

WP3 Data Federation and Uptake

T3.4 Atmosphere

Jörg Klausen, MeteoSwiss

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WP3 Data Federation and Uptake

- establish a **decentralized federated data access system** for a number of **different domains (Land, Ocean and Atmosphere)**
- provide **access to the Sentinel Collaborative Ground Segment**
- connect with **crowdsources**
- build up a **federated metadata and data architecture**
- connect with **commercial data providers**, especially for very high resolution and SAR data.



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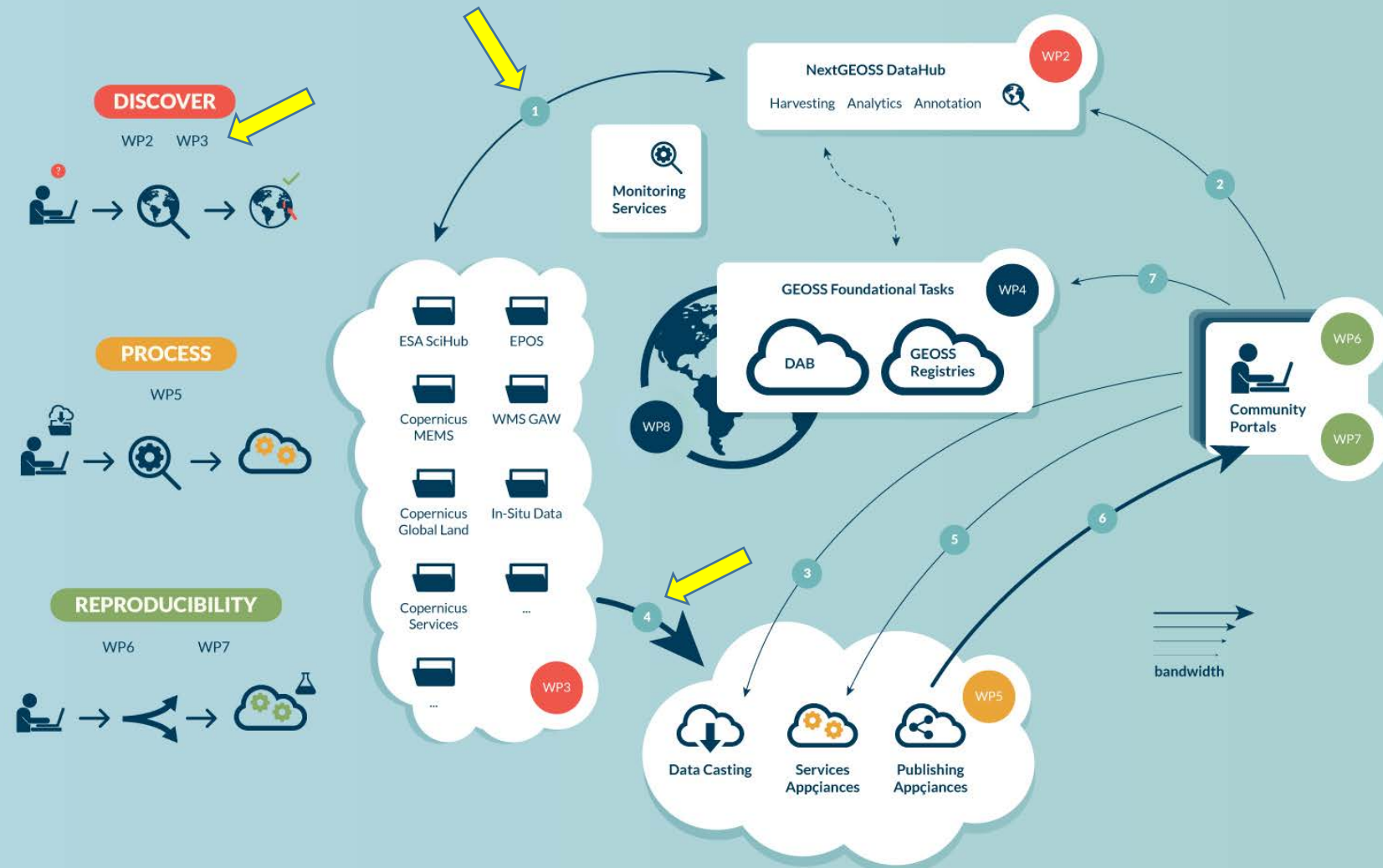


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NextGEOSS



1

Data Hub harvest and registers data from the each data infrastructure providing a links to the original original datasets at the source.

2

Discovery Enablers empower the community hubs to search for specific information from data or event-driven queries to the DataHub.

3

Access Enablers allow the community hubs to create selected data buckets to prepare the data access from the different providers.

4

Enhanced distributed **gateway** to EO data (from research and operational data infrastructures, across disciplines and communities)

5

Processing Enablers allow community hubs to deploy specific services appliances in advanced distributed ICT technologies

6

Publishing Appliances deliver back to the community hubs new products and analysis results processed by the services appliances

7

Community Portals **register** selected products and services to the GEO registries together with the respective data and service policies

Task Leads & Partners

T3.1 Sentinel data

Andreas Müller (DLR)

DLR + NOA

T3.2 Marine

Marion Sutton(?) (CLS)

CLS

T3.3 Land

Erwin Goor (VITO)

VITO

T3.4 Atmosphere

Jörg Klausen (MeteoSwiss)

Meteo Swiss + DLR + WMO + NILU + ARMINES

T3.5 Citizen Observatories

Bart de Lathouwer (OGCE)

OGC + BLB

T3.6 Commercial Providers

Gunter Schreier (DLR)

DLR + DMI

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WP3 T3.4 Atmosphere

- provide **atmospheric metadata and data** of physical and chemical observations (and products thereof)
 - **Armines** Solar irradiance (Seviri), Topography
 - **GAW WDCs (NILU, DLR, MeteoSwiss, WMO)**
 - Reactive gases, aerosols, ozone, greenhouse gases (surface-based and satellite-based)
 - station and observation metadata on WMO-coordinated observations



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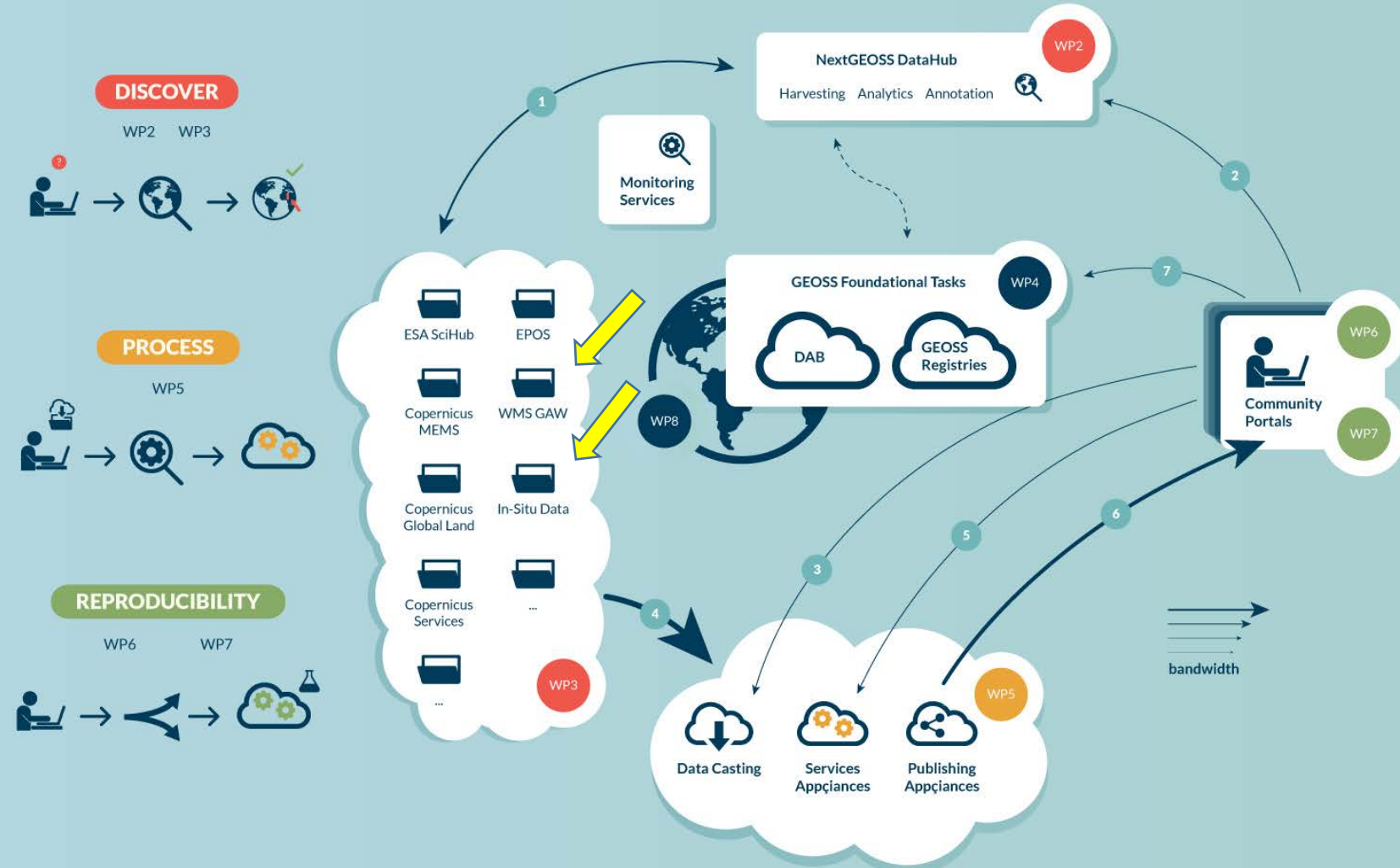


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	Product(s)
Observed physical quantity	
Instrument(s)	
Period available	
Processing level	
Spatial resolution	
Size of dataset	
Provider	<i>DLR</i>

Need update

Data Discovery

- ...
- ISO19115 / ISO19139 compliance

Need update

Data Access

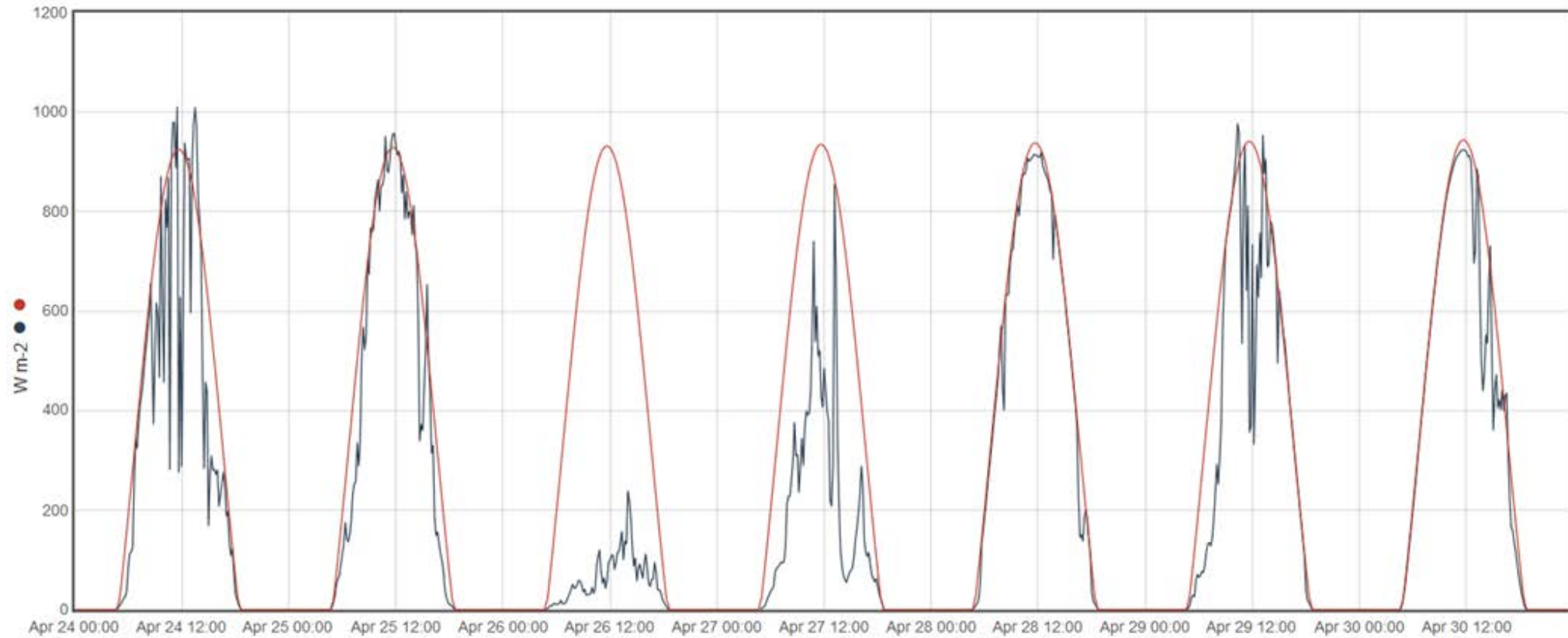
- ...

Access Restrictions

- Freely available for NextGEOSS

	Product	Product
Observed physical quantity	<i>Surface Solar Irradiance</i>	<i>Surface Solar Clear Sky Irradiance</i>
Instrument	<i>SEVIRI on Meteosat Second Generation</i>	<i>Model based</i>
Period available	<i>2004 – today (for NextGEOSS one year)</i>	<i>2004 – today (for NextGEOSS one year)</i>
Processing level	<i>Specific processing Heliosat-4</i>	<i>Specific processing Heliosat-4 (CAMS McClear)</i>
Spatial resolution	<i>3 x 3 km</i>	<i>50+ km</i>
Size of dataset	<i>< 1 TB</i>	<i>< 1 TB</i>
Provider	<i>Armines</i>	<i>Armines</i>

Example



CAMS Radiation & McClear time series for a single point on Earth

Data Discovery

- CSW (GEO Webservice-Energy catalog:
<http://geocatalog.webservice-energy.org>)
- ISO19115 / ISO19139 compliance

Data Access

- CAMS Radiation & McClear: WPS
- DTM SRTM: WMS, WCS

Access Restrictions

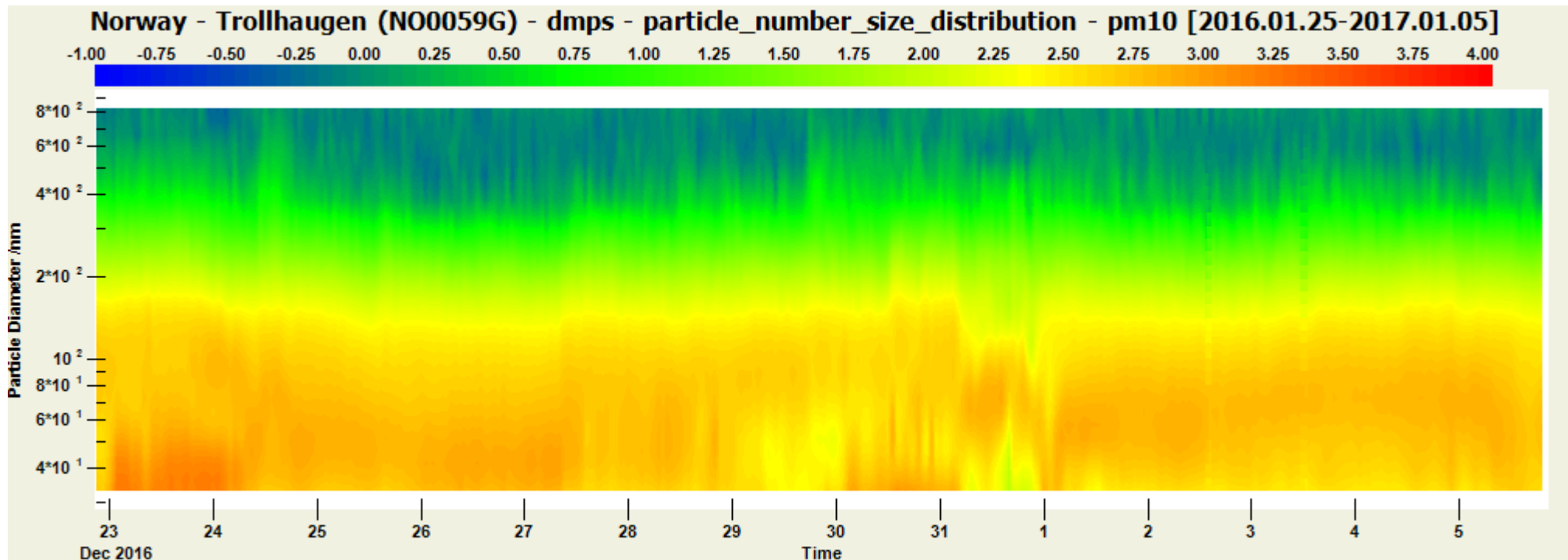
- Freely available for NextGEOSS

EBAS Database: Atmospheric Composition

	Products
Observed physical quantity	<i>> 600 atmospheric constituents, observed at > 1000 surface-based stations</i>
Instrument	<i>> 100 instrument types, depending on observed quantity</i>
Period available	<i>1971 – today</i>
Processing level	<i>L2</i>
Temporal resolution	<i>hourly – weekly (point data)</i>
Size of dataset	<i>Ca. 300 GB in total</i>
Provider	<i>NILU</i>
Update frequency	<i>Mostly annual, 38 stations in NRT (within 1-3 hours)</i>

EBAS Database: Atmospheric Composition

Example of available dataset(s)/physical quantities:
RRT particle size distribution data from Troll Station, Antarctica



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ther

Data Discovery

- Web-interface
- OAI-PMH (<http://ebasoi.nilu.no/oai>)
- ISO 19115 WMO profile, WIS approved:

Data Access

- Web-interface
- OGC-WCS currently being implemented
- Focus on standardized interfaces

MeteoSwiss operate the metadata portals GAWSIS (atmospheric chemical constituents) and OSCAR (all of the WMO and co-sponsored observing systems) for WMO. These implement the ISO 19156-based WIGOS metadata standard.

	Marine/Land/Atmosphere
Observed physical quantity	<i>> 750 quantities, observed at > 30'000 stations</i>
Instrument	<i>> 100 instrument types, depending on observed quantity</i>
Period available	<i>Since beginning of instrumental observations</i>
Processing level	<i>--</i>
Temporal resolution	<i>Time series of various geometries</i>
Size of dataset	<i>-- (metadata ca. 3 GB)</i>
Provider	<i>NMHSs, Universities, etc GAW WDCs, JCOMMOPS, etc</i>
Update frequency	<i>Not specified</i>

GAWSIS-OSCAR

Various search targets and results export possibilities

Management console for registered users

Possibility to seek support or provide Feedback

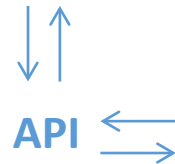
oscar.wmo.int/surface

The screenshot displays the OSCAR Surface web application. On the left, there is a 'Search for stations' panel with various filters like 'Station name', 'Country', and 'Type'. The main area features a 'Welcome to OSCAR/Surface' message and a map showing station locations across a geographical region. A 'Detailed station report' is visible on the right side of the interface.

Finely tuned search

Detailed station report

Operational since 2 May 2016



```
<?xml version="1.0" encoding="UTF-8" ?>
<http://www.w3.org/2001/XMLSchema>
<http://www.iso211.org/2005/gco>
<http://www.opengis.net/om/2.0>
<http://www.opengis.net/inspire/gpml>
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</xs:documentation>
</xs:annotation>
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<xs:annotation>
  <xs:documentation>An Abstr
An environmental monitoring facility
```

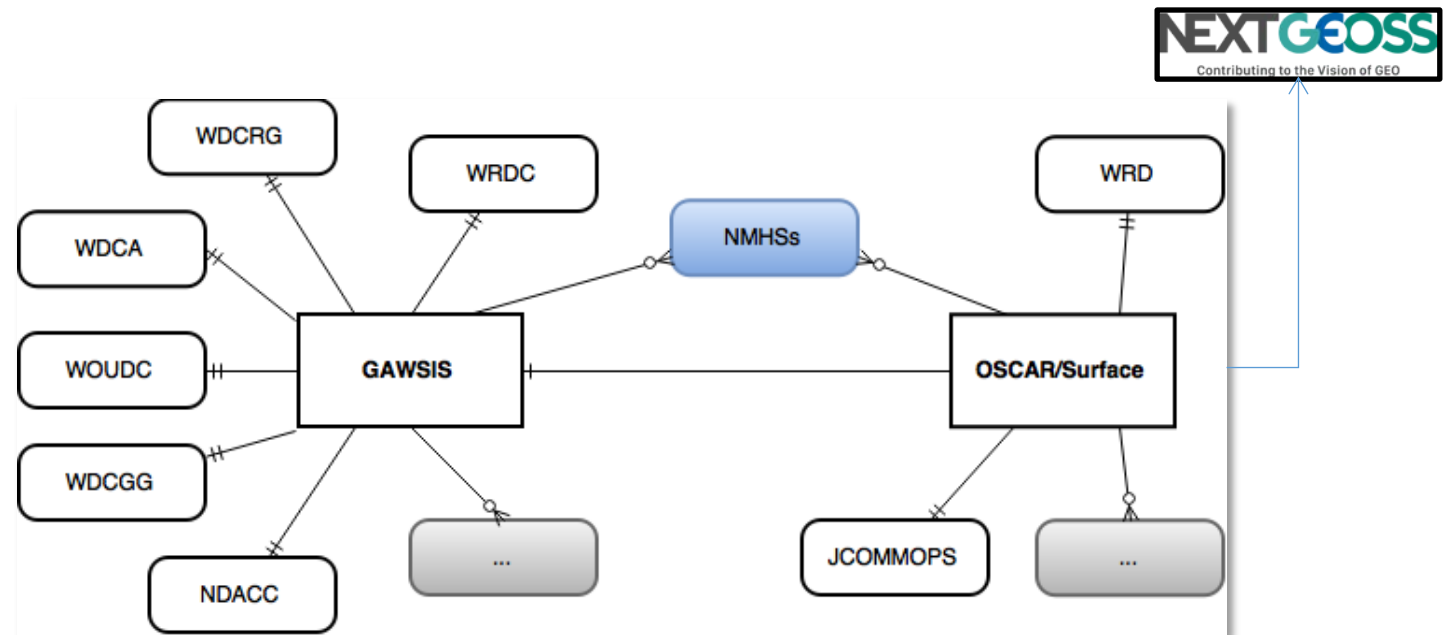
RESTful API handles WIGOS Metadata (OGC/ISO O&M) alpha release

Data Discovery

- Web-interface
- ISO 19115 WMO WIS profile, XML files:
<https://oscar.wmo.int/surface/index.html#/xml>
- RESTful API supports WMDR 1.0RC6

Data Access

- Access (links) to data via
- Web-interface



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Challenges

- **Understand requirements of WP2**
- Connect data providers to GEO infrastructure
- Connect data providers to GAWSIS-OSCAR
- Connect GAWSIS-OSCAR to GEO infrastructure



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Thank you!

