



MARINE GEOLOGY DATA ACCESSIBILITY IN THE EUROPEAN FRAMEWORK: THE I.G.M.E. DATABASE AND ACCESS SERVICES AFTER ITS PARTICIPATION IN THE GEO-SEAS PROJECT

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1. THE GEO-SEAS PROJECT

GEO-SEAS: Pan-European infrastructure for the management of marine and ocean geological and geophysical data (www.geo-seas.eu)

Project duration: 45 months

Project consortium: 29 partners from 17 European countries

Main objectives

- Expand the Sea-Data net infrastructure
- Publish and maintain a common catalogue and index of available data
- Harmonise quality standards and exchange formats
- Provide federated, ready for use, datasets
- Develop and provide new data products and services
- Determine arrangements for the use of these data and services
- Determine a long-term agreement for exploitation
- Promote the infrastructure and its services



Geo-Seas Partners
NERC-BGS, NERC-BODC, NERC-NOCS, CIRIA & CEFAS (UK), MARIS, TNO & EU-Consult (Netherlands), IFREMER, BRGM, CNRS & SHOM (France), BSH & BGR (Germany), IGME & UB (Spain), INETI (Portugal), IGME-EKBAA & NOA (Greece), GSI & UCC (Ireland), OGS (Italy), GEUS (Denmark), NGU (Norway), PGI (Poland), EGK (Estonia), LIGG (Lithuania), IO-BAS (Bulgaria), MUMM (Belgium) and LU (Latvia).



2. MARINE GEOLOGY IN I.G.M.E.

During more than 30 years of activity in numerous research projects, the Institute of Geology & Mineral Exploration of Greece has carried out extensive work in marine geology:

- National research projects (e.g. for the construction of bridges & ports, for the installation of submarine cables, for the study of lakes)
- European projects (e.g. Anaximander) and bilateral cooperations (e.g. Albania)
- Projects funded by the 3rd C.S.F. (Urban geology) and the N.S.R.F. (Marine geology)
- Marine Geology mapping in scale 1:200000

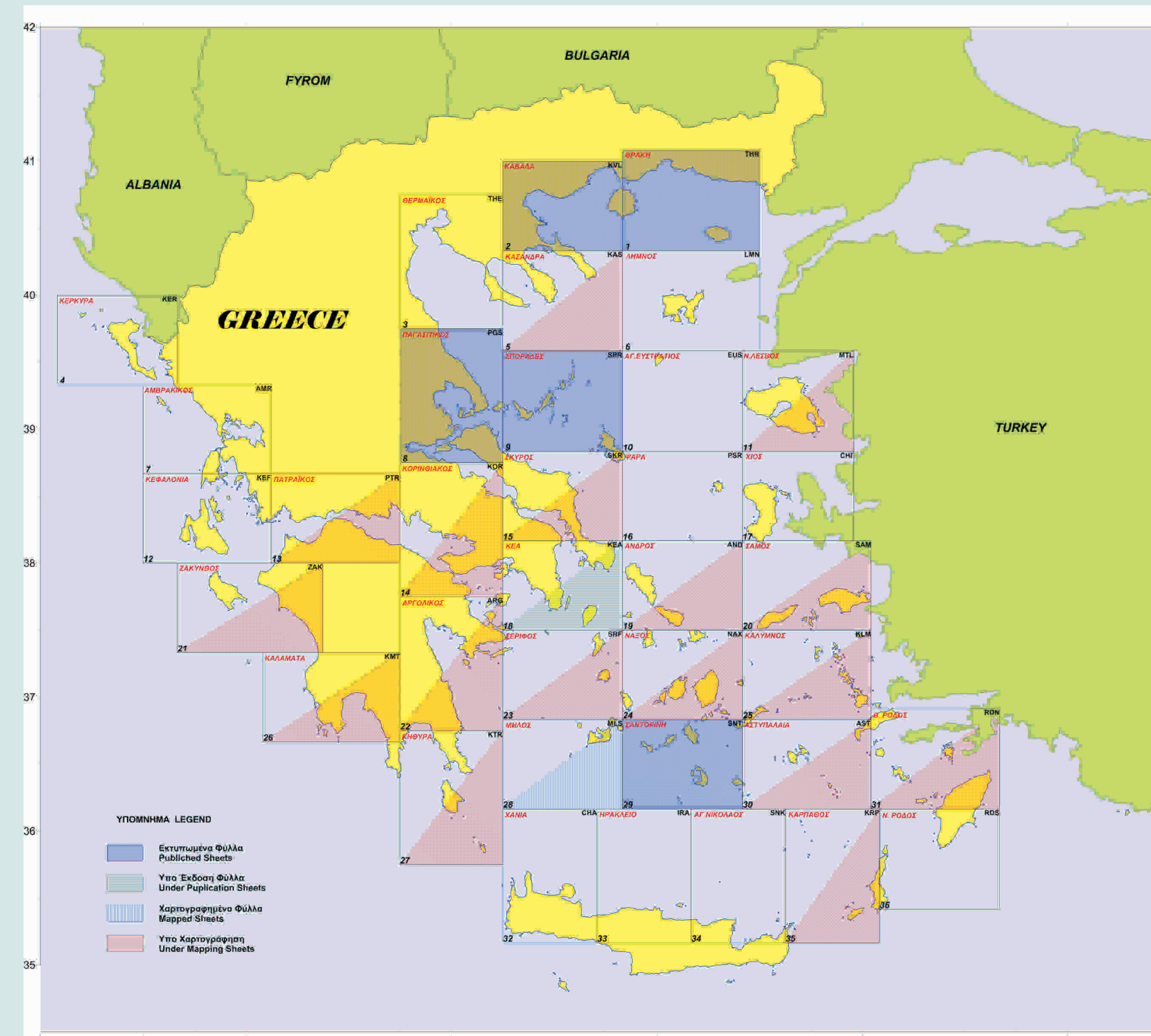
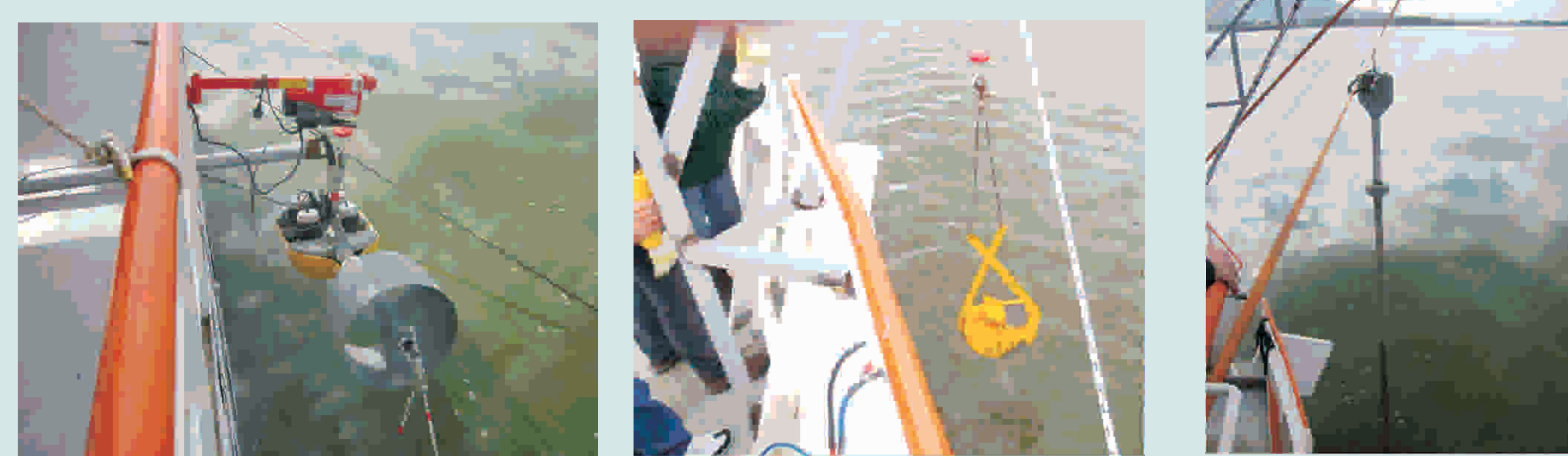


Figure 1 - Marine geology mapping in scale 1:200000.

3. THE I.G.M.E. DATABASE

Metadata records

The metadata of all the available data from IGME were archived according to the Common Data Index (CDI) using the SeaDataNet standard (ISO19115 compliant). CDI population and maintenance activities at IGME involved:

- Analysis of the formats and local availability of metadata
- Editing of existing metadata according to the GEO-SEAS standards and guidelines
- Compiling and validating a first test-batch of metadata
- Compilation and/or updating of the metadata and validation into a test site by MARIS
- Importing geological and geophysical XML metadata entries into the central CDI directory

The generation of CDI records was accomplished by using the MIKADO software.

- 2147 CDIs of sediment grab samples
- 79 CDIs of unconsolidated sediment cores (comprising 437 specimens)
- 547 seismic profiles (~20,000 km) of bathymetry and seismic reflection measurements

Additional files for the description of the seismic profiles were prepared:

- 547 O&M (Observation and Measurements) metadata records
- 2603 Sensor/ML records (one for every individual segment of the seismic sections)
- 2603 low-resolution thumbnails of the scanned seismic profile images

Table 1 – Definition of metadata characteristics

MANDATORY	OPTIONAL
Dataset-id	Time resolution
Dataset-name	Vertical element (min-max observation depth)
Coordinates (or bounding box)	Vertical datum
Object type	Water depth
Heading 3	Datum of coordinate system
Period of sampling	Track resolution
Parameters measured	Polygon (for curve/surface data)
Brief summary of the content	Sampling interval
Sampling instrument	Cruise information (name – id – date)
Sampling platform class	Station information (name – id – date)
Data holding centre	Project title
Originator centre	
Distributor	
Collate centre	
Distribution websites & services	
Dataset access restriction	
Data format	
CDI file revision date	

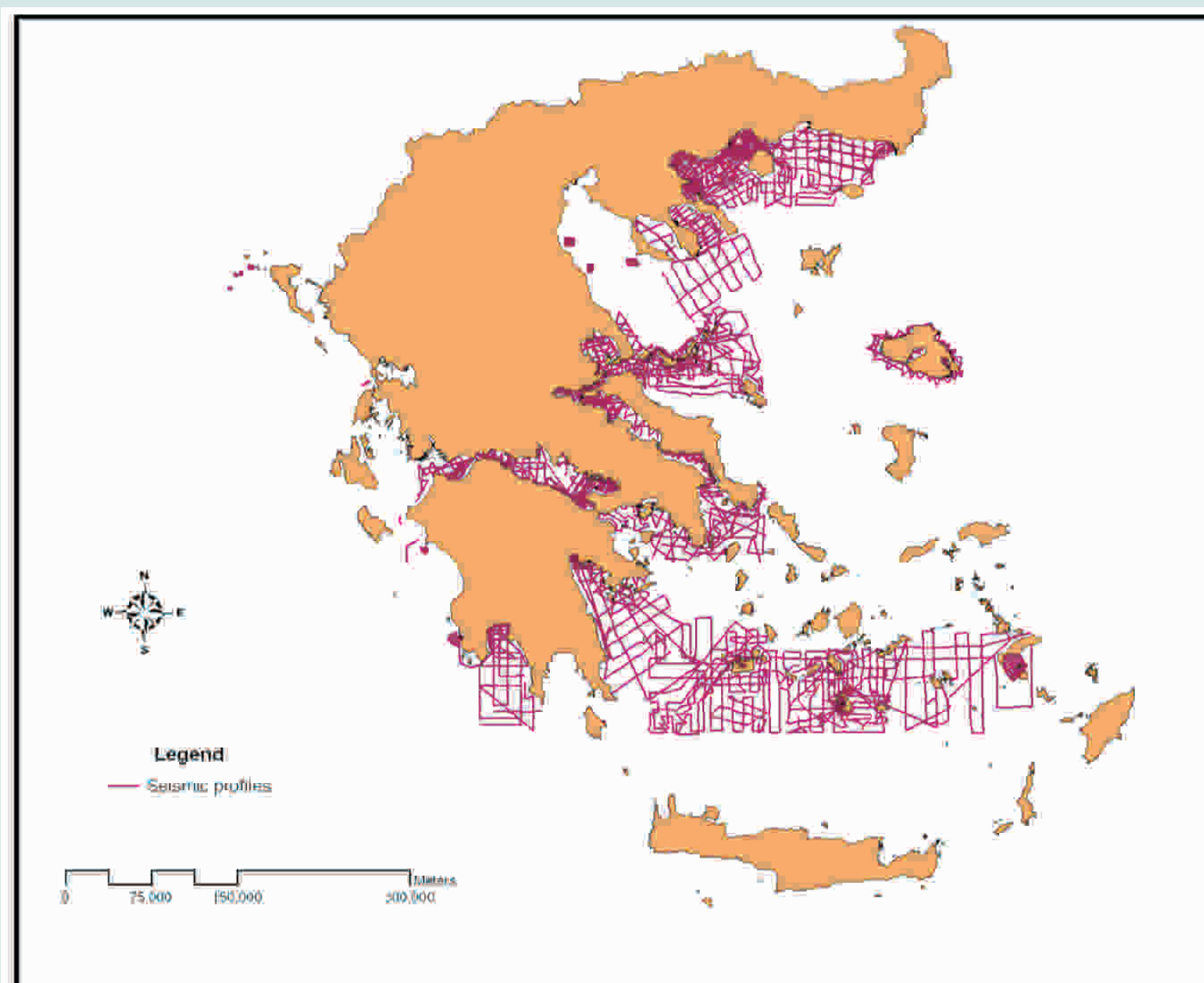
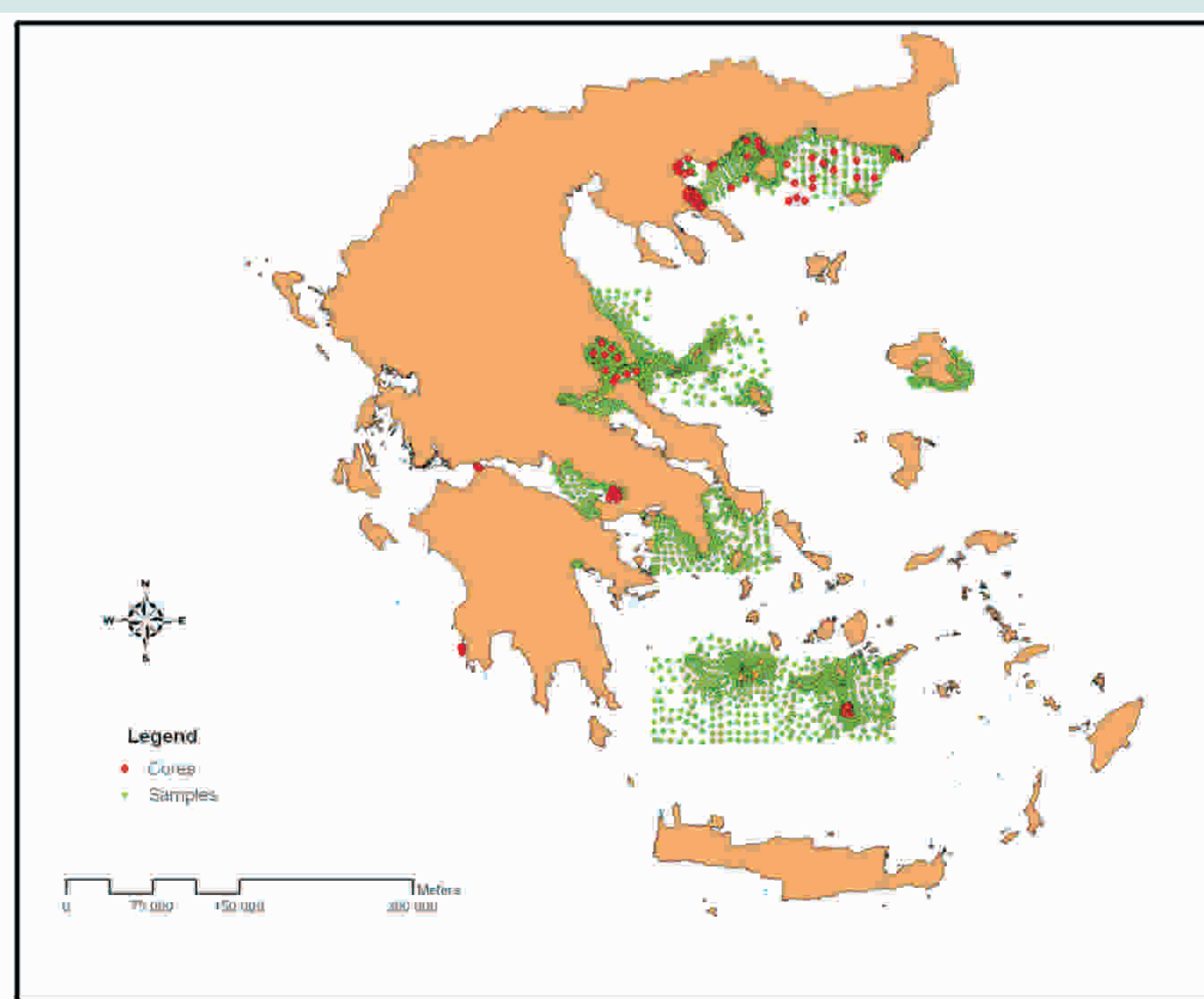


Figure 2 - The dataset of IGME included in the Geo-Seas portal: sediment grab samples and sediment cores (top), lines of seismic profiles (bottom). These data have been collected by IGME from 1979-present.

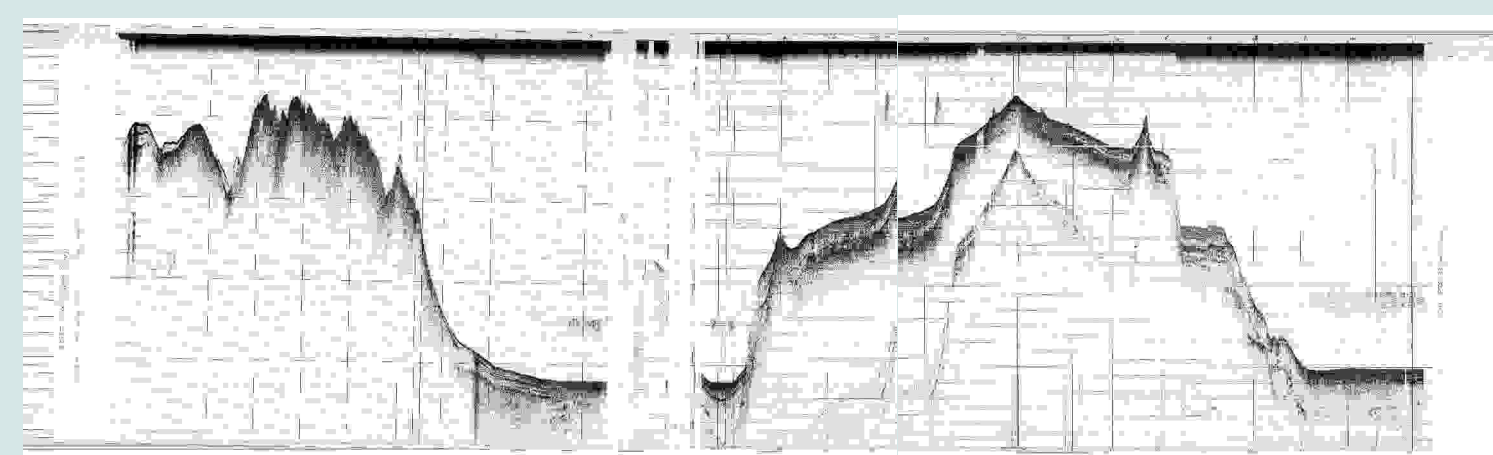


Figure 5 - An example of a seismic reflection profile, included in the Geo-Seas CDI.

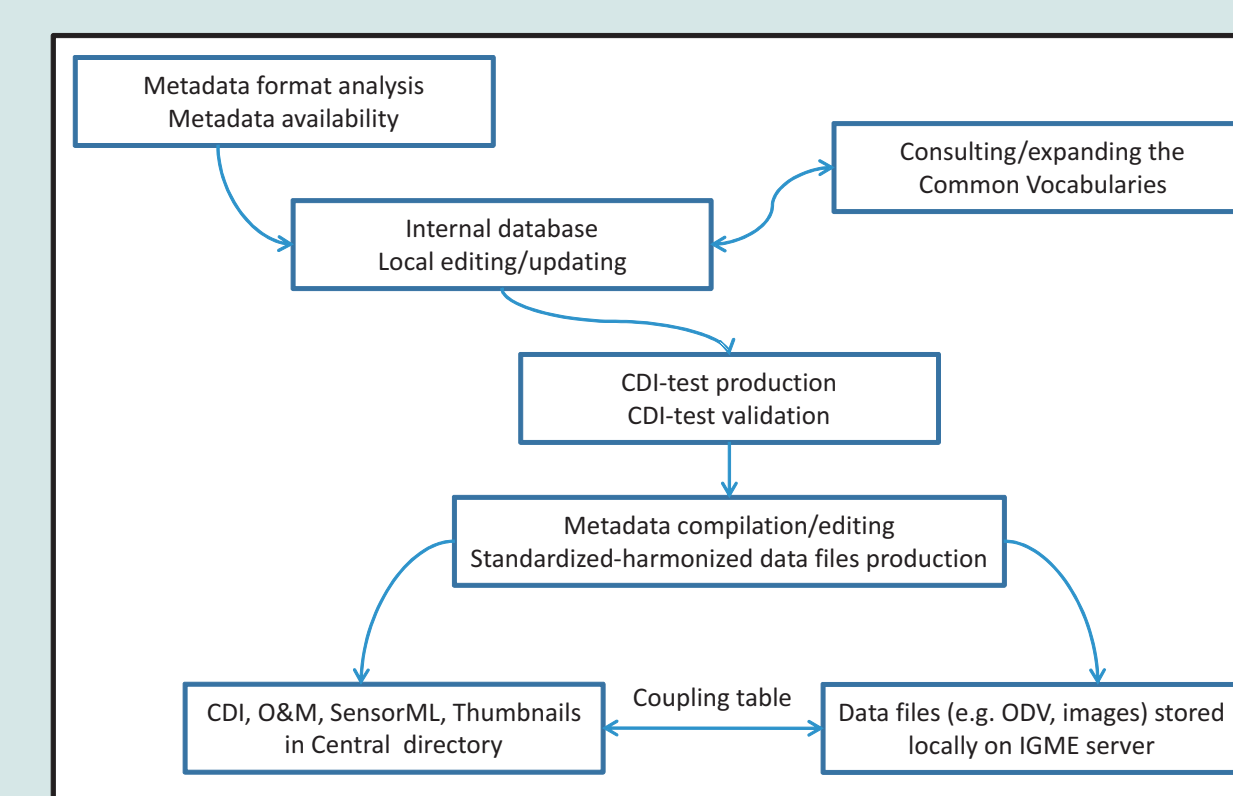


Figure 3 - CDI population activity at IGME.

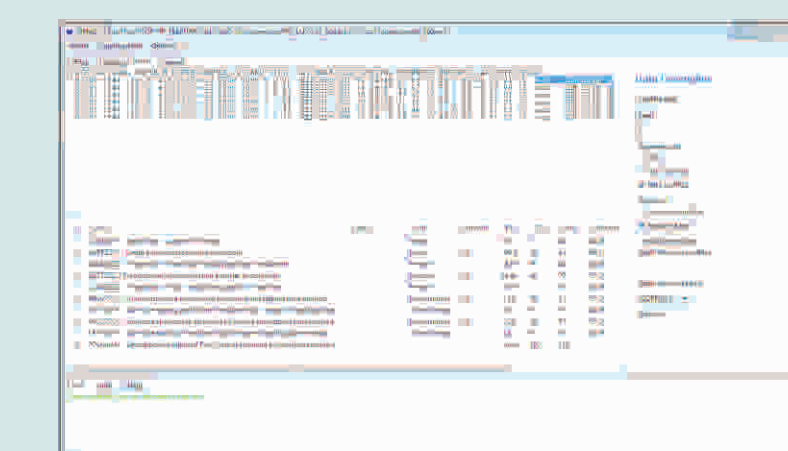


Figure 4 – Definition of data input for the preparation of ODV using NEMO software.

Data files

Data files were prepared, following the Geo-Seas standardization and harmonization guidelines. They are stored locally in the I.G.M.E. server, in direct connection with the CDI directory through the coupling table.

The generation of data records - in the INSPIRE-compliant Ocean Data View (ODV) format - was accomplished by using the NEMO software.

- 2147 ODVs of sediment grab samples
- 79 ODVs of unconsolidated sediment cores

Concerning the geophysical data, high-resolution image files with raw data representation were prepared.

Figure 6 – A representative record from IGME metadata as shown in GEO-SEAS Common Data Index (www.geo-seas.eu/v_cdi_v2/browse_step.asp)



4. CONCLUSIONS & ADDED VALUE

1. I.G.M.E. data were organized in a complete, harmonized and standardized database.
2. Many of the needed metadata were retrieved from old paper records & a big part of the seismic profile data which existed only on analogue format were scanned. Thus, apart from being available for delivery their salvation was ensured.
3. Through the implementation of the GEO-SEAS project the existing marine geological and geophysical information from IGME and 24 more data centres has been standardized, harmonized and is now available for search and download through a single portal.
4. The creation of the required infrastructure and the awareness of the necessity for standardized and harmonized data and metadata will ensure that all data collected in the future will be according to the guidelines set through the GEO-SEAS project and directly incorporated in the CDI directory.
5. The standardization, harmonization and provision of data and metadata, carried out through the GEO-SEAS project, are aligned with European directives and recent large-scale framework programmes on global and European scales, such as GEOSS and GMES, EMODNET and INSPIRE. Thus, they allow I.G.M.E. to fully conform to the EU directives for the provision of marine geology data.

Future prospects

Maintenance of the GEO-SEAS portal and inclusion of additional data files (palynology, palaeontological, radiochronological and other data).

The incorporation of all existing marine geology data in a GIS-database, INSPIRE compliant.

The creation of pan-European marine geology products (e.g through the EMODNET 2 initiative).

I.G.M.E. is implementing the project "Marine geology and mineral exploration on the continental shelf and other areas of the Aegean Sea" (funded by the N.S.R.F.). After completion all available data will be uploaded in the GEO-SEAS portal.

Thank you for your attention!

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