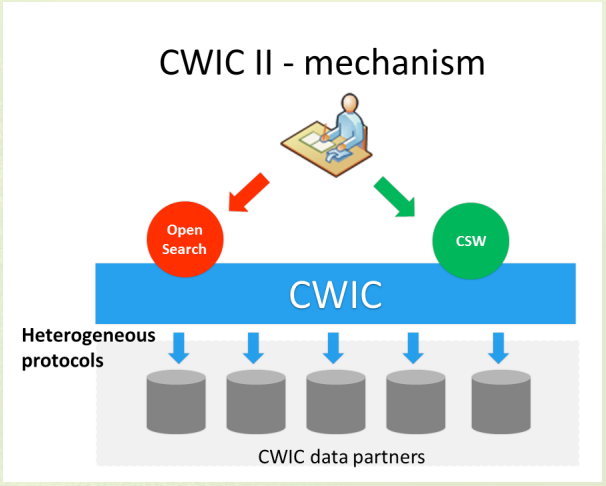
CEOS WGISS Integrated Catalog (CWIC)

The purpose of CWIC is to provide a consistent search interface to help users find and access satellite data made available by CWIC data partners through the use of the WGISS-supported standards, the Open Geospatial Consortium (OGC) Catalog Services for the Web (CSW) 2.0.2, and the CEOS OpenSearch Best Practices.

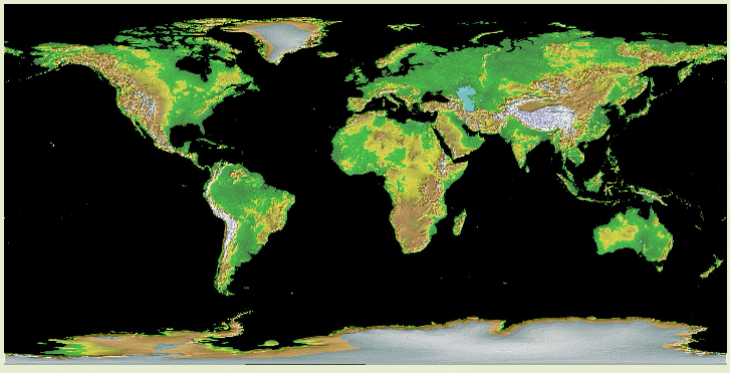
The CWIC software translates data searches done via OGC CSW or CEOS OpenSearch into the format understood by each of CWIC's data partners and then, translates the search results back into the format understood by the original search tool.

CWIC data partners include NASA (National Aeronautics and Space Administration), NOAA (National Oceanic and Atmospheric Administration), USGS (United States Geological Survey), INPE (National Institute of Space Research – Brazil), CCMEO (Canadian Center for Mapping and Earth Observations), ISRO (Indian Space Research Organisation), AOE CAS (Academy of Opto-Electronics Chinese Academy of Science - China), EUMETSAT (European Organisation for the Exploitation of Meteorological Satellites), and several agencies in Australia.



CWIC II- Mechanism

CWIC Data Partners

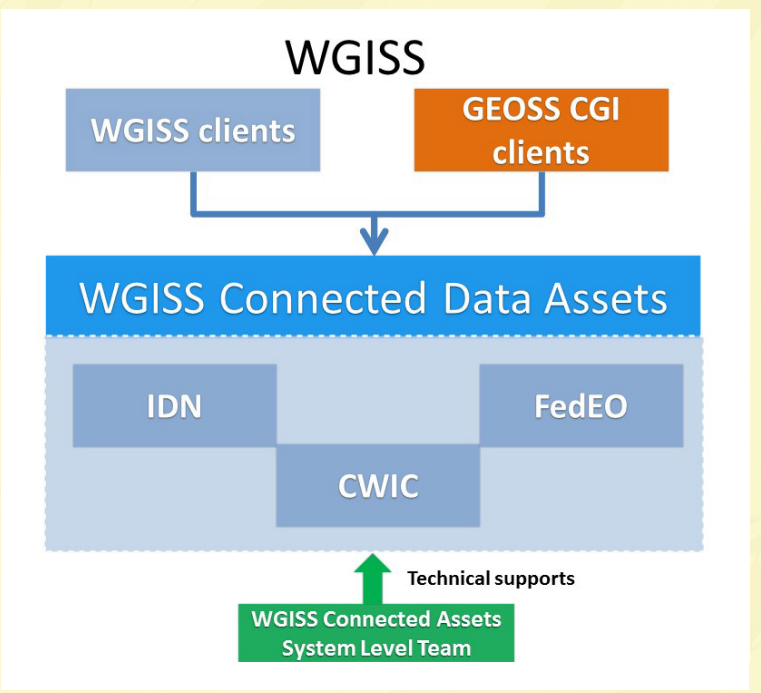


WGISS Connected Data Assets

The WGISS Connected Data Assets include the International Directory Network (IDN), FedEO (Federated Earth Observation Gateway), and CWIC (CEOS WGISS Integrated Catalog). WGISS supported standards are now used to search and access data from thousands of collections and hundreds of millions of inventory records, with additional data collections and inventory records from CEOS Agencies being added daily to this integrated system.

The WGISS Connected Data Assets also provide access to CEOS Agency datasets through their integration with the GEOSS (Global Observation System of Systems) Common Infrastructure (GCI). More and more, CEOS Agencies continue to adopt the WGISS supported standards (OGC CSW 2.0.2 and CEOS OpenSearch Best Practices) and make their data discoverable via the WGISS Connected Data Assets. Learn more about accessible CEOS Agency datasets on the WGISS website: wgiss.ceos.org.

The WGISS Connected Data Assets System Level Team provides coordination and oversight of the operations and evolution of this integrated system and also provides technical support for CEOS partners that offer access to data.



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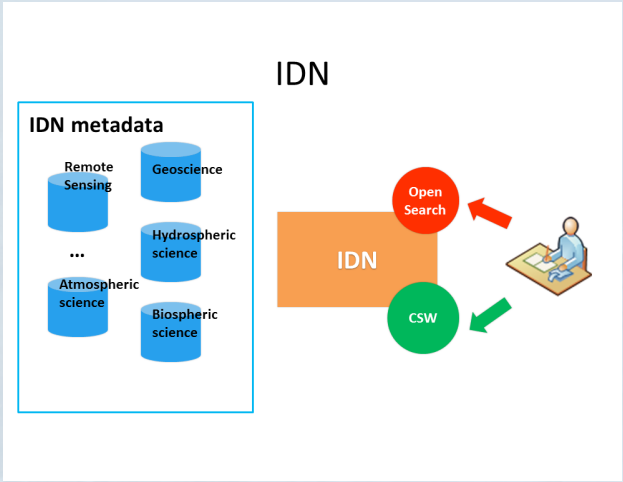
The Committee on Earth Observation Satellites

International Directory Network (IDN)

The CEOS International Directory Network (IDN) Master Directory assists researchers by providing free, online access to information about scientific datasets (metadata) in the Earth sciences, including geoscience, hydrospheric science, biospheric science, satellite remote sensing, and atmospheric science. This metadata describes data held by university departments, government agencies, multinational organizations, and other organizations all over the world.

The WGISS IDN Interest Group is responsible for coordinating activities among participating international agencies to maintain, improve, and expand the functions and use of the CEOS IDN.

CEOS Agencies register their data collections in the IDN for their heritage data as well as for new mission datasets. The IDN also aligns itself with the WGISS supported standards for search (OGC CSW 2.0.2 and CEOS OpenSearch Best Practices) and provides the "collection search" function for the WGISS Connected Data Assets integrated system.



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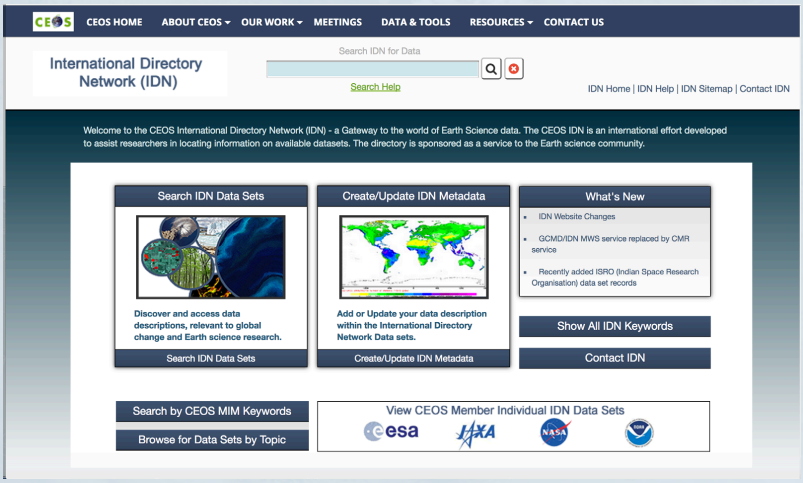

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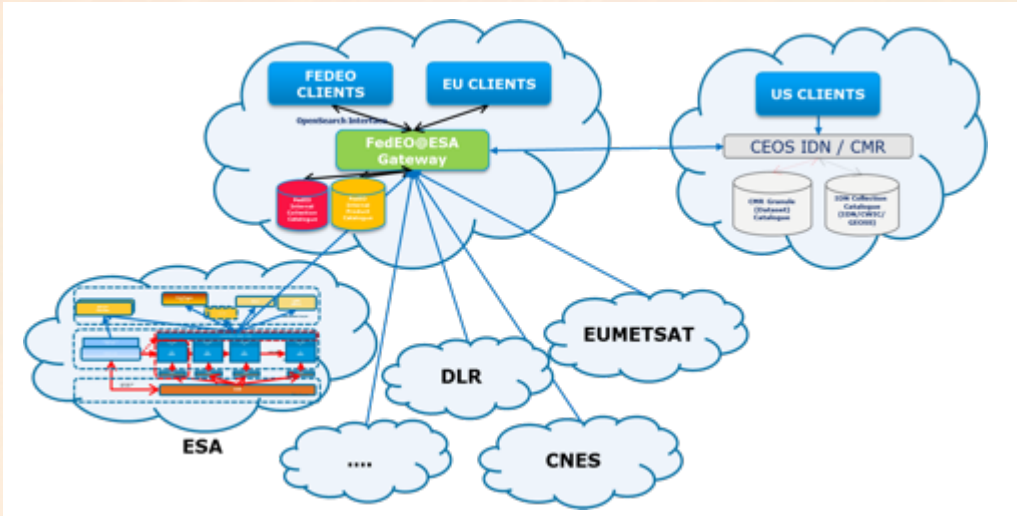
Federated Earth Observation (FedEO)

Purpose

FedEO (Federated Earth Observation missions access) offers a unique entry point to a growing number of scientific catalogues and services for, but not limited to, European and Canadian EO missions. FedEO is deployed within the European Space Agency (ESA) infrastructure as a gateway to:

- Providing brokered discovery of, access to, and ordering capability for EO missions, product catalogues, and archives based on HMA (Heterogeneous Missions Accessibility) interfaces;
- Implementing the OpenSearch OGC (Open Geospatial Consortium) for an increased number of discoverable and accessible EO data collections;
- Enabling the interconnection between CEOS Community Catalogues and Clients.

FedEO was initially developed as a prototype for the GEO/GEOSS (Group on Earth Observations/Global Earth Observation System of Systems) and EO-DAIL (Earth Observation Data Access & Integration Layer). However, since the 2012 CEOS plenary, FedEO has also begun facilitating access to European mission data in the international context and primarily through CEOS.



FedEO Interoperability Context

In order to ensure the highest level of interoperability for both users and data providers, FedEO is aligned to the most recent OGC, ISO, and CEOS standardisation guidelines:

Services

- CEOS OpenSearch Best Practices, version 1.1.1, 26/10/2014
- OGC 10-032r8, OpenSearch Geo and Time Extensions, version 1.0.0, 14/04/2014.
- OGC 13-026r5, OpenSearch Extension for Earth Observation, DRAFT 1.0.0, 29/10/2014
- OGC 13-084r2, OGC I15 (ISO19115 Metadata) Extension Package of CS-W ebRIM Profile, 1.0, 28/04/2014
- OGC 11-035r1, EO Collection and Service Discovery using the ebRIM Application Profile of CSW 2.0, 1.0, 26/03/2013
- OGC 06-141r6, Ordering Services Framework for Earth Observation Products Interface Standard, Version 1.0.0, 09/01/2012.
- OGC 07-118r9, User Management Interfaces for Earth Observation Services, Version 1.1, 28/04/2014.

Metadata

- OGC 10-157r4, Earth Observation Metadata profile of Observations & Measurements, 1.1, 10/06/2014
- ISO 19139, Geographic Information – Metadata XML (ISO 19139:2007)
- ISO 19139-2:2012, Geographic information -- Metadata -- XML schema implementation -- Part 2: Extensions for imagery and gridded data
- INSPIRE Metadata Implementing Rules: Technical Guidelines based on EN ISO 19115 and EN ISO 19119
- INSPIRE Technical Guidance for the Implementation of the INSPIRE Download Services
- OGC 08-167r2, Semantic annotations in OGC standards, Version 2.0, 10/10/2012

More Information

FedEO Query Examples: http://fedeo.esa.int/opensearch/readme.html

FedEO OpenSearch Description: http://fedeo.esa.int/opensearch/description.xml

Information for FedEO Clients: https://eoportal.org/web/eoportal/fedeo

Communication and Coordination

Find up-to-date FedEO information and resources at: http://ceos.org/ourwork/workinggroups/wgiss/access/fedeo/

Feel free to email for more information:

- FedEO Operations Team: RSS_TEAM@esa.int
- FedEO Evolutions and Population: andrea.della.vecchia@esa.int, Olivier.barois@esa.int
- HMA Standardisation: Olivier.barois@esa.int
- Coordination and International Cooperation: mirko.albani@esa.int

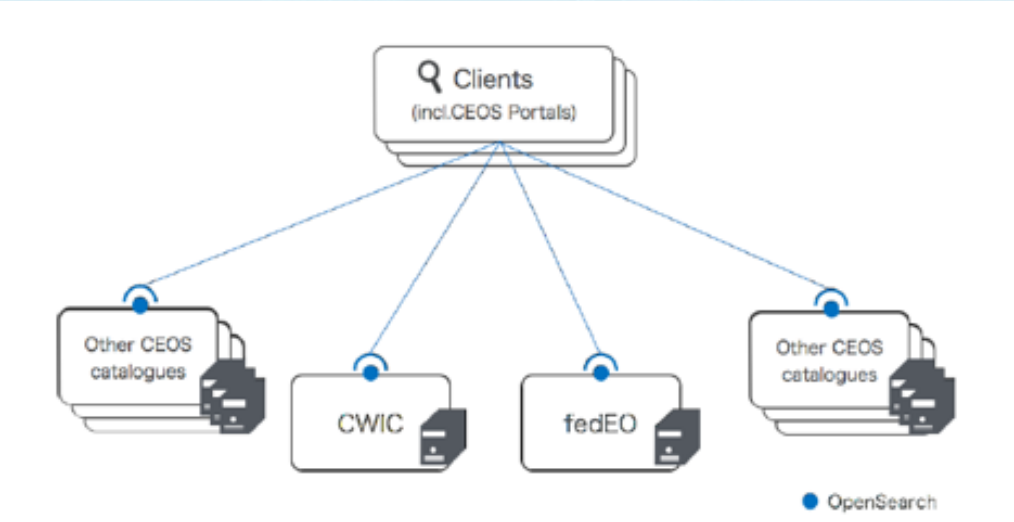
The Committee on Earth Observation Satellites

CEOS OpenSearch Project

Purpose

The CEOS OpenSearch Project aims to increase the level of interoperability among CEOS systems interfaces, by:

- Promoting the use of the OpenSearch standard by Earth data providers as a means of improving data discovery
- Collecting the expectations and requirements of data providers interested in OpenSearch implementation
- Removing ambiguity in implementations where possible
- Facilitating the aggregation of data search results from disparate Earth data providers via OpenSearch common standards
- Enabling clients to access search engines via an OpenSearch Description Document (OSDD) without prior knowledge of or experience using the interface
- Facilitating smooth integrations between related OpenSearch implementations, such as a dataset resource collection that refers to granule resource collections from another provider



CEOS OpenSearch

Results

The CEOS OpenSearch project did not attempt to define a new standard, but, rather, leveraged existing international guidelines to produce both a CEOS OpenSearch Best Practice and a CEOS OpenSearch Developer Guide.

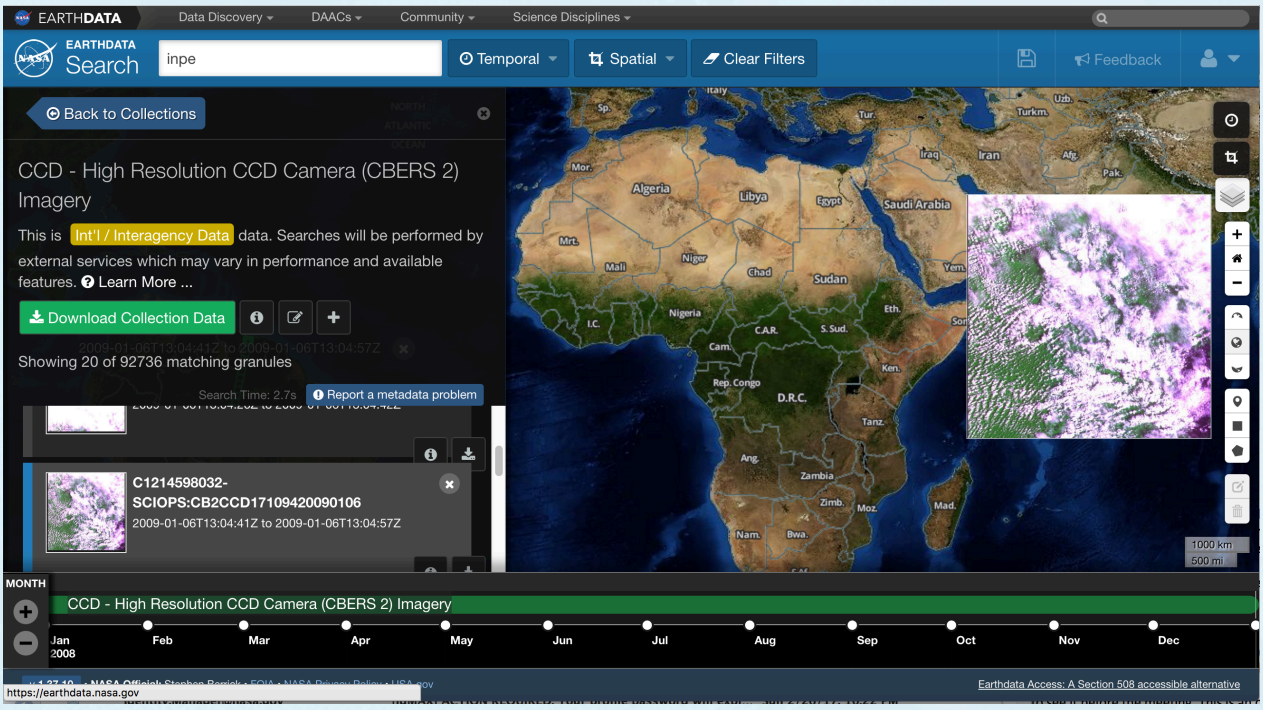
CEOS Open Search Best Practice Guide Objective: to collect and describe requirements about the OpenSearch interface, while remaining as implementation/technology independent as possible. This document provides server implementation best practices for the EO OpenSearch search service that facilitates standardized and harmonized access to metadata and CEOS Agency data, including that of CWIC and FedEO.

CEOS Open Search Developer Guide Objective: to provide guidelines for the implementation of an OpenSearch search engine aligned with the Open Search Best Practice requirements.

Communication and Coordination

Find up-to-date OpenSearch information and resources at:
http://ceos.org/ourwork/workinggroups/wgiss/access/opensearch/
Feel free to email for more information:

- OpenSearch Project: andrea.della.vecchia@esa.int, Olivier.barois@esa.int
- Coordination and International Cooperation: mirko.albani@esa.int



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Technology Exploration Interest Group

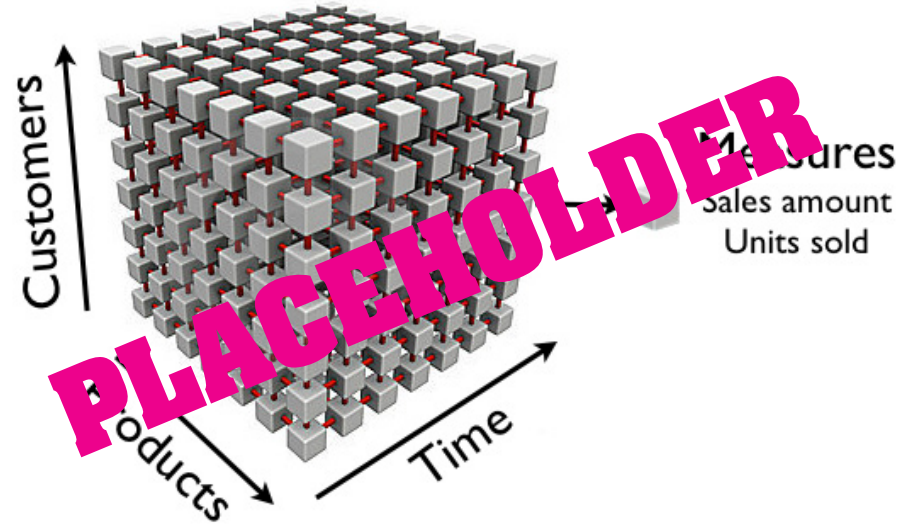
Purpose

To serve as a forum for exchanging technical information and lessons-learned experiences about current and trending software technologies, services, and other internet-related software technologies.

Primary goals include:

- Providing CEOS/WGISS Agencies opportunities to collaborate and discuss current and future technology solutions
- Researching technologies that can help the Earth observation community be flexible and adaptable in their IT infrastructure
- Facilitating CEOS/WGISS understanding of all generations of technology and supporting the implementation of both legacy and leading edge technologies into Earth observation data systems
- Promoting technologies in CEOS/WGISS that prove beneficial to the Earth observation communit

Recent topics of interest: Big Data, Cloud Computing, Data Cubes



Data Cube

Data Preservation for CEOS

Earth observation data are unique snapshots of the condition of the Earth at a specific point in time. As such, they constitute an asset for all of humankind that must be preserved, i.e. safeguarded against loss and kept accessible and usable for current and future generations. The importance of safeguarding these data becomes even more apparent when one considers the over 40 years worth of data available in Earth observation archives around the world – and the increasing demand for monitoring long-term variations in environmental parameters, such as sea surface temperature or global ozone distributions, which require long time series of data. Moreover, with the advent of new, high resolution Earth observation missions, data volumes are expected to grow significantly in the near future.

Background

WGISS accomplishes its Data Preservation and Curation efforts through the Data Stewardship Interest Group (DSIG). In addition to data archiving, the DSIG mandate covers data and associated knowledge consolidation and valorization aspects.

Image Description

The DSIG helps extend the existing European framework for data preservation and management cooperation to all CEOS Agencies.

Purpose

Data Preservation and Curation activity objectives include:

- Enabling the sharing of agency investigations, developments, experiences, and lessons learned related to EO data stewardship

- Drafting common cross-agency best practices and/or guidelines for data stewardship for potential adoption by WGISS
- Sponsoring technical exchanges and conducting joint activities and/or pilot projects on specific data stewardship topics
- Establishing and maintaining a CEOS "Data Purge Alert" service
- Contributing to Group on Earth Observation (GEO) Standardization activities

Scope

Activities focus on EO Data, Metadata, and Associated Knowledge:

- Long-term archiving approaches, systems, and media
- Formats and standards
- Lifecycle concepts
- Valorization and curation

Achievements:

- Raised awareness on EO data stewardship
- Shared investigations, developments, experiences, and lessons learned relating to EO data preservation
- Drafted common cross-agency Best Practices, Guidelines and White Papers:
    - **White Papers and Reports**
        - Long-Term Archive Strategies
        - Data Preservation Techniques
        - Data Lifecycle Models and Concepts
        - Browse Survey 1997-2010
        - Guidelines for GIS-Ready Products
        - Browse Guidelines Document (version 2)
        - Offline Media Trade Study
        - Data Purge Alert White Paper
    - **Best Practices and Recommendations**
        - EO Preserved Data Set Content
        - EO Data Preservation Guidelines
        - Preview Image Principle
        - Data Management Statement
        - CEOS Persistent Identifier Best Practices
        - Generic Earth Observation Data Set Consolidation Process
        - Long-Term Preservation of Earth Observation Space Data: Preservation Workflow
        - Long-Term Preservation of Earth Observation Space Data: Glossary of Acronyms and Terms

- Implemented joint activities and pilot projects on specific data preservation topics and long-term archive strategies
- Implemented a CEOS "Data Purge Alert" servic