



Fieldwork Protocols

Guidelines for Quality Assurance

The Mediterranean Forecasting System is the first programme developed in the Mediterranean region allowing a long term, widespread, working link between research institutions and merchant ship companies. The MFS-VOS module of the program is mission oriented. Merchant ships are providing cost effective observations for forecast and for the study of the Mediterranean Sea changes in the upper layer. One of the major issue of MFS-VOS is the control of all phases, from data collection to delivery. For this reason a series of guidelines have been developed by the participants to the project, in order to meet the MFSP requirements.

A certain care is devoted to the development of a guide for the assurance of the fieldwork to help the personnel involved in data collection, in order to assure the highest quality of data.

The quality of products and services depends on the resources that are set aside. The expertise and qualification of the personnel will be decisive for the quality of the results supplied. A quality assurance system must therefore include guidelines and procedures which will, at all times, aim to ensure the best possible and most relevant expertise relative to requirements.

Education

The formal education will mainly be adequate to the collection of XBT data and decisions to be taken in case of failures of the acquisition/transmission system. To ensure the quality, it is important that every field worker has adequate training relative to the methods, instruments and equipment used in the fieldwork. The field worker should also have the relevant information on the environment they are exploring, such as the temperature profiles expected during the ship trip.

Mobilization

A personnel plan must be prepared. It must containing an overview of how the field work is to be organised

and what each person will do is essential for the organization of the fieldwork.

Field of responsibility

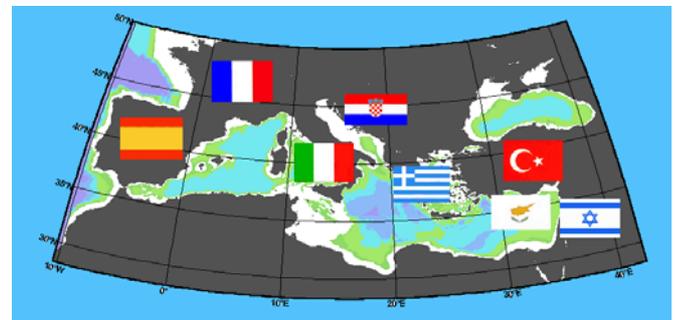
There will two level of responsibility:

- 1) the responsible scientist of each institution participating to MFSP VOS (here after the 'institutional chief scientist') will:
 - ensure the contact network and lines of communication to and between the personnel
 - ensure that the personnel and material resources satisfy the MFSP VOS demands
 - suggest the strategy of the data acquisition on the base of the ship track and timing,
 - discuss the deviations with respect to the planned measurements.
- 2) the technician on board will be responsible of the data acquisition and will continuously check the data acquisition/transmission system. Some decisions could be necessary during the trip. The technicians should use their experience/good-will. The field worker must decide any deviation with respect to the plans

Information on MFSTEP: www.bo.ingv.it/mfstep/

Access to real time data:

<http://vosdata.santateresa.enea.it:54321/mfs/>





WORKING PROCEDURES

Sippican cable

The cable length between the launcher and the computer is recommended to be almost 50 m, because the operator has to move freely, while looking for the right launching position. The launching can be performed successfully from a height on the sea surface ranging from 5 to 10 meters. This possibility is compatible with practically every type of vessel (container ship, cargo ship, gas tanker, ferry, etc...)

Launching operation: control of the launcher

The launching operation has to be performed on the side of the ship, as to avoid dangerous turbulence effects, and recommends manual launching, because the operator can control the impact angle of the probe into the sea surface as best as he can: this angle must be absolutely perpendicular. In case the probe should fall partially or totally on its side, the time needed to reach the regime fall rate would be increased and the depth evaluated by the computer would be incorrect: the depth is not measured, but calculated by the Sippican Software, which uses an experimental speed rate, and the computation of the depth starts just at the moment the probe head gets in touch with the sea.

Wind influence

The launching side in the ship must be decided by taking the wind in consideration, because the wind could push the wire against the ship hull and break it.

Launching operations: canister insertion and XBT drop

After having put the canister into the launcher, the operator removes the pin, puts the arm out of the side of the ship as far as he can and points the launcher perpendicularly to the sea surface; at the right moment with regard to the wind and the ship rolling, he removes the plastic cap of the canister and drops the probe. In some cases the canister was tied to the end of a rod, in order to keep off the vessel side even more substantially. After the launch, the canister can be kept inside the launcher as to keep the electric contacts inside the launcher in good state.

Working instructions

The entire acquisition-transmission system, once properly installed, will be of a sufficient easy use. The following instructions will help to carry out the field work.

- Check the data acquisition-transmission system in the harbor every time before the beginning of the ship track.
- Record in the Cruise Summary Report the approximate ship speed.
- Prepare the launcher before reaching the measurement place. The canister must be inserted inside the launcher and the electric connections must be checked.
- The launches must be done at a distance of 10 – 12 nautical miles each from the other. This distance has to be calculated on the base of the ship speed.
- After the launch, the technician must check the regularity of the data acquisition by looking at the PC and record the GMT time in the Cruise Summary Report (see annex 1).
- Assure the saving of the original data file into diskettes, time by time.

In case of failures

Soon after the launch, the personnel must check if the temperature profile has been properly recorded by the system.

- Data out of range. In appendix 3 are reported the minimum and maximum values accepted for the Mediterranean Basins (MEDATLAS Project). In case a significant part of the profile is out of the admitted ranges, it is recommended to drop another XBT only if the time delay from the previous drop is less than 15 minutes for ships travelling at a speed less than 15 knt, or less than 10 minutes for faster ships.
- Wire break. The acquisition fault can be due to the wire break and the PC will display a profile with a depth less than the 400-460 m foreseen for the T4 probe. In this case it is recommended to drop another XBT only if the time delay from the previous drop is less than 15 minutes for ships travelling at a speed less than 15 knt, or less than 10 minutes for faster ships.



Supplementary observations and measurements

The frequency of data collection will not allow in general to make supplementary measurements. If additional information will be required to interpret and understand the results of measurements, this will be decided case by case, in order to assure the main task of this project, which is the XBT data collection for data assimilation. Some observations could help (wherever possible) on data analysis, such as: weather conditions, waves, atmospheric pressure and temperature. They can be recorder in the Cruise Summary Report.

Equipment list

Sippican System

1. launcher
2. MK12 processor
3. Cable for the connection DAS MK12 – launcher
4. Cable for the connection DAS MK12 – PC (RS232)

Computer

5. PC + monitor
6. Diskettes

Personnel

7. Map of the Mediterranean Sea
8. Map of the ship track
9. Maps showing different launch options
10. Manual of Sippican

Ship

11. 220V AC
12. Multiple outlet

Software

13. Sippican software for visualization and storage



SAFETY INSTRUCTIONS

One must constantly keep in mind that the risk of falling into the sea is always incumbent the operator: the floor can be wet and slippery, the operator can be tired after long shifts and has to lean out of the ship, the launching procedure could be performed during the night.

The operator will be supplied with safety equipment, as life jacket, fastening harness and cable with spring catch to be locked to the ship before launching, lights for night operation, because the sea surface should be well lighted as to choose the right launching moment.

It is recommended that safety directions should be written and agreed upon with the captain, who is responsible of enforcing them.

An alarm clock should be also provided to be ready to launching even at night time. Additionally the operator will not be able to have meals with the other personnel and special provisions have to be taken with the cooking staff.

In the case the launching hours should exceed a maximum, two or more people shall be hired. In any case only one of them will be the responsible of all the launching programme. At any case it is clear that the launching frequency enforces the deployment of fully dedicated persons to XBT's launching and that the idea of employing the ship staff is not viable.

