ina thickness and stable isotope variability reflecting a change in the hydrology. The Early Holocene was characterized by higher rainfall and higher inter-annual variability, and complete flooding of the cave probably occurred several times during the year, thus promoting calcareous tufa deposition. In the Mid Holocene, both rainfall and inter-annual variability diminished. From ca. 4,900 cal yrs BP onwards a decrease in growth rate coincided with an increase in the degree of covariance between $\delta^{13}C$ and $\delta^{18}O$ and suggests a progressive lowering of the groundwater table, followed by the near-starvation of the flowstone that occurred soon after 4,500 cal yrs BP. In conclusion, the thickness of calcareous tufa annual laminae coupled with stable isotope analyses can be used as palaeo-hydrological indicators for regional scale aquifers.

0761

Abrupt climatic events during OIS-3 recorded in terrestrial sediments in NW Europe: a multi-proxy approach

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Abrupt climatic changes during Oxygen Isotope Stage 3 (OIS-3 or Weichselian Middle Pleniglacial) are revealed in the oxygen-isotope records of the Greenland ice-cores and in the North Atlantic marine-cores. In the Greenland ice-cores, these so-called D/O cycles start with a rapid warming of 5-10 degrees Celsius within a few decades, followed by a phase of gradual cooling over several hundred to more than a thousand years and often end with a final reduction in temperature back to cold, stadial conditions. On the adjacent European continent, however, climatic variability during this time interval is poorly known. High-resolution terrestrial records are scarce and the discontinuous nature of sedimentation and repeated erosion on the continent combined with poor dating control often hampers a detailed study of the vegetation and climate. In this contribution, shallow lacustrine sequences, intercalated with fluvial sediments or tills and dated to OIS-3, are presented from three different locations in NW Europe: 1. the opencast lignite mines Reichwalde and Nochten in eastern Germany, 2. Sourlie in Scotland, U.K., and 3. Sokli in Finland. Within these Middle Weichselian sequences, rapid warming events are assumed to have given rise to thaw-lake formation and deposition of organic-rich lacustrine sediments, while the extreme cooling events of the D/O cycles are probably represented in the sequences by clastic intervals during which frost fissures and frost wedges developed or even till was deposited. A high-resolution multi-proxy study of these sequences including botanical analyses (pollen and macrofossils, e.g. seeds/fruits, mosses etc.), zoological analyses (e.g. Coleoptera, Chironomidae, Cladocera, Bryozoa) and 14C and OSL dating allowed a detailed environmental reconstruction and quantification of the associated climate warming. Different approaches were applied and compared, i.e. the "climate indicator species method" was used for the botanical data, while the "transfer function approach" was applied on the zoological data. In all studied sequences, the botanical and zoological data give a similar temperature signal, i.e. showing relatively high mean July temperatures during the initial period of deposition, followed by a cooling of ca. 2-4 degrees Celsius and culminating in a return of permafrost conditions in the upper part of the sequences (i.e. eastern Germany) or overriding of the continental ice-sheet and final deposition of basal till (i.e. Sokli and Sourlie). The combined evidence suggests that the increased warming in response to a D/O event was a forcing factor for the formation of the lacustrine deposits.

0279

Does the glacial/interglacial sea-level changes modulate the atmospheric CO_2 variations?

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It is postulated the rate of the terrestrial organic carbon (OC) retention around the moving ocean/continent interface is strongly affected by the sea-level. Therefore it must be to large extent controlled by sea level changes resulting from the glacial-interglacial cyclicity. In order to assess the changes in the rate of OC immobilization in the coastal areas, the OC content must be integrated with sediment accumulation rates on shelves, in lagoons and estuaries. For this purpose we determined organic carbon content in several hundreds of samples taken from cored boreholes, which crossed the entire infill sequences of S. Iberian estuaries and represent the time span from ca 13000 yr calBP to present. These data were subsequently integrated into the sea-level/sediment accumulation curve during the postglacial times. The obtained figures indicate that until ca 7000 yr calBP, i.e. during the period of fast sea level rise, the organic carbon exported from the continent, accumulated at an average rate of 280 g/m^2/yr. In the Middle and Upper Holocene, when the rate of the sea level rise was not exceeding 25 cm/century the organic carbon accumulation rate dropped to an average value of 80 g/m^2/yr. From the other hand, the existing data on gas bubble composition in the Antarctic ice cores have shown that the atmospheric CO_2 concentration evolved during the last glacial/interglacial transition, from 180 ppmv minimum during the LGM to the 270 ppmv pre-industrial level. Considering that the terrestrial particulate organic matter is an essential fertilizer of the ocean, we postulate that enhanced burial of the particulate organic matter (POM) in the coastal areas during the period of fast postglacial sea level rise is responsible for decrease of primary productivity in the open ocean and may be in part at least responsible for the consequent transfer of 200 Gt of C in form of CO_2, to the atmosphere.

In order to prove the robustness of the above postulate it is necessary to accommodate in the appropriate (GCM+carbon?) models: (i) the data on the increased organic carbon burial in shelf/coastal sediments observed during the deglaciation (ii) the withdrawal of the trapped carbon from global biogeochemical cycling and its impact on biological productivity of the shelf and open ocean.

1292

Geohazard mapping on the continental margins of Italy: the MaGIC Project

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2007 is the first of the five-year Project MaGIC (Marine Geohazard along the Italian Coasts), funded by the Italian Civil Protection Department, aimed at extensive mapping and monitoring by means of multibeam bathymetry of most of the Italian continental margins. The main objective of the project is to produce a very large bathymetric database as well as a large number of 1:50000 maps of the geohazards present