backhoe at Piano di Pecore di Colliano, Salerno, southern Italy (44°44'N, 15°22'E). The trenching site is in a little intermontane basin, where a pond recurrently formed because of partial damming of the seasonal stream by faulting activity. Here, the sedimentary suite is faulted and warped by five quakes (including that of 1980), which were comparable in terms of vertical throw and deformation pattern. Chronological data for pre-1980 events, coupled with detailed stratigraphic analysis, yielded a slip rate of 0.4 mm/yr and a recurrence rate of 1700 yr.

RADIOCARBON RESULTS FOR THE BRITISH BEAKERS

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The beginning of the Bronze Age in the British Isles has traditionally been marked by the appearance, in the archaeological record, of Beaker assemblages, mainly characterized by the Beaker pottery form, itself. Ceramic typologies based on this style, undoubtedly continental in origin, have been used both for relative dating and as evidence of the social and economic developments of the period.

Systematic radiocarbon dating has been attempted for the continental European Beaker material (Lanting, Mook & van der Waals 1973), but no such program has been carried out on British material. An examination of the existing radiocarbon results for the British Beakers showed many to be flawed in some way, particularly in the use of materials, such as mature wood, where there is no *a priori* reason for assuming a direct relationship between sample death and context. An attempt has been made at the British Museum to test the validity of archaeologically derived chronologies for the Beaker pottery of the British Isles. This involved analysis of a group of carefully selected human bone from Beaker burials, where there is a known direct association between ceramic usage and the cessation of carbon exchange. Twenty such samples have been identified and measured. The results presented here, combined with the 15 previously produced, supposedly reliable determinations, show no relationship between pottery style and calendar date of deposition.

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^{14}C ACTIVITY AND ^{3}He CONTENT IN INTERSTITIAL WATERS FROM CORAL REEF: EVIDENCE FOR THE ENDO-UPWELLING CONCEPT

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In the central desert region of the tropical ocean, atolls constitute oases. The classical model of atoll functioning, based on horizontal exchanges between lagoon and oligotrophic oceanic surface water, is unable to balance nutrient budgets to account for high organic production. The geothermal endo-upwelling concept (Rougerie & Wauthy 1986) is based on a vertical ascent of deep-and rich-nutrient oceanic water, driven by geothermal heat flow through the atoll internal

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structure, supplying the nutrients to the reef building. The intermediate deep water in the Pacific is ^{14}C depleted, compared to the surface water, and also records the ^{3}He anomaly resulting from hydrothermal activity. These properties of intermediate waters may be recorded in the interstitial waters in the coral reef. We use the agreement between these two parameters to check the validity of the concept of geothermal endo-upwelling.

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EVALUATING DISSOLVED INORGANIC CARBON CYCLING IN A FORESTED LAKE WATERSHED USING CARBON ISOTOPES

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Dissolved inorganic carbon (DIC) is an important component of the alkalinity balance on freshwater systems. A comprehensive evaluation of DIC cycling is essential to predict the impact of anthropogenic activities, such as acid rain, on natural systems. In this paper, we will discuss isotopic and chemical data of soil CO_2 and DIC (groundwater, streams and lake water) samples taken in a forested lake watershed on the Precambrian Shield, Canada. Some of the main results of this ongoing research can be summarized as follows:

Soil CO_2 profiles show higher CO_2 concentrations during the summer months. The average $\delta^{13}C$ for the soil CO_2 is −22.0‰; groundwaters are characterized by a mean $\delta^{13}C$ of −23‰. This indicates that weathering of silicates is the main process responsible for the generation of alkalinity in this watershed. Groundwater in the middle part of the basin is characterized by ^{14}C activities in the range of 116 pMC to 120 pMC. These values are close to the atmospheric CO_2 during 1990. Lower ^{14}C activity (112 pMC) is observed in groundwater in the discharge areas. This suggests (assuming piston flow) that the mean residence time of groundwater from recharge to discharge areas is in the order of 30 years in this basin. Stream DIC in the middle part of the basin presents similar ^{14}C activities to those of groundwater; however, lower ^{14}C activities are observed in streams discharging into the lake. These data suggest the contribution of older water to the stream along the stream course. Carbon isotope and chemical data on lake water particulate organic carbon (POC) and dissolved organic carbon (DOC) will also be discussed.

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INVESTIGATING CARBON SOURCES FOR METHANE AND DISSOLVED ORGANIC CARBON IN A REGIONAL CONFINED AQUIFER USING ^{14}C

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Environmental isotopes (^{13}C, ^{2}H) have been widely used to investigate the origin of methane in subsurface systems. However, few investigations have used radiocarbon dating as a means of identifying carbon sources for methane (CH_4) and dissolved organic carbon (DOC) in groundwater. In this paper, we discuss ^{14}C data for CH_4 and DOC from groundwater samples taken from a regional Quaternary-age, confined aquifer located in southern Ontario. The potential carbon

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