



Project of Strategic Interest NEXTDATA

Scientific Report for the reference period **01/01/2012-31/12/2012**

WP 2.4 - Archive of paleoclimate data from sedimentary cores (Resp. Luciana Ferraro, CNR-IAMC)

Partners: CNR-DTA, INGV

1. Scheduled activities and expected results

As reported in the Executive project Plan, the activities of the first year are based on an accurate archival research (in the national and international literature and in the international databases) on sedimentary cores drilled in the Mediterranean Basin, as well as on specific cores from selected extra-Mediterranean sectors. This research phase primarily aims at the identification and critical evaluation of the core samples located in the Mediterranean Basin and of the related available and/or accessible paleoclimatic proxies.

The integration between the available databases and the scientific literature, allows for a selection of the available sites in the Mediterranean Basin, according to the criteria identified in the relevant scientific literature.

M2.4.1 (PM12): Completion of the information on sediment cores and potential key sites.

2. Deliverables expected for the reference period

D2.4.1 (PM12): Archive of sediment core data and key sites and data transmission to the General Portal.

3. Activities which have been actually conducted during the reference period

3.1 Research activities

During the first year of the project activity, an exhaustive archival research (in the national and international scientific literature and in the international databases) on sediment cores drilled in the Mediterranean Basin was carried out.

The content of all databases available to the scientific community was analyzed to identify and select the information related to marine sedimentary archives and collect relevant information on marine data.

After a comparative analysis of the various databases has been performed, we have identified the following databases, which useful to obtain information on the Mediterranean area:

- 1) Geo-Seas
- 2) Marine Geology Data Ocean Drilling Data Deep Sea Drilling Project & Ocean Drilling Program Data (<http://www.ngdc.noaa.gov/mgg/geology/drill.html>)

Additional selection criteria were applied to these databases to identify:

- 1) the sites drilled through the use of sampling devices able to collected undisturbed sequences of marine sediments, such as
 - gravity corer – piston corer – Kullenberg piston corer – rotary drilling;
 - box-corer
- 2) the sites located on the continental shelf and in the abyssal plain, which are areas suitable for the recovery of undisturbed marine sedimentary sequences.

This preliminary selection phase for the Mediterranean Basin allowed us to recognize 1517 sites, divided as follows:

- 170 sites sampled through the use of a box-corer
- 817 sites sampled through the use of a gravity corer
- 427 sites sampled through the use of a piston corer
- 35 sites sampled through the use of a Kullenberg piston corer
- 68 sites sampled through the use of rotary drilling

The geographical selection criteria previously adopted (continental shelf and abyssal plain) and the sampling devices used for the recovery of the cores were supported by the analysis of the national and international scientific literature focused on the Holocene time interval for the Mediterranean (as reported in the Deliverable 2.3.1).

3.2 Applications; technological and computational aspects

None in the reference period.

3.3 Formation

None in the reference period.

3.4 Dissemination and disclosure

None in the reference period.

3.5 Dissemination

None in the reference period.

3.6 Participation in conferences, workshops, meetings

None in the reference period.

4. Results obtained during the reference period

4.1 Specific results (Data libraries, Measurements, Numerical simulations, etc)

Marine sediment data and metadata on the 1517 sampling sites in the Mediterranean Basin were collected (as reported in section 5, this activity, still preliminary, was originally planned for the second year of the project).

The comparison between the data collected for the 1517 drilling sites and the information contained in the scientific literature, has allowed us to propose, during a meeting held on 15/11/2012 at the University of Cagliari with the scientific leaders of WP2.1, WP2.3 and WP2.4, a conceptual method for metadata publishing and a geo-database for the recording of marine sediments data.

As an outcome of the meeting, the SHARE Geo Network structure for cataloging metadata was discussed, in order to allow the storage of marine sediments data. A hierarchical-type structure Parent/Child was identified, as follows:

Project ---- > Cruise ---- > Sampling sites

The identified structure to store the marine sedimentary cores could be modified subsequently as a result of the review and analysis of national and international literature to be completed in the second year of the project.

4.2 Publications

None in the reference period.

4.3 Availability of data and model outputs (format, type of library, etc)

Currently, the recovered data are in tabular format (Excel) and are available upon request.

4.4 Completed deliverables

D2.4.1: Sedimentary cores data and key sites archive and transmitting information to the General Portal.

During the first year of project activities, an exhaustive archival research on sediment cores drilled in the Mediterranean Basin was carried out, exploiting information contained in the international databases and in the national and international scientific literature.

This research phase has led to gather data and metadata from 1517 sampling sites of marine sediments in the Mediterranean Basin and to collect and analyze the results of 152 national and international research papers (this literature search work will be completed during the second year of the project).

In this archive, the data and metadata identified in the framework of WP1.5 have also been stored.

5. Comment on differences between expected activities/results/deliverables and those which have been actually performed.

In the first year of project, the bibliographic research on the sedimentary cores in specific extra-Mediterranean sectors was not carried out. The choice of concentrating the bibliographic activity on the Mediterranean Basin was motivated by the need to work in synergy with the WP1.5 research activities.

Some activities planned for the second year have been anticipated to the first year (such as the retrieval of information necessary to construct the metadata of the collected cores and the designing of a data management database), which was useful to build the conceptual scheme for the metadata publication and the geo-database for recording marine sediment data.

At variance with what was planned in the Executive Plan, during the first year we have not transmitted the data to the General Portal. This delay is due to a difficulty encountered in adapting the metadata cataloging structure of the SHARE Geo Network to the description of marine sediment cores and to the need to find the most suitable configuration for the hierarchical structure of information to be stored. The latter issue was addressed in the official meeting held on 15/11/2012 at the University of Cagliari with the scientific leaders of WP2.1, WP2.3 and WP2.4.

6. Expected activities for the following reference period

For the second year of the project, following the activities carried out during the first year, we have planned to complete the collection of information on the Mediterranean Basin needed to fill the metadata format on census cores and the transmission to the General Portal.

We will contact research institutions in order to retrieve information on marine sedimentary cores in the Mediterranean Basin, which was not accessible through inspection of the scientific literature/international databases.

We will collect and study the scientific literature on the sites available for the Atlantic Ocean, with particular reference to the Strait of Gibraltar. As indicated in the Executive Plan, it will be

explored the possibility of implementing an infrastructure for the storage of marine sediments at temperatures up to -18°C , with accurate transport and manipulation. The infrastructure could also host use samples in the framework of the NextData project (WP1.5) and should be linked with other core repositories in the Mediterranean area.