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The TRR170-DB Data Repository: The Life Cycle of FAIR Planetary Data from Archive to Publication

Elfrun Lehmann and Harry Becker
Freie Universität Berlin, Geologische Wissenschaften, Geochemie / TRR 170, Berlin, Germany (elfrun.lehmann@fu-berlin.de)

The TRR170-DB data repository (https://planetary-data-portal.org/) is a Re3data (r3data.org) referenced repository that manages new machine-readable data and resources from the collaborative research center 'Late Accretion onto Terrestrial Planets' (TRR 170) and from other institutions in in the planetary science community. Data in the repository reflect the diverse methods and approaches applied in the planetary sciences, including astromaterials data, experimental studies, remote sensing data, images and geophysical modeling data. The TRR170-DB repository follows a data policy and practice that supports Open Science and the FAIR principles (Wilkinson et al., 2016) as promoted by the German National Research Data Infrastructure (www.nfdi.de) and various national and international funding agencies and initiatives. The TRR170-DB framework supports users to align their data storage with the data life cycle of data sharing, persistent data citation, and data publishing. The permanent host of the TRR170-DB is Freie Universität Berlin. This long-term preservation and access of TRR170-DB's published data ensures them being reused by researchers and the interested public.

The TRR170-DB repository is operated on the open source data management software Dataverse (dataverse.org). A web portal provides access to the storage environment of the datasets. The web portal guides users through the process of data storage and publication. It also informs about legal conditions and embargo periods to safeguard the data publication process. Additional information is available informing the user about data management and data publication related news and training events.

A user can search metadata information to find specific published data collections and files without logging in to TRR170-DB. A recently integrated new tool, the data explorer, assists the user in advanced searches to browse and find published data content. Data suppliers receive data curation services, a permanent archive and a digital object identifier (DOI) to make the dataset unique and findable. We encourage TRR 170 members and other users to store replication datasets by implementing publishing workflows to link publications to data. These replication datasets are freely available, and no permission is required for reuse and verification of a study. TRR170-DB has a flexible data-driven metadata system that uses tailored metadata blocks for specific data communities. Once a dataset has been published, its metadata and files can be exported in various open metadata standards and file formats. This ensures that all data published in the repository are generally accessible for other external databases and repositories

("interoperability").

We are currently expanding metadata templates to improve interoperability, findability, preservation, and reuse of geochemical data in TRR170-DB. New geochemical metadata templates will incorporate additional standardized information on samples and materials, analytical methods and additional experimental data. Advancing metadata templates will be an ongoing process in which the international scientific community and various initiatives (OneGeochemistry, Astromaterials Data System, etc.) need to interact and discuss what is required.