

WGISS-Related Activities at DLR

EO Missions, Data Management, and Services

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A large, curved image of the Earth from space occupies the bottom right portion of the slide. It shows a view of the Earth's surface with blue oceans, green landmasses, and white clouds. The curvature of the planet is clearly visible, with the horizon line curving upwards from the bottom left towards the right.

Knowledge for Tomorrow

Executive Summary

WGISS related DLR activities

- Operating three current EO missions - TerraSAR-X, TanDEM-X, EnMAP
- Four missions in the pipeline - MERLIN, CO2 Image; HRWS, Tandem-L (planned / considered)
- Developing and operating a range of state-of-the-art infrastructures and services covering the entire EO value adding chain
- Numerous technical contributions to the Copernicus program
- Contributing to EO data management evolution and interoperability in the context of CEOS, GEO, OGC, and ESA working groups



Earth Observation Missions

Operational missions

■ TerraSAR-X & TanDEM-X

- Polarimetric, interferometric X-band radar Earth observation
- Launched 2007 / 2010
- Public-private partnership DLR / Airbus-DS
- Global high-resolution DEM completed in 2016

■ EnMAP

- Imaging spectrometry
- Launched 04/2022
- 242 bands (VNIR, SWIR); 30 m x 30 m spatial resolution
- 30 km swath width; max. 5000 km swath length acquired per day
- Data dissemination start planned for 11/2022



Earth Observation Missions

Planned / considered missions

■ MERLIN

- Methane Remote Sensing LIDAR Mission
- German-French collaboration
- Planned launch 2027

■ CO2Image

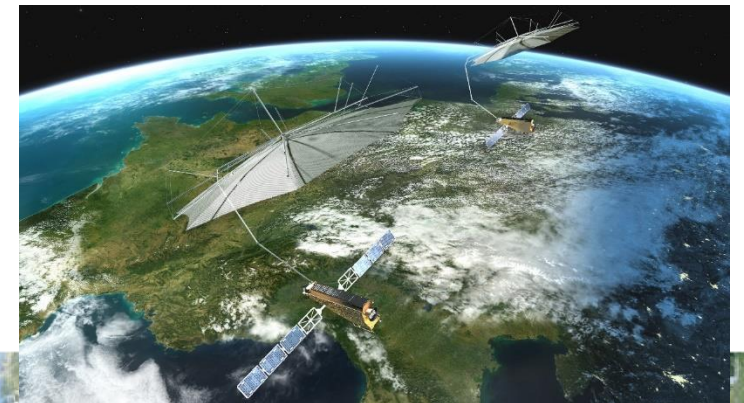
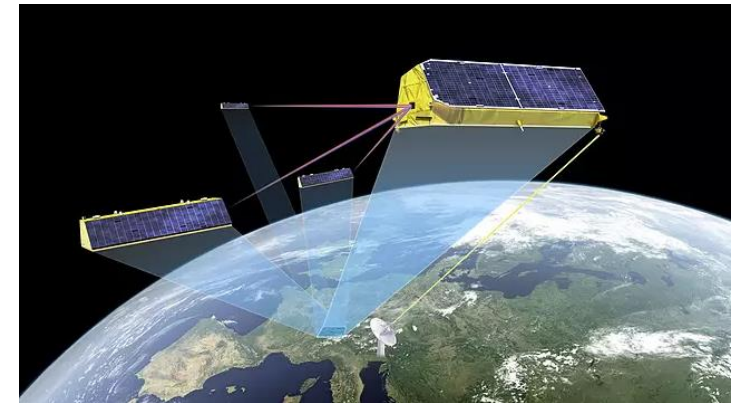
- High-resolution mission complementing Copernicus CO2M
- Planned launch 2026

■ HRWS

- High-resolution Wide Swath
- Polarimetric, interferometric X-band radar Earth observation
- Launch date tbd.

■ Tandem-L

- Polarimetric, interferometric L-band radar Earth observation
- Tomographic measurements of 3-d structure (forest, ice sheets)
- Launch date tbd.



Big Data Management in Earth Observation

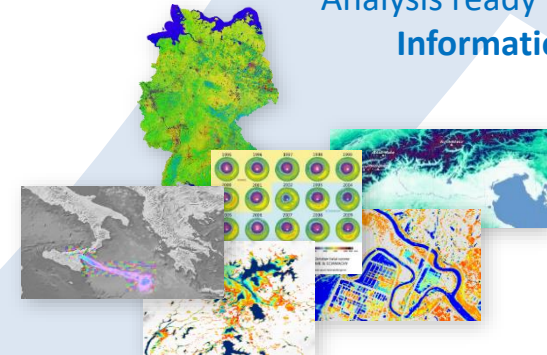
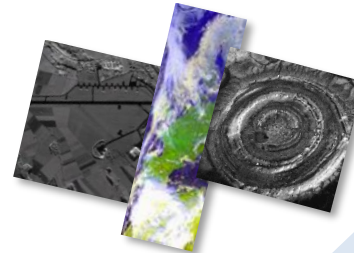
Contributing to the paradigm shift

- Managing large-volume EO data along the value chain
- Data modeling, ARD generation, software development, system and IT engineering
- Algorithm development and generation of regional and global geoinformation products
- Data provision according to international standards
- State-of-the-art infrastructures and data services serving EO missions and research projects
- Coupling of long-term archive and analysis platforms



High-performance exploitation platforms
Analysis ready data, federation
Information systems

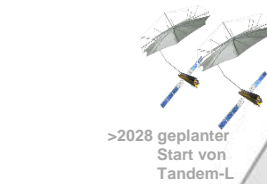
Earth observation data



Spatial information products



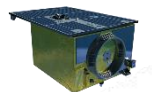
Active long-term archive
Secure data, geo-redundancy, 100 PB capacity
Interoperable catalogs and data access



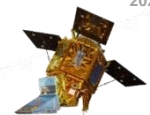
>2028 geplanter Start von Tandem-L



>2026 geplanter Start von HRWS



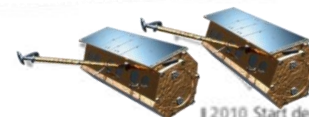
2022 Start von EnMAP



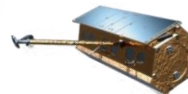
2017 Start von Sentinel-5p



2014 Start von Sentinel-1, erste Mission des europäischen Erdbeobachtungsprogramms Copernicus



2010 Start der DLR-Radarmission TanDEM-X



2007 Start der DLR-Radarmission TerraSAR-X



2002 Start des ESA-Umweltsatelliten ENVISAT



2000 Start der Fernerkundungsmission SRTM

Datenvolumen im DLR-Satellitendatenarchiv (D-SDA) in Petabyte

Selected DLR EO Data Management Infrastructures and Services I

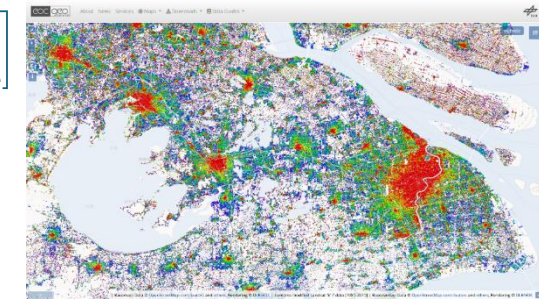
■ German Satellite Data Archive (D-SDA)

Long-term preservation and curation, ensuring EO data accessibility and usability for future users



■ EOC-Geoservice

Spatial data infrastructure for interoperable access to spatial information products based on international standards



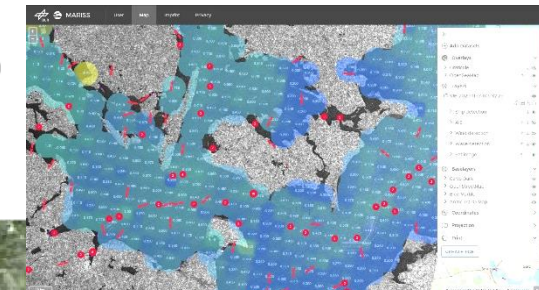
■ HPDA Terrabyte

High-performance earth observation analytics platform for scientific use in collaboration with the Leibniz Supercomputing Centre, Munich



■ Environmental and Crisis Information Systems (UKIS)

Set of building blocks for developing customized information and decision support systems



Selected DLR EO Data Management Infrastructures and Services II

■ Copernicus Data and Exploitation Platform CODE-DE 2

- Copernicus Collaborative Ground Segment
- EO data and services focused on national public authorities
- Funded by the German Federal Ministry for Digital and Transport



■ Scientific EO Analytics Platform EO-Lab

- EO data and services focused on national scientific users
- Funded by the German Federal Ministry for Economic Affairs and Climate Action



Selected Copernicus-Related DLR Activities

■ Sentinel Core Ground Segment

- Sentinel-5P Payload Data Reception (Inuvik) and Ground Segment
- Sentinel Acquisition Service (Neustrelitz)
- Sentinel-1 Production Service
- HPC4Copernicus
- Sentinel-4 /-5 Level-2 algorithm & processor development

■ Copernicus Collaborative Ground Segment

- National Mirror - CODE-DE 2
- Sentinel-1 'listening-in' and NRT maritime product generation

■ Mission Performance (MPC), Instrument & Algorithm Validation, Quality Working Groups (QWG)

- Optical & SAR MPC
- Optical Expert-Support Laboratories
- Sentinel-5P QWG

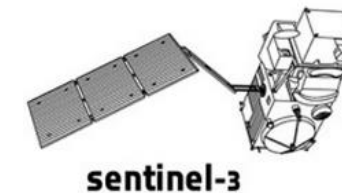
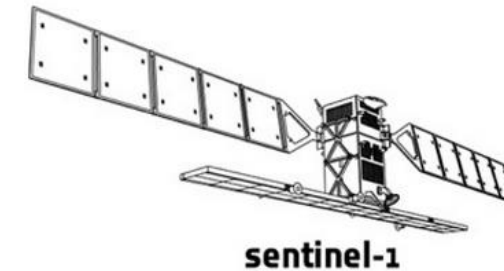
■ Mission Advisory Groups

- Sentinel-4 / -5, ROSE-L, CHIME

■ Copernicus Services

- Ozone, Aerosols, Greenhouse gases in support of Atmosphere and Climate Services
- Software & science support to Ground Motion Service
- VHR NRT maritime surveillance products for Marine Environment Monitoring Service
- Global Flood Monitoring supporting Emergency Service

■ Curated archive of Sentinel-1, Sentinel-2, Sentinel-3 OLCI, Sentinel-5P user level data





Thank you very much
Questions?

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