Scientific drilling infrastructure: improved access and progress in digital archiving of samples and data

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Scientific Drilling and Coring

Where data comes from? → **Data** → **Areas**

International Scientific drilling programs
- Ocean
  - DSDP(1966-1983)
  - ODP(1985-2003)
  - IODP(2003-2013)
  - IODP(2013-2024)
  - IODP³ from 2025
- Land
  - ICDP

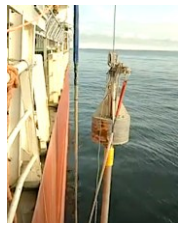
Marine Coring
- Expeditions (Research Vessels)
  - Urania (CNR)
  - Gaia Blu (CNR)
  - Explora (OGS)
  - Laura Bassi (OGS)

Italian Participation

ECORD
IODP-Italia
MUR
CNR DSSTTA

IODP³ INTERNATIONAL OCEAN DRILLING PROGRAMME
icdp INTERNATIONAL CONTINENTAL SCIENTIFIC DRILLING PROGRAM







Scientific Drilling Cores (Rocks or Sediments)



Bremen Core Repository

Areas

- Structural Geology
- Sedimentology
- Paleomagnetism
- Petrography
- Petrology
- Geochemistry
- Micropaleontology
- Lithology
- Borehole Geophysics

Objectives

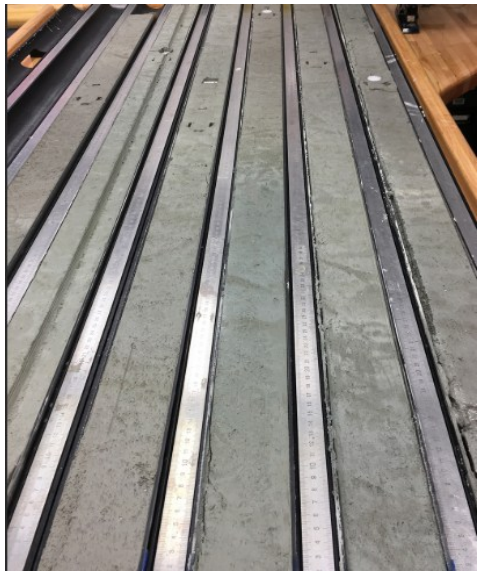
WP7 ITINERIS in Italy has focused on two main actions:

1) Identification of vintage samples from past studies that generated valuable scientific data but remained **uncatalogued** in storage facilities of Italian universities and research centers.

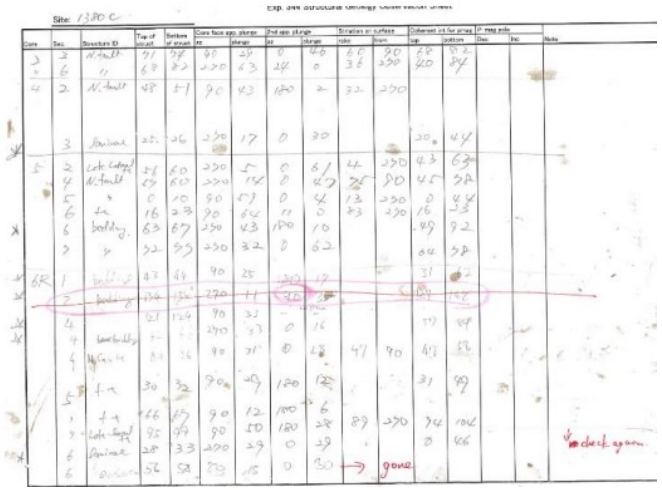
2) Collection of shallow coring records acquired onshore and offshore (including those from the Italian research vessels), which lacked a proper data archiving system.

Deliverable

1. Cores from scientific drilling



2. Cores descriptions



3- Digital archiving + calculations

	A	B	C	D	E	F	G	H	I	J	K
1						Top depth	bottom dept	av. Depth	top of struct	bottom of struct	average depth
2	Site	Hole	core	sect	structure ID	m	m	m			
3	U1380 C	3R		3	Normal Fault	451.21	451.24	451.225	71.0	74.0	72.5
4	U1380 C	3R		6	Normal Fault	455.38	455.52	455.45	68.0	82.0	75
5	U1380 C	4R		2	Normal Fault	458.61	458.64	458.625	48.0	51.0	49.5
6	U1380 C	4R		3	Lamination	459.45	459.46	459.455	25.0	26.0	25.5
7	U1380 C	5R		2	Strike-slip Fault (sinistra	468.83	468.87	468.85	56.0	60.0	58
8	U1380 C	5R		4	Normal Fault	471.21	471.27	471.24	54.0	60.0	57
9	U1380 C	5R		5	Normal Fault	471.74	471.84	471.79	0.0	10.0	5
10	U1380 C	5R		6	Fault	473.06	473.13	473.095	16.0	23.0	19.5
11	U1380 C	5R		6	Bedding	473.53	473.57	473.55	63.0	67.0	65
12	U1380 C	5R		7	Bedding	474.56	474.58	474.57	72.0	74.0	73
13	U1380 C	6R		1	Bedding	477.23	477.24	477.235	43.0	44.0	43.5
14	U1380 C	6R		4	Normal Fault	481.81	481.88	481.845	49.0	56.0	52.5
15	U1380 C	6R		4	Bedding	481.94	481.98	481.96	62.0	66.0	64
16	U1380 C	6R		4	Bedding	482.53	482.56	482.545	121.0	124.0	122.5
17	U1380 C	6R		5	Fault	482.88	482.9	482.89	30.0	32.0	31
18	U1380 C	6R		5	Fault	483.24	483.25	483.245	66.0	67.0	66.5
19	U1380 C	6R		5	Strike-slip Fault (sinistra	483.53	483.57	483.55	95.0	99.0	97
20	U1380 C	6R		6	Lamination	484.36	484.41	484.385	28.0	33.0	30.5
21	U1380 C	6R		6	Fracture	484.64	484.66	484.65	56.0	58.0	57
22	U1380 C	6R		7	Vein	485.99	486.38	486.185	41.0	80.0	60.5
23	U1380 C	6R		7	Fault	486.31	486.42	486.365	73.0	84.0	78.5
24	U1380 C	7R		1	Strike-slip Fault (sinistra	487.1	487.13	487.115	60.0	63.0	61.5
25	U1380 C	7R		1	Fracture Zone (Breccia)	487.4	487.58	487.49	90.0	108.0	99
26	U1380 C	7R		1	Normal Fault	487.85	487.86	487.855	135.0	136.0	135.5
27	U1380 C	7R		1	Fracture Zone (Breccia)	487.86	487.99	487.925	136.0	149.0	142.5
28	U1380 C	7R		2	Fracture Zone (Breccia)	488	488.37	488.185	0.0	37.0	18.5

4- Archiving in mobile Digital Information System (mDIS)* (in progress)

icdp

COSTA RICA SEISMOGENESIS PROJECT, PROGRAM A STAGE 2 (CRISP-A2)

List of Structure records

Expedition	Program Name	Site	Hole Code/Identfier	Core Number	Section Number	Split Type
344	International Ocean Discovery Program	1	A	1 H	1	W

ID	Top/location on section [cm]	Bottom	Structure Id	Remarks	Structure Details	Dip	Dip 2	Az 1	Az 2	Striation	Curator
2	55	56	Bedding		Slump	3	15	90	15		
3	65	70	Bedding		Slump	38	1	90	0		
4	78	79	Bedding		Slump	3	5	270	0		
5	85	89	Bedding		Slump	30	19	270	180		

Access to ECORD and ICDP

- **ITINERIS has boosted the access of Italian researchers (including many early career researchers) to both the European Consortium Oceanic for Research Drilling (ECORD) and the ICDP infrastructures**
  - 2024: **16** members of Science Teams in three Drilling Expeditions, of which 2 co-chief scientists
  - 2025: **7** members of Science Teams in three Drilling Expeditions
  - (pre-ITINERIS annual entitlement: ~2)
  - **2** ICDP drilling project and **1** proposals in Italy
- **Increased the national participation in proposal writing, in drilling expeditions/projects, initiatives to use legacy samples/data, and training activities.**
- **Italy has become the fourth contributor in ECORD after Germany, UK, and France.**

Conclusions

ITINERIS has:

- Promoted the archiving of thousands of existing sub-samples and datasets making data **Findable, Accessible, Interoperable, Reusable (FAIR). 18085 samples in the catalogues**
- **Reinforced the network of laboratories for core and sample analysis (CNR, OGS, INGV, Univ. Milano, Pavia, Florence)**
- Supported the development of an **ITINERIS database infrastructure adopting the ICDP-ECORD Mobile Drilling Information System (mDIS) and training users.**
- **Set the basis for the establishment of a national system for drilling and coring data repositories**

THANKS!

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