



Project of strategic interest NEXTDATA

Deliverable D2.4.A

Archive/portal for free and easy access to databases and paleoclimatic reconstructions from marine sediment cores

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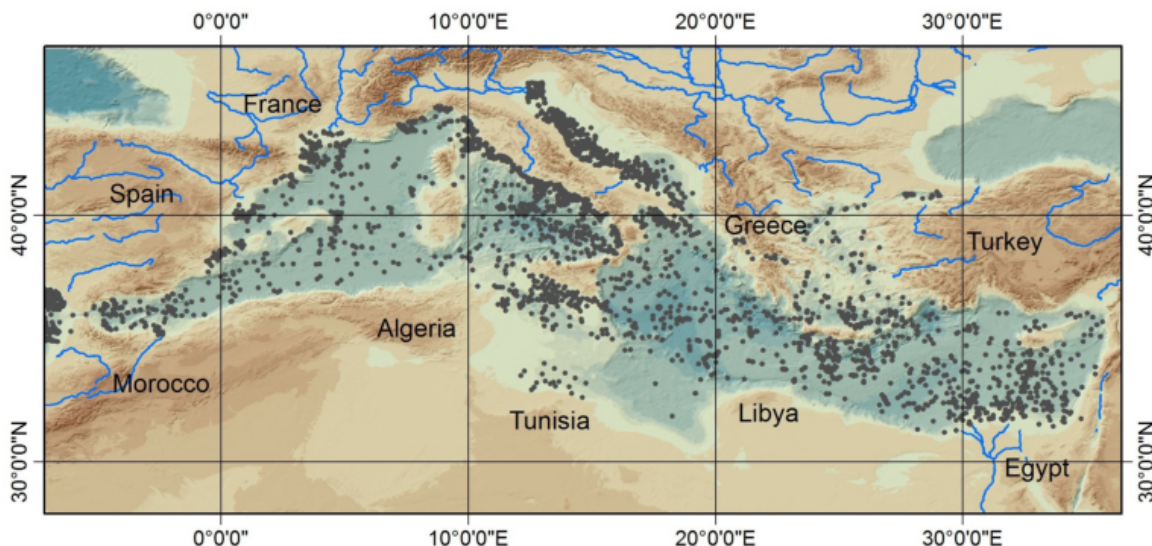
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An upgrade of climatic data from marine sedimentary cores for the Mediterranean Sea was carried out to populate the WDB (Weather and Water Database) and for transmission to the NextData General Portal. The data are related to marine sedimentary cores collected by IAMC - CNR during the past oceanographic cruises “NextData2013” onboard the R/V Urania (12-19 September 2013, Strait of Sicily - Gulf of Taranto), “NextData2014” onboard the R/V Urania (9-21 July 2014, Sicily Channel and Adriatic Sea) and “NextData2016” onboard the R/V Minerva1 (11-29 June 2016, Ionian Sea, Strait of Sicily, Tyrrhenian Sea and Ligurian Sea).

The database allows to export the metadata and data as ODBC database, dBASE, Excel files and text files of marine sedimentary cores.

Marine sedimentary cores were upgraded to a number of 8000 (6000 cores from the Mediterranean Sea and 2000 cores from the Atlantic/Strait of Gibraltar), as shown in Figure 1 and summarized in Table 1.

Scientific papers that publish paleoclimate proxies are about 200; 360 marine sedimentary cores are associated with scientific papers.



Sea/Ocean	Cores (%)	Sea/Ocean	Cores (%)
Adriatic Sea	11,93	Marmara Sea	1,15
Aegean Sea	4,09	Mediterranean Sea-Eastern Basin	29,77
Alboran Sea	2,77	Mediterranean Sea-Western Basin	13,71
Balearic Sea	1,98	Tyrrhenian Sea	28,79
Ionian Sea	4,70	Strait of Gibraltar	0,02
Ligurian Sea	1,12		

Figure 1 - Overview of the location of marine sediment cores (black circles) drilled in the Mediterranean Sea and Atlantic Ocean together with their abundance in specific single sectors.

Information related to the tephra layers and AMS ¹⁴C dating were improved using the results found in the literature, since these proxies have a key role for evaluating the synchrony/diachrony of the climatic changes in the Mediterranean and represent a constraint for age modelling of marine sequences.

The new database of marine sediment cores has been published in Alberico et al. (2017). A conceptual and logical model was drawn to physically implement a paleoclimatic database named WDB-Paleo including the paleoclimatic proxy data (planktonic and benthic foraminifera, pollens,

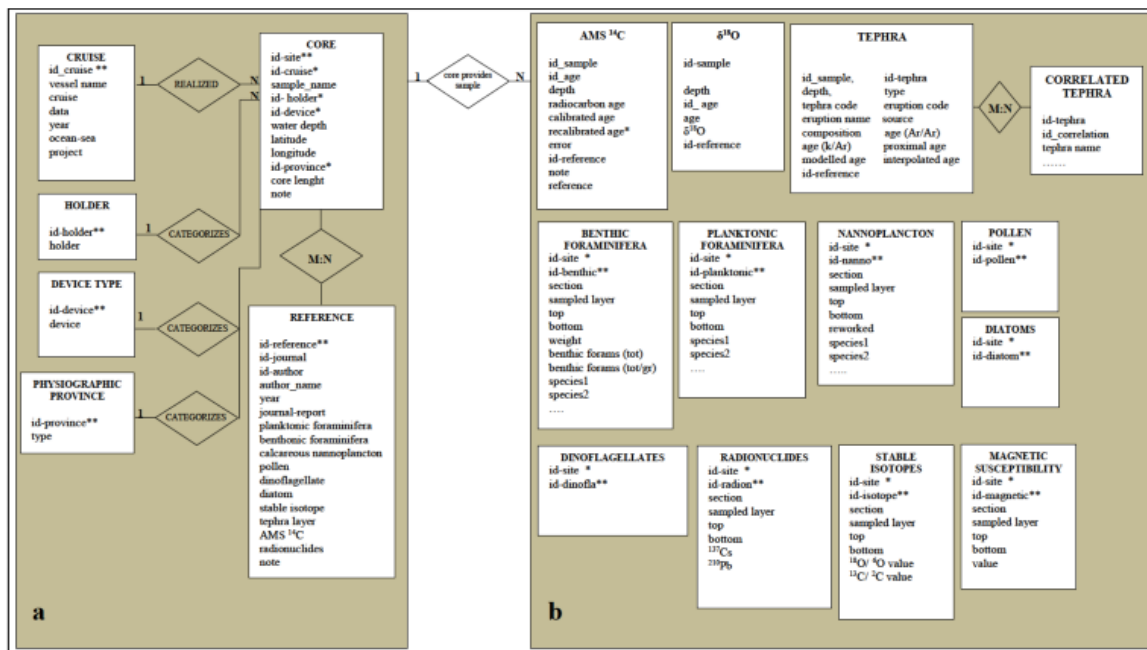


Figure 2 - Marine sites entity-relationship diagram, the double asterisk shows the primary key and the single asterisk shows the foreign key. The entities enclosed in the left-side box record the metadata, those in the right-side box the quantitative data from CNR-IAMC projects and from the scientific literature.

NextData Scientific papers (years 2016 and 2017)

- Bonomo S., Cascella A., Alberico I., Sorgato S., Pelosi N., Ferraro L., Lirer F., Vallefucio M., Bellucci L., Agnini C., Pappone G. (2016). Reworked Coccoliths as runoff proxy for the last 400 years: The case of Gaeta Gulf (central Tyrrhenian Sea, Central Italy). *Palaeogeography, Palaeoclimatology, Palaeoecology* 459, 15-28
- Capotondi L., Girone A., Lirer F., Bergami C., Verducci M., Vallefucio M., Afferri A., Ferraro L., Pelosi N., De Lange G. J. (2016). Central Mediterranean Mid-Pleistocene paleoclimatic variability and its connection with global climate. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 442, 72-83, doi: 10.1016/j.palaeo.2015.11.009
- Margaritelli G., Vallefucio M., Di Rita F., Capotondi L., Bellucci L.G., Insinga D.D., Petrosino P., Bonomo S., Cacho I., Cascella A., Ferraro L., Florindo F., Lubritto C., Lurcock P.C., Magri D., Pelosi N., Rettori R., Lirer F. (2016). Marine response to climate changes during the last five millennia in the central Mediterranean Sea. *Global and Planetary Change*. 142, 53-72. doi: 10.1016/j.gloplacha.2016.04.007.
- Alberico I., Giliberti I., Insinga D.D., Petrosino P., Vallefucio M., Lirer F., Bonomo S., Cascella A., Anzalone E., Barra R., E. Marsella, and Ferraro L. (2017). Marine sediment cores database for the Mediterranean Basin: a tool for past climatic and environmental studies. *Gruyter Open Geoscience*, 9; 221-239.