

course in close proximity to the lake in the early 1990s. This preliminary study confirms that thecamoebians have considerable potential as indicators of eutrophication in lakes and can provide an estimate of baseline conditions.

GLACIAL HISTORY ALONG AN ARIDITY TRANSECT IN THE PAMIR MOUNTAINS BASED ON ^{10}Be SURFACE EXPOSURE DATING

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The reconstruction of past climate changes in the Pamir Mountains has high potential for identifying the dynamics of circulation systems in Asia and for understanding global environmental changes during the Late Quaternary. The Pamir Mountains are situated in a climatic transition zone between mid-latitude westerlies, the Indian summer monsoon and the Siberian High. Today main moisture to the Pamir comes with SW- cyclones along the westerly jetstream whereas the influence of the Indian monsoon typically ends south of the NW-Himalaya. Up to now the impact of the Indian monsoon on former glaciations of the Pamir Mountains has not yet been adequately examined. Even chronological information about former glaciations in the Pamir is still sparse. The objectives of our study are: To upgrade the present glacial chronology by dating glacial successions along a moisture gradient from the north-western to the southern Pamir Mountain ranges. We present preliminary ^{10}Be ages from moraine successions of three study sites (Iskenderkul area, Muksu-Kyslsu area, Alichur area). Our first results from the southern Pamir (Alichur area) corroborate and refine previously published findings: Extensive glaciation occurred during MIS 4 and during MIS 2. However our data indicate that glaciers in the southern Pamir also advanced during ~50 to 40 ka. Rapid deglaciation occurred after ~18 ka. So far there is no evidence for glacier advances during the Holocene. Overall, we conclude that the glacial chronology of the Pamir seems to be mainly controlled by temperature, with maxima during ~70 to 60 ka, ~50 to 40 ka and ~20 ka. Because during climatic cold phases the Indian Monsoon was weakened we assume that glacier advances in the Pamir Mountains during the Last Glacial cycle were mainly triggered by westerly moisture supply. Analyses of further samples, from both the Muksu-Kyslsu area and the Iskenderkul area are in progress.

THE '4.2 KYR EVENT' IN THE BRITISH ISLES: EVIDENCE FOR AN ABRUPT CLIMATE EVENT IN THE NORTH ATLANTIC?

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Palaeoenvironmental and archaeological data from several regions around the world show evidence of a multi-centennial climatic event occurring approximately 4.2 cal. kyr BP. Abrupt climate change events (ACCs) in the early-Holocene were dominated by meltwater pulse events associated with the final stages of deglaciation, a mechanism unlikely to have driven subsequent ACCs in the mid- and late-Holocene. A study of the '4.2 kyr event' therefore provides an opportunity to study ACCs in the context of comparable environmental conditions to those of the modern day, thus providing valuable lessons for the future. Whilst the climatic change and/or impact of the 4.2 kyr event is clear in certain regions (such as southwest Asia), more work must be done to disentangle the timing and magnitude of change at this time in other regions, including northwest Europe. A more comprehensive reconstruction of the event's spatial and temporal variability will help determine the likely drivers of this event. Here we present the results of a multi-proxy examination of a peat sequence from Sluggan Moss, Northern Ireland. A range of palaeohydrological proxy analyses have been undertaken, including: humification, plant macrofossil and testate amoebae analyses. Furthermore, stable isotopic analysis (^{13}C and ^{18}O) of Sphagnum-cellulose presents an opportunity to examine changes in atmospheric circulation across the 4.2 kyr event. The chronological resolution on the sequence is exceptionally high, providing an excellent opportunity to determine the synchronicity of the climatic signal across the North Atlantic region around 4.2 cal. kyr BP.

HEIDELBERG BASIN DRILLING PROJECT: A WINDOW TO THE PLIO-/PLEISTOCENE ENVIRONMENTAL HISTORY OF THE UPPER RHINE GRABEN (MAGNETOSTRATIGRAPHY, ENVIRONMENTAL MAGNETISM)

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Fluvial sediments especially from large streams with almost continent-wide catchments reflect sensitively the response of continental ecosystems to climate change. During the late Plio-/ Pleistocene several hundred meter of fluvial clastics have been accumulated in the vicinity of Heidelberg (northern Upper Rhine Graben). The Heidelberg Basin was fed not only by material eroded from the nearby highlands and by important regional tributaries, but essentially also by sediments from the alpine catchment of the Rhine. The composition of the sediments therefore reflects the onset of the alpine glaciation and the glacial history of the Alps, too.

The 300 m deep borehole Ludwigshafen-Parkinsel (P34) - one of several cores from the Heidelberg basin which were recovered from groundwater exploration - comprises Plio-/ Pleistocene fluvial sediments. Heavy mineral analyses and rock magnetic proxies show a clearly structured profile. Heavy mineral data evidence a change from a mainly locally controlled sediment input from the Rhine Graben margins to a more distinct alpine controlled sedimentation at a depth of 177 m. At the same depth, rock magnetic proxies revealed a change from hard magnetic minerals (goethite) to soft magnetic minerals (greigite). Based on lithostratigraphic correlations with other sedimentary records from the Rhine Graben, this event must have happened at the end of Late Pliocene, during a normal polarity interval of the Earth's magnetic field (Gauss Chron?). The results encouraged us to drill a 500 m deep borehole directly at the depocenter (Heidelberger Loch), where one of the most complete Plio-/ Pleistocene sediment successions for Europe was deposited. In the frame of the interdisciplinary Heidelberg Basin drilling project a high-resolution magnetostratigraphic and environmental magnetic study will be performed to obtain a chronostratigraphic framework and to reconstruct the regional palaeoclimate during the Plio-/ Pleistocene.

MAIN FEATURES OF CENDRES CAVE HARPOONS (TEULADA-MORAIRA, VALENCIAN COUNTRY)

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The harpoons in the Iberian Mediterranean coast are not very abundant. Cendres cave is the site where more pieces were recovered. In this poster we present the 19 harpoons from Upper Magdalenian levels of this site and the valuation of its main morphometric patterns. Also, several radiocarbon dates obtained in the last years allows us to know their position within the Magdalenian sequence.

The data obtained showed that the harpoons of the Iberian Mediterranean coast have some differences with those existing in the north of the Iberian Peninsula, the northern Catalonia and southern France.

FIRE WALK WITH ME. HUMAN INDUCED FIRE ACTIVITY IN THE MONTAFON VALLEY (NORTHERN ALPS, AUSTRIA) - A GEOARCHAEOLOGICAL APPROACH

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The control of fire played an important role in the course of human evolution. Its intentional use for wood land clearances, warmth, cooking or pyrotechnology (production of pottery, plaster, metals, glass etc.) leaves various marks on the geoarchaeological and archaeological record (Berna and Goldberg 2008, Brown et al., 2010). This study was motivated by the observation that at the Bartholomäberg in the Montafon Valley fire was used frequently for different purposes: wood land clearances, maintaining ecotones and settlement- and mining activity. Evidence from different settings such as colluvial soils rich in charcoal, occupation layers, fire- and smithing places and burnt pits from Early Bronze Age to the late Middle Ages will be presented. Combined analyses from pedology,