



NFDI4Earth

National Research Data Infrastructure
for Earth System Sciences

2nd DFG NFDI Conference 2020 – Lars Bernard (TU Dresden) for the NFDI4Earth Consortium

Our domain - Earth System Science

- **Earth System Science (ESS)**

Atmosphere, Biosphere, Cryosphere, Geosphere, Hydrosphere, and Anthroposphere

- Research from **Local Processes to Global Challenges**

e.g. climate change, environmental pollution, land-use change, natural hazards, scarcity of raw materials, water scarcity

- Observing, measuring, modelling, analyzing, predicting the Earth System

- In **international and interdisciplinary** settings

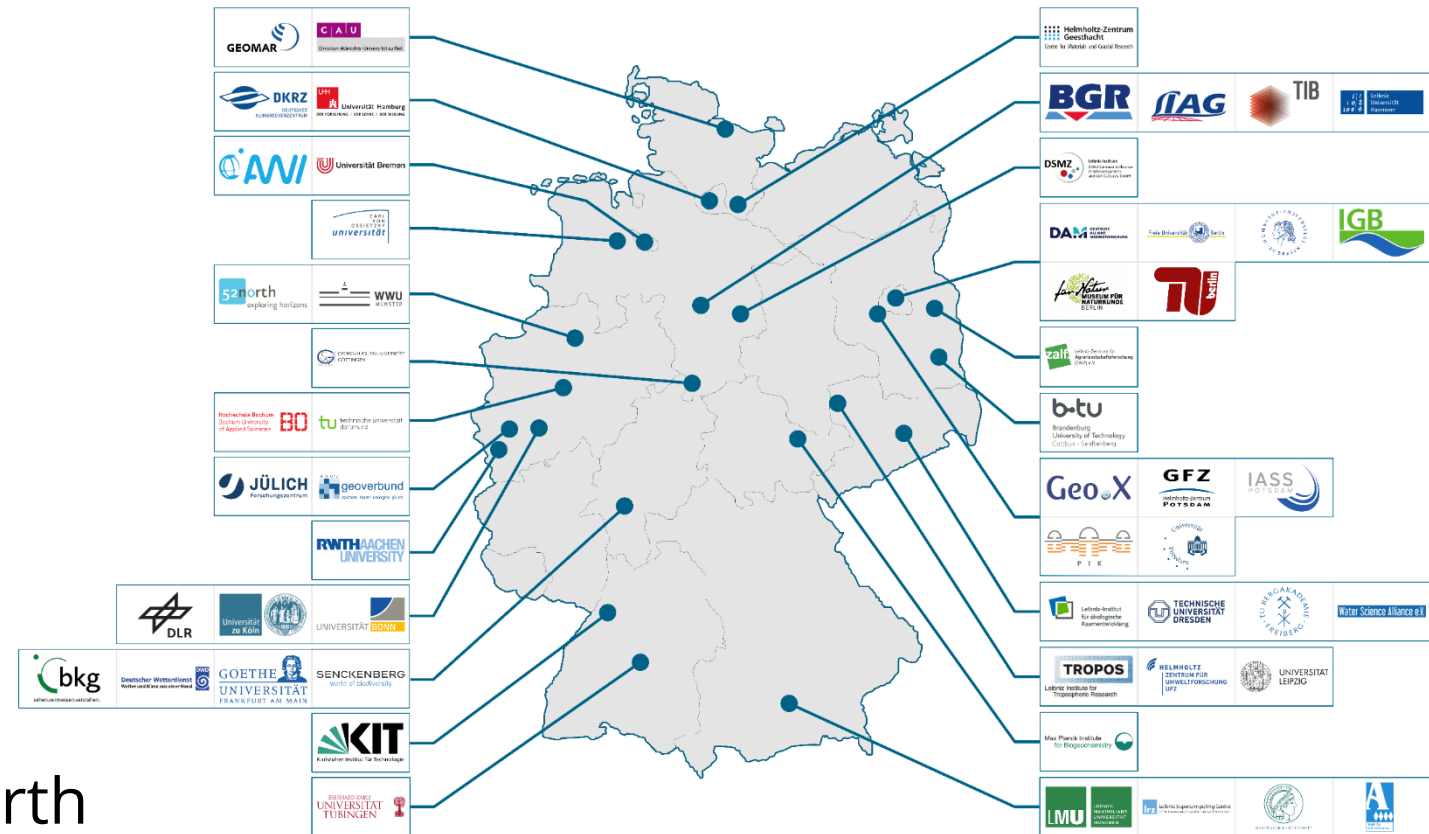
- **Spatio-Temporal Data** as **common reference**

FAIR Data and Interoperable Tools to enable new level of synthesis



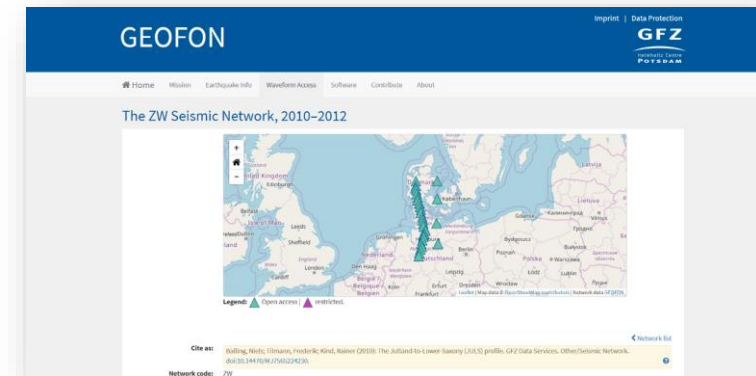
Who we are

- Currently 54 partners from:
 - Universities
 - Research Organisations
Helmholtz, Leibniz, Max Planck Society
 - Infrastructure Providers
Research Infrastructures, Repositories,
High Performance Computing Centers,
Libraries
 - Governmental Institutions
 - Scientific Associations
- Established 2018 the NFDI4Earth
as an **Open Consortium**

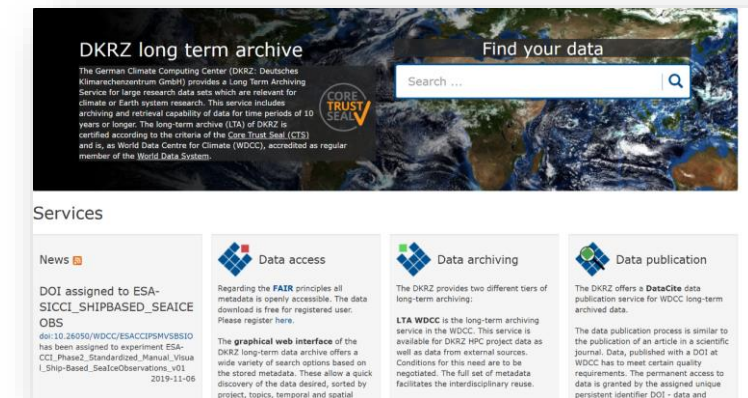


What we have

- Positive attitude to **Openness and FAIRness**
- **Data** from different sources, growing openness
- Established **repositories**
PIDs, curation, ...
- Several **standards** for interoperability
Metadata, Data Schemas, APIs, Spatio-temporal reference systems, Vocabularies/Ontologies
- Demanding models and big data applications
- **too big for local processing**
- Collaborative development of simulation and analysis tools - typically as **Open Source**



<http://dataservices.gfz-potsdam.de/portal/>



<https://cera-www.dkrz.de/>

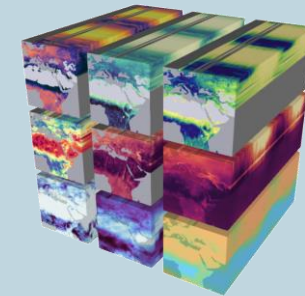


<http://www.geoportal.de>

<https://www.pangaea.de>

- **Large, diverse number of data services (> 100) and activities** related to ESS...
- **Different data qualities:** dimensions, semantics, scale, coverage, temporal and spatial resolutions, sizes, repeatability, provenances, curation levels,...
- **Incomplete support along the data lifecycle**
- Lack of support (platforms, tools) for **joint and collaborative interpretation of multiple heterogeneous and decentralized data**
- The typical ones
 - Hardly sustainable offers, operation and knowledge management related to RDM
 - Different data cultures within sub-disciplines and organizations...RDM experts and novices...need for recognition

- *One* Community approach to Openness and FAIRness in Earth System Science
- Innovative Platforms for
 - integration of multiple heterogeneous and decentralized data streams
 - collaborative data analysis
- Qualification for people, data, tools and services
- Consolidation as a basis for sustainability



TA1: 2Participate

Pilots, Incubators, Training and Academies

TA2: 2Facilitate

Virtual Help Desk; N4E One Stop;
N4E Data Science Tools, Governmental Data;
Long Term Preservation

TA3: 2Interoperate

N4EArchitecture; Gold Standards for FAIR ESS;
NFDI Commons; National & International Networks

TA4: 2Coordinate

Collaborative & Sustainable Governance;
Communication; Community Support



Innovation Perspective

Community Perspective

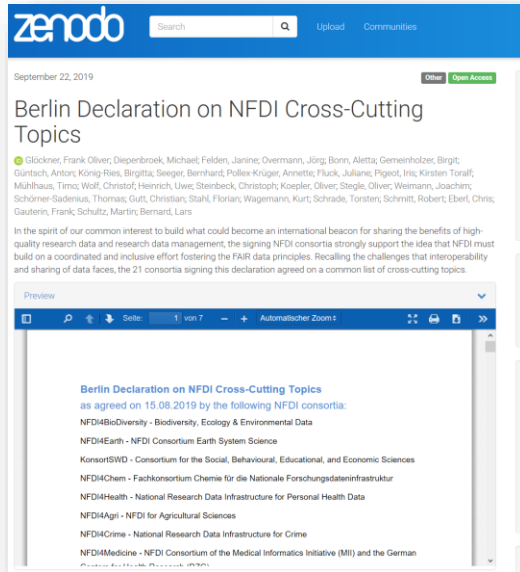
User Perspective

Infrastructure Perspective

NFDI Integration

**Coordination and
Community Support**

Our Expectations towards NFDI



<https://doi.org/10.5281/zenodo.3457213>

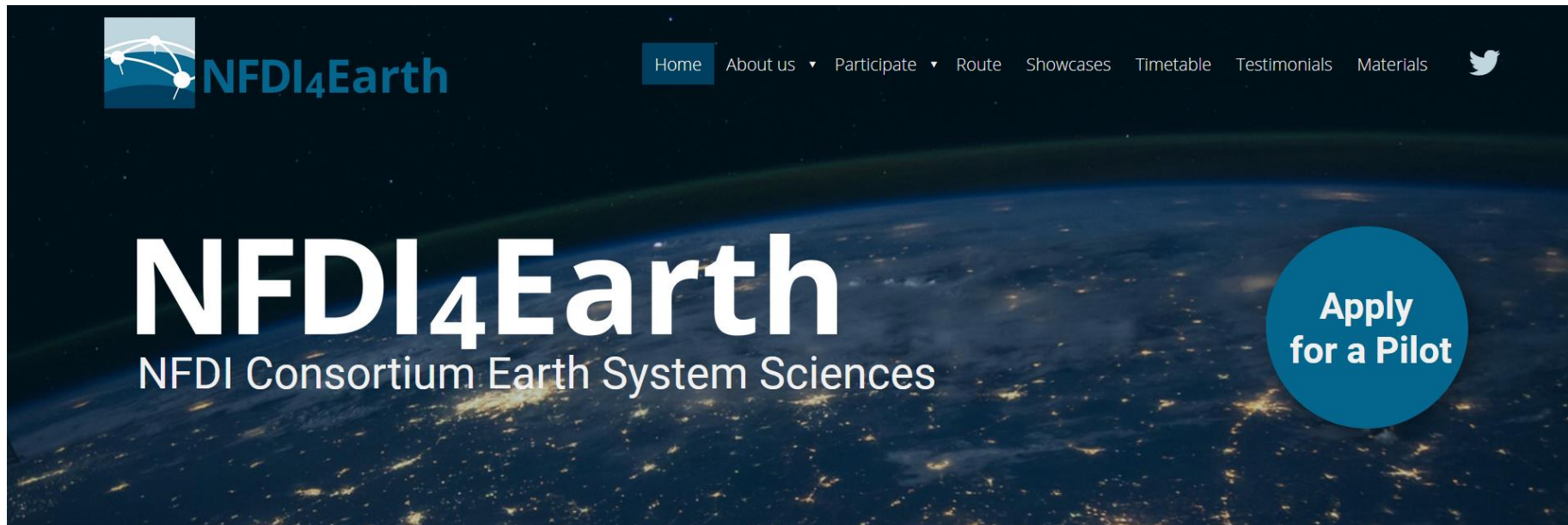


<https://zenodo.org/record/3895209>

- The “NFDI Verein” as the Common Platform
- Jointly tackling Cross-Cutting Topics
 - Collaborative governance and general framework
(e.g. common vision)
 - Community (User) Involvement
(e.g. cross-NFDI use cases)
 - Common technical infrastructure and concepts
(e.g. research data commons, pIDs...)
 - Legal and ethical aspects

- NFDI4Earth plans dedicated measures to contribute to NFDI commons
- NFDI4Earth specific NFDI contributions:
 - Knowledge hub for **dealing with geo-spatio-temporal data**
 - Long-standing active participation in various **relevant international networks** (AGU, EGU, RDA, EOSC,...WMO...)
 - Collaboration with **governmental agencies** and other national stakeholders
 - Widespread experiences in **contributing to international standards for geodata and services** (Metadata, Data Encodings, APIs)
 - Well-established culture and skills concerning **community software developments**
 - Representing a number of the German HPC centres **contributing to the envisioned scientific computing cloud**

Thank You !



<https://www.nfdi4earth.de/>

Additional Information

- **N4E Interest Groups (SIGs) – *talking on common topics***
 - Group around technical or community topics
 - SIGs have a voice in the NFDI4Earth governance
- **ESS Pilots – *doing FAIR ESS RDM and***
 - short termed implementation projects – max one year
 - represent different user perspectives (=personas/archetypes)
 - represent a variety of use cases and complexities and do reflect the different FDM maturity levels in the ESS community.
 - Crosslink with different TAs and measures and support the agile N4E development
- **N4E Incubator – *exploring new methods in ESS RDM and ES data science***
 - small innovation projects from open calls – one year – beginning in 2nd year

What is a NFDI4Earth Interest Group?

An Interest Group (IG) is a temporary or permanent forum for an information community or stakeholder group to e.g. identify, discuss and communicate requirements for NFDI4Earth, jointly advance NFDI4Earth-related concepts, technologies and processes, implement NFDI4Earth principles, or to disseminate specific NFDI4Earth offers.

IGs support the NFDI4Earth vision and may complement the work of the NFDI4Earth Task Areas.



Become part of the NFDI4Earth activities!

NFDI4Earth is designed as an open consortium. If you are interested in participating and shaping NFDI4Earth, we invite you to initiate an Interest Group or join an existing one:

[Read the guidelines for detailed information](#)

The following ideas were discussed at the last plenary meeting on 24 January 2020 at Potsdam and are currently formed to a Special Interest Group:

- **Geophysics**
- **Data Management Plan**
- **Reproducible Software**
- **Industry and Company Data**
- **FAIR Data and Interoperability**

Further information about these groups as well as their responsible contacts will follow shortly!

If you are interested in one of the topics and interest groups resp. mentioned above at present please send first an e-mail to info@nfdi4earth.de

<https://www.nfdi4earth.de/participate/get-involved-by-interest-groups>



What is a NFDI4

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- **Geophysics**
- **Data Management**
- **Reproducible Software**
- **Industry and Competence**
- **FAIR Data and Interoperability**

Further information about these groups

If you are interested in one of the topics and interest groups resp. mentioned above at present please send an e-mail to info@nfdi4earth.de



An IG can be initiated by at least 6 persons from at least 3 different organizations. IG members do not need to be members of the NFDI4Earth consortium. External contributors are highly welcome! Following an open community process, NFDI4Earth IGs shall be open for new members, which commit themselves to the IGs' objectives.

Please submit your application by describing your ...

- Motivation
- Scope
- Initial work plan
- Mode of work
- Initial members
- Lifetime of the IG (permanent, temporary)

Expected results (paper, event, course materials, draft specification, case studies and flexible projects etc.)

Your application will be evaluated by the NFDI4Earth Steering Group. As soon as your IG is confirmed, you need to elect a spokesperson and his/her representative.

What's the lifetime of a NFDI4Earth Interest Group?

As mentioned above ("What is a NFDI4Earth Interest Group?") an NFDI4Earth IG can be temporary or permanent. However, the NFDI Steering Group reviews the activities of each NFDI4Earth IG on a yearly basis and may close an IG in case of inactivity or activities contradicting with overall NFDI4Earth goals and vision.

How does an NFDI4Earth IG contribute to NFDI4Earth?

NFDI4Earth IGs can contribute to NFDI4Earth in manifold ways (see "What is a NFDI4Earth Interest Group?"). In particular, IGs are entitled to submit proposals to the NFDI4Earth Steering Group, in order to address particular requests concerning the NFDI4Earth development (e.g. for support of specific domain specific requirements, development of specific standards or their adoption etc.). The NFDI4Earth Steering Group decides upon adoption based on feasibility and relevance.

How does NFDI4Earth support its Interest Groups?

The NFDI4Earth project supports its IGs by providing communication facilities (virtual meetings, web space etc.) to facilitate their daily work and to ensure proper communication. As soon as NFDI4Earth is funded and proper governance procedures are established, additional support can be made available upon request.

How to submit your application?

[Click here to submit your application](#)

<https://www.nfdi4earth.de/participate/get-involved-by-interest-groups>



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NFDI4Earth Pilot

The development of the NFDI4Earth is driven by the researchers' needs and requirements for research data management according to the FAIR principles. NFDI4Earth uses Earth System Science Pilots to engage the community. These Pilots stem from different domains of the ESS community, do manifest the researchers' needs and are the community's contribution to an agile development of the NFDI4Earth.

NFDI4Earth intends to start in running up to 15 Pilots, which are collected from an Open Call, evaluated in an open review process and will become part of the new NFDI4Earth proposal. Pilots do typically run for one year and are evaluated against a set of pre-defined criteria. Once NFDI4Earth is funded by DFG annual calls for pilots will be launched.

1st Call

Submission Deadline: July 24



Become part of the
new NFDI4Earth proposal!

NFDI4Earth is designed as an open consortium. If you are interested in participating and shaping NFDI4Earth, we invite you to apply for a pilot:

[Read the guidelines for detailed information](#)

If you are interested to apply for a pilot and have any questions please send an e-mail to info@nfdi4earth.de

<https://www.nfdi4earth.de/participate/get-involved-by-pilots>

Guidelines - Pilot

NFDI4Earth How to apply for a NFDI4Earth Pilot?

The development principles manifest themselves in the NFDI4Earth part of the funded by

1st C

The aim of the Earth System Science Pilots in the NFDI4Earth is to contribute to a broad, sustainable, and innovative development of the consortium. Pilots serve, for instance, for requirements engineering in the different task areas. The extent of a pilot should not exceed 1 person-year.

- Proposals for pilots will be evaluated in an open review process. Both the proposals and the anonymous reviews will be made accessible. By submitting a proposal, you as PI agree to an open access evaluation of the proposal.
- Criteria for the evaluation of the pilots will be in equal parts (scored on a 5 points scale for each criterion):
 - **Quality and Innovation** (relevance beyond state-of-the-art)
 - **Feasibility** (leveraging existing technologies)
 - **Potential for engaging a broad user community** (also potential for linking scientific users and information infrastructures)
 - **Potential for integration into the NFDI4Earth** (relevance to the NFDI4Earth as whole e.g. in terms of contributing to a measure like education, interoperability, archiving, and clearly addressing relevant aspects of the research data life cycle)
- It is important to note that the selected **set of pilots must represent a broad range of disciplines within the Earth System Sciences**. Hence, pilots may be selected that score a bit lower than others on the criteria mentioned above in order to cover a wider range of disciplines and interrelations.
- **Submissions should follow the template below** - text must contain proper references and links where appropriate.
- **Pilots must be described as short as possible and not exceed 4 pages**. However, we will not exclude anyone who does not exactly respect the constraints. But precise wording is what counts.

Note: If the submitted pilot proposal is successful, the applicant agrees

- that the PIs parent institution will be named as participant (with the PI as representative) of the NFDI4Earth,
- that a letter of commitment is provided in due time (due to DFG regulations the letter has to be signed by your institution),
- that the person submitting the pilot will support the proposal writing process as it will be requested by the NFDI4Earth editorial team

Also note: The submission is subject to a review process and does not guarantee any funding!

Download Templates

[Dotx](#)[Docx](#)[RTF](#)

<https://www.nfdi4earth.de/participate/get-involved-by-pilots>