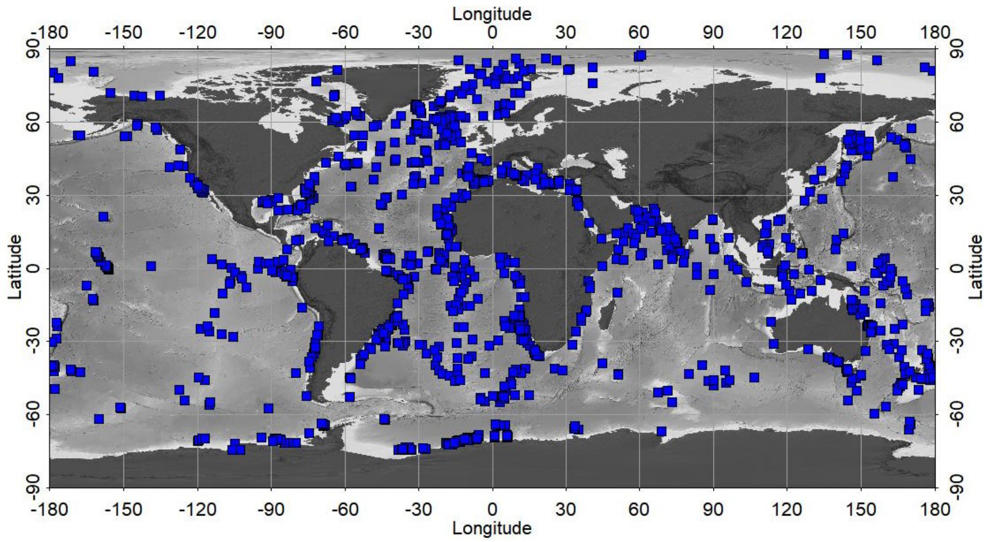

Figure 1. Spatial distribution of stable isotope records available in this atlas. The map has been generated with PaleoDataView (Langner and Mulitza, 2019).

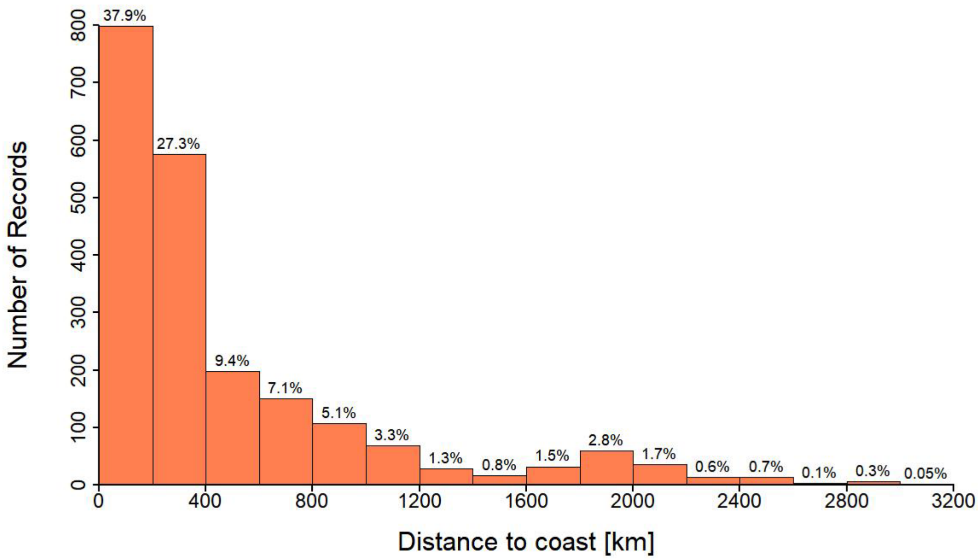

Figure 2. Number of isotope records available in this atlas versus distance to the coastline in 200 km bins. The global coastline was created with the free vector and raster map data from http://www.naturalearthdata.com (last access: 19 May 2022).

from the decreasing temperature stratification with increasing latitude (Fig. 7).

The data set contains 160 356 δ^{13}C values. Planktic Foraminifera from tropical latitudes show the highest δ^{13}C values (Fig. 7) of up to 3.53 ‰ in shells of the species *G. ruber* from the Red Sea core M31_2-78_PC6 (Geiselhart and Hemleben, 1998a). Planktic δ^{13}C values get as low as −17.7 ‰ on *N. pachyderma* sinistral (Fig. 6) in core LV28-4-4 from the Sea of Okhotsk (Kaiser, 2001), which might be related to a potential contribution from authigenic carbonate minerals that form with the anaerobic oxidation of methane (Cook et al., 2011). Benthic foraminiferal δ^{13}C gets as low as −7.99 ‰ in *Elphidium batialis* from western North Pacific core KT90-9_21 (Oba and Murayama, 2004) and as high as 3.36 ‰ in the aragonitic shells of *Hoeglundina elegans* from western North Atlantic core OC205-2-149JPC (Slowey and Curry, 1995). Benthic species of the genus *Cibicides/Cibicidoides* show a clear trend toward decreasing δ^{13}C values in the deep ocean (Fig. 8), as expected from the global distribution of δ^{13}C in dissolved ΣCO_2 (Kroopnick, 1985).

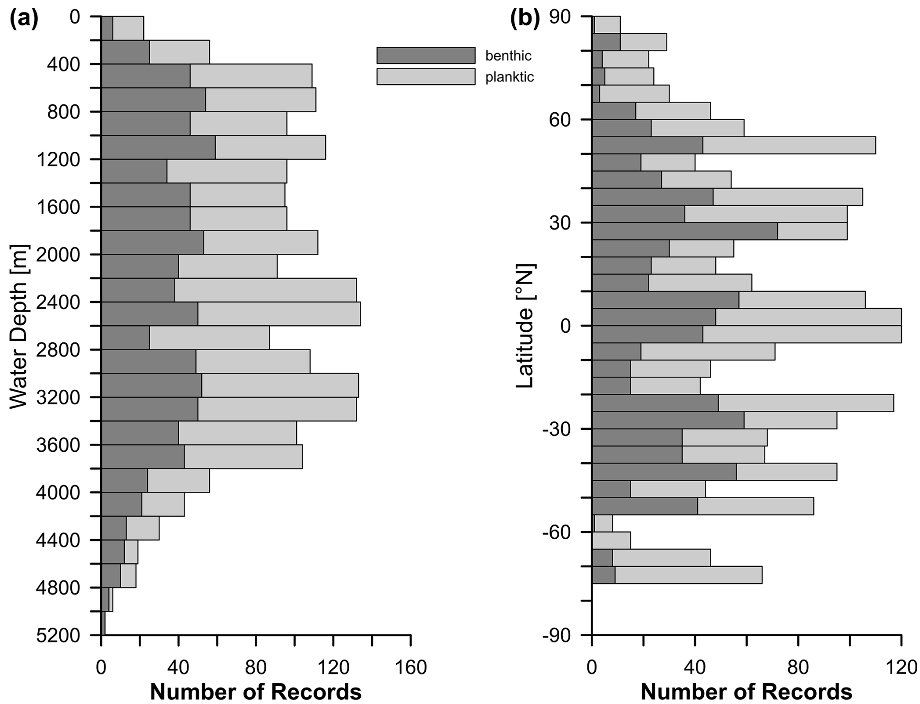

Figure 3. Distribution of stable isotope records with water depth in 200 m bins **(a)** and with latitude in 5° bins **(b)**.

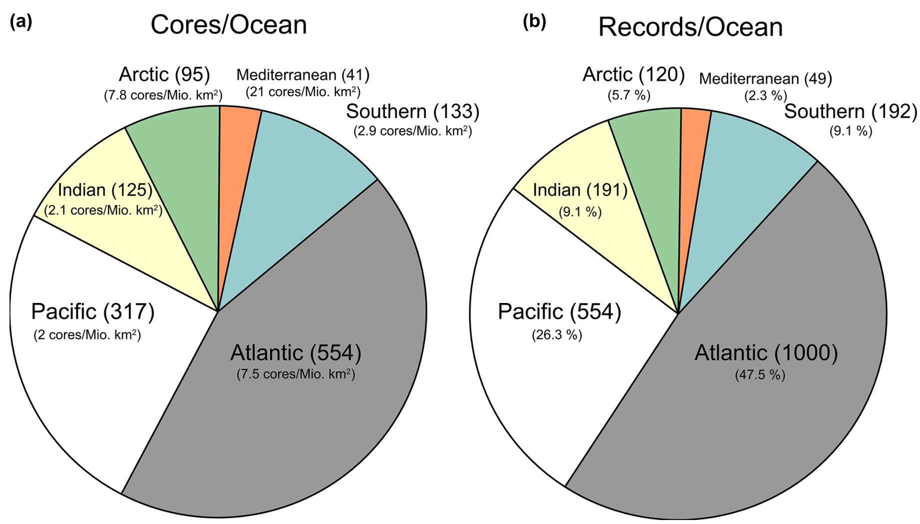

Figure 4. Number of cores **(a)** and records **(b)** for major ocean basins. A record is a downcore series of paired oxygen and carbon isotope measurements on a foraminiferal species or species group stored in a single netCDF file. Several records can exist for a single core. The counts include records/cores for which either $\delta^{18}O$ or $\delta^{13}C$ is missing. Numbers in small font below ocean basin name indicate density of cores in cores/10^6 km^2 **(a)** and percentage from the total number of records in the atlas **(b)** in each basin. Ocean basins follow the definitions in the World Ocean Atlas 2001 (Stephens et al., 2002). Pacific includes the Sea of Japan and the Indian Ocean includes the Bay of Bengal and the Red Sea.

3.4 Distribution of radiocarbon ages

The data set contains 6153 individual radiocarbon ages with a maximum age of about 56 ka. About 47 % of the cores are associated with at least one radiocarbon date. Most of the radiocarbon-dated cores are from the Atlantic (44 %) followed by the Pacific (28 %) and the Arctic Ocean (12 %) (Fig. 9). The temporal distribution of the radiocarbon ages (Fig. 10) shows that the last deglaciation has been preferentially dated, which is likely a consequence of the scientific attention focused on this time period and the limited stratigraphic extent of many coring techniques. The fraction of re-

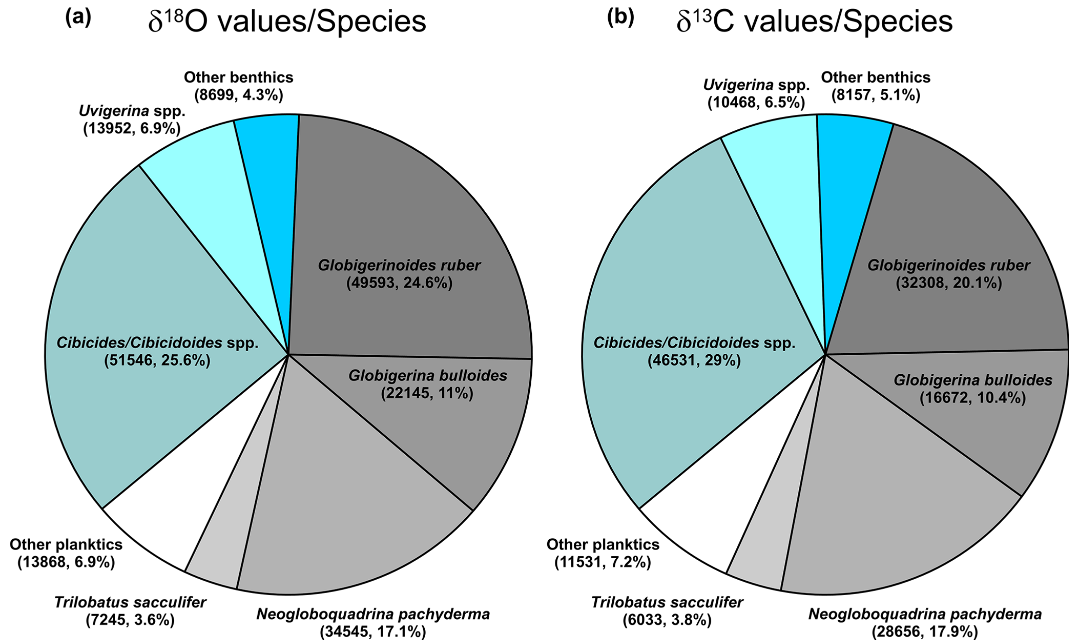

Figure 5. Fraction of oxygen **(a)** and carbon **(b)** isotope values measured on benthic (blue) and planktic (grey) species/species groups. Numbers below the species/genus names indicate absolute number of values and percentage from the total number of δ^{18}O **(a)** or δ^{13}C **(b)** values in the atlas. See Sect. S4 in the Supplement for the categorization of the individual species names from the original publications.

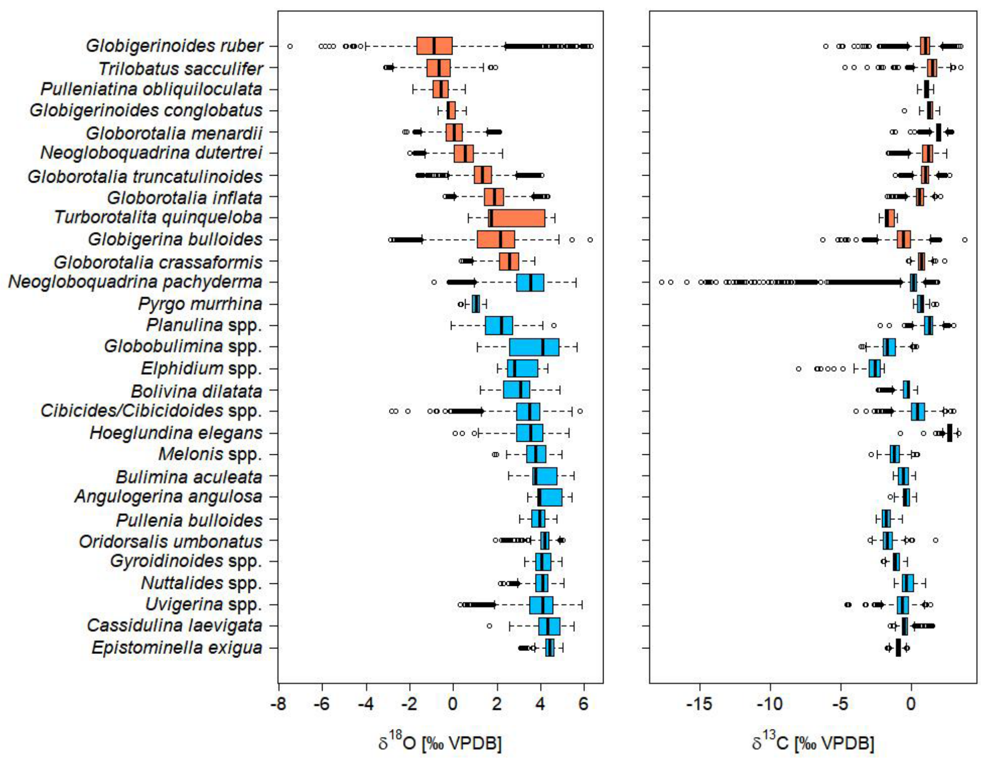

Figure 6. Box-and-whisker plot of oxygen (left) and carbon (right) stable isotope values of planktic (orange) and benthic (blue) Foraminifera at the species or genus level. The vertical line shows the median, left and right margins of the box indicate the 25th and 75th percentiles. The whiskers (the horizontal dashed lines) indicate the maximum/minimum values, or in case of outliers (open circles), highest/lowest data point that is less than 1.5 times above/below the interquartile range. The plot has been created with R's boxplot() function (R Core Team, 2017).

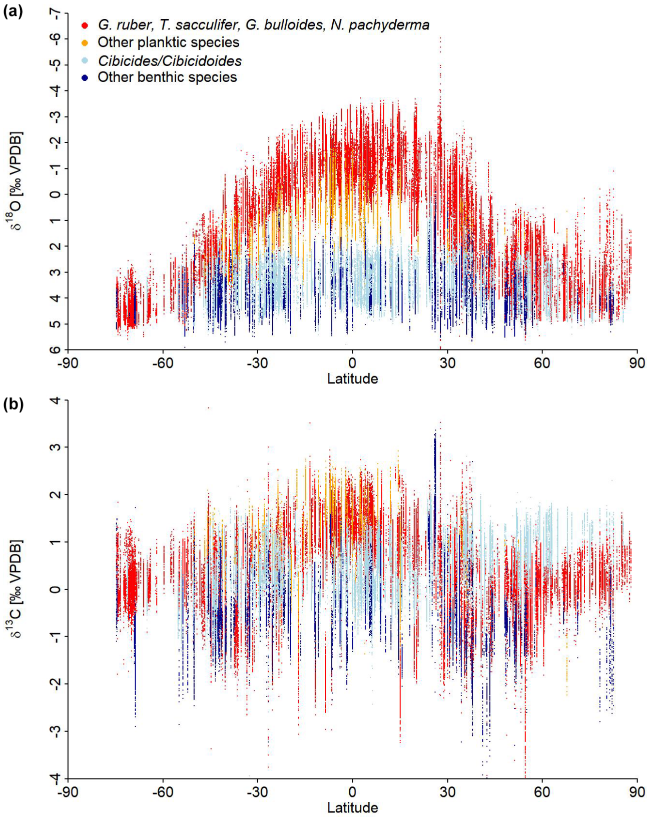

Figure 7. Distribution of $\delta^{18}O$ values **(a)** and $\delta^{13}C$ values **(b)** with latitude. Red/orange: planktic Foraminifera, blue: benthic Foraminifera. Extreme values outside the axis ranges are not shown.

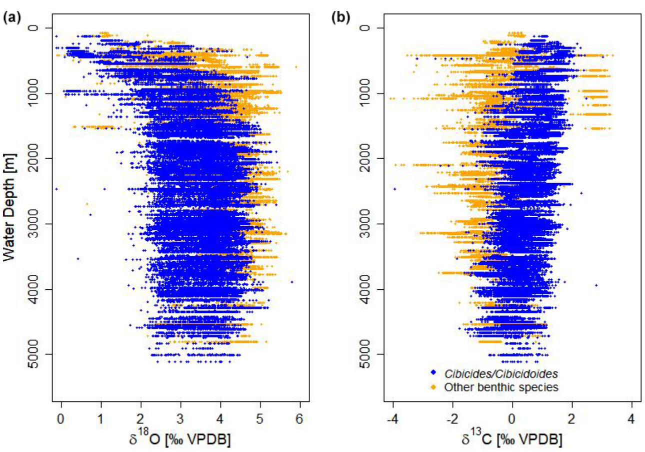

Figure 8. Distribution of benthic oxygen ($\delta^{18}O$, **a**) and carbon ($\delta^{13}C$, **b**) isotope values with water depth. Extreme values outside the axis ranges are not shown. Blue: *Cibicides/Cibicidoides*, orange: other benthic species.

versals is higher for the deglacial and glacial periods, where the higher sampling density increases the likelihood of reversals.

4 Possible applications

4.1 Marine geology and paleoceanography

Foraminiferal oxygen isotope ratios provide one of the most reliable tools for stratigraphy in marine sediments, particularly for time periods older than the range of the radiocarbon method, or if radiocarbon is not available or associated with large uncertainties due to unknown reservoir ages. Usually, oxygen-isotope stratigraphy is applied by using global (Imbrie et al., 1984; Prell et al., 1986; Lisiecki and Raymo, 2005) or basin-wide (Lisiecki and Stern, 2016) isotope reference curves. The collection presented here may provide the opportunity to find and align new records with the closest published isotope record measured on the same species, taking events into account that may only occur locally. Through its value for stratigraphy, our collection may also provide a foundation for the global mapping of seafloor sedimentation rates. The spatial quantitative mapping of sedimentation rates will allow the development of sediment budgets for the seafloor, including carbon burial.

Oxygen and carbon isotope ratios of Foraminifera are of great value for paleoclimatology by providing information on the history of seawater temperature and isotopic composition as well as circulation, productivity, and carbon sequestration. This isotope atlas will allow for new global compilations to be undertaken to understand these processes at a global scale. Although distorted by habitat effects and vital effects, there is hope that some of these effects can be represented and quantified in foraminiferal ecosystem/calcification models (e.g., Wolf-Gladrow et al., 1999; Schmidt and Mulitza, 2002; Fraile et al., 2008). Since the number of climate models containing the cycling of oxygen and carbon isotopes is constantly growing (Marchal and Curry, 2008; Kurahashi-Nakamura et al., 2017; Tierney et al., 2020; Muglia et al., 2018; Völpel et al., 2017), foraminiferal isotopes may provide the opportunity to validate climate model experiments directly. Given this prospect and the spatial coverage, foraminiferal isotope data should be rescued, assembled, and organized to secure the information for future applications as we continue to improve our understanding of the ecological and geochemical processes that determine isotope ratios in foraminiferal shells. Depending on the scientific problem, paleoceanographic compilations usually have specific criteria (e.g., temporal resolution or the availability of radiocarbon ages) for the selection of the records to be included (e.g., Jonkers et al., 2020). An atlas product that includes the majority of the available records enables quick selection of suitable data without an extensive literature review.

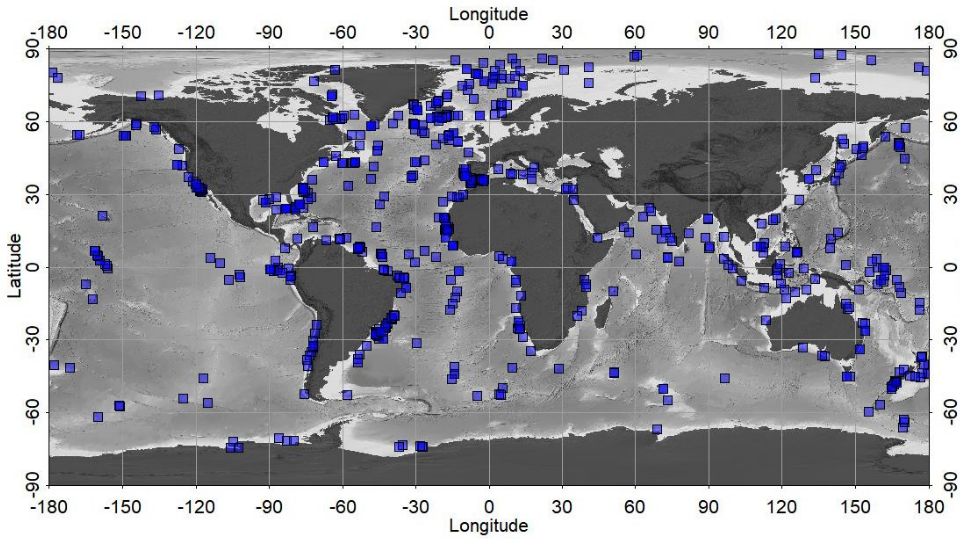

Figure 9. Spatial distribution of stable isotope records with at least one radiocarbon age. The map has been generated with PaleoDataView (Langner and Mulitza, 2019).

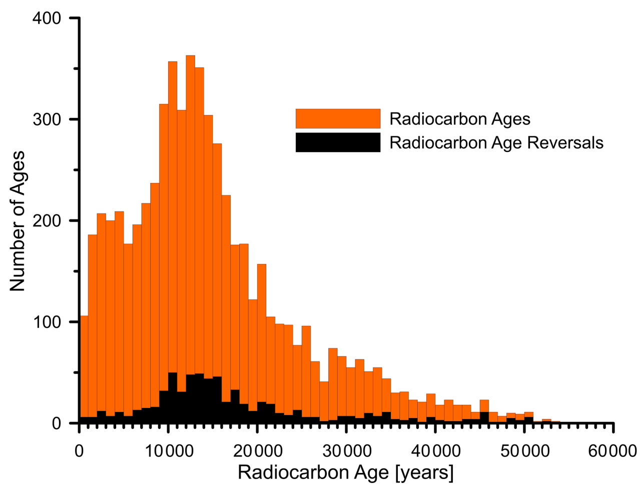

Figure 10. Distribution of radiocarbon ages in 1 kyr bins. Fraction of age reversals in black. Three negative radiocarbon ages are not included.

4.2 Expedition planning

The planning of marine coring campaigns requires prior knowledge of existing cores. Existing core locations are often resampled to get new sediment material or to extend the stratigraphic coverage with alternative coring gear that can penetrate deeper into the sediment. For example, many IODP and ODP cores are drilled at sites where short cores were previously retrieved. The knowledge of existing core locations and their stratigraphy allows identification of sampling gaps. Many aspects of marine expeditions are unpredictable, and schedules and coring plans regularly have to be adapted, often on a daily basis. The atlas we are presenting here provides fast access to stratigraphic data and may aid the identification of suitable alternative coring locations on ocean expeditions. Both the freely available PDV software and the atlas do not require web access and are therefore suitable to be used with a standard laptop computer.

4.3 Education

Foraminiferal oxygen isotope ratios are still the most valuable stratigraphic tool in marine sediments. The atlas covers various sedimentation regimes and therefore provides numerous examples of how factors like local hydrography, species, or sedimentation rates influence the patterns of downcore isotope ratios. It therefore may be used as a resource to train students in regional isotope stratigraphy for studies in paleoceanography, paleoclimate, and marine geology. Lecturers may employ the atlas together with PaleoDataView or with custom software to show examples on how isotope stages may be identified in different geological settings and on how isotope differences between species may be explained by hydrography and foraminiferal ecology. Students may also actively explore the patterns of isotope stratigraphies from different parts of the global seafloor to actively learn how global factors such as ice volume and local factors such as sea surface temperature (SST) and freshwater input influence stable isotope records.

5 Data availability

All data included in the World Atlas of late Quaternary Foraminiferal Oxygen and Carbon Isotope Ratios can be downloaded at https://doi.org/10.1594/PANGAEA.936747 (Mulitza et al., 2021a). For use with the software PaleoDataView, the unzipped root directory ("WA_Foraminiferal_Isotopes_2022") of the collection with all its content can be copied into the "Documents/PaleoDataView/" folder (Windows) or the /PaleoDataView/ folder under "Applications" (macOS). Select the root directory "WA_Foraminiferal_Isotopes_2022" under "Data → Change Collection → Change Working Directory" to explore the data. For use with custom software, netCDF files containing stable isotopes data are stored under "WA_Foraminiferal_Isotopes_2022\Foraminiferal Isotopes\Data\" and the radiocarbon data under "WA_Foraminiferal_Isotopes_2022\Age\". Information on the installation of PaleoDataView is available from Langner and Mulitza (2019).

6 Future: building a dynamic world atlas of marine sediments

The amount of proxy data from marine sediments is growing fast, and the demand of data sets that can constrain past states of the Earth system is increasing. The complexity of the data makes it challenging to maintain and reduce the data sets into spatially and chronologically coherent and meaningful data sets. We propose to initiate an atlas series that provides raw data in a consistent data format as a first step from data archived in public databases (as published) towards more sophisticated data products describing past states of the ocean and the seafloor (Fig. 11). Eventually, these harmonized data sets can form a continuously growing and sustainable public "database layer" where proxy-specific raw data can be queried and directly loaded into software that provides the tools to generate homogenized data products that can reach out into other disciplines, i.e., climate modeling. We present a simple file-based data collection where each file contains only one proxy record rather than all available data of the core. Paleoclimatic data are often analyzed and assembled in proxy-specific collections, because proxy-specific transfer functions have to be applied in order to quantify environmental variables. Furthermore, comparisons of records from different sites are preferably done on the same proxy type to ensure comparability. A single file per proxy facilitates the composition of proxy-specific collections, avoiding the additional costs (i.e., in terms of data management and disk space) of other downcore parameters in the same file. This modularity also allows individual scientists to separate their unpublished/unvalidated data from published/validated data that are ready to be included into a proxy collection. On the other hand, it is desirable to consistently apply the same stratigraphy to all proxies from a single core. PDV will automatically apply a single age model to all proxy records with the same core label. This requires that the depth scales and the core label of the different proxies are identical, when the data are imported.

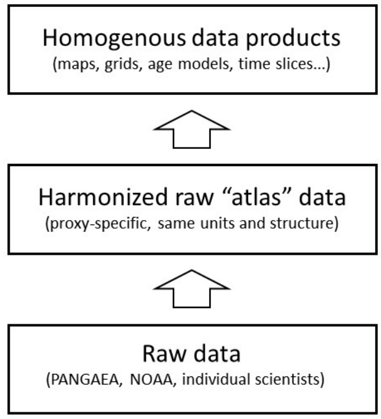

Figure 11. Potential workflow to form sustainable data products from raw databases.

Stable isotopes and radiocarbon ages usually provide the stratigraphic basis for further investigations. When collections of other proxies are added to PDV, these collections can rely on the stratigraphic data provided here and any changes in the stratigraphy will be applied to all proxy data in the collection. The efficient visualization of the data in PDV allows the identification of erroneous data and helps to improve the atlas product over time. The Excel export and import functions of PDV also ensure access to the data for individuals without strong programming skills.

As new foraminiferal isotope measurements become frequently available, we plan to update the atlas in reasonable intervals. Also, more historical isotope data may become available and need to be rescued (i.e., Borreggine et al., 2017). We hope this atlas will be a useful resource for the paleoceanography and marine geology community and will continue to grow through the contribution of new data sets as they are developed. Please contact the first author if you are interested in contributing to future updates of the atlas.

Appendix A

Table A1. References for the included stable isotope and radiocarbon data.

Core/site	References
12PC51	Sikes and Keigwin (1994)
3MO67	Znaidi-Rivault (2006a)
64PE-174P13	Scussolini and Peeters (2013)
75KS23	Znaidi-Rivault (2006b)
75KS5	Znaidi-Rivault (2006c)
75KS50	Znaidi-Rivault (2006d)
75KS76	Znaidi-Rivault (2006e)
75KS79	Znaidi-Rivault (2006f)
A179-15	Mix et al. (1986); CLIMAP Project Members (2004a)
A7	Sun et al. (2005)
AA_GC5	Rathburn et al. (1997)
AAS9_21	Govil and Naidu (2010)
AHF-11343	Mortyn et al. (1996)
AHF-16830	Mortyn et al. (1996)
AHF-16832	Mortyn et al. (1996)
AHF-28181	Mortyn et al. (1996)
AII-125JPC-76	Friddell (2003)
AII60-13APC	Curry and Lohmann (1982)
ALB226	Sarnthein et al. (1994)
AMK4-316GC	Barash et al. (2002); Spielhagen et al. (1999)
AOS94_B16	Poore et al. (1999)
AOS94_B17	Poore et al. (1999)
AOS94_B19	Poore et al. (1999)
AOS94_B8	Poore et al. (1999)
ASV13_1200	Duplessy et al. (2005)
AT_II-107_22	Keigwin and Boyle (1989)
BA84-02PC	Kallel et al. (1997)
BA84-08GC	Kallel et al. (1997)
BC42-11	Showers and Margolis (1985)
BC43-15	Showers and Margolis (1985)
BC44-12	Showers and Margolis (1985)
BC5-5	Showers and Margolis (1985)
BC79-8	Showers and Margolis (1985)
BCCF10-01	Dias et al. (2018)
BCCF10-01	Venancio et al. (2016)
BCCF10-04	Venancio et al. (2016)
BCCF10-09	Dias et al. (2018)
BCCF10-15	Dias et al. (2018)
BOFS14K	Bertram et al. (1995); Lowry and Machin (2016)
BOFS17K	Shimmield (2004a)
BOFS26_6K	Beveridge et al. (1995)
BOFS28_3K	Beveridge et al. (1995)
BOFS29_1K	Beveridge et al. (1995)
BOFS30_3K	Beveridge et al. (1995)
BOFS31_1K	Beveridge et al. (1995)
BOFS5K	Shimmield (2004b); Manighetti et al. (1995)
BS79-33	Cacho et al. (2001); Sbaffi et al. (2001)
BS88-6-10B	Horwege and Spielhagen, unpublished
BS88-6-12	Horwege and Spielhagen, unpublished
BS88-6-13	Horwege and Spielhagen, unpublished
BS88-6-14	Horwege and Spielhagen, unpublished
BS88-6-16	Horwege and Spielhagen, unpublished
BS88-6-17B	Horwege and Spielhagen, unpublished
BS88-6-18	Horwege and Spielhagen, unpublished
BS88-6-21	Horwege and Spielhagen, unpublished
BS88-6-23	Horwege and Spielhagen, unpublished
BS88-6-3	Horwege and Spielhagen, unpublished
BS88-6-4	Horwege and Spielhagen, unpublished
BS88-6-6	Horwege and Spielhagen, unpublished
BS88-6-7	Horwege and Spielhagen, unpublished
BS88-6-8	Horwege and Spielhagen, unpublished
BS-A	Ferreira et al. (2014)
BS-C	Costa et al. (2018)
BS-D	Ferreira et al. (2014)
BT4	Curry et al. (1988)

Table A1. Continued.

Core/site	References
CEUTA10PC08	Ausín et al. (2015a)
CF10-01B	Lessa et al. (2016); de Oliveira Lessa et al. (2014)
CF10-09A	Lessa et al. (2016)
CH0182-36	Slowey and Curry (1987)
CH22KW31	Pastouret et al. (1978)
CH69-K09	Labeyrie et al. (1999)
CH71-07	Sarnthein et al. (1994)
CH72-02	Curry et al. (1988)
CH73-139C	Duplessy (1982); Labeyrie and Duplessy (1985); Bard et al. (1987)
CH74-227	Labeyrie (1996)
CH75-03	Curry et al. (1988)
CH75-04	Curry et al. (1988)
CH84-27	Labeyrie (1996)
CHAT_16k	Yu et al. (2007)
CHAT_1K	Weaver et al. (1998); McCave et al. (2008)
CHAT10K	McCave et al. (2008); Maxson et al. (2019)
CHAT3K	McCave et al. (2008)
CHN115-70PC	Curry and Lohmann (1982)
CHN115-88PC	Curry and Lohmann (1982)
CHN115-89PC	Curry and Lohmann (1982)
CHN115-90PC	Curry and Lohmann (1982)
CHN115-91PC	Curry and Lohmann (1982)
CHN115-92PC	Curry and Lohmann (1982)
CHN82-20	Keigwin and Lehman (1994)
CHN82-24	Curry et al. (1988)
CMU-14	Toledo et al. (2007)
CS70-5	Znaidi-Rivault (2006g)
CS72-37	Kallel et al. (1997)
D11957P	Lebreiro et al. (1997)
DSDP590	Nelson et al. (1994, 1993)
DSDP591	Nelson et al. (1994, 1993)
DSDP592	Nelson et al. (1994, 1993)
DSDP593	Elmore et al. (2015c)
DSDP594	Nelson et al. (1986)
E11-2	Mashiotta et al. (1999); Zheng et al. (2002)
E27-23	Ferry et al. (2015); Anderson et al. (2009)
E45-29	Howard and Prell (1992)
E49-17	Howard and Prell (1992)
E49-18	Howard and Prell (1992)
E49-21	Howard and Prell (1992)
E49-23	Howard and Prell (1992)
ELT25.011-CP	Waddell et al. (2009)
ELT48.022-PC	Rickaby and Elderfield (1999)
EN066-10PG	Curry and Lohmann (1983)
EN066-16PG	Curry and Lohmann (1983)
EN066-21PG	Curry and Lohmann (1983)
EN066-26PG	Curry and Lohmann (1983)
EN066-29PG	Curry and Lohmann (1983)
EN066-32PG	Curry and Lohmann (1983)
EN066-36PG	Curry and Lohmann (1983)
EN066-38PG	Curry and Lohmann (1983)
EN066-44PG	Curry and Lohmann (1983)
EN32-PC6	Flower et al. (2004)
EN540-GGC-2	Keigwin, unpublished
ENAM9321	Rasmussen et al. (1996)
ERDC-093P	Shackleton et al. (1992)
ERDC-124P	Wu et al. (1990)
ESP-08	Toledo et al. (2007)
EW0408-26JC	Praetorius and Mix (2014); Praetorius et al. (2015, 2016)
EW0408-26TC	Praetorius et al. (2015, 2016)
EW0408-66JC	Praetorius and Mix (2014); Praetorius et al. (2016)
EW0408-85JC	Praetorius et al. (2015); Davies-Walczak et al. (2014)
EW0408-87JC	Praetorius et al. (2015); Davies-Walczak et al. (2014)
EW9209-1JPC	Curry et al. (1999)
EW9209-2JPC	Curry et al. (1999)
EW9209-3JPC	Curry et al. (1999)
EW9302-24GGC	Oppo et al. (2015)
EW9302-25GGC	Oppo et al. (2015)
EW9302-26GGC	Oppo et al. (2015)

Table A1. Continued.

Core/site	References
EW9504-02	Stott et al. (2000)
EW9504-03	Stott et al. (2000)
EW9504-04	Stott et al. (2000)
EW9504-05	Stott et al. (2000)
EW9504-08	Stott et al. (2000)
EW9504-09	Stott et al. (2000)
F2-92-P3	van Geen et al. (1996); Zheng et al. (2000)
F8-90-G21	van Geen et al. (1996)
Fan_17	Parker et al. (2016)
FFC15	Keigwin and Lehman (2015)
FR01_97-09	Bostock et al. (2009)
FR01_97-10	Bostock et al. (2009); Bostock et al. (2004)
FR01_97-11	Bostock et al. (2009)
FR01_97-12	Bostock et al. (2004)
FR01_97-13	Bostock et al. (2009)
FR01_97-14	Bostock et al. (2009)
FR1_94-GC3	de Deckker et al. (2019)
FR4-92-PC16	Dunbar et al. (2000)
FR4-92-PC36	Dunbar et al. (2000)
FR4-92-PC42	Dunbar et al. (2000)
FR4-92-PC6	Dunbar et al. (2000)
FR5-90-PC27a	Bostock et al. (2006)
GC34	Moy et al. (2006)
GeoB10038-4	Mohtadi et al. (2010a, b); Mohtadi, unpublished
GeoB10053-7	Mohtadi et al. (2011); Mohtadi, unpublished
GeoB10069-3	Gibbons et al. (2014); Mohtadi, unpublished
GeoB1007-4	Mulitza and Rühlemann (2000); Mulitza, unpublished
GeoB1008-3	Schneider (1991); Govin, unpublished
GeoB1016-3	Schneider et al. (1995); Govin, unpublished
GeoB1023-5	Schneider et al. (1995); Kim and Schneider (2003)
GeoB1028-5	Wefer et al. (1996); Bickert and Mackensen (2004)
GeoB1031-4	Wefer et al. (1996); Bickert and Mackensen (2004)
GeoB1032-2	Bickert and Mackensen (2004)
GeoB1032-3	Wefer et al. (1996); Bickert and Mackensen (2004)
GeoB1034-1	Bickert and Mackensen (2004)
GeoB1034-3	Bickert and Mackensen (2004)
GeoB1035-3	Bickert and Mackensen (2004)
GeoB1035-4	Bickert and Mackensen (2004)
GeoB1041-1	Bickert and Mackensen (2004)
GeoB1041-3	Wolff (1998); Bickert and Mackensen (2004)
GeoB1101-4	Bickert and Mackensen (2004)
GeoB1101-5	Bickert and Mackensen (2004)
GeoB1105-3	Kemle-von Mücke (1994); Bickert and Mackensen (2004)
GeoB1105-4	Meinecke (1992); Kemle-von Mücke (1994); Bickert and Mackensen (2004)
GeoB1112-3	Bickert and Mackensen (2004)
GeoB1112-4	Kemle-von Mücke (1994); Bickert and Mackensen (2004)
GeoB1113-4	Sarnthein et al. (1994)
GeoB1113-7	Sarnthein et al. (1994)
GeoB1115-3	Bickert and Mackensen (2004)
GeoB1115-4	Bickert and Mackensen (2004)
GeoB1117-2	Bickert and Mackensen (2004)
GeoB1117-3	Bickert and Mackensen (2004)
GeoB1118-2	Bickert and Mackensen (2004)
GeoB1118-3	Bickert and Mackensen (2004)
GeoB1211-1	Bickert and Mackensen (2004)
GeoB1211-3	Bickert and Mackensen (2004)
GeoB1214-1	Bickert and Mackensen (2004)
GeoB1214-2	Bickert and Mackensen (2004)
GeoB1220-1	Wefer et al. (1996); Bickert and Mackensen (2004)
GeoB12605-3	Kuhnert et al. (2014); Kuhnert, unpublished
GeoB12615-4	Romahn et al. (2014)
GeoB12624-1	Liu et al. (2016); Bouimetarhan et al. (2015)
GeoB1306-1	Bickert and Mackensen (2004)
GeoB1306-2	Bickert and Mackensen (2004)
GeoB1309-2	Hale and Pflaumann (1999a)
GeoB1312-2	Hale and Pflaumann (1999a); Bickert and Mackensen (2004)
GeoB13601-4	Just et al. (2012)
GeoB13731-1	Fink et al. (2013); Wang et al. (2019)
GeoB13801-2	Bender et al. (2013)

Table A1. Continued.

Core/site	References
GeoB13825-2	Bickert, unpublished
GeoB13862-1	Voigt et al. (2015)
GeoB1408-3	Dürkoop et al. (1997a); Mulitza (2009a)
GeoB1413-4	Wefer et al. (1996)
GeoB1417-1	Meinecke (1992); Bickert and Mackensen (2004)
GeoB1419-2	Bickert and Mackensen (2004)
GeoB15005-1	Martínez-Méndez et al. (2013)
GeoB1501-4	Dürkoop et al. (1997b); Bickert and Mackensen (2004)
GeoB1503-1	Dürkoop et al. (1997c); Bickert and Mackensen (2004); Mulitza, unpublished
GeoB1505-2	Bickert and Mackensen (2004)
GeoB1506-2	Wolff (1998)
GeoB1508-4	Dürkoop et al. (1997d); Bickert and Mackensen (2004)
GeoB1515-1	Rühlemann et al. (1996); Vidal et al. (1999)
GeoB1520-1	Bickert and Mackensen (2004)
GeoB1520-2	Bickert and Mackensen (2004)
GeoB1523-1	Mulitza (1994); Bickert and Mackensen (2004); Mulitza (2009b)
GeoB1523-1	Rühlemann et al. (2001)
GeoB1523-2	Bickert and Mackensen (2004)
GeoB16202-2	Freymüller (2013); Vahlenkamp (2013); Huppertz (2014); Mulitza et al. (2017); Voigt et al. (2017); Venancio et al. (2018); Mulitza, unpublished; Mulitza and Mackensen, unpublished
GeoB16206-1	Zhang et al. (2015); Voigt et al. (2017)
GeoB16224-1	Krummrei (2015); Zhang et al. (2015); Voigt et al. (2017); Crivellari et al. (2018); Mulitza, unpublished
GeoB16320-2	Matos et al. (2017)
GeoB1701-4	Dürkoop et al. (1997e); Mulitza, unpublished
GeoB1704-4	Mollenhauer (2002); Mollenhauer, unpublished
GeoB1706-2	Little et al. (1997)
GeoB1710-2	Bickert and Mackensen (2004)
GeoB1710-3	Schmiedl and Mackensen (1997)
GeoB1711-4	Bickert and Mackensen (2004); Vidal et al. (1999); Little et al. (1997); Balmer et al. (2016)
GeoB1711-5	Bickert and Mackensen (2004)
GeoB1712-4	Mollenhauer, unpublished
GeoB1720-2	Dickson et al. (2009)
GeoB1721-4	Bickert and Mackensen (2004)
GeoB1721-7	Bickert and Mackensen (2004)
GeoB1722-1	Bickert and Mackensen (2004)
GeoB1722-3	Bickert and Mackensen (2004)
GeoB1903-3	Dürkoop et al. (1997f); Bickert and Mackensen (2004); Niebler and Mulitza (2009)
GeoB1905-3	Bickert and Mackensen (2004)
GeoB2004-2	Bickert and Mackensen (2004); Mulitza (2009c)
GeoB2016-1	Niebler (2004g); Bickert and Mackensen (2004)
GeoB2019-1	Bickert and Mackensen (2004); Niebler (2004h); Mulitza, unpublished
GeoB2021-5	Niebler (2004i); Mulitza, unpublished
GeoB2104-3	Steinborn (2003); Hickey (2010); Mulitza, unpublished
GeoB2105-1	Steinborn (2003)
GeoB2106-3	Steinborn (2003)
GeoB2107-3	Dürkoop (1998); Portilho-Ramos et al. (2018); Heil (2006); Rühlemann, unpublished
GeoB2109-1	Hale and Pflaumann (1999b); Dürkoop et al. (2004a); Mulitza (2009d); Huang (2013)
GeoB2110-4	Gingele et al. (1999)
GeoB2116-4	Niebler (2004j); Mulitza (2004)
GeoB2117-1	Dürkoop et al. (1997g)
GeoB2125-1	Dürkoop et al. (1997h)
GeoB2126-3	Govin, unpublished
GeoB2202-4	Dürkoop et al. (1997i)
GeoB2204-1	Dürkoop (1998); Bickert and Mackensen (2004); Mulitza, unpublished
GeoB2204-2	Dürkoop (1998); Bickert and Mackensen (2004); Mulitza, unpublished
GeoB2215-10	Wolff (1998); Bickert and Mackensen (2004)
GeoB2819-1	Dürkoop et al. (1997j); Hale and Pflaumann (1999a); Bickert and Mackensen (2004)
GeoB3004-1	Schmiedl and Mackensen (2006)
GeoB3005-1	Müller and Budziak (2004)
GeoB3104-1	Arz et al. (1998); Arz et al. (1999b)
GeoB3117-1	Arz et al. (1999a)
GeoB3129-1	Arz et al. (1999a)
GeoB3176-1	Arz et al. (1999a)
GeoB3202-1	Arz et al. (1999b); Behling et al. (2002)
GeoB3229-2	Arz et al. (1999b)
GeoB3302-1	Lamy (1998); Mohtadi et al. (2008)
GeoB3304-5	Bernhardt et al. (2016, 2015)
GeoB3313-1	Lamy et al. (2002)
GeoB3327-5	Ho et al. (2012)

Table A1. Continued.

Core/site	References
GeoB3359-3	Mohtadi et al. (2008)
GeoB3369-1	Bernhardt et al. (2016, 2015)
GeoB3375-1	Lamy et al. (1998, 2000)
GeoB3603-2	Bickert and Mackensen (2004)
GeoB3606-1	Romero et al. (2003)
GeoB3722-2	Mollenhauer (2002); Niebler et al. (2003); Mollenhauer, unpublished; Niebler, unpublished
GeoB3801-6	Bickert and Mackensen (2004); Mulitza (2009e)
GeoB3808-6	Hale and Pflaumann (1999c) Bickert and Mackensen (2004); Dürkoop et al. (2004b)
GeoB3813-3	Bickert and Mackensen (2004); Mulitza (2009f)
GeoB3914-2	Govin, unpublished
GeoB3935-2	Schlünz et al. (2000)
GeoB3938-1	Schlünz et al. (2000); Govin et al. (2014a)
GeoB4216-1	Freudenthal et al. (2002)
GeoB4223-2	Freudenthal et al. (2002); Henderiks et al. (2002)
GeoB4240-2	Freudenthal et al. (2002); Henderiks et al. (2002)
GeoB4241-11	Freudenthal (2000); Henderiks et al. (2002)
GeoB4403-2	Bickert and Mackensen (2004)
GeoB4411-2	Hörner (2012); Govin et al. (2014a)
GeoB4420-2	Mulitza, unpublished
GeoB4901-8	Adegbie (2001)
GeoB4905-4	Adegbie et al. (2003); Weldeab et al. (2005); Zimmermann (2013)
GeoB5115-2	Niebler (2004k); Bickert and Mackensen (2004)
GeoB5121-2	Niebler (2004l); Bickert and Mackensen (2004)
GeoB5844-2	Arz et al. (2003)
GeoB5901-2	Schirrmacher et al. (2020); Rühlemann, unpublished
GeoB6201-5	Portilho-Ramos et al. (2018)
GeoB6211-2	Steinborn (2003); Chiessi et al. (2008, 2009); Voigt et al. (2015); Chiessi, unpublished
GeoB6212-1	Chiessi and Mulitza, unpublished
GeoB6213-2	Mulitza and Chiessi, unpublished
GeoB6308-3	Voigt et al. (2015)
GeoB6340-2	Mulitza, unpublished
GeoB6403-3	Donner, unpublished
GeoB6405-6	Donner, unpublished
GeoB6408-4	Donner, unpublished
GeoB6412-2	Barbara Donner, unpublished
GeoB6421-2	Barbara Donner, unpublished
GeoB6425-2	Donner, unpublished
GeoB6518-1	Schefuss et al. (2005)
GeoB6719-1	Rüggeberg et al. (2005)
GeoB6910-2	Steinborn (2003)
GeoB6914-2	Steinborn (2003)
GeoB7010-2	Kuhr (2011); Govin et al. (2014b, a)
GeoB7112-5	Mohtadi and Hebbeln (2004); Mohtadi et al. (2004)
GeoB7165-1	Mohtadi et al. (2008)
GeoB7920-2	Tjallingii et al. (2008)
GeoB7926-2	Romero et al. (2008); Kim et al. (2012); McKay et al. (2014)
GeoB8453-1	Rathmann and Mulitza, unpublished
GeoB8507-3	Kohn et al. (2011)
GeoB9064-1	El Frihmat et al. (2015)
GeoB9069-1	El Frihmat et al. (2015)
GeoB9311-1	Dupont and Kuhlmann (2017)
GeoB9501-5	Mulitza et al. (2010); Kuhnert and Mulitza, unpublished data
GeoB9503-5	Mulitza, unpublished; Bouimetarhan et al. (2009)
GeoB9506-1	Mulitza, unpublished
GeoB9508-5	Mulitza et al. (2008); Johnstone, unpublished
GeoB9510-1	Völpel et al. (2019); Lynch-Stieglitz, unpublished
GeoB9512-5	Völpel et al. (2019); Lynch-Stieglitz, unpublished
GeoB9513-3	Völpel et al. (2019); Mulitza, unpublished
GeoB9516-5	Itambi et al. (2009); Mulitza, unpublished
GeoB9526-5	Zarrieß, 2010; Zarrieß and Mackensen (2010); Zarrieß et al. (2011)
GeoB9528-3	Castañeda et al. (2009); Gemmeke (2010)
GeoB9532-2	Huang and Mulitza, unpublished
GeoB9533-2	Huang and Mulitza, unpublished
GeoB9534-5	Huang and Mulitza, unpublished
GeoB9535-4	Collins et al. (2011); Huang and Mulitza, unpublished
GeoB9624-1	Henrich et al. (2010); Bickert, unpublished
GEOFARKF13	Richter (1998)
GeoTu_SL110	Ehrmann et al. (2016)
GGC-49	Leech et al. (2013)

Table A1. Continued.

Core/site	References
GIK11944-1	Winn et al. (1991)
GIK11944-2	Zahn-Knoll (1986)
GIK12392-1	Zahn et al. (1986)
GIK13289-2	Sarnthein et al. (1994)
GIK13291-1	Hommers et al. (2019)
GIK13519-1	Sarnthein et al. (1984)
GIK15612-2	Sarnthein et al. (1994); Kiefer (1998)
GIK15637-1	Kiefer (1998); Sarnthein et al. (1994); Zahn-Knoll and Sarnthein (2003)
GIK15666-6	Weinelt and Sarnthein (2003a); Zahn et al. (1987)
GIK15669-1	Sarnthein et al. (1994); Zahn et al. (1987)
GIK15670-5	Weinelt and Sarnthein (2003b); Weinelt (1993); Zahn et al. (1987)
GIK16004-1	Sarnthein et al. (1994); Zahn et al. (1987)
GIK16160-3	Wang et al. (2013a, b)
GIK16396-1	Sarnthein et al. (1994)
GIK16459-1	Sarnthein (2004)
GIK16771-2	Sarnthein et al. (1994)
GIK16773-1	Sarnthein et al. (1994)
GIK16776-1	Hüls (1991)
GIK16856-2	Sarnthein et al. (1994); Schulz (1995)
GIK16867-2	Sarnthein (1997a)
GIK16867-3	Sarnthein (1997a)
GIK17045-2	Sarnthein et al. (1994)
GIK17045-3	Sarnthein et al. (1994)
GIK17048-3	Sarnthein (1997b)
GIK17048-4	Sarnthein (1997b)
GIK17049-6	Jung (1996)
GIK17050-1	Jung and Sarnthein (2003a)
GIK17051-3	Jung and Sarnthein (2003a, b)
GIK17054-1	Sarnthein et al. (1988)
GIK17055-1	Winn and Sarnthein (1991); Winn et al. (1991)
GIK17055-2	Winn and Sarnthein (1991); Winn et al. (1991)
GIK17286-1	Lauterbach et al. (2020)
GIK17304-1	Winn (2013e)
GIK17304-2	Winn (2013f)
GIK17747-1	Winn (2013g)
GIK17747-2	Winn (2013h)
GIK17748-2	Mohtadi and Hebbeln (2004); Mohtadi et al. (2008)
GIK17790-3	Winn (2013b)
GIK17795-2	Winn (2013c)
GIK17812-1	Winn (2013d)
GIK17940-2	Wang et al. (1999a, b)
GIK17954-2	Wang et al. (1999a)
GIK17961-2	Wang et al. (1999a)
GIK17964-2	Wang et al. (1999a)
GIK18471-1	Lo Giudice Cappelli et al. (2016)
GIK18517-2	Hendrizan et al. (2017b, a)
GIK18519-2	Schröder et al. (2018)
GIK18522-3	Schröder et al. (2018)
GIK18526-3	Schröder et al. (2018)
GIK18540-3	Schröder et al. (2018)
GIK23071-3	Voelker (1999)
GIK23074-1	Voelker (1999)
GIK23258-2	Weinelt (1993); Sarnthein et al. (2003)
GIK23258-3	Sarnthein et al. (2003)
GIK23259-2	Weinelt (1993)
GIK23323-1	Bauch et al. (2003)
GIK23415-9	Jung (1996)
GIK23416-4	Jung and Sarnthein (2003c)
GIK23417-1	Jung and Sarnthein (2003d)
GIK23419-8	Jung (1996)
GIK23519-4	Millo et al. (2006)
GIK23519-5	Millo et al. (2006)
GL-1090	Santos et al. (2017a, b, 2020)
GL-1248	Venancio et al. (2018)
GL-74	Portilho-Ramos et al. (2014)
GL-75	Portilho-Ramos et al. (2014)
GL-852	Toledo et al. (2016)
GL-854	Camillo et al. (2020); de Almeida et al. (2015)
GS07-150_11_1MC-C	Santos et al. (2013)

Table A1. Continued.

Core/site	References
GS07-150_17_2MC-A	Santos et al. (2013)
GS07-150_MC-B	Santos et al. (2014)
H214	Sikes et al. (2016); Samson et al. (2005)
HER_GC_T1	Ausín et al. (2015b)
HER-GC-ALB2	Català et al. (2019)
HLY02-02-51	Cook et al. (2011); Caissie et al. (2010)
HLY02-02-57	Cook et al. (2011)
HLY03-05GC	Jennings et al. (2011)
HLY1302-JPC-15	Keigwin et al. (2018)
HLY1302-JPC-2	Keigwin et al. (2018)
HLY1302-JPC-6	Keigwin et al. (2018)
HLY1302-JPC-9	Keigwin et al. (2018)
HM79-4_6	Karpuz and Jansen (1992)
HU2001043-008	Hoffman (2016)
HU2001043-008TWC	Hoffman (2016)
HU2006040-006	Hoffman (2016)
HU72-021-3	Keigwin and Jones (1995)
HU72-021-7	Keigwin and Jones (1995)
HU73-011-1	Keigwin and Jones (1995)
HU73-031-7	Keigwin and Jones (1995)
HU75-41	Labeyrie and Duplessy (1985)
HU75-42	Labeyrie and Duplessy (1985)
HU76-029-033	Hillaire-Marcel et al. (1989)
HU77-148	Andrews et al. (1991)
HU77-149	Andrews et al. (1991)
HU77-150	Andrews et al. (1991)
HU77-151	Andrews et al. (1991)
HU77-154	Andrews et al. (1991)
HU77-156	Andrews et al. (1991)
HU84-008	Andrews et al. (1991)
HU85-027-016P	Hillaire-Marcel et al. (1989)
HU85-027-016TWC	Hillaire-Marcel et al. (1989)
HU87-033-009	Andrews and Tedesco (1992)
HU-90-013-011BC	Hillaire-Marcel et al. (1994)
HU-90-013-013P	Hillaire-Marcel et al. (1994)
HU-90-013-017BC	Hillaire-Marcel et al. (1994)
HU-91-045-052P	Hillaire-Marcel, unpublished
HU91-045-094	Hillaire-Marcel et al. (1994)
HUD91_039-012P	Knudsen et al. (2008); Blake et al. (1996)
HYIV2015-B9	Li et al. (2018)
IN68-5	Jorissen et al. (1993)
INMD-097BX	Berger et al. (1985)
INMD-101BX	Berger et al. (1985)
INMD-104BX	Berger et al. (1985)
INMD-109BX	Berger et al. (1985)
INMD-110BX	Berger et al. (1985)
INMD-111BX	Berger et al. (1985)
INMD-113BX	Berger et al. (1985)
INMD-115BX	Berger et al. (1985); Berger and Vincent (1986)
IOW226660-5	Mollenhauer et al. (2003); Mollenhauer, unpublished
IOW226920-3	Mollenhauer et al. (2003); Mollenhauer, unpublished
J-11	Gorbarenko and Southon (2000)
JM11-FI-19PC	Hoff et al. (2016)
JM96-1225_1-GC	Hagen and Hald (2002)
JM96-1225_2-GC	Hagen and Hald (2002)
JR104-GC352	Hillenbrand et al. (2010)
JR104-GC357	Hillenbrand et al. (2010)
JR104-GC368	Hillenbrand et al. (2010)
JR104-GC370	Hillenbrand et al. (2010)
JR104-GC372	Hillenbrand et al. (2010)
JR179-TC493	Lu et al. (2016)
JR244-GC528	Roberts et al. (2016)
JR298-PC726	Channell et al. (2019)
JR298-PC728	Channell et al. (2019)
JR298-PC736	Channell et al. (2019)
KC82-21	Znaidi-Rivault (1982); Caralp (1988); Vergnaud-Grazzini and Pierre (1991)
KC82-26	Znaidi-Rivault (1982); Caralp (1988); Vergnaud-Grazzini and Pierre (1991)
KET82-21	Colin et al. (2021)
KF-12	Costa et al. (2016a)

Table A1. Continued.

Core/site	References
KF14	Leonhardt et al. (2015)
KF16	Repschläger et al. (2015)
KH94-3_LM-8	Oba and Murayama (2004)
KN07304-0003PG	Curry et al. (1988)
KN166-14-11JPC	Elmore et al. (2015a, b)
KN166-14-3GGC	Elmore et al. (2015b)
KN166-14-JPC-13	Hodell et al. (2010)
KNR110-43PC	Curry and Crowley (1987)
KNR110-50	Curry et al. (1988)
KNR110-55	Sarnthein et al. (1988)
KNR110-58	Curry et al. (1988)
KNR110-66	Curry et al. (1988)
KNR110-71	Curry et al. (1988)
KNR110-75	Curry et al. (1988)
KNR110-82	Curry et al. (1988)
KNR110-91	Curry et al. (1988)
KNR140-01JPC	Keigwin (2004)
KNR140-02JPC	Keigwin (2004)
KNR140-02PG	Keigwin (2004)
KNR140-12JPC	Keigwin (2004)
KNR140-21GGC	Keigwin (2004)
KNR140-22JPC	Keigwin (2004)
KNR140-22PG	Keigwin (2004)
KNR140-28GGC	Keigwin (2004)
KNR140-29GGC	Keigwin (2004)
KNR140-2JPC-37	Hagen and Keigwin (2002)
KNR140-30GGC	Keigwin (2004)
KNR140-31GGC	Keigwin (2004)
KNR140-39GGC	Keigwin (2004); Keigwin and Schlegel (2002)
KNR140-40GGC	Keigwin (2004)
KNR140-43GGC	Keigwin (2004)
KNR140-50GGC	Keigwin (2004)
KNR140-51GGC	Keigwin (2004); Carlson et al. (2008); Rasmussen and Thomsen (2012)
KNR140-56GGC	Keigwin (2004)
KNR140-63JPC	Keigwin (2004)
KNR140-64GGC	Keigwin (2004)
KNR140-66GGC	Keigwin (2004)
KNR140-67JPC	Keigwin (2004)
KNR159-5-120GGC	Hoffman and Lund (2012)
KNR159-5-125GGC	Lund et al. (2015); Hoffman and Lund (2012)
KNR159-5-14GGC	Lund et al. (2015)
KNR159-5-17JPC	Lund et al. (2015); Tessin and Lund (2013)
KNR159-5-20JPC	Lund et al. (2015)
KNR159-5-22GGC	Lund et al. (2015); Hoffman and Lund (2012)
KNR159-5-30GGC	Lund et al. (2015); Tessin and Lund (2013)
KNR159-5-33GGC	Lund et al. (2015); Tessin and Lund (2013)
KNR159-5-36GGC	Lund et al. (2015); Carlson et al. (2008); Sortor and Lund (2011); Came et al. (2003)
KNR159-5-42JPC	Lund et al. (2015); Hoffman and Lund (2012)
KNR159-5-54GGC	Hoffman and Lund (2012)
KNR159-5-63GGC	Lund et al. (2015)
KNR159-5-78GGC	Lund et al. (2015); Tessin and Lund (2013)
KNR159-5-90GGC	Lund et al. (2015)
KNR166-2-105JPC	Lynch-Stieglitz et al. (2009)
KNR166-2-106JPC	Lynch-Stieglitz et al. (2009)
KNR166-2-113JPC	Lynch-Stieglitz et al. (2009)
KNR166-2-119JPC	Lynch-Stieglitz et al. (2009)
KNR166-2-127JPC	Lynch-Stieglitz et al. (2011)
KNR166-2-132JPC	Lynch-Stieglitz et al. (2011)
KNR166-2-135JPC	Lynch-Stieglitz et al. (2009)
KNR166-2-1GGC	Lynch-Stieglitz et al. (2009)
KNR166-2-26JPC	Schmidt and Lynch-Stieglitz (2011); Lynch-Stieglitz et al. (2011)
KNR166-2-29JPC	Lynch-Stieglitz et al. (2011)
KNR166-2-2JPC	Lynch-Stieglitz et al. (2009)
KNR166-2-31JPC	Lynch-Stieglitz et al. (2011)
KNR166-2-48JPC	Lynch-Stieglitz et al. (2009)
KNR166-2-51JPC	Lynch-Stieglitz et al. (2009)
KNR166-2-59JPC	Lynch-Stieglitz et al. (2009)
KNR166-2-73GGC	Lynch-Stieglitz et al. (2011)
KNR166-2-8GGC	Lynch-Stieglitz et al. (2009)

Table A1. Continued.

Core/site	References
KNR191-CDH19	Henry et al. (2016)
KNR195-5-CDH23	Kalansky et al. (2015)
KNR195-5-MC42C	Rustic et al. (2015)
KNR197-10-17GGC	Keigwin and Swift (2017)
KNR197-3-23GGC	Oppo et al. (2018)
KNR197-3-36GGC	Oppo et al. (2018)
KNR197-3-45GGC	Oppo et al. (2018)
KNR197-3-46CDH	Oppo et al. (2018)
KNR197-3-47CDH	Oppo et al. (2018)
KNR197-3-53GGC	Oppo et al. (2018)
KNR197-3-60GGC	Oppo et al. (2018)
KNR197-3-9GGC	Oppo et al. (2018).
KNR198-GGC-4	Keigwin, unpublished
KNR207-2_GGC3	Middleton et al. (2018)
KNR207-2_GGC6	Middleton et al. (2018)
KNR31-GPC5	Keigwin et al. (1991); Keigwin and Jones (1994, 1995)
KNR73_4PC	Keigwin and Lehman (2015)
KNR73_6PG	Keigwin and Lehman (2015)
KS82-30	Vergnaud-Grazzini and Pierre (1991); Caralp (1988)
KS82-31	Vergnaud-Grazzini and Pierre (1991); Caralp (2006a)
KS82-32	Thunell (2006a); Caralp (2006b)
KT90-9_21	Oba and Murayama (2004)
KT90-9_5	Oba and Murayama (2004)
LaPAS-KF02	Pivel et al. (2013)
LO09_21-2	Lackschewitz et al. (1998)
LO09_23-2	Lackschewitz et al. (1998)
LOUIS1610	Aharon (2003)
LOUIS1639	Aharon (2003)
LOUIS1640	Aharon (2003)
LOUIS1900	Aharon (2003)
LOUIS1924	Aharon (2003)
LOUIS1938	Aharon (2003)
LOUIS2023	Aharon (2003)
LV27-10-1	Kaiser (2001)
LV27-10-5	Kaiser (2001)
LV27-12-2	Kaiser (2001)
LV27-12-3	Kaiser (2001)
LV27-15-1	Kaiser (2001)
LV27-4-2	Kaiser (2001)
LV27-4-3	Kaiser (2001)
LV27-5-5	Kaiser (2001)
LV27-7-2	Kaiser (2001)
LV27-7-3	Kaiser (2001)
LV27-8-3	Kaiser (2001)
LV27-9-4	Kaiser (2001)
LV28-2-3	Kaiser (2001)
LV28-40-4	Kaiser (2001)
LV28-41-3	Kaiser (2001)
LV28-41-4	Kaiser (2001)
LV28-42-3	Kaiser (2001)
LV28-42-4	Kaiser (2001)
LV28-4-3	Kaiser (2001)
LV28-4-4	Kaiser (2001); Lembke-Jene et al. (2017)
LV28-44-2	Kaiser (2001)
LV28-44-3	Kaiser (2001)
M1_105KK	Sirocko (1989)
M1_114KK	Sirocko (1989)
M1_143KK	Sirocko (1989)
M1_162KK	Sirocko (1989)
M1_169SK	Sirocko (1989)
M1_181SK	Sirocko (1989)
M1_182SK	Sirocko (1989)
M1_223SK	Sirocko (1989)
M1_232SK	Sirocko (1989)
M125_469-3	Campos et al. (2020)
M125-34-2	Bahr et al. (2020)
M125-50-3	Campos et al. (2020)
M125-55-7	Hou et al. (2020)
M174_Kl11	Rohling et al. (2008)

Table A1. Continued.

Core/site	References
M25_4-KL11	Allen et al. (1999); Emeis et al. (2000)
M31_2-78_PC6	Geiselhart and Hemleben (1998a)
M31_2-84_PC6	Geiselhart and Hemleben (1998b)
M31_3_KL35	Müller and Budziak (2004)
M31_3_SL3011-1	Ivanova et al. (2003)
M33_1_SL_EAST	Ivanova et al. (2003)
M35003-4	Hüls (2000); Rühlemann et al. (1999); Mulitza et al. (1999); Hüls and Zahn (2000); Vink et al. (2001); Mulitza and Rühlemann, unpublished
M35027-1	Stüber (1999)
M39008-3	Cacho et al. (2001); Löwemark et al. (2004)
M40_4_SL67	Weldeab et al. (2003)
M40_4_SL71	Weldeab et al. (2003)
M40_4_SL87	Weldeab et al. (2003)
M44_3_KL83	Weldeab et al. (2003)
M5_3a-420.2	Sirocko (1989)
M5_3a-422_2	Sirocko (1989)
M74_4_1096-1	Paul et al. (2012)
M74_4_1143-1	Betzler et al. (2013)
M77_2_052-2	Glock et al. (2018); Erdem et al. (2016)
M77_2_059-1	Nürnberg et al. (2015); Mollier-Vogel et al. (2013)
M78_1_235-1	Reißig et al. (2019); Hoffmann et al. (2014); Poggemann et al. (2018)
MC-29D	Keigwin et al. (2003)
MD00-2361	Stuut et al. (2019); Spooner et al. (2011)
MD01-2378	Holbourn et al. (2005); Dürkop et al. (2008)
MD01-2392	Li et al. (2010)
MD01-2416	Gebhardt et al. (2008); Sarnthein et al. (2015)
MD01-2421	Oba and Murayama (2004)
MD01-2446	Marino et al. (2014)
MD01-2461	Peck et al. (2008, 2007)
MD02-2488	Govin et al. (2009)
MD02-2489	Gebhardt et al. (2008)
MD02-2496	Taylor et al. (2014); Cosma et al. (2008)
MD02-2503	Hill et al. (2006); Grelaud et al. (2009); Sarnthein et al. (2015)
MD02-2550	Williams et al. (2010); LoDico et al. (2006)
MD02-2575	Ziegler et al. (2008); Nürnberg et al. (2008)
MD02-2588	Diz et al. (2007); Ziegler et al. (2008)
MD02-2594	Martínez-Méndez et al. (2010); Dyez et al. (2014)
MD03-2607	Lopes dos Santos et al. (2013)
MD03-2611G	Gingele et al. (2007); Moros et al. (2009); de Deckker et al. (2012)
MD03-2698	Lebreiro et al. (2009)
MD03-2699	Voelker et al. (2010); Rodrigues et al. (2010)
MD03-2707	Weldeab et al. (2016); Weldeab et al. (2007)
MD03-MUC3	Moros and de Deckker (2020)
MD05-2896	Wang et al. (2016); Huang and Tian (2012); Tian et al. (2010); Wan and Jian (2014)
MD05-2897	Wang et al. (2016); Huang and Tian (2012)
MD05-2901	Li et al. (2009)
MD05-2904	Ge et al. (2010); Huang et al. (2015); Wan and Jian (2014)
MD05-2925	Lo et al. (2017)
MD06-2986	Ronge et al. (2015)
MD06-2990	Ronge et al. (2015)
MD06-3018	Russon et al. (2009, 2011)
MD06-3067	Bolliet et al. (2011)
MD06-3075	Fraser et al. (2014)
MD07-3076	Vázquez Riveiros et al. (2010); Skinner et al. (2010); Waelbroeck et al. (2011); Gottschalk et al. (2015, 2016)
MD07-3128	Caniupán et al. (2011)
MD08-3180	Repschläger et al. (2015); Schwab et al. (2012)
MD09-3259	Govin, unpublished
MD10-3340	Dang et al. (2015)
MD13-3455G	Fentimen et al. (2020)
MD73-025	Duplessy (1982); Labeyrie and Duplessy (1985); Labracherie et al. (1989)
MD76-123	Sirocko (1989)
MD76-125	Curry et al. (1988); Sirocko (1989)
MD76-127	Sirocko (1989)
MD76-128	Sirocko (1989)
MD76-131	Duplessy (1982); Sarnthein et al. (1988); Singh et al. (2011)
MD76-132	Sirocko (1989)
MD76-135	Sarnthein et al. (1988)
MD76-135	Sirocko (1989)
MD77-191	Sirocko (1989)

Table A1. Continued.

Core/site	References
MD77-194	Sarnthein et al. (1988); Sirocko (1989)
MD77-200	Sarnthein et al. (1988)
MD77-202	Sarnthein et al. (1988); Sirocko (1989)
MD77-203	Sarnthein et al. (1988)
MD79-254	Curry et al. (1988)
MD79-257	Duplessy et al. (1991); Levi et al. (2007)
MD80-304	Labeyrie and Duplessy (1985)
MD81-BC15	Thunell (2006b)
MD81-LC03	Jenkins and Williams (2004)
MD81-LC07	Jenkins and Williams (2004)
MD84-527	Pichon et al. (1992); Labracherie et al. (1989)
MD84-551	Labracherie et al. (1989)
MD84-629	Znaidi-Rivault (2006h)
MD84-641	Fontugne and Calvert (1992); Melki et al. (2010)
MD88-769	Rosenthal et al. (1997)
MD88-770	Labeyrie et al. (1996)
MD88-784	Lynch-Stieglitz et al. (2016)
MD90-912	Colin et al. (2021)
MD90-963	Bassinot et al. (1994)
MD95-2002	Eynaud et al. (2012); Auffret et al. (2002); Zaragosi et al. (2006)
MD95-2011	Dreger (1999), Hevrey, unpublished
MD95-2012	Dreger (1999)
MD95-2037	Labeyrie et al. (2005); Gherardi et al. (2009)
MD95-2039	Schönfeld et al. (2003)
MD95-2040	Voelker and de Abreu (2011); de Abreu et al. (2003)
MD95-2042	Shackleton et al. (2000); Hoogakker et al. (2015); Shackleton et al. (2004); Bard et al. (2004c, b, a)
MD95-2043	Cacho et al. (2006)
MD96-2048	Caley et al. (2018)
MD96-2080	Rau et al. (2002)
MD96-2084	Rau (2003)
MD96-2085	Chen et al. (2002)
MD96-2098	Pichevin et al. (2005); Daniau et al. (2013)
MD97-2106	Moy et al. (2006)
MD97-2114	Cobianchi et al. (2012)
MD97-2121	Carter and Manighetti (2006)
MD97-2138	de Garidel-Thoron et al. (2007)
MD97-2142	Chen et al. (2003); Ren et al. (2017)
MD97-2151	Wei et al. (2006); Lee et al. (1999)
MD98-2170	Stott et al. (2007)
MD98-2176	Stott et al. (2007)
MD98-2181	Stott et al. (2007, 2002); Stott (2007); Khider et al. (2014)
MD99-2227	Evans et al. (2007)
MD99-2227P	Evans et al. (2007)
MD99-2236	Jennings et al. (2015)
MD99-2254	de Vernal and Hillaire-Marcel (2006)
MD99-2263	Andrews et al. (2009)
MD99-2339	Voelker et al. (2006)
MD99-2343	Frigola et al. (2008)
ME0005-24JC	Kienast et al. (2013, 2007); Kusch et al. (2010); Dubois et al. (2011)
ME0005A-43JC	Benway et al. (2006)
MG237	Giresse et al. (1982); Sarnthein et al. (1994)
ML1208-06BB	Lynch-Stieglitz et al. (2015)
ML1208-10GC	Lynch-Stieglitz et al. (2015)
ML1208-11GC	Lynch-Stieglitz et al. (2015)
ML1208-12GC	Lynch-Stieglitz et al. (2015)
ML1208-13BB	Monteagudo et al. (2021); Lynch-Stieglitz et al. (2015); Costa and McManus (2017)
ML1208-15GC	Lynch-Stieglitz et al. (2015)
ML1208-17PC	Lynch-Stieglitz et al. (2015)
ML1208-17TC	Lynch-Stieglitz et al. (2015)
ML1208-18GC	Lynch-Stieglitz et al. (2015); Monteagudo et al. (2021); Lynch-Stieglitz, unpublished
ML1208-19GC	Lynch-Stieglitz et al. (2015)
ML1208-20BB	Monteagudo et al. (2021); Lynch-Stieglitz et al. (2015); Costa and McManus (2017)
ML1208-27BB	Lynch-Stieglitz et al. (2015); Monteagudo et al. (2021); Lynch-Stieglitz, unpublished
ML1208-28BB	Lynch-Stieglitz et al. (2015); Costa et al. (2016b); Costa and McManus (2017); Monteagudo et al. (2021); Lynch-Stieglitz, unpublished
ML1208-30BB	Lynch-Stieglitz et al. (2015)
ML1208-31BB	Lynch-Stieglitz et al. (2015); Jacobel et al. (2016); Monteagudo et al. (2021); Lynch-Stieglitz, unpublished
ML1208-32BB	Monteagudo et al. (2021); Costa and McManus (2017)
ML1208-34BB	Lynch-Stieglitz et al. (2015)

Table A1. Continued.

Core/site	References
ML1208-35BB	Lynch-Stieglitz et al. (2015)
ML1208-36BB	Costa et al. (2016b); Costa and McManus (2017); Monteagudo et al. (2021); Lynch-Stieglitz, unpublished
ML1208-37BB	Lynch-Stieglitz et al. (2015); Jacobel et al. (2016); Monteagudo et al. (2021)
MR00-K03-PC-01	Harada et al. (2004)
MR00-K03-PC-04	Harada et al. (2004)
MS21PC	Hennekam et al. (2015)
MSM05_5_723-2	Werner et al. (2016)
MV0502-4JC	Waddell et al. (2009)
MW9109-15GGC	Patrick and Thunell (1997); Yu et al. (2010)
MW9109-36BC	Broecker et al. (2001); Lynch-Stieglitz, unpublished
MW9109-44GGC	Broecker et al. (2001); Lynch-Stieglitz, unpublished
MW9109-48GGC	Yu et al. (2010); Lynch-Stieglitz, unpublished
MW9109-51BC	Lynch-Stieglitz, unpublished
MW9109-55GGC	Fehrenbacher and Martin (2011); Lynch-Stieglitz, unpublished
NA87-22	Vidal et al. (1997); Waelbroeck et al. (2001, 2006)
NBP9802_3GC1	Chase et al. (2003)
NBP9802_4GC1	Chase et al. (2003)
NBP9802_5GC1	Chase et al. (2003)
NEAP-04K	Rickaby and Elderfield (2005); Hall et al. (2004)
OC205-103GGC	Curry et al. (1999)
OC205-2-100GGC	Slowey and Curry (1995); Came et al. (2008)
OC205-2-103GGC	Slowey and Curry (1995); Curry et al. (1999); Came et al. (2003)
OC205-2-106GGC	Slowey and Curry (1995)
OC205-2-108GGC	Slowey and Curry (1995)
OC205-2-117JPC	Slowey and Curry (1995)
OC205-2-149JPC	Slowey and Curry (1995)
OC205-2-33GGC	Slowey and Curry (1995)
OC205-2-7JPC	Slowey and Curry (1995)
OC205-2-97JPC	Slowey and Curry (1995)
OCE326-26GGC	Keigwin et al. (2005)
OCE326-MC25B	Keigwin et al. (2005)
OCE3326-14GGC	Keigwin et al. (2005)
OCE400-MC44	Keigwin et al. (2005)
OD-041-04	Nørgaard-Pedersen et al. (2003)
OD96_30_3_1	Nørgaard-Pedersen (2000a)
ODP1063	Channell et al. (2012)
ODP1078C	Rühlemann et al. (2004); Kim et al. (2003); Mulitza, unpublished
ODP1079	Lynch-Stieglitz et al. (2006)
ODP1084	Mollenhauer, unpublished
ODP1084B	Lynch-Stieglitz et al. (2006)
ODP1119	Carter et al. (2004)
ODP1120	Duncan et al. (2016)
ODP1123	Elderfield et al. (2012)
ODP1125	Peterson et al. (2020)
ODP1127	Andres (2002)
ODP1168	Nürnberg et al. (2004)
ODP1170	Nürnberg et al. (2004)
ODP1172A	Nürnberg et al. (2004); Nürnberg and Groeneveld (2006)
ODP658C	Knaack and Sarnthein (2005); Knaack (1997); deMenocal et al. (2000)
ODP769	Linsley (1996)
ODP817A	Haddad et al. (1993)
ODP818B	Haddad et al. (1993)
ODP819A	Alexander et al. (1993)
ODP820A	Peerdeman et al. (1993)
ODP980	Oppo et al. (2003)
ODP984	Praetorius et al. (2008)
OK92_2182	Kaiser (2001)
OK92_2185	Kaiser (2001)
Orgon4-KS8	Sirocko (1989); Sirocko et al. (2000)
P1-003MC	Sejrup et al. (2010)
P69	Weaver et al. (1998); Nelson et al. (2000)
P71	Duncan et al. (2016)
PAR87A-01	Zahn et al. (1991)
PAR87A-02	Zahn et al. (1991)
PAR87A-10	Zahn et al. (1991)
PASSAP_PS009PC	Hennekam et al. (2015)
PC17	Lee et al. (2001)
PC20	Lee et al. (2001)
PC75-1	Shao et al. (2019)

Table A1. Continued.

Core/site	References
PC75-2	Shao et al. (2019)
PC83-1	Shao et al. (2019)
PLDS-7G	Keigwin and Lehman (2015)
POS200_10_6-2	Abrantes et al. (2018, 2001, 1998); Baas et al. (1997); Mienert et al. (1998)
POS457-905-2	Mirzaloo et al. (2019)
POS457-909-2	Mirzaloo et al. (2019)
PS1006-1	Grobe and Mackensen (1992)
PS1021-1	Grobe (1986a)
PS1023-1	Grobe (1986b)
PS1224-1	Grobe (1986b)
PS1243-1	Bauch (2001)
PS1290-4	Hebbeln (1992); Elverhøi et al. (1995)
PS1294-4	Hebbeln (1992); Elverhøi et al. (1995)
PS1295-4	Jones and Keigwin (1988)
PS1308-3	Spielhagen, unpublished
PS1367-2	Grobe and Mackensen (1992)
PS1368-3	Grobe (1996a)
PS1369-2	Grobe (1996b)
PS1370-2	Grobe (1996c)
PS1375-3	Grobe (1996d)
PS1378-3	Grobe (1996e)
PS1379-3	Grobe (1996f)
PS1380-3	Grobe and Mackensen (1992)
PS1381-3	Grobe (1996g)
PS1385-3	Grobe and Mackensen (1992)
PS1387-3	Grobe (1996h)
PS1388-3	Mackensen et al. (1989)
PS1389-3	Grobe and Mackensen (1992)
PS1390-3	Grobe and Mackensen (1992)
PS1392-1	Grobe (1996i)
PS1394-4	Grobe and Mackensen (1992)
PS1420-1	Melles (1991)
PS1420-2	Melles (1991)
PS1431-1	Grobe and Mackensen (1992)
PS1436-1	Ott and Gersonde (1997a)
PS1451-1	Cordes and Fütterer (1997a)
PS1458-1	Winn (2014d)
PS1458-2	Winn (2014e)
PS1461-1	Grobe (1996j)
PS1467-1	Cordes and Fütterer (1997b)
PS1479-2	Grobe and Mackensen (1992)
PS1481-3	Grobe et al. (1990)
PS1494-2	Melles (1991)
PS1494-3	Melles (1991)
PS1498-1	Melles (1991)
PS1498-2	Melles (1991)
PS1506-1	Mackensen et al. (1994)
PS1519-12	Horwege and Spielhagen, unpublished
PS1524-1	Köhler (1991)
PS1527-10	Köhler (1991)
PS1535-5	Spielhagen et al. (2004); Nørgaard-Pedersen et al. (2003)
PS1535-8	Spielhagen et al. (2004); Nowaczyk et al. (2003)
PS1563-2	Grobe (2002a)
PS1564-2	Grobe (2002b)
PS1565-2	Hillenbrand (1995)
PS1576-2	Brehme (1992)
PS1577-1	Brehme (1992)
PS1588-1	Grobe (1996k)
PS1591-1	Grobe et al. (1990)
PS1599-3	Weber (1992); Weber et al. (1994)
PS1606-3	Melles (1991)
PS1607-1	Melles (1991)
PS1607-3	Melles (1991)
PS1609-3	Melles (1991)
PS1611-3	Melles (1991)
PS1612-1	Melles (1991)
PS1612-2	Melles (1991)
PS1613-2	Melles (1991)
PS1613-4	Melles (1991)

Table A1. Continued.

Core/site	References
PS1640-1	Grobe and Mackensen (1992)
PS1648-1	Grobe and Mackensen (1992)
PS1649-2	Ott and Gersonde (1997b)
PS1650-1	Ott and Gersonde (1997c)
PS1650-2	Ott and Gersonde (1997d)
PS1651-1	Ott and Gersonde (1997e)
PS1651-2	Ott and Gersonde (1997f)
PS1652-1	Ott and Gersonde (1997g)
PS1652-2	Ott and Gersonde (1997h)
PS1653-1	Ott and Gersonde (1997i)
PS1653-2	Ott and Gersonde (1997j)
PS1654-1	Ott and Gersonde (1997k)
PS1654-2	Ott and Gersonde (1997l); Bianchi and Gersonde (2004)
PS1704-4	Horwege and Spielhagen, unpublished
PS1706-1	Horwege and Spielhagen, unpublished
PS1707-1	Horwege and Spielhagen, unpublished
PS1708-1	Horwege and Spielhagen, unpublished
PS1730-2	Nam (1997); Stein et al. (1996)
PS1754-1	Niebler (1995)
PS1768-8	Mulitza et al. (1999); Gersonde et al. (2003)
PS1769-1	Niebler (1995)
PS1789-1	Weber (1992); Weber et al. (1994)
PS1790-1	Weber (1992); Weber et al. (1994)
PS1805-6	Grobe (1996l)
PS1811-8	Grobe (1996m)
PS1812-1	Grobe (1996n)
PS1812-6	Grobe (1996o)
PS1813-6	Grobe (1996p)
PS1816-1	Grobe (1996q)
PS1878-3	Nowaczyk et al. (2003); Telesiński et al. (2014a, b)
PS1894-7	Nørgaard-Pedersen et al. (2003); Telesiński et al. (2014a, b)
PS1906-1	Magnus (2000); Nørgaard-Pedersen et al. (2003)
PS1906-2	Nees (1993); Nørgaard-Pedersen et al. (2003)
PS1910-1	Telesiński et al. (2014a)
PS1920-1	Stein et al. (1996)
PS1927-2	Nam (1997); Stein et al. (1996)
PS1951-1	Stein et al. (1996)
PS2037-3	Bonn (1995)
PS2038-2	Bonn et al. (1998)
PS2039-1	Bonn (1995)
PS2040-2	Bonn (1995)
PS2045-3	Bonn (1995)
PS2046-1	Bonn (1995)
PS2047-3	Bonn (1995)
PS2049-4	Bonn (1995)
PS2050-1	Bonn (1995)
PS2055-2	Bonn (1995)
PS2056-1	Bonn (1995)
PS2076-3	Niebler (1995)
PS2082-1	Mackensen et al. (1994)
PS2085-2	Niebler (1995)
PS2102-2	Niebler (1995); Gersonde et al. (2003)
PS2121-4	Müller (1995)
PS2138-1	Knies and Stein (1998a); Knies et al. (1998); Wollenburg et al. (2001); Nowaczyk et al. (2003)
PS2166-2	Nørgaard-Pedersen et al. (1998)
PS2170-4	Stein et al. (1994)
PS2177-1	Nørgaard-Pedersen et al. (2003, 1998)
PS2185-3	Spielhagen et al. (2004); Nørgaard-Pedersen et al. (1998)
PS2195-4	Nørgaard-Pedersen et al. (1998)
PS2200-2	Nørgaard-Pedersen et al. (1998)
PS2206-4	Stein et al. (1994)
PS2208-1	Stein et al. (1994); Stein and Schneider (2003)
PS2212-3	Wollenburg et al. (2001)
PS2250-5	Niebler (1995)
PS2423-4	Notholt (1998)
PS2424-1	Notholt (1998)
PS2446-4	Knies and Stein (1998b); Stein and Fahl (2000)
PS2458-4	Spielhagen et al. (2005); Spielhagen, unpublished
PS2487-6	Flores et al. (1999)

Table A1. Continued.

Core/site	References
PS2495-3	Mackensen et al. (2001); Gersonde et al. (2003); Niebler (2004a, b, c)
PS2498-1	Mackensen et al. (2001); Gersonde et al. (2003); Niebler (2004d, e, f)
PS2499-5	Mackensen et al. (2001); Gersonde et al. (2003)
PS2539-2	Hillenbrand et al. (2003)
PS2540-1	Hillenbrand et al. (2003)
PS2541-2	Hillenbrand et al. (2003)
PS2543-3	Hillenbrand et al. (2003)
PS2547-2	Hillenbrand et al. (2003)
PS2547-3	Hillenbrand et al. (2003)
PS2548-2	Hillenbrand et al. (2003)
PS2550-2	Hillenbrand et al. (2003)
PS2551-1	Hillenbrand et al. (2002)
PS2556-1	Hillenbrand et al. (2003)
PS2556-2	Braun (1997)
PS2561-2	Krueger et al. (2008)
PS2644-2	Voelker (1999)
PS2644-5	Voelker (1999)
PS2646-5	Voelker (1999)
PS2647-2	Voelker (1999)
PS2709-1	Flores et al. (2000)
PS2819-2	Vernaleken (1999)
PS2820-1	Vernaleken (1999)
PS2837-5	Nørgaard-Pedersen et al. (2003)
PS2876-1	Nørgaard-Pedersen et al. (2003)
PS2876-2	Nørgaard-Pedersen et al. (2003)
PS2887-1	Nørgaard-Pedersen and Spielhagen (2000); Nørgaard-Pedersen et al. (2003)
PS2887-2	Nørgaard-Pedersen (2000b); Nørgaard-Pedersen et al. (2003)
PS51_038-3	Nørgaard-Pedersen (2006)
PS51_038-4	Spielhagen et al. (2004)
PS66_309-1	Winkelmann et al. (2008)
PS69_251-1	Hillenbrand et al. (2017); Smith et al. (2014)
PS69_912-3	Ronge (2019b, a)
PS69_912-4	Ronge (2019b, a)
PS72_396-3	Geibert et al. (2021)
PS75_056-1	Ullermann et al. (2016)
PS75_072-4	Benz et al. (2016); Tiedemann and Lembke-Jene, unpublished
PS75_073-2	Benz et al. (2016); Tiedemann and Lembke-Jene, unpublished
PS75_085-1	Benz et al. (2016); Tiedemann and Lembke-Jene, unpublished
PS75_160-1	Hillenbrand et al. (2017)
PS75_167-1	Hillenbrand et al. (2017)
PS75-059-2	Ullermann et al. (2016); Ronge et al. (2016)
Q208	Winn (2013a)
Q585	Weaver et al. (1998)
Q859	Winn and Fenner (2013a)
Q861	Winn and Fenner (2013b)
R657	Weaver et al. (1998)
RAMA44P	Keigwin (1987)
RAPiD-10-1P	Thornalley et al. (2011, 2010)
RAPiD-12-1K	Thornalley et al. (2010, 2009)
RAPiD-15-4P	Thornalley et al. (2010)
RAPiD-17-5P	Thornalley et al. (2010)
RC09-150	Bé and Duplessy (1976)
RC09-166	Tierney et al. (2017)
RC10-131	Anderson et al. (1989)
RC10-289	Matsumoto and Lynch-Stieglitz (2003)
RC11-120	Curry et al. (1988)
RC11-238	Koutavas and Lynch-Stieglitz (2003)
RC11-83	Charles et al. (1996); Charles and Fairbanks (1992); Piotrowski et al. (2004)
RC11-86	Shackleton (2003)
RC12-109	Anderson et al. (1989)
RC12-113	Anderson et al. (1989)
RC12-279	Lynch-Stieglitz et al. (2006)
RC12-294	CLIMAP Project Members (2003)
RC12-339	Naqvi et al. (1994)
RC12-344	Duplessy (1982); Naqvi et al. (1994); Rashid et al. (2007)
RC13-110	Lyle et al. (2002)
RC13-115	Lyle et al. (2002)
RC13-140	Koutavas and Lynch-Stieglitz (2003)
RC13-228	Curry et al. (1988)

Table A1. Continued.

Core/site	References
RC13-229	Oppo and Fairbanks (1987)
RC13-254	Charles et al. (1991)
RC13-259	Shemesh et al. (1995)
RC13-269	Shemesh et al. (1995)
RC14-31	Broecker et al. (2000)
RC14-33	Broecker et al. (2000)
RC15-93	Charles et al. (1991)
RC16-119	Oppo and Horowitz (2000)
RC16-59	Lynch-Stieglitz, unpublished
RC16-84	Oppo and Horowitz (2000)
RC16-86	Oppo and Horowitz (2000)
RC17-176	Leech et al. (2013)
RC17-69	CLIMAP Project Members (1981)
RC8-102	Koutavas and Lynch-Stieglitz (2003)
RC9-150	Wells et al. (1994)
RC9-203	Oppo and Fairbanks (1987)
RECORD23	Colin et al. (2021)
RNDB-11PC	Keigwin and Lehman (2015)
RNDB-13PC	Keigwin and Lehman (2015)
RR0503_125JPC	Schiraldi et al. (2014); Sikes et al. (2016)
RR0503_41JPC	Sikes et al. (2016)
RR0503-79JPC	Sikes et al. (2016)
RR0503_83JPC	Sikes et al. (2016)
RR0503_83TC	Sikes et al. (2016)
RR0503-87JPC	Sikes et al. (2016)
RR0503_87TC	Sikes et al. (2016)
RR0503-64JPC	Schiraldi et al. (2014); Sikes et al. (2016)
RR0503-79JPC	Schiraldi et al. (2014)
RR0503-87JPC	Schiraldi et al. (2014)
RS105_GC23	Troedson and Davies (2001)
RS105GC25	Troedson and Davies (2001); Bostock et al. (2006)
RS112GC10	Troedson and Davies (2001)
RS112GC9	Troedson and Davies (2001); Bostock et al. (2006)
RS147-GC07	Sikes et al. (2016, 2009)
RS67-GC13	Lynch-Stieglitz et al. (1994)
RS67-GC16	Lynch-Stieglitz et al. (1994)
RS67-GC27	Lynch-Stieglitz et al. (1994)
RS67-GC3	Lynch-Stieglitz et al. (1994)
RS67-GC52	Lynch-Stieglitz et al. (1994)
RS78-GC18	Lynch-Stieglitz et al. (1994)
S794	Weaver et al. (1998)
SAN-76	Toledo et al. (2007)
SAT-048A	Frozza et al. (2020)
SBB2012DB	Osborne et al. (2020)
SCS90-36	Huang et al. (1997)
SHAK06-5K	Ausín et al. (2019)
SK129-CR05	Guptha et al. (2005)
SK157-15	Raza et al. (2014)
SK157-16	Raza et al. (2014)
SK157-20	Naik and Naidu (2016)
SK157-GC04	Saraswat et al. (2005)
SK200-GC17	Naik et al. (2014)
SK218_1	Govil and Divakar Naidu (2011); Govil, Naidu, and Mulitza, unpublished
SK237-GC04	Saraswat et al. (2013)
SK237-GC09	Saraswat et al. (2019)
SL-1	Guptha et al. (2005)
SL-4	Guptha et al. (2005)
SN6	Tiwari et al. (2015)
SO12_98	Winn (2012)
SO126_39KL	Weldeab et al. (2019)
SO130_261KL	von Rad et al. (2003)
SO135_03GKG	Winn (2014a)
SO135_04SL	Winn (2014b)
SO135_05GKG	Winn (2014c)
SO135_21GKG	Winn (2014f)
SO135_40KL	Winn (2014f)
SO136_003GC	Ronge et al. (2015); Barrows et al. (2007)
SO136-111	Crosta et al. (2004); Sturm (2003)
SO161_5_50SL	Blumberg et al. (2008)

Table A1. Continued.

Core/site	References
SO164-03-4	Reißig et al. (2019)
SO178-13-6	Max et al. (2014); Lembke-Jene et al. (2017)
SO189-119KL	Mohtadi et al. (2014); Mohtadi, unpublished
SO189-144KL	Mohtadi et al. (2014); Mohtadi, unpublished
SO189-39KL	Mohtadi et al. (2014); Mohtadi, unpublished
SO201-2-12KL	Riethdorf et al. (2013)
SO201-2-85	Riethdorf et al. (2013); Max et al. (2014)
SO202_1_27-6	Maier et al. (2015, 2018)
SO213_2_60-1	Molina-Kescher et al. (2016)
SO213_2_82-1	Ronge et al. (2015)
SO213_2_84-1	Ronge et al. (2015)
SO213-59-2	Tapia et al. (2015); Molina-Kescher et al. (2016); Nürnberg, unpublished
SO225-08-3	Raddatz et al. (2017); Nürnberg, unpublished
SO225-53-3	Raddatz et al. (2017); Nürnberg, unpublished
SO236_52-4	Bunzel et al. (2017)
SO26_127KA	Winn et al. (1991)
SO26_131KA	Winn et al. (1991)
SO26_141KA	Sarnthein and Winn (2013b)
SO26_189KA	Sarnthein and Winn (1991)
SO26_222KA	Sarnthein and Winn (2013a)
SO26_58KA	Winn et al. (1991)
SO26_90KA	Winn et al. (1991)
SO28-05KL	Sirocko (1989)
SO28-11KL	Sirocko (1989)
SO28-18KL	Sirocko (1989)
SO35_2_101KL	Winn et al. (1990)
SO35_2_102KL	Winn et al. (1990)
SO35_3_182KL	Winn et al. (1990)
SO35_3_211KL	Winn et al. (1990)
SO35_3_272KL	Winn (2013i)
SO36_2_17SL	Lynch-Stieglitz et al. (1994)
SO36-SL17	Lynch-Stieglitz et al. (1994)
SO36-SL7	Lynch-Stieglitz et al. (1994)
SO42-15KL	Sirocko (1989)
SO42-26KL	Sirocko (1989)
SO42-51KL	Sirocko (1989)
SO42-57KL	Sirocko (1989)
SO42-64KL	Sirocko (1989)
SO42-70KL	Sirocko (1989)
SO42-71KL	Sirocko (1989)
SO42-74KL	Sirocko et al. (2000)
SO42-82KL	Sirocko (1989)
SO42-87KL	Sirocko (1989)
SO75_3_26KL	Zahn et al. (1997)
SO82_2-2	Lackschewitz et al. (1998)
SO82_4-2	Lackschewitz et al. (1998); Moros et al. (1997)
SO82_5-2	Jung (1996); Lackschewitz et al. (1998); van Kreveld et al. (2000)
SO82_7-2	Lackschewitz et al. (1998)
SO90_137KA	von Rad et al. (1999)
SO93_1_22KL	Weber (1997)
Station-8s-MC	Harada et al. (2004)
Station-8s-PC	Harada et al. (2004)
SU81-07	Kallel et al. (1997)
SU81-18	Bard et al. (1987); Sarnthein et al. (1994); Duplessy (1996); Bard et al. (2000); Waelbroeck et al. (2001, 2019); Missiaen et al. (2019)
SU81-32	Sarnthein et al. (1994)
SU81-44	Sarnthein et al. (1994)
SU81-50	Sarnthein et al. (1994)
SU90-08	Missiaen et al. (2020); Grousset et al. (1993); Elliot et al. (1998)
SU90-09	Grousset et al. (2001)
SU90-11	Labeyrie et al. (1995)
SU90-24	Elliot et al. (2002)
SU90-I02	Schulz (1995)
SU90-I03	Schulz (1995)
SU90-I06	Schulz (1995)
SU90-I07	Schulz (1995)
SU90-I08	Schulz (1995)
SU92-21	Sarnthein et al. (1994)
T86-15P	Sarnthein et al. (1994)

Table A1. Continued.

Core/site	References
T86-15S	Sarnthein et al. (1994)
T87_2_20G	Thunell et al. (1977)
TAN0803-09	Maxson et al. (2019); Bostock et al. (2015)
TAN0803-27	Maxson et al. (2019)
TAN1106-11	Maxson et al. (2019)
TAN1106-15	Maxson et al. (2019)
TAN1106-28	Bostock et al. (2015)
TAN1106-34	Maxson et al. (2019); Bostock et al. (2015)
TAN1106-43	Maxson et al. (2019); Bostock et al. (2015)
TAN1106-7	Maxson et al. (2019)
TGS-931	Schröder et al. (2018)
TR163-19	Spero et al. (2003)
TR163-25T	Hoogakker et al. (2018)
TR163-31	Patrick and Thunell (1997); Curry et al. (1988)
TTN057-13-PC4	Kanfoush et al. (2002, 2000); Shemesh et al. (2002)
TTN057-6-PC4	Hodell et al. (2003)
TTR13-AT-455G	Seidenkrantz et al. (2021)
TTR13-AT-479G	Seidenkrantz et al. (2021)
U306	Winn (2016)
U938	Weaver et al. (1998)
Ulleung_C11	Kim et al. (2000)
Ulleung_C21	Kim et al. (2000)
UM94PC31	Corselli et al. (2002)
V10-49	Kallel et al. (1997)
V10-51	Kallel et al. (1997)
V12-70	Lynch-Stieglitz et al. (2006)
V16-51	Lynch-Stieglitz et al. (2006)
V17-178	Keigwin and Jones (1995)
V19-236	Lynch-Stieglitz et al. (2006)
V19-258	Lynch-Stieglitz et al. (2006)
V19-259	Lynch-Stieglitz et al. (2006)
V19-27	Koutavas and Lynch-Stieglitz (2003)
V19-28	Koutavas and Lynch-Stieglitz (2003)
V19-30	Curry et al. (1988)
V20-234	Lynch-Stieglitz, unpublished
V21-146	Hovan et al. (1991)
V21-29	Koutavas and Lynch-Stieglitz (2003)
V21-30	Koutavas and Lynch-Stieglitz (2003)
V21-40	Koutavas and Lynch-Stieglitz (2003)
V22-108	Charles et al. (1991)
V22-174	Shackleton (1977)
V22-196	Sarnthein et al. (1994)
V22-197	Curry et al. (1988)
V22-222	Mix et al. (1986)
V23-100	Sarnthein et al. (1994)
V23-81	Jansen and Veum (1990); Elliot et al. (1998)
V24-109	Shackleton et al. (1992)
V24-157	Anderson et al. (1989)
V24-161	Anderson et al. (1989)
V24-166	Anderson et al. (1989)
V24-170	Anderson et al. (1989)
V24-184	Anderson et al. (1989)
V24-253	Oppo and Horowitz (2000)
V25-21	Curry and Crowley (1987)
V25-59	Curry et al. (1988)
V26-175	Matsumoto and Lynch-Stieglitz (2003)
V26-176	Sarnthein et al. (1988); Matsumoto and Lynch-Stieglitz (2003); CLIMAP Project Members (2004b)
V26-177	Matsumoto and Lynch-Stieglitz (2003)
V27-180	Lynch-Stieglitz, unpublished
V28-122	Oppo and Fairbanks (1987); W. S. Broecker et al. (1988); W. Broecker et al. (1988); Schmidt et al. (2004)
V28-127	Oppo and Fairbanks (1990)
V28-14	Curry et al. (1988)
V28-304	Curry et al. (1988)
V28-73	Oppo and Lehman (1993)
V29-135	Sarnthein et al. (1994)
V29-140	Lynch-Stieglitz et al. (2006)
V29-193	Oppo and Lehman (1993)
V29-198	Oppo and Lehman (1993)
V29-202	Oppo and Lehman (1993)

Table A1. Continued.

Core/site	References
V29-204	Curry et al. (1999)
V29-9	Lynch-Stieglitz, unpublished
V30-40	Oppo and Fairbanks (1987)
V30-49	Curry et al. (1988)
V30-5	Matsumoto and Lynch-Stieglitz (2003)
V32-8	Mix et al. (1986)
V34-90	Gorbarenko et al. (2002)
V34-98	Gorbarenko et al. (2002)
V35-5	Oppo and Fairbanks (1987)
Vi-37GC	Keigwin (1998)
VM12-107	Schmidt et al. (2012)
VM18-222	Lynch-Stieglitz et al. (1994)
VM19-110	Leech et al. (2013)
VM24-110	Leech et al. (2013)
VM24-150	Leech et al. (2013)
VM28-213	Leech et al. (2013)
VM28-227	Leech et al. (2013)
VM28-229	Leech et al. (2013)
VM28-230	Leech et al. (2013)
VM28-233	Leech et al. (2013)
VM28-234	Leech et al. (2013)
VM28-235	Leech et al. (2013)
VM28-235TW	Leech et al. (2013)
VM28-236	Leech et al. (2013)
VM28-246	Leech et al. (2013)
VM34-2	Leech et al. (2013)
VNTR01_10PC	Keigwin and Lehman (2015)
W8402A-14	Jasper et al. (1994)
W8709A-1	Lyle et al. (1992)
W8709A-13	Lyle et al. (1992); Lund and Mix (1998)
W8709A-8	Lyle et al. (1992); Ortiz et al. (1997)
W8709A-8TC	Lyle et al. (1992); Ortiz et al. (1997)
WIND-28K	Kiefer et al. (2006); Johnstone et al. (2014)
Y71-06-12	Shackleton (1977)
Y71-09-101	Lyle et al. (2002)
Z2108	Nelson et al. (1994)
Z2112	Sikes et al. (2016)

Supplement. The supplement related to this article is available online at: https://doi.org/10.5194/essd-14-2553-2022-supplement.

Author contributions. SM conceptualized the atlas and wrote the paper with input from all co-authors. All authors assisted in the compilation of the data, and/or provided unpublished data and contributed to the paper.

Competing interests. The contact author has declared that neither they nor their co-authors have any competing interests.

Disclaimer. Publisher's note: Copernicus Publications remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Acknowledgements. Constructive comments by Ralf Schiebel, Stefano Bernasconi, and an anonymous reviewer substantially improved the manuscript. Data synthesis was supported by the Ocean Circulation and Carbon Cycling (OC3) working group of the Past Global Changes (PAGES) project and by the German Federal Ministry of Education and Research (BMBF) as a Research for Sustainability initiative (FONA) through the PalMod project (FKZ: 01LP1509B). Andreas Schmittner acknowledges support from the US National Science Foundation (grant no. 1924215).

Financial support. This research has been supported by the Bundesministerium für Bildung und Forschung (grant no. 01LP1509B) and the National Science Foundation (grant no. 1924215).

Review statement. This paper was edited by Kirsten Elger and reviewed by Stefano Bernasconi, Ralf Schiebel, and one anonymous referee.

References

Abrantes, F., Baas, J., Haflidason, H., Rasmussen, T., Klitgaard, D., Loncaric, N., and Gaspar, L.: Sediment fluxes along the northeastern European Margin: inferring hydrological changes between 20 and 8 kyr, Mar. Geol., 152, 7–23, https://doi.org/10.1016/S0025-3227(98)00062-0, 1998.

Abrantes, F. F., Gaspar, L., Helmers, E., Loncaric, N., and Monteiro, J.: Geochemical properties, stable isotopes and foraminifera abundances in sediment cores from the Portuguese Margin taken during the POSEIDON cruise PO200/10 in 1993. European North Atlantic Margin (ENAM): Sediment Pathways, Processes and Fluxes, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.895024, 2018.

Abrantes, F. F., Loncaric, N., Moreno, J., Mil-Homens, M., and Pflaumann, U.: Paleoceanographic conditions along the Portuguese Margin during the last 30 ka: A multiple proxy study, Comunicacoes do Instituto Geologico e Mineiro, 161–184, 2001.

Adegbie, A. T.: Reconstruction of paleoenvironmental conditions in Equatorial Atlantic and the Gulf of Guinea Basins for the last 245,000 years, Berichte aus dem Fachbereich Geowissenschaften der Universität Bremen, 178, Universität Bremen, Bremen, 113 pp., 2001.

Adegbie, A. T., Schneider, R. R., Röhl, U., and Wefer, G.: Glacial millennial-scale fluctuations in central African precipitation recorded in terrigenous sediment supply and freshwater signals offshore Cameroon, Palaeogeogr. Palaeocl., 197, 323–333, https://doi.org/10.1016/S0031-0182(03)00474-7, 2003.

Aharon, P.: Meltwater flooding events in the Gulf of Mexico revisited: Implications for rapid climate changes during the last deglaciation, Paleoceanography, 18, 1079, https://doi.org/10.1029/2002PA000840, 2003.

Alexander, I. T., Kroon, D., and Thompson, R.: Late Quaternary Paleoenvironmental Change on the Northeast Australian Margin as Evidenced in Oxygen Isotope Stratigraphy, Mineral Magnetism, and Sedimentology, in: Proceedings of the Ocean Drilling Program, 133 Scientific Results, edited by: McKenzie, J. A., Davies, P. J., and Palmer-Julson, A., Ocean Drilling Program, https://doi.org/10.2973/odp.proc.sr.133.224.1993, 1993.

Allen, J. R. M., Brandt, U., Brauer, A., Hubberten, H.-W., Huntley, B., Keller, J., Kraml, M., Mackensen, A., Mingram, J., Negendank, J. F. W., Nowaczyk, N. R., Oberhänsli, H., Watts, W. A., Wulf, S., and Zolitschka, B.: Rapid environmental changes in southern Europe during the last glacial period, Nature, 400, 740–743, https://doi.org/10.1038/23432, 1999.

Anderson, D. M., Prell, W. L., and Barratt, N. J.: Estimates of sea surface temperature in the Coral Sea at the Last Glacial Maximum, Paleoceanography, 4, 615–627, https://doi.org/10.1029/PA004i006p00615, 1989.

Anderson, R. F., Ali, S., Bradtmiller, L. I., Nielsen, S. H. H., Fleisher, M. Q., Anderson, B. E., and Burckle, L. H.: Wind-driven upwelling in the Southern Ocean and the deglacial rise in atmospheric CO_2, Science, 323, 1443–1448, https://doi.org/10.1126/science.1167441, 2009.

Andres, M. S.: Late quaternary paleoceanography of the Great Australian Bight: A geochemical and sedimentological study of cool-water carbonates, ODP Leg 182, Site 1127, PhD thesis, Swiss Federal Institute of Technology Zurich, 189 pp., 2002.

Andrews, J. T. and Tedesco, K.: Detrital carbonate-rich sediments, northwestern Labrador Sea: Implications for ice-sheet dynamics and iceberg rafting (Heinrich) events in the North Atlantic, Geology, 20, 1087, https://doi.org/10.1130/0091-7613(1992)020<1087:DCRSNL>2.3.CO;2, 1992.

Andrews, J. T., Erlenkeuser, H., Evans, L. W., Briggs, W. M., and Jull, A. J. T.: Meltwater and Deglaciation, SE Baffin Shelf (NE Margin Laurentide Ice Sheet) Between 13.5 and 7 ka: From O and C Stable Isotopic Data, Paleoceanography, 6, 621–637, https://doi.org/10.1029/91PA01914, 1991.

Andrews, J. T., Belt, S. T., Olafsdottir, S., Massé, G., and Vare, L. L.: Sea ice and marine climate variability for NW Iceland/Denmark Strait over the last 2000 cal. yr BP, Holocene, 19, 775–784, https://doi.org/10.1177/0959683609105302, 2009.

Arz, H. W., Pätzold, J., and Wefer, G.: Correlated Millennial-Scale Changes in Surface Hydrography and Terrigenous Sediment Yield Inferred from Last-Glacial Marine Deposits off Northeastern Brazil, Quaternary Res., 50, 157–166, https://doi.org/10.1006/qres.1998.1992, 1998.

Arz, H. W., Pätzold, J., and Wefer, G.: Climatic changes during the last deglaciation recorded in sediment cores from the northeastern Brazilian Continental Margin, Geo-Mar. Lett., 19, 209–218, https://doi.org/10.1007/s003670050111, 1999a.

Arz, H. W., Pätzold, J., and Wefer, G.: The deglacial history of the western tropical Atlantic as inferred from high resolution stable isotope records off northeastern Brazil, Earth Planet. Sc. Lett., 167, 105–117, https://doi.org/10.1016/S0012-821X(99)00025-4, 1999b.

Arz, H. W., Pätzold, J., Müller, P. J., and Moammar, M. O.: Influence of Northern Hemisphere climate and global sea level rise on the restricted Red Sea marine environment during termination I, Paleoceanography, 18, 1053, https://doi.org/10.1029/2002PA000864, 2003.

Auffret, G., Zaragosi, S., Dennielou, B., Cortijo, E., van Rooij, D., Grousset, F., Pujol, C., Eynaud, F., and Siegert, M.: Terrigenous fluxes at the Celtic margin during the last glacial cycle, Mar. Geol., 188, 79–108, https://doi.org/10.1016/S0025-3227(02)00276-1, 2002.

Ausín, B., Flores, J.-A., Sierro, F.-J., Bárcena, M.-A., Hernández-Almeida, I., Francés, G., Gutiérrez-Arnillas, E., Martrat, B., Grimalt, J. O., and Cacho, I.: Coccolithophore productivity and surface water dynamics in the Alboran Sea during the last 25 kyr, Palaeogeogr. Palaeocl., 418, 126–140, https://doi.org/10.1016/j.palaeo.2014.11.011, 2015a.

Ausín, B., Flores, J. A., Sierro, F. J., Cacho, I., Hernández-Almeida, I., Martrat, B., and Grimalt, J. O.: Atmospheric patterns driving Holocene productivity in the Alboran Sea (Western Mediterranean): A multiproxy approach, Holocene, 25, 583–595, https://doi.org/10.1177/0959683614565952, 2015b.

Ausín, B., Haghipour, N., Wacker, L., Voelker, A. H. L., Hodell, D., Magill, C., Looser, N., Bernasconi, S. M., and Eglinton, T. I.: Radiocarbon Age Offsets Between Two Surface Dwelling Planktonic Foraminifera Species During Abrupt Climate Events in the SW Iberian Margin, Paleoceanography and Paleoclimatology, 34, 63–78, https://doi.org/10.1029/2018PA003490, 2019.

Baas, J. H., Mienert, J., Abrantes, F., and Prins, M. A.: Late Quaternary sedimentation on the Portuguese continental margin: climate-related processes and products, Palaeogeogr. Palaeocl., 130, 1–23, https://doi.org/10.1016/S0031-0182(96)00135-6, 1997.

Bahr, A., Doubrawa, M., Titschack, J., Austermann, G., Koutsodendris, A., Nürnberg, D., Albuquerque, A. L., Friedrich, O., and Raddatz, J.: Monsoonal forcing of cold-water coral growth off southeastern Brazil during the past 160 kyr, Biogeosciences, 17, 5883–5908, https://doi.org/10.5194/bg-17-5883-2020, 2020.

Balmer, S., Sarnthein, M., Mudelsee, M., and Grootes, P. M.: Refined modeling and ^{14}C plateau tuning reveal consistent patterns of glacial and deglacial ^{14}C reservoir ages of surface waters in low-latitude Atlantic, Paleoceanography, 31, 1030–1040, https://doi.org/10.1002/2016PA002953, 2016.

Barash, M. S., Yushina, I. G., and Spielhagen, R. F.: Reconstructions of the Quaternary paleohydrological variability by planktonic foraminifera (North Atlantic, Reykjanes Ridge), Oceanology, 42, 744–756, 2002.

Bard, E., Arnold, M., Maurice, P., Duprat, J., Moyes, J., and Duplessy, J.-C.: Retreat velocity of the North Atlantic polar front during the last deglaciation determined by ^{14}C accelerator mass spectrometry, Nature, 328, 791–794, https://doi.org/10.1038/328791a0, 1987.

Bard, E., Rostek, F., Turon, J.-L., and Gendreau, S.: Hydrological impact of heinrich events in the subtropical northeast atlantic, Science, 289, 1321–1324, https://doi.org/10.1126/science.289.5483.1321, 2000.

Bard, E., Ménot-Combes, G., and Rostek, F.: Present Status of Radiocarbon Calibration and Comparison Records Based on Polynesian Corals and Iberian Margin Sediments, Radiocarbon, 46, 1189–1202, https://doi.org/10.1017/S0033822200033087, 2004a.

Bard, E., Rostek, F., and Ménot-Combes, G.: Radiocarbon calibration beyond 20,000 ^{14}C yr B. P. by means of planktonic foraminifera of the Iberian Margin, Quaternary Res., 61, 204–214, https://doi.org/10.1016/j.yqres.2003.11.006, 2004b.

Bard, E., Rostek, F., and Ménot-Combes, G.: Paleoclimate. A better radiocarbon clock, Science, 303, 178–179, https://doi.org/10.1126/science.1091964, 2004c.

Barrows, T. T., Juggins, S., de Deckker, P., Calvo, E., and Pelejero, C.: Long-term sea surface temperature and climate change in the Australian–New Zealand region, Paleoceanography, 22, 149, https://doi.org/10.1029/2006PA001328, 2007.

Bassinot, F. C., Beaufort, L., Vincent, E., Labeyrie, L. D., Rostek, F., Müller, P. J., Quidelleur, X., and Lancelot, Y.: Coarse fraction fluctuations in pelagic carbonate sediments from the tropical Indian Ocean: A 1500-kyr record of carbonate dissolution, Paleoceanography, 9, 579–600, https://doi.org/10.1029/94PA00860, 1994.

Bauch, D., Darling, K., Simstich, J., Bauch, H. A., Erlenkeuser, H., and Kroon, D.: Palaeoceanographic implications of genetic variation in living North Atlantic *Neogloboquadrina pachyderma*, Nature, 424, 299–302, https://doi.org/10.1038/nature01778, 2003.

Bauch, H.: A multiproxy reconstruction of the evolution of deep and surface waters in the subarctic Nordic seas over the last 30,000 yr, Quaternary Sci. Rev., 20, 659–678, https://doi.org/10.1016/S0277-3791(00)00098-6, 2001.

Bé, A. W. and Duplessy, J. C.: Subtropical convergence fluctuations and quaternary climates in the middle latitudes of the Indian ocean, Science, 194, 419–422, https://doi.org/10.1126/science.194.4263.419, 1976.

Behling, H., Arz, H. W., Pätzold, J., and Wefer, G.: Late Quaternary vegetational and climate dynamics in southeastern Brazil, inferences from marine cores GeoB 3229-2 and GeoB 3202-1, Palaeogeogr. Palaeocl., 179, 227–243, https://doi.org/10.1016/S0031-0182(01)00435-7, 2002.

Bender, V. B., Hanebuth, T. J. J., and Chiessi, C. M.: Holocene shifts of the Subtropical Shelf Front off southeastern South America controlled by high and low latitude atmospheric forcings, Paleoceanography, 28, 481–490, https://doi.org/10.1002/palo.20044, 2013.

Benway, H. M., Mix, A. C., Haley, B. A., and Klinkhammer, G. P.: Eastern Pacific Warm Pool paleosalinity and climate variability: 0–30 kyr, Paleoceanography, 21, 32, https://doi.org/10.1029/2005PA001208, 2006.

Benz, V., Esper, O., Gersonde, R., Lamy, F., and Tiedemann, R.: Last Glacial Maximum sea surface temperature and sea–ice extent in the Pacific sector of the

Southern Ocean, Quaternary Sci. Rev., 146, 216–237, https://doi.org/10.1016/j.quascirev.2016.06.006, 2016.

Berger, W. H. and Vincent, E.: Sporadic shutdown of North Atlantic deep water production during the Glacial–Holocene transition?, Nature, 324, 53–55, https://doi.org/10.1038/324053a0, 1986.

Berger, W. H., Killingley, J. S., Metzler, C. V., and Vincent, E.: Two-Step Deglaciation: ^{14}C-Dated High-Resolution δ^{18}O Records from the Tropical Atlantic Ocean, Quaternary Res., 23, 258–271, https://doi.org/10.1016/0033-5894(85)90032-8, 1985.

Bernhardt, A., Melnick, D., Hebbeln, D., Lückge, A., and Strecker, M. R.: Turbidite paleoseismology along the active continental margin of Chile – Feasible or not?, Quaternary Sci. Rev., 120, 71–92, https://doi.org/10.1016/j.quascirev.2015.04.001, 2015.

Bernhardt, A., Hebbeln, D., Regenberg, M., Lückge, A., and Strecker, M. R.: Shelfal sediment transport by an undercurrent forces turbidity-current activity during high sea level along the Chile continental margin, Geology, 44, 295–298, https://doi.org/10.1130/G37594.1, 2016.

Bertram, C. J., Elderfield, H., Shackleton, N. J., and MacDonald, J. A.: Cadmium/calcium and carbon isotope reconstructions of the glacial northeast Atlantic Ocean, Paleoceanography, 10, 563–578, https://doi.org/10.1029/94PA03058, 1995.

Betzler, C., Lüdmann, T., Hübscher, C., and FÜRSTENAU, J.: Current and sea-level signals in periplatform ooze (Neogene, Maldives, Indian Ocean), Sediment. Geol., 290, 126–137, https://doi.org/10.1016/j.sedgeo.2013.03.011, 2013.

Beveridge, N. A. S., Elderfield, H., and Shackleton, N. J.: Deep thermohaline circulation in the low-latitude Atlantic during the Last Glacial, Paleoceanography, 10, 643–660, https://doi.org/10.1029/94PA03353, 1995.

Bianchi, C. and Gersonde, R.: Climate evolution at the last deglaciation: the role of the Southern Ocean, Earth Planet. Sc. Lett., 228, 407–424, https://doi.org/10.1016/j.epsl.2004.10.003, 2004.

Bickert, T. and Mackensen, A.: Last Glacial to Holocene Changes in South Atlantic Deep Water Circulation, in: The South Atlantic in the Late Quaternary: Reconstruction of Material Budgets and Current Systems, edited by: Wefer, G., Mulitza, S., and Ratmeyer, V., Springer Berlin Heidelberg, Berlin, Heidelberg, 671–693, https://doi.org/10.1007/978-3-642-18917-3_29, 2004.

Blake Jr., W., Jackson, R. H., and Currie, C. G.: ^{14}C datings of sediment core HU91/039-012TC and HU91/039-012P from the northernmost Baffin Bay, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.785493, 1996.

Blumberg, S., Lamy, F., Arz, H. W., Echtler, H. P., Wiedicke, M., Haug, G. H., and Oncken, O.: Turbiditic trench deposits at the South-Chilean active margin: A Pleistocene–Holocene record of climate and tectonics, Earth Planet. Sc. Lett., 268, 526–539, https://doi.org/10.1016/j.epsl.2008.02.007, 2008.

Bolliet, T., Holbourn, A., Kuhnt, W., Laj, C., Kissel, C., Beaufort, L., Kienast, M., Andersen, N., and Garbe-Schönberg, D.: Mindanao Dome variability over the last 160 kyr: Episodic glacial cooling of the West Pacific Warm Pool, Paleoceanography, 26, 1050, https://doi.org/10.1029/2010PA001966, 2011.

Bonn, W. J.: Biogenopal und biogenes Barium als Indikatoren für spätquartäre Produktivitätsänderungen am antarktischen Kontinentalhang, atlantischer Sektor, Berichte zur Polarforschung, 180, Alfred-Wegener-Institut für Polar- und Meeresforschung, 186 pp., 1995.

Bonn, W. J., Gingele, F. X., Grobe, H., Mackensen, A., and Fütterer, D. K.: Palaeoproductivity at the Antarctic continental margin: opal and barium records for the last 400 ka, Palaeogeogr. Palaeocl., 139, 195–211, https://doi.org/10.1016/S0031-0182(97)00144-2, 1998.

Borreggine, M., Myhre, S. E., Mislan, K. A. S., Deutsch, C., and Davis, C. V.: A database of paleoceanographic sediment cores from the North Pacific, 1951–2016, Earth Syst. Sci. Data, 9, 739–749, https://doi.org/10.5194/essd-9-739-2017, 2017.

Bostock, H. C., Opdyke, B. N., Gagan, M. K., and Fifield, L. K.: Carbon isotope evidence for changes in Antarctic Intermediate Water circulation and ocean ventilation in the southwest Pacific during the last deglaciation, Paleoceanography, 19, PA4013, https://doi.org/10.1029/2004PA001047, 2004.

Bostock, H. C., Opdyke, B. N., Gagan, M. K., Kiss, A. E., and Fifield, L. K.: Glacial/interglacial changes in the East Australian current, Clim. Dynam., 26, 645–659, https://doi.org/10.1007/s00382-005-0103-7, 2006.

Bostock, H. C., Opdyke, B. N., Gagan, M. K., and Fifield, L. K.: Late Quaternary siliciclastic/carbonate sedimentation model for the Capricorn Channel, southern Great Barrier Reef province, Australia, Mar. Geol., 257, 107–123, https://doi.org/10.1016/j.margeo.2008.11.003, 2009.

Bostock, H. C., Hayward, B. W., Neil, H. L., Sabaa, A. T., and Scott, G. H.: Changes in the position of the Subtropical Front south of New Zealand since the last glacial period, Paleoceanography, 30, 824–844, https://doi.org/10.1002/2014PA002652, 2015.

Bouimetarhan, I., Dupont, L., Schefuß, E., Mollenhauer, G., Mulitza, S., and Zonneveld, K.: Palynological evidence for climatic and oceanic variability off NW Africa during the late Holocene, Quaternary Res., 72, 188–197, https://doi.org/10.1016/j.yqres.2009.05.003, 2009.

Bouimetarhan, I., Dupont, L., Kuhlmann, H., Pätzold, J., Prange, M., Schefuß, E., and Zonneveld, K.: Northern Hemisphere control of deglacial vegetation changes in the Rufiji uplands (Tanzania), Clim. Past, 11, 751–764, https://doi.org/10.5194/cp-11-751-2015, 2015.

Boyle, E. A. and Keigwin, L.: North Atlantic thermohaline circulation during the past 20,000 years linked to high-latitude surface temperature, Nature, 330, 35–40, https://doi.org/10.1038/330035a0, 1987.

Braun, B.: Rekonstruktion glaziomariner Sedimentationsprozesse am Kontinentalrand des westlichen Bellingshausenmeeres, Diploma Thesis, Alfred Wegener Institute for Polar and Marine Research, Bremerhaven & Geologisches Institut, Julius-Maximilians Universität, Würzburg, 83 pp., 1997.

Brehme, I.: Sedimentfazies und Bodenwasserstrom am Kontinentalhang des nordwestlichen Weddellmeeres (Sediment facies and bottomwater current on the continental slope in the northwestern Weddell Sea), Berichte zur Polarforschung, 110, Alfred-Wegener-Institut für Polar- und Meeresforschung, 127 pp., 1992.

Broecker, W., Klas, M., Ragano-Beavan, N., Mathieu, G., Mix, A., Andree, M., Oeschger, H., Wölfli, W., Suter, M., Bonani, G., Hofmann, H. J., Nessi, M., and Morenzoni, E.: Accelerator mass spectrometry radiocarbon measurements on marine carbonate samples from deep sea cores and sediment traps, Radiocarbon, 30, 261–295, https://doi.org/10.1017/S0033822200044234, 1988.

Broecker, W. S., Andree, M., Bonani, G., Wolfli, W., Klas, M., Mix, A., and Oeschger, H.: Comparison between radiocarbon ages obtained on coexisting planktonic foraminifera, Paleoceanography, 3, 647–657, https://doi.org/10.1029/PA003i006p00647, 1988.

Broecker, W. S., Clark, E., Lynch-Stieglitz, J., Beck, W., Stott, L. D., Hajdas, I., and Bonani, G.: Late glacial diatom accumulation at 9° S in the Indian Ocean, Paleoceanography, 15, 348–352, https://doi.org/10.1029/1999PA000439, 2000.

Broecker, W. S., Lynch-Stieglitz, J., Clark, E., Hajdas, I., and Bonani, G.: What caused the atmosphere's CO_2 content to rise during the last 8000 years?, Geochem. Geophy. Geosy., 2, 2001GC000177, https://doi.org/10.1029/2001GC000177, 2001.

Bunzel, D., Schmiedl, G., Lindhorst, S., Mackensen, A., Reolid, J., Romahn, S., and Betzler, C.: A multi-proxy analysis of Late Quaternary ocean and climate variability for the Maldives, Inner Sea, Clim. Past, 13, 1791–1813, https://doi.org/10.5194/cp-13-1791-2017, 2017.

Cacho, I., Grimalt, J. O., Canals, M., Sbaffi, L., Shackleton, N. J., Schönfeld, J., and Zahn, R.: Variability of the western Mediterranean Sea surface temperature during the last 25,000 years and its connection with the Northern Hemisphere climatic changes, Paleoceanography, 16, 40–52, https://doi.org/10.1029/2000PA000502, 2001.

Cacho, I., Shackleton, N., Elderfield, H., Sierro, F. J., and Grimalt, J. O.: Glacial rapid variability in deep-water temperature and δ^{18}O from the Western Mediterranean Sea, Quaternary Sci. Rev., 25, 3294–3311, https://doi.org/10.1016/j.quascirev.2006.10.004, 2006.

Caissie, B. E., Brigham-Grette, J., Lawrence, K. T., Herbert, T. D., and Cook, M. S.: Last Glacial Maximum to Holocene sea surface conditions at Umnak Plateau, Bering Sea, as inferred from diatom, alkenone, and stable isotope records, Paleoceanography, 25, 15, https://doi.org/10.1029/2008PA001671, 2010.

Caley, T., Extier, T., Collins, J. A., Schefuß, E., Dupont, L., Malaizé, B., Rossignol, L., Souron, A., McClymont, E. L., Jimenez-Espejo, F. J., García-Comas, C., Eynaud, F., Martinez, P., Roche, D. M., Jorry, S. J., Charlier, K., Wary, M., Gourves, P.-Y., Billy, I., and Giraudeau, J.: A two-million-year-long hydroclimatic context for hominin evolution in southeastern Africa, Nature, 560, 76–79, https://doi.org/10.1038/s41586-018-0309-6, 2018.

Came, R. E., Oppo, D. W., and Curry, W. B.: Atlantic Ocean circulation during the Younger Dryas: Insights from a new Cd/Ca record from the western subtropical South Atlantic, Paleoceanography, 18, 1086, https://doi.org/10.1029/2003PA000888, 2003.

Came, R. E., Oppo, D. W., Curry, W. B., and Lynch-Stieglitz, J.: Deglacial variability in the surface return flow of the Atlantic meridional overturning circulation, Paleoceanography, 23, PA1217, https://doi.org/10.1029/2007PA001450, 2008.

Camillo, E., Quadros, J. P., Santarosa, A. C. A., Costa, K. B., and Toledo, F. A. L.: An abrupt cooling event recorded around 73 kyr in western South Atlantic, Quatern. Int., 542, 80–87, https://doi.org/10.1016/j.quaint.2020.03.005, 2020.

Campos, M. C., Chiessi, C. M., Venancio, I. M., Pinho, T. M. L., Crivellari, S., Kuhnert, H., Schmiedl, G., Díaz, R. A., Albuquerque, A. L. S., Portilho-Ramos, R. C., Bahr, A., and Mulitza, S.: Constraining Millennial-Scale Changes in Northern Component Water Ventilation in the Western Tropical South Atlantic, Paleoceanography and Paleoclimatology, 35, e2020PA003876, https://doi.org/10.1029/2020PA003876, 2020.

Caniupán, M., Lamy, F., Lange, C. B., Kaiser, J., Arz, H., Kilian, R., Baeza Urrea, O., Aracena, C., Hebbeln, D., Kissel, C., Laj, C., Mollenhauer, G., and Tiedemann, R.: Millennial-scale sea surface temperature and Patagonian Ice Sheet changes off southernmost Chile (53° S) over the past $\sim$ 60 kyr, Paleoceanography, 26, PA3221, https://doi.org/10.1029/2010PA002049, 2011.

Caralp, M.: _Age determination of sediment core KS82-31, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.407598, 2006a.

Caralp, M.: _Age determination of sediment core KS82-32, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.407599, 2006b.

Caralp, M.-H.: Late glacial to recent deep-sea benthic foraminifera from the northeastern Atlantic (Cadiz Gulf) and western Mediterranean (Alboran Sea): Paleooceanographic results, Mar. Micropaleontol., 13, 265–289, https://doi.org/10.1016/0377-8398(88)90006-0, 1988.

Carlson, A. E., Oppo, D. W., Came, R. E., LeGrande, A. N., Keigwin, L. D., and Curry, W. B.: Subtropical Atlantic salinity variability and Atlantic meridional circulation during the last deglaciation, Earth Planet. Sc. Lett., 36, 991, https://doi.org/10.1130/g25080a.1, 2008.

Carter, L. and Manighetti, B.: Glacial/interglacial control of terrigenous and biogenic fluxes in the deep ocean off a high input, collisional margin: A 139 kyr-record from New Zealand, Mar. Geol., 226, 307–322, https://doi.org/10.1016/j.margeo.2005.11.004, 2006.

Carter, R. M., Gammon, P. R., and Millwood, L.: Glacial–interglacial (MIS 1–10) migrations of the Subtropical Front across ODP Site 1119, Canterbury Bight, Southwest Pacific Ocean, Mar. Geol., 205, 29–58, https://doi.org/10.1016/S0025-3227(04)00017-9, 2004.

Castañeda, I. S., Mulitza, S., Schefuss, E., Lopes dos Santos, R. A., Sinninghe Damsté, J. S., and Schouten, S.: Wet phases in the Sahara/Sahel region and human migration patterns in North Africa, P. Natl. Acad. Sci. USA, 106, 20159–20163, https://doi.org/10.1073/pnas.0905771106, 2009.

Català, A., Cacho, I., Frigola, J., Pena, L. D., and Lirer, F.: Holocene hydrography evolution in the Alboran Sea: a multi-record and multi-proxy comparison, Clim. Past, 15, 927–942, https://doi.org/10.5194/cp-15-927-2019, 2019.

Channell, J. E. T., Hodell, D. A., and Curtis, J. H.: ODP Site 1063 (Bermuda Rise) revisited: Oxygen isotopes, excursions and paleointensity in the Brunhes Chron, Geochem. Geophy. Geosy., 13, Q02001, https://doi.org/10.1029/2011GC003897, 2012.

Channell, J. E. T., Xuan, C., Hodell, D. A., Crowhurst, S. J., and Larter, R. D.: Relative paleointensity (RPI) and age control in Quaternary sediment drifts off the Antarctic Peninsula, Quaternary Sci. Rev., 211, 17–33, https://doi.org/10.1016/j.quascirev.2019.03.006, 2019.

Charles, C. D. and Fairbanks, R. G.: Evidence from Southern Ocean sediments for the effect of North Atlantic deep-water flux on climate, Nature, 355, 416–419, https://doi.org/10.1038/355416a0, 1992.

Charles, C. D., Froelich, P. N., Zibello, M. A., Mortlock, R. A., and Morley, J. J.: Biogenic opal in Southern Ocean sediments over the last 450,000 years: Implications for surface water chemistry and circulation, Paleoceanography, 6, 697–728, https://doi.org/10.1029/91PA02477, 1991.

Charles, C. D., Lynch-Stieglitz, J., Ninnemann, U. S., and Fairbanks, R. G.: Climate connections between the hemisphere revealed by deep sea sediment core/ice core correlations, Earth Planet. Sc. Lett., 142, 19–27, https://doi.org/10.1016/0012-821X(96)00083-0, 1996.

Chase, Z., Anderson, R. F., Fleisher, M. Q., and Kubik, P. W.: Accumulation of biogenic and lithogenic material in the Pacific sector of the Southern Ocean during the past 40,000 years, Deep-Sea Res. Pt. II, 50, 799–832, https://doi.org/10.1016/S0967-0645(02)00595-7, 2003.

Chen, M.-T., Chang, Y.-P., Chang, C.-C., Wang, L.-W., Wang, C.-H., and Yu, E.-F.: Late Quaternary sea-surface temperature variations in the southeast Atlantic: a planktic foraminifer faunal record of the past 600 000 yr (IMAGES II MD962085), Mar. Geol., 180, 163–181, https://doi.org/10.1016/S0025-3227(01)00212-2, 2002.

Chen, M.-T., Shiau, L.-J., Yu, P.-S., Chiu, T.-C., Chen, Y.-G., and Wei, K.-Y.: 500 000-Year records of carbonate, organic carbon, and foraminiferal sea-surface temperature from the southeastern South China Sea (near Palawan Island), Palaeogeogr. Palaeocl., 197, 113–131, https://doi.org/10.1016/S0031-0182(03)00389-4, 2003.

Chiessi, C. M., Mulitza, S., Paul, A., Pätzold, J., Groeneveld, J., and Wefer, G.: South Atlantic interocean exchange as the trigger for the Bølling warm event, Geology, 36, 919–922, https://doi.org/10.1130/G24979A.1, 2008.

Chiessi, C. M., Mulitza, S., Pätzold, J., Wefer, G., and Marengo, J. A.: Possible impact of the Atlantic Multidecadal Oscillation on the South American summer monsoon, Geophys. Res. Lett., 36, 105, https://doi.org/10.1029/2009GL039914, 2009.

CLIMAP Project Members: Seasonal reconstructions of the earth's surface at the last glacial maximum, Geological Society of America, Map and Chart Series, 36, 1–18, 1981.

CLIMAP Project Members: Stable isotope analysis on sediment core RC12-294, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.106548, 2003.

CLIMAP Project Members: Radiocarbon age determinations on sediment core A179-015, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.186339, 2004a.

CLIMAP Project Members: Radiocarbon age determinations on sediment core V26-176, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.186283, 2004b.

Cobianchi, M., Luciani, V., Lupi, C., Mancin, N., Lirer, F., Pelosi, N., Trattenero, I., Bordiga, M., Hall, I. R., and Sprovieri, M.: Pleistocene biogeochemical record in the south-west Pacific Ocean (images site MD97-2114, Chatham Rise), J. Quaternary Sci., 27, 519–530, https://doi.org/10.1002/jqs.2542, 2012.

Colin, C., Duhamel, M., Siani, G., Dubois-Dauphin, Q., Ducassou, E., Liu, Z., Wu, J., Revel, M., Dapoigny, A., Douville, E., Taviani, M., and Montagna, P.: Changes in the Intermediate Water Masses of the Mediterranean Sea During the Last Climatic Cycle—New Constraints From Neodymium Isotopes in Foraminifera, Paleoceanography and Paleoclimatology, 36, 1, https://doi.org/10.1029/2020PA004153, 2021.

Collins, J. A., Schefuß, E., Heslop, D., Mulitza, S., Prange, M., Zabel, M., Tjallingii, R., Dokken, T. M., Huang, E., Mackensen, A., Schulz, M., Tian, J., Zarriess, M., and Wefer, G.: Interhemispheric symmetry of the tropical African rainbelt over the past 23,000 years, Nat. Geosci., 4, 42–45, https://doi.org/10.1038/ngeo1039, 2011.

Cook, M. S., Keigwin, L. D., Birgel, D., and Hinrichs, K.-U.: Repeated pulses of vertical methane flux recorded in glacial sediments from the southeast Bering Sea, Paleoceanography, 26, PA2210, https://doi.org/10.1029/2010PA001993, 2011.

Cordes, D. and Fütterer, D. K.: Sedimentology of core PS1451-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51958, 1997a.

Cordes, D. and Fütterer, D. K.: Sedimentology of core PS1467-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51961, 1997b.

Corselli, C., Principato, M. S., Maffioli, P., and Crudeli, D.: Changes in planktonic assemblages during sapropel S5 deposition: Evidence from Urania Basin area, eastern Mediterranean, Paleoceanography, 17, 1–1-1-30, https://doi.org/10.1029/2000PA000536, 2002.

Cosma, T. N., Hendy, I. L., and Chang, A. S.: Chronological constraints on Cordilleran Ice Sheet glaciomarine sedimentation from core MD02-2496 off Vancouver Island (western Canada), Quaternary Sci. Rev., 27, 941–955, https://doi.org/10.1016/j.quascirev.2008.01.013, 2008.

Costa, K. and McManus, J.: Efficacy of ^{230}Th normalization in sediments from the Juan de Fuca Ridge, northeast Pacific Ocean, Geochim. Cosmochim. Ac., 197, 215–225, https://doi.org/10.1016/j.gca.2016.10.034, 2017.

Costa, K. B., Cabarcos, E., Santarosa, A. C. A., Battaglin, B. B. F., and Toledo, F. A. L.: A multiproxy approach to the climate and marine productivity variations along MIS 5 in SE Brazil: A comparison between major components of calcareous nannofossil assemblages and geochemical records, Palaeogeogr. Palaeocl., 449, 275–288, https://doi.org/10.1016/j.palaeo.2016.02.032, 2016a.

Costa, K. M., McManus, J. F., Anderson, R. F., Ren, H., Sigman, D. M., Winckler, G., Fleisher, M. Q., Marcantonio, F., and Ravelo, A. C.: No iron fertilization in the equatorial Pacific Ocean during the last ice age, Nature, 529, 519–522, https://doi.org/10.1038/nature16453, 2016b.

Costa, K. B., Camillo Jr, E., Santarosa, A. C. A., Iwai, F. S., de Quadros, J. P., Leipnitz, I. I., and de Lima Toledo, F. A.: Menardiiform planktonic foraminifera stratigraphy from Middle Pleistocene to Holocene in the Western South Atlantic, Rev. Bras. Paleontolog., 21, 225–237, https://doi.org/10.4072/rbp.2018.3.03, 2018.

Cramer, B. S., Toggweiler, J. R., Wright, J. D., Katz, M. E., and Miller, K. G.: Ocean overturning since the Late Cretaceous: Inferences from a new benthic foraminiferal isotope compilation, Paleoceanography, 24, 1095, https://doi.org/10.1029/2008PA001683, 2009.

Crivellari, S., Chiessi, C. M., Kuhnert, H., Häggi, C., da Costa Portilho-Ramos, R., Zeng, J.-Y., Zhang, Y., Schefuß, E., Mollenhauer, G., Hefter, J., Alexandre, F., Sampaio, G., and Mulitza, S.: Increased Amazon freshwater discharge during late Heinrich Stadial 1, Quaternary Sci. Rev., 181, 144–155, https://doi.org/10.1016/j.quascirev.2017.12.005, 2018.

Crosta, X., Sturm, A., Armand, L., and Pichon, J.-J.: Late Quaternary sea ice history in the Indian sector of the Southern Ocean as recorded by diatom assemblages, Mar. Micropaleontol., 50, 209–223, https://doi.org/10.1016/S0377-8398(03)00072-0, 2004.

Curry, W. B. and Crowley, T. J.: The d13C of equatorial Atlantic surface waters: Implications for Ice Age pCO_2 levels, Paleoceanography, 2, 489–517, https://doi.org/10.1029/PA002i005p00489, 1987.

Curry, W. B. and Lohmann, G. P.: Carbon Isotopic Changes in Benthic Foraminifera from the Western South Atlantic: Reconstruction of Glacial Abyssal Circulation Patterns, Quaternary Res., 18, 218–235, https://doi.org/10.1016/0033-5894(82)90071-0, 1982.

Curry, W. B. and Lohmann, G. P.: Reduced advection into Atlantic Ocean deep eastern basins during last glaciation maximum, Nature, 306, 577–580, https://doi.org/10.1038/306577a0, 1983.

Curry, W. B., Duplessy, J. C., Labeyrie, L. D., and Shackleton, N. J.: Changes in the distribution of $\delta^{13}C$ of deep water CO_2 between the Last Glaciation and the Holocene, Paleoceanography, 3, 317–341, https://doi.org/10.1029/PA003i003p00317, 1988.

Curry, W. B., Marchitto, T. M., McManus, J. F., Oppo, D. W., and Laarkamp, K. L.: Millennial-scale changes in ventilation of the thermocline, intermediate, and deep waters of the glacial North Atlantic, in: Mechanisms of Global Climate Change at Millennial Time Scales, edited by: Clark, U., Webb, S., and Keigwin, D., American Geophysical Union, Washington, DC, 59–76, https://doi.org/10.1029/GM112, 1999.

Dang, H., Jian, Z., Kissel, C., and Bassinot, F.: Precessional changes in the western equatorial Pacific Hydroclimate: A 240 kyr marine record from the Halmahera Sea, East Indonesia, Geochem. Geophy. Geosy., 16, 148–164, https://doi.org/10.1002/2014GC005550, 2015.

Daniau, A.-L., Sánchez Goñi, M. F., Martinez, P., Urrego, D. H., Bout-Roumazeilles, V., Desprat, S., and Marlon, J. R.: Orbital-scale climate forcing of grassland burning in southern Africa, P. Natl. Acad. Sci. USA, 110, 5069–5073, https://doi.org/10.1073/pnas.1214292110, 2013.

Davies-Walczak, M., Mix, A. C., Stoner, J. S., Southon, J. R., Cheseby, M., and Xuan, C.: Late Glacial to Holocene radiocarbon constraints on North Pacific Intermediate Water ventilation and deglacial atmospheric CO_2 sources, Earth Planet. Sc. Lett., 397, 57–66, https://doi.org/10.1016/j.epsl.2014.04.004, 2014.

de Abreu, L. , Shackleton, N. J., Schönfeld, J., Hall, M., and Chapman, M.: Millennial-scale oceanic climate variability off the Western Iberian margin during the last two glacial periods, Mar. Geol., 196, 1–20, https://doi.org/10.1016/S0025-3227(03)00046-X, 2003.

de Almeida, F. K., de Mello, R. M., Costa, K. B., and Toledo, F. A. L.: The response of deep-water benthic foraminiferal assemblages to changes in paleoproductivity during the Pleistocene (last 769.2 kyr), western South Atlantic Ocean, Palaeogeogr. Palaeocl., 440, 201–212, https://doi.org/10.1016/j.palaeo.2015.09.005, 2015.

de Deckker, P., Moros, M., Perner, K., and Jansen, E.: Influence of the tropics and southern westerlies on glacial interhemispheric asymmetry, Nat. Geosci., 5, 266–269, https://doi.org/10.1038/ngeo1431, 2012.

de Deckker, P., Barrows, T. T., Stuut, J.-B. W., van der Kaars, S., Ayress, M. A., Rogers, J., and Chaproniere, G.: Land–sea correlations in the Australian region: 460 ka of changes recorded in a deep-sea core offshore Tasmania. Part 2: the marine compared with the terrestrial record, Aust. J. Earth Sci., 66, 17–36, https://doi.org/10.1080/08120099.2018.1495101, 2019.

de Oliveira Lessa, D. V., Ramos, R. P., Barbosa, C. F., da Silva, A. R., Belem, A., Turcq, B., and Albuquerque, A. L.: Planktonic foraminifera in the sediment of a western boundary upwelling system off Cabo Frio, Brazil, Mar. Micropaleontol., 106, 55–68, https://doi.org/10.1016/j.marmicro.2013.12.003, 2014.

de Vernal, A. and Hillaire-Marcel, C.: Provincialism in trends and high frequency changes in the northwest North Atlantic during the Holocene, Global Planet. Change, 54, 263–290, https://doi.org/10.1016/j.gloplacha.2006.06.023, 2006.

deMenocal, P., Ortiz, J., Guilderson, T., Adkins, J., Sarnthein, M., Baker, L., and Yarusinsky, M.: Abrupt onset and termination of the African Humid Period, Quaternary Sci. Rev., 19, 347–361, https://doi.org/10.1016/S0277-3791(99)00081-5, 2000.

Dias, B. B., Barbosa, C. F., Faria, G. R., Seoane, J. C. S., and Albuquerque, A. L. S.: The effects of multidecadal-scale phytodetritus disturbances on the benthic foraminiferal community of a Western Boundary Upwelling System, Brazil, Mar. Micropaleontol., 139, 102–112, https://doi.org/10.1016/j.marmicro.2017.12.003, 2018.

Dickson, A. J., Beer, C. J., Dempsey, C., Maslin, M. A., Bendle, J. A., McClymont, E. L., and Pancost, R. D.: Oceanic forcing of the Marine Isotope Stage 11 interglacial, Nat. Geosci., 2, 428–433, https://doi.org/10.1038/ngeo527, 2009.

Diz, P., Hall, I. R., Zahn, R., and Molyneux, E. G.: Paleoceanography of the southern Agulhas Plateau during the last 150 ka: Inferences from benthic foraminiferal assemblages and multispecies epifaunal carbon isotopes, Paleoceanography, 22, PA4218, https://doi.org/10.1029/2007PA001511, 2007.

Dreger, D. L.: Decadal-to-centennial-scale sediment records of ice advance on the Barents shelf and meltwater discharge into the northeastern Norwegian Sea over the last 40 kyr, PhD thesis, Mathematisch-Naturwissenschaftliche Fakultät, Christian-Albrechts-Universität zu Kiel, Kiel, Germany, 79 pp., 1999.

Dubois, N., Kienast, M., Kienast, S., Normandeau, C., Calvert, S. E., Herbert, T. D., and Mix, A.: Millennial-scale variations in hydrography and biogeochemistry in the Eastern Equatorial Pacific over the last 100 kyr, Quaternary Sci. Rev., 30, 210–223, https://doi.org/10.1016/j.quascirev.2010.10.012, 2011.

Dunbar, G. B., Dickens, G. R., and Carter, R. M.: Sediment flux across the Great Barrier Reef Shelf to the Queensland Trough over the last 300 ky, Sediment. Geol., 133, 49–92, https://doi.org/10.1016/S0037-0738(00)00027-0, 2000.

Duncan, B., Carter, L., Dunbar, G., Bostock, H., Neil, H., Scott, G., Hayward, B. W., and Sabaa, A.: Interglacial/glacial changes in coccolith-rich deposition in the SW Pacific Ocean: An analogue for a warmer world?, Global Planet. Change, 144, 252–262, https://doi.org/10.1016/j.gloplacha.2016.08.001, 2016.

Duplessy, J.-C.: North Atlantic deep water circulation during the last climate cycle, Bulletin de l'Institut de Geologie du Bassin d'Aquitaine, 31, 379–391, 1982.

Duplessy, J.-C.: Quaternary paleoceanography: unpublished stable isotope # records, IGBP PAGES/World Data Center for Paleoclimatology Data Contribution Series #1996-035, NOAA/NGDC Paleoclimatology Program, Boulder, Colorado, USA, 1996.

Duplessy, J. C., Shackleton, N. J., Fairbanks, R. G., Labeyrie, L., Oppo, D., and Kallel, N.: Deepwater source variations during the last climatic cycle and their impact on the global deepwater circulation, Paleoceanography, 3, 343–360, https://doi.org/10.1029/PA003i003p00343, 1988.

Duplessy, J. C., Bard, E., Arnold, M., Shackleton, N. J., Duprat, J., and Labeyrie, L.: How fast did the ocean—atmosphere system run during the last deglaciation?, Earth Planet. Sc. Lett., 103, 27–40, https://doi.org/10.1016/0012-821X(91)90147-A, 1991.

Duplessy, J. C., Cortijo, E., Ivanova, E., Khusid, T., Labeyrie, L., Levitan, M., Murdmaa, I., and Paterne, M.: Paleoceanography of the Barents Sea during the Holocene, Paleoceanography, 20, PA4004, https://doi.org/10.1029/2004PA001116, 2005.

Dupont, L. M. and Kuhlmann, H.: Glacial-interglacial vegetation change in the Zambezi catchment, Quaternary Sci. Rev., 155, 127–135, https://doi.org/10.1016/j.quascirev.2016.11.019, 2017.

Dürkoop, A.: Der Brasil-Strom im Spätquartär: Rekonstruktion der oberflächennahen Hydrographie während der letzten 400 000 Jahre, Berichte aus dem Fachbereich Geowissenschaften der Universität Bremen, 119, Universität Bremen, Bremen, 121 pp., 1998.

Dürkoop, A., Hale, W., Mulitza, S., Pätzold, J., and Wefer, G.: Stable isotope data of sediment core GeoB1408-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223480, 1997a.

Dürkoop, A., Hale, W., Mulitza, S., Pätzold, J., and Wefer, G.: Stable isotope data of sediment core GeoB1501-4, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223481, 1997b.

Dürkoop, A., Hale, W., Mulitza, S., Pätzold, J., and Wefer, G.: Stable isotope data of sediment core GeoB1503-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223482, 1997c.

Dürkoop, A., Hale, W., Mulitza, S., Pätzold, J., and Wefer, G.: Stable isotope data of sediment core GeoB1508-4, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223483, 1997d.

Dürkoop, A., Hale, W., Mulitza, S., Pätzold, J., and Wefer, G.: Stable isotope data of sediment core GeoB1701-4, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223484, 1997e.

Dürkoop, A., Hale, W., Mulitza, S., Pätzold, J., and Wefer, G.: Stable isotope data of sediment core GeoB1903-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223485, 1997f.

Dürkoop, A., Hale, W., Mulitza, S., Pätzold, J., and Wefer, G.: Stable isotope data of sediment core GeoB2117-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223487, 1997g.

Dürkoop, A., Hale, W., Mulitza, S., Pätzold, J., and Wefer, G.: Stable isotope data of sediment core GeoB2125-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223488, 1997h.

Dürkoop, A., Hale, W., Mulitza, S., Pätzold, J., and Wefer, G.: Stable isotope data of sediment core GeoB2202-4, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223489, 1997i.

Dürkoop, A., Hale, W., Mulitza, S., Pätzold, J., and Wefer, G.: Stable isotope data of sediment core GeoB2819-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223491, 1997j.

Dürkoop, A., Hale, W., Mulitza, S., Pätzold, J., and Wefer, G.: Stable isotope data of sediment core GeoB2109-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223486, 2004a.

Dürkoop, A., Hale, W., Mulitza, S., Pätzold, J., and Wefer, G.: Stable isotope data of sediment core GeoB3808-6, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223492, 2004b.

Dürkop, A., Holbourn, A., Kuhnt, W., Zuraida, R., Andersen, N., and Grootes, P. M.: Centennial-scale climate variability in the Timor Sea during Marine Isotope Stage 3, Mar. Micropaleontol., 66, 208–221, https://doi.org/10.1016/j.marmicro.2007.10.002, 2008.

Dyez, K. A., Zahn, R., and Hall, I. R.: Multicentennial Agulhas leakage variability and links to North Atlantic climate during the past 80,000 years, Paleoceanography, 29, 1238–1248, https://doi.org/10.1002/2014PA002698, 2014.

Ehrmann, W., Schmiedl, G., Seidel, M., Krüger, S., and Schulz, H.: A distal 140 kyr sediment record of Nile discharge and East African monsoon variability, Clim. Past, 12, 713–727, https://doi.org/10.5194/cp-12-713-2016, 2016.

El Frihmat, Y., Hebbeln, D., Jaaidi, E. B., and Mhammdi, N.: Reconstruction of productivity signal and deep-water conditions in Moroccan Atlantic margin (∼ 35° N) from the last glacial to the Holocene, SpringerPlus, 4, 69, https://doi.org/10.1186/s40064-015-0853-6, 2015.

Elderfield, H., Ferretti, P., Greaves, M., Crowhurst, S., McCave, I. N., Hodell, D., and Piotrowski, A. M.: Evolution of ocean temperature and ice volume through the mid-Pleistocene climate transition, Science, 337, 704–709, https://doi.org/10.1126/science.1221294, 2012.

Elliot, M., Labeyrie, L., Bond, G., Cortijo, E., Turon, J.-L., Tisnerat, N., and Duplessy, J.-C.: Millennial-scale iceberg discharges in the Irminger Basin during the Last Glacial Period: Relationship with the Heinrich events and environmental settings, Paleoceanography, 13, 433–446, https://doi.org/10.1029/98PA01792, 1998.

Elliot, M., Labeyrie, L., and Duplessy, J.-C.: Changes in North Atlantic deep-water formation associated with the Dansgaard–Oeschger temperature oscillations (60–10 ka), Quaternary Sci. Rev., 21, 1153–1165, https://doi.org/10.1016/S0277-3791(01)00137-8, 2002.

Elmore, A. C., Wright, J. D., and Southon, J.: Continued meltwater influence on North Atlantic Deep Water instabilities during the early Holocene, Mar. Geol., 360, 17–24, https://doi.org/10.1016/j.margeo.2014.11.015, 2015a.

Elmore, A. C., Wright, J. D., and Chalk, T. B.: Precession-driven changes in Iceland–Scotland Overflow Water penetration and bottom water circulation on Gardar Drift since ∼ 200 ka, Palaeogeogr. Palaeocl., 440, 551–563, https://doi.org/10.1016/j.palaeo.2015.09.042, 2015b.

Elmore, A. C., McClymont, E. L., Elderfield, H., Kender, S., Cook, M. R., Leng, M. J., Greaves, M., and Misra, S.: Antarctic Intermediate Water properties since 400 ka recorded in infaunal (*Uvigerina peregrina*) and epifaunal (*Planulina wuellerstorfi*) benthic foraminifera, Earth Planet. Sc. Lett., 428, 193–203, https://doi.org/10.1016/j.epsl.2015.07.013, 2015c.

Elverhøi, A., Andersen, E. S., Dokken, T., Hebbeln, D., Spielhagen, R., Svendsen, J. I., Sørflaten, M., Rørnes, A., Hald, M., and Forsberg, C. F.: The Growth and Decay of the Late Weichselian Ice Sheet in Western Svalbard and Adjacent Areas Based on Provenance Studies of Marine Sediments, Quaternary Res., 44, 303–316, https://doi.org/10.1006/qres.1995.1076, 1995.

Emeis, K.-C., Struck, U., Schulz, H.-M., Rosenberg, R., Bernasconi, S., Erlenkeuser, H., Sakamoto, T., and Martinez-Ruiz, F.: Temperature and salinity variations of Mediterranean Sea surface waters over the last 16,000 years from records of planktonic stable oxygen isotopes and alkenone unsaturation ratios, Palaeogeogr. Palaeocl., 158, 259–280, https://doi.org/10.1016/S0031-0182(00)00053-5, 2000.

Erdem, Z., Schönfeld, J., Glock, N., Dengler, M., Mosch, T., Sommer, S., Elger, J., and Eisenhauer, A.: Peruvian sediments as recorders of an evolving hiatus for the last 22 thousand years, Quaternary Sci. Rev., 137, 1–14, https://doi.org/10.1016/j.quascirev.2016.01.029, 2016.

Evans, H. F., Channell, J. E. T., Stoner, J. S., Hillaire-Marcel, C., Wright, J. D., Neitzke, L. C., and Mountain, G. S.: Paleointensity-assisted chronostratigraphy of detrital layers on the Eirik Drift (North Atlantic) since marine isotope stage 11, Geochem. Geophy. Geosy., 8, Q11007, https://doi.org/10.1029/2007GC001720, 2007.

Eynaud, F., Malaizé, B., Zaragosi, S., de Vernal, A., Scourse, J., Pujol, C., Cortijo, E., Grousset, F. E., Penaud, A., Toucanne, S., Turon, J.-L., and Auffret, G.: New constraints on European glacial freshwater releases to the North Atlantic Ocean, Geophys. Res. Lett., 39, 79, https://doi.org/10.1029/2012GL052100, 2012.

Fehrenbacher, J. and Martin, P.: Western equatorial Pacific deep water carbonate chemistry during the Last Glacial Maximum and deglaciation: Using planktic foraminiferal Mg/Ca to reconstruct sea surface temperature and seafloor dissolution, Paleoceanography, 26, PA2225, https://doi.org/10.1029/2010PA002035, 2011.

Fentimen, R., Feenstra, E., Rüggeberg, A., Vennemann, T., Hajdas, I., Adatte, T., van Rooij, D., and Foubert, A.: Cold-Water Coral Mound Archive Provides Unique Insights Into Intermediate Water Mass Dynamics in the Alboran Sea During the Last Deglaciation, Front. Mar. Sci., 7, 243, https://doi.org/10.3389/fmars.2020.00354, 2020.

Ferreira, F., Frontalini, F., Leão, C. J., and Leipnitz, I. I.: Changes in the water column structure and paleoproductivity in the western South Atlantic Ocean since the middle Pleistocene: Evidence from benthic and planktonic foraminifera, Quatern. Int., 352, 111–123, https://doi.org/10.1016/j.quaint.2014.07.061, 2014.

Ferry, A. J., Crosta, X., Quilty, P. G., Fink, D., Howard, W., and Armand, L. K.: First records of winter sea ice concentration in the southwest Pacific sector of the Southern Ocean, Paleoceanography, 30, 1525–1539, https://doi.org/10.1002/2014PA002764, 2015.

Fink, H. G., Wienberg, C., de Pol-Holz, R., Wintersteller, P., and Hebbeln, D.: Cold-water coral growth in the Alboran Sea related to high productivity during the Late Pleistocene and Holocene, Mar. Geol., 339, 71–82, https://doi.org/10.1016/j.margeo.2013.04.009, 2013.

Flores, J.-A., Gersonde, R., and Sierro, F. J.: Pleistocene fluctuations in the Agulhas Current Retroflection based on the calcareous plankton record, Mar. Micropaleontol., 37, 1–22, https://doi.org/10.1016/S0377-8398(99)00012-2, 1999.

Flores, J.-A., Gersonde, R., Sierro, F. J., and Niebler, H.-S.: Southern Ocean Pleistocene calcareous nannofossil events: calibration with isotope and geomagnetic stratigraphies, Mar. Micropaleontol., 40, 377–402, https://doi.org/10.1016/S0377-8398(00)00047-5, 2000.

Flower, B. P., Hastings, D. W., Hill, H. W., and Quinn, T. M.: Phasing of deglacial warming and Laurentide Ice Sheet meltwater in the Gulf of Mexico, Paleoceanography, 32, 597, https://doi.org/10.1130/G20604.1, 2004.

Fontugne, M. R. and Calvert, S. E.: Late Pleistocene Variability of the Carbon Isotopic Composition of Organic Matter in the Eastern Mediterranean: Monitor of Changes in Carbon Sources and Atmospheric CO_2 Concentrations, Paleoceanography, 7, 1–20, https://doi.org/10.1029/91PA02674, 1992.

Fraile, I., Schulz, M., Mulitza, S., and Kucera, M.: Predicting the global distribution of planktonic foraminifera using a dynamic ecosystem model, Biogeosciences, 5, 891–911, https://doi.org/10.5194/bg-5-891-2008, 2008.

Fraser, N., Kuhnt, W., Holbourn, A., Bolliet, T., Andersen, N., Blanz, T., and Beaufort, L.: Precipitation variability within the West Pacific Warm Pool over the past 120 ka: Evidence from the Davao Gulf, southern Philippines, Paleoceanography, 29, 1094–1110, https://doi.org/10.1002/2013PA002599, 2014.

Freudenthal, T.: Reconstruction of productivity gradients in the Canary Island region off Morocco by means of sinking particles and sediments, Berichte aus dem Fachbereich Geowissenschaften der Universität Bremen, 147 pp., 2000.

Freudenthal, T., Meggers, H., Henderiks, J., Kuhlmann, H., Moreno, A., and Wefer, G.: Upwelling intensity and filament activity off Morocco during the last 250,000 years, Deep-Sea Res. Pt. II, 49, 3655–3674, https://doi.org/10.1016/S0967-0645(02)00101-7, 2002.

Freymüller, J.: Eine hochauflösende planktische Isotopenaufzeichnung des 'Heinrich Event 1' im tropischen Südamerika, Bachelorarbeit, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 40 pp., 2013.

Friddell, J. E.: Increased northeast Pacific climatic variability during the warm middle Holocene, Geophys. Res. Lett., 30, 483, https://doi.org/10.1029/2002GL016834, 2003.

Frigola, J., Moreno, A., Cacho, I., Canals, M., Sierro, F. J., Flores, J. A., and Grimalt, J. O.: Evidence of abrupt changes in Western Mediterranean Deep Water circulation during the last 50 kyr: A high-resolution marine record from the Balearic Sea, Quatern. Int., 181, 88–104, https://doi.org/10.1016/j.quaint.2007.06.016, 2008.

Frozza, C. F., Pivel, M. A. G., Suárez-Ibarra, J. Y., Ritter, M. N., and Coimbra, J. C.: Bioerosion on Late Quaternary Planktonic Foraminifera Related to Paleoproductivity in the Western South Atlantic, Paleoceanography and Paleoclimatology, 35, 32, https://doi.org/10.1029/2020PA003865, 2020.

de Garidel-Thoron, T., Rosenthal, Y., Beaufort, L., Bard, E., Sonzogni, C., and Mix, A. C.: A multiproxy assessment of the western equatorial Pacific hydrography during the last 30 kyr, Paleoceanography, 22, PA3204, https://doi.org/10.1029/2006PA001269, 2007.

Ge, H., Li, Q., and Cheng, X.: Late Quaternary high resolution monsoon records in planktonic stable isotopes from northern South China Sea, Earth Sci. J. China Uni. Geosci., 515–525, 2010 (in Chinese).

Gebhardt, H., Sarnthein, M., Grootes, P. M., Kiefer, T., Kuehn, H., Schmieder, F., and Röhl, U.: Paleonutrient and productivity records from the subarctic North Pacific for Pleistocene glacial terminations I to V, Paleoceanography, 23, PA1202, https://doi.org/10.1029/2007PA001513, 2008.

Geibert, W., Matthiessen, J., Stimac, I., Wollenburg, J., and Stein, R.: Glacial episodes of a freshwater Arctic Ocean covered by a thick ice shelf, Nature, 590, 97–102, https://doi.org/10.1038/s41586-021-03186-y, 2021.

Geiselhart, S. and Hemleben, C.: Stable isotopes of sediment core M31/2_KL17, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.54426, 1998a.

Geiselhart, S. and Hemleben, C.: Stable isotopes from sediment core M31/2_KL23, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.54427, 1998b.

Gemmeke, B.: Spätquartäre Variationen der Sauerstoffisotopen-Zusammensetztung des Oberflächenwassers im östlichen tropischen Nordatlantik, Bachelorarbeit, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 39 pp., 2010.

Gersonde, R., Abelmann, A., Brathauer, U., Becquey, S., Bianchi, C., Cortese, G., Grobe, H., Kuhn, G., Niebler, H.-S., Segl, M., Sieger, R., Zielinski, U., and Fütterer, D. K.: Last glacial sea surface temperatures and sea–ice extent in the Southern Ocean (Atlantic–Indian sector): A multiproxy approach, Paleoceanography, 18, https://doi.org/10.1029/2002PA000809, 2003.

Gherardi, J.-M., Labeyrie, L., Nave, S., Francois, R., McManus, J. F., and Cortijo, E.: Glacial-interglacial circulation changes inferred from 231 Pa/ 230 Th sedimentary record in the North Atlantic region, Paleoceanography, 24, PA2204, https://doi.org/10.1029/2008PA001696, 2009.

Gibbons, F. T., Oppo, D. W., Mohtadi, M., Rosenthal, Y., Cheng, J., Liu, Z., and Linsley, B. K.: Deglacial δ^{18}O and hydrologic variability in the tropical Pacific and Indian Oceans, Earth Planet. Sc. Lett., 387, 240–251, https://doi.org/10.1016/j.epsl.2013.11.032, 2014.

Gingele, F., de Deckker, P., and Norman, M.: Late Pleistocene and Holocene climate of SE Australia reconstructed from dust and river loads deposited offshore the River Murray Mouth, Earth Planet. Sc. Lett., 255, 257–272, https://doi.org/10.1016/j.epsl.2006.12.019, 2007.

Gingele, F. X., Schmieder, F., Dobeneck, T. von, Petschick, R., and Rühlemann, C.: Terrigenous Flux in the Rio Grande Rise Area during the Past 1500 ka: Evidence of Deepwater Advection or Rapid Response to Continental Rainfall Patterns?, Paleoceanography, 14, 84–95, https://doi.org/10.1029/1998PA900012, 1999.

Giresse, P., Bongopassi, G., Delibrias, G., and Duplessy, J. C.: La lithostratigraphie de sédiments hémipélagiques du delta profond du fleuvre Congo es ses indications sur les paléoclimats de la fin du Quaternaire, B. Soc. Geol. Fr., 24, 803–815, 1982.

Glock, N., Erdem, Z., Wallmann, K., Somes, C. J., Liebetrau, V., Schönfeld, J., Gorb, S., and Eisenhauer, A.: Coupling of oceanic carbon and nitrogen facilitates spatially resolved quantitative reconstruction of nitrate inventories, Nat. Commun., 9, 1217, https://doi.org/10.1038/s41467-018-03647-5, 2018.

Gorbarenko, S. A. and Southon, J. R.: Detailed Japan Sea paleoceanography during the last 25 kyr: constraints from AMS dating and δ^{18}O of planktonic foraminifera, Palaeogeogr. Palaeocl., 156, 177–193, https://doi.org/10.1016/S0031-0182(99)00137-6, 2000.

Gorbarenko, S. A., Khusid, T. A., Basov, I. A., Oba, T., Southon, J. R., and Koizumi, I.: Glacial Holocene environment of the southeastern Okhotsk Sea: evidence from geochemical and palaeontological data, Palaeogeogr. Palaeocl., 177, 237–263, https://doi.org/10.1016/S0031-0182(01)00335-2, 2002.

Gottschalk, J., Skinner, L. C., and Waelbroeck, C.: Contribution of seasonal sub-Antarctic surface water variability to millennial-scale changes in atmospheric CO_2 over the last deglaciation and Marine Isotope Stage 3, Earth Planet. Sc. Lett., 411, 87–99, https://doi.org/10.1016/j.epsl.2014.11.051, 2015.

Gottschalk, J., Vázquez Riveiros, N., Waelbroeck, C., Skinner, L. C., Michel, E., Duplessy, J.-C., Hodell, D., and Mackensen, A.: Carbon isotope offsets between benthic foraminifer species of the genus Cibicides (*Cibicidoides*) in the glacial sub-Antarctic Atlantic, Paleoceanography, 31, 1583–1602, https://doi.org/10.1002/2016PA003029, 2016.

Govil, P. and Naidu, P. D.: Evaporation-precipitation changes in the eastern Arabian Sea for the last 68 ka: Implications on monsoon variability, Paleoceanography, 25, 159, https://doi.org/10.1029/2008PA001687, 2010.

Govil, P. and Naidu, P. D.: Variations of Indian monsoon precipitation during the last 32 kyr reflected in the surface hydrography of the Western Bay of Bengal, Quaternary Sci. Rev., 30, 3871–3879, https://doi.org/10.1016/j.quascirev.2011.10.004, 2011.

Govin, A., Michel, E., Labeyrie, L., Waelbroeck, C., Dewilde, F., and Jansen, E.: Evidence for northward expansion of Antarctic Bottom Water mass in the Southern Ocean during the last glacial inception, Paleoceanography, 24, PA1202, https://doi.org/10.1029/2008PA001603, 2009.

Govin, A., Chiessi, C. M., Zabel, M., Sawakuchi, A. O., Heslop, D., Hörner, T., Zhang, Y., and Mulitza, S.: Terrigenous input off northern South America driven by changes in Amazonian climate and the North Brazil Current retroflection during the last 250 ka, Clim. Past, 10, 843–862, https://doi.org/10.5194/cp-10-843-2014, 2014.

Grelaud, M., Beaufort, L., Cuven, S., and Buchet, N.: Glacial to interglacial primary production and El Niño-Southern Oscillation dynamics inferred from coccolithophores of the Santa Barbara Basin, Paleoceanography, 24, PA1203, https://doi.org/10.1029/2007PA001578, 2009.

Grobe, H.: Sedimentation processes on the antarctic continental margin at Kapp Norvegia during the late Pleistocene, Geol. Rundsch., 75, 97–104, https://doi.org/10.1007/BF01770181, 1986a.

Grobe, H.: Spätpleistozäne Sedimentationsprozesse am antarktischen Kontinentalhang vor Kapp Norvegia, östliche Weddell See, Berichte zur Polarforschung, 27, Alfred-Wegener-Inst. für Polar- und Meeresforschung, Bremerhaven, 121 pp., 1986b.

Grobe, H.: Sedimentology of core PS1368-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51580, 1996a.

Grobe, H.: Sedimentology of core PS1369-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51582, 1996b.

Grobe, H.: Sedimentology of core PS1370-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51584, 1996c.

Grobe, H.: Sedimentology of core PS1375-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51589, 1996d.

Grobe, H.: Sedimentology of core PS1378-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51594, 1996e.

Grobe, H.: Sedimentology of core PS1379-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51596, 1996f.

Grobe, H.: Sedimentology of core PS1381-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51600, 1996g.

Grobe, H.: Sedimentology of core PS1387-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51607, 1996h.

Grobe, H.: Sedimentology of core PS1392-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51628, 1996i.

Grobe, H.: Sedimentology of core PS1461-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51657, 1996j.

Grobe, H.: Sedimentology of core PS1588-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51673, 1996k.

Grobe, H.: Sedimentology of core PS1805-6, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51727, 1996l.

Grobe, H.: Sedimentology of core PS1811-8, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51732, 1996m.

Grobe, H.: Sedimentology of core PS1812-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51733, 1996n.

Grobe, H.: Sedimentology of core PS1812-6, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51734, 1996o.

Grobe, H.: Sedimentology of core PS1813-6, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51735, 1996p.

Grobe, H.: Sedimentology of core PS1816-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51736, 1996q.

Grobe, H.: Sedimentology and stable isotope ratios of core PS1563-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.80819, 2002a.

Grobe, H.: Sedimentology and stable isotope ratios of core PS1564-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.81001, 2002b.

Grobe, H., Fütterer, D. K., and Spieß, V.: Oligocene to Quaternary Sedimentation Processes on the Antarctic Continental Margin, ODP Leg 113, Site 693, in: Proceedings of the Ocean Drilling Program, 113 Scientific Reports, edited by: Barker, P. E. and Kennett, J. P., Ocean Drilling Program, https://doi.org/10.2973/odp.proc.sr.113.193.1990, 1990.

Grobe, H. and Mackensen, A.: Late Quaternary climatic cycles as recorded in sediments from the Antarctic continental margin, in: The Antarctic Paleoenvironment: A Perspective on Global Change: Part One, edited by: Kennett, J. P. and Warkne, D. A., American Geophysical Union, Washington, DC, 349–376, https://doi.org/10.1029/AR056p0349, 1992.

Grousset, F. E., Labeyrie, L., Sinko, J. A., Cremer, M., Bond, G., Duprat, J., Cortijo, E., and Huon, S.: Patterns of Ice-Rafted Detritus in the Glacial North Atlantic (40–55° N), Paleoceanography, 8, 175–192, https://doi.org/10.1029/92PA02923, 1993.

Grousset, F. E., Cortijo, E., Huon, S., Hervé, L., Richter, T., Burdloff, D., Duprat, J., and Weber, O.: Zooming in on Heinrich layers, Paleoceanography, 16, 240–259, https://doi.org/10.1029/2000PA000559, 2001.

Guptha, M. V. S., Naidu, P. D., Haake, B. G., and Schiebel, R.: Carbonate and carbon fluctuations in the Eastern Arabian Sea over 140 ka: Implications on productivity changes?, Deep-Sea Res. Pt. II, 52, 1981–1993, https://doi.org/10.1016/j.dsr2.2005.05.003, 2005.

Haddad, G. A., Droxler, A. W., Kroon, D., and Müller, D. W.: Quaternary CaCO3 Input and Preservation within Antarctic Intermediate Water Mineralogic and Isotopic Results from Holes 818B and 817A, Townsville Trough (Northeast Australian Margin), in: Proceedings of the Ocean Drilling Program, 133 Scientific Results, edited by: McKenzie, J. A., Davies, P. J., and Palmer-Julson, A., Ocean Drilling Program, https://doi.org/10.2973/odp.proc.sr.133.229.1993, 1993.

Hagen, S. and Hald, M.: Variation in surface and deep water circulation in the Denmark Strait, North Atlantic, during marine isotope stages 3 and 2, Paleoceanography, 17, 13-1–13-16, https://doi.org/10.1029/2001PA000632, 2002.

Hagen, S. and Keigwin, L. D.: Sea-surface temperature variability and deep water reorganisation in the subtropical North Atlantic during Isotope Stage 2–4, Mar. Geol., 189, 145–162, https://doi.org/10.1016/S0025-3227(02)00327-4, 2002.

Hale, W. and Pflaumann, U.: Sea-surface Temperature Estimations using a Modern Analog Technique with Foraminiferal Assemblages from Western Atlantic Quaternary Sediments, in: Use of Proxies in Paleoceanography: Examples from the South Atlantic, edited by: Fischer, G. and Wefer, G., Springer Berlin Heidelberg, Berlin, Heidelberg, 69–90, 1999a.

Hale, W. and Pflaumann, U.: Stable isotopes on *Globigerinoides ruber* in sediment core GeoB2109-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.140002, 1999b.

Hale, W. and Pflaumann, U.: Stable isotopes on *Globigerinoides ruber* in sediment core GeoB3808-6, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.140005, 1999c.

Hall, I. R., Bianchi, G. G., and Evans, J. R.: Centennial to millennial scale Holocene climate-deep water linkage in the North Atlantic, Quaternary Sci. Rev., 23, 1529–1536, https://doi.org/10.1016/j.quascirev.2004.04.004, 2004.

Harada, N., Ahagon, N., Uchida, M., and Murayama, M.: Northward and southward migrations of frontal zones during the past 40 kyr in the Kuroshio-Oyashio transition area, Geochem. Geophy. Geosy., 5, Q09004, https://doi.org/10.1029/2004GC000740, 2004.

Hays, J. D., Imbrie, J., and Shackleton, N. J.: Variations in the Earth's Orbit: Pacemaker of the Ice Ages, Science, 194, 1121–1132, https://doi.org/10.1126/science.194.4270.1121, 1976.

Hebbeln, D.: Weichselian glacial history of the Svalbard area: correlating the marine and terrestrial records, Boreas, 21, 295–302, https://doi.org/10.1111/j.1502-3885.1992.tb00035.x, 1992.

Heil, G.: Abrupt climate shifts in the western tropical to subtropical Atlantic region during the last glacial, PhD thesis, Fachbereich Geowissenschaften, Universität Bremen, Bremen, Germany, 121 pp., 2006.

Henderiks, J., Freudenthal, T., Meggers, H., Nave, S., Abrantes, F., Bollmann, J., and Thierstein, H. R.: Glacial–interglacial variability of particle accumulation in the Canary Basin: a time-slice approach, Deep-Sea Res. Pt. II, 49, 3675–3705, https://doi.org/10.1016/S0967-0645(02)00102-9, 2002.

Hendrizan, M., Kuhnt, W., and Holbourn, A.: High resolution reconstruction of hydrological changes over the last 14 kyr from sediment core GIK18517-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.880971, 2017a.

Hendrizan, M., Kuhnt, W., and Holbourn, A.: Variability of Indonesian Throughflow and Borneo Runoff During the Last 14 kyr, Paleoceanography, 32, 1054–1069, https://doi.org/10.1002/2016PA003030, 2017b.

Hennekam, R., Donders, T. H., Zwiep, K., and de Lange, G. J.: Integral view of Holocene precipitation and vegetation changes in the Nile catchment area as inferred from its delta sediments, Quaternary Sci. Rev., 130, 189–199, https://doi.org/10.1016/j.quascirev.2015.05.031, 2015.

Henrich, R., Cherubini, Y., and Meggers, H.: Climate and sea level induced turbidite activity in a canyon system offshore the hyperarid Western Sahara (Mauritania): The Timiris Canyon, Mar. Geol., 275, 178–198, https://doi.org/10.1016/j.margeo.2010.05.011, 2010.

Henry, L. G., McManus, J. F., Curry, W. B., Roberts, N. L., Piotrowski, A. M., and Keigwin, L. D.: North Atlantic ocean circulation and abrupt climate change during the last glaciation, Science, 353, 470–474, https://doi.org/10.1126/science.aaf5529, 2016.

Hickey, B. J.: Reconstructing past flow rates of southern component water masses using sedimentary $^{231}Pa/^{230}Th$, PhD thesis, University of Oxford, 232 pp., 2010.

Hill, T. M., Kennett, J. P., Pak, D. K., Behl, R. J., Robert, C., and Beaufort, L.: Pre-Bølling warming in Santa Barbara Basin, California: surface and intermediate water records of early deglacial warmth, Quaternary Sci. Rev., 25, 2835–2845, https://doi.org/10.1016/j.quascirev.2006.03.012, 2006.

Hillaire-Marcel, C., de Vernal, A., Aksu, A. E., and Macko, S.: High-Resolution Isotopic and Micropaleontological Studies of Upper Pleistocene Sediments at ODP Site 645, Baffin Bay, in: Proceedings of the Ocean Drilling Program, 105 Scientific Results, edited by: Srivastava, S. P., Arthur, M. A., and Clement, B., Ocean Drilling Program, https://doi.org/10.2973/odp.proc.sr.105.138.1989, 1989.

Hillaire-Marcel, C., de Vernal, A., Bilodeau, G., and Wu, G.: Isotope stratigraphy, sedimentation rates, deep circulation, and carbonate events in the Labrador Sea during the last ∼ 200 ka, Can. J. Earth Sci., 31, 63–89, https://doi.org/10.1139/e94-007, 1994.

Hillenbrand, C.-D.: Sedimentological and stable isotope analysis of sediment core PS1565-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.50003, 1995.

Hillenbrand, C.-D., Fütterer, D., Grobe, H., and Frederichs, T.: No evidence for a Pleistocene collapse of the West Antarctic Ice Sheet from continental margin sediments recovered in the Amundsen Sea, Geo-Mar. Lett., 22, 51–59, https://doi.org/10.1007/s00367-002-0097-7, 2002.

Hillenbrand, C.-D., Grobe, H., Diekmann, B., Kuhn, G., and Fütterer, D. K.: Distribution of clay minerals and proxies for productivity in surface sediments of the Bellingshausen and Amundsen seas (West Antarctica) – Relation to modern environmental conditions, Mar. Geol., 193, 253–271, https://doi.org/10.1016/S0025-3227(02)00659-X, 2003.

Hillenbrand, C.-D., Larter, R. D., Dowdeswell, J. A., Ehrmann, W., Ó Cofaigh, C., Benetti, S., Graham, A. G. C., and Grobe, H.: The sedimentary legacy of a palaeo-ice stream on the shelf of the southern Bellingshausen Sea: Clues to West Antarctic glacial history during the Late Quaternary, Quaternary Sci. Rev., 29, 2741–2763, https://doi.org/10.1016/j.quascirev.2010.06.028, 2010.

Hillenbrand, C.-D., Smith, J. A., Hodell, D. A., Greaves, M., Poole, C. R., Kender, S., Williams, M., Andersen, T. J., Jernas, P. E., Elderfield, H., Klages, J. P., Roberts, S. J., Gohl, K., Larter, R. D., and Kuhn, G.: West Antarctic Ice Sheet retreat driven by Holocene warm water incursions, Nature, 547, 43–48, https://doi.org/10.1038/nature22995, 2017.

Ho, S. L., Mollenhauer, G., Lamy, F., Martínez-Garcia, A., Mohtadi, M., Gersonde, R., Hebbeln, D., Nunez-Ricardo, S., Rosell-Melé, A., and Tiedemann, R.: Sea surface temperature variability in the Pacific sector of the Southern Ocean over the past 700 kyr, Paleoceanography, 27, 380, https://doi.org/10.1029/2012PA002317, 2012.

Hodell, D. A., Charles, C. D., Curtis, J. H., Mortyn, P. G., Ninnemann, U. S., and Venz, K. A.: Data report: Oxygen isotope stratigraphy of ODP Leg 177 Sites 1088, 1089, 1090, 1093, and 1094, in: Proceedings of the Ocean Drilling Program, 177 Scientific Results, edited by: Gersonde, R., Hodell, D. A., and Blum, P., Ocean Drilling Program, https://doi.org/10.2973/odp.proc.sr.177.120.2003, 2003.

Hodell, D. A., Evans, H. F., Channell, J. E. T., and Curtis, J. H.: Phase relationships of North Atlantic ice-rafted debris and surface-deep climate proxies during the last glacial period, Quaternary Sci. Rev., 29, 3875–3886, https://doi.org/10.1016/j.quascirev.2010.09.006, 2010.

Hoff, U., Rasmussen, T. L., Stein, R., Ezat, M. M., and Fahl, K.: Sea ice and millennial-scale climate variability in the Nordic seas 90 kyr ago to present, Nat. Commun., 7, 12247, https://doi.org/10.1038/ncomms12247, 2016.

Hoffman, J. L. and Lund, D. C.: Refining the stable isotope budget for Antarctic Bottom Water: New foraminiferal data from the abyssal southwest Atlantic, Paleoceanography, 27, https://doi.org/10.1029/2011PA002216, 2012.

Hoffman, J. S.: Ocean Temperature Variability during the Late Pleistocene, PhD thesis, Oregon State University, Corvallis, OR, 287 pp., 2016.

Hoffmann, J., Bahr, A., Voigt, S., Schönfeld, J., Nürnberg, D., and Rethemeyer, J.: Disentangling abrupt deglacial hydrological changes in northern South America: Insolation versus oceanic forcing, Geology, 42, 579–582, https://doi.org/10.1130/G35562.1, 2014.

Holbourn, A., Kuhnt, W., Kawamura, H., Jian, Z., Grootes, P., Erlenkeuser, H., and Xu, J.: Orbitally paced paleoproductivity variations in the Timor Sea and Indonesian Throughflow variability during the last 460 kyr, Paleoceanography, 20, PA3002, https://doi.org/10.1029/2004PA001094, 2005.

Hommers, H., Voelker, A. H. L., and Sarnthein, M.: Stable isotope data of *Globigerinoides ruber* white (315–400 µm) for deep-sea core GIK13291-1 off Cape Blanc, NW Africa, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.903669, 2019.

Hoogakker, B. A. A., Elderfield, H., Schmiedl, G., McCave, I. N., and Rickaby, R. E. M.: Glacial–interglacial changes in bottom-water oxygen content on the Portuguese margin, Nat. Geosci., 8, 40–43, https://doi.org/10.1038/ngeo2317, 2015.

Hoogakker, B. A. A., Lu, Z., Umling, N., Jones, L., Zhou, X., Rickaby, R. E. M., Thunell, R., Cartapanis, O., and Galbraith, E.: Glacial expansion of oxygen-depleted seawater in the eastern tropical Pacific, Nature, 562, 410–413, https://doi.org/10.1038/s41586-018-0589-x, 2018.

Hörner, T.: Relation between Amazonian precipitation, insolation and ocean circulation during the last 250 kyr, Master Thesis, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 84 pp., 2012.

Hou, A., Bahr, A., Raddatz, J., Voigt, S., Greule, M., Albuquerque, A. L., Chiessi, C. M., and Friedrich, O.: Insolation and Greenhouse Gas Forcing of the South American Monsoon System Across Three Glacial-Interglacial Cycles, Geophys. Res. Lett., 47, 259, https://doi.org/10.1029/2020GL087948, 2020.

Hovan, S. A., Rea, D. K., and Pisias, N. G.: Late Pleistocene Continental Climate and Oceanic Variability Recorded in Northwest Pacific Sediments, Paleoceanography, 6, 349–370, https://doi.org/10.1029/91PA00559, 1991.

Howard, W. R. and Prell, W. L.: Late Quaternary Surface Circulation of the Southern Indian Ocean and its Relationship to Orbital Variations, Paleoceanography, 7, 79–117, https://doi.org/10.1029/91PA02994, 1992.

Huang, C.-Y., Wu, S.-F., Zhao, M., Chen, M.-T., Wang, C.-H., Tu, X., and Yuan, P. B.: Surface ocean and monsoon climate variability in the South China Sea since the last glaciation, Mar. Micropaleontol., 32, 71–94, https://doi.org/10.1016/S0377-8398(97)00014-5, 1997.

Huang, E.: Atlantic Meridional Overturning Circulation during the Last Glacial and Deglacial: Inferences from the Atlantic Tropical Thermocline Temperature and Seawater Radiocarbon Activity, PhD thesis, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 121 pp., 2013.

Huang, E. and Tian, J.: Sea-level rises at Heinrich stadials of early Marine Isotope Stage 3: Evidence of terrigenous n-alkane input in the southern South China Sea, Global Planet. Change, 94–95, 1–12, https://doi.org/10.1016/j.gloplacha.2012.06.003, 2012.

Huang, E., Tian, J., Qiao, P., Wan, S., Xie, X., and Yang, W.: Early interglacial carbonate-dilution events in the South China Sea: Implications for strengthened typhoon activities over subtropical East Asia, Quaternary Sci. Rev., 125, 61–77, https://doi.org/10.1016/j.quascirev.2015.08.007, 2015.

Hüls, C. M.: Millennial-scale SST variability as inferred from planktonic foraminiferal census counts in the western subtropical Atlantic, GEOMAR-Report, 95, GEOMAR, Kiel, 118 pp., 2000.

Hüls, M.: Meeresoberflächentemperaturen im Atlantik vor Liberia in den letzten 400.00 Jahren (Meteor Kern 16776), Diploma Thesis, Geologisch–Paläontologisches Institut, Christian-Albrechts-Universität, Kiel, Germany, 77 pp., 1991.

Hüls, M. and Zahn, R.: Millennial-scale sea surface temperature variability in the western tropical North Atlantic from planktonic foraminiferal census counts, Paleoceanography, 15, 659–678, https://doi.org/10.1029/1999PA000462, 2000.

Huppertz, N.: Variability of surface water stratification offshore Brazil over the past 25 ka, Master Thesis, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 35 pp., 2014.

Imbrie, J., Hays, J. D., Martinson, D. G., McIntyre, A., Mix, A. C., Morley, J. J., Pisias, N. G., Prell, W. L., and Shackleton, N. J.: The orbital theory of Pleistocene climate: Support from a revised chronology of the marine δ^{18}O record, in: Milankovitch and Climate (Part 1), edited by: Berger, A. L., Imbrie, J., Hays, J. D., Kukla, G., and Saltzman, B., 269–305, Hingham, Mass. (Reidel), ISBN 978-90-277-1778-8, 1984.

Itambi, A. C., von Dobeneck, T., Mulitza, S., Bickert, T., and Heslop, D.: Millennial-scale northwest African droughts related to Heinrich events and Dansgaard-Oeschger cycles: Evidence in marine sediments from offshore Senegal, Paleoceanography, 24, PA1205, https://doi.org/10.1029/2007PA001570, 2009.

Ivanova, E., Schiebel, R., Singh, A. D., Schmiedl, G., Niebler, H.-S., and Hemleben, C.: Primary production in the Arabian Sea during the last 135 000 years, Palaeogeogr. Palaeocl., 197, 61–82, https://doi.org/10.1016/S0031-0182(03)00386-9, 2003.

Jacobel, A. W., McManus, J. F., Anderson, R. F., and Winckler, G.: Large deglacial shifts of the Pacific Intertropical Convergence Zone, Nat. Commun., 7, 10449, https://doi.org/10.1038/ncomms10449, 2016.

Jansen, E. and Veum, T.: Evidence for two-step deglaciation and its impact on North Atlantic deep-water circulation, Nature, 343, 612–616, https://doi.org/10.1038/343612a0, 1990.

Jasper, J. P., Hayes, J. M., Mix, A. C., and Prahl, F. G.: Photosynthetic fractionation of 13C and concentrations of dissolved CO_2 in the central equatorial Pacific during the last 255,000 years, Paleoceanography, 9, 781–798, https://doi.org/10.1029/94PA02116, 1994.

Jenkins, J. A. and Williams, D. F.: Stable isotope analysis on planktic foraminifera in sediment core MD81-LC03, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.186153, 2004.

Jennings, A., Sheldon, C., Cronin, T., Francus, P., Stoner, J., and Andrews, J.: The Holocene History of Nares Strait: Transition from Glacial Bay to Arctic-Atlantic Throughflow, Oceanography, 24, 26–41, https://doi.org/10.5670/oceanog.2011.52, 2011.

Jennings, A., Andrews, J., Pearce, C., Wilson, L., and Ólfasdótttir, S.: Detrital carbonate peaks on the Labrador shelf, a 13–7 ka template for freshwater forcing from the Hudson Strait outlet of the Laurentide Ice Sheet into the subpolar gyre, Quaternary Sci. Rev., 107, 62–80, https://doi.org/10.1016/j.quascirev.2014.10.022, 2015.

Johnstone, H. J. H., Kiefer, T., Elderfield, H., and Schulz, M.: Calcite saturation, foraminiferal test mass, and Mg/Ca-based temperatures dissolution corrected using XDX-A 150 ka record from the western Indian Ocean, Geochem. Geophy. Geosy., 15, 781–797, https://doi.org/10.1002/2013GC004994, 2014.

Jones, G. A. and Keigwin, L. D.: Evidence from Fram Strait (78° N) for early deglaciation, Nature, 336, 56–59, https://doi.org/10.1038/336056a0, 1988.

Jonkers, L., Cartapanis, O., Langner, M., McKay, N., Mulitza, S., Strack, A., and Kucera, M.: Integrating palaeoclimate time series with rich metadata for uncertainty modelling: strategy and documentation of the PalMod 130k marine palaeoclimate data synthesis, Earth Syst. Sci. Data, 12, 1053–1081, https://doi.org/10.5194/essd-12-1053-2020, 2020.

Jorissen, F. J., Asioli, A., Borsetti, A. M., Capotondi, L., Visser, J. P. de, Hilgen, F. J., Rohling, E. J., van der Borg, K., Vergnaud Grazzini, C., and Zachariasse, W. J.: Late Quaternary central Mediterranean biochronology, Mar. Micropaleontol., 21, 169–189, https://doi.org/10.1016/0377-8398(93)90014-O, 1993.

Jung, S. J. A.: Wassermassenaustausch zwischen NE-Atlantik und Nordmeer während der letzten 300.000/80.000 Jahre im Abbild stabiler 0- und C-lsotope, Christian-Albrechts-Universität zu Kiel, 1996.

Jung, S. J. A. and Sarnthein, M.: Stable isotope data of sediment cores GIK17050-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.112909, 2003a.

Jung, S. J. A. and Sarnthein, M.: Stable isotope data of sediment cores GIK17051-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.112910, 2003b.

Jung, S. J. A. and Sarnthein, M.: Stable isotope data of sediment cores GIK23416-4, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.112913, 2003c.

Jung, S. J. A. and Sarnthein, M.: Stable isotope data of sediment cores GIK23417-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.112914, 2003d.

Just, J., Dekkers, M. J., von Dobeneck, T., van Hoesel, A., and Bickert, T.: Signatures and significance of aeolian, fluvial, bacterial and diagenetic magnetic mineral fractions in Late Quaternary marine sediments off Gambia, NW Africa, Geochem. Geophy. Geosy., 13, 191, https://doi.org/10.1029/2012GC004146, 2012.

Kaiser, A.: Ozeanographie, Produktivität und Meereisverbreitung im Ochotskischen Meer während der letzten ca. 350 ka, PhD thesis, Kiel, Germany, 114 pp., 2001.

Kalansky, J., Rosenthal, Y., Herbert, T., Bova, S., and Altabet, M.: Southern Ocean contributions to the Eastern Equatorial Pacific heat content during the Holocene, Earth Planet. Sc. Lett., 424, 158–167, https://doi.org/10.1016/j.epsl.2015.05.013, 2015.

Kallel, N., Paterne, M., Duplessy, J. C., Vergnaud-Grazzini, C., Pujol, C., Labeyrie, L., Arnold, M., Fontugne, M., and Pierre, C.: Enhanced rainfall in the Mediterranean region during the last sapropel event, Oceanol. Acta, 20, 697–712, 1997.

Kanfoush, S. L., Hodell, D. A., Charles, C. D., Guilderson, T. P., Mortyn, P. G., and Ninnemann, U. S.: Millennial-scale instability of the antarctic ice sheet during the last glaciation, Science, 288, 1815–1818, https://doi.org/10.1126/science.288.5472.1815, 2000.

Kanfoush, S. L., Hodell, D. A., Charles, C. D., Janecek, T. R., and Rack, F. R.: Comparison of ice-rafted debris and physical properties in ODP Site 1094 (South Atlantic) with the Vostok ice core over the last four climatic cycles, Palaeogeogr. Palaeocl., 182, 329–349, https://doi.org/10.1016/S0031-0182(01)00502-8, 2002.

Karpuz, N. K. and Jansen, E.: A high-resolution diatom record of the last deglaciation from the SE Norwegian Sea: Documentation of rapid climatic changes, Paleoceanography, 7, 499–520, https://doi.org/10.1029/92PA01651, 1992.

Keigwin, L. D.: North Pacific deep water formation during the latest glaciation, Nature, 330, 362–364, https://doi.org/10.1038/330362a0, 1987.

Keigwin, L. D.: Glacial-age hydrography of the far northwest Pacific Ocean, Paleoceanography, 13, 323–339, https://doi.org/10.1029/98PA00874, 1998.

Keigwin, L. D.: Radiocarbon and stable isotope constraints on Last Glacial Maximum and Younger Dryas ventilation in the western North Atlantic, Paleoceanography, 19, PA4012, https://doi.org/10.1029/2004PA001029, 2004.

Keigwin, L. D. and Boyle, E. A.: Late quaternary paleochemistry of high-latitude surface waters, Palaeogeogr. Palaeocl., 73, 85–106, https://doi.org/10.1016/0031-0182(89)90047-3, 1989.

Keigwin, L. D. and Jones, G. A.: Western North Atlantic evidence for millennial-scale changes in ocean circulation and climate, J. Geophys. Res., 99, 12397, https://doi.org/10.1029/94JC00525, 1994.

Keigwin, L. D. and Jones, G. A.: The marine record of deglaciation from the continental margin off Nova Scotia, Paleoceanography, 10, 973–985, https://doi.org/10.1029/95PA02643, 1995.

Keigwin, L. D. and Lehman, S. J.: Deep circulation change linked to HEINRICH Event 1 and Younger Dryas in a middepth North Atlantic Core, Paleoceanography, 9, 185–194, https://doi.org/10.1029/94PA00032, 1994.

Keigwin, L. D. and Lehman, S. J.: Radiocarbon evidence for a possible abyssal front near 3.1 km in the glacial equatorial Pacific Ocean, Earth Planet. Sc. Lett., 425, 93–104, https://doi.org/10.1016/j.epsl.2015.05.025, 2015.

Keigwin, L. D. and Schlegel, M. A.: Ocean ventilation and sedimentation since the glacial maximum at 3 km in the western North Atlantic, Geochem. Geophy. Geosy., 3, 1–14, https://doi.org/10.1029/2001GC000283, 2002.

Keigwin, L. D. and Swift, S. A.: Carbon isotope evidence for a northern source of deep water in the glacial western North Atlantic, P. Natl. Acad. Sci. USA, 114, 2831–2835, https://doi.org/10.1073/pnas.1614693114, 2017.

Keigwin, L. D., Jones, G. A., Lehman, S. J., and Boyle, E. A.: Deglacial meltwater discharge, North Atlantic Deep Circulation, and abrupt climate change, J. Geophys. Res., 96, 16811, https://doi.org/10.1029/91JC01624, 1991.

Keigwin, L. D., Sachs, J. P., and Rosenthal, Y.: A 1600-year history of the Labrador Current off Nova Scotia, Clim. Dynam., 21, 53–62, https://doi.org/10.1007/s00382-003-0316-6, 2003.

Keigwin, L. D., Sachs, J. P., Rosenthal, Y., and Boyle, E. A.: The 8200 year B. P. event in the slope water system, western subpolar North Atlantic, Paleoceanography, 20, https://doi.org/10.1029/2004PA001074, 2005.

Keigwin, L. D., Klotsko, S., Zhao, N., Reilly, B., Giosan, L., and Driscoll, N. W.: Deglacial floods in the Beaufort Sea preceded Younger Dryas cooling, Nat. Geosci., 11, 599–604, https://doi.org/10.1038/s41561-018-0169-6, 2018.

Kemle-von Mücke, S.: Oberflächenwasserstruktur und -zirkulation des Südostatlantiks im Spätquartär, Berichte aus dem Fachbereich Geowissenschaften der Universität Bremen, 55, Bremen, 151 pp., 1994.

Khider, D., Jackson, C. S., and Stott, L. D.: Assessing millennial-scale variability during the Holocene: A perspective from the western tropical Pacific, Paleoceanography, 29, 143–159, https://doi.org/10.1002/2013PA002534, 2014.

Kiefer, T.: Produktivität und Temperaturen im subtropischen Nordatlantik: Zyklische und abrupte Veränderungen im späten Quartär, Berichte, 90, Geologisch-Paläontolog. Inst. und Museum Christian-Albrechts-Univ, Kiel, 127 pp., 1998.

Kiefer, T., McCave, I. N., and Elderfield, H.: Antarctic control on tropical Indian Ocean sea surface temperature and hydrography, Geophys. Res. Lett., 33, 1050, https://doi.org/10.1029/2006GL027097, 2006.

Kienast, S. S., Kienast, M., Mix, A. C., Calvert, S. E., and François, R.: Thorium-230 normalized particle flux and sediment focusing in the Panama Basin region during the last 30,000 years, Paleoceanography, 22, 406, https://doi.org/10.1029/2006PA001357, 2007.

Kienast, S. S., Friedrich, T., Dubois, N., Hill, P. S., Timmermann, A., Mix, A. C., and Kienast, M.: Near collapse of the meridional SST gradient in the eastern equatorial Pacific during Heinrich Stadial 1, Paleoceanography, 28, 663–674, https://doi.org/10.1002/2013PA002499, 2013.

Kim, J.-H. and Schneider, R. R.: Low-latitude control of interhemispheric sea-surface temperature contrast in the tropical Atlantic over the past 21 k years: the possible role of SE trade winds, Clim. Dynam., 21, 337–347, https://doi.org/10.1007/s00382-003-0341-5, 2003.

Kim, J.-H., Schneider, R. R., Mulitza, S., and Müller, P. J.: Reconstruction of SE trade-wind intensity based on sea-surface temperature gradients in the Southeast Atlantic over the last 25 kyr, Geophys. Res. Lett., 30, 297, https://doi.org/10.1029/2003GL017557, 2003.

Kim, J.-H., Romero, O. E., Lohmann, G., Donner, B., Laepple, T., Haam, E., and Sinninghe Damsté, J. S.: Pronounced subsurface cooling of North Atlantic waters off Northwest Africa during Dansgaard–Oeschger interstadials, Earth Planet. Sc. Lett., 339–340, 95–102, https://doi.org/10.1016/j.epsl.2012.05.018, 2012.

Kim, J.-M., Kennett, J. P., Park, B.-K., Kim, D. C., Kim, G. Y., and Roark, E. B.: Paleoceanographic change during the last deglaciation, east Sea of Korea, Paleoceanography, 15, 254–266, https://doi.org/10.1029/1999PA000393, 2000.

Knaack, J.: Eine neue Transferfunktion zur Rekonstruktion der Paläoproduktivität aus Gemeinschaften mariner Diatomeen, Geologisch–Paläontologisches Institut und Museum, Christian-Albrechts-Universität, Kiel, 1997.

Knaack, J.-J. and Sarnthein, M.: Stable isotopes of foraminifera of ODP Hole 108-658C, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.227736, 2005.

Knies, J. and Stein, R.: New aspects of organic carbon deposition and its paleoceanographic implications along the Northern Barents Sea Margin during the last 30,000 years, Paleoceanography, 13, 384–394, https://doi.org/10.1029/98PA01501, 1998a.

Knies, J. and Stein, R.: Stable isotope analysis on sediment core PS2446-4, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.54687, 1998b.

Knies, J., Vogt, C., and Stein, R.: Late Quaternary growth and decay of the Svalbard/Barents Sea ice sheet and paleoceanographic evolution in the adjacent Arctic Ocean, Geo-Mar. Lett., 18, 195–202, https://doi.org/10.1007/s003670050068, 1998.

Knudsen, K. L., Stabell, B., Seidenkrantz, M.-S., Eiriksson, J. O. N., and Blake, W.: Deglacial and Holocene conditions in northernmost Baffin Bay: sediments, foraminifera, diatoms and stable isotopes, Boreas, 37, 346–376, https://doi.org/10.1111/j.1502-3885.2008.00035.x, 2008.

Kohn, M., Steinke, S., Baumann, K.-H., Donner, B., Meggers, H., and Zonneveld, K. A. F.: Stable oxygen isotopes from the calcareous-walled dinoflagellate *Thoracosphaera heimii* as a proxy for changes in mixed layer temperatures off NW Africa during the last 45,000 yr, Palaeogeogr. Palaeocl., 302, 311–322, https://doi.org/10.1016/j.palaeo.2011.01.019, 2011.

Köhler, S. E. I.: Spätquartäre paläo-ozeanographische Entwicklung des Nordpolarmeeres und Europäischen Nordmeeres anhand von Sauerstoff- und Kohlenstoff-Isotopenverhältnissen der planktischen Foraminifere *Neogloboquadrina pachyderma* (sin.), PhD thesis, Kiel, Germany, 104 pp., 1991.

Koutavas, A. and Lynch-Stieglitz, J.: Glacial-interglacial dynamics of the eastern equatorial Pacific cold tongue-Intertropical Convergence Zone system reconstructed from oxygen isotope records, Paleoceanography, 18, 1089, https://doi.org/10.1029/2003PA000894, 2003.

Kroopnick, P. M.: The distribution of ^{13}C of ΣCO_2 in the world oceans, Deep-Sea Res., 32, 57–84, https://doi.org/10.1016/0198-0149(85)90017-2, 1985.

Krueger, S., Leuschner, D. C., Ehrmann, W., Schmiedl, G., Mackensen, A., and Diekmann, B.: Ocean circulation patterns and dust supply into the South Atlantic during the last glacial cycle revealed by statistical analysis of kaolinite/chlorite ratios, Mar. Geol., 253, 82–91, https://doi.org/10.1016/j.margeo.2008.04.015, 2008.

Krummrei, M.: Spätquartäre Schichtung des Oberflächenwassers im westlichen tropischen Atlantik, Bachelorarbeit, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 31 pp., 2015.

Kuhnert, H., Kuhlmann, H., Mohtadi, M., Meggers, H., Baumann, K.-H., and Pätzold, J.: Holocene tropical western Indian Ocean sea surface temperatures in covariation with climatic changes in the Indonesian region, Paleoceanography, 29, 423–437, https://doi.org/10.1002/2013PA002555, 2014.

Kuhr, J.: Spätquartäre Niederschlagsveränderungen im Amazonasbecken: Einfluss von Sonneneinstrahlung und Ozeanzirkulation, Masterarbeit, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 58 pp., 2011.

Kurahashi-Nakamura, T., Paul, A., and Losch, M.: Dynamical reconstruction of the global ocean state during the Last Glacial Maximum, Paleoceanography, 32, 326–350, https://doi.org/10.1002/2016PA003001, 2017.

Kusch, S., Eglinton, T. I., Mix, A. C., and Mollenhauer, G.: Timescales of lateral sediment transport in the Panama Basin as revealed by radiocarbon ages of alkenones, total organic carbon and foraminifera, Earth Planet. Sc. Lett., 290, 340–350, https://doi.org/10.1016/j.epsl.2009.12.030, 2010.

Labeyrie, L.: Quaternary paleoceanography: unpublished stable isotope records, IGBP PAGES/World Data Center for Paleoclimatology Data Contribution Series #1996-036, 1996.

Labeyrie, L., Vidal, L., Cortijo, E., Arnold, M., Duplessy, J. C., Vautravers, M., Labracherie, M., Duprat, J., Turon, J. L., F. Grousset, F., and van Weering, T.: Surface and deep hydrology of the Northern Atlantic Ocean during the past 150 000 years, Philos. T. R. Soc. Lon. B, 348, 255–264, https://doi.org/10.1098/rstb.1995.0067, 1995.

Labeyrie, L., Labracherie, M., Gorfti, N., Pichon, J. J., Vautravers, M., Arnold, M., Duplessy, J.-C., Paterne, M., Michel, E., Duprat, J., Caralp, M., and Turon, J.-L.: Hydrographic changes of the Southern Ocean (southeast Indian Sector) Over the last 230 kyr, Paleoceanography, 11, 57–76, https://doi.org/10.1029/95PA02255, 1996.

Labeyrie, L., Leclaire, H., Waelbroeck, C., Cortijo, E., Duplessy, J.-C., Vidal, L., Elliot, M., Le Coat, B., and Auffret, G.: Temporal variability of the surface and deep waters of the North West Atlantic Ocean at orbital and millenial scales, in: Mechanisms of Global Climate Change at Millennial Time Scales, edited by: Clark, U., Webb, S., and Keigwin, D., American Geophysical Union, Washington, DC, 77–98, https://doi.org/10.1029/GM112, 1999.

Labeyrie, L., Waelbroeck, C., Cortijo, E., Michel, E., and Duplessy, J.-C.: Changes in deep water hydrology during the Last Deglaciation, C. R. Geosci., 337, 919–927, https://doi.org/10.1016/j.crte.2005.05.010, 2005.

Labeyrie, L. D. and Duplessy, J. C.: Changes in the oceanic ratio during the last 140 000 years: High-latitude surface water records, Palaeogeogr. Palaeocl., 50, 217–240, https://doi.org/10.1016/0031-0182(85)90069-0, 1985.

Labracherie, M., Labeyrie, L. D., Duprat, J., Bard, E., Arnold, M., Pichon, J.-J., and Duplessy, J.-C.: The Last Deglaciation in the Southern Ocean, Paleoceanography, 4, 629–638, https://doi.org/10.1029/PA004i006p00629, 1989.

Lackschewitz, K. S., Baumann, K.-H., Gehrke, B., Wallrabe-Adams, H.-J., Thiede, J., Bonani, G., Endler, R., Erlenkeuser, H., and Heinemeier, J.: North Atlantic Ice Sheet Fluctuations 10,000–70,000 yr Ago as Inferred from Deposits on the Reykjanes Ridge, Southeast of Greenland, Quaternary Res., 49, 171–182, https://doi.org/10.1006/qres.1997.1948, 1998.

Lamy, F.: Spätquartäre Variationen des terrigenen Sedimenteintrags entlang des chilenischen Kontinentalhangs als Abbild von Klimavariabilität im Milanković- und Sub-Milanković-Zeitbereich, Berichte aus dem Fachbereich Geowissenschaften der Universität Bremen, 120, Bremen, 1998.

Lamy, F., Hebbeln, D., and Wefer, G.: Late Quaternary precessional cycles of terrigenous sediment input off the Norte

Chico, Chile (27.5° S) and palaeoclimatic implications, Palaeogeogr. Palaeocl., 141, 233–251, https://doi.org/10.1016/S0031-0182(98)90052-9, 1998.

Lamy, F., Klump, J., Hebbeln, D., and Wefer, G.: Late Quaternary rapid climate change in northern Chile, Terra Nova, 12, 8–13, https://doi.org/10.1046/j.1365-3121.2000.00265.x, 2000.

Lamy, F., Rühlemann, C., Hebbeln, D., and Wefer, G.: High- and low-latitude climate control on the position of the southern Peru–Chile Current during the Holocene, Paleoceanography, 17, 16–1-16-10, https://doi.org/10.1029/2001PA000727, 2002.

Langner, M. and Mulitza, S.: Technical note: PaleoDataView – a software toolbox for the collection, homogenization and visualization of marine proxy data, Clim. Past, 15, 2067–2072, https://doi.org/10.5194/cp-15-2067-2019, 2019.

Lauterbach, S., Andersen, N., Wang, Y. V., Blanz, T., Larsen, T., and Schneider, R. R.: An ∼ 130 kyr Record of Surface Water Temperature and δ^{18}O From the Northern Bay of Bengal: Investigating the Linkage Between Heinrich Events and Weak Monsoon Intervals in Asia, Paleoceanography and Paleoclimatology, 35, PA1003, https://doi.org/10.1029/2019PA003646, 2020.

Lebreiro, S. M., Moreno, J. C., Abrantes, F. F., and Pflaumann, U.: Productivity and paleoceanographic implications on the Tore Seamount (Iberian Margin) during the last 225 kyr: Foraminiferal evidence, Paleoceanography, 12, 718–727, https://doi.org/10.1029/97PA01748, 1997.

Lebreiro, S. M., Voelker, A. H. L., Vizcaino, A., Abrantes, F. G., Alt-Epping, U., Jung, S., Thouveny, N., and Gràcia, E.: Sediment instability on the Portuguese continental margin under abrupt glacial climate changes (last 60 kyr), Quaternary Sci. Rev., 28, 3211–3223, https://doi.org/10.1016/j.quascirev.2009.08.007, 2009.

Lee, K. E., Slowey, N. C., and Herbert, T. D: Glacial sea surface temperatures in the subtropical North Pacific: A comparison of $U^{k\prime}_{37}$ δ^{18}O, and foraminiferal assemblage temperature estimates, Paleoceanography, 16, 268–279, https://doi.org/10.1029/1999pa000493, 2001.

Lee, M.-Y., Wei, K.-Y., and Chen, Y.-G.: High Resolution Oxygen Isotope Straigraphy for the Last 150,000 Years in the Southern South China Sea:Core MD972151, Terr. Atmos. Ocean. Sci., 10, 239, https://doi.org/10.3319/TAO.1999.10.1.239(IMAGES), 1999.

Leech, P. J., Lynch-Stieglitz, J., and Zhang, R.: Western Pacific thermocline structure and the Pacific marine Intertropical Convergence Zone during the Last Glacial Maximum, Earth Planet. Sc. Lett., 363, 133–143, https://doi.org/10.1016/j.epsl.2012.12.026, 2013.

Lembke-Jene, L., Tiedemann, R., Nürnberg, D., Kokfelt, U., Kozdon, R., Max, L., Röhl, U., and Gorbarenko, S. A.: Deglacial variability in Okhotsk Sea Intermediate Water ventilation and biogeochemistry: Implications for North Pacific nutrient supply and productivity, Quaternary Sci. Rev., 160, 116–137, https://doi.org/10.1016/j.quascirev.2017.01.016, 2017.

Leonhardt, A., Toledo, F. A. L., and Carlos Coimbra, J.: The Mid-Brunhes event in the southwestern Atlantic Ocean: coccolithophore assemblages during the Mis 11-9, Rev. Bras. Paleontolog., 18, 343–354, https://doi.org/10.4072/rbp.2015.3.01, 2015.

Lessa, D. V. O., Venancio, I. M., dos Santos, T. P., Belem, A. L., Turcq, B. J., Sifeddine, A., and Albuquerque, A. L. S.: Holocene oscillations of Southwest Atlantic shelf circulation based on planktonic foraminifera from an upwelling system (off Cabo Frio, Southeastern Brazil), Holocene, 26, 1175–1187, https://doi.org/10.1177/0959683616638433, 2016.

Levi, C., Labeyrie, L., Bassinot, F., Guichard, F., Cortijo, E., Waelbroeck, C., Caillon, N., Duprat, J., de Garidel-Thoron, T., and Elderfield, H.: Low-latitude hydrological cycle and rapid climate changes during the last deglaciation, Geochem. Geophy. Geosy., 8, Q05N12, https://doi.org/10.1029/2006GC001514, 2007.

Li, G., Rashid, H., Zhong, L., Xu, X., Yan, W., and Chen, Z.: Changes in Deep Water Oxygenation of the South China Sea Since the Last Glacial Period, Geophys. Res. Lett., 45, 9058–9066, https://doi.org/10.1029/2018GL078568, 2018.

Li, L., Wang, H., Li, J., Zhao, M., and Wang, P.: Changes in sea surface temperature in western South China Sea over the past 450 ka, Chinese. Sci. Bull., 54, 3335–3343, https://doi.org/10.1007/s11434-009-0083-9, 2009.

Li, Q., Zheng, F., Chen, M., Xiang, R., Qiao, P., Shao, L., and Cheng, X.: Glacial Paleoceanography off the Mouth of the Mekong River, Southern South China Sea, During the last 500 ka, Quaternary Res., 73, 563–572, https://doi.org/10.1016/j.yqres.2010.03.003, 2010.

Linsley, B. K.: Oxygen-isotope record of sea level and climate variations in the Sulu Sea over the past 150,000 years, Nature, 380, 234–237, https://doi.org/10.1038/380234a0, 1996.

Lisiecki, L. E. and Raymo, M. E.: A Pliocene-Pleistocene stack of 57 globally distributed benthic δ^{18}O records, Paleoceanography, 20, PA1003, https://doi.org/10.1029/2004PA001071, 2005.

Lisiecki, L. E. and Stern, J. V.: Regional and global benthic δ^{18}O stacks for the last glacial cycle, Paleoceanography, 31, 1368–1394, https://doi.org/10.1002/2016pa003002, 2016.

Little, M. G., Schneider, R. R., Kroon, D., Price, B., Bickert, T., and Wefer, G.: Rapid palaeoceanographic changes in the Benguela Upwelling System for the last 160,000 years as indicated by abundances of planktonic foraminifera, Palaeogeogr. Palaeocl., 130, 135–161, https://doi.org/10.1016/S0031-0182(96)00136-8, 1997.

Liu, X., Rendle-Bühring, R., and Henrich, R.: Climate and sea-level controls on turbidity current activity on the Tanzanian upper slope during the last deglaciation and the Holocene, Quaternary Sci. Rev., 133, 15–27, https://doi.org/10.1016/j.quascirev.2015.12.002, 2016.

Lo, L., Chang, S.-P., Wei, K.-Y., Lee, S.-Y., Ou, T.-H., Chen, Y.-C., Chuang, C.-K., Mii, H.-S., Burr, G. S., Chen, M.-T., Tung, Y.-H., Tsai, M.-C., Hodell, D. A., and Shen, C.-C.: Nonlinear climatic sensitivity to greenhouse gases over past 4 glacial/interglacial cycles, Sci. Rep.-UK, 7, 4626, https://doi.org/10.1038/s41598-017-04031-x, 2017.

Lo Giudice Cappelli, E., Holbourn, A., Kuhnt, W., and Regenberg, M.: Changes in Timor Strait hydrology and thermocline structure during the past 130 ka, Palaeogeogr. Palaeocl., 462, 112–124, https://doi.org/10.1016/j.palaeo.2016.09.010, 2016.

LoDico, J. M., Flower, B. P., and Quinn, T. M.: Subcentennial-scale climatic and hydrologic variability in the Gulf of Mexico during the early Holocene, Paleoceanography, 21, 771, https://doi.org/10.1029/2005PA001243, 2006.

Lopes dos Santos, R. A., de Deckker, P., Hopmans, E. C., Magee, J. W., Mets, A., Sinninghe Damsté, J. S., and Schouten, S.: Abrupt vegetation change after the Late Quaternary megafaunal extinction in southeastern Australia, Nat. Geosci., 6, 627–631, https://doi.org/10.1038/ngeo1856, 2013.

Löwemark, L., Schönfeld, J., Werner, F., and Schäfer, P.: Trace fossils as a paleoceanographic tool: evidence from Late Quaternary sediments of the southwestern Iberian margin, Mar. Geol., 204, 27–41, https://doi.org/10.1016/S0025-3227(03)00351-7, 2004.

Lowry, R. K. and Machin, P.: Compilation of the results of EU-project BOFS, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.859221, 2016.

Lu, Z., Hoogakker, B. A. A., Hillenbrand, C.-D., Zhou, X., Thomas, E., Gutchess, K. M., Lu, W., Jones, L., and Rickaby, R. E. M.: Oxygen depletion recorded in upper waters of the glacial Southern Ocean, Nat. Commun., 7, 11146, https://doi.org/10.1038/ncomms11146, 2016.

Lund, D. C. and Mix, A. C.: Millennial-scale deep water oscillations: Reflections of the North Atlantic in the deep Pacific from 10 to 60 ka, Paleoceanography, 13, 10–19, https://doi.org/10.1029/97PA02984, 1998.

Lund, D. C., Tessin, A. C., Hoffman, J. L., and Schmittner, A.: Southwest Atlantic water mass evolution during the last deglaciation, Paleoceanography, 30, 477–494, https://doi.org/10.1002/2014PA002657, 2015.

Lyle, M., Zahn, R., Prahl, F., Dymond, J., Collier, R., Pisias, N., and Suess, E.: Paleoproductivity and carbon burial across the California Current: The multitracers transect, 42° N, Paleoceanography, 7, 251–272, https://doi.org/10.1029/92PA00696, 1992.

Lyle, M., Mix, A., and Pisias, N.: Patterns of $CaCO_3$ deposition in the eastern tropical Pacific Ocean for the last 150 kyr: Evidence for a southeast Pacific depositional spike during marine isotope stage (MIS) 2, Paleoceanography, 17, 3-1–3-13, https://doi.org/10.1029/2000PA000538, 2002.

Lynch-Stieglitz, J., Fairbanks, R. G., and Charles, C. D.: Glacial-interglacial history of Antarctic Intermediate Water: Relative strengths of Antarctic versus Indian Ocean sources, Paleoceanography, 9, 7–29, https://doi.org/10.1029/93PA02446, 1994.

Lynch-Stieglitz, J., Curry, W. B., Oppo, D. W., Ninneman, U. S., Charles, C. D., and Munson, J.: Meridional overturning circulation in the South Atlantic at the last glacial maximum, Geochem. Geophy. Geosy., 7, Q10N03, https://doi.org/10.1029/2005GC001226, 2006.

Lynch-Stieglitz, J., Curry, W. B., and Lund, D. C.: Florida Straits density structure and transport over the last 8000 years, Paleoceanography, 24, 147, https://doi.org/10.1029/2008PA001717, 2009.

Lynch-Stieglitz, J., Schmidt, M. W., and Curry, W. B.: Evidence from the Florida Straits for Younger Dryas ocean circulation changes, Paleoceanography, 26, 147, https://doi.org/10.1029/2010PA002032, 2011.

Lynch-Stieglitz, J., Polissar, P. J., Jacobel, A. W., Hovan, S. A., Pockalny, R. A., Lyle, M., Murray, R. W., Ravelo, A. C., Bova, S. C., Dunlea, A. G., Ford, H. L., Hertzberg, J. E., Wertman, C. A., Maloney, A. E., Shackford, J. K., Wejnert, K., and Xie, R. C.: Glacial-interglacial changes in central tropical Pacific surface seawater property gradients, Paleoceanography, 30, 423–438, https://doi.org/10.1002/2014PA002746, 2015.

Lynch-Stieglitz, J., Ito, T., and Michel, E.: Antarctic density stratification and the strength of the circumpolar current during the Last Glacial Maximum, Paleoceanography, 31, 539–552, https://doi.org/10.1002/2015pa002915, 2016.

Mackensen, A., Grobe, H., Hubberten, H.-W., Spiess, V., and Fütterer, D. K.: Stable isotope stratigraphy from the Antarctic continental margin during the last one million years, Mar. Geol., 87, 315–321, https://doi.org/10.1016/0025-3227(89)90068-6, 1989.

Mackensen, A., Grobe, H., Hubberten, H.-W., and Kuhn, G.: Benthic foraminiferal assemblages and the δ^{13}C-signal in the Atlantic sector of the Southern Ocean: Glacial-to-interglacial contrasts, in: Carbon cycling in the glacial ocean: Constraints on the ocean's role in global change, edited by: Zahn, R., Pedersen, T. F., Kaminski, M. A., and Labeyrie, L., NATO ASI series, Springer, Berlin, I 17, 105–144, 1994.

Mackensen, A., Rudolph, M., and Kuhn, G.: Late Pleistocene deep-water circulation in the subantarctic eastern Atlantic, Global Planet. Change, 30, 197–229, https://doi.org/10.1016/S0921-8181(01)00102-3, 2001.

Magnus, S.: Benthische Foraminiferen im Boreas-Becken, Grönlandsee: Verbreitung und paläo-ozeanographische Rekonstruktionen für die letzten 450.000 Jahre, Berichte zur Polarforschung, 373, Alfred-Wegener-Inst. für Polar- und Meeresforschung, Bremerhaven, 137 pp., 2000.

Maier, E., Méheust, M., Abelmann, A., Gersonde, R., Chapligin, B., Ren, J., Stein, R., Meyer, H., and Tiedemann, R.: Deglacial subarctic Pacific surface water hydrography and nutrient dynamics and links to North Atlantic climate variability and atmospheric CO_2, Paleoceanography, 30, 949–968, https://doi.org/10.1002/2014PA002763, 2015.

Maier, E., Zhang, X., Abelmann, A., Gersonde, R., Mulitza, S., Werner, M., Méheust, M., Ren, J., Chapligin, B., Meyer, H., Stein, R., Tiedemann, R., and Lohmann, G.: North Pacific freshwater events linked to changes in glacial ocean circulation, Nature, 559, 241–245, https://doi.org/10.1038/s41586-018-0276-y, 2018.

Manighetti, B., McCave, I. N., Maslin, M., and Shackleton, N. J.: Chronology for climate change: Developing age models for the biogeochemical ocean flux study cores, Paleoceanography, 10, 513–525, https://doi.org/10.1029/94PA03062, 1995.

Marchal, O. and Curry, W. B.: On the abyssal circulation in the glacial Atlantic, J. Phys. Oceanogr., 38, 2014–2037, https://doi.org/10.1175/2008JPO3895.1, 2008.

Marino, M., Maiorano, P., Tarantino, F., Voelker, A., Capotondi, L., Girone, A., Lirer, F., Flores, J.-A., and Naafs, B. D. A.: Coccolithophores as proxy of seawater changes at orbital-to-millennial scale during middle Pleistocene Marine Isotope Stages 14-9 in North Atlantic core MD01-2446, Paleoceanography, 29, 518–532, https://doi.org/10.1002/2013PA002574, 2014.

Martínez-Méndez, G., Zahn, R., Hall, I. R., Peeters, F. J. C., Pena, L. D., Cacho, I., and Negre, C.: Contrasting multiproxy reconstructions of surface ocean hydrography in the Agulhas Corridor and implications for the Agulhas Leakage during the last 345,000 years, Paleoceanography, 25, PA4227, https://doi.org/10.1029/2009PA001879, 2010.

Martínez-Méndez, G., Hebbeln, D., Mohtadi, M., Lamy, F., Pol-Holz, R. de, Reyes-Macaya, D., and Freudenthal, T.: Changes in the advection of Antarctic Intermediate Water to the northern Chilean coast during the last 970 kyr, Paleoceanography, 28, 607–618, https://doi.org/10.1002/palo.20047, 2013.

Mashiotta, T. A., Lea, D. W., and Spero, H. J.: Glacial–interglacial changes in Subantarctic sea surface temperature and δ^{18}O-water using foraminiferal Mg, Earth Planet. Sc. Lett., 170, 417–432, https://doi.org/10.1016/S0012-821X(99)00116-8, 1999.

Matos, L., Wienberg, C., Titschack, J., Schmiedl, G., Frank, N., Abrantes, F., Cunha, M. R., and Hebbeln, D.: Coral mound development at the Campeche cold-water coral province, southern Gulf of Mexico: Implications of Antarctic Intermediate Water increased influence during interglacials, Mar. Geol., 392, 53–65, https://doi.org/10.1016/j.margeo.2017.08.012, 2017.

Matsumoto, K. and Lynch-Stieglitz, J.: Persistence of Gulf Stream separation during the Last Glacial Period: Implications for current separation theories, J. Geophys. Res., 108, 215, https://doi.org/10.1029/2001jc000861, 2003.

Max, L., Lembke-Jene, L., Riethdorf, J.-R., Tiedemann, R., Nürnberg, D., Kühn, H., and Mackensen, A.: Pulses of enhanced North Pacific Intermediate Water ventilation from the Okhotsk Sea and Bering Sea during the last deglaciation, Clim. Past, 10, 591–605, https://doi.org/10.5194/cp-10-591-2014, 2014.

Maxson, C. R., Bostock, H. C., Mackintosh, A., Mikaloff-Fletcher, S., McCave, N., and Neil, H. L.: Modern, Preindustrial, and Past (Last 25 ka) Carbon Isotopic (δ^{13}C) Variability in the Surface Waters of the Southwest Pacific, Paleoceanography and Paleoclimatology, 34, 692–714, https://doi.org/10.1029/2018PA003441, 2019.

McCave, I. N., Carter, L., and Hall, I. R.: Glacial–interglacial changes in water mass structure and flow in the SW Pacific Ocean, Quaternary Sci. Rev., 27, 1886–1908, https://doi.org/10.1016/j.quascirev.2008.07.010, 2008.

McGregor, H. V., Dima, M., Fischer, H. W., and Mulitza, S.: Rapid 20th-century increase in coastal upwelling off northwest Africa, Science, 315, 637–639, https://doi.org/10.1126/science.1134839, 2007.

McKay, C. L., Filipsson, H. L., Romero, O. E., Stuut, J.-B. W., and Donner, B.: Pelagic–benthic coupling within an upwelling system of the subtropical northeast Atlantic over the last 35 ka BP, Quaternary Sci. Rev., 106, 299–315, https://doi.org/10.1016/j.quascirev.2014.04.027, 2014.

Meinecke, G.: Spätquartäre Oberflächenwassertemperaturen im östlichen äquatorialen Atlantik, Berichte aus dem Fachbereich Geowissenschaften der Universität Bremen, 29, Bremen, 181 pp., 1992.

Melki, T., Kallel, N., and Fontugne, M.: The nature of transitions from dry to wet condition during sapropel events in the Eastern Mediterranean Sea, Palaeogeogr. Palaeocl., 291, 267–285, https://doi.org/10.1016/j.palaeo.2010.02.039, 2010.

Melles, M.: Paläoglaziologie und Paläozeanographie im Spätquartär am Kontinentalrand des südlichen Weddellmeeres, Antarktis, Berichte zur Polarforschung, 81, Alfred-Wegener-Inst. für Polar- und Meeresforschung, Bremerhaven, 190 pp., 1991.

Middleton, J. L., Mukhopadhyay, S., Langmuir, C. H., McManus, J. F., and Huybers, P. J.: Millennial-scale variations in dustiness recorded in Mid-Atlantic sediments from 0 to 70 ka, Earth Planet. Sc. Lett., 482, 12–22, https://doi.org/10.1016/j.epsl.2017.10.034, 2018.

Mienert, J., Abrantes, F., Auffret, G., Evans, D., Kenyon, N., Kuijpers, A., Sejrup, H. P., and van Weering, T.: European North Atlantic Margin (ENAM I): sediment pathways, processes, and fluxes – an introduction, Mar. Geol., 152, 3–6, https://doi.org/10.1016/S0025-3227(98)00061-9, 1998.

Millo, C., Sarnthein, M., Voelker, A., and Erlenkeuser, H.: Variability of the Denmark Strait Overflow during the Last Glacial Maximum, Boreas, 35, 50–60, https://doi.org/10.1111/j.1502-3885.2006.tb01112.x, 2006.

Mirzaloo, M., Nürnberg, D., Kienast, M., and Lubbe, H. J. L.: Synchronous Changes in Sediment Transport and Provenance at the Iceland-Faroe Ridge Linked to Millennial Climate Variability From 55 to 6 ka BP, Geochem. Geophy. Geosy., 20, 4184–4201, https://doi.org/10.1029/2019GC008298, 2019.

Missiaen, L., Waelbroeck, C., Pichat, S., Jaccard, S. L., Eynaud, F., Greenop, R., and Burke, A.: Improving North Atlantic Marine Core Chronologies Using ^{230}Th Normalization, Paleoceanography and Paleoclimatology, 34, 1057–1073, https://doi.org/10.1029/2018PA003444, 2019.

Missiaen, L., Wacker, L., Lougheed, B. C., Skinner, L., Hajdas, I., Nouet, J., Pichat, S., and Waelbroeck, C.: Radiocarbon Dating of Small-sized Foraminifer Samples: Insights into Marine sediment Mixing, Radiocarbon, 62, 313–333, https://doi.org/10.1017/RDC.2020.13, 2020.

Mix, A. C., Ruddiman, W. F., and McIntyre, A.: Late Quaternary paleoceanography of the Tropical Atlantic, 1: Spatial variability of annual mean sea-surface temperatures, 0–20,000 years B.P, Paleoceanography, 1, 43–66, https://doi.org/10.1029/PA001i001p00043, 1986.

Mohtadi, M. and Hebbeln, D.: Mechanisms and variations of the paleoproductivity off northern Chile (24° S–33° S) during the last 40,000 years, Paleoceanography, 19, PA2023, https://doi.org/10.1029/2004PA001003, 2004.

Mohtadi, M., Romero, O. E., and Hebbeln, D.: Changing marine productivity off northern Chile during the past 19 000 years: a multivariable approach, J. Quaternary Sci., 19, 347–360, https://doi.org/10.1002/jqs.832, 2004.

Mohtadi, M., Rossel, P., Lange, C. B., Pantoja, S., Böning, P., Repeta, D. J., Grunwald, M., Lamy, F., Hebbeln, D., and Brumsack, H.-J.: Deglacial pattern of circulation and marine productivity in the upwelling region off central-south Chile, Earth Planet. Sc. Lett., 272, 221–230, https://doi.org/10.1016/j.epsl.2008.04.043, 2008.

Mohtadi, M., Lückge, A., Steinke, S., Groeneveld, J., Hebbeln, D., and Westphal, N.: Late Pleistocene surface and thermocline conditions of the eastern tropical Indian Ocean, Quaternary Sci. Rev., 29, 887–896, https://doi.org/10.1016/j.quascirev.2009.12.006, 2010a.

Mohtadi, M., Steinke, S., Lückge, A., Groeneveld, J., and Hathorne, E. C.: Glacial to Holocene surface hydrography of the tropical eastern Indian Ocean, Earth Planet. Sc. Lett., 292, 89–97, https://doi.org/10.1016/j.epsl.2010.01.024, 2010b.

Mohtadi, M., Oppo, D. W., Steinke, S., Stuut, J.-B. W., de Pol-Holz, R., Hebbeln, D., and Lückge, A.: Glacial to Holocene swings of the Australian–Indonesian monsoon, Nat. Geosci., 4, 540–544, https://doi.org/10.1038/ngeo1209, 2011.

Mohtadi, M., Prange, M., Oppo, D. W., de Pol-Holz, R., Merkel, U., Zhang, X., Steinke, S., and Lückge, A.: North Atlantic forcing of tropical Indian Ocean climate, Nature, 509, 76–80, https://doi.org/10.1038/nature13196, 2014.

Molina-Kescher, M., Frank, M., Tapia, R., Ronge, T. A., Nürnberg, D., and Tiedemann, R.: Reduced admixture of North Atlantic Deep Water to the deep central South Pacific during the last two glacial periods, Paleoceanography, 31, 651–668, https://doi.org/10.1002/2015PA002863, 2016.

Mollenhauer, G.: Organic carbon accumulation in the South Atlantic Ocean, Berichte aus dem Fachbereich Geowissenschaften der Universität Bremen, 204, Bremen, 139 pp., 2002.

Mollenhauer, G., Eglinton, T. I., Ohkouchi, N., Schneider, R. R., Müller, P. J., Grootes, P. M., and Rullkötter, J.: Asynchronous alkenone and foraminifera records from the Benguela Upwelling System, Geochim. Cosmochim. Ac., 67, 2157–2171, https://doi.org/10.1016/S0016-7037(03)00168-6, 2003.

Mollier-Vogel, E., Leduc, G., Böschen, T., Martinez, P., and Schneider, R. R.: Rainfall response to orbital and millennial forcing in northern Peru over the last 18 ka, Quaternary Sci. Rev., 76, 29–38, https://doi.org/10.1016/j.quascirev.2013.06.021, 2013.

Monteagudo, M. M., Lynch-Stieglitz, J., Marchitto, T. M., and Schmidt, M. W.: Central Equatorial Pacific Cooling During the Last Glacial Maximum, Geophys. Res. Lett., 48, e2020GL088592, https://doi.org/10.1029/2020GL088592, 2021.

Moros, M. and de Deckker, P.: Planktic foraminifera stable carbon and oxygen isotopes from sediment cores MD03-2611G and MUC-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.923026, 2020.

Moros, M., Endler, R., Lackschewitz, K. S., Wallrabe-Adams, H.-J., Mienert, J., and Lemke, W.: Physical properties of Reykjanes Ridge sediments and their linkage to high-resolution Greenland Ice Sheet Project 2 ice core data, Paleoceanography, 12, 687–695, https://doi.org/10.1029/97PA02030, 1997.

Moros, M., de Deckker, P., Jansen, E., Perner, K., and Telford, R. J.: Holocene climate variability in the Southern Ocean recorded in a deep-sea sediment core off South Australia, Quaternary Sci. Rev., 28, 1932–1940, https://doi.org/10.1016/j.quascirev.2009.04.007, 2009.

Mortyn, P. G., Thunell, R. C., Anderson, D. M., Stott, L. D., and Le, J.: Sea surface temperature changes in the southern California borderlands during the last glacial-Interglacial cycle, Paleoceanography, 11, 415–429, https://doi.org/10.1029/96PA01236, 1996.

Moy, A. D., Howard, W. R., and Gagan, M. K.: Late Quaternary palaeoceanography of the Circumpolar Deep Water from the South Tasman Rise, J. Quaternary Sci., 21, 763–777, https://doi.org/10.1002/jqs.1067, 2006.

Muglia, J., Skinner, L. C., and Schmittner, A.: Weak overturning circulation and high Southern Ocean nutrient utilization maximized glacial ocean carbon, Earth Planet. Sc. Lett., 496, 47–56, https://doi.org/10.1016/j.epsl.2018.05.038, 2018.

Mulitza, S.: Spätquartäre Variationen der oberflächennahen Hydrographie im westlichen äquatorialen Atlantik, Berichte aus dem Fachbereich Geowissenschaften der Universität Bremen, 57, Bremen, 95 pp., 1994.

Mulitza, S.: Stable isotopes of sediment core GeoB2116-4, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223625, 2004.

Mulitza, S.: *Globigerinoides ruber* (white) isotopes of sediment core GeoB1408-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.713175, 2009a.

Mulitza, S.: *Globigerinoides ruber* (white) isotopes of sediment core GeoB1523-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.713176, 2009b.

Mulitza, S.: *Globigerinoides ruber* (white) isotopes of sediment core GeoB2004-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.713178, 2009c.

Mulitza, S.: *Globigerinoides ruber* (white) isotopes of sediment core GeoB2109-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.713179, 2009d.

Mulitza, S.: *Globigerinoides ruber* (white) isotopes of sediment core GeoB3801-6, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.713180, 2009e.

Mulitza, S.: *Globigerinoides ruber* (white) isotopes of sediment core GeoB3813-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.713181, 2009f.

Mulitza, S. and Rühlemann, C.: African Monsoonal Precipitation Modulated by Interhemispheric Temperature Gradients, Quaternary Res., 53, 270–274, https://doi.org/10.1006/qres.1999.2110, 2000.

Mulitza, S., Arz, H., Kemle-von Mücke, S., Moos, C., Niebler, H.-S., Pätzold, J., and Segl, M.: The South Atlantic Carbon Isotope Record of Planktic Foraminifera, in: Use of Proxies in Paleoceanography: Examples from the South Atlantic, edited by: Fischer, G. and Wefer, G., Springer Berlin Heidelberg, Berlin, Heidelberg, 427–445, https://doi.org/10.1007/978-3-642-58646-0_17, 1999.

Mulitza, S., Prange, M., Stuut, J.-B., Zabel, M., Dobeneck, T. von, Itambi, A. C., Nizou, J., Schulz, M., and Wefer, G.: Sahel megadroughts triggered by glacial slowdowns of Atlantic meridional overturning, Paleoceanography, 23, PA4206, https://doi.org/10.1029/2008PA001637, 2008.

Mulitza, S., Heslop, D., Pittauerova, D., Fischer, H. W., Meyer, I., Stuut, J.-B., Zabel, M., Mollenhauer, G., Collins, J. A., Kuhnert, H., and Schulz, M.: Increase in African dust flux at the onset of commercial agriculture in the Sahel region, Nature, 466, 226–228, https://doi.org/10.1038/nature09213, 2010.

Mulitza, S., Chiessi, C. M., Schefuß, E., Lippold, J., Wichmann, D., Antz, B., Mackensen, A., Paul, A., Prange, M., Rehfeld, K., Werner, M., Bickert, T., Frank, N., Kuhnert, H., Lynch-Stieglitz, J., Portilho-Ramos, R. C., Sawakuchi, A. O., Schulz, M., Schwenk, T., Tiedemann, R., Vahlenkamp, M., and Zhang, Y.: Synchronous and proportional deglacial changes in Atlantic meridional overturning and northeast Brazilian precipitation, Paleoceanography, 32, 622–633, https://doi.org/10.1002/2017PA003084, 2017.

Mulitza, S., Bickert, T., Bostock, H. C., Chiessi, C. M., Donner, B., Govin, A., Harada, N., Huang, E., Johnstone, H., Kuhnert, H., Langner, M., Lamy, F., Lembke-Jene, L., Lisiecki, L. E., Lynch-Stieglitz, J., Max, L., Mohtadi, M., Mollenhauer, G., Muglia, J., Nürnberg, D., Paul, A., Rühlemann, C., Repschläger, J., Saraswat, R., Schmittner, A., Sikes, E., Spielhagen, R. F., and Tiedemann, R.: World Atlas of late Quaternary Foraminiferal Oxygen and Carbon Isotope Ratios (WA_Foraminiferal_Isotopes_2022), PANGAEA [data set], https://doi.org/10.1594/PANGAEA.936747, 2021a.

Mulitza, S., Bickert, T., Bostock, H. C., Chiessi, C. M., Donner, B., Govin, A., Harada, N., Huang, E., Johnstone, H., Kuhnert, H., Langner, M., Lamy, F., Lembke-Jene, L., Lisiecki, L., Lynch-Stieglitz, J., Max, L., Mohtadi, M., Mollenhauer, G., Muglia, J., Nürnberg, D., Paul, A., Rühlemann, C., Repschläger, J., Saraswat, R., Schmittner, A., Sikes, E. L., Spielhagen, R. F., and Tiedemann, R.: Data Sources for the World Atlas of late Quaternary Foraminiferal Oxygen and Carbon Isotope Ratios 2021, Zenodo [data set], https://doi.org/10.5281/zenodo.6337519, 2021b.

Müller, C.: Spätquartäre Sedimentationsprozesse in der östlichen Framstrasse, Diploma Thesis, Fachbereich Geowissenschaften, Westfälische Wilhelms-Universität zu Münster, 84 pp., 1995.

Müller, P. J. and Budziak, D.: C37-alkenones of sediment core GeoB3005-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.143727, 2004.

Naik, D. K., Saraswat, R., Khare, N., Pandey, A. C., and Nigam, R.: Hydrographic changes in the Agulhas Recirculation Region during the late Quaternary, Clim. Past, 10, 745–758, https://doi.org/10.5194/cp-10-745-2014, 2014.

Naik, S. S. and Naidu, P. D.: Carbonate preservation during the 'mystery interval' in the northern Indian Ocean, Geochem. J., 50, 357–362, https://doi.org/10.2343/geochemj.2.0420, 2016.

Nam, S.-I.: Late Quaternary glacial history and paleoceanographic reconstructions along the East Greenland continental margin: Evidence from high-resolution records of stable isotopes and ice-rafted debris, Berichte zur Polarforschung, 241, Alfred-Wegener-Inst. für Polar- und Meeresforschung, Bremerhaven, 157 pp., 1997.

Naqvi, W. A., Charles, C. D., and Fairbanks, R. G.: Carbon and oxygen isotopic records of benthic foraminifera from the Northeast Indian Ocean: implications on glacial-interglacial atmospheric CO_2 changes, Earth Planet. Sc. Lett., 121, 99–110, https://doi.org/10.1016/0012-821x(94)90034-5, 1994.

Nees, S.: Spätquartäre Benthosforaminiferen des Europäischen Nordmeeres: Veränderungen der Artengesellschaften und Akkumulationsraten bei Klimawechseln, Berichte aus dem Sonderforschungsbereich 313, Veränderungen der Umwelt – Der Nördliche Nordatlantik, 44, Kiel, 80 pp., 1993.

Nelson, C. S., Hendy, C. H., Cuthbertson, A. M., and Jarrett, G. R.: Late Quaternary Carbonate and Isotope Stratigraphy, Subantarctic Site 594, Southwest Pacific, in: Initial Reports of the Deep Sea Drilling Project, 90, edited by: Kennett, J. P. and von der Borch, C. C., U.S. Government Printing Office, https://doi.org/10.2973/dsdp.proc.90.144.1986, 1986.

Nelson, C. S., Hendy, C. H., and Cuthbertson, A. M.: Compendium of stable oxygen and carbon isotope data for the late Quaternary interval of deep sea cores from the New Zealand sector of the Tasman Sea and Southwest Pacific Ocean, Occasional Report, 16, Dept. of Earth Sciences, Univ. of Waikato, Hamilton, New Zealand, 87 pp., 1993.

Nelson, C. S., Hendy, C. H., and Cuthbertson, A. M.: Oxygen isotope evidence for climatic contrasts between Tasman Sea and Southwest Pacific Ocean during the late Quaternary, in: Evolution of the Tasman Sea, edited by: van der Linden, G. J., Swanson, K. M., and Muir, R. J., Balkema, Rotterdam, 181–197, 1994.

Nelson, C. S., Hendy, I. L., Neil, H. L., Hendy, C. H., and Weaver, P. P. E.: Last glacial jetting of cold waters through the Subtropical Convergence zone in the Southwest Pacific off eastern New Zealand, and some geological implications, Palaeogeogr. Palaeocl., 156, 103–121, https://doi.org/10.1016/S0031-0182(99)00134-0, 2000.

Niebler, H.-S.: Rekonstruktionen von Paläo-Umweltparametern anhand von stabilen Isotopen und Faunen-Vergesellschaftungen planktischer Foraminiferen im Südatlantik, Berichte zur Polarforschung, 167, Alfred-Wegener-Inst. für Polar- und Meeresforschung, Bremerhaven, 198 pp., 1995.

Niebler, H.-S.: Isotopes (G. bulloides) of sediment core PS2495-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.55893, 2004a.

Niebler, H.-S.: Isotopes (G. inflata) of sediment core PS2495-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.55891, 2004b.

Niebler, H.-S.: Isotopes (N. pachyderma, dextral) of sediment core PS2495-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.55890, 2004c.

Niebler, H.-S.: Stable isotopes measured on Globigerina bulloides of sediment core PS2498-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.55892, 2004d.

Niebler, H.-S.: Stable isotopes measured on *Globorotalia inflata* of sediment core PS2498-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.55889, 2004e.

Niebler, H.-S.: Stable isotopes measured on *Neogloboquadrina pachyderma* sinistral of sediment core PS2498-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.55888, 2004f.

Niebler, H.-S.: Stable isotopes of sediment core GeoB2016-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223624, 2004g.

Niebler, H.-S.: Stable isotopes of sediment core GeoB2019-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223477, 2004h.

Niebler, H.-S.: Stable isotopes of sediment core GeoB2021-5, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223478, 2004i.

Niebler, H.-S.: Stable isotopes of sediment core GeoB2116-4, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223652, 2004j.

Niebler, H.-S.: Stable isotopes of sediment core GeoB5115-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223628, 2004k.

Niebler, H.-S.: Stable isotopes of sediment core GeoB5121-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.223629, 2004l.

Niebler, H.-S. and Mulitza, S.: *Globigerinoides ruber* (white) isotopes of sediment core GeoB1903-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.713177, 2009.

Niebler, H.-S., Arz, H. W., Donner, B., Mulitza, S., Pätzold, J., and Wefer, G.: Sea surface temperatures in the equatorial and South Atlantic Ocean during the Last Glacial Maximum (23–19 ka), Paleoceanography, 18, 1069, https://doi.org/10.1029/2003PA000902, 2003.

Nørgaard-Pedersen, N.: Sedimentology and stratigraphy of core OD96_30:3:1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.56573, 2000a.

Nørgaard-Pedersen, N.: Sedimentology and stratigraphy of core PS2887-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.56142, 2000b.

Nørgaard-Pedersen, N.: Grains size distribution and stable isotope ratios in N. pachyderma from sediment core PS51/038-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.399764, 2006.

Nørgaard-Pedersen, N. and Spielhagen, R. F.: Sedimentology and stratigraphy of core PS2887-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.56571, 2000.

Nørgaard-Pedersen, N., Spielhagen, R. F., Thiede, J., and Kassens, H.: Central Arctic surface ocean environment during the past 80,000 years, Paleoceanography, 13, 193–204, https://doi.org/10.1029/97PA03409, 1998.

Nørgaard-Pedersen, N., Spielhagen, R. F., Erlenkeuser, H., Grootes, P. M., Heinemeier, J., and Knies, J.: Arctic Ocean during the Last Glacial Maximum: Atlantic and polar domains of surface water mass distribution and ice cover, Paleoceanography, 18, 1063, https://doi.org/10.1029/2002PA000781, 2003.

Notholt, H.: Die Auswirkungen der "NorthEastWater"-Polynya auf die Sedimentation vor NO-Grönland und Untersuchungen zur PaläoOzeanographie seit dem Mittelweichsel, Berichte zur Polarforschung, 275, Alfred-Wegener-Institut für Polar- and Meeresforschung, Bremen, Bremerhaven, 183 pp., 1998.

Nowaczyk, N. R., Antonow, M., Knies, J., and Spielhagen, R. F.: Further rock magnetic and chronostratigraphic results on reversal excursions during the last 50 ka as derived from northern high latitudes and discrepancies in precise AMS ^{14}C dating, Geophys. J. Int., 155, 1065–1080, https://doi.org/10.1111/j.1365-246X.2003.02115.x, 2003.

Nürnberg, D. and Groeneveld, J.: Pleistocene variability of the Subtropical Convergence at East Tasman Plateau: Evidence from planktonic foraminiferal Mg/Ca (ODP Site 1172A), Geochem. Geophy. Geosy., 7, Q04P11, https://doi.org/10.1029/2005GC000984, 2006.

Nürnberg, D., Brughmans, N., Schönfeld, J., Ninnemann, U., and Dullo, C.: Paleo-export production, terrigenous flux and sea surface temperatures around Tasmania: Implications for glacial/interglacial changes in the Subtropical Convergence zone, in: The Cenozoic Southern Ocean: Tectonics, Sedimentation, and Climate Change Between Australia and Antarctica, edited by: Exon, N. F., Kennett, J. P., and Malone, M. J., American Geophysical Union, Washington, DC, 291–318, https://doi.org/10.1029/151GM17, 2004.

Nürnberg, D., Ziegler, M., Karas, C., Tiedemann, R., and Schmidt, M. W.: Interacting Loop Current variability and Mississippi River discharge over the past 400 kyr, Earth Planet. Sc. Lett., 272, 278–289, https://doi.org/10.1016/j.epsl.2008.04.051, 2008.

Nürnberg, D., Böschen, T., Doering, K., Mollier-Vogel, E., Raddatz, J., and Schneider, R.: Sea surface and subsurface circulation dynamics off equatorial Peru during the last ~ 17 kyr, Paleoceanography, 30, 984–999, https://doi.org/10.1002/2014PA002706, 2015.

Oba, T. and Murayama, M.: Sea-surface temperature and salinity changes in the northwest Pacific since the Last Glacial Maximum, J. Quaternary Sci., 19, 335–346, https://doi.org/10.1002/jqs.843, 2004.

Oppo, D. W. and Fairbanks, R. G.: Variability in the deep and intermediate water circulation of the Atlantic Ocean during the past 25,000 years: Northern Hemisphere modulation of the Southern Ocean, Earth Planet. Sc. Lett., 86, 1–15, https://doi.org/10.1016/0012-821X(87)90183-X, 1987.

Oppo, D. W. and Fairbanks, R. G.: Atlantic Ocean thermohaline circulation of the last 150,000 years: Relationship to climate and atmospheric CO_2, Paleoceanography, 5, 277–288, https://doi.org/10.1029/PA005i003p00277, 1990.

Oppo, D. W. and Horowitz, M.: Glacial deep water geometry: South Atlantic benthic foraminiferal Cd/Ca and δ^{13}C evidence, Paleoceanography, 15, 147–160, https://doi.org/10.1029/1999PA000436, 2000.

Oppo, D. W. and Lehman, S. J.: Mid-depth circulation of the subpolar north atlantic during the last glacial maximum, Science, 259, 1148–1152, https://doi.org/10.1126/science.259.5098.1148, 1993.

Oppo, D. W., McManus, J. F., and Cullen, J. L.: Palaeo-oceanography: Deepwater variability in the Holocene epoch, Nature, 422, 277, https://doi.org/10.1038/422277b, 2003.

Oppo, D. W., Curry, W. B., and McManus, J. F.: What do benthic δ^{13}C and δ^{18}O data tell us about Atlantic circulation during Heinrich Stadial 1?, Paleoceanography, 30, 353–368, https://doi.org/10.1002/2014PA002667, 2015.

Oppo, D. W., Gebbie, G., Huang, K.-F., Curry, W. B., Marchitto, T. M., and Pietro, K. R.: Data Constraints on Glacial Atlantic Water Mass Geometry and Properties, Paleoceanography and Paleoclimatology, 33, 1013–1034, https://doi.org/10.1029/2018PA003408, 2018.

Ortiz, J., Mix, A., Hostetler, S., and Kashgarian, M.: The California Current of the Last Glacial Maximum: Reconstruction at 42° N based on multiple proxies, Paleoceanography, 12, 191–205, https://doi.org/10.1029/96PA03165, 1997.

Osborne, E. B., Thunell, R. C., Gruber, N., Feely, R. A., and Benitez-Nelson, C. R.: Decadal variability in twentieth-century ocean acidification in the California Current Ecosystem, Nat. Geosci., 13, 43–49, https://doi.org/10.1038/s41561-019-0499-z, 2020.

Ott, G. and Gersonde, R.: Sedimentology and stable isotopes on core PS1436-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51768, 1997a.

Ott, G. and Gersonde, R.: Sedimentology and stable isotopes on core PS1649-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51770, 1997b.

Ott, G. and Gersonde, R.: Sedimentology and stable isotopes on core PS1650-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51771, 1997c.

Ott, G. and Gersonde, R.: Sedimentology and stable isotopes on core PS1650-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51772, 1997d.

Ott, G. and Gersonde, R.: Sedimentology and stable isotopes on core PS1651-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51774, 1997e.

Ott, G. and Gersonde, R.: Sedimentology and stable isotopes on core PS1651-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51775, 1997f.

Ott, G. and Gersonde, R.: Sedimentology and stable isotopes on core PS1652-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51776, 1997g.

Ott, G. and Gersonde, R.: Sedimentology and stable isotopes on core PS1652-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51777, 1997h.

Ott, G. and Gersonde, R.: Sedimentology and stable isotopes on core PS1653-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51779, 1997i.

Ott, G. and Gersonde, R.: Sedimentology and stable isotopes on core PS1653-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51783, 1997j.

Ott, G. and Gersonde, R.: Sedimentology and stable isotopes on core PS1654-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51786, 1997k.

Ott, G. and Gersonde, R.: Sedimentology and stable isotopes on core PS1654-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.51788, 1997l.

Parker, A. O., Schmidt, M. W., Jobe, Z. R., and Slowey, N. C.: A new perspective on West African hydroclimate during the last deglaciation, Earth Planet. Sc. Lett., 449, 79–88, https://doi.org/10.1016/j.epsl.2016.05.038, 2016.

Pastouret, L., Chamley, H., Delibrias, G., Duplessy, J. C., and Thiede, J.: Late quaternary climatic changes in western tropical Africa deduced from deep-sea sedimentation off Niger delta, Oceanol. Acta, 1, 217–232, 1978.

Patrick, A. and Thunell, R. C.: Tropical Pacific sea surface temperatures and upper water column thermal structure during the Last Glacial Maximum, Paleoceanography, 12, 649–657, https://doi.org/10.1029/97PA01553, 1997.

Paul, A., Reijmer, J. J. G., Fürstenau, J., Kinkel, H., and Betzler, C.: Relationship between Late Pleistocene sea-level variations, carbonate platform morphology and aragonite production (Maldives, Indian Ocean), Sedimentology, 59, 1640–1658, https://doi.org/10.1111/j.1365-3091.2011.01319.x, 2012.

Pearson, P. N.: Oxygen Isotopes in Foraminifera: Overview and Historical Review, Paleontol. Soc. pap., 18, 1–38, https://doi.org/10.1017/S1089332600002539, 2012.

Peck, V. L., Hall, I. R., Zahn, R., Grousset, F., Hemming, S. R., and Scourse, J. D.: The relationship of Heinrich events and their European precursors over the past 60 ka BP: a multi-proxy ice-rafted debris provenance study in the North East Atlantic, Quaternary Sci. Rev., 26, 862–875, https://doi.org/10.1016/j.quascirev.2006.12.002, 2007.

Peck, V. L., Hall, I. R., Zahn, R., and Elderfield, H.: Millennial-scale surface and subsurface paleothermometry from the northeast Atlantic, 55–8 ka BP, Paleoceanography, 23, https://doi.org/10.1029/2008PA001631, 2008.

Peerdeman, F. M., Davies, P. J., and Chivas, A. R.: The Stable Oxygen Isotope Signal in Shallow-Water, Upper-Slope Sediments off the Great Barrier Reef (Hole 820A), in: Proceedings of the Ocean Drilling Program, 133 Scientific Results, edited by: McKenzie, J. A., Davies, P. J., and Palmer-Julson, A., Ocean Drilling Program, https://doi.org/10.2973/odp.proc.sr.133.288.1993, 1993.

Peterson, L. C., Lawrence, K. T., Herbert, T. D., Caballero-Gill, R., Wilson, J., Huska, K., Miller, H., Kelly, C., Seidenstein, J., Hovey, D., and Holte, L.: Plio-Pleistocene Hemispheric (A)Symmetries in the Northern and Southern Hemisphere Midlatitudes, Paleoceanography and Paleoclimatology, 35, PA2216, https://doi.org/10.1029/2019PA003720, 2020.

Pichevin, L., Martinez, P., Bertrand, P., Schneider, R., Giraudeau, J., and Emeis, K.: Nitrogen cycling on the Namibian shelf and slope over the last two climatic cycles: Local and global forcings, Paleoceanography, 20, PA2006, https://doi.org/10.1029/2004pa001001, 2005.

Pichon, J.-J., Labeyrie, L. D., Bareille, G., Labracherie, M., Duprat, J., and Jouzel, J.: Surface water temperature changes in the high latitudes of the southern hemisphere over the Last Glacial-Interglacial Cycle, Paleoceanography, 7, 289–318, https://doi.org/10.1029/92PA00709, 1992.

Piotrowski, A. M., Goldstein, S. L., Hemming, S. R., and Fairbanks, R. G.: Intensification and variability of ocean thermohaline circulation through the last deglaciation, Earth Planet. Sc. Lett., 225, 205–220, https://doi.org/10.1016/j.epsl.2004.06.002, 2004.

Pivel, M. A. G., Santarosa, A. C. A., Toledo, F. A. L., and Costa, K. B.: The Holocene onset in the southwestern South Atlantic, Palaeogeogr. Palaeocl., 374, 164–172, https://doi.org/10.1016/j.palaeo.2013.01.014, 2013.

Poggemann, D.-W., Nürnberg, D., Hathorne, E. C., Frank, M., Rath, W., Reißig, S., and Bahr, A.: Deglacial Heat Uptake by the Southern Ocean and Rapid Northward Redistribution Via Antarctic Intermediate Water, Paleoceanography and Paleoclimatology, 33, 1292–1305, https://doi.org/10.1029/2017PA003284, 2018.

Poore, R. Z., Ostermann, D. R., and McGeehin, J. P.: Stable isotope data and AMS ^{14}C dates from Arctic Ocean Section 1994 surface sediment transect and box core samples from the Mendeleyev Ridge area, Open-File Report, 99–48, 17 pp., 1999.

Portilho-Ramos, R. C., Ferreira, F., Lago, L. C., Da Silva, A. G. V., Jaworski, K. S., and Toledo, M. B.: Globorotalia crassaformis optimum event: a new late Quaternary biostratigraphic marker for the southeastern Brazilian margin, PALAIOS, 29, 578–593, https://doi.org/10.2110/palo.2013.097, 2014.

Portilho-Ramos, R. C., Cruz, A. P. S., Barbosa, C. F., Rathburn, A. E., Mulitza, S., Venancio, I. M., Schwenk, T., Rühlemann, C., Vidal, L., Chiessi, C. M., and Silveira, C. S.: Methane release from the southern Brazilian margin during the last glacial, Sci. Rep.-UK, 8, 5948, https://doi.org/10.1038/s41598-018-24420-0, 2018.

Praetorius, S., Mix, A., Jensen, B., Froese, D., Milne, G., Wolhowe, M., Addison, J., and Prahl, F.: Interaction between climate, volcanism, and isostatic rebound in Southeast Alaska during the last deglaciation, Earth Planet. Sc. Lett., 452, 79–89, https://doi.org/10.1016/j.epsl.2016.07.033, 2016.

Praetorius, S. K. and Mix, A. C.: Paleoclimate. Synchronization of North Pacific and Greenland climates preceded abrupt deglacial warming, Science, 345, 444–448, https://doi.org/10.1126/science.1252000, 2014.

Praetorius S. K., McManus, J. F., Oppo, D. W., and Curry, W. B.: Episodic reductions in bottom-water currents since the last ice age, Nat. Geosci., 1, 449–452, https://doi.org/10.1038/ngeo227, 2008.

Praetorius, S. K., Mix, A. C., Walczak, M. H., Wolhowe, M. D., Addison, J. A., and Prahl, F. G.: North Pacific deglacial hypoxic events linked to abrupt ocean warming, Nature, 527, 362–366, https://doi.org/10.1038/nature15753, 2015.

Prell, W. L., Imbrie, J., Martinson, D. G., Morley, J. J., Pisias, N. G., Shackleton, N. J., and Streeter, H. F.: Graphic correlation of oxygen isotope stratigraphy application to the Late Quaternary, Paleoceanography, 1, 137–162, https://doi.org/10.1029/PA001i002p00137, 1986.

R Core Team: R: A Language and Environment for Statistical Computing, Vienna, Austria, https://www.R-project.org/ (last access: 23 May 2022), 2017.

Raddatz, J., Nürnberg, D., Tiedemann, R., and Rippert, N.: Southeastern marginal West Pacific Warm Pool sea-surface and thermocline dynamics during the Pleistocene (2.5–0.5 Ma), Palaeogeogr. Palaeocl., 471, 144–156, https://doi.org/10.1016/j.palaeo.2017.01.024, 2017.

Rashid, H., Flower, B. P., Poore, R. Z., and Quinn, T. M.: A ∼ 25 ka Indian Ocean monsoon variability record from the Andaman Sea, Quaternary Sci. Rev., 26, 2586–2597, https://doi.org/10.1016/j.quascirev.2007.07.002, 2007.

Rasmussen, T. L. and Thomsen, E.: Changes in planktic foraminiferal faunas, temperature and salinity in the Gulf Stream during the last 30,000 years: influence of meltwater via the Mississippi River, Quaternary Sci. Rev., 33, 42–54, https://doi.org/10.1016/j.quascirev.2011.11.019, 2012.

Rasmussen, T. L., Thomsen, E., van Weering, T. C. E., and Labeyrie, L.: Rapid changes in surface and deep water conditions at the Faeroe Margin during the last 58,000 years, Paleoceanography, 11, 757–771, https://doi.org/10.1029/96PA02618, 1996.

Rathburn, A. E., Pichon, J.-J., Ayress, M. A., and de Deckker, P.: Microfossil and stable-isotope evidence for changes in Late Holocene palaeoproductivity and palaeoceanographic conditions in the Prydz Bay region of Antarctica, Palaeogeogr. Palaeocl., 131, 485–510, https://doi.org/10.1016/s0031-0182(97)00017-5, 1997.

Rau, A.: δ^{13}C and δ^{18}O from *Globorotalia inflata* of sediment core MD96-2084, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.113001, 2003.

Rau, A. J., Rogers, J., Lutjeharms, J. R. E., Giraudeau, J., Lee-Thorp, J. A., Chen, M.-T., and Waelbroeck, C.: A 450-kyr record of hydrological conditions on the western Agulhas Bank Slope, south of Africa, Mar. Geol., 180, 183–201, https://doi.org/10.1016/S0025-3227(01)00213-4, 2002.

Raza, T., Ahmad, S. M., Sahoo, M., Banerjee, B., Bal, I., Dash, S., Suseela, G., and Mukherjee, I.: Hydrographic changes in the southern Bay of Bengal during the last ∼ 65,000 y inferred from carbon and oxygen isotopes of foraminiferal fossil shells, Quatern. Int., 333, 77–85, https://doi.org/10.1016/j.quaint.2014.02.010, 2014.

Reißig, S., Nürnberg, D., Bahr, A., Poggemann, D.-W., and Hoffmann, J.: Southward Displacement of the North Atlantic Subtropical Gyre Circulation System During North Atlantic Cold Spells, Paleoceanography and Paleoclimatology, 18, 1050, https://doi.org/10.1029/2018PA003376, 2019.

Ren, H., Sigman, D. M., Martínez-García, A., Anderson, R. F., Chen, M.-T., Ravelo, A. C., Straub, M., Wong, G. T. F., and Haug, G. H.: Impact of glacial/interglacial sea level change on the ocean nitrogen cycle, P. Natl. Acad. Sci. USA, 114, E6759-E6766, https://doi.org/10.1073/pnas.1701315114, 2017.

Repschläger, J., Weinelt, M., Andersen, N., Garbe-Schönberg, D., and Schneider, R.: Northern source for Deglacial and Holocene deepwater composition changes in the Eastern North Atlantic Basin, Earth Planet. Sc. Lett., 425, 256–267, https://doi.org/10.1016/j.epsl.2015.05.009, 2015.

Rew, R. and Davis, G.: NetCDF: an interface for scientific data access, IEEE Comput. Graph., 10, 76–82, https://doi.org/10.1109/38.56302, 1990.

Richter, T.: Sedimentary fluxes at the Mid-Atlantic ridge: Sediment sources, accumulation rates, and geochemical characterisation, GEOMAR-Report, 73, GEOMAR Research Center for Marine Geosciences, Christian Albrechts University in Kiel, Kiel, 173 pp., 1998.

Rickaby, R. E. M. and Elderfield, H.: Planktonic foraminiferal Cd/Ca: Paleonutrients or paleotemperature?, Paleoceanography, 14, 293–303, https://doi.org/10.1029/1999PA900007, 1999.

Rickaby, R. E. M. and Elderfield, H.: Evidence from the high-latitude North Atlantic for variations in Antarctic Intermediate water flow during the last deglaciation, Geochem. Geophy. Geosy., 6, Q05001, https://doi.org/10.1029/2004GC000858, 2005.

Riethdorf, J.-R., Max, L., Nürnberg, D., Lembke-Jene, L., and Tiedemann, R.: Deglacial development of (sub) sea surface temperature and salinity in the subarctic northwest Pacific: Implications for upper-ocean stratification, Paleoceanography, 28, 91–104, https://doi.org/10.1002/palo.20014, 2013.

Roberts, J., Gottschalk, J., Skinner, L. C., Peck, V. L., Kender, S., Elderfield, H., Waelbroeck, C., Vázquez Riveiros, N., and Hodell, D. A.: Evolution of South Atlantic density and chemical stratification across the last deglaciation, P. Natl. Acad. Sci. USA, 113, 514–519, https://doi.org/10.1073/pnas.1511252113, 2016.

Rodrigues, T., Grimalt, J. O., Abrantes, F., Naughton, F., and Flores, J.-A.: The last glacial–interglacial transition (LGIT) in the western mid-latitudes of the North Atlantic: Abrupt sea surface temperature change and sea level implications, Quaternary Sci. Rev., 29, 1853–1862, https://doi.org/10.1016/j.quascirev.2010.04.004, 2010.

Rohling, E. J., Grant, K., Hemleben, C., Kucera, M., Roberts, A. P., Schmeltzer, I., Schulz, H., Siccha, M., Siddall, M., and Trommer, G.: New constraints on the timing of sea level fluctuations during early to middle marine isotope stage 3, Paleoceanography, 23, PA3219, https://doi.org/10.1029/2008PA001617, 2008.

Romahn, S., Mackensen, A., Groeneveld, J., and Pätzold, J.: Deglacial intermediate water reorganization: new evidence from the Indian Ocean, Clim. Past, 10, 293–303, https://doi.org/10.5194/cp-10-293-2014, 2014.

Romero, O., Mollenhauer, G., Schneider, R. R., and Wefer, G.: Oscillations of the siliceous imprint in the central Benguela Upwelling System from MIS 3 through to the early Holocene: the influence of the Southern Ocean, J. Quaternary Sci., 18, 733–743, https://doi.org/10.1002/jqs.789, 2003.

Romero, O. E., Kim, J.-H., and Donner, B.: Submillennial-to-millennial variability of diatom production off Mauritania, NW Africa, during the last glacial cycle, Paleoceanography, 23, PA3218, https://doi.org/10.1029/2008PA001601, 2008.

Ronge, T. A.: Stable and radiogenic isotope record for sediments cores from the Southern Indian Ocean, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.906365, 2019a.

Ronge, T. A.: Stable carbon and oxygen isotope record of sediment profile PS69/912, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.906364, 2019b.

Ronge, T. A., Steph, S., Tiedemann, R., Prange, M., Merkel, U., Nürnberg, D., and Kuhn, G.: Pushing the boundaries: Glacial/interglacial variability of intermediate and deep waters in the southwest Pacific over the last 350,000 years, Paleoceanography, 30, 23–38, https://doi.org/10.1002/2014PA002727, 2015.

Ronge, T. A., Tiedemann, R., Lamy, F., Köhler, P., Alloway, B. V., de Pol-Holz, R., Pahnke, K., Southon, J., and Wacker, L.: Radiocarbon constraints on the extent and evolution of the South Pacific glacial carbon pool, Nat. Commun., 7, 11487, https://doi.org/10.1038/ncomms11487, 2016.

Rosenthal, Y., Boyle, E. A., and Labeyrie, L.: Last Glacial Maximum paleochemistry and deepwater circulation in the Southern Ocean: Evidence from foraminiferal cadmium, Paleoceanography, 12, 787–796, https://doi.org/10.1029/97PA02508, 1997.

Rüggeberg, A., Dorschel, B., Dullo, W.-C., and Hebbeln, D.: Sedimentary patterns in the vicinity of a carbonate mound in the Hovland Mound Province, northern Porcupine Seabight, in: Cold-Water Corals and Ecosystems, edited by: Freiwald, A. and Roberts, J. M., Springer-Verlag, Berlin/Heidelberg, 87–112, https://doi.org/10.1007/3-540-27673-4_5, 2005.

Rühlemann, C., Frank, M., Hale, W., Mangini, A., Mulitza, S., Müller, P. J., and Wefer, G.: Late Quaternary productivity changes in the western equatorial Atlantic: Evidence from ^{230}Th-normalized carbonate and organic carbon accumulation rates, Mar. Geol., 135, 127–152, https://doi.org/10.1016/S0025-3227(96)00048-5, 1996.

Rühlemann, C., Mulitza, S., Müller, P. J., Wefer, G., and Zahn, R.: Warming of the tropical Atlantic Ocean and slowdown of thermohaline circulation during the last deglaciation, Nature, 402, 511–514, https://doi.org/10.1038/990069, 1999.

Rühlemann, C., Diekmann, B., Mulitza, S., and Frank, M.: Late Quaternary changes of western equatorial Atlantic surface circulation and Amazon lowland climate recorded in Ceará Rise deep-sea sediments, Paleoceanography, 16, 293–305, https://doi.org/10.1029/1999PA000474, 2001.

Rühlemann, C., Mulitza, S., Lohmann, G., Paul, A., Prange, M., and Wefer, G.: Intermediate depth warming in the tropical Atlantic related to weakened thermohaline circulation: Combining paleoclimate data and modeling results for the last deglaciation, Paleoceanography, 19, PA1025, https://doi.org/10.1029/2003PA000948, 2004.

Russon, T., Elliot, M., Kissel, C., Cabioch, G., de Deckker, P., and Corrège, T.: Middle-late Pleistocene deep water circulation in the southwest subtropical Pacific, Paleoceanography, 24, 159, https://doi.org/10.1029/2009PA001755, 2009.

Russon, T., Elliot, M., Sadekov, A., Cabioch, G., Corrège, T., and de Deckker, P.: The mid-Pleistocene transition in the subtropical southwest Pacific, Paleoceanography, 26, C07023, https://doi.org/10.1029/2010PA002019, 2011.

Rustic, G. T., Koutavas, A., Marchitto, T. M., and Linsley, B. K.: Dynamical excitation of the tropical Pacific Ocean and ENSO variability by Little Ice Age cooling, Science, 350, 1537–1541, https://doi.org/10.1126/science.aac9937, 2015.

Samson, C. R., Sikes, E. L., and Howard, W. R.: Deglacial paleoceanographic history of the Bay of Plenty, New Zealand, Paleoceanography, 20, PA4017, https://doi.org/10.1029/2004PA001088, 2005.

Santos, T. P., Franco, D. R., Barbosa, C. F., Belem, A. L., Dokken, T., and Albuquerque, A. L. S.: Millennial- to centennial-scale changes in sea surface temperature in the tropical South Atlantic throughout the Holocene, Palaeogeogr. Palaeocl., 392, 1–8, https://doi.org/10.1016/j.palaeo.2013.08.019, 2013.

Santos, T. P., Belem, A. L., Barbosa, C. F., Dokken, T., and Albuquerque, A. L. S.: Paleoceanographic reconstruction of the western equatorial Atlantic during the last 40 kyr, Palaeogeogr. Palaeocl., 415, 14–20, https://doi.org/10.1016/j.palaeo.2014.01.001, 2014.

Santos, T. P., Lessa, D. O., Venancio, I. M., Chiessi, C. M., Mulitza, S., Kuhnert, H., and Albuquerque, A. L. S.: The Impact of the AMOC Resumption in the Western South Atlantic Thermocline at the Onset of the Last Interglacial, Geophys. Res. Lett., 44, 11547-11554, https://doi.org/10.1002/2017GL074457, 2017a.

Santos, T. P., Lessa, D. O., Venancio, I. M., Chiessi, C. M., Mulitza, S., Kuhnert, H., Govin, A., Machado, T., Costa, K. B., Toledo, F., Dias, B. B., and Albuquerque, A. L. S.: Prolonged warming of the Brazil Current precedes deglaciations, Earth Planet. Sc. Lett., 463, 1–12, https://doi.org/10.1016/j.epsl.2017.01.014, 2017b.

Santos, T. P., Ballalai, J. M., Franco, D. R., Oliveira, R. R., Lessa, D. O., Venancio, I. M., Chiessi, C. M., Kuhnert, H., Johnstone, H., and Albuquerque, A. L. S.: Asymmetric response of the subtropical western South Atlantic thermocline to the Dansgaard-Oeschger events of Marine Isotope Stages 5 and 3, Quaternary Sci. Rev., 237, 106307, https://doi.org/10.1016/j.quascirev.2020.106307, 2020.

Saraswat, R., Nigam, R., Weldeab, S., Mackensen, A., and Naidu, P. D.: A first look at past sea surface temperatures in the equatorial Indian Ocean from Mg/Ca in foraminifera, Geophys. Res. Lett., 32, 217, https://doi.org/10.1029/2005GL024093, 2005.

Saraswat, R., Lea, D. W., Nigam, R., Mackensen, A., and Naik, D. K.: Deglaciation in the tropical Indian Ocean driven by interplay between the regional monsoon and global teleconnections, Earth Planet. Sc. Lett., 375, 166–175, https://doi.org/10.1016/j.epsl.2013.05.022, 2013.

Saraswat, R., Singh, D. P., Lea, D. W., Mackensen, A., and Naik, D. K.: Indonesian throughflow controlled the westward extent of the Indo–Pacific Warm Pool during glacial-interglacial intervals, Global Planet. Change, 183, 103031, https://doi.org/10.1016/j.gloplacha.2019.103031, 2019.

Sarnthein, M.: Stable isotope analysis on planktic foraminifera on sediment core profile GIK16867-1/-2/-3, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.54392, 1997a.

Sarnthein, M.: Stable isotope analysis on planktic foraminifera on sediment core profile GIK17048-3/-4, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.54394, 1997b.

Sarnthein, M.: Stable istope analysis on planktic foraminifera on sediment core GIK16459-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.134936, 2004.

Sarnthein, M. and Winn, K.: Carbon and oxygen isotope measurements on *Globigerinoides ruber* white and *Cibicides wuellerstorfi*, dry density, carbonate and organic carbon contents in southeast tropical Pacific core SO26-189, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.805129, 1991.

Sarnthein, M. and Winn, K.: Carbon and oxygen isotope measurements on Globigerinoides ruber white and Cibicides wuellerstorfi, dry density, carbonate and organic carbon contents in southeast tropical Pacific core SO26-222, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.805131, 2013a.

Sarnthein, M. and Winn, K.: Carbon and oxygen isotope measurements on Globoquadrina dutertrei dextral and Cibicides wuellerstorfi, dry density, carbonate and organic carbon contents in equatorial Pacific core SO26-141, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.805126, 2013b.

Sarnthein, M., Erlenkeuser, H., von Grafenstein, R., and Schröder, C.: Stable isotope stratigraphy for the last 750.000 years: "Meteor" core 13519 from the eastern equatorial Atlantic, Meteor Forschungsergebnisse, Deutsche Forschungsgemeinschaft, Reihe C Geologie und Geophysik, C38, 9–24, 1984.

Sarnthein, M., Winn, K., Duplessy, J.-C., and Fontugne, M. R.: Global variations of surface ocean productivity in low and mid latitudes: Influence on CO_2 reservoirs of the deep ocean and atmosphere during the last 21,000 years, Paleoceanography, 3, 361–399, https://doi.org/10.1029/PA003i003p00361, 1988.

Sarnthein, M., Winn, K., Jung, S. J. A., Duplessy, J.-C., Labeyrie, L., Erlenkeuser, H., and Ganssen, G.: Changes in East Atlantic Deepwater Circulation over the last 30,000 years: Eight time slice reconstructions, Paleoceanography, 9, 209–267, https://doi.org/10.1029/93PA03301, 1994.

Sarnthein, M., Kreveld, S., Erlenkeuser, H., Grootes, P. M., Kucera, M., Pflaumann, U., and Schulz, M.: Centennial-to-millennial-scale periodicities of Holocene climate and sediment injections off the western Barents shelf, 75° N, Boreas, 32, 447–461, https://doi.org/10.1111/j.1502-3885.2003.tb01227.x, 2003.

Sarnthein, M., Balmer, S., Grootes, P. M., and Mudelsee, M.: Planktic and Benthic ^{14}C Reservoir Ages for Three Ocean Basins, Calibrated by a Suite of ^{14}C Plateaus in the Glacial-to-Deglacial Suigetsu Atmospheric ^{14}C Record, Radiocarbon, 57, 129–151, https://doi.org/10.2458/azu_rc.57.17916, 2015.

Sbaffi, L., Wezel, F. C., Kallel, N., Paterne, M., Cacho, I., Ziveri, P., and Shackleton, N.: Response of the pelagic environment to palaeoclimatic changes in the central Mediterranean Sea during the Late Quaternary, Mar. Geol., 178, 39–62, https://doi.org/10.1016/S0025-3227(01)00185-2, 2001.

Schefuss, E., Schouten, S., and Schneider, R. R.: Climatic controls on central African hydrology during the past 20,000 years, Nature, 437, 1003–1006, https://doi.org/10.1038/nature03945, 2005.

Schiebel, R. and Hemleben, C.: Planktic Foraminifers in the Modern Ocean, Springer Berlin Heidelberg, Berlin, Heidelberg, 2017.

Schiraldi, B., Sikes, E. L., Elmore, A. C., Cook, M. S., and Rose, K. A.: Southwest Pacific subtropics responded to last deglacial warming with changes in shallow water sources, Paleoceanography, 29, 595–611, https://doi.org/10.1002/2013PA002584, 2014.

Schirrmacher, J., Kneisel, J., Knitter, D., Hamer, W., Hinz, M., Schneider, R. R., and Weinelt, M.: Spatial patterns of temperature, precipitation, and settlement dynamics on the Iberian Peninsula during the Chalcolithic and the Bronze Age, Quaternary Sci. Rev., 233, 106220, https://doi.org/10.1016/j.quascirev.2020.106220, 2020.

Schlünz, B., Schneider, R. R., Müller, P. J., and Wefer, G.: Late Quaternary organic carbon accumulation south of Barbados: influence of the Orinoco and Amazon rivers?, Deep-Sea Res. Pt. I, 47, 1101–1124, https://doi.org/10.1016/S0967-0637(99)00076-X, 2000.

Schmidt, G. A. and Mulitza, S.: Global calibration of ecological models for planktic foraminifera from coretop carbonate oxygen-18, Mar. Micropaleontol., 44, 125–140, https://doi.org/10.1016/S0377-8398(01)00041-X, 2002.

Schmidt, M. W. and Lynch-Stieglitz, J.: Florida Straits deglacial temperature and salinity change: Implications for tropical hydrologic cycle variability during the Younger Dryas, Paleoceanography, 26, PA4205, https://doi.org/10.1029/2011PA002157, 2011.

Schmidt, M. W., Spero, H. J., and Lea, D. W.: Links between salinity variation in the Caribbean and North Atlantic thermohaline circulation, Nature, 428, 160–163, https://doi.org/10.1038/nature02346, 2004.

Schmidt, M. W., Chang, P., Hertzberg, J. E., Them, T. R., Ji, L., J, L., and Otto-Bliesner, B. L.: Impact of abrupt deglacial climate change on tropical Atlantic subsurface temperatures, P. Natl. Acad. Sci. USA, 109, 14348–14352, https://doi.org/10.1073/pnas.1207806109, 2012.

Schmiedl, G. and Mackensen, A.: Late Quaternary paleoproductivity and deep water circulation in the eastern South Atlantic Ocean: Evidence from benthic foraminifera, Palaeogeogr. Palaeocl., 130, 43–80, https://doi.org/10.1016/S0031-0182(96)00137-X, 1997.

Schmiedl, G. and Mackensen, A.: Multispecies stable isotopes of benthic foraminifers reveal past changes of organic matter decomposition and deepwater oxygenation in the Arabian Sea, Paleoceanography, 21, 2831, https://doi.org/10.1029/2006PA001284, 2006.

Schneider, R. R.: Spätquartäre Produktivitätsänderungen im östlichen Angola-Becken: Reaktion auf Variationen im Pasat-Spätquartäre Produktivitätsänderungen im östlichen Angola-Becken: Reaktion auf Variationen im Pasat-Monsun-Windsystem und in der Advektion des Benguela-Küstenstroms, Berichte aus dem Fachbereich Geowissenschaften der Universität Bremen, 21, 198 pp., 1991.

Schneider, R. R., Müller, P. J., and Ruhland, G.: Late Quaternary surface circulation in the east equatorial South Atlantic: Evidence from Alkenone sea surface temperatures, Paleoceanography, 10, 197–219, https://doi.org/10.1029/94PA03308, 1995.

Schönfeld, J., Zahn, R., and de Abreu, L.: Surface and deep water response to rapid climate changes at the Western Iberian Margin, Global Planet. Change, 36, 237–264, https://doi.org/10.1016/S0921-8181(02)00197-2, 2003.

Schröder, J. F., Kuhnt, W., Holbourn, A., Beil, S., Zhang, P., Hendrizan, M., and Xu, J.: Deglacial Warming and Hydroclimate Variability in the Central Indonesian Archipelago, Paleoceanography and Paleoclimatology, 33, 974–993, https://doi.org/10.1029/2018PA003323, 2018.

Schulz, H.: Meeresoberflächentemperaturen vor 10.000 Jahren – Auswirkungen des frühholozänen Insolationsmaximums, Geologisch–Paläontologisches Institut und Museum, Christian-Albrechts-Universität, Kiel, 1995.

Schwab, C., Kinkel, H., Weinelt, M., and Repschläger, J.: Coccolithophore paleoproductivity and ecology response to deglacial and Holocene changes in the Azores Current System, Paleoceanography, 27, PA3210, https://doi.org/10.1029/2012PA002281, 2012.

Scussolini, P. and Peeters, F. J. C.: A record of the last 460 thousand years of upper ocean stratification from the central Walvis Ridge, South Atlantic, Paleoceanography, 28, 426–439, https://doi.org/10.1002/palo.20041, 2013.

Seidenkrantz, M.-S., Kuijpers, A., Aagaard-Sørensen, S., Lindgreen, H., Olsen, J., and Pearce, C.: Evidence for influx of Atlantic water masses to the Labrador Sea during the Last Glacial Maximum, Sci. Rep.-UK, 11, 627, https://doi.org/10.1038/s41598-021-86224-z, 2021.

Sejrup, H. P., Lehman, S. J., Haflidason, H., Noone, D., Muscheler, R., Berstad, I. M., and Andrews, J. T.: Response of Norwegian Sea temperature to solar forcing since 1000 A.D., J. Geophys. Res., 115, 3713, https://doi.org/10.1029/2010JC006264, 2010.

Shackleton, N. J.: Carbon-13 in Uvigerina: Tropical rain forest history and the equatorial Pacific carbonate dissolution cycle, in: The fate of fossil fuel CO_2 in the oceans, edited by: Andersen, N. R. and Malahoff, A., Plenum Pr, New York, 401–427, 1977.

Shackleton, N. J.: Stable isotope analysis on sediment core RC11-86, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.106546, 2003.

Shackleton, N. J. and Opdyke, N. D.: Oxygen Isotope and Palaeomagnetic Stratigraphy of Equatorial Pacific Core V28-238: Oxygen Isotope Temperatures and Ice Volumes on a 10^5 Year and 10^6 Year Scale, Quaternary Res., 3, 39–55, https://doi.org/10.1016/0033-5894(73)90052-5, 1973.

Shackleton, N. J., Le, J., Mix, A., and Hall, M. A.: Carbon isotope records from pacific surface waters and atmospheric carbon dioxide, Quaternary Sci. Rev., 11, 387–400, https://doi.org/10.1016/0277-3791(92)90021-Y, 1992.

Shackleton, N. J., Hall, M. A., and Vincent, E.: Phase relationships between millennial-scale events 64,000–24,000 years ago, Paleoceanography, 15, 565–569, https://doi.org/10.1029/2000PA000513, 2000.

Shackleton, N. J., Fairbanks, R. G., Chiu, T.-C., and Parrenin, F.: Absolute calibration of the Greenland time scale: implications for Antarctic time scales and for Δ^{14}C, Quaternary Sci. Rev., 23, 1513–1522, https://doi.org/10.1016/j.quascirev.2004.03.006, 2004.

Shao, J., Stott, L. D., Gray, W. R., Greenop, R., Pecher, I., Neil, H. L., Coffin, R. B., Davy, B., and Rae, J. W. B.: Atmosphere-Ocean CO_2 Exchange Across the Last Deglaciation From the Boron Isotope Proxy, Paleoceanography and Paleoclimatology, 34, 1650–1670, https://doi.org/10.1029/2018PA003498, 2019.

Shemesh, A., Burckle, L. H., and Hays, J. D.: Late Pleistocene oxygen isotope records of biogenic silica from the Atlantic sector of the Southern Ocean, Paleoceanography, 10, 179–196, https://doi.org/10.1029/94PA03060, 1995.

Shemesh, A., Hodell, D., Crosta, X., Kanfoush, S., Charles, C., and Guilderson, T.: Sequence of events during the last deglaciation in Southern Ocean sediments and Antarctic ice cores, Paleoceanography, 17, 8-1–8-7, https://doi.org/10.1029/2000PA000599, 2002.

Shimmield, G.: Stable isotope analysis on planktic foraminifera in sediment core BOFS17K, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.194838, 2004.

Shimmield, G.: Stable isotope analysis on planktic foraminifera in sediment core BOFS5K, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.194839, 2004b.

Showers, W. J. and Margolis, S. V.: Evidence for a tropical freshwater spike during the last glacial/interglacial transition in the Venezuela Basin: δ^{18}O and δ^{13}C of calcareous plankton, Mar. Geol., 68, 145–165, https://doi.org/10.1016/0025-3227(85)90009-X, 1985.

Sikes, E. L. and Keigwin, L. D.: Equatorial Atlantic sea surface temperature for the last 30 kyr: A comparison of $U^{k\prime}_{37}$ δ^{18}O and foraminiferal assemblage temperature estimates, Paleoceanography, 9, 31–45, https://doi.org/10.1029/93PA02198, 1994.

Sikes, E. L., Howard, W. R., Samson, C. R., Mahan, T. S., Robertson, L. G., and Volkman, J. K.: Southern Ocean seasonal temperature and Subtropical Front movement on the South Tasman Rise in the late Quaternary, Paleoceanography, 24, PA2201, https://doi.org/10.1029/2008PA001659, 2009.

Sikes, E. L., Elmore, A. C., Allen, K. A., Cook, M. S., and Guilderson, T. P.: Glacial water mass structure and rapid δ^{18}O and δ^{13}C changes during the last glacial termination in the Southwest Pacific, Earth Planet. Sc. Lett., 456, 87–97, https://doi.org/10.1016/j.epsl.2016.09.043, 2016.

Singh, A. D., Jung, S. J. A., Darling, K., Ganeshram, R., Ivanochko, T., and Kroon, D.: Productivity collapses in the Arabian Sea during glacial cold phases, Paleoceanography, 26, PA3210, https://doi.org/10.1029/2009PA001923, 2011.

Sirocko, F.: Zur Akkumulation von Staubsedimenten im nördlichen Indischen Ozean; Anzeiger der Klimageschichte Arabiens und Indiens, Berichte – Reports, Geologisch–Paläontologisches Institut und Museum (Kiel, Univ.). Berichte. 27, 27, Geol.-Paläont. Inst. u. Museum Univ, Kiel, 185 pp., 1989.

Sirocko, F., Garbe-Schönberg, D., and Devey, C.: Processes controlling trace element geochemistry of Arabian Sea sediments during the last 25,000 years, Global Planet. Change, 26, 217–303, https://doi.org/10.1016/S0921-8181(00)00046-1, 2000.

Skinner, L. C., Fallon, S., Waelbroeck, C., Michel, E., and Barker, S.: Ventilation of the deep Southern Ocean and deglacial CO_2 rise, Science, 328, 1147–1151, https://doi.org/10.1126/science.1183627, 2010.

Slowey, N. C. and Curry, W. B.: Structure of the glacial thermocline at Little Bahama Bank, Nature, 328, 54–58, https://doi.org/10.1038/328054a0, 1987.

Slowey, N. C. and Curry, W. B.: Glacial-interglacial differences in circulation and carbon cycling within the upper western North Atlantic, Paleoceanography, 10, 715–732, https://doi.org/10.1029/95pa01166, 1995.

Smith, J. A., Hillenbrand, C.-D., Kuhn, G., Klages, J. P., Graham, A. G. C., Larter, R. D., Ehrmann, W., Moreton, S. G., Wiers, S., and Frederichs, T.: New constraints on the timing of West Antarctic Ice Sheet retreat in the eastern Amundsen Sea since the Last Glacial Maximum, Global Planet. Change, 122, 224–237, https://doi.org/10.1016/j.gloplacha.2014.07.015, 2014.

Sortor, R. N. and Lund, D. C.: No evidence for a deglacial intermediate water Δ^{14}C anomaly in the SW Atlantic, Earth Planet. Sc. Lett., 310, 65–72, https://doi.org/10.1016/j.epsl.2011.07.017, 2011.

Spero, H. J., Mielke, K. M., Kalve, E. M., Lea, D. W., and Pak, D. K.: Multispecies approach to reconstructing eastern equatorial Pacific thermocline hydrography during the past 360 kyr, Paleoceanography, 18, 1022, https://doi.org/10.1029/2002PA000814, 2003.

Spielhagen, R., Erlenkeuser, H., and Siegert, C.: History of freshwater runoff across the Laptev Sea (Arctic) during the last deglaciation, Global Planet. Change, 48, 187–207, https://doi.org/10.1016/j.gloplacha.2004.12.013, 2005.

Spielhagen, R. F., Barash, M. S., Ivanov, G. I., and Thiede, J. (Eds.): G erman–Russian cooperation: biogeographic and biostratigraphic investigations on selected sediment cores from the Eurasian continental margin and marginal seas to analyze the Late Quaternary climatic variability, Berichte zur Polarforschung, 306, Alfred-Wegener-Inst. für Polar- und Meeresforschung, Bremerhaven, 170 pp., 1999.

Spielhagen, R. F., Baumann, K.-H., Erlenkeuser, H., Nowaczyk, N., Nørgaard-Pedersen, N., Vogt, C., and Weiel, D.: Arctic Ocean deep-sea record of northern Eurasian ice sheet history, Quaternary Sci. Rev., 23, 1455–1483, https://doi.org/10.1016/j.quascirev.2003.12.015, 2004.

Spooner, M. I., de Deckker, P., Barrows, T. T., and Fifield, L. K.: The behaviour of the Leeuwin Current offshore NW Australia during the last five glacial–interglacial cycles, Global Planet. Change, 75, 119–132, https://doi.org/10.1016/j.gloplacha.2010.10.015, 2011.

Stein, R. and Fahl, K.: Age determinations on sediment core PS2446-4, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.358536, 2000.

Stein, R. and Schneider, D. A.: Age determinations on sediment core PS2208-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.91162, 2003.

Stein, R., Schubert, C., Vogt, C., and Fütterer, D.: Stable isotope stratigraphy, sedimentation rates, and salinity changes in the Latest Pleistocene to Holocene eastern central Arctic Ocean, Mar. Geol., 119, 333–355, https://doi.org/10.1016/0025-3227(94)90189-9, 1994.

Stein, R., Nam, S.-I., Grobe, H., and Hubberten, H.: Late Quaternary glacial history and short-term ice-rafted debris fluctuations along the East Greenland continental margin, Geological Society, London, Special Publications, 111, 135–151, https://doi.org/10.1144/GSL.SP.1996.111.01.09, 1996.

Steinborn, W.: Rekonstruktion der glazialen Wassermassenstratifizierung im westlichen subtropischen Südatlantik (Sao Paulo Plateau), Diplomarbeit, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 55 pp., 2003.

Stephens, C., Antonov, J. I., Boyer, T. P., Conkright, M. E., Locarnini, R. A., O'Brien, T. D., and Garcia, H. E.: World Ocean Atlas 2001, 2001, Volume 1: Temperature, NOAA atlas NESDIS, 50, Washington, DC, 176 pp., 2002.

Stott, L. D.: Comment on "Anomalous radiocarbon ages for foraminifera shells" by W. Broecker et al.: A correction to the western tropical Pacific MD9821-81 record, Paleoceanography, 22, PA1211, https://doi.org/10.1029/2006PA001379, 2007.

Stott, L. D., Neumann, M., and Hammond, D.: Intermediate water ventilation on the Northeastern Pacific Margin during the Late Pleistocene inferred from benthic foraminiferal δ^{13}C, Paleoceanography, 15, 161–169, https://doi.org/10.1029/1999PA000375, 2000.

Stott, L., Poulsen, C., Lund, S., and Thunell, R.: Super ENSO and global climate oscillations at millennial time scales, Science, 297, 222–226, https://doi.org/10.1126/science.1071627, 2002.

Stott, L., Timmermann, A., and Thunell, R.: Southern Hemisphere and deep-sea warming led deglacial atmospheric CO_2 rise and tropical warming, Science, 318, 435–438, https://doi.org/10.1126/science.1143791, 2007.

Stüber, A.: Spätpleistozäne Variabilität der Zwischenwasserzirkulation im subtropischen Westatlantik auf glazial-interglazialen und suborbitalen Zeitskalen: Rekonstruktion anhand stabiler Kohlenstoffisotope und Spurenmetallverhältnisse in kalkschaligen Benthosforaminiferen, PhD thesis, CAU, Kiel, Germany, 118 pp., 1999.

Sturm, A.: Changes in ocean circulation and carbonate chemistry in the Australian sector of the southern ocean during the last 500,000 years, PhD thesis, Mathematisch-Naturwissenschaftliche Fakultät, Christian-Albrechts-Universität zu Kiel, Kiel, Germany, 114 pp., 2003.

Stuut, J.-B. W., de Deckker, P., Saavedra-Pellitero, M., Bassinot, F., Drury, A. J., Walczak, M. H., Nagashima, K., and Murayama, M.: A 5.3-Million-Year History of Monsoonal Precipitation in Northwestern Australia, Geophys. Res. Lett., 46, 6946–6954, https://doi.org/10.1029/2019GL083035, 2019.

Sun, Y., Oppo, D. W., Xiang, R., Liu, W., and Gao, S.: Last deglaciation in the Okinawa Trough: Subtropical northwest Pacific link to Northern Hemisphere and tropical climate, Paleoceanography, 20, PA4005, https://doi.org/10.1029/2004PA001061, 2005.

Tapia, R., Nürnberg, D., Ronge, T., and Tiedemann, R.: Disparities in glacial advection of Southern Ocean Intermediate Water to the South Pacific Gyre, Earth Planet. Sc. Lett., 410, 152–164, https://doi.org/10.1016/j.epsl.2014.11.031, 2015.

Taylor, M. A., Hendy, I. L., and Pak, D. K.: Deglacial ocean warming and marine margin retreat of the Cordilleran Ice Sheet in the North Pacific Ocean, Earth Planet. Sc. Lett., 403, 89–98, https://doi.org/10.1016/j.epsl.2014.06.026, 2014.

Telesiński, M. M., Spielhagen, R. F., and Bauch, H. A.: Water mass evolution of the Greenland Sea since late glacial times, Clim. Past, 10, 123–136, https://doi.org/10.5194/cp-10-123-2014, 2014a.

Telesiński, M. M., Spielhagen, R. F., and Lind, E. M.: A high-resolution Lateglacial and Holocene palaeoceanographic record from the Greenland Sea, Boreas, 43, 273–285, https://doi.org/10.1111/bor.12045, 2014b.

Tessin, A. C. and Lund, D. C.: Isotopically depleted carbon in the mid-depth South Atlantic during the last deglaciation, Paleoceanography, 28, 296–306, https://doi.org/10.1002/palo.20026, 2013.

Thornalley, D. J. R., Elderfield, H., and McCave, I. N.: Holocene oscillations in temperature and salinity of the surface subpolar North Atlantic, Nature, 457, 711–714, https://doi.org/10.1038/nature07717, 2009.

Thornalley, D. J. R., Elderfield, H., and McCave, I. N.: Intermediate and deep water paleoceanography of the northern North Atlantic over the past 21,000 years, Paleoceanography, 25, 1769, https://doi.org/10.1029/2009PA001833, 2010.

Thornalley, D. J. R., Elderfield, H., and McCave, I. N.: Reconstructing North Atlantic deglacial surface hydrography and its link to the Atlantic overturning circulation, Global Planet. Change, 79, 163–175, https://doi.org/10.1016/j.gloplacha.2010.06.003, 2011.

Thunell, R. C.: Stable isotopes of sediment core KS82-32, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.407577, 2006a.

Thunell, R. C.: Stable isotopes of sediment core MD81-BC15, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.407578, 2006b.

Thunell, R. C., Williams, D. F., and Kennett, J. P.: Late Quaternary paleoclimatology, stratigraphy and sapropel history in eastern Mediterranean deep-sea sediments, Mar. Micropaleontol., 2, 371–388, https://doi.org/10.1016/0377-8398(77)90018-4, 1977.

Tian, J., Huang, E., and Pak, D. K.: East Asian winter monsoon variability over the last glacial cycle: Insights from a latitudinal sea-surface temperature gradient across the South China Sea, Palaeogeogr. Palaeocl., 292, 319–324, https://doi.org/10.1016/j.palaeo.2010.04.005, 2010.

Tierney, J. E., deMenocal, P. B., and Zander, P. D.: A climatic context for the out-of-Africa migration, Geology, 45, 1023–1026, https://doi.org/10.1130/g39457.1, 2017.

Tierney, J. E., Zhu, J., King, J., Malevich, S. B., Hakim, G. J., and Poulsen, C. J.: Glacial cooling and climate sensitivity revisited, Nature, 584, 569–573, https://doi.org/10.1038/s41586-020-2617-x, 2020.

Tiwari, M., Nagoji, S. S., and Ganeshram, R. S.: Multi-centennial scale SST and Indian summer monsoon precipitation variability since the mid-Holocene and its nonlinear response to solar activity, Holocene, 25, 1415–1424, https://doi.org/10.1177/0959683615585840, 2015.

Tjallingii, R., Claussen, M., Stuut, J.-B. W., Fohlmeister, J., Jahn, A., Bickert, T., Lamy, F., and Röhl, U.: Coherent high- and low-latitude control of the northwest African hydrological balance, Nat. Geosci., 1, 670–675, https://doi.org/10.1038/ngeo289, 2008.

Toledo, F. A. L., Costa, K. B., and Pivel, M. A. G.: Salinity changes in the western tropical South Atlantic during the last 30 kyr, Global Planet. Change, 57, 383–395, https://doi.org/10.1016/j.gloplacha.2007.01.001, 2007.

Toledo, F. A. L., Quadros, J. P., Camillo, E., Santarosa, A. C. A., Flores, J.-A., and Costa, K. B: Plankton biochronology for the last 772,000 years from the western South Atlantic Ocean, Mar. Micropaleontol., 127, 50–62, https://doi.org/10.1016/j.marmicro.2016.07.002, 2016.

Troedson, A. L. and Davies, P. J.: Contrasting facies patterns in subtropical and temperate continental slope sediments: inferences from east Australian late Quaternary records, Mar. Geol., 172, 265–285, https://doi.org/10.1016/S0025-3227(00)00132-8, 2001.

Ullermann, J., Lamy, F., Ninnemann, U., Lembke-Jene, L., Gersonde, R., and Tiedemann, R.: Pacific-Atlantic Circumpolar Deep Water coupling during the last 500 ka, Paleoceanography, 31, 639–650, https://doi.org/10.1002/2016PA002932, 2016.

Urey, H. C.: The thermodynamic properties of isotopic substances, J. Chem. Soc., 562–581, https://doi.org/10.1039/jr9470000562, 1947.

Vahlenkamp, M.: The Anatomy of Heinrich Event 1 – A Multiproxy Study of Centennial to Millennial Scale Climate Change off Brazil, Master Thesis, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 70 pp., 2013.

van Geen, A., Fairbanks, R. G., Dartnell, P., McGann, M., Gardner, J. V., and Kashgarian, M.: Ventilation changes in the northeast Pacific during the Last Deglaciation, Paleoceanography, 11, 519–528, https://doi.org/10.1029/96PA01860, 1996.

van Kreveld, S., Sarnthein, M., Erlenkeuser, H., Grootes, P., Jung, S., Nadeau, M. J., Pflaumann, U., and Voelker, A.: Potential links between surging ice sheets, circulation changes, and the Dansgaard-Oeschger Cycles in the Irminger Sea, 60–18 Kyr, Paleoceanography, 15, 425–442, https://doi.org/10.1029/1999PA000464, 2000.

Vázquez Riveiros, N., Waelbroeck, C., Skinner, L., Roche, D. M., Duplessy, J.-C., and Michel, E.: Response of South Atlantic deep waters to deglacial warming during Terminations V and I, Earth Planet. Sc. Lett., 298, 323–333, https://doi.org/10.1016/j.epsl.2010.08.003, 2010.

Venancio, I. M., Gomes, V. P., Belem, A. L., and Albuquerque, A. L. S.: Surface-to-subsurface temperature variations during the last century in a western boundary upwelling system (Southeastern, Brazil), Cont. Shelf Res., 125, 97–106, https://doi.org/10.1016/j.csr.2016.07.003, 2016.

Venancio, I. M., Mulitza, S., Govin, A., Santos, T. P., Lessa, D. O., Albuquerque, A. L. S., Chiessi, C. M., Tiedemann, R., Vahlenkamp, M., Bickert, T., and Schulz, M.: Millennial- to Orbital-Scale Responses of Western Equatorial Atlantic Thermocline Depth to Changes in the Trade Wind System Since the Last Interglacial, Paleoceanography and Paleoclimatology, 33, 1490–1507, https://doi.org/10.1029/2018PA003437, 2018.

Vergnaud-Grazzini, C. and Pierre, C.: High Fertility in the Alboran Sea Since the last Glacial Maximum, Paleoceanography, 6, 519–536, https://doi.org/10.1029/91PA00501, 1991.

Vernaleken, J.: Sedimentologische Untersuchungen spätquartärer glazialmariner Sedimente vom antarktischen Kontinentalhang vor Kapp Norvegia, Diploma Thesis, Geologisches Institut der Universität zu Köln/Alfred-Wegener-lnstitut für Polar- und Meeresforschung, Bremerhaven, 62 pp., 1999.

Vetoshkina, O. S., Lyyurov, S. V., and Byshnev, D. A.: Carbon and oxygen isotopic composition of Jurassic foraminifers in the Unzha River basin, Dokl. Earth Sci., 454, 21–24, https://doi.org/10.1134/S1028334X14010061, 2014.

Vidal, L., Labeyrie, L., Cortijo, E., Arnold, M., Duplessy, J. C., Michel, E., Becqué, S., and van Weering, T. C. E.: Evidence for changes in the North Atlantic Deep Water linked to meltwater surges during the Heinrich events, Earth Planet. Sc. Lett., 146, 13–27, https://doi.org/10.1016/S0012-821X(96)00192-6, 1997.

Vidal, L., Schneider, R. R., Marchal, O., Bickert, T., Stocker, T. F., and Wefer, G.: Link between the North and South Atlantic during the Heinrich events of the last glacial period, Clim. Dynam., 15, 909–919, https://doi.org/10.1007/s003820050321, 1999.

Vink, A., Rühlemann, C., Zonneveld, K. A. F., Mulitza, S., Hüls, M., and Willems, H.: Shifts in the position of the north equatorial current and rapid productivity changes in the western tropical Atlantic during the last glacial, Paleoceanography, 16, 479–490, https://doi.org/10.1029/2000PA000582, 2001.

Voelker, A., Leibro, S., Schönfeld, J., Cacho, I., Erlenkeuser, H., and Abrantes, F.: Mediterranean outflow strengthening during northern hemisphere coolings: A salt source for the glacial Atlantic?, Earth Planet. Sc. Lett., 245, 39–55, https://doi.org/10.1016/j.epsl.2006.03.014, 2006.

Voelker, A. H. L.: Zur Deutung der Dansgaard–Oeschger-Ereignisse in ultra-hochauflösenden Sedimentprofilen aus dem Europäischen Nordmeer, Berichte/Institut für Geowissenschaften, Christian-Albrechts-Universität Kiel, 9, Inst. für Geowissenschaften der Christian-Albrechts-Univ, Kiel, 271 pp., 1999.

Voelker, A. H. L. and de Abreu, L.: A Review of Abrupt Climate Change Events in the Northeastern Atlantic Ocean (Iberian Margin): Latitudinal, Longitudinal, and Vertical Gradients, in: Abrupt Climate Change: Mechanisms, Patterns, and Impacts, edited by: Rashid, H., Polyak, L., and Mosley-Thompson, E., American Geophysical Union, Washington, DC, 15–37, https://doi.org/10.1029/2010GM001021, 2011.

Voelker, A. H. L., Rodrigues, T., Billups, K., Oppo, D., McManus, J., Stein, R., Hefter, J., and Grimalt, J. O.: Variations in mid-latitude North Atlantic surface water properties during the mid-Brunhes (MIS 9–14) and their implications for the thermohaline circulation, Clim. Past, 6, 531–552, https://doi.org/10.5194/cp-6-531-2010, 2010.

Völpel, R., Paul, A., Krandick, A., Mulitza, S., and Schulz, M.: Stable water isotopes in the MITgcm, Geosci. Model Dev., 10, 3125–3144, https://doi.org/10.5194/gmd-10-3125-2017, 2017.

Völpel, R., Mulitza, S., Paul, A., Lynch-Stieglitz, J., and Schulz, M.: Water Mass Versus Sea Level Effects on Benthic Foraminiferal Oxygen Isotope Ratios in the Atlantic Ocean During the

LGM, Paleoceanography and Paleoclimatology, 34, 98–121, https://doi.org/10.1029/2018PA003359, 2019.

Voigt, I., Chiessi, C. M., Prange, M., Mulitza, S., Groeneveld, J., Varma, V., and Henrich, R.: Holocene shifts of the southern westerlies across the South Atlantic, Paleoceanography, 30, 39–51, https://doi.org/10.1002/2014PA002677, 2015.

Voigt, I., Cruz, A. P. S., Mulitza, S., Chiessi, C. M., Mackensen, A., Lippold, J., Antz, B., Zabel, M., Zhang, Y., Barbosa, C. F., and Tisserand, A. A.: Variability in mid-depth ventilation of the western Atlantic Ocean during the last deglaciation, Paleoceanography, 32, 948–965, https://doi.org/10.1002/2017PA003095, 2017.

von Rad, U., Schulz, H., Riech, V., den Dulk, M., Berner, U., and Sirocko, F.: Multiple monsoon-controlled breakdown of oxygen-minimum conditions during the past 30,000 years documented in laminated sediments off Pakistan, Palaeogeogr. Palaeocl., 152, 129–161, https://doi.org/10.1016/S0031-0182(99)00042-5, 1999.

von Rad, U., Sarnthein, M., Grootes, P. M., Doose-Rolinski, H., and Erbacher, J.: ^{14}C Ages of a Varved Last Glacial Maximum Section Off Pakistan, Radiocarbon, 45, 467–477, https://doi.org/10.1017/S0033822200032811, 2003.

Waddell, L. M., Hendy, I. L., Moore, T. C., and Lyle, M. W.: Ventilation of the abyssal Southern Ocean during the late Neogene: A new perspective from the subantarctic Pacific, Paleoceanography, 24, 1769, https://doi.org/10.1029/2008PA001661, 2009.

Waelbroeck, C., Duplessy, J. C., Michel, E., Labeyrie, L., Paillard, D., and Duprat, J.: The timing of the last deglaciation in North Atlantic climate records, Nature, 412, 724–727, https://doi.org/10.1038/35089060, 2001.

Waelbroeck, C., Labeyrie, L., Michel, E., Duplessy, J. C., McManus, J. F., Lambeck, K., Balbon, E., and Labracherie, M.: Sea-level and deep water temperature changes derived from benthic foraminifera isotopic records, Quaternary Sci. Rev., 21, 295–305, https://doi.org/10.1016/S0277-3791(01)00101-9, 2002.

Waelbroeck, C., Levi, C., Duplessy, J., Labeyrie, L., Michel, E., Cortijo, E., Bassinot, F., and Guichard, F.: Distant origin of circulation changes in the Indian Ocean during the last deglaciation, Earth Planet. Sc. Lett., 243, 244–251, https://doi.org/10.1016/j.epsl.2005.12.031, 2006.

Waelbroeck, C., Skinner, L. C., Labeyrie, L., Duplessy, J.-C., Michel, E., Vazquez Riveiros, N., Gherardi, J.-M., and Dewilde, F.: The timing of deglacial circulation changes in the Atlantic, Paleoceanography, 26, PA3213, https://doi.org/10.1029/2010PA002007, 2011.

Waelbroeck, C., Lougheed, B. C., Vazquez Riveiros, N., Missiaen, L., Pedro, J., Dokken, T., Hajdas, I., Wacker, L., Abbott, P., Dumoulin, J.-P., Thil, F., Eynaud, F., Rossignol, L., Fersi, W., Albuquerque, A. L., Arz, H., Austin, W. E. N., Came, R., Carlson, A. E., Collins, J. A., Dennielou, B., Desprat, S., Dickson, A., Elliot, M., Farmer, C., Giraudeau, J., Gottschalk, J., Henderiks, J., Hughen, K., Jung, S., Knutz, P., Lebreiro, S., Lund, D. C., Lynch-Stieglitz, J., Malaizé, B., Marchitto, T., Martínez-Méndez, G., Mollenhauer, G., Naughton, F., Nave, S., Nürnberg, D., Oppo, D., Peck, V., Peeters, F. J. C., Penaud, A., Portilho-Ramos, R. d. C., Repschläger, J., Roberts, J., Rühlemann, C., Salgueiro, E., Sanchez Goni, M. F., Schönfeld, J., Scussolini, P., Skinner, L. C., Skonieczny, C., Thornalley, D., Toucanne, S., van Rooij, D., Vidal, L., Voelker, A. H. L., Wary, M., Weldeab, S., and Ziegler, M.: Consistently dated Atlantic sediment cores over the last 40 thousand years, Scientific Data, 6, 165, https://doi.org/10.1038/s41597-019-0173-8, 2019.

Wan, S. and Jian, Z.: Deep water exchanges between the South China Sea and the Pacific since the last glacial period, Paleoceanography, 29, 1162–1178, https://doi.org/10.1002/2013PA002578, 2014.

Wang, H., Lo Iacono, C., Wienberg, C., Titschack, J., and Hebbeln, D.: Cold-water coral mounds in the southern Alboran Sea (western Mediterranean Sea): Internal waves as an important driver for mound formation since the last deglaciation, Mar. Geol., 412, 1–18, https://doi.org/10.1016/j.margeo.2019.02.007, 2019.

Wang, L., Sarnthein, M., Erlenkeuser, H., Grimalt, J., Grootes, P., Heilig, S., Ivanova, E., Kienast, M., Pelejero, C., and Pflaumann, U.: East Asian monsoon climate during the Late Pleistocene: high-resolution sediment records from the South China Sea, Mar. Geol., 156, 245–284, https://doi.org/10.1016/S0025-3227(98)00182-0, 1999a.

Wang, L., Sarnthein, M., Grootes, P. M., and Erlenkeuser, H.: Millennial reoccurrence of century-scale abrupt events of East Asian Monsoon: A possible heat conveyor for the global deglaciation, Paleoceanography, 14, 725–731, https://doi.org/10.1029/1999PA900028, 1999b.

Wang, P., Li, Q., Tian, J., He, J., Jian, Z., Ma, W., and Dang, H.: Monsoon influence on planktic δ^{18}O records from the South China Sea, Quaternary Sci. Rev., 142, 26–39, https://doi.org/10.1016/j.quascirev.2016.04.009, 2016.

Wang, Y. V., Leduc, G., Regenberg, M., Andersen, N., Larsen, T., Blanz, T., and Schneider, R. R.: Northern and southern hemisphere controls on seasonal sea surface temperatures in the Indian Ocean during the last deglaciation, Paleoceanography, 28, 619–632, https://doi.org/10.1002/palo.20053, 2013a.

Wang, Y. V., Larsen, T., Leduc, G., Andersen, N., Blanz, T., and Schneider, R. R.: What does leaf wax δD from a mixed C_3/C_4 vegetation region tell us?, Geochim. Cosmochim. Ac., 111, 128–139, https://doi.org/10.1016/j.gca.2012.10.016, 2013b.

Weaver, P. P. E., Carter, L., and Neil, H. L.: Response of surface water masses and circulation to Late Quaternary climate change east of New Zealand, Paleoceanography, 13, 70–83, https://doi.org/10.1029/97PA02982, 1998.

Weber, M.: Spätquartäre Sedimentation am Kontinentalrand des südöstlichen Weddellmeeres, Antarktis, Berichte zur Polarforschung, 109, Alfred-Wegener-Inst. für Polar- und Meeresforschung, Bremerhaven, 165 pp., 1992.

Weber, M. E.: Quantitative Ableitung sedimentphysikalischer Parameter mit Hilfe eines Multi-Sensor Core Loggers – neue Wege in der Analytik mariner Sedimente, Z. Angew. Geol., 43, 144–153, 1997.

Weber, M. E., Bonani, G., and Fütterer, K. D.: Sedimentation processes within channel-ridge systems, southeastern Weddell Sea, Antarctica, Paleoceanography, 9, 1027–1048, https://doi.org/10.1029/94PA01443, 1994.

Wefer, G., Berger, W. H., Bickert, T., Donner, B., Fischer, G., Mücke, S. K. von, Meinecke, G., Müller, P. J., Mulitza, S., Niebler, H.-S., Pätzold, J., Schmidt, H., Schneider, R. R., and Segl, M.: Late Quaternary Surface Circulation of the South Atlantic: The Stable Isotope Record and Implications for Heat Transport and Productivity, in: The South Atlantic: Present and Past Circulation, Springer Berlin Heidelberg, Berlin, Heidelberg, 461–502, https://doi.org/10.1007/978-3-642-80353-6_25, 1996.

Wei, G.-J., Huang, C.-Y., Wang, C.-C., Lee, M.-Y., and Wei, K.-Y.: High-resolution benthic foraminifer δ^{13}C records in the South China Sea during the last 150 ka, Mar. Geol., 232, 227–235, https://doi.org/10.1016/j.margeo.2006.08.005, 2006.

Weinelt, M.: Veränderungen der Oberflächenzirkulation im Europäischen Nordmeer während der letzten 60 000 Jahre: Hinweise aus stabilen Isotopen, Berichte aus dem Sonderforschungsbereich 313, Veränderungen der Umwelt – Der Nördliche Nordatlantik, 41, Sonderforschungsbereich 313, Kiel, Germany, 106 pp., 1993.

Weinelt, M. and Sarnthein, M.: Stable isotope analysis on sediment core GIK15666-6, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.97105, 2003a.

Weinelt, M. and Sarnthein, M.: Stable isotope analysis on sediment core GIK15670-5, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.97106, 2003b.

Weldeab, S., Emeis, K.-C., Hemleben, C., Schmiedl, G., and Schulz, H.: Spatial productivity variations during formation of sapropels S5 and S6 in the Mediterranean Sea: evidence from Ba contents, Palaeogeogr. Palaeocl., 191, 169–190, https://doi.org/10.1016/S0031-0182(02)00711-3, 2003.

Weldeab, S., Schneider, R. R., Kölling, M., and Wefer, G.: Holocene African droughts relate to eastern equatorial Atlantic cooling, Paleoceanography, 33, 981, https://doi.org/10.1130/G21874.1, 2005.

Weldeab, S., Lea, D. W., Schneider, R. R., and Andersen, N.: 155,000 years of West African monsoon and ocean thermal evolution, Science, 316, 1303–1307, https://doi.org/10.1126/science.1140461, 2007.

Weldeab, S., Friedrich, T., Timmermann, A., and Schneider, R. R.: Strong middepth warming and weak radiocarbon imprints in the equatorial Atlantic during Heinrich 1 and Younger Dryas, Paleoceanography, 31, 1070–1082, https://doi.org/10.1002/2016PA002957, 2016.

Weldeab, S., Rühlemann, C., Bookhagen, B., Pausata, F. S. R., and Perez-Lua, F. M.: Enhanced Himalayan Glacial Melting During YD and H1 Recorded in the Northern Bay of Bengal, Geochem. Geophy. Geosy., 149, 51, https://doi.org/10.1029/2018GC008065, 2019.

Wells, P., Wells, G., Cali, J., and Chivas, A.: Response of deep-sea benthic foraminifera to Late Quaternary climate changes, southeast Indian Ocean, offshore Western Australia, Mar. Micropaleontol., 23, 185–229, https://doi.org/10.1016/0377-8398(94)90013-2, 1994.

Werner, K., Müller, J., Husum, K., Spielhagen, R. F., Kandiano, E. S., and Polyak, L.: Holocene sea subsurface and surface water masses in the Fram Strait – Comparisons of temperature and sea–ice reconstructions, Quaternary Sci. Rev., 147, 194–209, https://doi.org/10.1016/j.quascirev.2015.09.007, 2016.

Williams, C., Flower, B. P., Hastings, D. W., Guilderson, T. P., Quinn, K. A., and Goddard, E. A.: Deglacial abrupt climate change in the Atlantic Warm Pool: A Gulf of Mexico perspective, Paleoceanography, 25, PA4221, https://doi.org/10.1029/2010PA001928, 2010.

Winkelmann, D., Schäfer, C., Stein, R., and Mackensen, A.: Terrigenous events and climate history of the Sophia Basin, Arctic Ocean, Geochem. Geophy. Geosy., 9, Q07023, https://doi.org/10.1029/2008GC002038, 2008.

Winn, K.: Carbon and oxygen isotope measurements on *Globigerinoides ruber* (w) and *Cibicides wuellerstorfi*, organic carbon and dry density in equatorial Pacific sediment core SO12-98, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.802163, 2012.

Winn, K.: Carbon and oxygen isotope measurements on *Globigerina bulloides* and *Cibicides wuellerstorfi*, carbonate and organic carbon contents in core Q 208, Bounty Trough, Southwest Pacific, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.811792, 2013a.

Winn, K.: Carbon and oxygen isotope measurements on *Globigerinoides ruber* (white) and *Cibicides wuellerstorfi* in core GIK17790-3 from the Sala Y Gomez Volcanic Chain east of Easter Island, subtropical South Pacific, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.816484, 2013b.

Winn, K.: Carbon and oxygen isotope measurements on *Globigerinoides ruber* (white) and *Cibicides wuellerstorfi* in core GIK17795-2 located just west of the EPR to the west of Easter Island, subtropical South Pacific, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.817696, 2013c.

Winn, K.: Carbon and oxygen isotope measurements on *Globigerinoides ruber* (white) and *Cibicides wuellerstorfi* in core GIK17812-1 located west of the EPR, subtropical South Pacific, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.817727, 2013d.

Winn, K.: Carbon and oxygen isotope measurements on *Globorotalia inflata*, *Globigerinoides ruber* white, *Cibicides wuellerstorfi* (sinistral and dextral) in southeast Pacific core SO65-5KL, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.811695, 2013e.

Winn, K.: Carbon and oxygen isotope measurements on *Globorotalia inflata*, *Globigerinoides ruber* white, *Cibicides wuellerstorfi* (sinistral and dextral) in southeast Pacific core SO65-6 KG, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.811699, 2013f.

Winn, K.: Carbon and oxygen isotope ratios on planktonic foraminifera in subtropical Southeast Pacific core GIK17747-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.815874, 2013g.

Winn, K.: Carbon and oxygen isotope ratios on planktonic foraminifera in subtropical Southeast Pacific core GIK17747-2, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.815877, 2013h.

Winn, K.: Density, carbon and stable isotope ratios of foraminifera from sediment core SO35-272, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.806902, 2013i.

Winn, K.: Stable isotope ratios from sediment core SO135_03GKG, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.830284, 2014a.

Winn, K.: Stable isotope ratios from sediment core SO135_04SL, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.830285, 2014b.

Winn, K.: Stable isotope ratios from sediment core SO135_05GKG, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.830377, 2014c.

Winn, K.: Stable isotope ratios of foraminifera in sediment core PS1458-1 from Maud Rise, Southern Ocean, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.834969, 2014d.

Winn, K.: Stable isotope ratios of foraminifera in sediment core PS1458-2 from Maud Rise, Southern Ocean, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.834971, 2014e.

Winn, K.: Stable isotope ratios on sediment core GIK16115-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.831347, 2014f.

Winn, K.: Stable isotope ratios on planktonic and benthic foraminifera in sediment core U306 from the Manihiki Plateau, tropical Southwest Pacific, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.859006, 2016.

Winn, K. and Fenner, J. M.: Carbon and oxygen isotope measurements on *Cibicides wuellerstorfi*, *C. kullenbergi* and *Uvigerina peregrina* in core Q859, Bounty Trough, Southwest Pacific, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.811794, 2013a.

Winn, K. and Fenner, J. M.: Carbon and oxygen isotope measurements on *Cibicides wuellerstorfi*, *C. kullenbergi* and *Uvigerina peregrina* in core Q861, Bounty Trough, Southwest Pacific, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.811797, 2013b.

Winn, K. and Sarnthein, M.: Stable isotopes of sediment core GIK17055, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.323484, 1991.

Winn, K., Wiedicke, M., and Erlenkeuser, H.: Stable isotope stratigraphy, paleoproductivity and sedimentation rates in the South Lau and North Fiji Basins, Southwest Pacific, Geologisches Jahrbuch Reihe D, 231–253, 1990.

Winn, K., Sarnthein, M., and Erlenkeuser, H.: δ^{18}O Stratigraphy and Chronology of Kiel Sediment Cores from the East Atlantic, Geologisch–Paläontologisches Institut und Museum, Christian-Albrechts-Universität, Kiel, https://doi.org/10.2312/REPORTS-GPI.1991.45, 1991.

Wolf-Gladrow, D. A., Bijma, J., and Zeebe, R. E.: Model simulation of the carbonate chemistry in the microenvironment of symbiont bearing foraminifera, Mar. Chem., 64, 181–198, https://doi.org/10.1016/S0304-4203(98)00074-7, 1999.

Wolff, T.: Mixed layer characteristics in the equatorial Atlantic during the late quaternary as deduced from planktonic foraminifera, Berichte aus dem Fachbereich Geowissenschaften der Universität Bremen, 125, Fachbereich Geowiss. der Univ. Bremen, Bremen, 132 pp., 1998.

Wollenburg, J. E., Kuhnt, W., and Mackensen, A.: Changes in Arctic Ocean paleoproductivity and hydrography during the last 145 kyr: The benthic foraminiferal record, Paleoceanography, 16, 65–77, https://doi.org/10.1029/1999PA000454, 2001.

Wu, G., Herguera, J. C., and Berger, W. H.: Differential dissolution: Modification of Late Pleistocene oxygen isotope records in the western equatorial Pacific, Paleoceanography, 5, 581–594, https://doi.org/10.1029/PA005i004p00581, 1990.

Yu, J., Elderfield, H., and Hönisch, B.: B/Ca in planktonic foraminifera as a proxy for surface seawater pH, Paleoceanography, 22, 1077, https://doi.org/10.1029/2006PA001347, 2007.

Yu, J., Broecker, W. S., Elderfield, H., Jin, Z., McManus, J., and Zhang, F.: Loss of carbon from the deep sea since the Last Glacial Maximum, Science, 330, 1084–1087, https://doi.org/10.1126/science.1193221, 2010.

Zahn, R., Winn, K., and Sarnthein, M.: Benthic foraminiferal δ^{13}C and accumulation rates of organic carbon: *Uvigerina peregrina* group and *Cibicidoides wuellerstorfi*, Paleoceanography, 1, 27–42, https://doi.org/10.1029/PA001i001p00027, 1986.

Zahn, R., Sarnthein, M., and Erlenkeuser, H.: Benthic isotope evidence for changes of the Mediterranean outflow during the Late Quaternary, Paleoceanography, 2, 543–559, https://doi.org/10.1029/PA002i006p00543, 1987.

Zahn, R., Pedersen, T. F., Bornhold, B. D., and Mix, A. C.: Water Mass Conversion in the Glacial Subarctic Pacific (54° N, 148° W): Physical Constraints and the Benthic–Planktonic Stable Isotope Record, Paleoceanography, 6, 543–560, https://doi.org/10.1029/91PA01327, 1991.

Zahn, R., Schönfeld, J., Kudrass, H.-R., Park, M.-H., Erlenkeuser, H., and Grootes, P.: Thermohaline instability in the North Atlantic during meltwater events: Stable isotope and ice-rafted detritus records from Core SO75-26KL, Portuguese Margin, Paleoceanography, 12, 696–710, https://doi.org/10.1029/97pa00581, 1997.

Zahn-Knoll, R.: Spätquartäre Entwicklung von Küstenauftrieb und Tiefenwasserzirkulation im Nordost-Atlantik: Rekonstruktion anhand stabiler Isotope kalkschaliger Foraminiferen, PhD thesis, Kiel, Germany, 111 pp., 1986.

Zahn-Knoll, R. and Sarnthein, M.: Stable isotope analysis on sediment core GIK15637-1, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.106213, 2003.

Zaragosi, S., Bourillet, J.-F., Eynaud, F., Toucanne, S., Denhard, B., van Toer, A., and Lanfumey, V.: The impact of the last European deglaciation on the deep-sea turbidite systems of the Celtic–Armorican margin (Bay of Biscay), Geo-Mar. Lett., 26, 317–329, https://doi.org/10.1007/s00367-006-0048-9, 2006.

Zarrieß, M.: Primary productivity and ocean circulation changes on orbital and millennial timescales off Northwest Africa during the last glacial/interglacial cycle: Evidence from benthic foraminiferal assemblages, stable carbon and oxygen isotopes and Mg/Ca paleothermometry, PhD thesis, Fachbereich Geowissenschaften, Universität Bremen, Bremen, Germany, 120 pp., 2010.

Zarrieß, M. and Mackensen, A.: The tropical rainbelt and productivity changes off northwest Africa: A 31,000-year high-resolution record, Mar. Micropaleontol., 76, 76–91, https://doi.org/10.1016/j.marmicro.2010.06.001, 2010.

Zarrieß, M., Johnstone, H., Prange, M., Steph, S., Groeneveld, J., Mulitza, S., and Mackensen, A.: Bipolar seesaw in the northeastern tropical Atlantic during Heinrich stadials, Geophys. Res. Lett., 38, L04706, https://doi.org/10.1029/2010GL046070, 2011.

Zhang, Y., Chiessi, C. M., Mulitza, S., Zabel, M., Trindade, R. I. F., Hollanda, M. H. B. M., Dantas, E. L., Govin, A., Tiedemann, R., and Wefer, G.: Origin of increased terrigenous supply to the NE South American continental margin during Heinrich Stadial 1 and the Younger Dryas, Earth Planet. Sc. Lett., 432, 493–500, https://doi.org/10.1016/j.epsl.2015.09.054, 2015.

Zheng, Y., van Geen, A., Anderson, R. F., Gardner, J. V., and Dean, W. E.: Intensification of the Northeast Pacific oxygen minimum zone during the Bölling–Alleröd Warm Period, Paleoceanography, 15, 528–536, https://doi.org/10.1029/1999PA000473, 2000.

Zheng, Y., Anderson, R. F., Froelich, P. N., Beck, W., McNichol, A. P., and Guilderson, T.: Challenges in Radiocarbon Dating Organic Carbon in Opal-Rich Marine Sediments, Radiocarbon, 44, 123–136, https://doi.org/10.1017/S0033822200064729, 2002.

Ziegler, M., Nürnberg, D., Karas, C., Tiedemann, R., and Lourens, L. J.: Persistent summer expansion of the Atlantic Warm Pool during glacial abrupt cold events, Nat. Geosci., 1, 601–605, https://doi.org/10.1038/ngeo277, 2008.

Zimmermann, R.: Spätquartäre Geschichte der Oberflächenstratifizierung im Golf von Guinea anhand des Schwerelotkernes GeoB 4905-4, Bachelorarbeit, Fachbereich Geowissenschaften, Universität Bremen, Bremen, 2013.

Znaidi-Rivault, J.: Les grands evenments climatiques du Quaternaire recent en Mediterranee Orientale: La reponse sedimentaire, microfaunique et isotopique, PhD Thesis, University of Paris, 1982.

Znaidi-Rivault, J.: Stable isotopes of sediment core 3MO67, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.407872, 2006a.

Znaidi-Rivault, J.: Stable isotopes of sediment core 75KS23, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.407874, 2006b.

Znaidi-Rivault, J.: Stable isotopes of sediment core 75KS5, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.407878, 2006c.

Znaidi-Rivault, J.: Stable isotopes of sediment core 75KS50, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.407877, 2006d.

Znaidi-Rivault, J.: Stable isotopes of sediment core 75KS76, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.407879, 2006e.

Znaidi-Rivault, J.: Stable isotopes of sediment core 75KS79, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.407880, 2006f.

Znaidi-Rivault, J.: Stable isotopes of sediment core CS70-5, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.407881, 2006g.

Znaidi-Rivault, J.: Stable isotopes of sediment core MD84-629, PANGAEA [data set], https://doi.org/10.1594/PANGAEA.407885, 2006h.