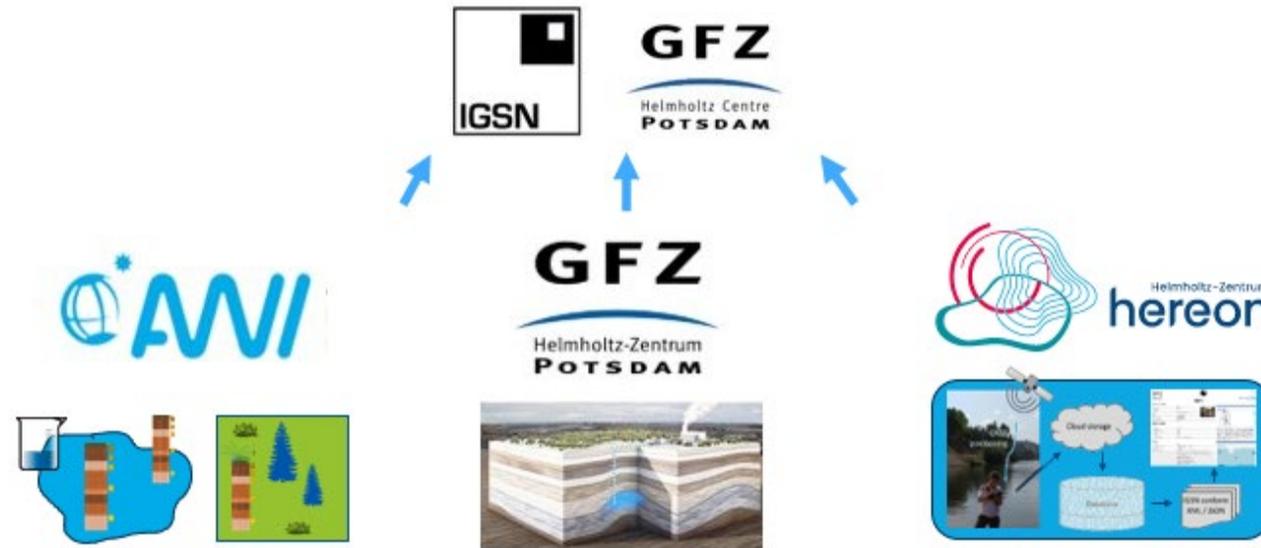


# FAIR WISH

FAIR Workflows to establish IGSN for Samples in the Helmholtz Association



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# Context

## Helmholtz Metadata Collaboration



- Platform to coordinate metadata across all research fields within the Helmholtz Association
- Aims to make all research data FAIR
- Provides funding for practical challenges in the field of metadata generation and data enrichment

# Motivation

## Samples in Science

### Samples

- record unique events in history
- are not reproducible
- are key sources of research data



Figure © AWI / AWI expedition 2021

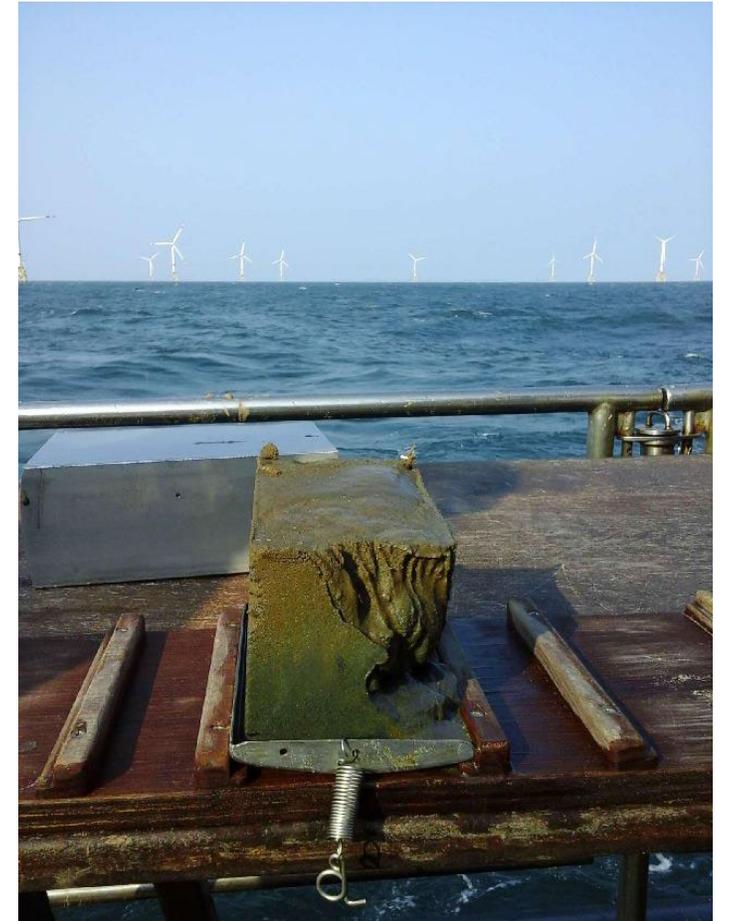


Figure © Ebeling / Hereon

# IGSN

## International Generic Sample Number

### Globally unique and persistent identifier for physical objects

- IGSNs resolve through the handle system to the landing page containing the virtual sample representation
- IGSN is currently merging with DataCite

### Benefits of IGSN

- Allows to cite, track and locate physical samples
- Links samples to data and publications
- Closes one of the last gaps of the full provenance of research results
- Builds a global sample catalog

**GFZ**  
Helmholtz Centre  
POTSDAM

IGSN  
Physical Sample

GFZ GERMAN RESEARCH CENTRE  
FOR GEOSCIENCES

**General Identifiers**

Program:	SO273
Expedition:	SO273
Type:	Individual Sample
Name:	SO273-31D-10
IGSN:	GFSO273N31
Parent IGSN:	GFSO273N21
Release Date:	N/A

**Sampling Location**

Latitude:	-43.8543
Longitude:	38.88
Coordinate System:	WGS84
Elevation:	-728
Location Type:	Ridge
Location Name:	Southwest Indian Ridge

**Geology**

Material:	Rock
Rock Classification:	Igneous>Volcanic>Mafic
Rock Type:	Plag-Basalt
Rock Description:	light (most of the primary mineralogy preserved) <ul style="list-style-type: none"><li>• weathering: light (most of the primary mineralogy preserved)</li><li>• shape: subangular</li><li>• Manganese crust (mm): 0.1</li><li>• Lithology: Plag-Basalt</li><li>• Average grain size: aphanitic</li><li>• Texture: highly phyrlic</li></ul>

**Sampling**

Drilling Method:	dredging
Platform Type:	Ship
Platform Name:	Sonne
Chief Scientist:	Prof. Dr. Jürgen Koeske
Start Date:	2020-03-20T23:06:56+00:00
End Date:	2020-03-21T00:55:02+00:00

**Repositories**

Publications & Datasets

**Sample Family**

- SO273-31D
- SO273-31D-1
- SO273-31D-2
- SO273-31D-3
- SO273-31D-4
- SO273-31D-5
- SO273-31D-6

**Location Map**

Drilling Start/End: 2020-03-20 23:06:56+00:00 / 2020-03-21 00:55:02+00:00  
Latitude: -43.85430 \* Longitude: 38.88000 \*  
Southwest Indian Ridge

**IGSN landing page**

# IGSN Description Metadata Schemata

## Descriptive Metadata

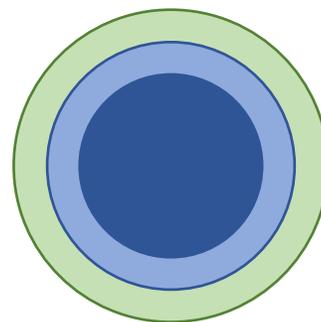
- Common Kernel

## Allocating Agent Specific Metadata

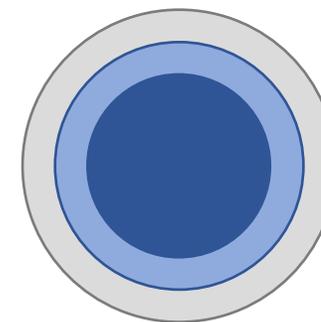
- GFZ specific

## Domain-specific metadata

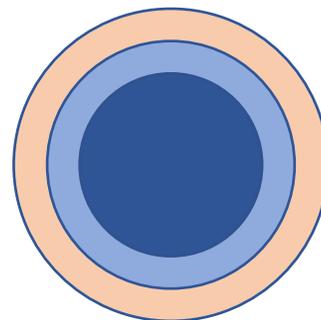
- Focus of FAIR WISH project
- develop standardised and discipline specific IGSN metadata schemes for different samples types



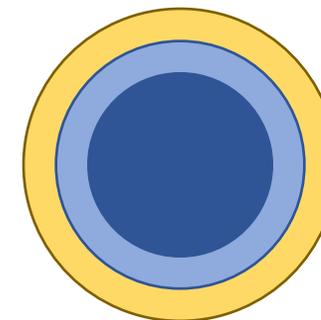
Vegetation



Sediment



Water

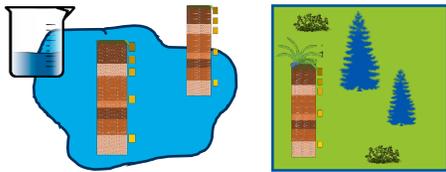


Rock

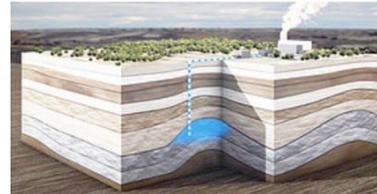
Figure © FAIR WISH



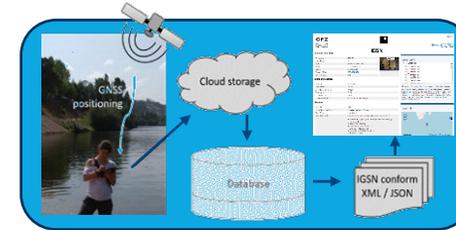
Partners:



Arctic land expedition samples from **Russian-German expeditions**



Rock samples and cores from the **Ketzin pilot site**



Automated IGSN assignment for **Biogeochemical Sample Database**

Use Cases:

level of digitalisation

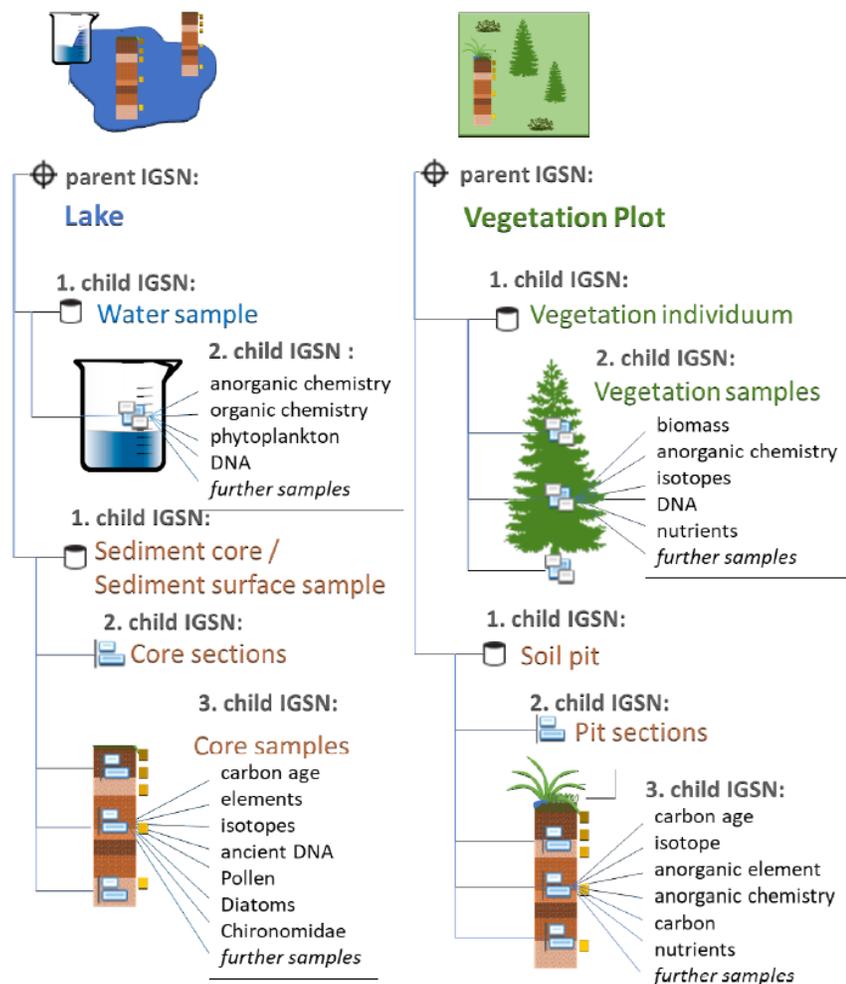


# FAIR WISH

## FAIR Workflows to establish IGSN for Samples in the Helmholtz Association

# Use case Russian-German Expeditions

## Assign IGSNs to samples from Russian-German Expeditions



- Samples from Russian-German land expeditions in Siberia from over 20 years
- Thousands of samples without digital record
- IGSNs will enable the connection of samples with data and publications

Figure © Heim / AWI

# Use case Ketzin

## CO<sub>2</sub> pilot site Ketzin: fit up with standardized metadata

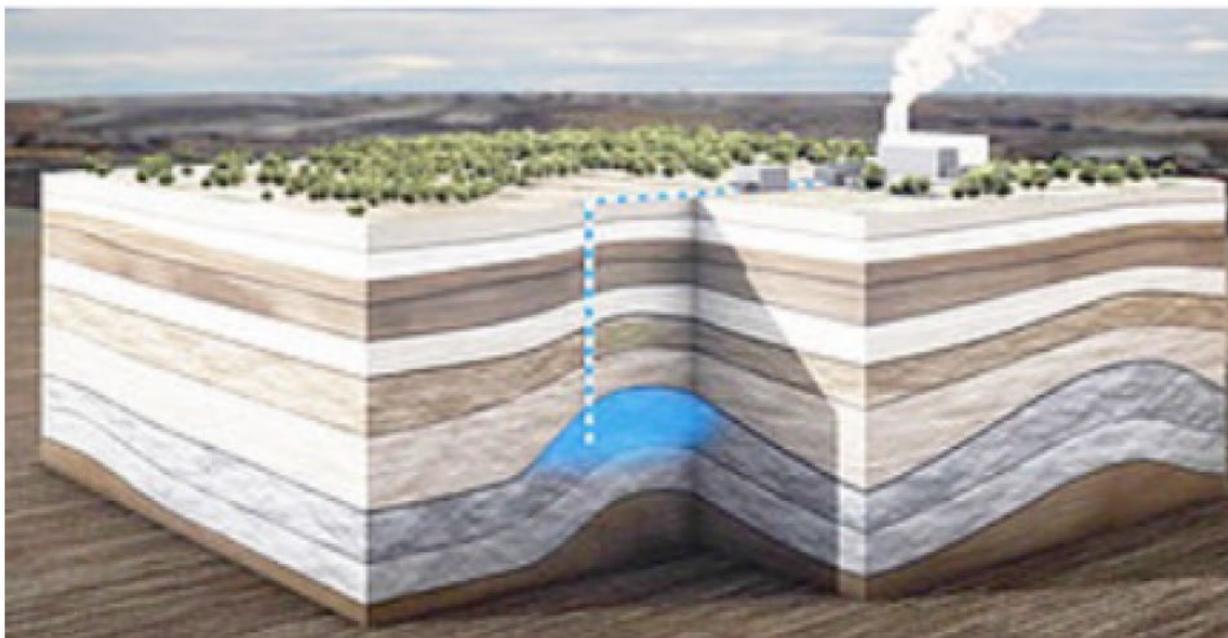
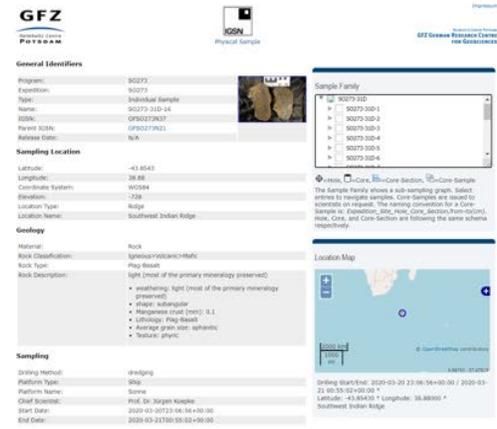
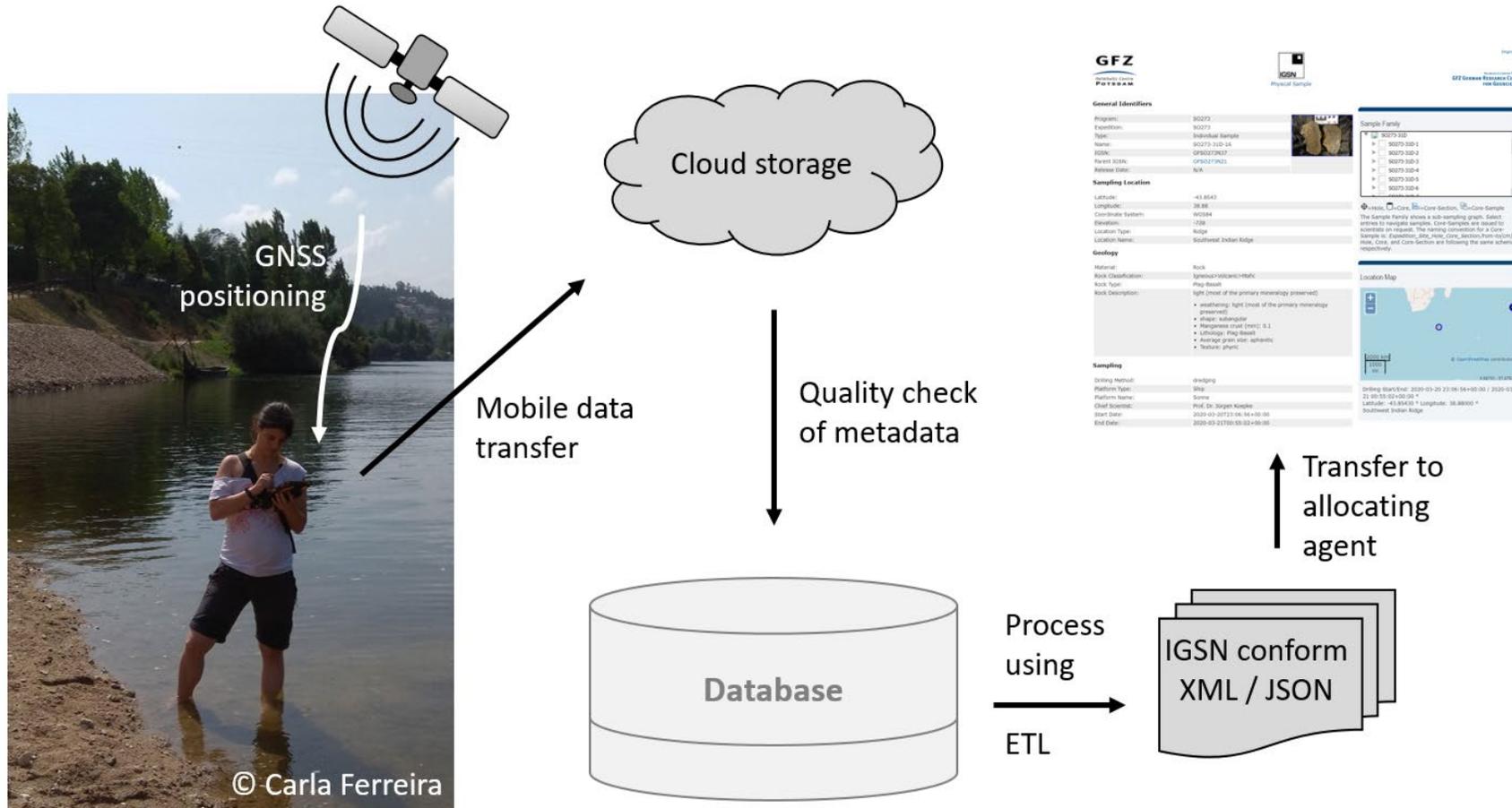


Figure © Elger / GFZ

- Samples from underground storage of CO<sub>2</sub> investigations
- > 330m of drill cores
- Basic documentation, but no standardized metadata

# Use case Biogeochemical Sample Database

## Automatically assign IGSNs for a sample database



- > 30.000 biogeochemical samples
- Large variety of water, sediment and other samples
- Metadata recorded digitally
- Standardization and mapping to IGSN metadata schema necessary

# Results

## First results

- Identification of a series of linked-data vocabularies to be used in domain-specific metadata
- Samples of the latest Russian-German land expedition to Siberia (in 2021) described digitally according to IGSN metadata standards and in process of assigning IGSNs
- Improvement of sample discovery in GFZ IGSN catalogue
- Revision and documentation of IGSN metadata schema for GFZ allocating agent activities

# Results

## Further expected results

- Standardised metadata templates for samples in the research areas Earth and Environment: vegetation, water, sediment, rock, air, snow and ice
- Workflows to generate IGSN metadata from databases and non-digitized data from structured tables
- Recommendations and templates will be given to IGSN e.V. and contribute to the international standardization of IGSN metadata

# Thank you!

