



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**

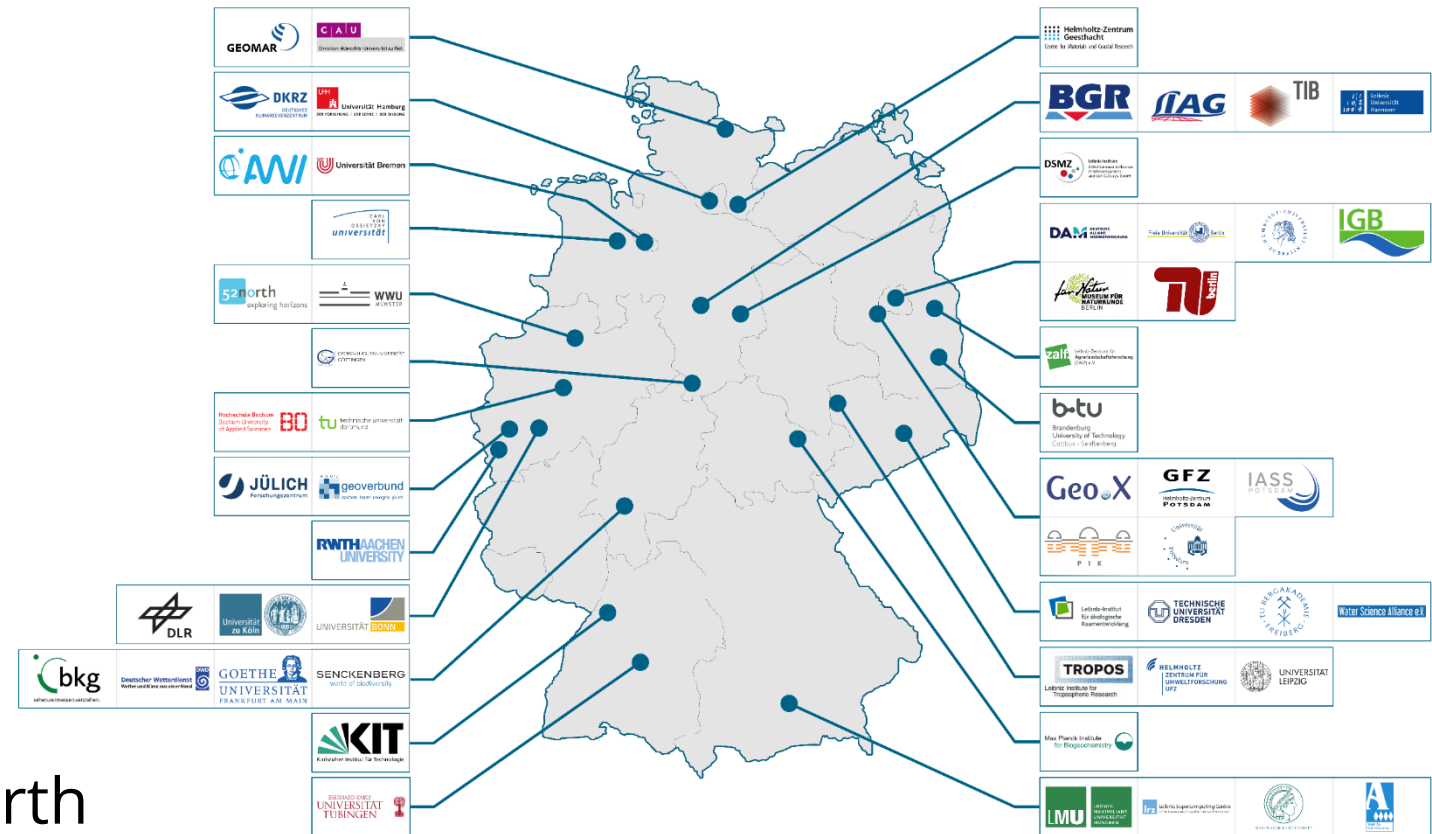
FAIR Data and Interoperable Tools to enable new level of synthesis



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**

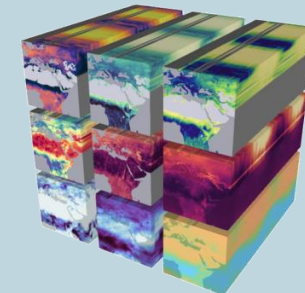


Our Issues

- **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

Our Challenges

- Large, diverse number of data services (> 100) and activities
 - *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

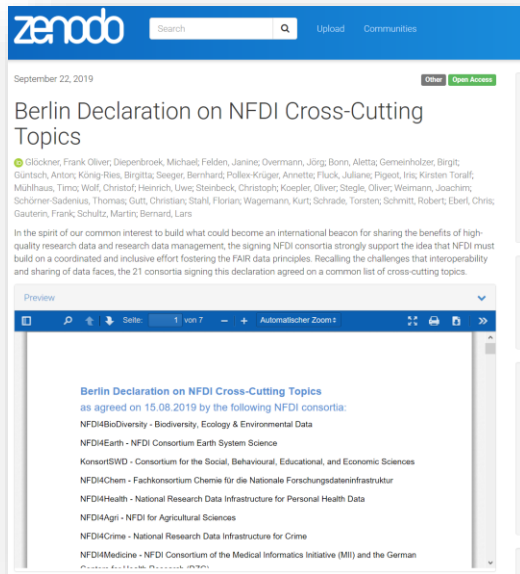
User Perspective

Infrastructure Perspective

NFDI Integration

**Coordination and
Community Support**

Our Expectations towards NFDI



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

- 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...)

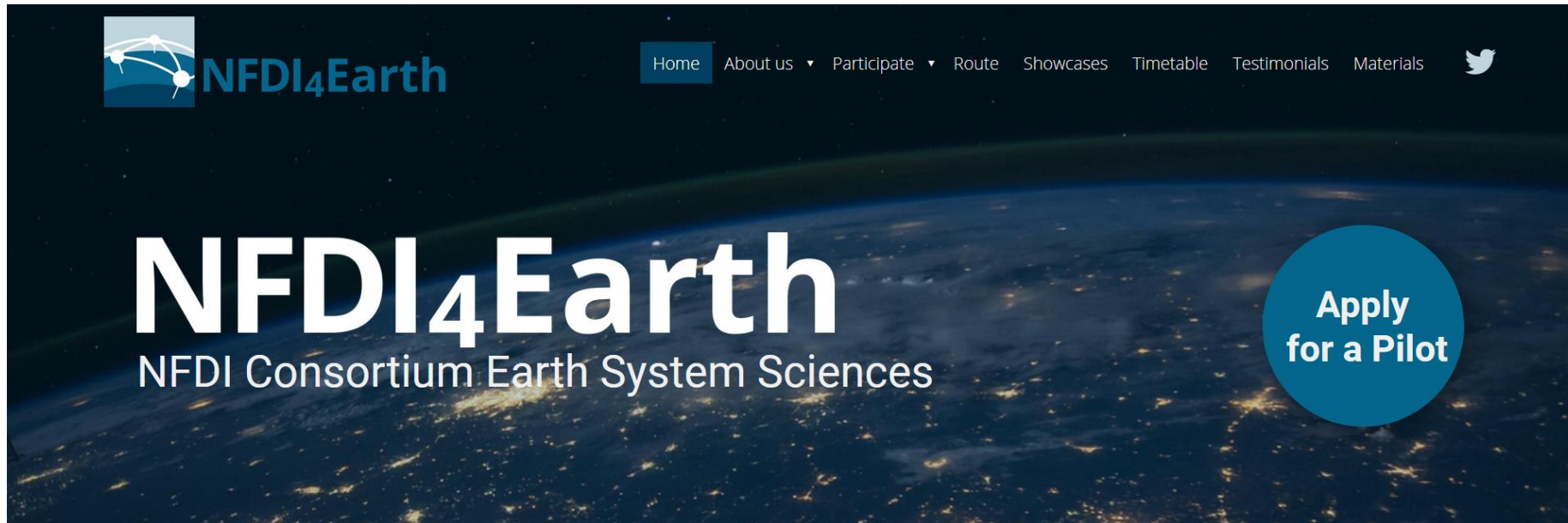
- Legal and ethical aspects



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

- 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/>