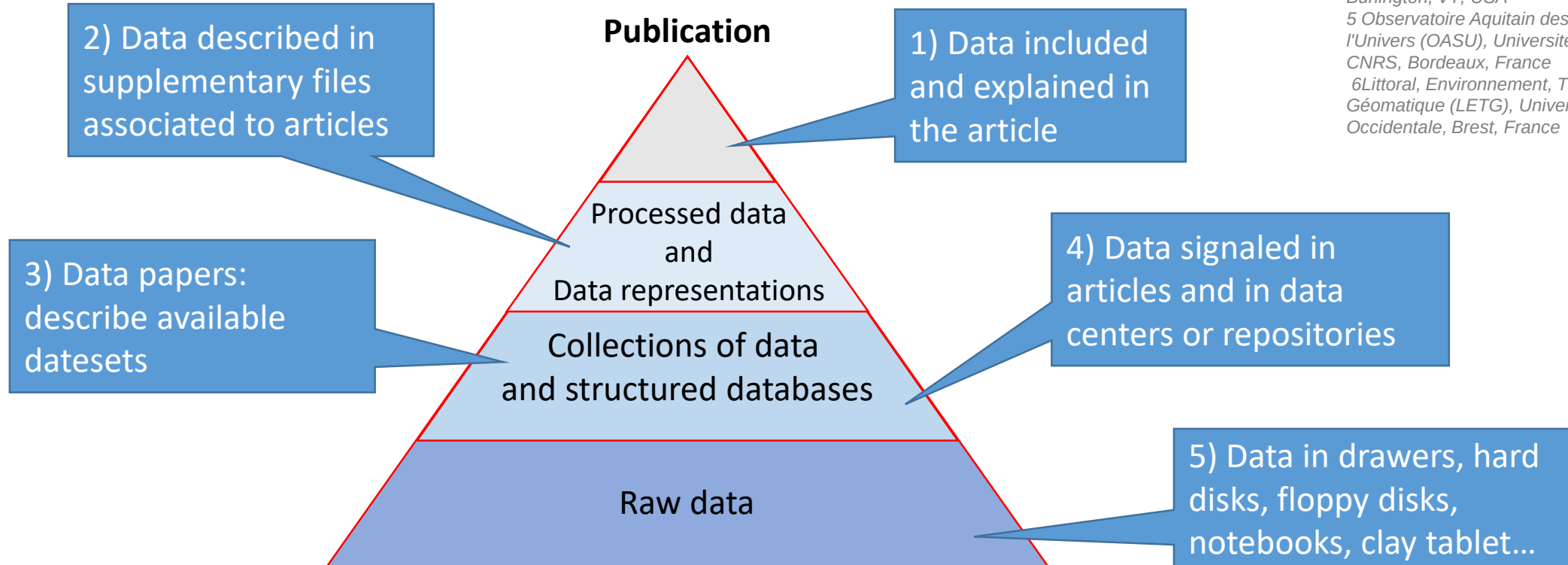


Fabien Arnaud¹, Cécile Pignol¹, Bruno Galabertier¹, Xavier Crosta², Isabelle Billy², Elodie Godinho³, Karim Bernardet³, Pierre Sabatier¹, Anne-Lise Develle¹, Rosalie Bruel^{1,4}, Julien Penguen⁵, Pascal Calvat⁵, Pierre Stéphan⁶, and Mathias Rouan⁶

The pyramid of data: general case



1 Environment Dynamics and Territories of the Mountain (EDYTEM), Université Savoie Mont-Blanc, CNRS, Chambéry, France (fabien.arnaud@univ-savoie.fr)
 2 Environnements et paléoenvironnements océaniques et continentaux (EPOC), Université de Bordeaux, CNRS, Bordeaux, France
 3 Division Technique de l'Institut des Sciences de l'Univers (DT-INSU), CNRS, La Seyne-sur-Mer, France
 4 Rubenstein Ecosystem Science Laboratory, University of Vermont, Burlington, VT, USA
 5 Observatoire Aquitain des Sciences de l'Univers (OASU), Université de Bordeaux, CNRS, Bordeaux, France
 6 Littoral, Environnement, Télédétection, Géomatique (LETG), Université de Bretagne Occidentale, Brest, France

Findable . Accessible .
Interoperable . Reusable .

Publications are just the emerged tip of a huge iceberg of « frozen » data



**Findable . Accessible .
Interoperable . Reusable .**

2) Data described in supplementary files associated to articles

3) Data papers: describe available datasets

Publication

1) Data included and explained in the article

Processed data
and
Data representations

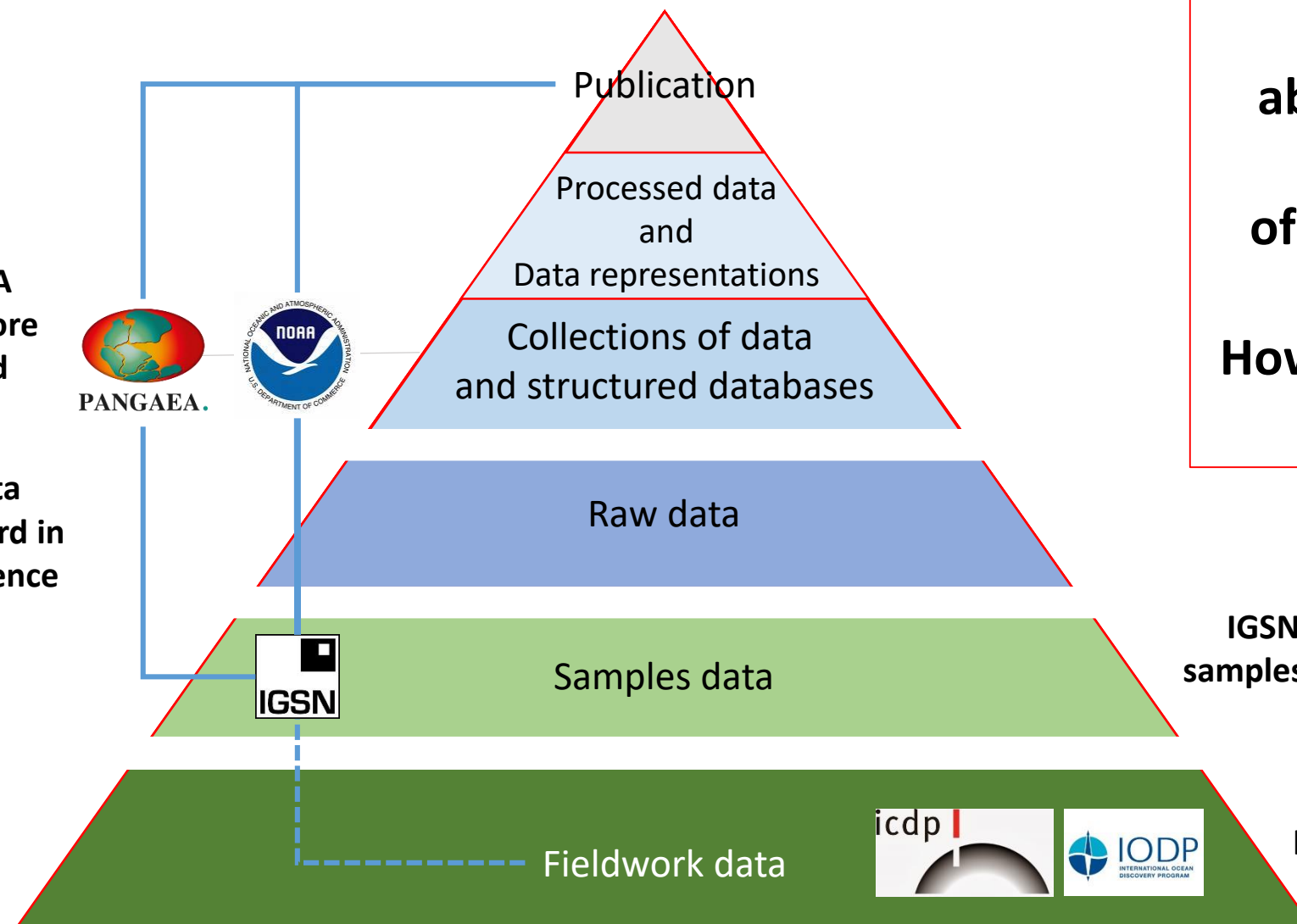
Collections of data
and structured databases

Raw data

4) Data signaled in articles and in data centers or repositories

5) Data in drawers, hard disks, floppy disks, notebooks, clay tablet...

The pyramid of data: case of field-based (geo)sciences



PANGAEA or NOAA portals permit to store and find published datasets

There is no raw data repository nor standard in sample-based geoscience

Samples and field data are the absolutely necessary foundations of the whole pyramid

However, they are often poorly banked

IGSN offers the opportunity to link samples and data but includes only poor fieldwork data

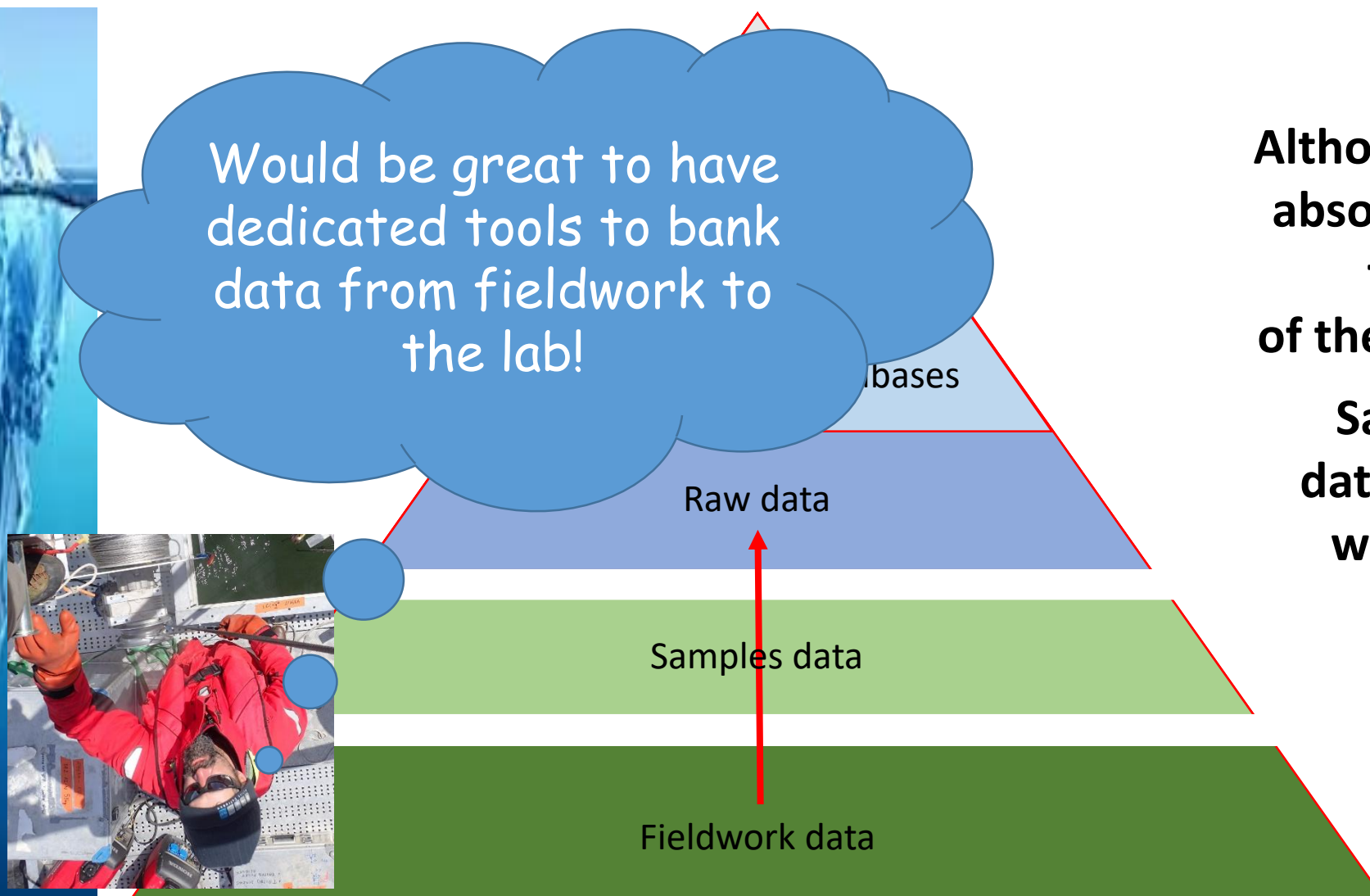
Fieldwork data are sometimes banked at single-project scale, not for every researcher

The pyramid of data: case of field-based (geo)sciences

Would be great to have dedicated tools to bank data from fieldwork to the lab!

Although, they are the absolutely necessary foundations of the whole pyramid:

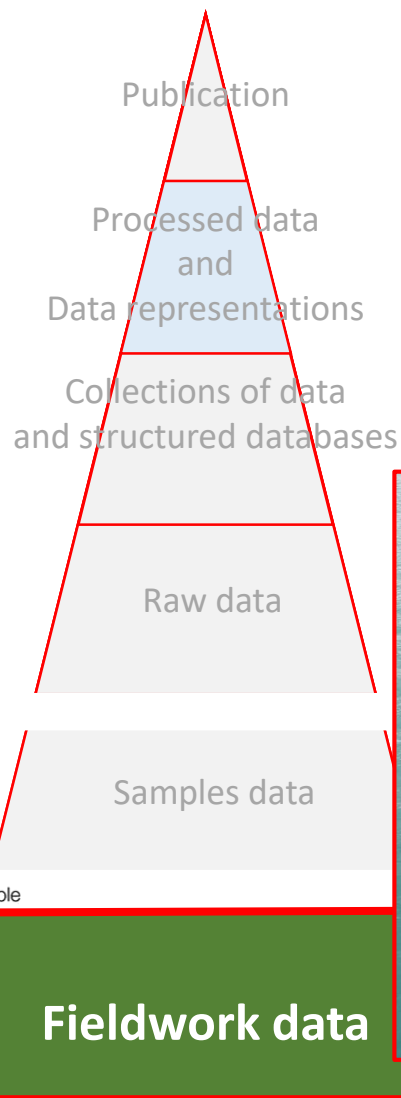
Samples and field data are often barely within the iceberg itself...



How to turn kilos of mud into megabytes of data?

10 years of efforts in curating lake sediment cores and their associated results

➔ **Catching fieldwork data at the source: CoreBook Android App.**

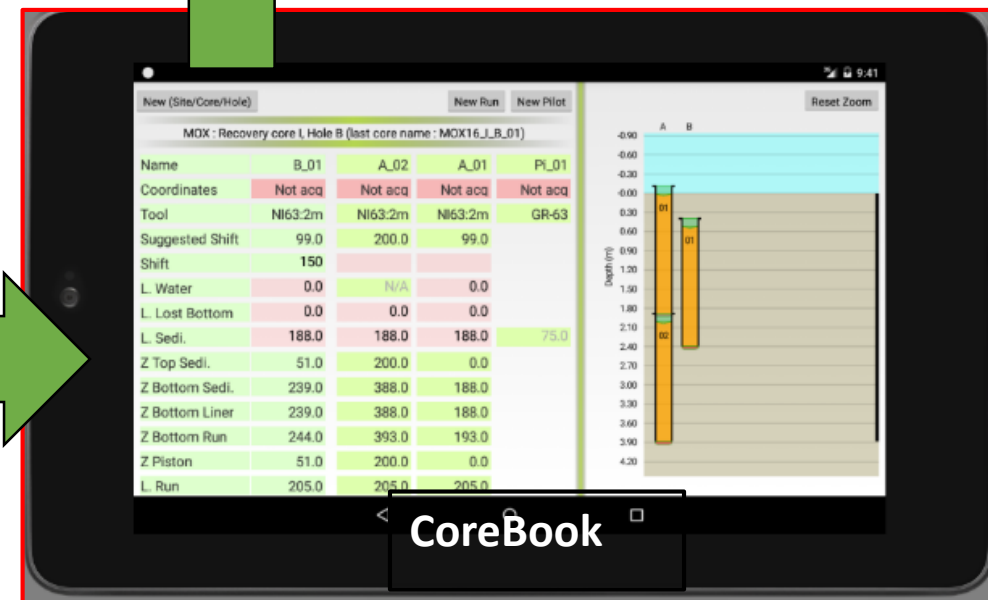
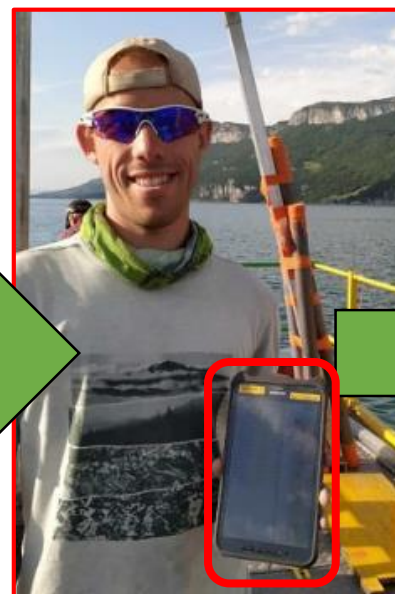
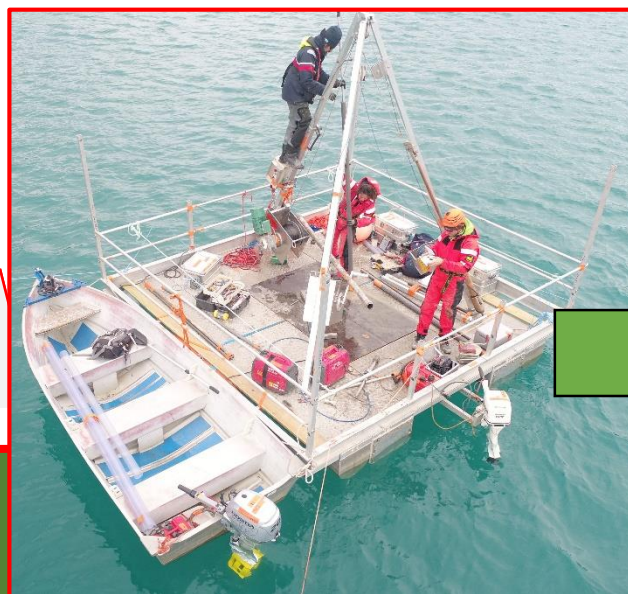


Functions to help field operations
(navigate, find older coring locations, placement of anchors, display of parallel cores)

Operator-friendly Data filling



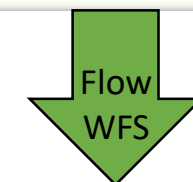
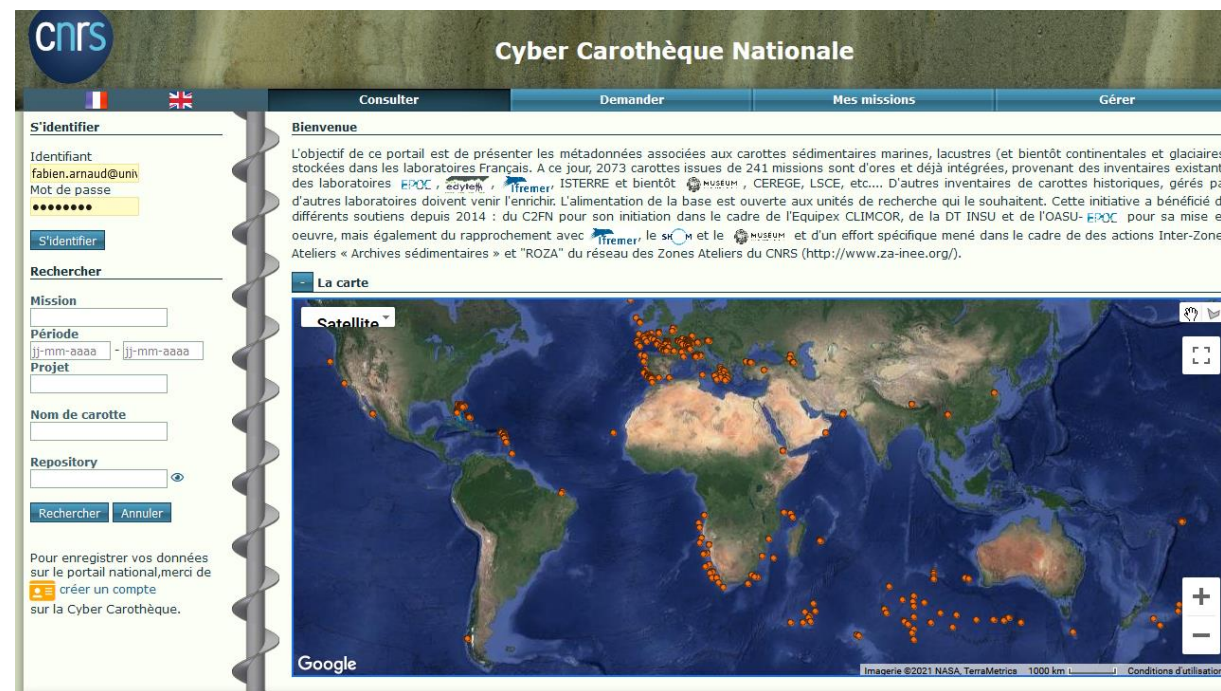
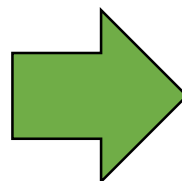
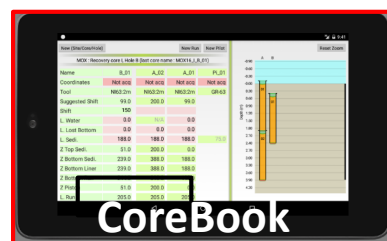
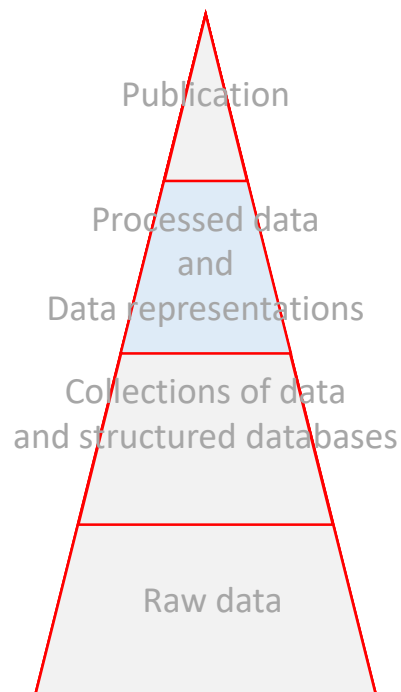
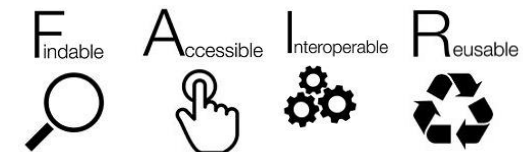
XML exchange file
Ready for input into a database



How to turn kilos of mud into megabytes of data?

10 years of efforts in curating lake sediment cores and their associated results

➔ **Banking and displaying fieldwork data: the National Cyber-core repository**
(Cyber-carothèque nationale)



Export geographical point & fielddata for GIS SYSTEM

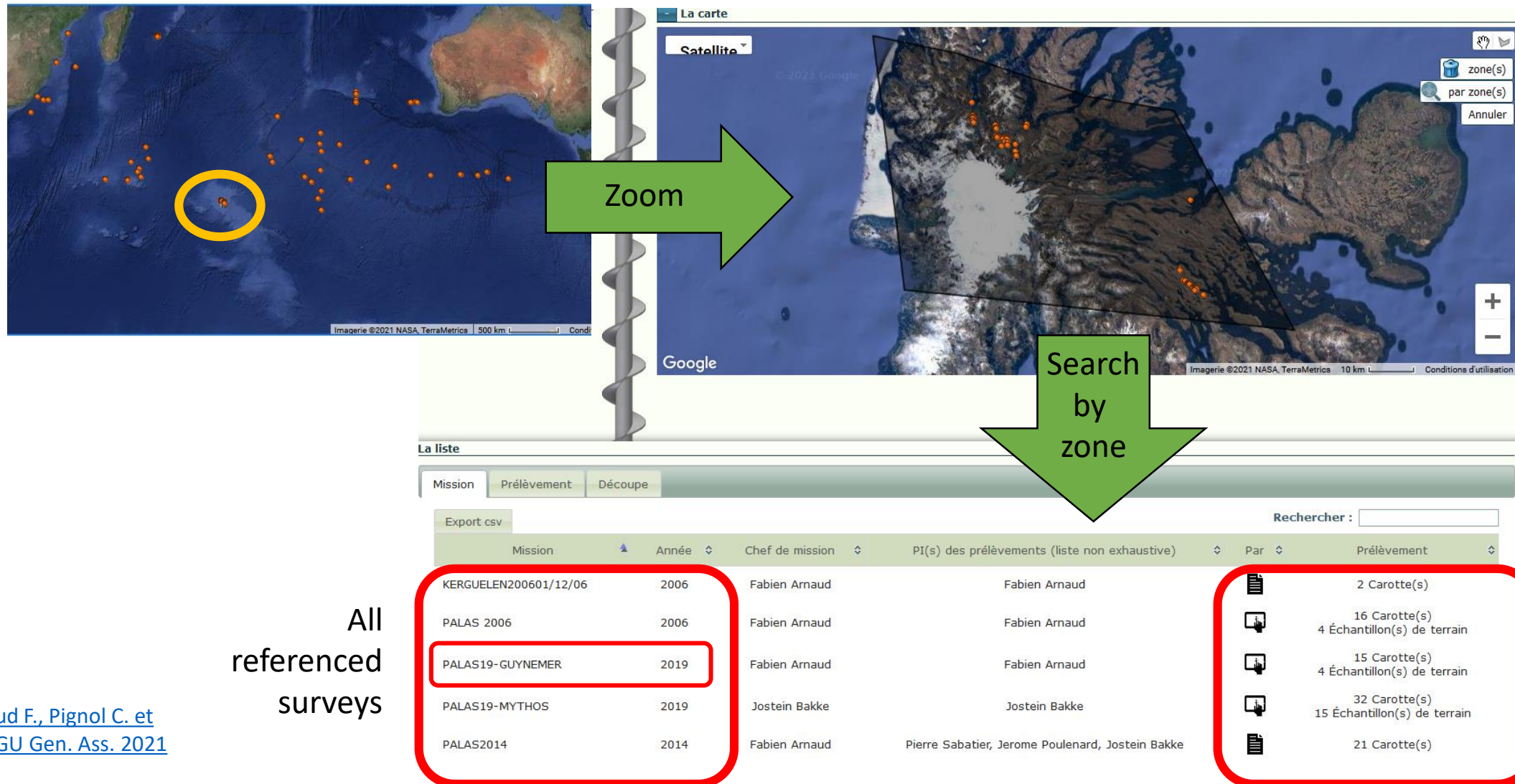
Samples data

Fieldwork data

How to turn kilos of mud into megabytes of data?

10 years of efforts in curating lake sediment cores and their associated results

Banking and displaying fieldwork data: the National Cyber-core repository ([Cyber-carothèque nationale](#))



All
referenced
surveys

All
referenced
cores and
samples

How to turn kilos of mud into megabytes of data?

10 years of efforts in curating lake sediment cores and their associated results

➔ Banking and displaying fieldwork data: the National Cyber-core repository ([Cyber-carothèque nationale](#))

Mission information

Mission PALAS19-GUYNEMER

Description

Fichier source Corebook

XML
source file

Code
Début de mission 27-11-2019 06:00
Fin de mission 27-11-2019 18:00

Description

Projet PALAS
Contexte scientifique

Link to project: permit
to display all
surveys/cores within
the same project

Connaissances préliminaires

Commentaire

Confidentialité Publique

Remerciements

DOI
URL
CSR

Automatic survey
report with DOI
(under development)

Participants

Chef foreur Arnaud Fabien
Chef de mission Arnaud Fabien

Acknowledgement of
crew members with
determined role and
ORCID identification

PI(s) des prélèvements (liste non exhaustive)
Arnaud Fabien

Financier

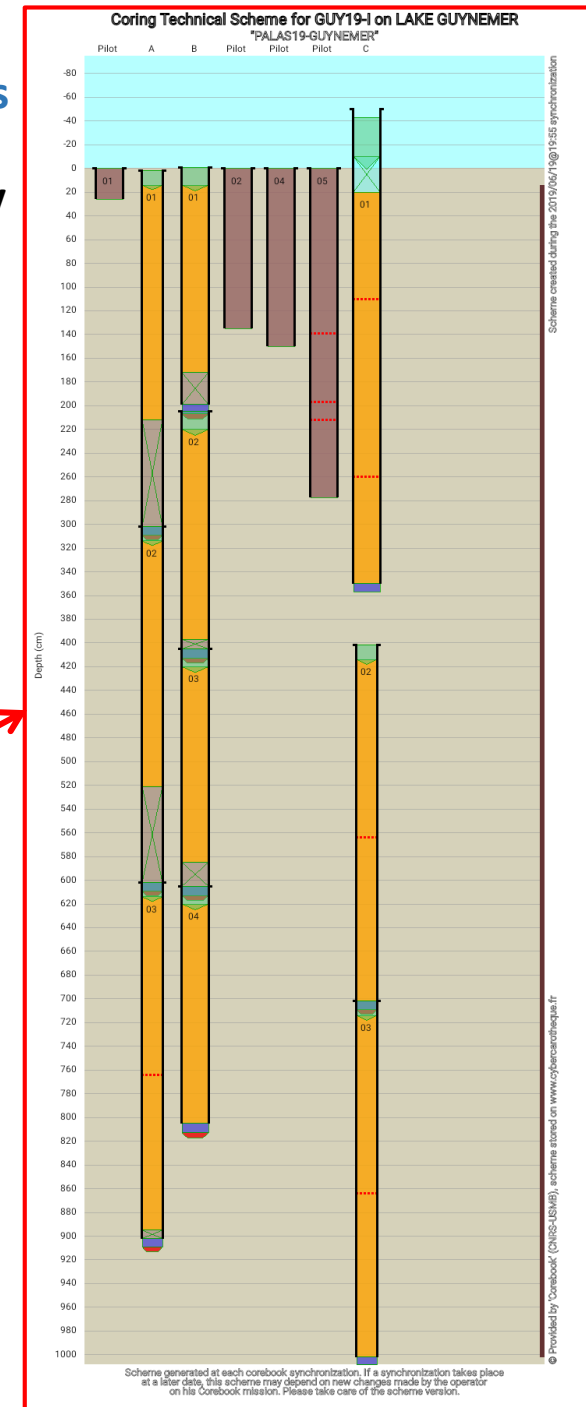
Aucun(e)

Documents liés

GUY19-I-Pil-05-20191223-141634.jpg
GUY19-I-Pil-05-20191223-141716.jpg
GUY19-I-Pil-05-20191223-141736.jpg
GUY19-I.20190619-195534.Coring.Schema.png
GUY19-I-B-01-20191201-064036.mp4
EPGUY19-01-20191204-113555.jpg
EPGUY19-01-20191204-113630.jpg

Any additionnal
document (pictures,
sounds, videos) taken
with CoreBook App.

When applicable: link
to the sketches of
parallel corings



How to turn kilos of mud into megabytes of data?

10 years of efforts in curating lake sediment cores and their associated results

➔ Banking and displaying fieldwork data: the National Cyber-core repository
([Cyber-carothèque nationale](#))

Sample (core) information

Description

N° IGSN **TOAE0000000078**

Site / Station **GUY19-I**

Nom **GUY19-I-A-03**

Matériau **Sédiment**

Type de prélèvement **Carotte (recouvrement)**

Environnement **Étendue d'eau (douce) naturelle - Lac**

Plateforme

Profondeur bathymétrique (m) **94**

Altitude (m) **131.0**

zone(s) **French Southern and Antarctic Lands, France**

Lieu **LAKE GUYNEMER**

Point GPS (WGS84, DD) **-49.11344500 69.02049300**

Date **28-11-2019 16:01**

Nom du carottier **U-NIEDERREITER 63-3m (EDY)**

Nom de la configuration **2-NIED63-3m PO/TC (EDY)**

Diamètre intérieur (mm) **63**

Longueur du prélèvement (m) **2.93**

Longueur matière récupérée (m) **2.81**

Époque géologique

PI **Fabien Arnaud**

Sondeur/Foreur en chef

Commentaire

IGSN unique
identifiant

Codified usual name :
Site-Year-Station-Hole-Section

Where is the core
stored?

Link to coring tool
information

Children
subsamples

Mission

Mission **PALAS19-GUYNEMER**

DOI / CSR

Début de mission **27-11-2019 06:00**

Fin de mission **27-11-2019 18:00**

Projet **PALAS**

Code projet (Reference)

Chef de mission **Fabien Arnaud**

Sondeur/Foreur en chef **Fabien Arnaud**

Repository

Repository **Environnements, DYnamiques et TERRitoires de la Montagne (EDYTEM)**

Documents liés

Aucun(e)

Sous-prélèvements associés

Export csv

Nom	Parent	IGSN	Profondeur supé
GUY19-I-A-03-A Section	GUY19-I-A-03 Carotte (recouvrement)	TOAE00000000582	
GUY19-I-A-03-B Section	GUY19-I-A-03 Carotte (recouvrement)	TOAE00000000583	

How to turn kilos of mud into megabytes of data?

10 years of efforts in curating lake sediment cores and their associated results

Banking and displaying fieldwork data: the National Cyber-core repository (cyber-carothèque nationale)

Coring tools information

Configuration des outils

ID	1 Nom de la configuration	2 Mode	3 Lien mécanique	4 Type Carottier	5 Carottier	6 Extracteur (core catcher)	7 Couronne	8 Trousse coupante / ogive	9 Dernière MAJ	10 Unité
107	1-UwPILOT90 (EDY)	Gravitaire	Câble	Interface	U-PILOT 90 (EDY)	Aucun(e)	Aucun(e)	Aucun(e)	2019-04-03 15:45:52	EDYTEM
106	1-UwPILOT63 (EDY)	Gravitaire	Câble	Interface	U-PILOT 63 (EDY)	Aucun(e)	Aucun(e)	Aucun(e)	2019-04-03 15:45:44	EDYTEM
105	1-NES (EDY)								2019-04-03 15:45:22	EDYTEM
104	2-USI								2019-04-08 15:43:08	EDYTEM
103	2-USI (EDY)								2019-04-08 15:43:44	EDYTEM
102	2-NIE (AFRI EDY)	Fonçage	Câble	stationnaire	90-2m (EDY AFRI)	NIEDERREITER 90 (AFR) Sph	Aucun(e)	90 2m TC (AFR)	2019-04-08 15:44:31	EDYTEM
101	2-NIED90-2m PO/TC (AFRI EDY)	Battage-Fonçage	Câble	Piston stationnaire	U-NIEDERREITER 90-2m (EDY AFRI)	8 (cm) NIEDERREITER 90 (AFR) PO	Aucun(e)	4 (cm) NEIDERREITER 90 2m TC (AFR)	2019-04-08 15:45:01	EDYTEM
100	2-NIED63-3m PO/TC (EDY)	Battage-Fonçage	Câble	Piston stationnaire	U-NIEDERREITER 63-3m (EDY)	7 (cm) NIEDERREITER 63 PO	Aucun(e)	4 (cm) NEIDERREITER 63 2m/3m TC	2019-04-08 15:45:40	EDYTEM

Normalised description of any coring/drilling tool + its configuration

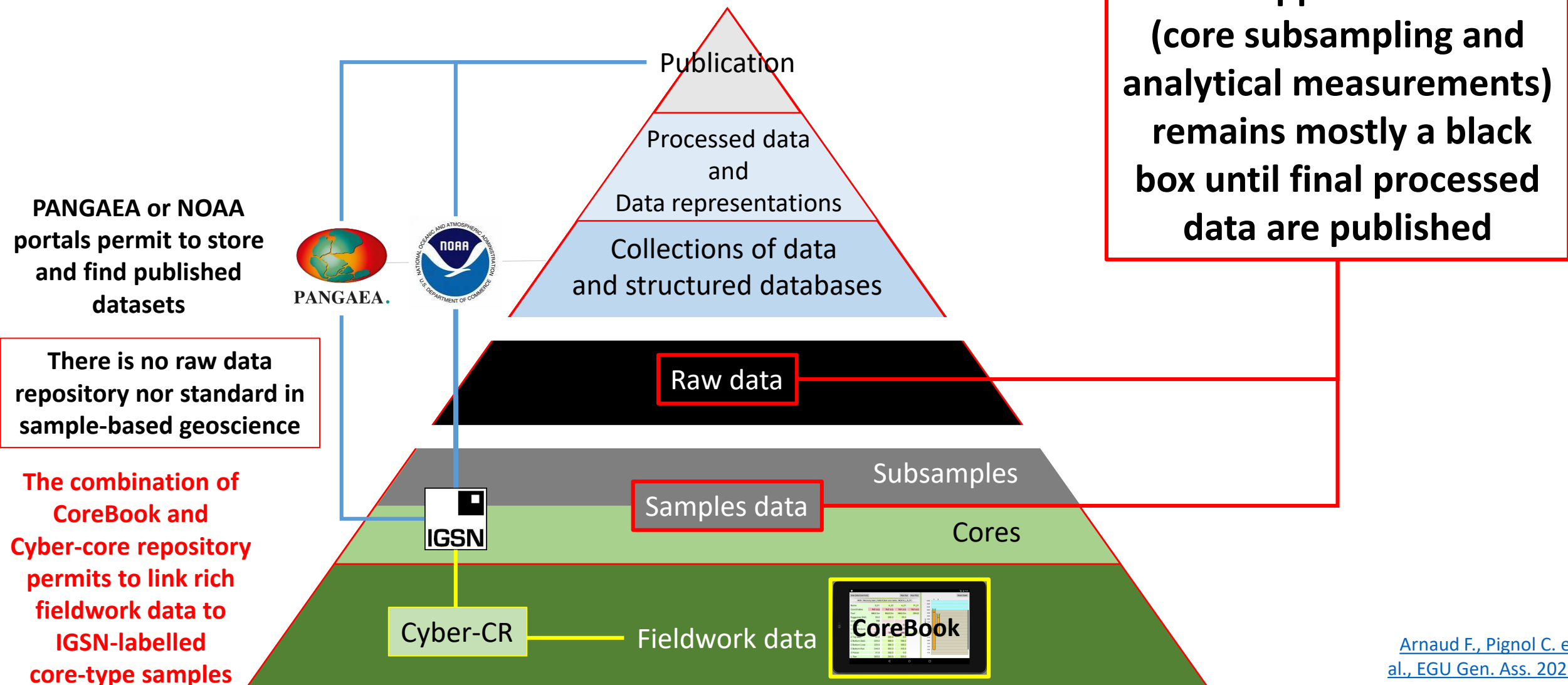
- 1- Name of the configuration
- 2- Mode (energy for penetration)
- 3- Link to the energy source
- 4- Type of corer
- 5- Usual name of the corer
- 6- Type of core catcher (if any)
- 7- Type coring bit (if any)
- 8- Type of cutting shoe (if any)
- 9- Latest update
- 10- Corer's owner

Under development:
#2 and #4 are common with
[CGI international standard for borehole drilling methods](#)

Mapping of both is ongoing

Configuration used to take GUY19-I-A-03

The pyramid of data: case of field-based (geo)sciences



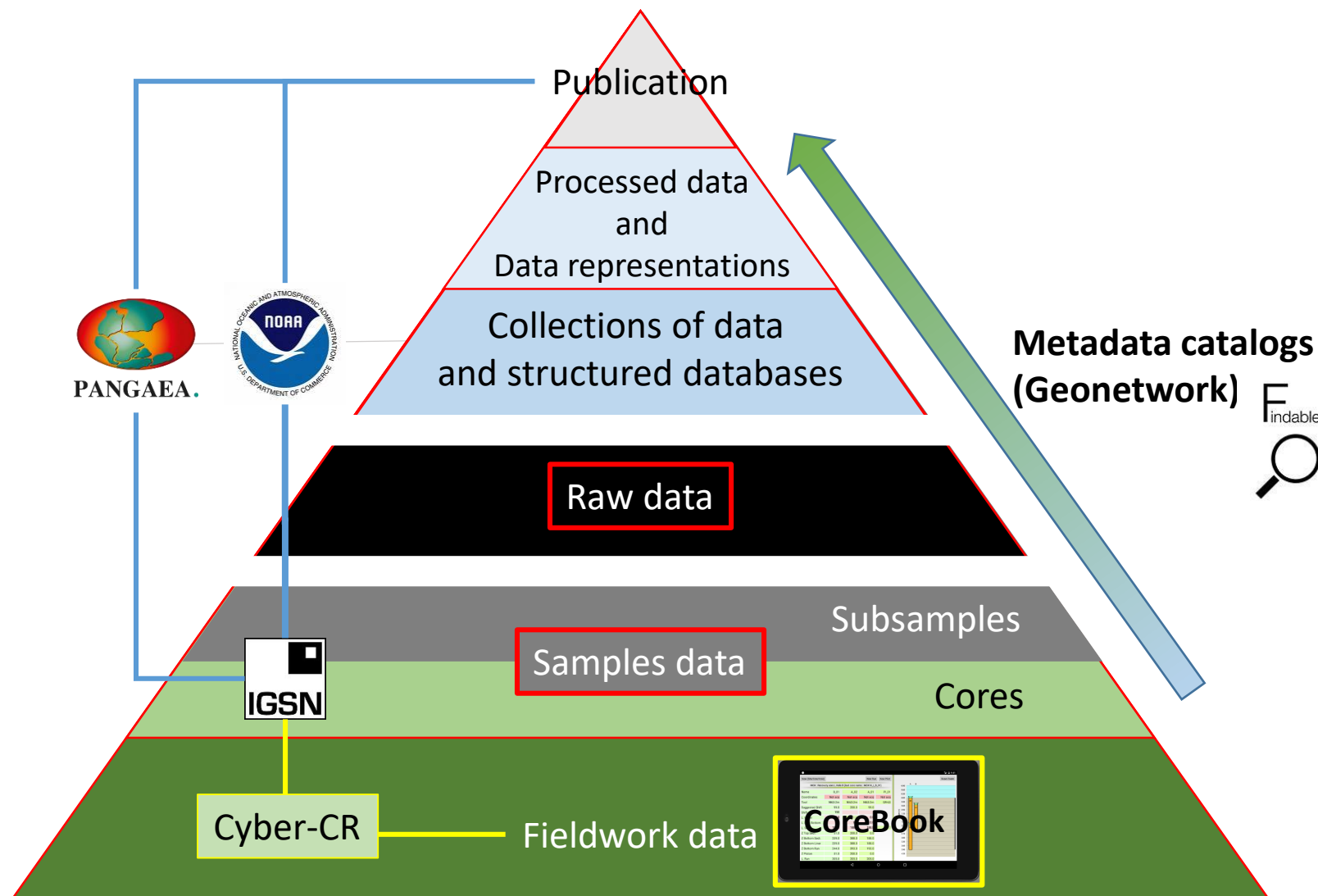
Remaining challenges are :

- 1) Curating core handling and subsampling data
- 2) Keeping track of previous operations (coring, subsampling, sample treatment) while analytical measurements are performed, together with analysis metadata

Ongoing attempts

- 1) Attempt to prolongate the cyber-core repository using [Collec-Science software](#) (not discussed here)
- 2) Prototype of an organised [Paleo-database for basic data](#) : **ROZA**

The pyramid of data: case of field-based (geo)sciences

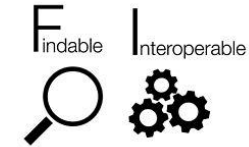


How to turn kilos of mud into megabytes of data?

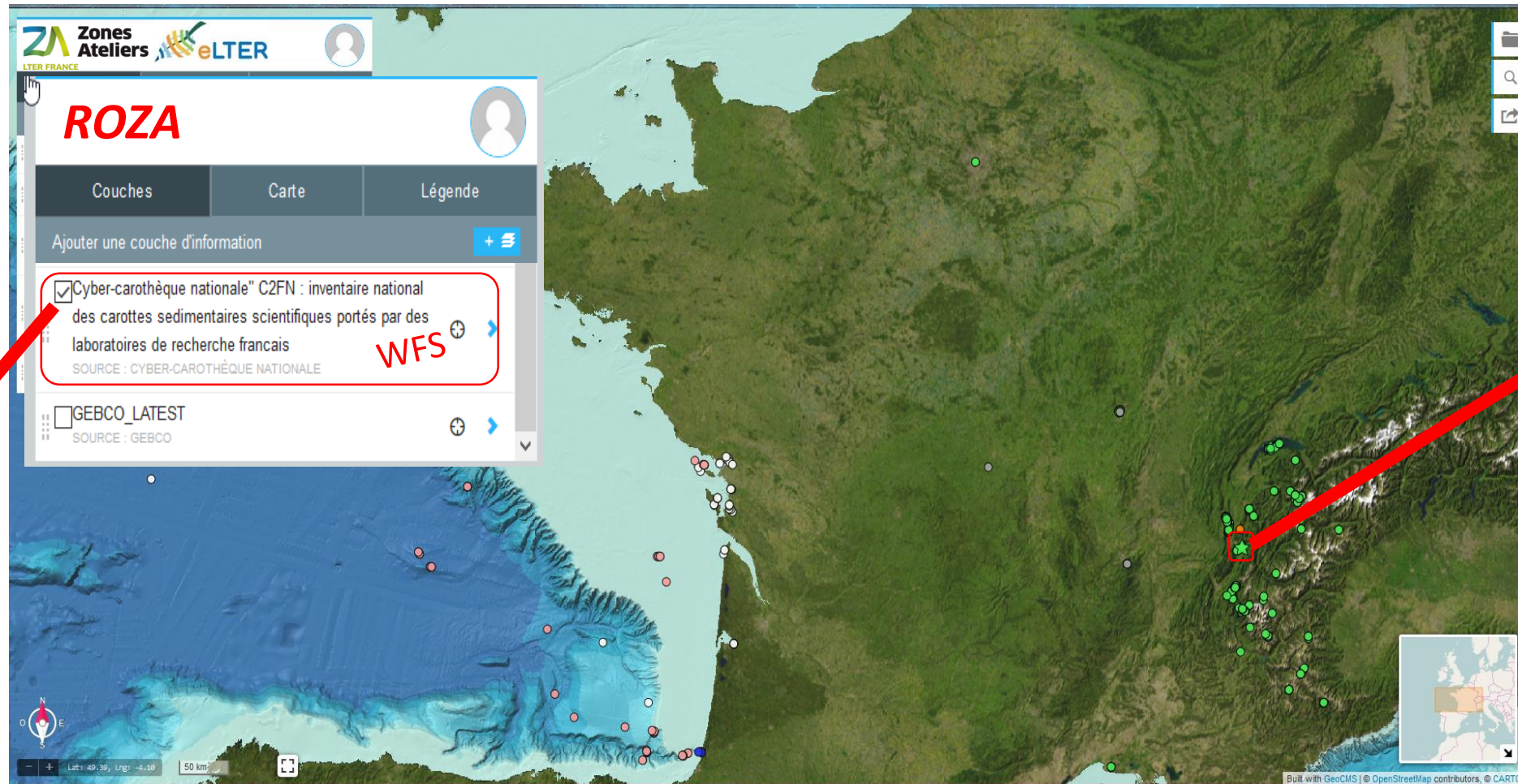
10 years of efforts in curating lake sediment cores and their associated results

« *French Zones Ateliers* » are the French contribution to the international *Long Term Environmental Research* (eLTER) network

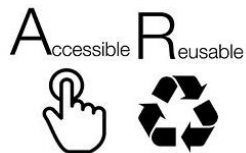
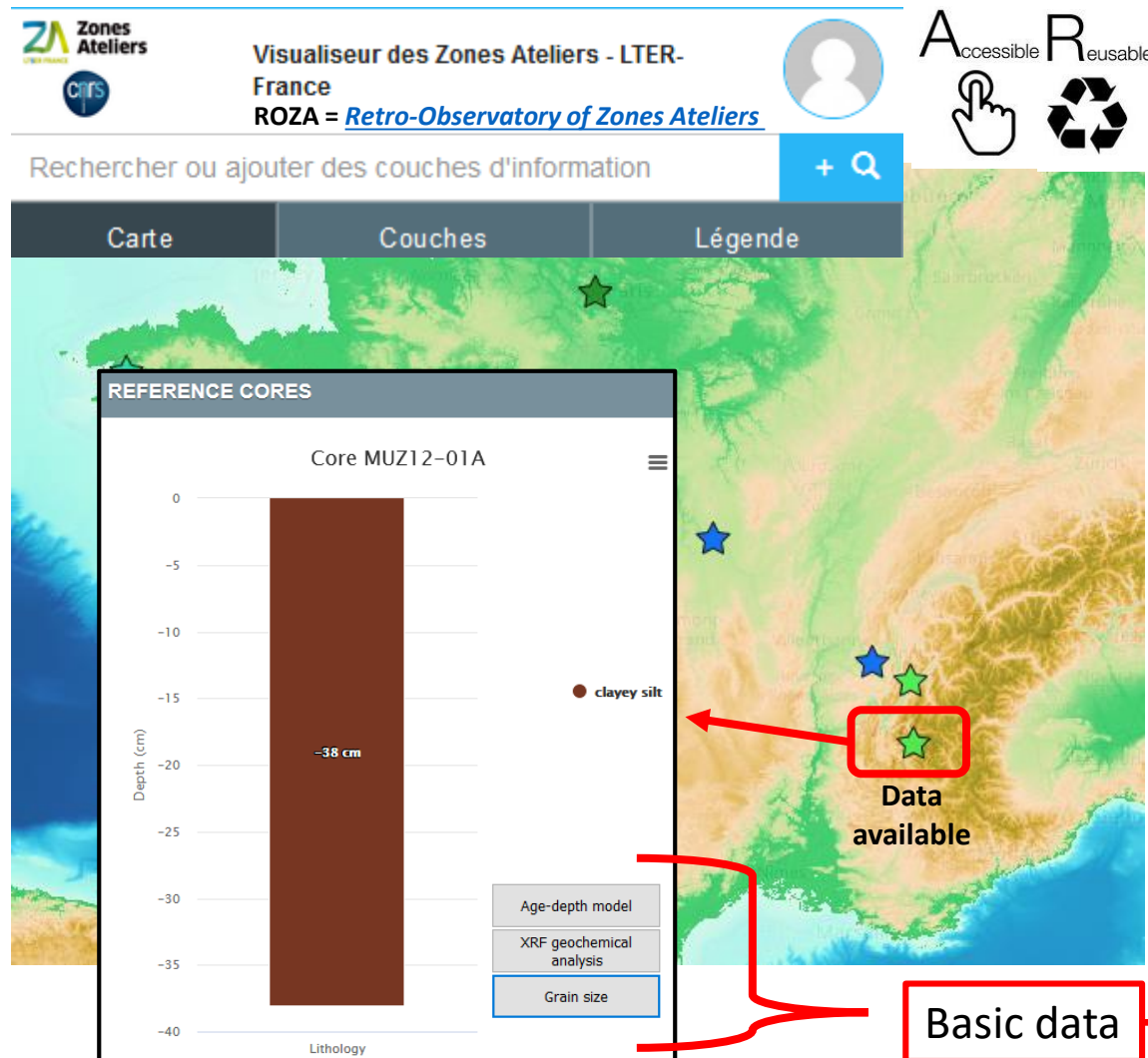
ROZA = Retro-Observatory of Zones Ateliers portal



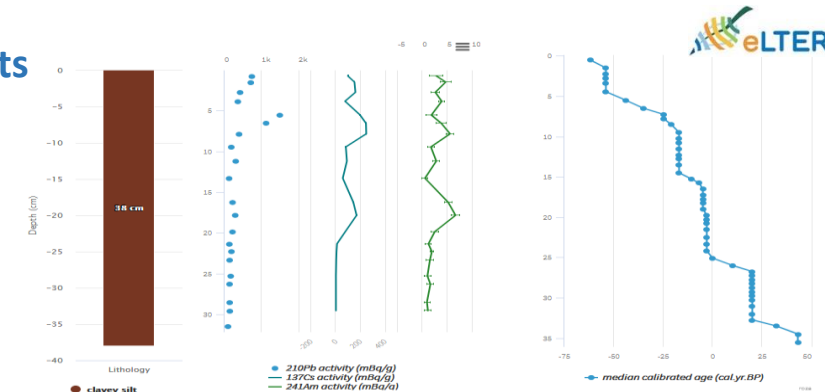
All Marines, continentals and ice 's cores by harvesting WFS From Cyber Core Repository



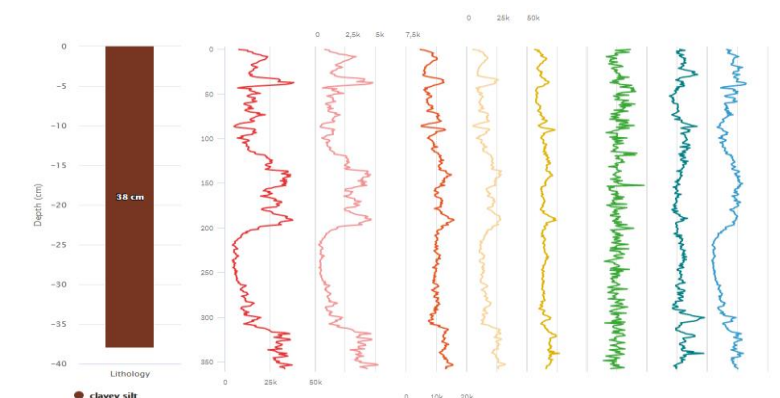
^ = Basic Data available



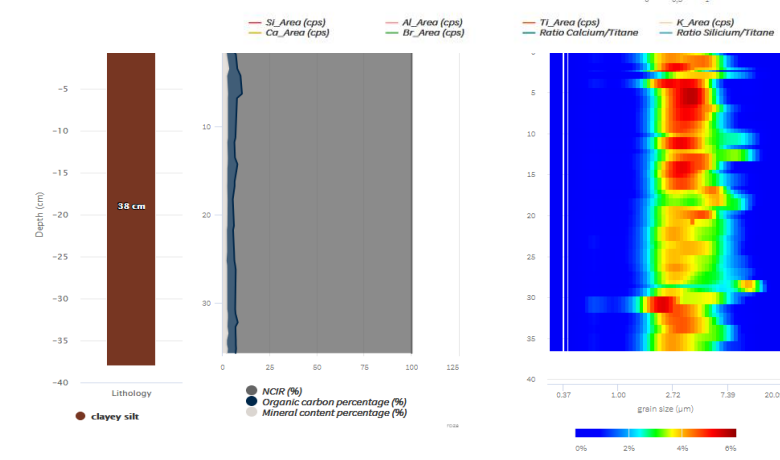
Dating information



XRF core scanner



Loss on Ignition & Grainsize



➔ ROZA aims at providing homogenised basic data to promote the re-use of sites, samples and data within the ZA network

ROZA : standardised data & metadata template

Usual name

IGSN

Usage license

NOMCAROTTE	POU14P1w	SESAR IGSN	IGSN:EDYFER0025	LICENCE UTILISATION (Creative Commons)	CC-BY-NC-SA
METADONNEES / REFERENCES					
Version fichier Reference EDYTEM_XRF_data_12/06/2015					
WHAT KIND OF ANALYSE	XRF core scanning				
WHERE / LAKE	Poule				
WHO / NAME RESEARCHER	Pierre Sabatier				
WHEN	25/01/2016				
WHY	Application	PALAS			
DOI					
Tube lenght (mm)	890				
Top sediment (mm)	38				
Bottom sediment (mm)	889				
Sediment lenght (mm)	851				
Tube Diameter	63mm				
INTRUMENT & SETTINGS		AVAATECH Core Scanner			
Source	Rhodium				
Voltage (kV)	10	30	50		
Intensity (mA)	1,2	0,75			
LiveTime (s)	30	30			
Step (mm)	1	1			
Measured Area (Crosscore*DownCore)	15*1	15*1			
Filter	No filter	Pd-Thin	Cu		
ELEMENTS concerned :					
	Al_Area	Cu_Area	Ag_Area		
	Si_Area	Zn_Area	Ba_Area		
	P_Area	Ga_Area			
	S_Area	Br_Area			
	Cl_Area	Rb_Area			
	K_Area	Sr_Area			
	Ca_Area	Y_Area			
	Ti_Area	Zr_Area			
	Cr_Area	Nb_Area			
	Mn_Area	Mo_Area			
	Fe_Area	Pb_Area			
	Rh_Area	Bi_Area			
Standards (Yes/No, Local Number Certified standards Names)		YES	134	MESS-3 SAPM-4	
Operator	Anne-Lise develle (orcid:00000328244106)				
Processing softwares	Winaxil, Winaxilbatch (Avaatech)				



Ongoing effort

When possible, use thesaurus/controlled vocabularies (CHEBI; IUPAC; QUTD; ...) to provide unambiguous variables and units (interoperability)

Sample characteristics
(from Cyber-core repository)

Measurements settings

Measurement variables
(here: list of elements)

Operator's
acknowledgement
(with ORCID)

➔ Referenced in
metadata catalogs

Promote visibility & interoperability

by metadata geocatalogue (ISO19.115)



Feature variables catalogue

Zones Ateliers LTSE France Metadata Node Rechercher Visualiser

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Retour à la recherche

Télécharger Mode affichage

Lac de la Muzelle - Carottage Muz12-I – Plant cover and erosion dynamics : impacts of pastoral activities and climatic changes over the last 1600 years - 2017 – (IGSN:IEFRA00A4)

Aperçu



 Logo

Aucune évaluation ★

Voir tous les commentaires

Ajouter votre commentaire

Étendue spatiale

Étendue temporelle

Téléchargements et liens

Zone Atelier Alpes
 LTSE-RZA <http://www.za-alpes.org/>

LTSE Zone Atelier Alpes - Master site Lautaret-oisans
 LTSE-R site <https://deims.org/79d6c1df-570f-455f-a929-6cfe5c4ca1e9>

Date de création
 2020-11-13

Fourni par


Mis à jour :

Link with vocabulary

Thesaurus / Vocabulary

(multi-language)

Interoperable

GENERAL

- Agroecology
- Biodiversity
- Farming practices
- Catchment
- Hydrology

INSPIRE

- Géology
- Habitats_and_biotopes
- Land_use

GEMET

- recherche scientifique
- donnée environnementale
- recherche sur l'environnement et développement
- étude de milieu
- données géoréférencées
- banque d'échantillons de l'environnement
- échantillonnage
- technique d'échantillonnage
- sédimentologie
- sédimentation
- glacier
- vase
- argile
- datation
- spectroscopie
- élément chimique

ENVTHES

- environmental analysis
- experimental research
- biodiversity
- core
- cores
- sampling date and time
- sampling parameter
- sediment
- sediment chemistry
- chemical analysis

NCBI

- Pinus
- Rumex
- Plantago

LINKED-EARTH

- flood frequency
- age modele

Feature catalog

Dictionnaire de données (Inter-ZA ROZA) : SHORT LIVE NUCLIDES

Technical information

Name	Definition
210 Pb Energy (keV) (FLOAT)	Grainsize
210Pb_ACTIVITY (mBq/g) (FLOAT)	
210Pb_ACTIVITY_uncert (mBq/g) (FLOAT)	
226Ra_ACTIVITY (mBq/g) (FLOAT)	
226 RaEnergy (keV) (FLOAT)	
226Ra_ACTIVITY_uncert (mBq/g) (FLOAT)	
137 CsEnergy (keV) (FLOAT)	
137Cs_ACTIVITY (mBq/g) (FLOAT)	
137Cs_ACTIVITY_uncert (mBq/g) (FLOAT)	
241 Am Energy (keV) (FLOAT)	
241Am_ACTIVITY (mBq/g) (FLOAT)	

Dictionnaire de données (Inter-ZA ROZA) : Classement, Q90, Q99

Technical information

Name	Definition
Grain moyen (REAL)	Measurement variables
Classement (FLOAT)	
Q90 (REAL)	
Q99 (REAL)	

Feature catalog

Dictionnaire de données (Inter-ZA ROZA) : Fluorescence X

Technical information

Name	Definition
Si_Area (INTEGER)	Fluorescence X
P_Area (INTEGER)	
S_Area (INTEGER)	

List of values

Create by R workflow « Geoflow »

Interoperability by Geocatalogue métadonnées (ISO19115)


LTER France Metadata Node

Rechercher
Visualiser

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Retour à la recherche

Lac de la Muzelle - Carottage Muz12-I – Plant cover and erosion dynamics : impacts of pastoral activities and climatic changes over the last 1600 years - 2017 – (IGSN:IEFRA00A4)

The reconstruction of human and climate-driven, Earth-shaping dynamics is important for understanding past human/environment interactions and for helping human societies that currently face global changes. However, it is often challenging to distinguish the effects of the climate from human activities on environmental changes such as erosion dynamic and plant cover. Here we evaluate an approach based on DNA metabarcoding used on lake sediments to provide high-resolution reconstruction of plant cover and livestock farming history over the last 1600 years. By comparing these data with reconstructions of erosive event frequency and glacier fluctuations, we can show that the erosion dynamic was primarily driven by climatic changes. The tree/shrub cover decreasing and the associated development of grazing activities in the last 500 years, had no noticeable impacts on the erosive event frequency. However, this period corresponds to the development of herbaceous plants with different and various ecological preferences, which shows the presence of a mosaic landscape. Tracking plants using lake sediment DNA (lake sedDNA) is an emerging and promising method for tracing past plant cover dynamic and better understand the roles of climatic changes and human activities on landscape changes. Composite coring sequence : site Muz12-I – avril 2012 (IGSN:IEFRA00A4). The sequence covered period from 303 to 2012 -year). LTER platform Lautaret-Oisans / Zone Atelier Alpes

Télécharger
Mode affichage

Aperçu



Aucune évaluation ★

Voir tous les commentaires
Ajouter votre commentaire

Étendue spatiale

Étendue temporelle

Date de création 2020-11-13

Fourni par

Mis à jour :

Zone Atelier Alpes
LTSEZ-ZAA <http://www.za-alpes.org/>

LTSEZ Zone Atelier Alpes - Mastersite Lautaret-oisans
LTSEZ-site <https://deims.org/79d6c1df-570f-455f-a929-6cfe5c4ca1e9>

powered by GeoNetwork 3.6.0.0
À propos
Github
API



Discover eLTER Data
Visualization Time Series Data
Discovery Service


Search
Map

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Back to search

Download
Display mode

Section de carottage MUZ12-01A - LAC DE LA MUZELLE, Date carottage (04/2012)

Core MUZ12-01A is the first run/section (0-36cm) of the MUZ12-I sequences (Maximum DEPTH, sediment/rock: 2.835 m)

Keywords : climate, Holocene, montane lake, Floods, LTER Zone Atelier Alpes ZAA, Projet ROZA

Keywords (Analytics) : XRF, DRY-MATTER, LOI, GRAIN SIZE, RADIOCARBON, SHORT LIVED RADIONUCLIDES, PHOTOGRAPHY

En cours de création

Spatial extent

France 44.95069400 6.09669400

Temporal extent

Creation date 2017-07-01

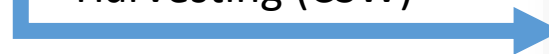
Period Sun Apr 01 2012 00:00:00 GMT+0200 Sun Apr 01 2012 00:00:00 GMT+0200

Provided by

Updated:



Harvesting (CSW)



10 years of efforts in curating lake sediment cores and their associated results

Achievements

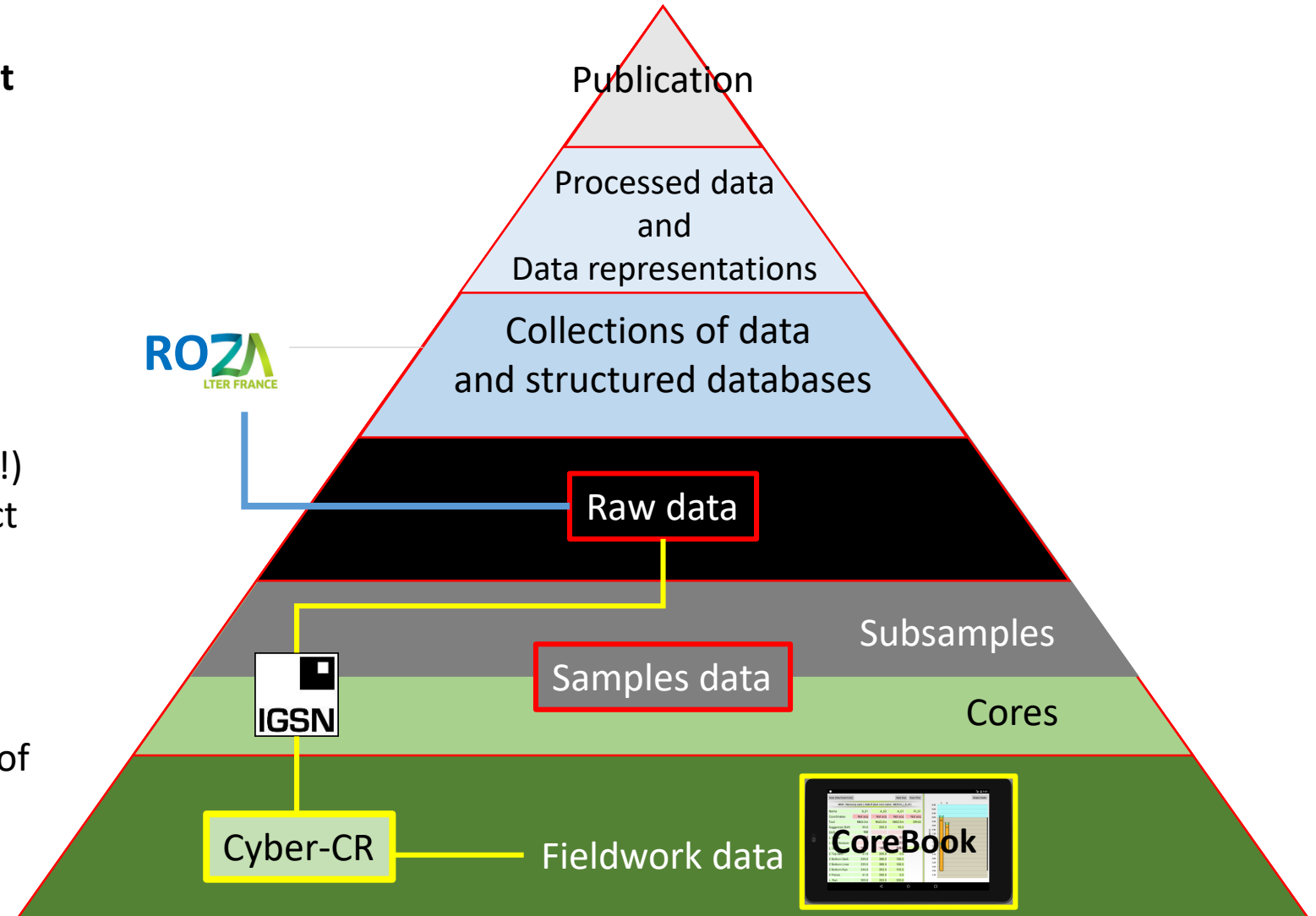
With ROZA, it is possible to get a dataset that is linked to its:

- measurement metadata (LTER catalogue)
- sample data (IGSN)
- Fieldwork data (Cyber-Core repository)

Remaining challenges are :

- **ROZA is just a prototype** (with lot of flaws!)
- Propose an user-friendly workflow to inject data
- Deal with sub-samples (currently, only the core level is treated)
- Extend the database (only 4 cores...)
- **Include treated data:** age-models instead of dating data → **SERAC**

The pyramid of data: case of field-based (geo)sciences

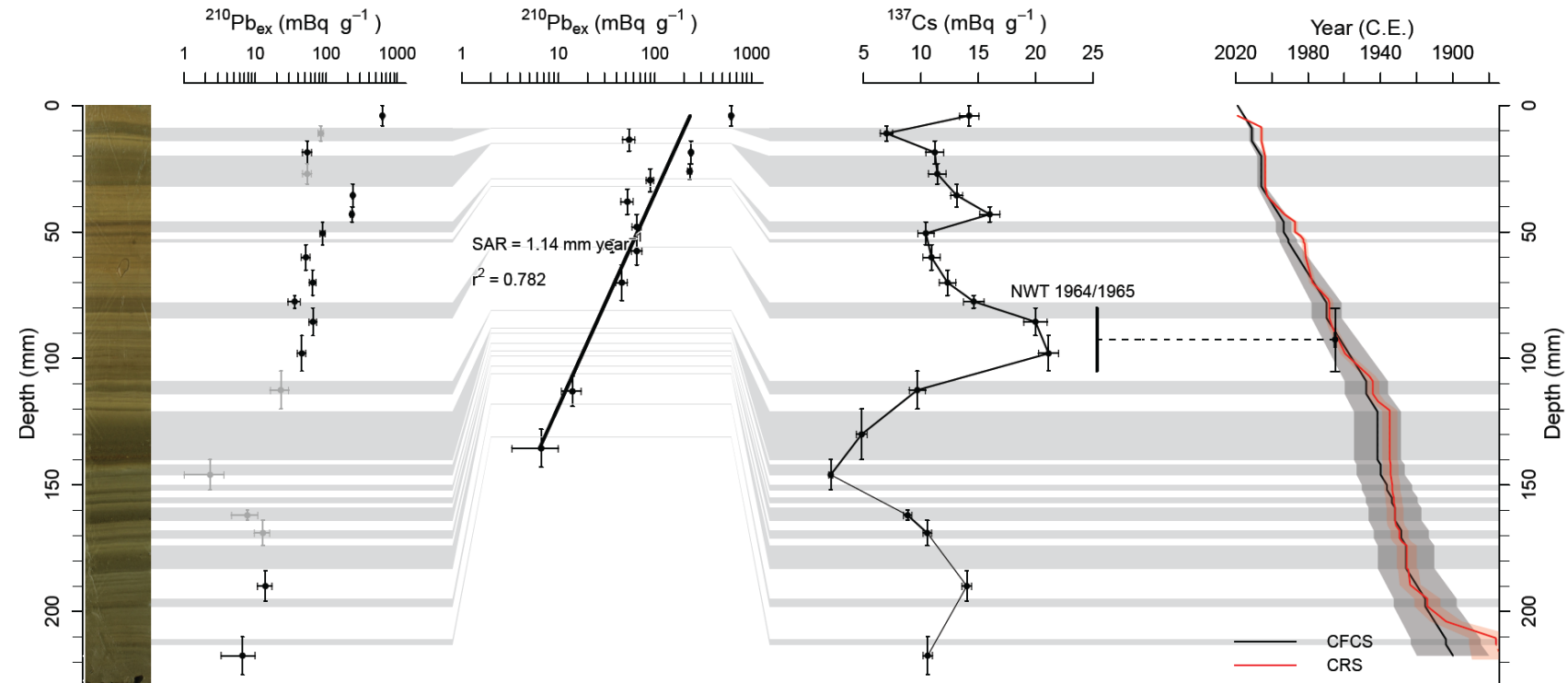


Metadata fields
including IGSN
and cyber-core
repository
references

SERAC

ROZA-like
standardised
data template

Standardised data representation



Standardised treated data with reproducible protocol

F_{indable} A_{ccessible} I_{nteroperable} R_{eusable}