were carried by surface currents, perhaps associated with Gulf Stream eddies that may have strengthened during the Mi-1 glaciation event.

Globigerinoides ruber (w) morpho-specific response on past SSS and SST changes inferred from stable isotopes and geochemical proxies (Mg/Ca, Ba/Ca): A Gulf of Mexico Perspective

G. Kontakiotis[1]*, A. Antonarakou[1], P.G. Mortyn[2,3] & H. Drinia[1]
[1]Faculty of Geology & Geoenvironment, Department of Historical Geology-Palaeontology, National & Kapodistrian University of Athens, Panepistimiopolis, Zografou, 15784, Greece
[2]Institute of Environmental Science and Technology (ICTA),Universitat Autçnoma de Barcelona (UAB), Edifici Cn - Campus UAB, Bellaterra 08193, Spain
[3]Department of Geography, Universitat Autçnoma de Barcelona (UAB), Spain
*gkontak@geol.uoa.gr

Globigerinoides ruber (w) morphotypes have been shown to pose distinct $\delta^{18}O$ and Mg/Ca compositions. Application of this information to the sediment core JPC-26 in the Gulf of Mexico (GOM) shows the differential response of *G. ruber* sensu stricto (s.s) and *G. ruber* sensu lato (s.l.) during the last 21 kyr_{cal} B.P., regarding to changes in sea surface temperature (SST) and salinity (SSS).

For palaeotemperature reconstructions we measured Mg/Ca ratios on both morphotypes, with the difference in Mg/Ca-Ts (ΔT) of the "surface morphotype" and the "mixed layer morphotype" to be indicative of the upper water column stratification. For palaeosalinity reconstructions, we present a $\delta^{18}O_{SEA\ WATER}$ ($\delta^{18}O_{SW}$) record, reconstructed from Mg/Ca ratios and $\delta^{18}O$ measurements. Moreover, we also measured Ba/Ca ratios in *G. ruber* s.s. and *G. ruber* s.l., as a proxy for North American riverine discharge. Overall, the reconstructed SST and SSS patterns reveal notable amplitude variations between the two morphotypes, adding valuable insights to previously published *G. ruber* (w, mixed) GOM records. Especially during the deglacial GOM meltwater flooding events (GOMs), the sea surface freshening seems to be more pronounced than the SST reduction. The comparison between the two morphotypes also shows that Ba/Ca and $\delta^{18}O_{SW}$ of *G. ruber* s.l. appears to be more sensitive to river water influence, which potentially makes the s.l. morhotypes more opportunistic than the s.s. morphotypes during the largest low-salinity Mississippi flooding events.

Late Quaternary palaeoenvironmental reconstruction of South Evoikos Gulf (east – central Aegean Sea) by benthic foraminiferal assemblages

M-A. Louvaria*, H. Driniaa, Th. Tsouroua & G. Anastasakisa
Faculty of Geology & Geoenvironment, Department of Historical Geology – Palaeontology, National & Kapodistrian University of Athens, Panepistimiopolis, Zografou, 15784, Greece
*melinaluvari@geol.uoa.gr

The present study is aiming to track the palaeoenvironmental evolution of South Evoikos Gulf during the Holocene, utilizing benthic foraminifera microfauna. South Evoikos Gulf constitutes a shallow epicontinental basin, at the northern prolongation of the Cycladic Platform (Western Aegean Sea, East – Central Greece). The gulf is divided into two sub-basins: a southern deeper basin with a maximum depth of 160 m and a northern shallow one where water depth ranges from 20 to 70 m. The study area is located at the latter. A gravity core of 150 cm total length which sedimentary record covers the last 13540+/-50 cal yr BP, was retrieved from 75.5 m water depth and a benthic foraminiferal analysis was

carried out on 88 samples. Relative abundances, cluster analyses, and faunal parameters, such as diversity indices, were performed in order to recognize significant variations in the assemblages and to trace the local palaeoenviromental conditions. The environmental interpretation of the results from the benthic foraminiferal analysis present strong evidence that a restricted, quite shallow, less than 30m deep, oligohaline lagoon was formed sometime before 13540 cal yr BP which maintained until 11065 cal yr BP. Subsequently, during the Holocene, an unrestricted communication with the sea was established and a marine coastal environment was formed.

A Diatom Record of Oceanographic and Sea Ice Variability from the Amundsen Sea

F.L. Mitchison[1], J.A. Smith[2], C.S. Allen[2], C.-D. Hillenbrand[2] & H. Blagborough[2]
[1]*School of Earth & Ocean Sciences, Cardiff University, UK*
[2]*The British Antarctic Survey, Cambridge, UK*

Accelerated melting of ice-streams terminating in the Amundsen Sea Embayment over recent decades, with consequences for global sea level, has directed attention towards the cause(s) of these changes. The upwelling of relatively warm circumpolar deep water (CDW) has been implicated in increased basal melting, yet the long-term variability of regional ocean forcing and related sea ice dynamics remain poorly constrained. Using material from three mid-shelf sediment cores, this study presents a diatom assemblage record of surface water and sea-ice conditions since deglaciation of the embayment c. 14 ka. Multivariate statistical analyses (principal component analysis and cluster analysis) reveal three relatively distinct floral assemblages. Intense water column stratification is inferred during the late Pleistocene (c. 14-11 ka), followed by evidence of significant glacial meltwater production and increased deep-water influx in the early Holocene (c. 11-7 ka). A shift towards assemblages dominated by sea-ice associated taxa at c.7 ka suggests increased sea-ice presence since this time, with the decline of the late summer species *Thalassiosira antarctica* implying a shorter growing season from c. 3 ka. However, continuous diatom sedimentation and the sporadic occurrence of CDW-proxy species *Fragilariopsis kerguelensis,* particularly in the eastern sector, indicates that the influx of warm water was sufficient to sustain a seasonally productive water column throughout the record despite the southerly latitude and increased sea-ice coverage of the mid and late Holocene.

Two case studies in evolution: *Turborotalia* and *Hantkenina* (Eocene planktonic foraminifera)

Paul N. Pearson[1], Thomas H. G. Ezard[2] & Helen K. Coxall[1,3]
[1]*School of Earth & Ocean Sciences, Cardiff University,* UK. pearsonp@cardiff.ac.uk
[2]*Centre for Biological Sciences, University of Southampton,* UK. t.ezard@soton.ac.uk
[3]*Department of Geological Sciences, Stockholm University,* UK. helen.coxall@geo.su.se

The fossil record of planktonic foraminifera (marine protists with calcite tests) is remarkably complete. A species can be continuously present in deep-sea cores in high abundance across millions of years – all the way from its first to last global appearance. We can address questions of speciation, evolution, and extinction that in other fossil groups are difficult because of incompleteness and sampling bias. As well as scientific opportunities, the record also forces us to confront some basic issues of terminology and methodology. What do we mean by completeness and continuity of record? If all in nature is flux, what do we mean by recognizing 'species' or 'lineages' as entities that persist through time? These themes are illustrated by two recently published case studies from the Eocene. In the first example, the