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ClimXtreme Central Evaluation System (XCES)

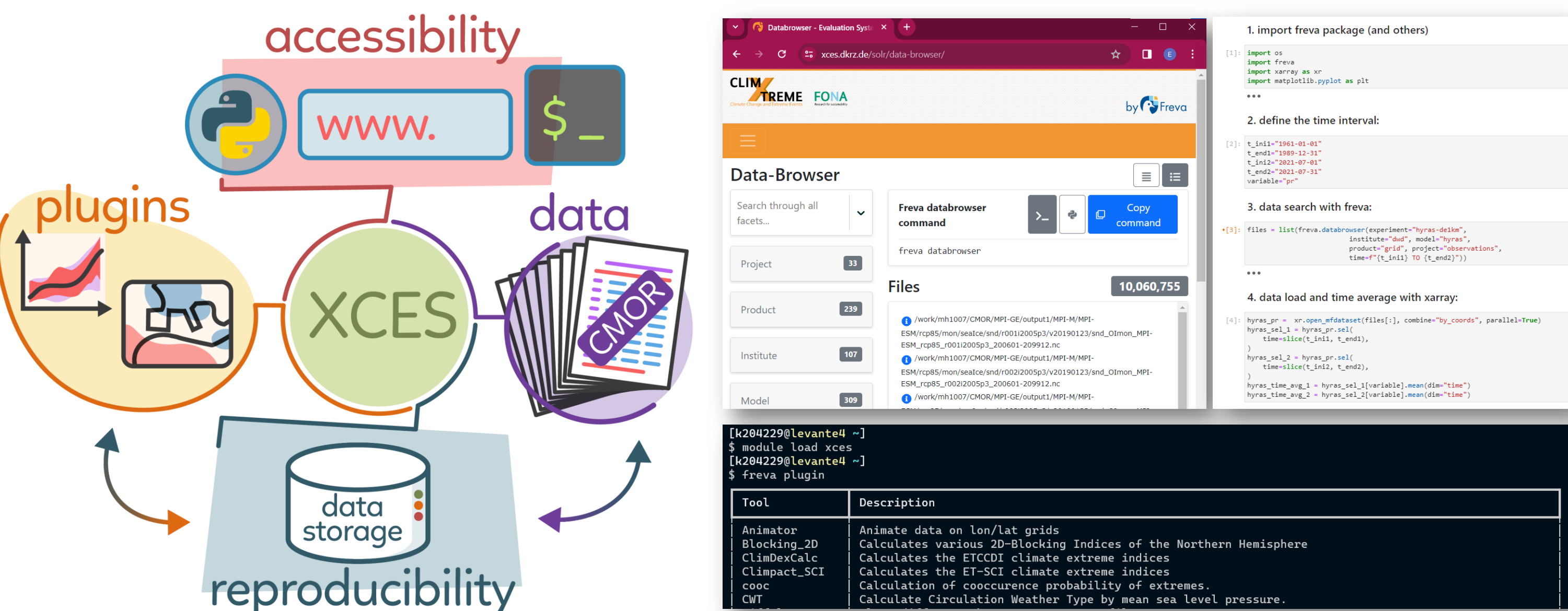


Figure 1: schema of XCES (left), and available access modes to XCES (right).

Features: Datasets + Plugins + Results

- **Via:** web, command line, python module → **accessible**
- **Datasets:** standardized (>13 million files) → **useful**
- **Plugins:** any language (30 plugins) → **flexible**
- **Results:** stored & shared (>20,500 runs) → **reproducible**

>50 unique users from 17 institutions

New work (freva team):

- **Access:** via RestAPI, no language (R, python, shell)
- **Data Endpoints:** cloud, catalogs, archive (WIP)
- **Flexible Data Index:** configurable DRS dialects
- **File inspector:** metadata & data preview (gridlook)
- **ClimateClaw (beta):** chatbot & jupyter extension

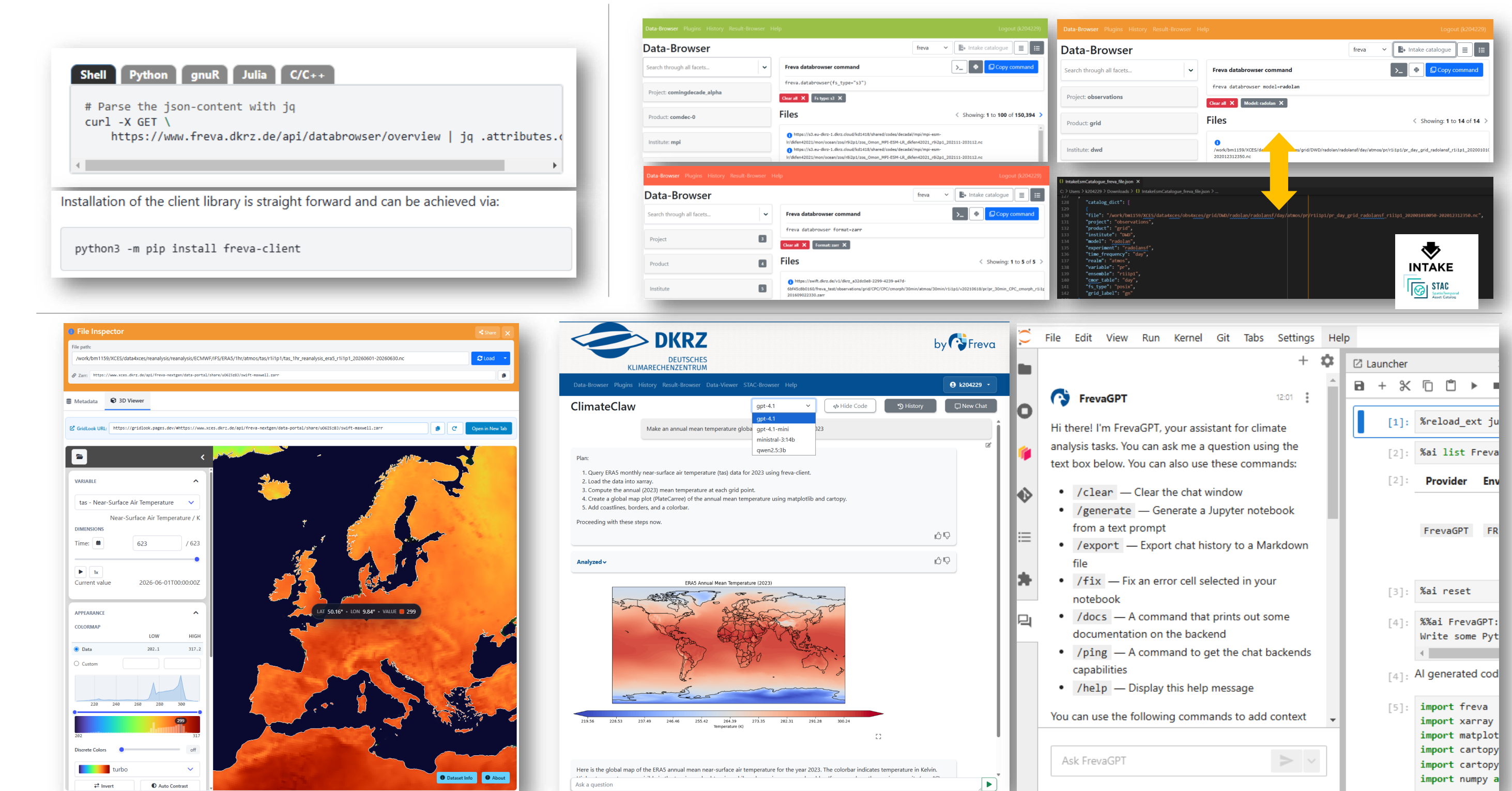


Figure 2: RestAPI query & endpoints (top left & right); file inspector (web), chatbot & jupyter extension (bottom left to right).

Data

Access to > 13 million files:

- 7% self-hosted (/work/bm1159)
- 93% from /pool or other projects (see below)

Up-to-date Datasets:

- Near-realtime: ERA5 (1940-present), HYRAS-DE (1km), Radolan-YW (1km, 5min)
- Weekly: Cmp6, Cmp5, CORDEX, ICDC (Hamburg)

Recent incorporations:

- DWD Kernenensembles v2018
- CORDEX CMIP6 Simulations (UDAG & NUKLEUS)

Ongoing Datasets (WIP):

- ERA5Land (tas, pr): in HealPix grid pyramid, zarr format (via <https://waterpark.dkrz.de/>)

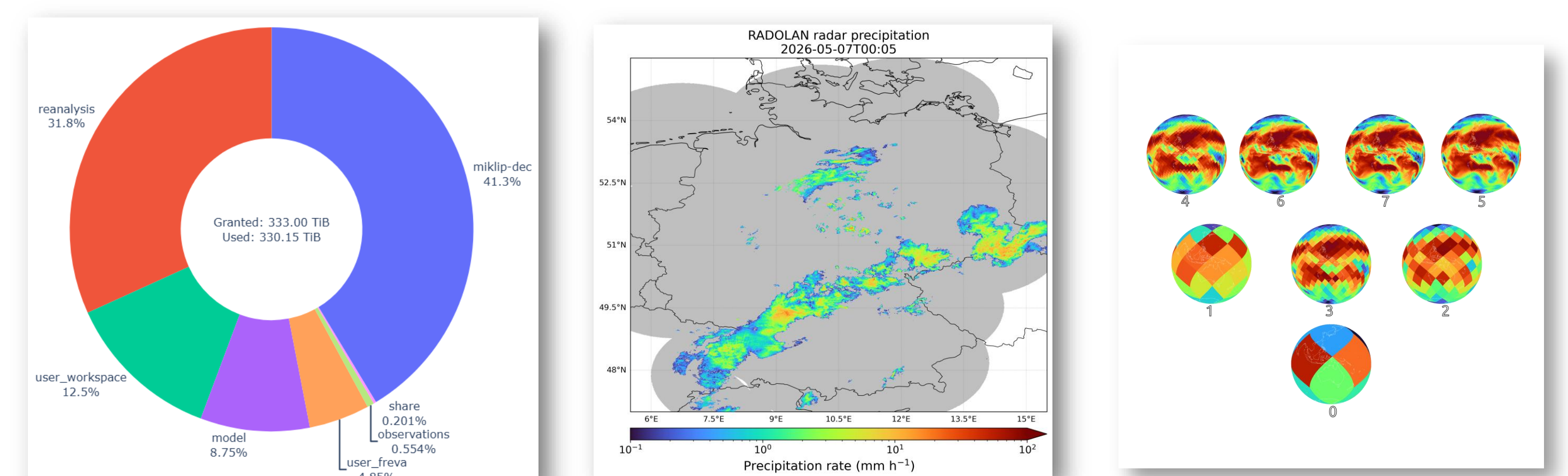


Figure 3: (left to right) usage of /work/bm1159, snapshot for Radolan-YW, HealPix pyramid example.

Documentation & Formation activities

Documentation (up-to-date):

- Freva (<https://freva-org.github.io/>), plugins (<https://gitlab.dkrz.de/bm1159/>)
- Data (<https://climxtreme.uni-bonn.de/>)

Workshops (in colab with other projects):

- 2024.06.12-13: General usage and Plugin dev.
- 2025.08.06: Databrowser novelties

Plugin Developers Regular Meetings:

- Since 2024.11, very occasional, ~10 assistants

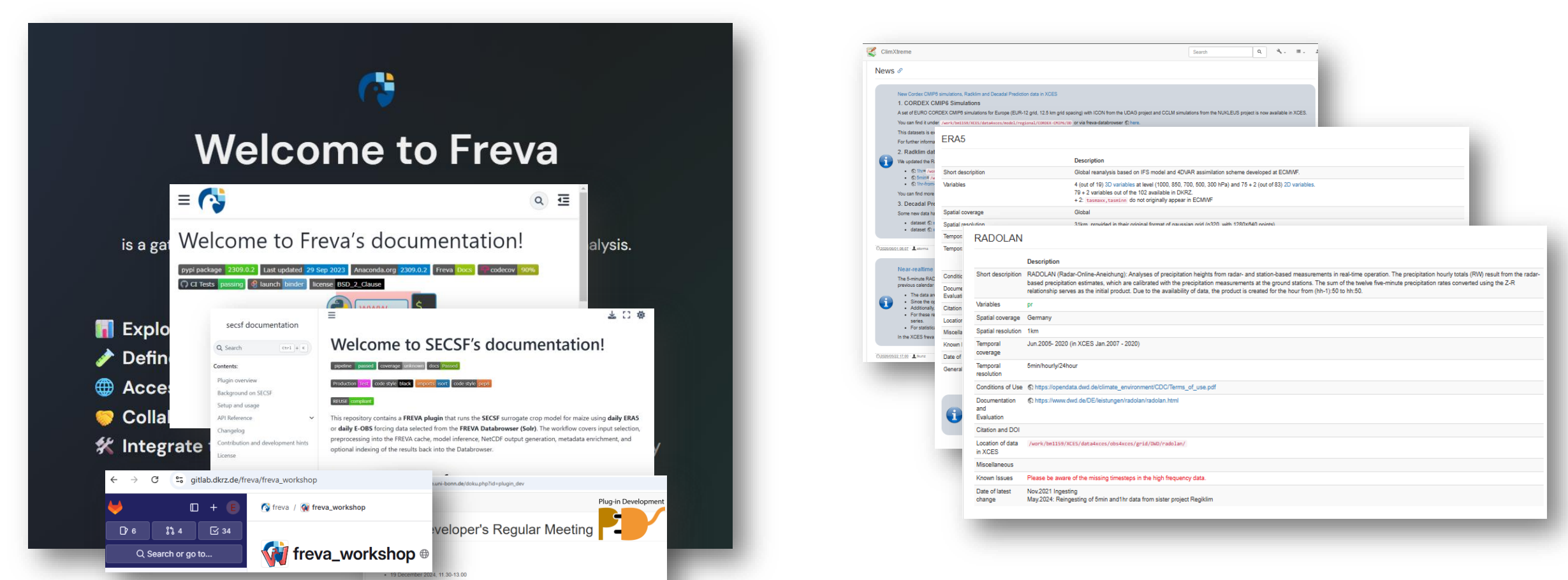


Figure 4: (left to right) documentation for freva, plugins and workshop in github and gitlab; information about data in the wiki.

Collaborations

- RegIKlim, Warmworld&Gems, Coming Decade: freva framework, data, plugins
- FUB: plugin development, data, framework test