FAIR Data for Earth Sciences

EOSC-Pillar

FAIR data and workflow efforts are a response to the increasing volume and complexity of scientific data. Particularly the environmental and earth sciences require a large amount of heterogeneous data. This use case demonstrates how researchers can easily access and analyse scientific data from different domains on demand and in remote facilities.

FAIR

Findable
Accessible
Interoperable
Reusable

What does FAIR data mean?

The FAIR principles ensure that data can easily be reused and incorporated into the European Open Science Cloud (EOSC). This benefits science - and society as a whole.

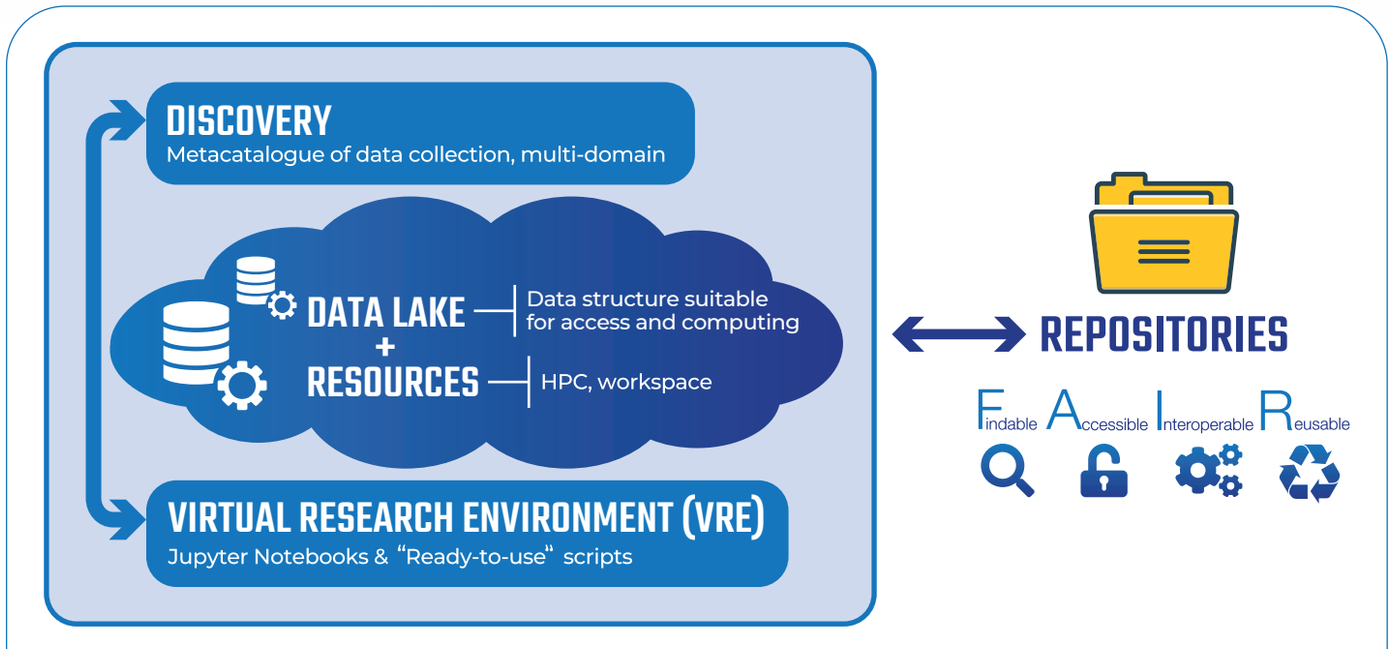
Challenge

- Earth sciences require large data volumes from different sources (satellite, on-site measurements and computer model data) and domains
- Current situation: data are managed and preserved separately on domain specific national infrastructures

The challenges are performing cross-domain or cross-source studies

What is needed to solve this issue?

- **Easier data discovery** through one entry point, with standardised vocabulary
- **Easier and faster data access** through data conversion in analysis-ready formats and implementation of on-demand data access services
- **Easier and faster data analysis** through virtual analysis platform supporting big data software packages and ready-to-use scripts **Computing resources** (storage and compute, analysis tools) and **discipline-related expertise** without being limited to local resources



Data analysis infrastructure as proposed by the use case (© Ifremer 2021, produced for EOSC-Pillar projet by V.Harscoat, M.Vernet)

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How EOSC-Pillar has helped

- By facilitating the discovery and provision of services to support the use-case: VRE, storage and computing facilities, archive for source code, discovery service
- By enabling collaboration between national and European data infrastructures and service providers
- By offering the possibility to test cross-domain and transnational access and analysis from multi-domain data repositories from France, Germany and Italy
- By providing use case demonstrators in order to guide the user through the workflow

Workflow as shown in the use case demonstrators

Agile FAIR Data

- User discovers data and associated services via multi-domain data catalogue
- User accesses EOSC-Pillar 4EarthScience VRE on D4Science platform
- User benefits from pre-defined analysis scripts or develops new scripts using specific software packages adapted to Big Data analysis (PANGEO)
- User easily accesses analysis-ready data from different national repositories through dedicated access services, without downloading and converting the data
- User runs analysis on-demand on remote (D4Science) computing facilities
- User can visualise the results online and download them
- User can share work with colleagues or other data analysts/researchers

Are you interested in Open Science?

Raise awareness for the European Open Science Cloud (EOSC) - and show researchers, students and decision-makers at your institution how to benefit from EOSC and how to get involved! If you want to know more about the EOSC-Pillar Ambassadors Programme,
get in touch with us!

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