

AMS  $^{14}\text{C}$  measurements of physically and chemically fractionated organic matter from sediments collected from the North Atlantic continental margin will be used to illustrate this approach to the study of carbon cycling in marine sediments.  $^{14}\text{C}$  data prove useful in distinguishing marine from terrestrial sources of sedimentary organic carbon, and in identification of the organic substrates from which pore-water DOC, DIC and  $\text{CH}_4$  are derived. A byproduct of this research is the identification of organic fractions most suitable for use in radiocarbon dating of sedimentary organic matter.

## **AUTOMATIC CALIBRATION OF RADIOCARBON DATES**

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A computer program for automatic calibration of radiocarbon dates has been developed at the Centre for Isotope Research (CIO) in Groningen. The program calculates the probability distribution along the calendar axis, based on the radiocarbon measurement and its standard deviation. The program can use any of the dendrochronological calibration sets as published in the literature, and has been distributed widely in the  $^{14}\text{C}$  community.

The program has been rebuilt extensively. From the main menu, one can select interactive calibrating, automatic calibrating, calibration averaging, spline calculations, smoothing, wiggle matching and special options. It is upgraded to Turbo-Pascal (version 5.0/5.5), and is working on XT and AT personal computers or true compatibles. Graphics supported are CGA, Hercules, EGA and VGA. For VGA, there is a color option. The calibration graphs can be dumped to a printer (Epson compatible) or color plotter (HP compatible).

The new Groningen program will be demonstrated during the conference.

## **A NEW DATA ACQUISITION SYSTEM FOR THE GRONINGEN COUNTERS**

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The Groningen proportional counter system consists of 11 counter systems: 3 for tritium and 8 for radiocarbon. Three of the  $^{14}\text{C}$  combined form the large high-precision counter; the small counter setup was decommissioned after the Chernobyl accident.

Until 1989, the data-acquisition system was based on an Apple microcomputer/PIA interface. This locally designed system is replaced by an XT-compatible PC with an IEEE-based interface system. The amplifiers and discriminator units were completely rebuilt. The same XT/IEEE processes additional data, such a temperature and pressure of the counter and the barometer reading.

The software is completely written in Turbo-Pascal. The program allows data entry from all the counters or from a subset; an on-line display shows – of all counters – the status, the GrN-number of the sample being measured and the most important channel counts. All data are stored on files which are coded by the date of the measurement and the counter number. This allows automatic processing/reporting and – in the near future – connections to outside programs such as, for example, the new Groningen data base.