National Marine Baseline Survey 1995

Underway Data
Introduction to Data

ENVIRONMENT AGENCY

Underway Data

An introduction to baseline survey coastal survey
vessel continuous monitoring data.

Contents:

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Introduction.

This document is designed to accompany the release of baseline survey data on CD-ROM. It explains the format and layout of the underway continuous monitoring data supplied on the CD-ROM.

The survey rationale, design and equipment specifications are covered in other documents. These can be found in the manuals section of the CD-ROM.

There are two separate systems used for continuous monitoring during the baseline surveys. They are used to measure physical parameters and nutrients, and are known as Qubit and Skalar, respectively.

Both these data sets require significant amounts of pre-processing before they can be used by standard PC systems. The raw data on the CD-ROM has been pre-processed, and in the case of the SKALAR, has been rigorously quality controlled. The Qubit data is more difficult to quality control. Please observe the health warning in the Qubit section of this document.

Much of the pre-processing of these data sets is done using bespoke software taking data from four slightly different survey vessel configurations. Whilst all effort has been made to make the transfer of data from boat to PC systems reliable, no guarantees can be given. However, enough housekeeping data is stored with the raw data to allow back-tracking to the original survey files. Please contact the National Centre in the event of a query.

The data from both systems are geographically positioned and do not follow exactly the same track on each survey. A GIS or at least a spatially capable plotting package is needed to handle the raw data. In the case of the Qubit, a series of plot files are routinely generated, and these are included on the CD-ROM.

Qubit Data

The Qubit system is the on board data gathering system that collects data from the electrochemical and spectral continuous monitoring devices used on board the coastal survey vessels. The actual determinands measured on each boat can vary, as can the calibration methods and the instruments used to gather them. The basic determinands (Temperature, Salinity, Dissolved Oxygen, Transmission and Chlorophyll) are measured on all systems. Measurements are recorded every ten seconds along the boat's survey track.

On some vessels, two systems are run, a towfish system that typically measures at 4 metres depth, and a pumped system or in situ system, measuring at 1 metre depth. The combination of these two data sets can reveal stratification information.

Three forms of Qubit data are supplied on the CD-ROM: the measurements in ASCII and plot files in EasyCAD and DXF format.

HEALTH WARNING:
Due to the hostile nature of the environment from which this data is collected there are occasional instrument problems and areas where data collection was not possible due to heavy seas. Any interpretation of these data must bear this in mind. The data has not been extensively quality controlled, but is deemed suitable for release as long as it is used with caution.

ASCII DATA

The Qubit data is produced in a format that is not database friendly. A format conversion is performed, converted to a comma separated file and split into 60 spatial "boxes" around the coastline, starting with box 1 at the Tweed, continuing to box 60 at the Solway Firth. Each box has approximately the same number of Qubit points. The geolocation information is stored as Eastings/Northings in the British National Grid projection. A map of the Qubit box positions is supplied at the end of this document.

The individual determinands in the files are listed below. Missing data are not entered, with some variables reserved for future expansion (Tide, for example).

Qubit ASCII file Columns

1	rec_no,	Record number from original file (housekeeping)
2	date,	Date of sample
3	time,	Time of Sample
4	fix,	Qubit Fix No (housekeeping)
5	file,	Qubit QPF file name (housekeeping)
6	easting,	Easting of sample
7	northing,	Northing of Sample
8	tide,	Reserved for future use
9	temp_fish,	Temperature from the towfish
10	sal_fish,	Salinity from the towfish
11	depth_fish,	Depth the fish is being flown
12	chloro_fish,	Fluorescence from the towfish
13	do_fish,	Dissolved Oxygen from the fish
14-	trans_fish,	Transmission from the towfish
15	temp_prof,	Temperature from the pumped system
16	sal_prof,	Salinity from the pumped system
17	depth_echo,	Depth of water from the echo sounder
18	quality	Reserved for future use

EasyCAD Plots

The Qubit data are routinely plotted on maps by the National Centre. The package used to produce these plots is EasyCAD. The plots are spatially referenced, but not necessarily plotted with North Up. Prior to the Summer 1995 survey, a set of 34 plots was produced. After this time, the plots were simplified and sheets moved to include overlap where sensible. A map of the location of these sheets is included as SHEETS in the EasyCAD directory, and included at the end of this document.

DXF Plots

These plots are in the AutoCAD exchange format DXF. They cover the same area and subject as the EasyCAD plots (see above). DXF is a verbose format, resulting in very large files. In order to fit them on to the CD-ROM, they have been compressed using the popular PKZIP routine, which is available as shareware from most bulletin boards, Compuserve, and the Internet. Be aware that the files are large - up to 200Mb per survey! Again a SHEETS file shows the location of the sheets around the country.

Skalar Data

The Skalar is the on-board "flow through" wet chemistry system used on board the coastal survey vessels. It measures a set of nutrients once every two minutes along the boat's survey track. Specifically, nitrite, ammonia, Total Oxidised Nitrogen (TON), phosphate and silicate.

Skalar data is processed after the survey to bring the data from the different regions to a common quality standard and to geo-locate the data. Geo-location is effected by cross-referencing the Skalar data with the Qubitcontinuous monitoring data on a time basis. This allows the Qubit position to be transposed into the SKALAR data set.

The Skalar data are organised into one file per boat per survey. Usually the Northumbria/Yorkshire boat covers from the Tweed to the Humber, the Anglian region boat covers from the Humber to the Medway Buoy (Thames), the South Western boat covers from the Medway buoy to Milford Haven and the North West boat covers from Milford Haven to the Solway Firth.

Each file is a .txt file, with the contents listed in the readme.txt file in the respective directory on the CD-ROM.

The file is a comma separated ASCII file, with one record for each geo-referenced position. The individual variables in the file are referenced in the first line of the file, and are listed below. The georeferencing information is usually in Latitude and Longitude format. The latitude is considered to be always North, with the Longitude direction (East/West) defined for each record. Occasionally, the data is georeferenced in British National Grid format, as a six figure Easting / Northing. In this case the last column is marked as BNG.

Columns in the ASCII file:

1   Date,
2   Time,
3   Hour,
4   Min,
5   Nitrite ug/l N,
6   TON ug/lN,
7   Amm ug/l N,
8   PO4 ug/l,
9   Silicate ug/l SiO2,
10   Lat,
11   Long,
12   E/W

National Marine Baseline
Survey, "Qubit Boxes".

SPATIALLY REFERENCED MOSAIC REPRESENTING
THE CONTINUOUS TRACK DATA PLOTS (PRE SUMMER 1995)

SHEET 1
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6
SHEET 7
SHEET 8
SHEET 9
SHEET 10
SHEET 11
SHEET 11A
SHEET 12
SHEET 13
SHEET 14
SHEET 15
SHEET 16
SHEET 17
SHEET 18
SHEET 19
SHEET 20
SHEET 21
SHEET 22
SHEET 23
SHEET 24
SHEET 25
SHEET 26
SHEET 27
SHEET 28
SHEET 29

SPATIALLY REFERENCED MOSAIC REPRESENTING
THE CONTINUOUS TRACK DATA PLOTS (POST SPRING 1995)