cesnet

CZECH COLLABORATIVE GROUND SEGMENT

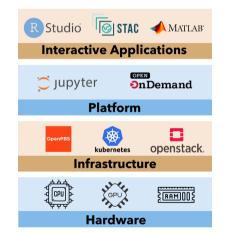
Jiří Matějka, Johana Supíková, Zdeněk Šustr

CESNET

4 March 2025

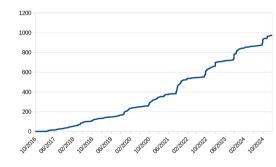
Computing resources

- CESNET provides computing & storage
 - \sim 50 000 CPU cores
 - ~500 GPUs
 - \sim 150 PBs of data storage
 - Grid (HPC/HTC), Cloud, Kubernetes, Platforms (Jupyter) and applications
- National access: MetaCentrum
- International access: EGI, EOSC
- EO Data + computing resources = national mini-DIAS



CESNET + Ministry of Transport & two distinct services:

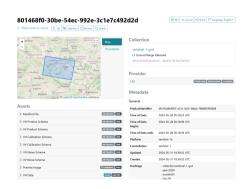
- DataHub Relay (since 2017)
 - Service in partnership with ESA
 - Hidden to end users
- National Mirror (since 2016)
 - National archive
 - Hub for Czech++ user groups
 - Mirror statistics by Dec. 2024
 - 954 registered users
 - 440,000 Sentinel products stored





STAC catalogue

- stac.cesnet.cz/browser
- Discoverability of a distributed archive
 - Sentinel, ERA5, Landsat
 - Access at asset level
 - Data stored in DHuS -> GSS, S3...
- STAC metadata generated on-site with Python's stactools
 - Some Sentinel products failing
 - No revocation from catalogue
 - Awaiting GSS notifications



Projects - FOCAL

Platform that combines intelligent workflow management with high performance computing resources for climate change modeling.

- Urban & forestry pilots
- Data management, Al tools
- Scientific outputs
 - Climate change impacts
 - Insights for farmers, foresters, urban architects...

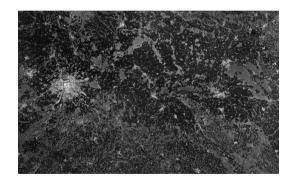


OF CLIMATE DATA LOCALLY

Projects - Visualization component

Quickly visualize high-res Sentinel products to the end user via a simple and interactive web application.

- Modular
- Backend GPU processing
- CUDAs CESNET GPUJPEG
- Downside: API speed limitation

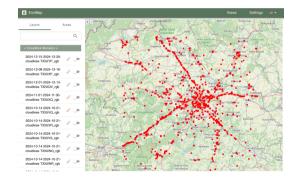


Projects of MT and TRC

Czech CollGS, Ministry of Transport & Transport Research Center work on the development of many applications such as:

- Generating cloud free mosaics
- Vegetation health analysis (forests, crops etc.)
- Truck traffic detection & NOx and other pollutants mapping
- Flood detection & analysis

https://envilab.cerit-sc.cz/cs





Thank you for your attention!

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