

WHP Subgroup on Underway Measurements: Overview

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1. Introduction

During its third meeting, the WOCE Hydrographic Programme Planning Committee established a subgroup on underway measurements to be conducted during WHP cruises. Strong needs exist for unified recommendations of on-route data collection procedures. They must include hydrographic observations at the sea surface and *in situ*, as well as meteorological recordings. High quality, underway observations have both direct and indirect scientific and operational applications. Among them are the identification, movement and mixing of water masses, fluxes of fresh water, heat and momentum through the sea surface, and the synoptic determination of hydrographic and atmospheric frontal structures. These observations are of vital importance for the recognition of possible aliasing effects in WHP sections. Operational aspects on a near-real time basis, as required by the Integrated Global Ocean Services System (IGOSS), make accurate data highly desirable. Furthermore, it is necessary to broaden the historical data base in many parts of the ocean for improved climatic analyses and bottom contouring. WHP ships will be capable of cruising away from general shipping lanes in otherwise data-sparse areas. Their proposed underway observations will supplement miscellaneous routine measurements aboard ships-of-opportunity and other merchant vessels participating in the Voluntary Observing Ships (VOS) program, jointly operated by the World Meteorological Organization and the Intergovernmental Oceanographic Commission.

2. Terms of Reference

The subgroup on underway measurements has to advise the WHP Planning Committee on:

1. Methods and standards for underway sampled data envisaged in the WHP,
2. The definition and implementation of procedures to improve measurement accuracy by addressing questions of sensor stability, the application of corrections, sampling strategy, instrument maintenance, and on-line/off-line processing.
3. Developments and requirements, and to provide recommendations to meet the above goals.

3. Groups of Underway Observations

The analysis of a series of position papers in this section revealed a possible classification of measurements into requested (mandatory) and complimentary (optional) observations. One can distinguish further between profiling and continuous surface observations. Table 1 summarizes the measurements discussed by the Working Group.

Method	Observation Mode
VERTICAL PROFILES	
XBT (Expendable Bathythermograph)	required
XCTD (Expendable CTD probe)	desirable instead of XBT
ADCP-SB (Acoustic Doppler Current Profiler - shipborne -)	complementary, highly desirable
NEAR-SURFACE OBSERVATIONS	
Meteorological Observations	required
Thermosalinograph (TRACKOB)	complementary, highly desirable
Bathymetry	required

Table 1: Underway measurements during WHP cruise