Multicore Carbon and Nitrogen Profiles

Introduction

This document covers the carbon and nitrogen profiles obtained from multicorer samples presented in file MCCN. The cores were worked on by a group from Edinburgh University and much of the data are discussed in Brand and Shimmield (1991).

Sample Acquisition

The cores were obtained using a Duncan and Associates multicorer which could take up to 12 5.5cm core tubes, 20cm apart, distributed over an area of 1 m$^2$. The individual core tubes were based on the Craib Corer with tightly fitting caps at each end of the core tube which snapped into place as soon as the corer was lifted clear of the sediment.

The cores obtained typically consisted of 10cm to 30cm of sediment overlain by 10cm to 20cm of bottom water. Multicorers are designed to obtain samples with the sediment-water interface undisturbed. The cores obtained for this study had clear overlying bottom water and many fine scale features such as worm tubes, settled planktonic faecal and degradation matter and brittle stars on the sediment surface showing that undisturbed cores had, in fact, been obtained.

The cores were subsampled using a piston and screw jack mechanism fitted to the core barrel. In general, the top 1cm of the core was divided into 1mm sections, the next 1cm into 2mm sections, the next 8 cm into 5mm sections and the remainder into 1cm sections. Occasionally, alternative sampling schemes were used. The data include sufficient information to allow the precise sampling scheme for each core to be determined.

Analysis

Back in the laboratory, the sediment samples were dried at 50°C and water contents, porosities and salt-corrected dry bulk densities calculated. The dried samples were ground in a tungsten carbide Tema mill.

Initial carbonate was removed using sulphurous acid using a technique similar to Verado et al (1990). Organic carbon determinations were carried out on a Carlo Erba CNS 1500 Analyser. Replicates gave a standard error of 10%.

References
