

NFDI4Earth

Metadata Standards for Geochemical Data

Activity Report December 2023

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NFDI₄Earth Interest Group: Motivation



- 2009 & 2014: ***Requirements for the Publication of Geochemical Data*** by Goldstein et al. (Editor's Roundtable, <https://doi.org/10.1594/IEDA/100426>)
- Journals and funding bodies request **storage of research data in open access repositories**
- **Metadata standards are heterogeneous** (different methods, samples, areas of science)
- **Significant advances in analytical methods** require extending metadata standards in various areas of geochemistry to meet requirements of scientific journals and repositories

Challenge: **Advancing metadata standards** for analytical data on geomaterials that are relevant **in various areas of science**

- Meetings in February and September
 - Due to other activities members of the IG were not able to meet more often in this year.
 - Number of online meeting participants:
 - 22 (Feb), 7 (Sept)
 - core participants based on earlier meetings: ca. 18

Activity Report 2023 (contd.)

- Affiliations of people on mailing and e-mail lists:

Bundesanstalt (BGR, BAW): 6	Helmholtz (GEOMAR , GFZ, Umweltforschung, HEREON, HZDR): 13	University Bremen: 2
Columbia University, USA: 1	KIT: 1	University Frankfurt: 3
Constructor University Bremen: 1	Leibniz Institute (DSMZ, IGB, LIAG, ZMT): 4	University Göttingen: 3
Deutsches Archäologisches Institut: 1	Lithodat, Australia: 2	University Kiel: 2
Deutsches Bergbau Museum: 4	RWTH Aachen: 1	University München: 1
Deutsches Klimarechenzentrum: 1	Shell Technology Centre Amsterdam, The Netherlands: 1	University Tübingen: 2
Fraunhofer-Einrichtung: 2	Staatliche Archive Bayern: 1	University zu Köln: 2
FU Berlin: 6	TU Dresden: 2	
German Aerospace Centre: 1	TU München: 1	

Activity Report 2023 (contd.)

February 2023 meeting: Discussion of the proposed structure and management of the IG

Coordination Group

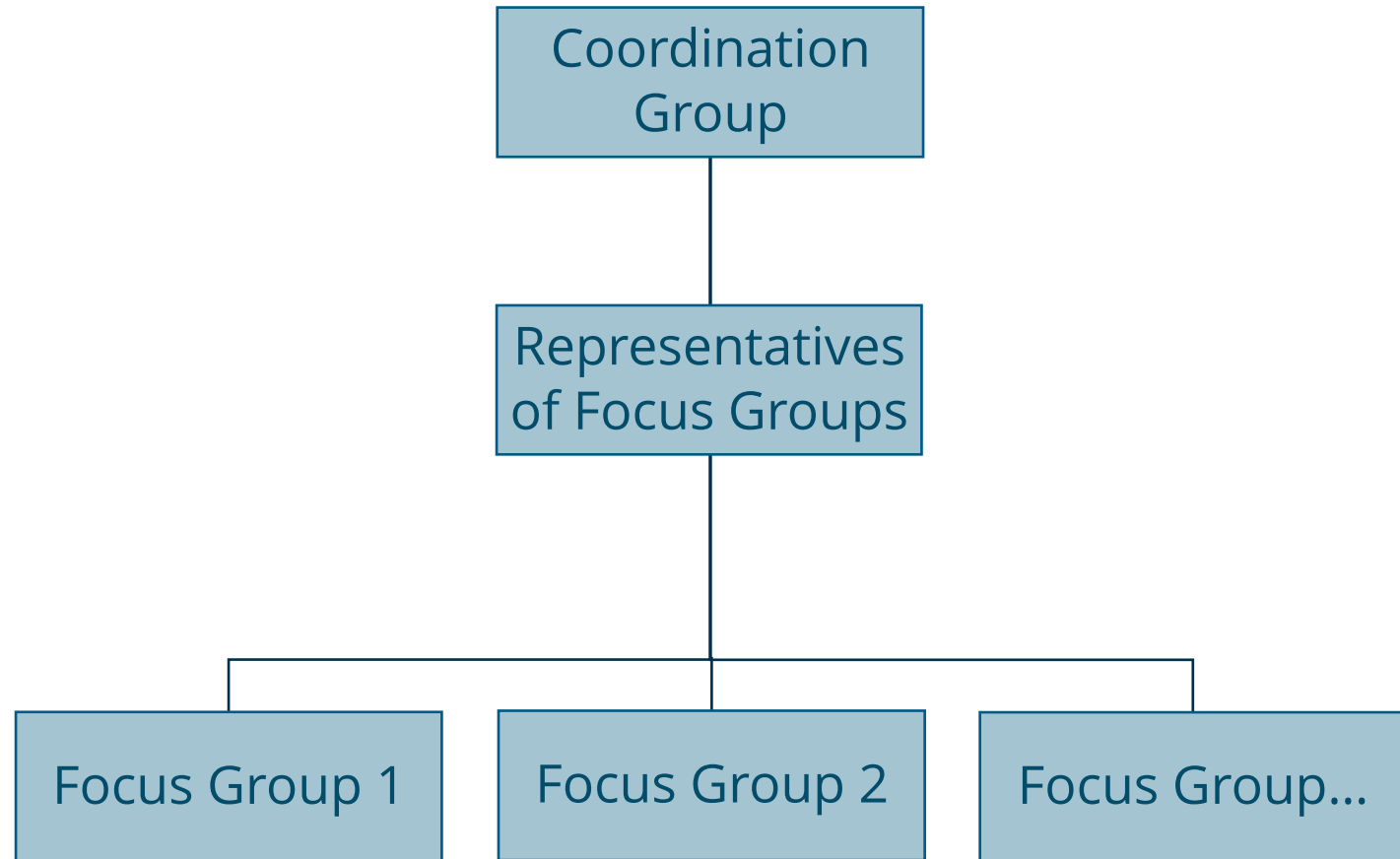
- represents IG
- reports to NFDI₄Earth and communities
- provides advice and support

Representatives of Focus Groups

- report results and progress to coordination group and communities.

Focus groups

- work on topical areas



Metadata standards: proposed topics for „Focus groups“

1. Developing ontologies and metadata for mass fractions of elements in rock samples and related inorganic material (meteorites, minerals, dust grains (and artifacts))
2. Developing ontologies and metadata for mass fractions of elements in water and suspended material (hydrogeochemistry)
3. Developing ontologies and metadata for isotopic data (mass-independent and massdependent isotopic variations, radiogenic isotopic systems)
4. Support tools that generate flexible metadata software, open software, automated work flows, pipelines
5. Developing identifiers to link metadata to instruments, methods, and samples (i.e., PIDINST, IGSN)
6. Support implementation of machine-readability of metadata concepts (providing APIs for testing new templates, etc.)
7. Support of focus areas 1-6: Development of FAIR data concepts and machine-readability of geochemical data

Focus groups are dynamic and can undergo changes over time due to various factors: Merge for pooling topics, split for more focused work, adjust of work focus, introduction of new topics

Activity Report 2023 (contd.)

Networking – national and international communities

Focus Groups should align their activities with expert groups, journal editors, learned societies, other consortia and interested groups, etc.

- International:

- OneGeochemistry Initiative: we are committed to fostering a strong collaboration with the initiative
- AuScope
- RDA (Research Data Alliance),
- COPDESS (Coalition for Publishing Data in the Earth and Space Sciences),

- National:

- NFDI4Objects, NFDI4Earth IG Research Software ...

These activities shall be supported by the coordination group.

Activity Report 2023 (contd.)

September 2023 meeting major outcome:

- Develop communication channels with OneGeochemistry
- Present the IG in newsletters of learned societies
- Request members of learned societies to support and contribute to the work in the various working groups of the IG

Activity Report 2023 (contd.)

Outlook for 2024

- Further meetings not yet scheduled.
- All activities and including information on founding period of the Interest Group are here,

<https://www.nfdi4earth.de/2participate/get-involved-by-interest-groups/ig-metadata-standards-for-geochemical-data>.