

This document includes:

Biology/Phytoplankton/Phytoplankton taxonomy-related abundance per unit volume of seawater water (cell per mL)

SAMPLE COLLECTION

Phytoplankton community structure and abundance

Seawater samples are collected on a weekly basis (weather permitting) from a depth of 10m using a 10L Niskin bottle. A 200mL water sample is removed from the Niskin bottle and immediately preserved with 2% (final concentration) acid-Lugol's iodine solution (Thronsen, 1978). A second 200mL sub-sample is also collected and preserved with neutral formaldehyde (4% final concentration) for the preservation and enumeration of coccolithophores. Paired samples are labelled and stored in cool, dark conditions during transportation to the laboratory.

CALCULATIONS AND ANALYSIS

Phytoplankton and microplankton abundance

Samples are analysed at the Plymouth Marine Laboratory using the Utermöhl technique (Utermöhl, 1958) according to guidance procedures within "Water quality – Guidance standard for routine microscopic surveys of phytoplankton using inverted microscopy (Utermöhl technique)" (BS EN 15204:2006).

Samples are acclimatised to room temperature to ensure a random distribution of cells in the settlement chambers. Following cell re-suspension and separation (through gentle rotation of samples bottles in a figure-of-eight movement) a sub-sample volume of either 50 or 100 mL (depending on cell density) is transferred to a plankton settling chamber. Samples are settled for ca. 4 hours per cm and ca. 16 hours per cm for Lugol's iodine and formaldehyde samples, respectively. Cells are identified, where possible, to species level according to published literature and assigned to different functional groups: Phyto-flagellates, Diatoms, Coccolithophores, Phaeocystis, Autotrophic dinoflagellates, Heterotrophic dinoflagellates, Zoo-flagellates, Ciliates. Abundance of each species/taxa are calculated according to number per unit volume of sample (cells mL⁻¹). Cell length, width and depth (µm) of each species/taxa are estimated using digital measurements, calibrated against an ocular micrometer. Mean cell measurements for each species/taxa are converted to volume assuming appropriate geometric shapes e.g. sphere, ellipsoid, cone (e.g. Eppley et al., 1970; Menden-Deuer and Lessard, 2000). Cell volumes of each species/taxa are then converted to carbon (pgC cell⁻¹) using the formulae of Menden-Deuer and Lessard (2000).

DATA STORAGE

Data are added to the Pangea database (www.pangea.de) at regular intervals (6-12 months).