

NFDI4Earth



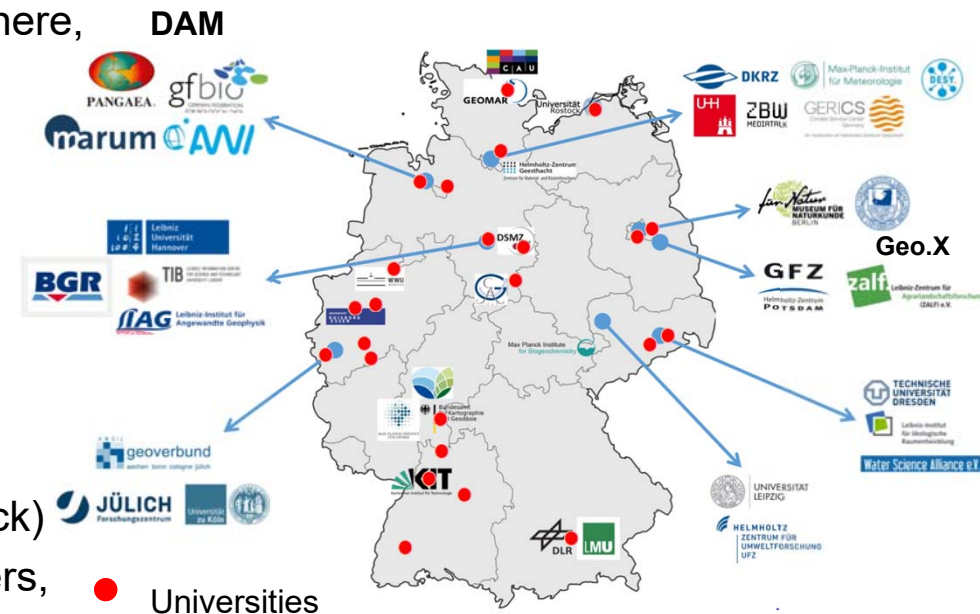
NFDI4Earth – Who we are ?!

■ Earth System Scientists ...

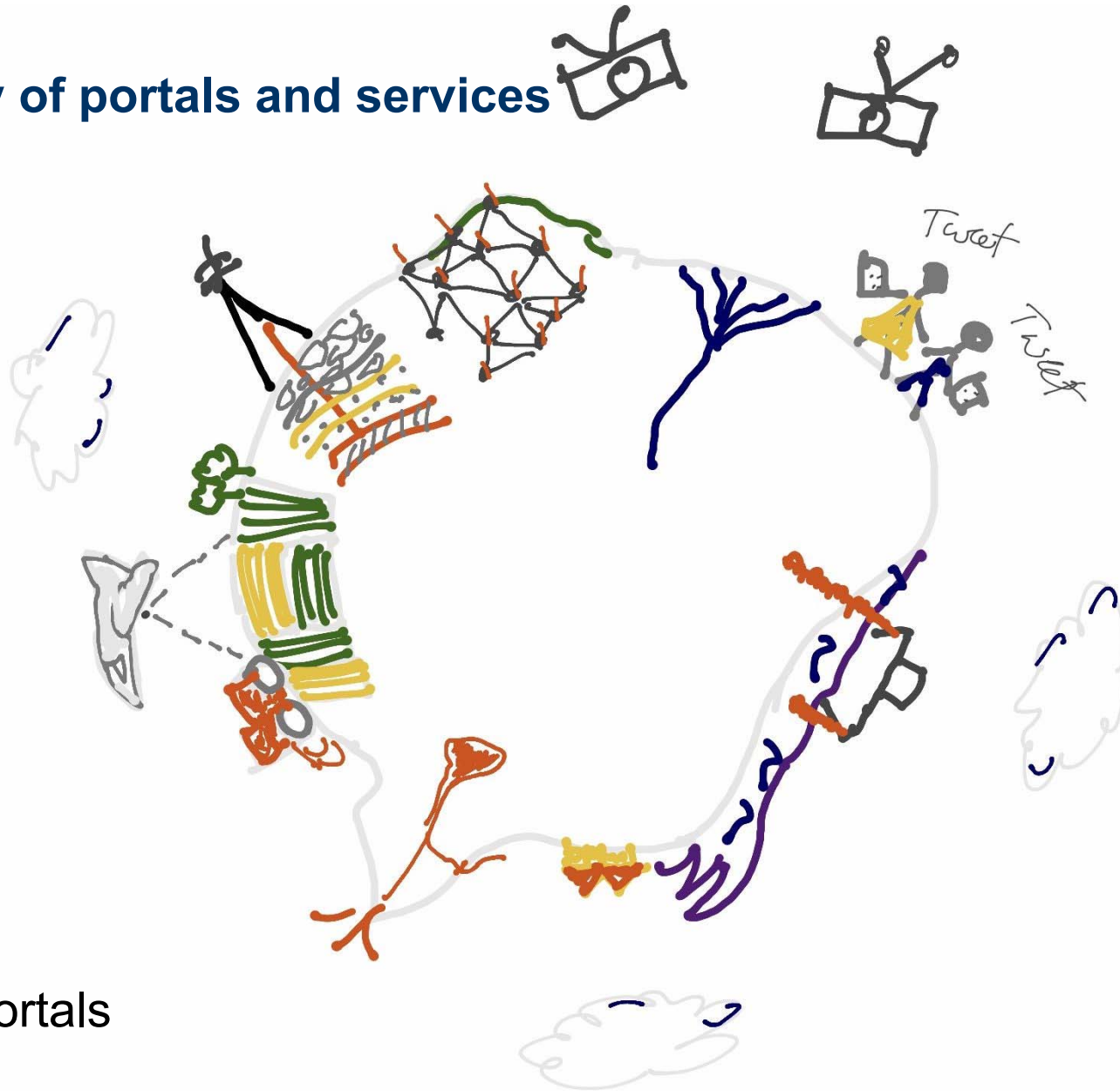
- Common research interest in observing, modelling, measuring, analyzing, understanding and predicting the Earth System considering the Geosphere, Hydrosphere, Atmosphere, Anthroposphere, Biosphere, ...
- From disciplines as geography, geology, geodesy, geophysics, geoinformatics, ecology, hydrology, meteorology, oceanography, ...
- Used to work in interdisciplinary settings

■ ... coming from:

- Universities
- Research Institutions (Helmholtz, Leibniz, Max Planck)
- Infrastructure Providers (Libraries, Computing Centers, Research Infrastructures, Repositories, ...)
- Governmental Institutions
- Different Scientific Associations



Survey of portals and services



- GEISHA
- DEIMS-SDR
- coastDat
- GFZ Data Services
- IGSN
- geoportal.de
- EEA
- GEOSS
- coastmap
- BGI Data Portal
- FIS Geophysik
- IPCC-DDC
- GeotIS
- metbase.org
- GeoRoc
- EarthCube
- Webmineral

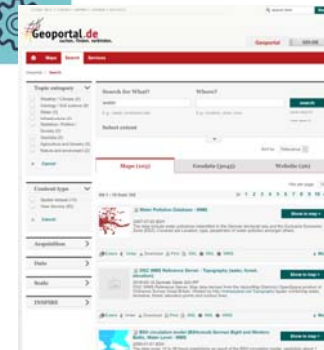
> 100 portals

NFDI4Earth – What we have

- A common interest in **spatio-temporal data** and related **methods** to monitor and model the Earth System
 - Data from in-situ and remote sensing sensor platforms and networks
 - Location serves as a common reference
 - Often Big Data - too big for local processing
 - Several standards for Metadata, Data Schemas, APIs
 - Collaborative development of simulation and analysis tools
- collaboration between ***all*** fields in ESS is essential for science
 - -> therefore a comprehensive approach for NFDI4Earth



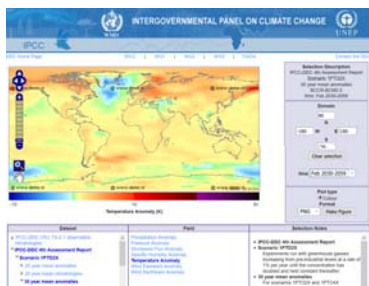
<https://code-de.org/>



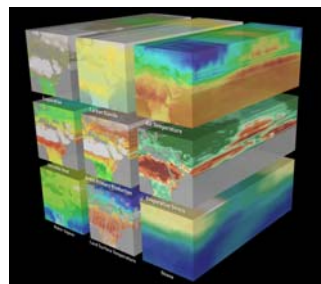
<http://www.geoportal.de>



<https://ec.europa.eu/eurostat/web/nuts/background>



<http://www.ipcc-data.org/maps/>



<https://www.earthsystemdatalab.net/>



<https://doi.pangaea.de/10.1594/PANGAEA.901006>



<http://www.tereno.net/ddp/>

Our contribution to NFDI

- We are Experts in spatio-temporal data as crosscutting basis for interdisciplinary research
- We are strongly integrated internationally, e.g. within the Research Data Alliance RDA, Earth Sciences are one of the dominant subjects
- We play leading role in implementation of FAIR, e.g. projects:
 - “Enabling FAIR data in the earth, space and environmental sciences” (<https://copdess.org/enabling-fair-data-project/>).
 - “ENVironmental Research Infrastructures building Fair services Accessible for society, Innovation and Research” (<http://envri.eu/envri-fair/>) (part of EOSC)
- We have strong expertise in consensual, international standards development (OGC, ISO, INSPIRE, W3C, ...)

BUT

- **Large, diverse number of repositories and portals**
very heterogeneous offers and services ... and thus tedious for researchers
- **Different data qualities**
dimension, semantics, scale, coverage, temporal and spatial resolution, selective ... streaming data
- **Different (data) cultures**
within sub-disciplines and organizations
- Need for **joint interpretation** of multiple heterogeneous and decentralized data streams
- **Rarely sustainable**
funding, knowledge management, ...
- **It lacks in a common vision, governance and qualification measures for people, data, tools and services**

Our strategy

- Further identify the **demands** for digital changes in German ESS community in a **structured community consultation** process
- Establish a **set of common principles**, rules and standards
 - guidance for ESS researchers
 - qualification frame for NFDI4Earth services and platforms
 - -> Develop sustainability concepts for reusable and well-documented underlying processes and software technologies
- Establish **experimental prototype platforms**, operating on distributed resources
 - blueprints for following developments
 - support use cases from different sub-disciplines in Earth System Sciences (and beyond)
- Provide tools and mechanisms for data integration and analysis

Consultation
and demands

Standardization
and
consolidation

Prototype
platforms

Automation &
Analysis

Our needs from Coordination – and possible cooperations

Common strategies for

- long term data preservation and archives
 - storage and compute services
 - Consolidating, safeguarding and developing European and International research data policies and initiatives (e.g. in the context of the EU Open Science Cloud)
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- Qualification of (data) scientists is a central issue of NFDI4Earth, but cooperation will be helpful
 - Content-related connection points to other consortia like:
 - NFDI4BioDiversity, NFDI4Chemie, NFDI4Health, NFDI4Microbiome, NFDI4agrar, NFDI4ING, FAIRmat, ASTRONFDI, KonsortSWD, NFDI4Memory, NFDI4Culture, Text+, and more

What NFDI4Earth wants to contribute to the NFDI

- Researchers **have access and contribute** to specialized and generic platforms for sharing data according to the (then well-known and established) FAIR principles
- Researchers are **duly acknowledged** for data sharing; **incentives**
- Consolidated platforms and networked data hubs allow for data exploration and collaborative data analysis (using AI, scientific visualisation, ...), i.e. **deep connection of data and analysis** platforms
- Access to spatio-temporal data as basis for interdisciplinary research for **All** researchers of NFDI in general
- NFDI4Earth is **integral part of international** data research infrastructures
- All Researchers **feel** that their research gets better with NFDI4Earth, thus: NFDI4Earth asserts our position at the forefront of Earth System research