



# Status, Plans & Services



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**Dissemination level:** Public

**Disclosing Party:** TU Wien

**Recipient Party:** Cloud & HTC infrastructure integration workshop participants



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| Staff       |                      |
|-------------|----------------------|
| 4,125       | scientific staff     |
| thereof 175 | professors           |
| 1,281       | non-scientific staff |
| 5,406       | total staff          |
| 25,951      | students             |

| Faculties   |
|---|
| Architecture and Planning                         |
| Civil Engineering                                 |
| Electrical Engineering and Information Technology |
| Informatics                                       |
| Mechanical and Industrial Engineering             |
| Mathematics and Geoinformation                    |
| Physics   |
| Technical Chemistry                               |

<https://www.tuwien.at>

## *“Discovery Phase”*

### **Participating in T2.3: Service promotion, user community support and coordination**

- Compute providers to become interoperable and mature providers in the EOSC Compute Platform.
- Scientific users who wish to use EGI-ACE services in EOSC.
- Scientific communities and RIs who want to establish their data spaces on top of the EGI-ACE infrastructure.

Still learning about the procedures and requirements at EGI-ACE

Internal discussion about service offerings

No strict SLAs / OLAs in place locally

No accounting for planned services

Establishing pilot services as a model for services from Austrian institutions

# Planned Services

*Starting with 1+1+1 experimental services*

## TU coLAB

Collaboration platform based on Confluence

Integrated in Austrian identity federation

Used for documentation and knowledge based for service

No „real“ value at first – helps us onboarding

## Austrian Data Cube



## OSSDIP Secure Data Infrastructure and Processes

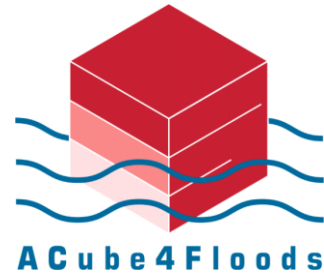
Trusted Research Environment

Securely „visiting“ data sets

Allow other institutions to perform analyses on data

# Austrian Data Cube

*Data Cube for Earth observation data*



# Data Cubes for Earth Observation



## *General Scope*

Coverages: homogeneous collections (space + time)

- 1-D time-series, 2-D imagery, 3-D x/y/t image time-series, x/y/z geophysical voxel, 4-D x/y/z/t climate and ocean data
- Multi-dimensional regular / irregular grids, point clouds, and general meshes

Regular data format: GML, JSON, GeoTIFF, NetCDF

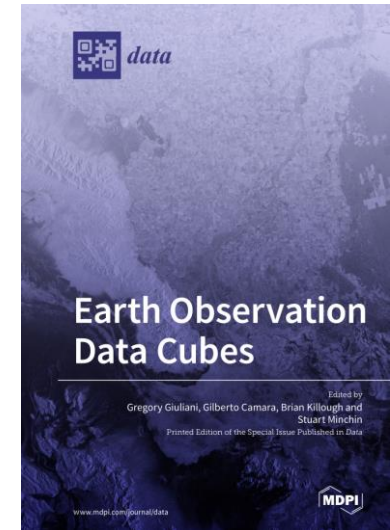
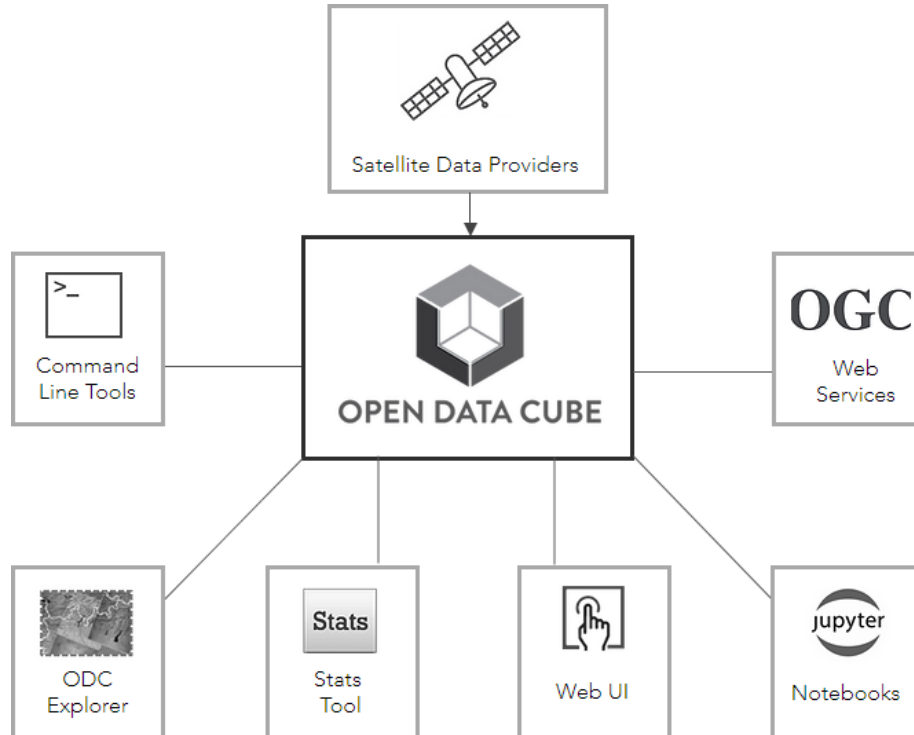
Access: OGC services

- E.g. WCS, WMS

Australian Geoscience Data Cube → Open Data Cube (open source) → adopted in different countries

# Data Cubes for Earth Observation

## Open Data Cube



Giuliani, G.; Camara, G.; Killough, B.; Minchin, S. Earth Observation Open Science: Enhancing Reproducible Science Using Data Cubes. *Data* **2019**, *4*, 147. <https://doi.org/10.3390/data4040147>

# Austrian Data Cube

## Scope

EO Data Cube at EODC for Austrian user community

- Gridded multi-dimensional database for EO Data time-series

Simplified user access to ARD data (Austria; **Copernicus Sentinel 1 / 2**)

- Single access point
- User-friendly framework, tailored to user's day-to-day work

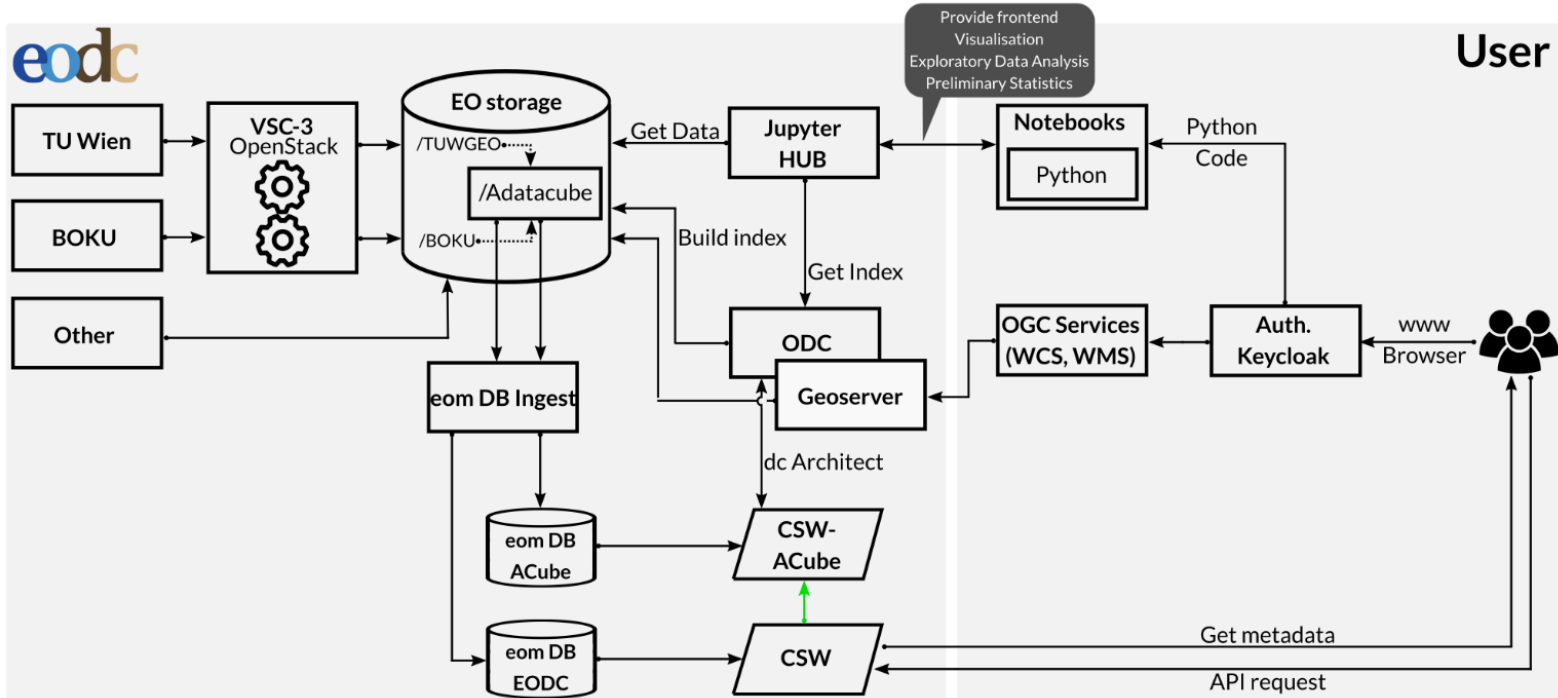
Implementing access points (Jupyter, WCS / WMS, QGIS)

Enabling / testing joint use of diverse EO data



# Austrian Data Cube

## Information flow



# Austrian Data Cube

*Data (not exhaustive)*

## Implementation of standards

File and data type,  
Naming convention

## Archive:

continious ingestion of S1 and  
S2 data  
Period: 2016/17-2019

## Sentinel-1

Backscatter  $\rightarrow \sigma_0, \gamma_0^T$   
Single images + monthly comp.

Surface soil moisture  
Forest layer  
Flood mapping

## Sentinel-2

Level-1C (TOA)  
Level-2A (BOA)

Vegetation Indices  
Cloud mask  
Snow confidence  
Flood mapping

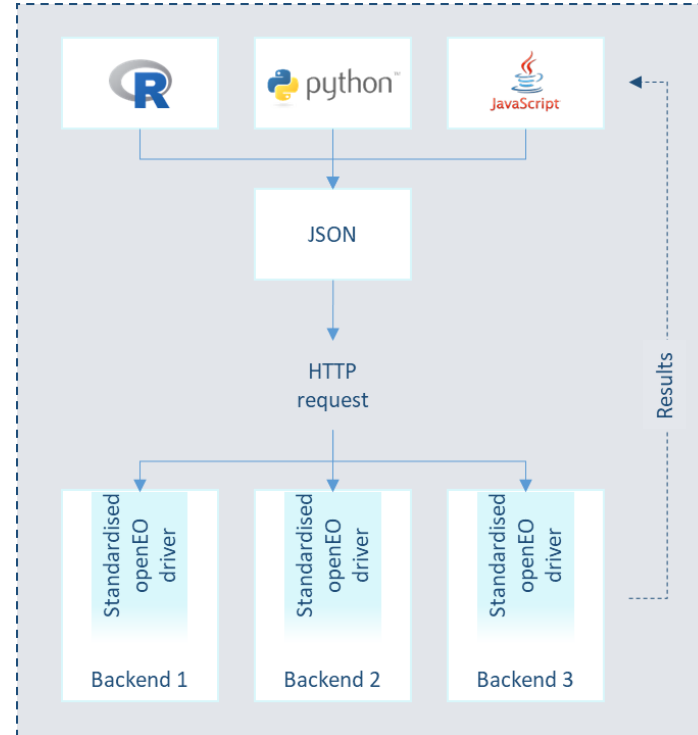
*Standardised access to cloud providers for EO data processing*



## Scope

Goal: standardised communication between EO clients and cloud back-ends

1. User's process chain
  2. Translation into machine readable code
  3. Transfer to back-end via HTTP request
  4. Translation into local syntax
  5. Execution at cloud back-end
- managing questions of data storage / access, resources, cloud infrastructure



## *Open source GitHub repositories*

<https://github.com/Open-EO>

Access points: R, Python, JavaScript / NodeJS, Browser, QGIS plugin, Android / iOS  
Driver APIs

Designed to run on / connect to specific environments / characteristics

Apache Airflow, Sentinel Hub, GeoPySpark / Geotrellis, GRASS GIS, JRC Big Data  
Platform, OpenStack, Google Earth Engine

To be seen as **templates** for additional APIs

Will be further managed / updated after project's run



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Copernicus - eoSC AnaLytics Engine





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# Capacity, Access & Communities



## Capacity

No hard limit, but limited by our support capacities

## Access Policies

TU users -> national users -> EGI-ACE

Experimental services -> start with “fair use” and use “as is”

## Communities

No special communities planned

# Next Steps

*Start integration*

Integrate with AAI...

Register in Application Database...

...



# Thank you!

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