Working Group on Information Systems and Services (WGISS)









Achievements of 2026

Report for Information to CEOS Principals

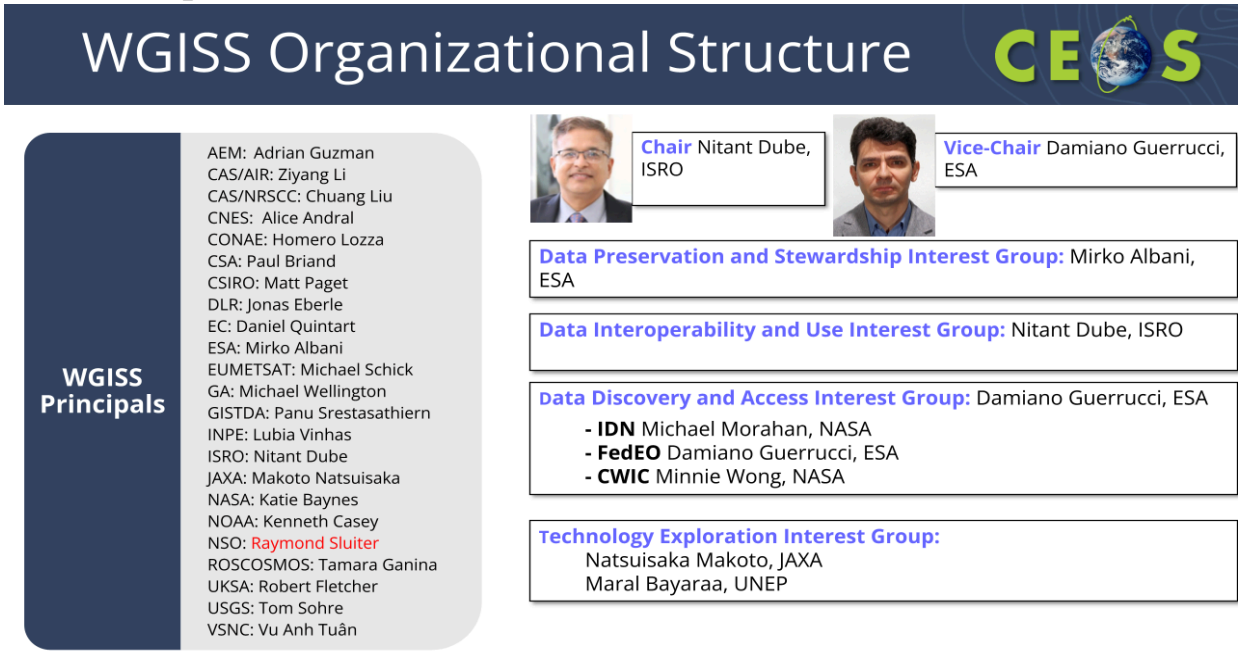
CEOS Plenary 2026

Author: WGISS Team

About WGISS

The Working Group on Information Systems and Services (WGISS) promotes collaboration in the development of systems and services that manage and supply Earth observation data. WGISS addresses the internal management of EO data, the creation of information systems and the delivery of interoperable services. The activities and expertise of WGISS span the full range of the information life cycle from the requirements and metadata definition for the initial ingestion of satellite data into archives through to the incorporation of derived information into end-user applications.

Membership and Structure



WGISS Meetings

WGISS-61 and WGDisaster-25 Joint Meeting

March 16th - 20th, 2026 | Dehradun, India



WGISS-62

October 26th - 30th, 2026 | Boulder, Colorado, USA

WGISS-63

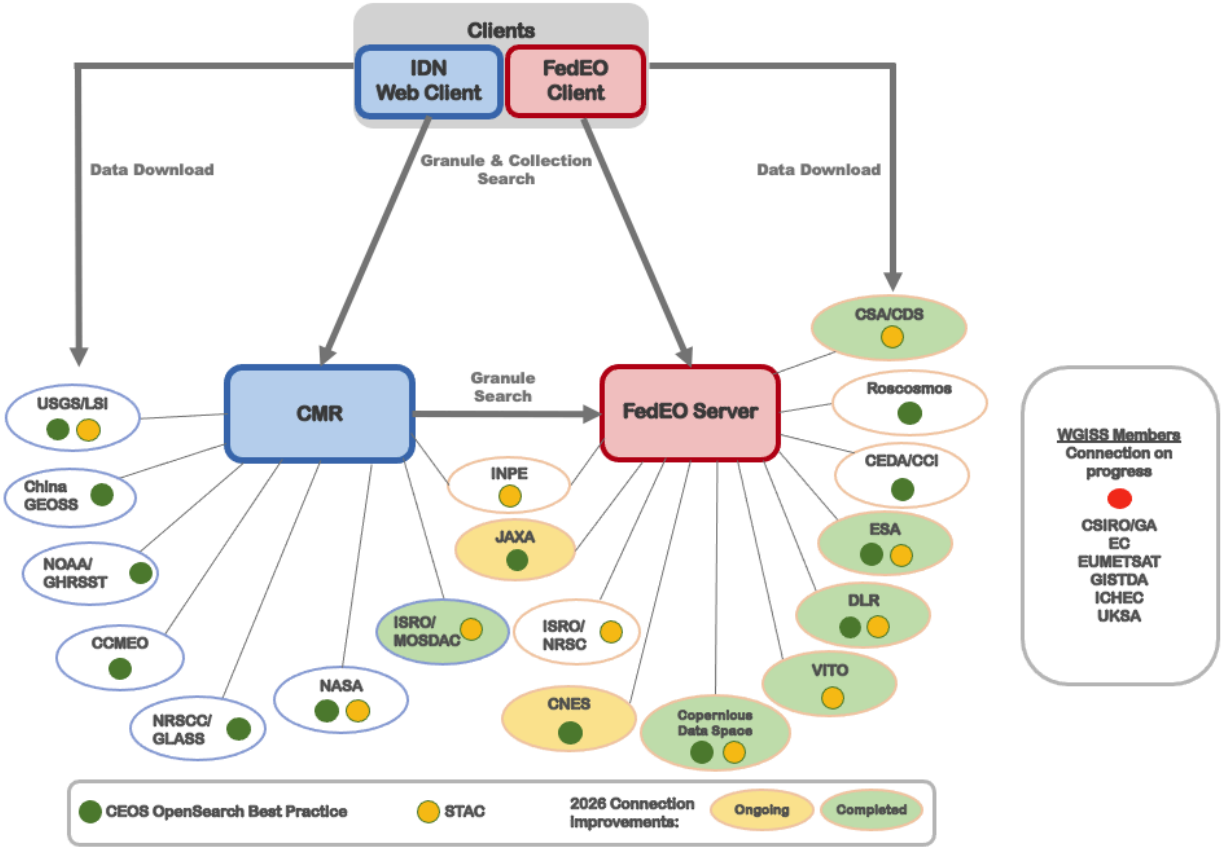
March 2026 UK, Hosted by UKSA

CEOS Deliverables: Status

Deliverable ID	Title	Status	Initiating Year	Completion	Status
DATA-26-01	EO Data Citation Guidelines	Closed	2026	2026 Q4	Guidelines are developed, reviewed, and published
DATA-26-02	Interoperability Maturity Matrix	Closed	2026	2026 Q4	Maturity Matrix is developed, reviewed, and will be released by the end of 2026
DATA-26-03	EO Data Provenance Guidelines	In Progress	2026	2027 Q4	EO Data Provenance Guidelines, Initial Discussions completed
DATA-26-04	White Paper on Federated Authentication and Authorisation Access	In Progres	2026	2027 Q1	Consolidating the common context and initial use cases to support a shared CEOS discussion on future cross-agency access arrangements.
DATA-26-05	White Paper on Digital Twins	In Progres	2026	2027 Q3	White Paper on Digital Twins, CEOS agencies' inputs consolidated, documentation in progress
DATA-26-06	Resilience Interoperability Demonstrator on Supersites	In Progres	2026	2027 Q4	Identification of supersites completed; discussion on data flow and processing

Interest Group: Data Discovery and Access

The Data Discovery and Access Interest Group (DAIG) coordinates CEOS agencies to ease discovery and access to Earth Observation data. It supports a common forum to define standard guidelines that help align agency discovery services, metadata practices, and user guidance. The group is advancing the CEOS Connected Data Assets based on STAC interfaces, an interoperable tool to connect as many CEOS agencies as possible into federated data access at the same time, supporting broader priorities such as resilience, cloud-based access, and trusted cross-agency services.



Main Achievements:

- **Expanded and strengthened Connected Data Assets (CDA) integrations:** In 2026, CDA integration expanded through the implementation and enhancement of STAC connections for CSA/CDS, VITO, ISRO/MOSDAC, CDSE, DLR, and ESA. Work continues with STAC upgrades for JAXA and CNES, and new connection integrations for CSIRO/GA, ICHEC, EUMETSAT, UKSA, the European Commission, and GISTDA.

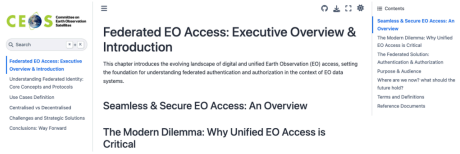
- **Improved the supporting discovery services:** FedEO received additional query capabilities, closer STAC alignment, and updated examples, while IDN/MMT work improved collection maintenance, structured quality information, and provider management.

- **Federated Authentication and Authorization White Paper:** Consolidating the common context and initial use cases to support a shared CEOS discussion on future cross-agency access arrangements.

Table of Contents

1. Federated EO Access: Executive Overview & Introduction
2. Understanding Federated Identity: Core Concepts and Protocols
3. Use Cases Definition
4. Challenges and Strategic Solutions
5. Conclusions: Way Forward

Included	User Federation
Excluded	Federation of catalog Data federation *WGISS-59-11*



Data Discovery and Access

Doc. Ref.	Document Name/Link	Curator
OPENSEARCH.BP	CEOS OpenSearch Best Practice	DAIG
DAIG.SMDBP	CEOS Service Discovery Best Practice	DAIG
DAIG.CDA.OS.CG	WGISS Connected Data Assets Client Guide (OpenSearch)	DAIG
OPENSEARCH.CTP	CEOS OpenSearch Conformance Test Plan	DAIG
OPENSEARCH.DG	CEOS OpenSearch Developer Guide	DAIG
DAIG.CDA.FEO	FedEO Data Partner Guide	DAIG
DAIG.CDA.CWIC	CWIC Data Partner Guide	DAIG
	CEOS EO Collection and Granule Discovery Best Practice with STAC	DAIG

- Updated the *CEOS EO Collection and Granule Discovery Best Practice with STAC* to version 1.0.1, adding or clarifying file-size and link checks and practical examples.
- Work also continued on the *CEOS OpenSearch Best Practices* and on aligning client guidance across OpenSearch and STAC.
- Developed the *Guidance to Enable Discoverability of Specialised Datasets via the Connected Data Assets*, providing a reusable approach for publishing and finding thematic datasets through the shared CEOS discovery infrastructure.
- Expanded cooperation with CEOS Analysis Ready Data (CEOS-ARD), WG Disaster and the Land Surface Imaging Virtual Constellation (LSI-VC), creating opportunities to apply the specialised-dataset guidance to community use cases. Work with the CEOS System

Engineering Office also explored closer cooperation between the CEOS Analytics Lab (CAL) and CDA, including FedEO/IDN integration.

- ❖ Strengthened coordination among WGISS Interest Groups: DAIG and TEIG advanced the Data in the Cloud discussion and future access models. DAIG and DSIG began framing future application of data-discovery approaches for datasets from AVHRR recovery projects.

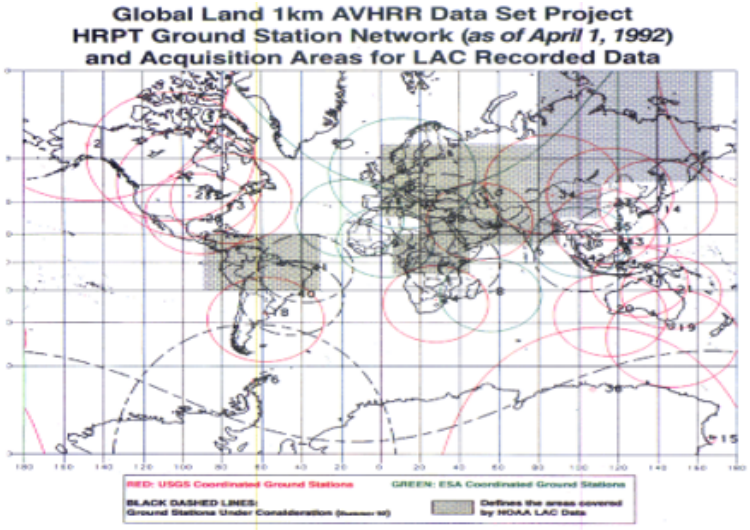
Interest Group: Data Preservation and Stewardship

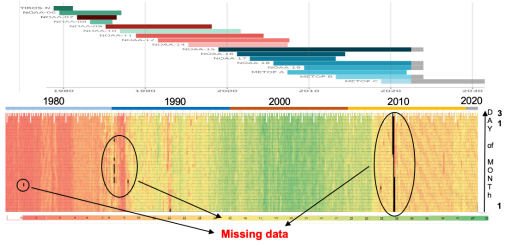
The WGISS Data Preservation and Stewardship Interest Group (DSIG) preserves and curates space data and associated information, including archiving, consolidation, and valorisation, and works to recover heritage space data that are currently inaccessible to users or at risk of loss.
Heritage Collections Recovery:

The activity identifies historical/heritage collections currently not accessible to users and triggers potential joint recovery activities. Three main steps being undertaken are :

- Identify historical/heritage collections of interest for climate/scientific application at preservation risk and/or currently not accessible to users (e.g. because data written on old media, not kept online, not processed, etc.)
- Define recovery criteria and prioritization model (technical aspects, actual/potential user needs/interest, data property rights, etc.)
- Define priorities and trigger recovery actions, possibly joint within WGISS, liaising/interacting as needed with other international partners

AVHRR Heritage data recovery





In support of climate community needs (e.g. NOAA POES and MetOp) WGISS has worked, under ESA lead, to recover AVHRR worldwide data from 1978 onwards, at 1 km resolution (Local Area Coverage – LAC), often not accessible to users and scattered in local archives.

Several datasets have been recovered (e.g., Europe, Central and South Africa, South America,

Eastern Asia). Further recovery activities are ongoing with organisations in India, China, Canada and other regions where unlocking of historical AVHRR collections may provide additional valuable coverage.

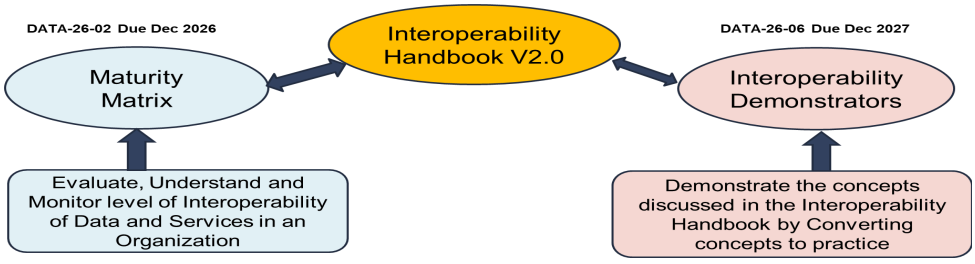
EO Collection Citation Guidelines [DATA-26-01]:
The white paper proposes guidelines for citing Earth Observation collections, defining and suggesting required, recommended, optional, and a few domain-specific components. The paper is developed, reviewed, and published (Link).

Data Provenance Guidelines [DATA-26-03]:
EO Data Provenance guidelines framework prepared; discussions initiated with use-cases from CEOS and other agencies and deliberated during WGISS-62; development and delivery of guidelines in 2027

Interest Group: Data Interoperability and Use

The focus of Data Interoperability and Use is to develop guidelines to enable data, systems, and services that are often developed independently to work together seamlessly. For Earth observation (EO) data providers and distributors, this means enabling users to discover, access, integrate, and analyse data from multiple sources without unnecessary technical, semantic, or policy barriers.

Current Work in Progress



Interoperability Maturity Matrix [DATA-26-02]: Development and Discussions Completed; to be released by this year-end.

Questions are designed against each Interoperability Handbook 2.0 recommendation to assess the Maturity Level

Maturity Level	Description
Initial	Processes are ad hoc, chaotic, and success depends on individuals' efforts
Managed	Basic management processes are established, and success can be repeated
Defined	The organization develops a standard process that is documented and standardized, and there exists a policy for its implementation
Integrated	Processes are monitored, controlled, and are integrated into all processes across the

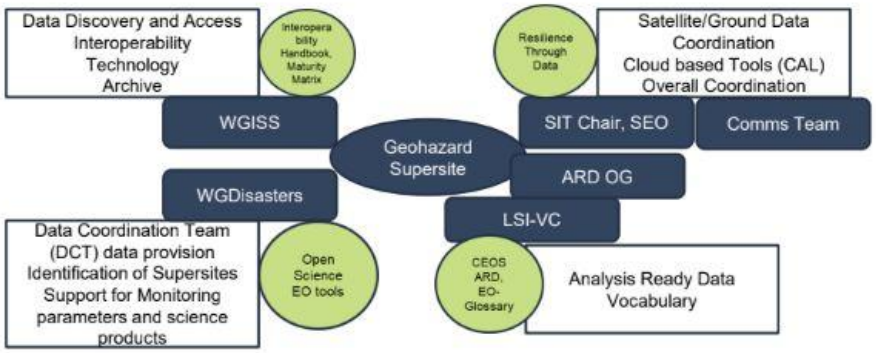
	organization
Adaptive	Processes are constantly improved through feedback and by introducing new ideas and technology

Snapshot of One Recommendation of the Policy Factor

FACTORS	PRINCIPLES		DESCRIPTION	QUESTIONNAIRE	Your Response	Level of Maturity
		POL#1	Data providers should participate and engage in relevant community groups/events, such as CEOS, GEO and CGMS, and their respective working groups. Interoperability requires collaboration and coordination between all actors within the sector.	Is your organization aware of the community groups such as CEOS/GEO/CGMS	Yes	Integrated
				Is your organization member of any community group such as CEOS/GEO/CGMS	Yes	
				Is the community membership goverened by your organization policy	Yes	
				Is your organization actively collaborating with other Data providers of the comminity groups	Yes	
				Does your Organization has a mechansim for review of collaboration and coordination between Data providers of the groups and adapt to the best practices	No	

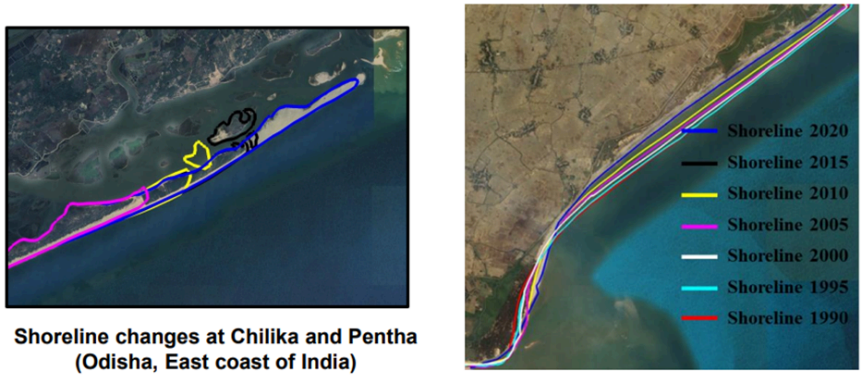
Interoperability Demonstrators

1) Resilience Interoperability Demonstrator :



Objective	Working Group/VC	Status
Utilize concepts of Interoperability, CEOS Analysis-Ready Data, and Open Science to demonstrate the capability for monitoring Geohazard supersites; SIT-Chair Priority-2 (Connected Data for Community Resilience)	SIT Chair Team, SEO, WGISS, WGDisaster, Comms Team, ARD-OG, LSI-VC	Geohazard supersites are identified; experimentation with the open data on the identified sites is in progress

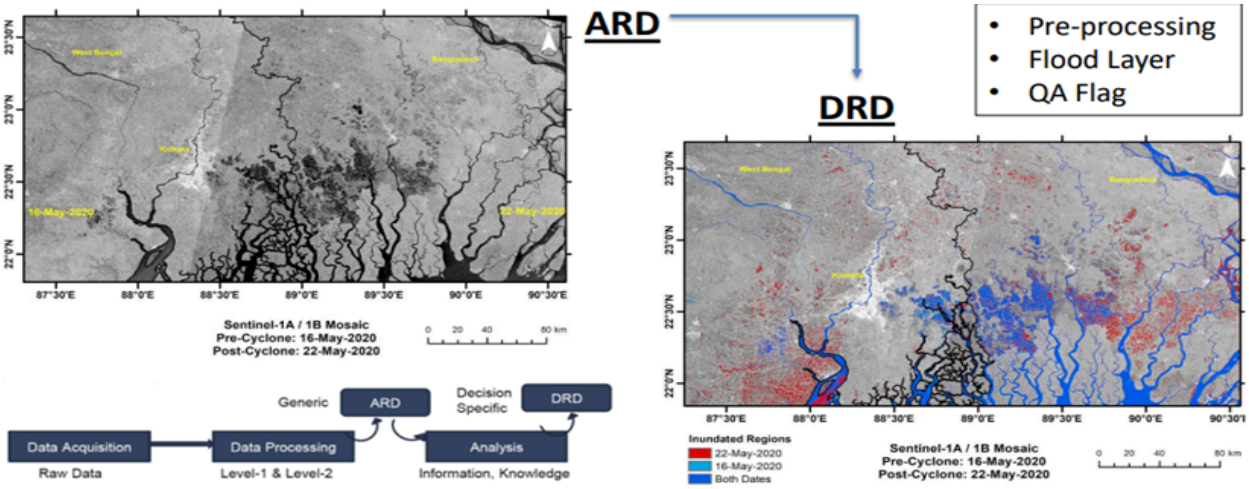
2) **Shoreline Interoperability Demonstrator :**



Shoreline changes at Chilika and Pentha (Odisha, East coast of India)

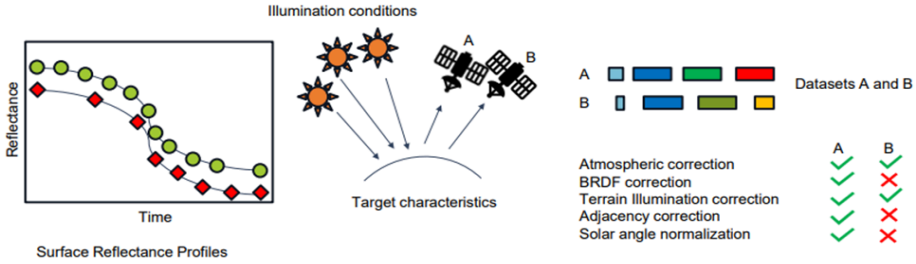
Objective	Working Group/VC	Status
Develop Shoreline Decision Ready Data Specifications and develop sample products demonstrating the impact of Interoperability Recommendations	COAST-VC, WGISS	Shoreline Decision Ready Data developed and discussed with COAST-VC, sample product generation in progress

3) **Surface Inundation Interoperability Demonstrator**



Objective	Working Group/VC	Status
Develop Specifications and decision-ready data for Surface Inundation.	WGISS, WGDisaster (Flood Pilot)	Inundation decision-ready data specifications developed; sample product being generated using NISAR data

4) **Land Surface Reflectance Interoperability Demonstrator**



Objective	Working Group/VC	Status
Demonstrate capability for generation of Interoperable Surface Reflectance using ARD from different satellite missions	WGCV, WGISS	WGCV recommendations are being finalized; integration with the Interoperability Recommendations to be initiated

Interest Group: Technology Exploration

The Technology Exploration Interest Group serves as a platform for sharing technical knowledge and lessons learned on emerging and evolving technologies that support the use and distribution of space-based Earth observation data.

AI/ML White Paper

Version 1.0 of the AI/ML White Paper has been finalised, with more than 40 contributors from across the CEOS agencies, as shown in the map below. A particular success is the growing collection of use cases illustrating how AI is applied to Earth observation across climate, disaster response, infrastructure monitoring, and sustainable finance. (https://github.com/ceos-org/aiml-white-paper/blob/main/README.md)

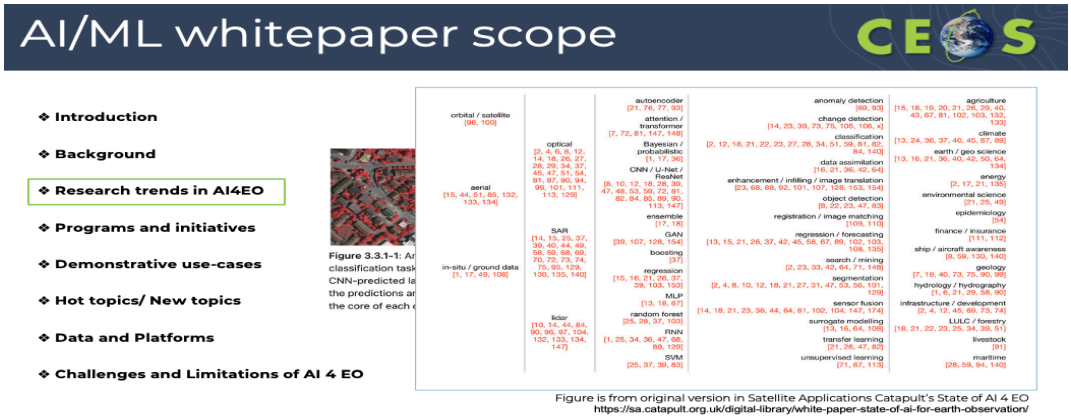
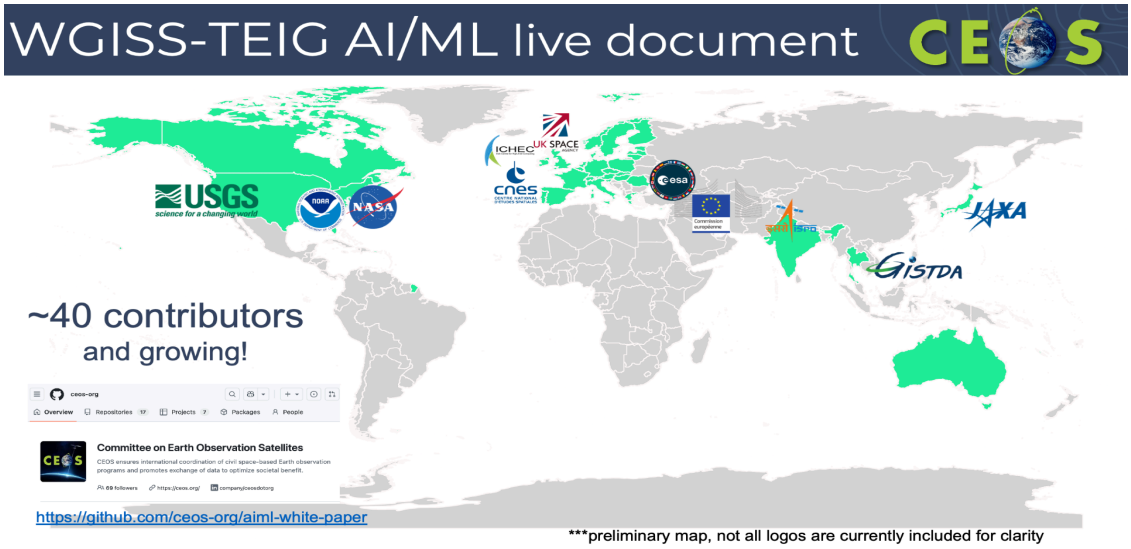


Figure is from original version in Satellite Applications Catapult's State of AI 4 EO
https://sa.catapult.org.uk/digital-library/white-paper-state-of-ai-for-earth-observation/

CEOS Newsletter (Planned): Pixels to Planet Insights: Harnessing Artificial Intelligence and Machine Learning for Earth Observation Data

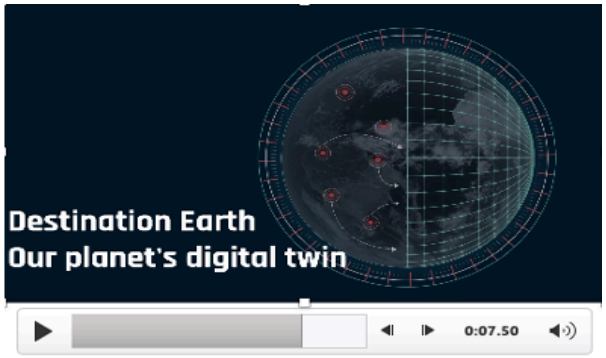


Digital Twin White Paper [DATA-26-05]

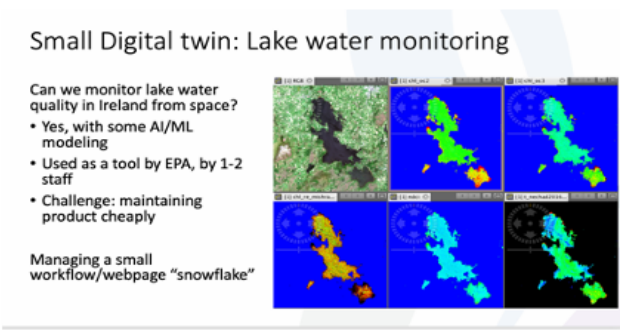
Work related to Digital Twins in the EO context in CEOS agencies was presented and discussed during WGISS-61 and WGISS-62. Based on the inputs gathered and the outcomes, the WG finalized the proposed white paper's structure. The white paper is to be completed in 2027.

Examples of Digital twins being developed by CEOS agencies include ESA's Destination Earth Digital Twin programme, Ireland's small-scale digital twin frameworks, ISRO's Geospatial twin framework and CNES's digital Twin framework.

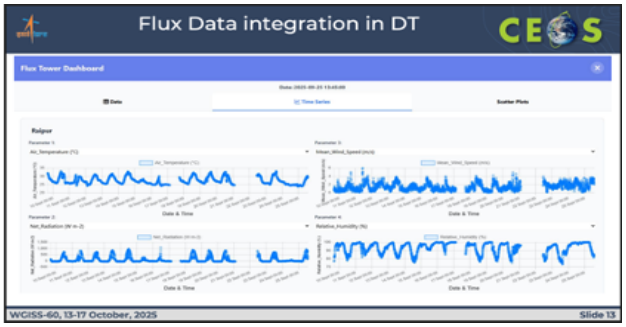




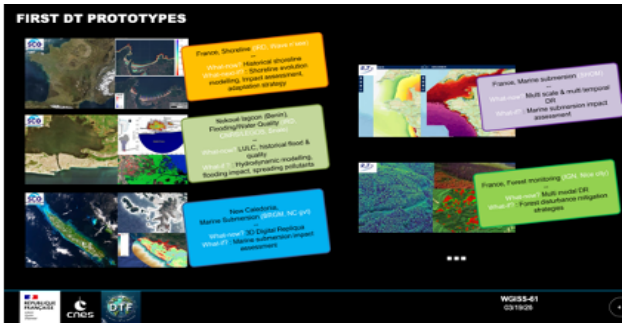












CEOS-wide collaboration

WGISS is active in ensuring participation both within the group, through its twice-yearly meetings WGISS-61 and WGISS-62, and across other CEOS groups, including chairing a joint discussion session and an AI4EO presentation at the WGDisasters-26 meeting held at ASI.



Throughout the year, WGISS members have also supported and contributed to other cross-group activities, including the ARD and AI discussions at the SIT 2026 Technical Workshop.