

SeisDARE: an open access seismic data repository



DeFelipe, I.1, Alcalde, J.1, Ivandic, M.2, Martí, D.1, Ruiz, M.1, Marzán, I.1, Diaz, J.1, Ayarza, P.3, Palomeras, I.3, Fernandez-Turiel, J.-L.1, Molina, C.4, Bernal, I.4, Brow, L. R.5, Roberts, R.2 and Carbonell, R.1

(1) Geosciences Barcelona (GEO3BCN-CSIC), Spain; (2) Uppsala University, Sweden; (3) University of Salamanca, Spain; (4) CSIC, Madrid, Spain; (5) Cornell University, Earth and Atmospheric Sciences, United States.

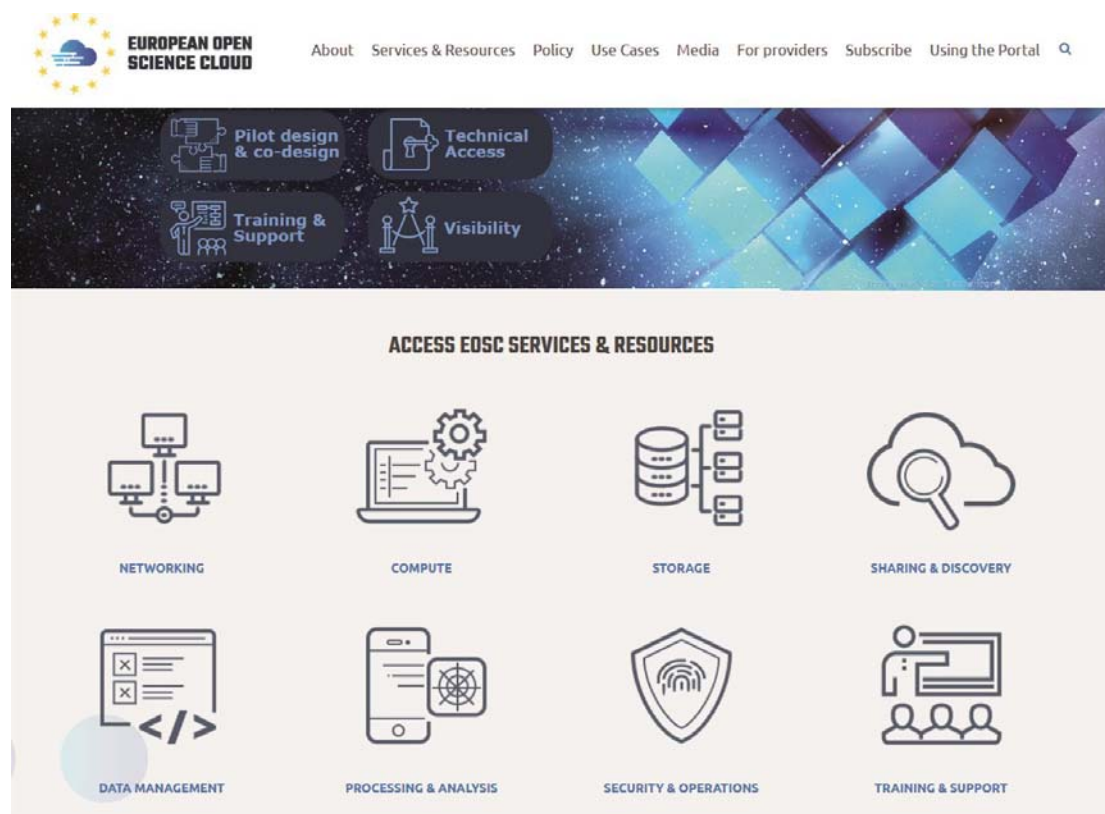
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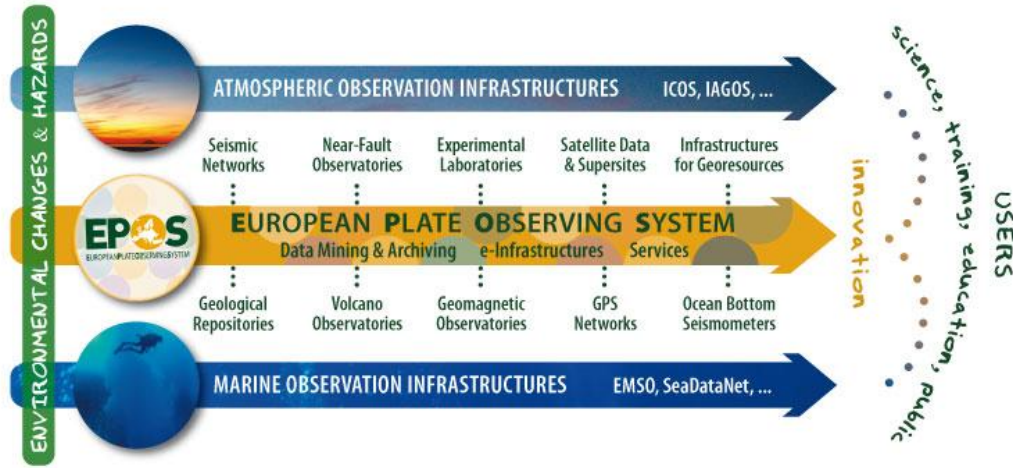
INTRODUCTION

Seismic data provide critical information about the structure of the lithosphere and are the basis for Solid Earth Science. Therefore, it is essential to preserve seismic data for future generations of geoscientists.

Following this philosophy, the European Open Science Cloud (**EOSC** (<https://www.eosc-portal.eu/>)) is driving towards a virtual environment with open and seamless services for storage, management, and reuse of research data by federating existing scientific data infrastructures.



Specifically on Earth Sciences, the European Plate Observation System (**EPOS** (<https://epos-ip.org/>)) was established in 2002 as a multidisciplinary e-infrastructure aiming to facilitate the integrated use of data and data products.



Within EPOS, a thematic core of **Seismology** (<https://epos-ip.org/tcs/seismology>) provide access to seismic and seismological data.

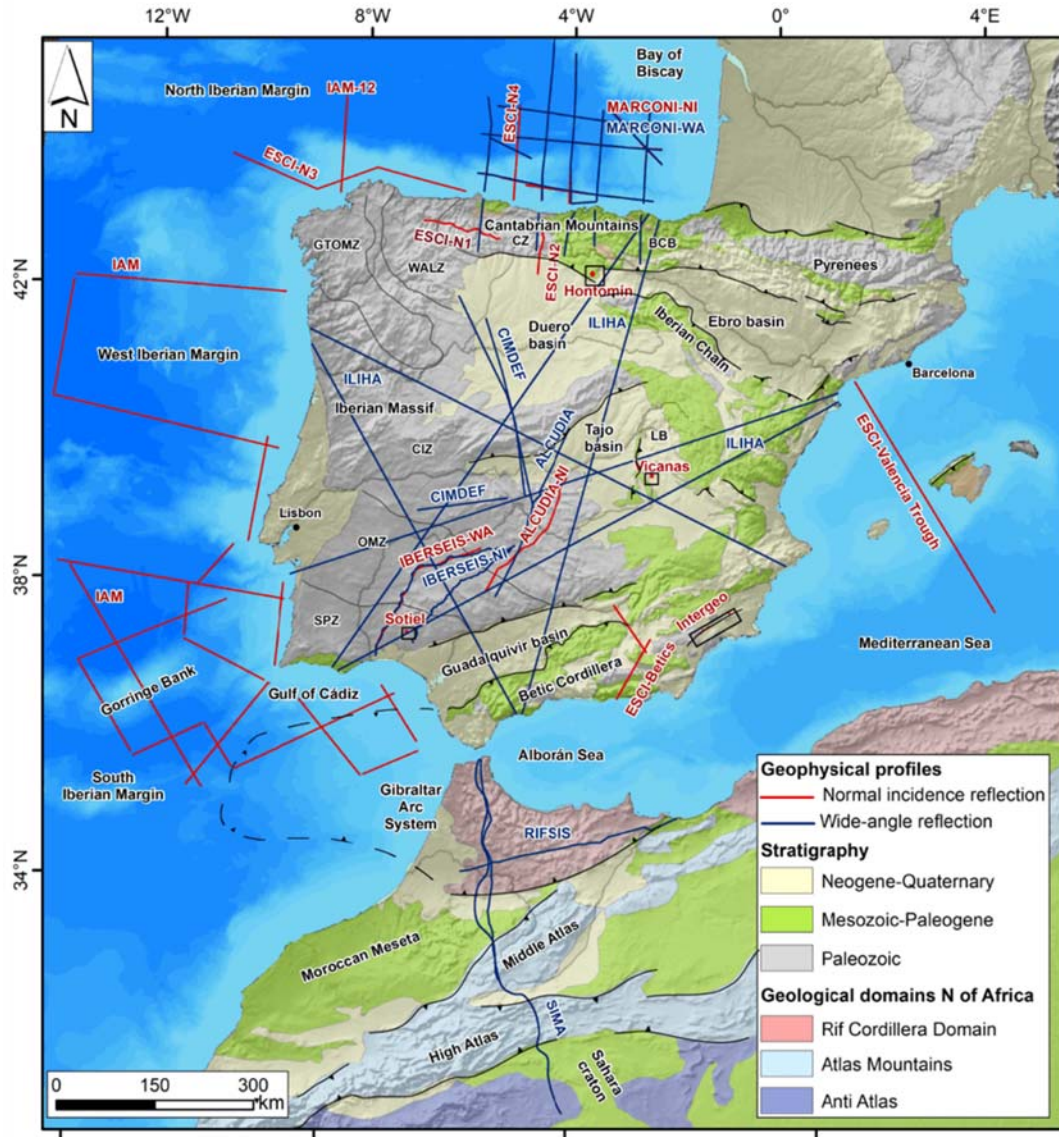
Within the GEO3BCN database, stands out **SeisDARE** (<https://digital.csic.es/handle/10261/101879>), an open access **Seismic Data REpository**. It comprises, until now, 21 seismic datasets.

Here, every dataset is presented in the format of a publication, with the authors, year, title, and DOI. Additionally, we include an index card summarizing the main characteristics of the dataset.

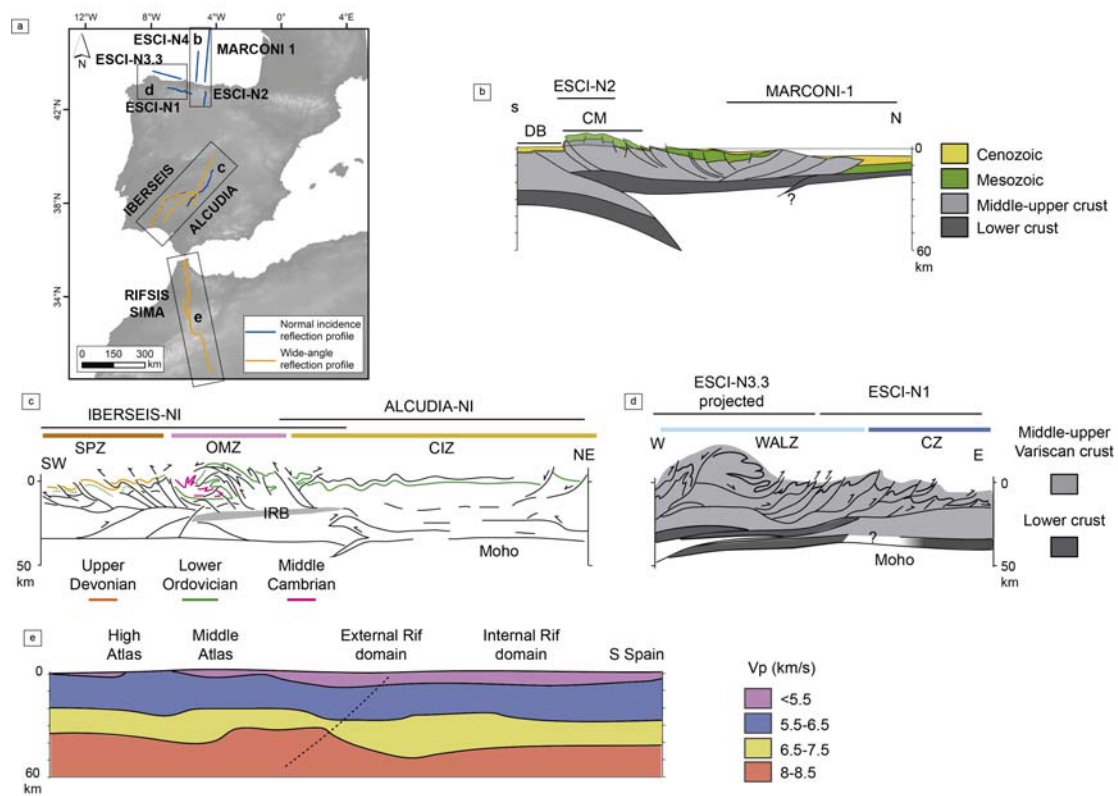
SEISDARE: GEOLOGICAL COVERAGE

SeisDARE comprises Deep Seismic Sounding (DSS) and high-resolution (HR) data acquired in the Iberian Peninsula and Morocco since the 1980's.

DSS data aim to characterize the structure of the lithosphere and HR data are focused on the shallow subsurface for exploration purposes.



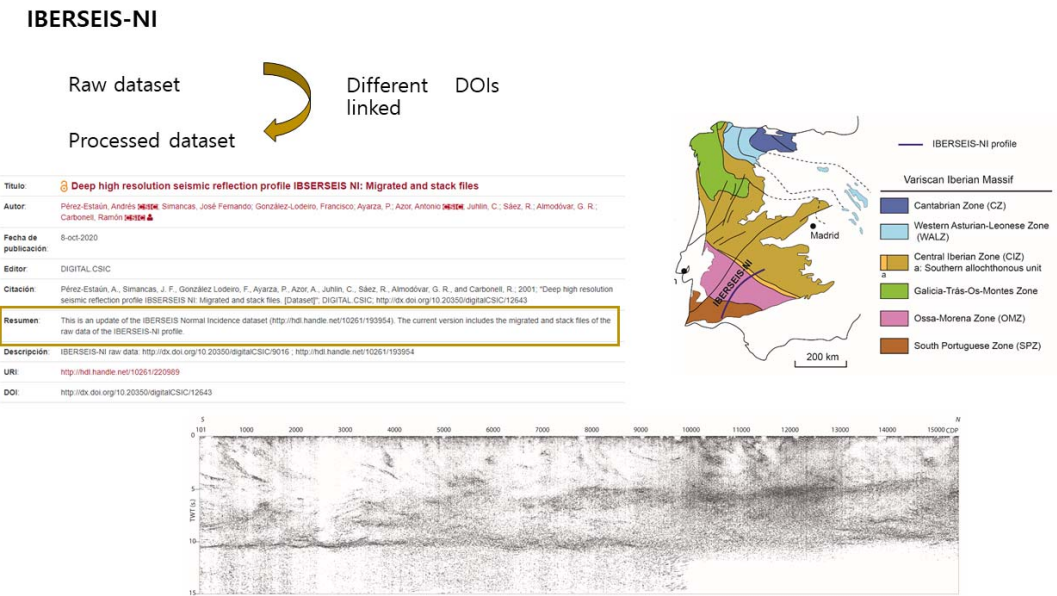
Geological map of the Iberian Peninsula and north of Africa with the seismic profiles provided in the SeisDARE (DeFelipe et al., 2020).



a) Map of the Iberian Peninsula and north of Africa with the location of the ESCI-N, MARCONI 1, IBERSEIS, ALCUDIA, RIFSIS and SIMA projects; b) crustal structure of the Cantabrian Mountains (CM), Duero basin (DB), and Bay of Biscay based on ESCI-N and MARCONI data (after Pedreira et al., 2015; Gallastegui et al., 2016; Teixell et al., 2018); c) crustal structure of the southern Iberian Massif (SPZ: South Portuguese Zone; OMZ: Ossa Morena Zone; and CIZ: Central Iberian Zone; IRB: Iberian Reflective Body) revealed by the IBERSEIS and ALCUDIA projects (after Simancas et al., 2013); d) crustal structure of the northern Iberian Massif revealed by the ESCI-N1 and N3.3 profiles (after Ayarza et al., 1998; Fernández-Viejo and Gallastegui, 2005; Simancas et al., 2013); and e) P-wave velocity model obtained from the wide-angle reflection data of RIFSIS and SIMA (simplified from Ayarza et al., 2014; Gil et al., 2014) (DeFelipe et al., 2020).

SEISDARE: DATA EXAMPLES

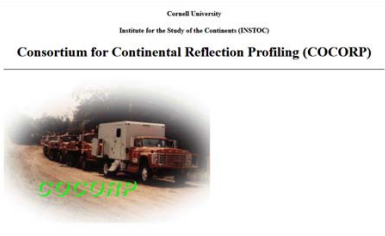
As an example of DSS data, IBERSEIS-NI was acquired in the Iberian Massif and is accesible by raw and processed files (Pérez-Estaún et al., 2001a, b). Complementary, a wide-angle reflection experiment was carried out to obtain a velocity model along the IBERSEIS profile (Palomeras et al., 2003).



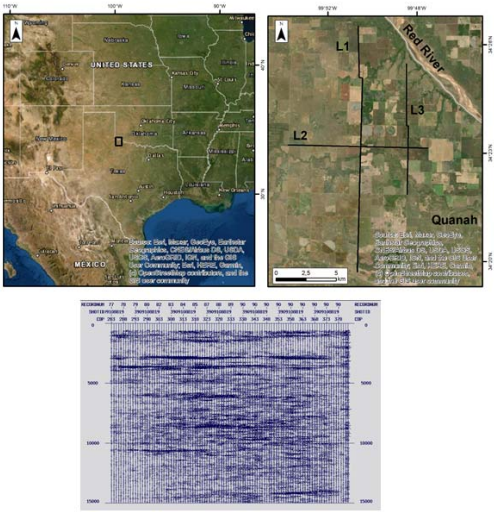
COCORP

Pioneer in the use of multichannel seismic reflection for exploration of the lithosphere.

In 1975, 37 km of deep seismic profiling were acquired in Texas.



<http://www.geo.cornell.edu/geology/cocorp/COCORP.html>



Oliver and Kaufman (1975)

DIGITAL.CSIC

In close collaboration with EPOS, **Digital.CSIC** (<https://digital.csic.es/>) is an institutional repository that stores multidisciplinary data following the FAIR (Findable, Accessible, Interoperable and Reusable) principles of data management.

Within digital.CSIC, the institute Geosciences Barcelona (**Geo3BCN** (<https://geo3bcn.csic.es/>)) hosts a website where information about the research carried out, can be easily accessed.

DIGITAL.CSIC / Recursos Naturales

English español

Statistics

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El Instituto de Ciencias de la Tierra Jaume Almera (ICTJA) es un centro del Consejo Superior de Investigaciones Científicas (CSIC), se creó en 1965 y está ubicado en el Campus Universitario de Pedralbes en Barcelona. La actividad investigadora del ICTJA se enmarca en cuatro Líneas de Investigación: Estructura y Dinámica de la Tierra. Cambios Medioambientales en el Registro Geológico. Modelado Geofísico y Geoquímico. Cristalografía y Propiedades Ópticas. La actividad investigadora se desarrolla a través de la ejecución de contratos con empresas públicas y privadas y proyectos de investigación competitiva de los gobiernos catalán y español y de la Unión Europea.

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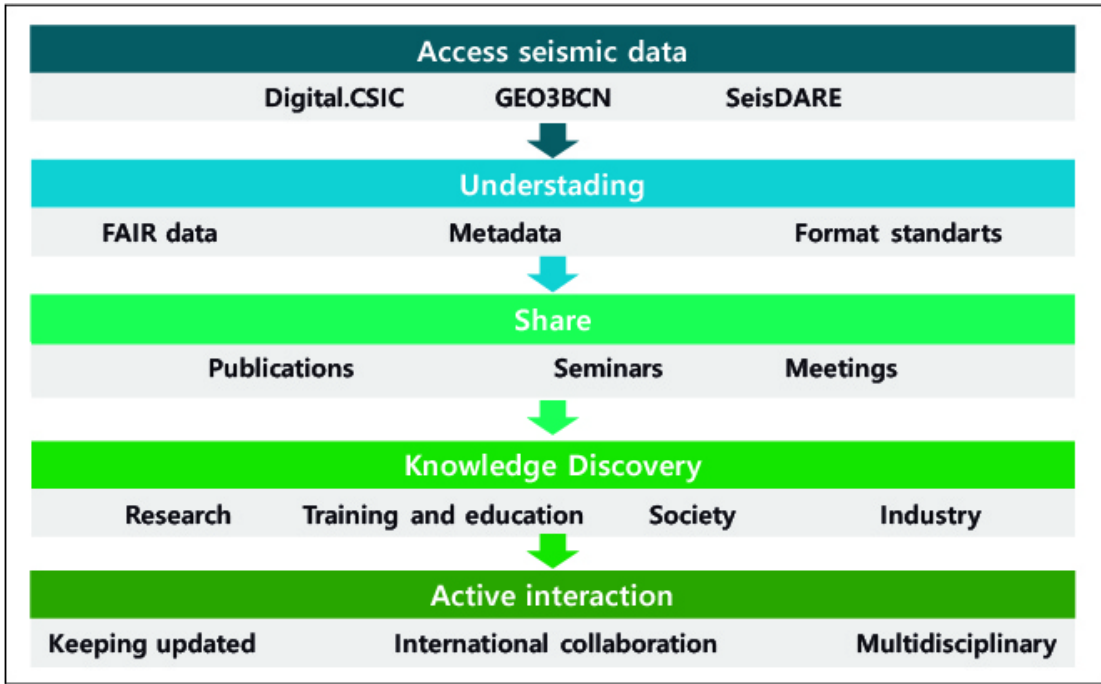
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CONCLUSIONS

SeisDARE is an open access Seismic DAta REpository that stores DSS and HR seismic data acquired in the Iberian Peninsula and Morocco since the 1980's.

This database has been built thanks to a network of institutions and is open for international data exchange and collaborations.

By following the FAIR (Findable, Accessible, Interoperable and Reusable) principles of data management and having regular updates, it brings endless research and teaching opportunities to the scientific, industrial and educational communities.



Acknowledgments

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