OCRE

Open Clouds for Research Environments

EO services in DIAS

USE CASES

GÉANT CERN RHEA GROUP Trust-IT

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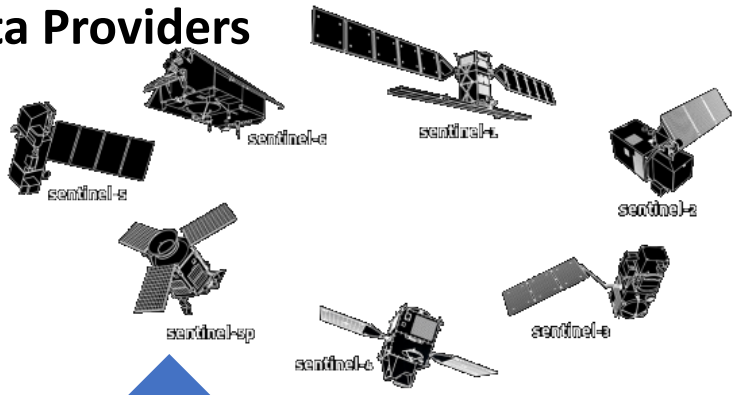
EO service value chain: From satellite to users

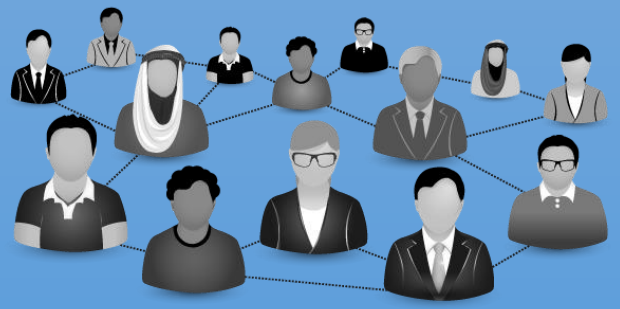
Data Providers



Service / Platform Providers

- Value added products
- Data visualisation
- Data analytics
- Data processing services
- Processing platforms

User community



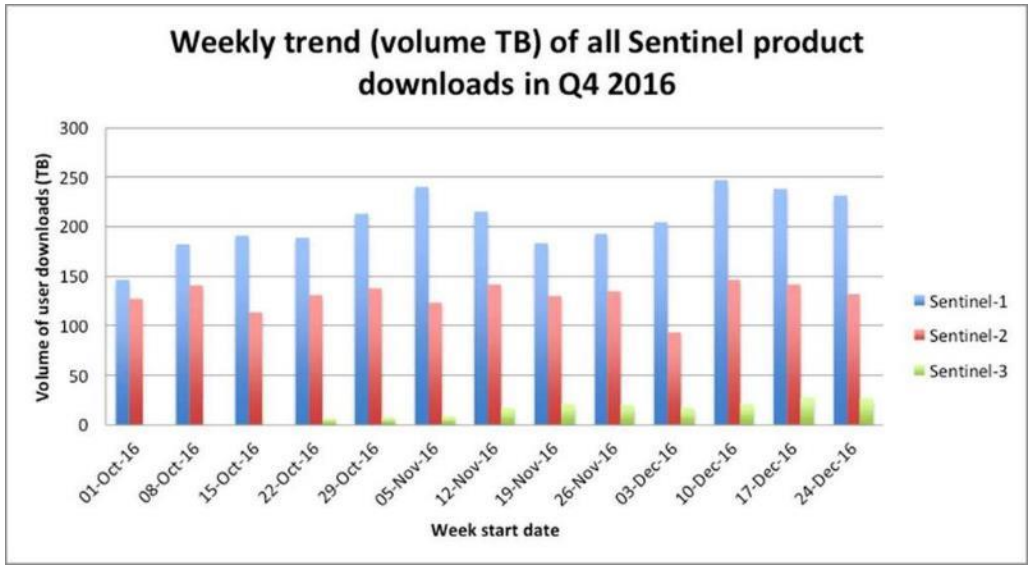
European Open Science Cloud

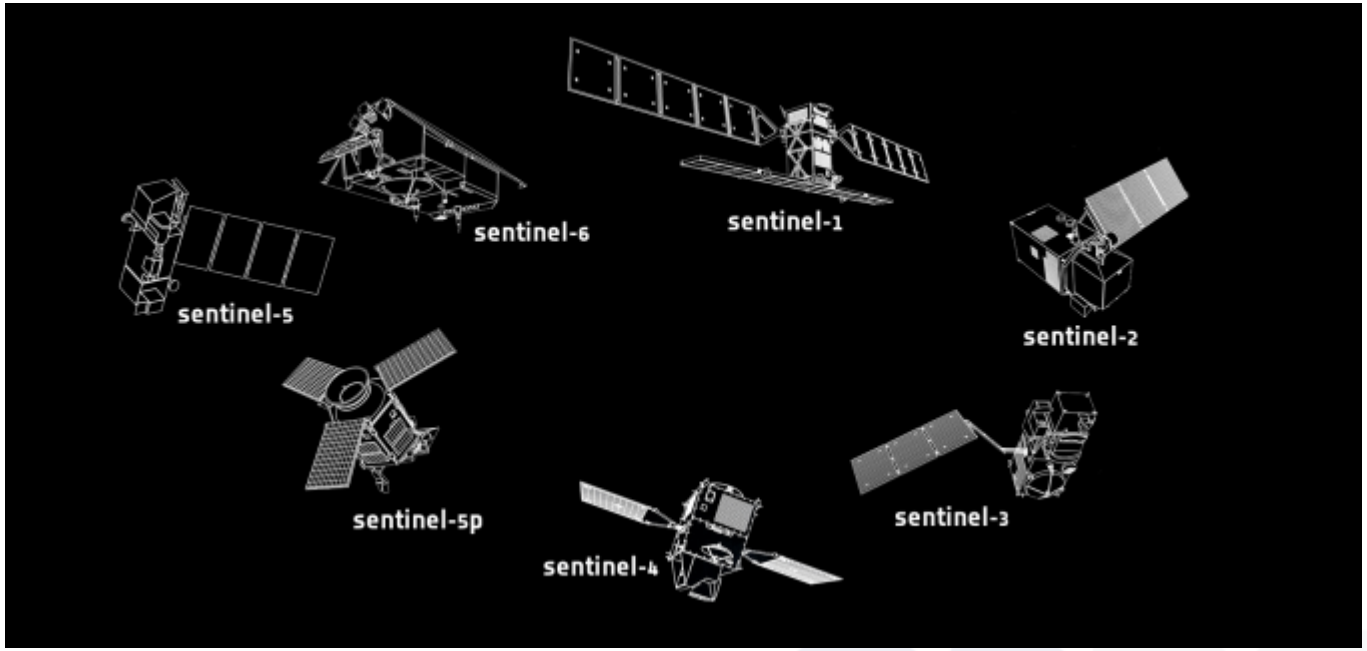
- Oil & Gas sector
- Agricultural sector
- Insurance sector
- Environmental sector

DIAS

Copernicus Data Information Access Services

- The European Commission launched the Copernicus Data and Information Access Services (DIAS) to resolve the challenges of accessing and downloading the vast amount of data produced by the different Copernicus Sentinels





Source: Simon Jutz, Head Copernicus Space Office,

DIAS Overview, JRC Ispra, 17-Mar 2017

Copernicus Data Information Access Services

WWW.CREODIAS.EU

WWW.MUNDIWEBSERVICES.COM

WWW.ONDA-DIAS.EU

WWW.SOBLOO.EU

WWW.WEKEO.EU

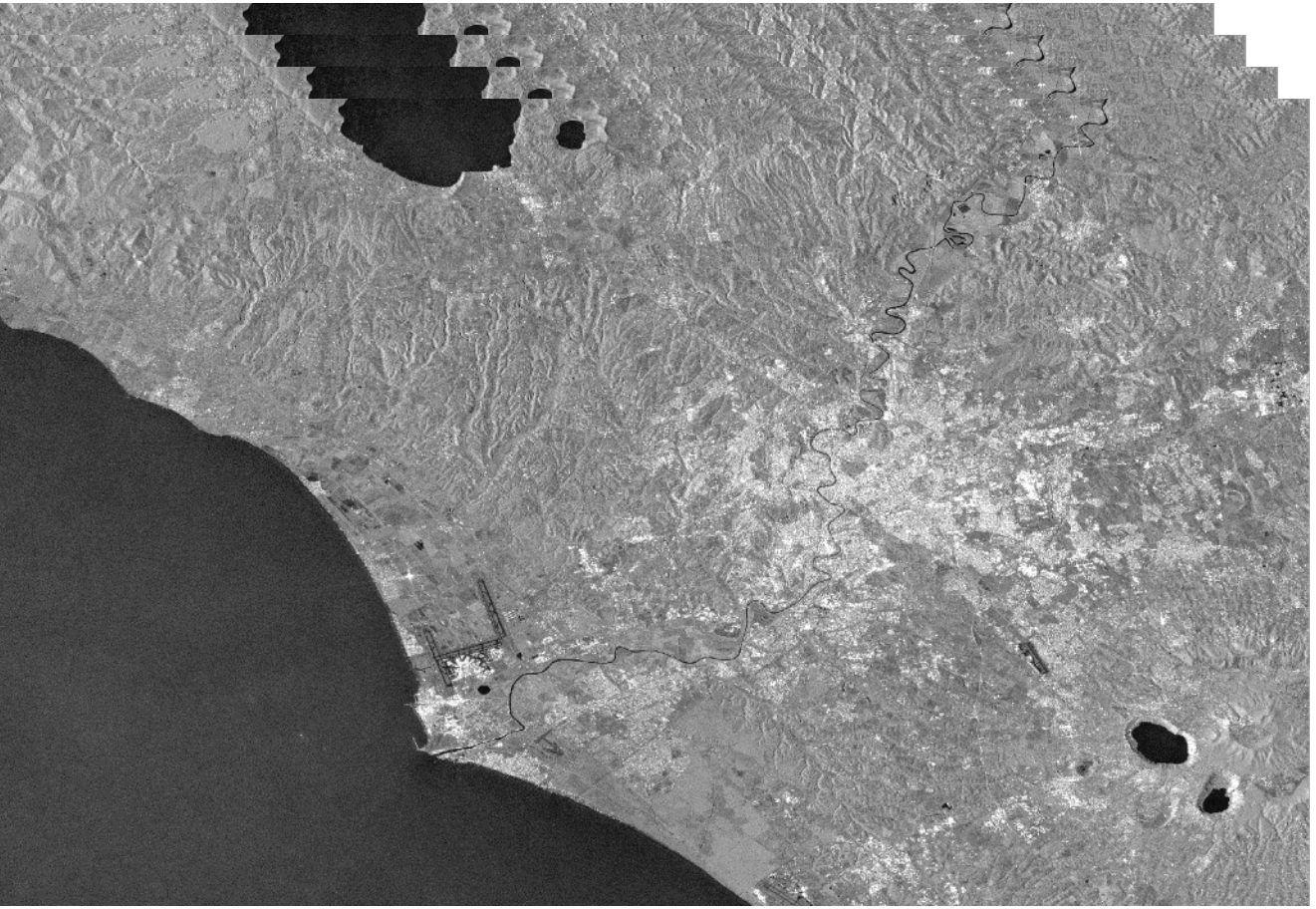
Why is interesting to move EO services into DIAS

- No need to update and maintain Copernicus Satellite data catalogue.
- Fast data access as data is locally accessible.
- Virtually unlimited computing resources available (CPUs, GPUs, virtualized environments, bare metal services)
  - Parallelise several requests
  - Optimisation on resources
  - Scale resources as needed

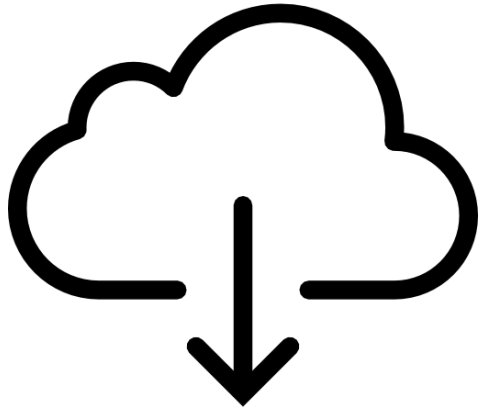
Data accessibility

- Near Real Time (NRT)
  - DIAS has low latency on the NRT data availability (minimal latency 2h)
- No-time critical (NTC)
  - Full mission dataset is available
- Time series data availability
  - Here is one of the great advantages of using DIAS. Big amount of data does not need to be downloaded anymore.

Data availability



- The data access is only one of the advantages in running services in DIAS
  - It becomes critical when working with large time series datasets for single run



25 hours of download
in average for 100
S1 IW SLC download

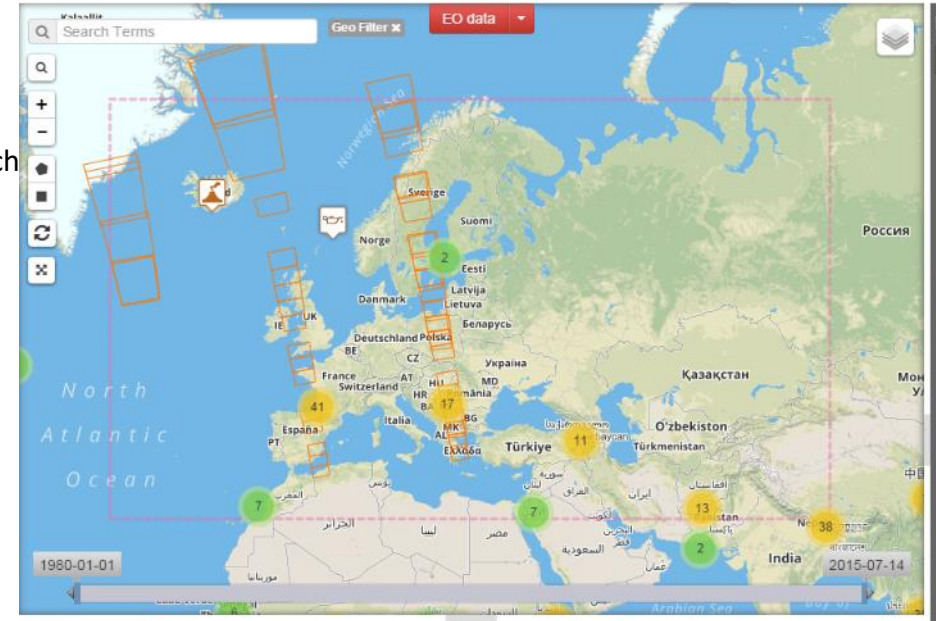
EO services : Use cases

Processing platforms

- Hosting of pre-developed algorithms
- The platform might instantiate or deploy computing resources to process new tasks and eliminate them once complete (ideally to reduce costs)
- The platform provides an API to invoke the services
- The platform should be able to interconnect services with data and computing resources
  - The EO service provider can provide services that could run independently on the platform below
- Dataset search/selector based on:
  - Mission
  - Area of interest (visualized, or delimited by polygon)
  - Sensing time
  - Data type
- **It is not in the procurement baseline, but an interesting element that enables the efficient migration to cloud and DIAS (in particular for many EO service providers)**

Use Case Data Processing services

Central section provides data search and browse visualisation



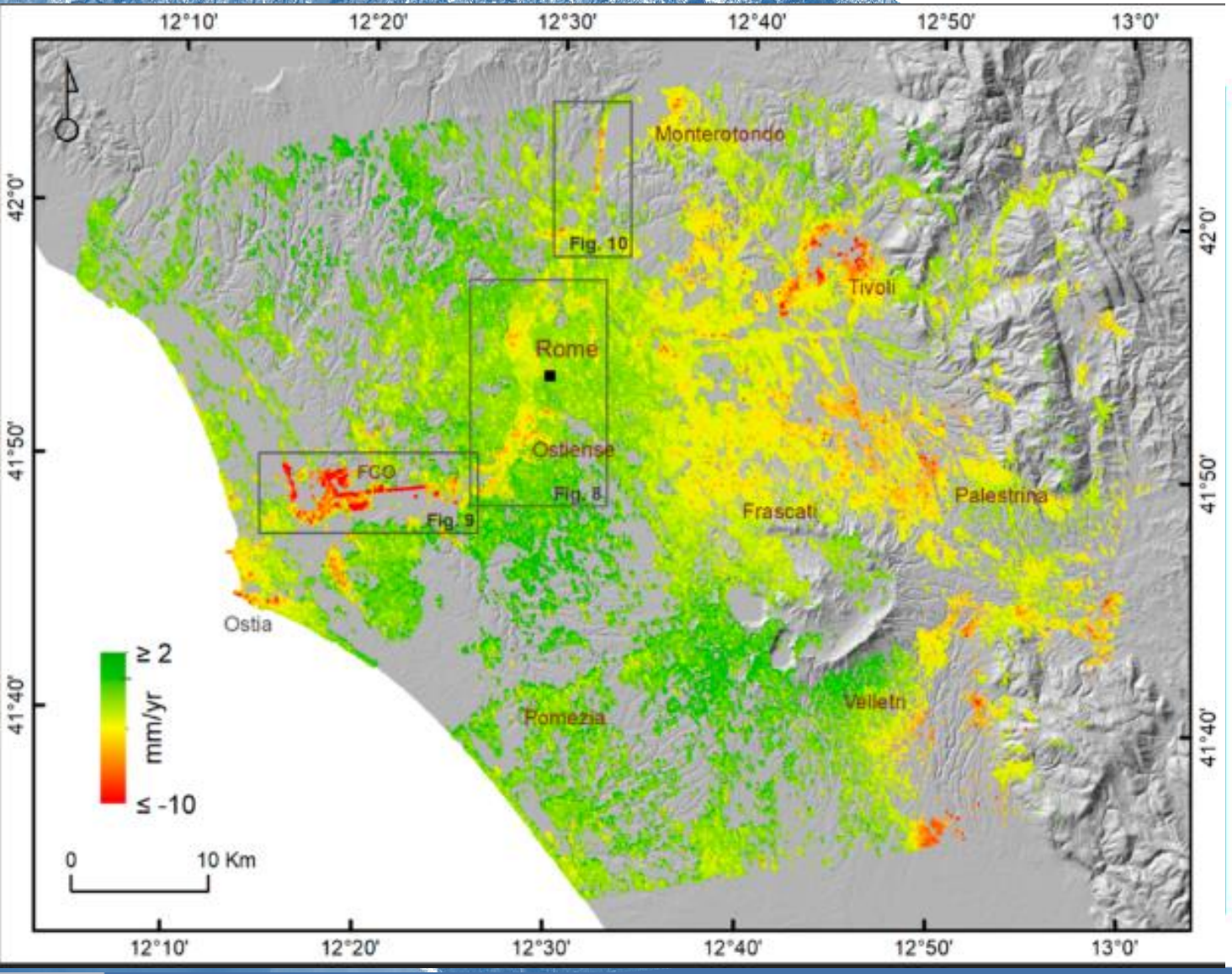
Right pane shows available processing services and toolboxes, as well as published products, publications, and community information

Lower panes show search results and allow drag-and-drop to create a basket of input products

Basket can be dragged to processing service to initiate

Courtesy of Geohazard TEP

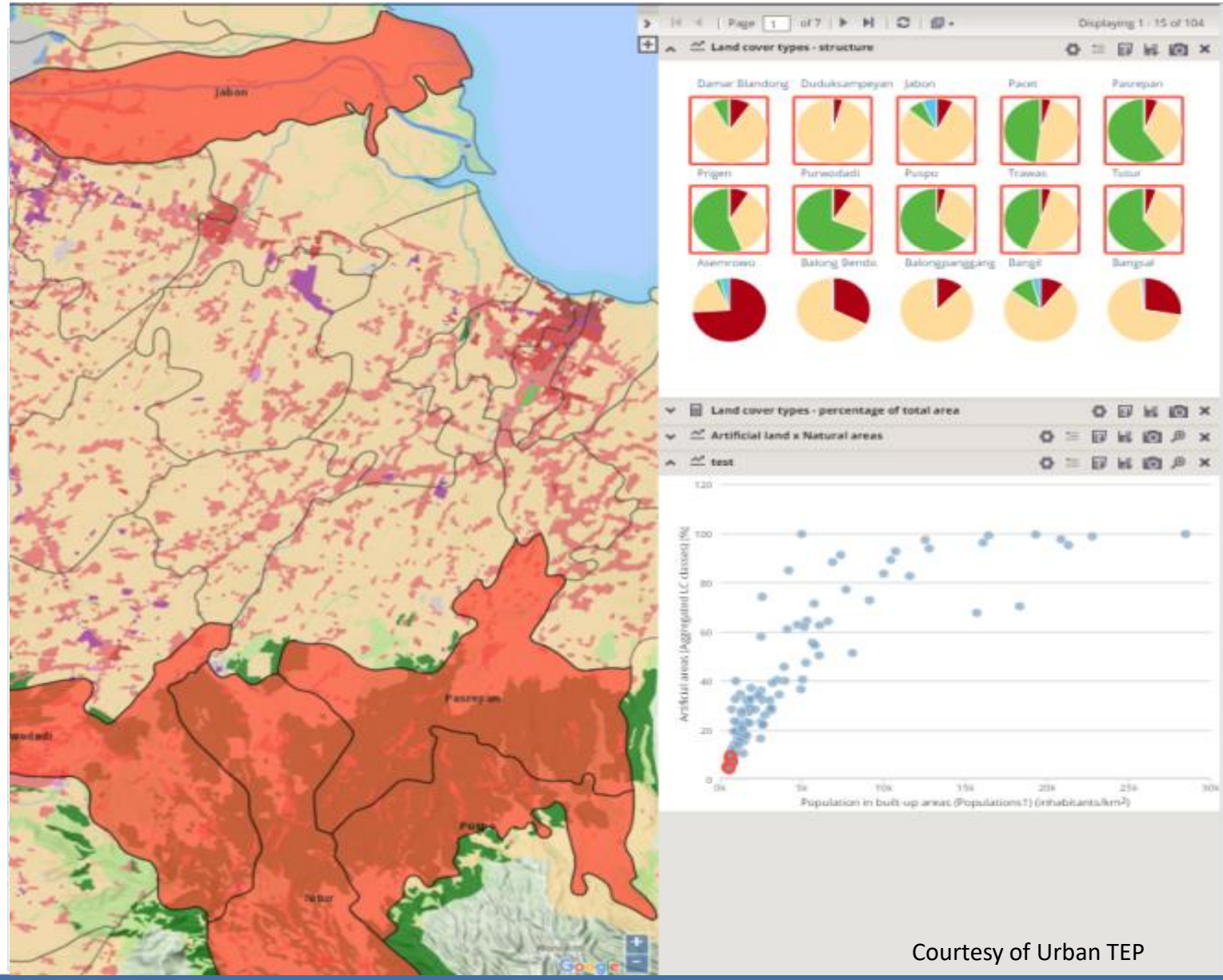
Data processing



- Near Real Time (NRT) services
  - Earthquake mapping, Flood detection/mapping
- No-time critical (NTC) services
  - L3 product generation
- Time series analysis
  - Long term change detection
  - Subsidence analysis

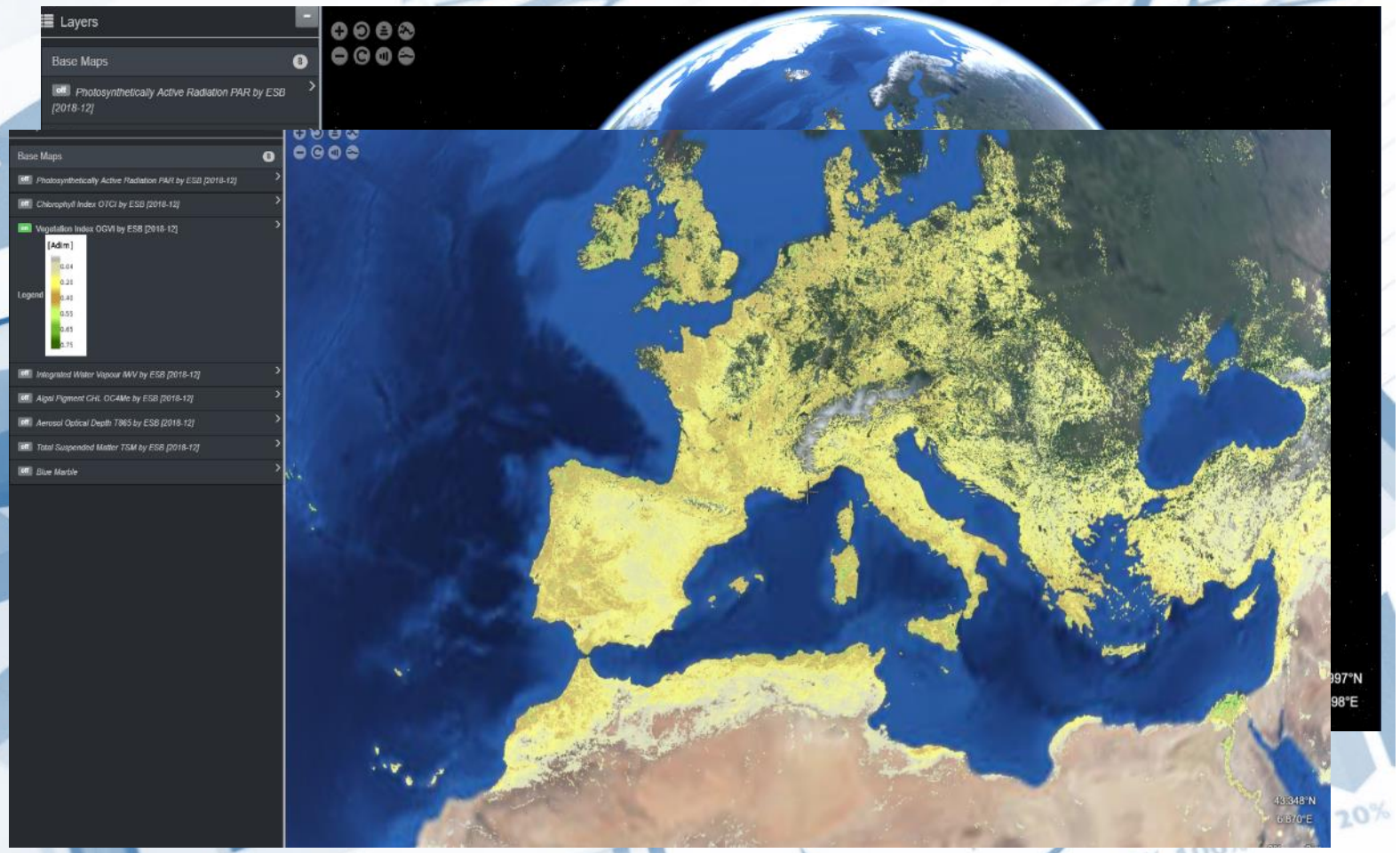
Data analytics

- Online results analytics
  - Plot, graphs, tables
  - Combine EO data, high level products (maps, indices) and other data (in-situ, twits)



Courtesy of Urban TEP

Data visualisation



- webGIS server to visualize:
  - Input data
  - Processing results
  - Other layers:
    - Events
    - Vector/polygons
- Example:
  - Interactive website with monthly Level 3 Sentinel-3 products (e.g. NDVI)

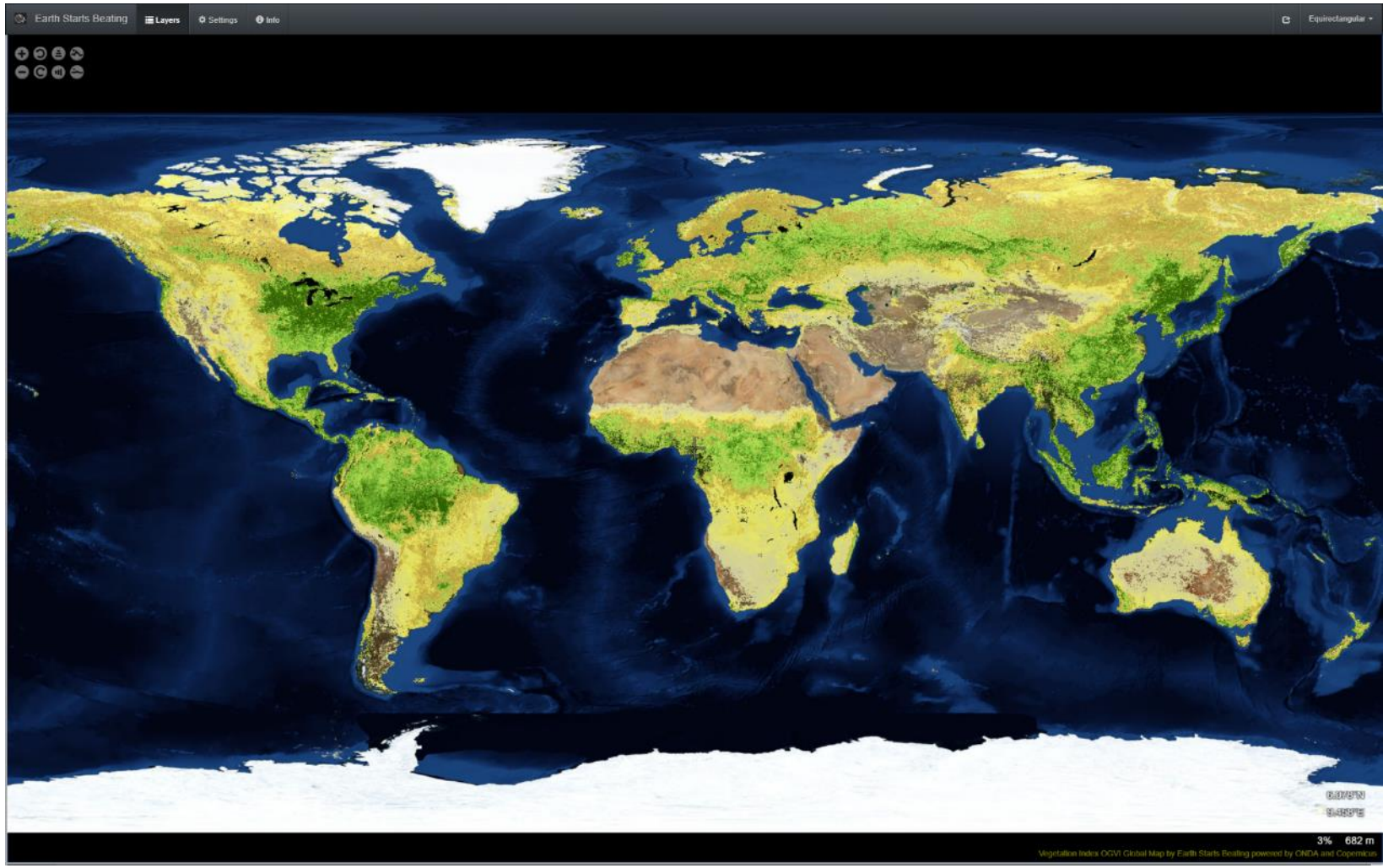
Courtesy of Earthstatrsbeating

Value added products

- Level-3 daily/weekly/monthly composites

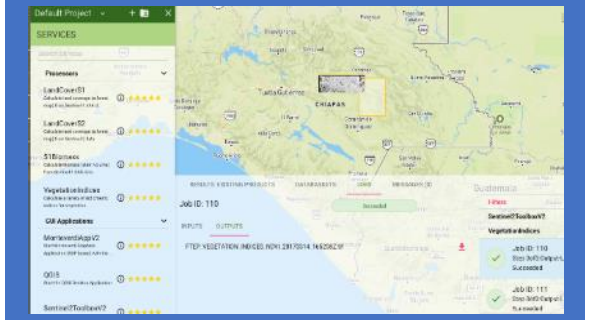
- Example:
  - Monthly NDVI composites

    (Normalised Difference Vegetation Index)
  - NDWI (Normalised Difference Water Index)

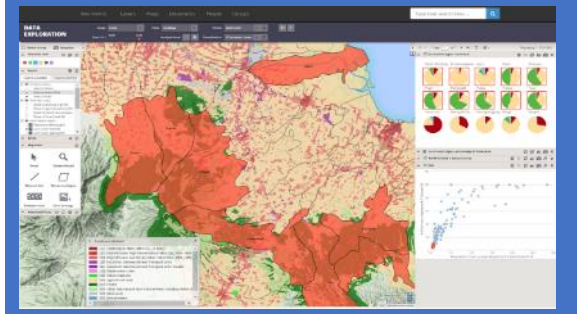


Preliminary categories of foreseen services

Data Processing Services

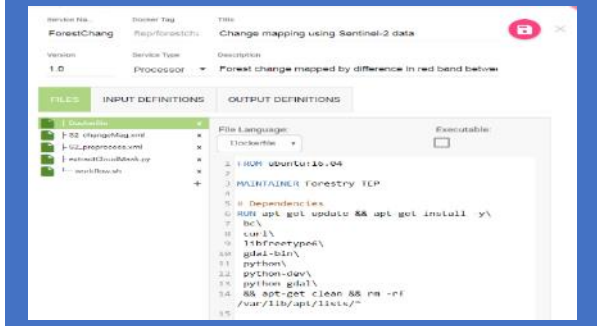


Data Analytics

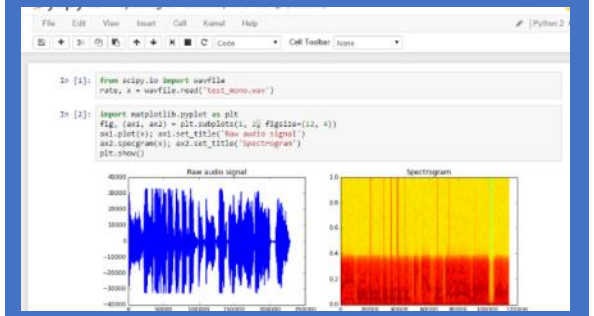


Data Sharing/Publication

User Service integration



Interactive development



Powered by a scalable collocated processing environment - DIAS

Questions ?