



SENTINEL DATA PROCESSING IN METACENTRUM

National archive, access, computing, news

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CESNET

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■ Data expertise

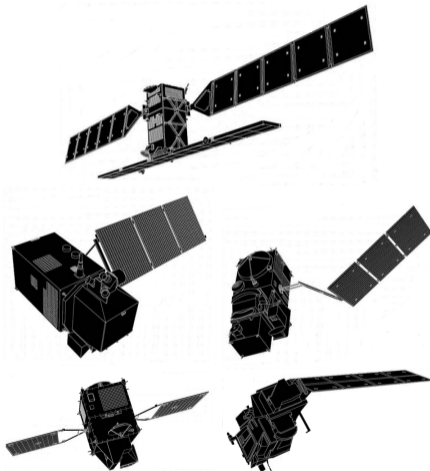
- Storage
- Access
- Redistribution
- Consulting and custom solutions

■ Processing resources

- Grid
- Cloud

■ Cooperation

- 1:1 support
- project partnership



- Obvious overlap \implies frequent interchangeable use of the names
- Sentinel: a series of satellite platforms by ESA
 - Radar, visual, atmosphere
 - ESA Collaborative Ground Segment for redistribution
 - Centralized services
 - + Network of relays
 - + National mirrors
 - + Anything useful under joint or national funding
- Copernicus: EC flagship project for Earth observation
 - Sentinel, Eumetsat, in-situ sources
 - separate distribution patterns (DIAS)



T36RVU_20210319T082639

Z. Šustr, Sentinel in MetaCentrum, CESNET



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T36RVU_20210324T082611

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T36RVU_20210329T082559

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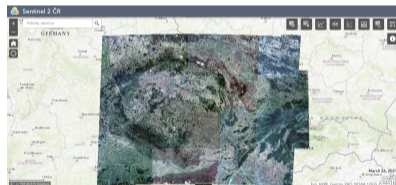
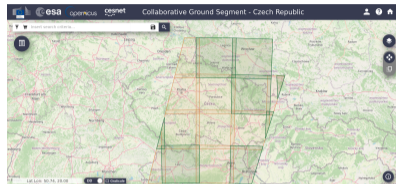


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- Full coverage of the national territory
- Full history (starting in 2015 for Sentinel 1)
 - Over 200 k products (203,457 as of April 14th)
- Occasionally leaving out low-level products
 - Sentinel 1 RAW, Sentinel 5b Level 1
- <https://dhr1.cesnet.cz>
 - Self-registration
 - Federated authentication planned for mid-term future
- Alternative interfaces
 - ArcGIS
 - Sponsored by MDČR
 - Non-SAFE products
 - In development



■ Custom datasets

- Caching, based on pre-agreed download/retention policies
 - User groups with interest in other geographic areas
 - Reasonable data volumes
- <https://dhr2.cesnet.cz>
 - Self-registration, but contents are random

■ DataHub relay

- Part of ESA's redistribution mechanism
- Global coverage over limited time
- Available to feed downstream archives
 - Set up your downloaders
 - ... or have a custom push feed



- Service based on ESA/SERCO DataHub Software (DHuS)
 - Web-based GUI + API
- Query interfaces
 - OpenSearch
 - OData
- Object storage – **https get**
 - Full products in SAFE format (zipped subdirectory)
 - node extraction supported
- **put not directly supported but negotiable**
 - Upload endpoint + import
 - Redistribution service for non-SAFE products is in development
- Support happily provided



- **MetaCentrum** resources (grid, cloud) available for processing
- No special arrangement for data access
 - FS-level access discouraged
 - Data are **close**, network is **fast**
 - Little need to maintain your own source product archives
- ESA Sentinel toolboxes (STEP) available among **MetaCentrum** software modules
 - `module add sentinel-7 (sentinel-6)`
- Workload management through long-running jobs (oven) or cloud VMs
- Scaling out to EOSC
- Ask for support



■ Support is available

- Data access
- Feed/data arrival detection
- Data from other (extranational) sources
- Workload setup and management
- **You** supply the algorithm

■ Projects

- **CESNET** as technology partner in your EO data processing projects, providing the above support activities
- Our own initiative to fill in perceived functionality gaps
 - C-SCALE (Copernicus EO SC Analytics Engine)
 - NextEOS (Successor to the NextGEOSS project)



■ Copernicus data and compute federation under EOSC

- *If every partner covers part of the globe, can a federation cover all of it?*
- Avoid creating yet another metadata catalogue, rather learn to query existing sources
- Provide solutions to access EO data and run analytic workflows in EOSC compute resources
 - Cloud
 - Batch
 - HPC
- Involve users, bring in new communities
- Make the platform a standard tool offered through the EOSC portal

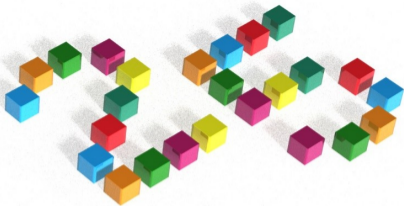


■ If you have a use case, talk to us



- Sentinel 5 precursor
 - Only L2 products, national coverage, full history
... but that's 10% of the Earth's surface
- Separate endpoint for custom datasets (dhr2)
 - Better management of collections under different retention policies
- Repository and map server for non-SAFE products
- Support for your use cases
 - Data access
 - Redistribution of results
 - Automating your workflows in **MetaCentrum**
 - Grid
 - Cloud
 - Jupyter





Questions?

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Thank you for your attention!

