WGISS Connected Data Assets Overview

F. Marchesi (Solenix for ESA)
Y. Coene (Spacebel for ESA)

Agenda Item 5.5
WGISS-61 and WGDisaster-25
16-20 March, 2026
Dehradun, India

CEOS
Committee on
Earth Observation Satellites

Overview

1. Data Access Interest Group
2. Data Access Assets
3. Engagement and CDA Integration Process
4. Documentation
5. Contacts

Data Access Interest Group

The WGISS Data Access Interest Group (DAIG):

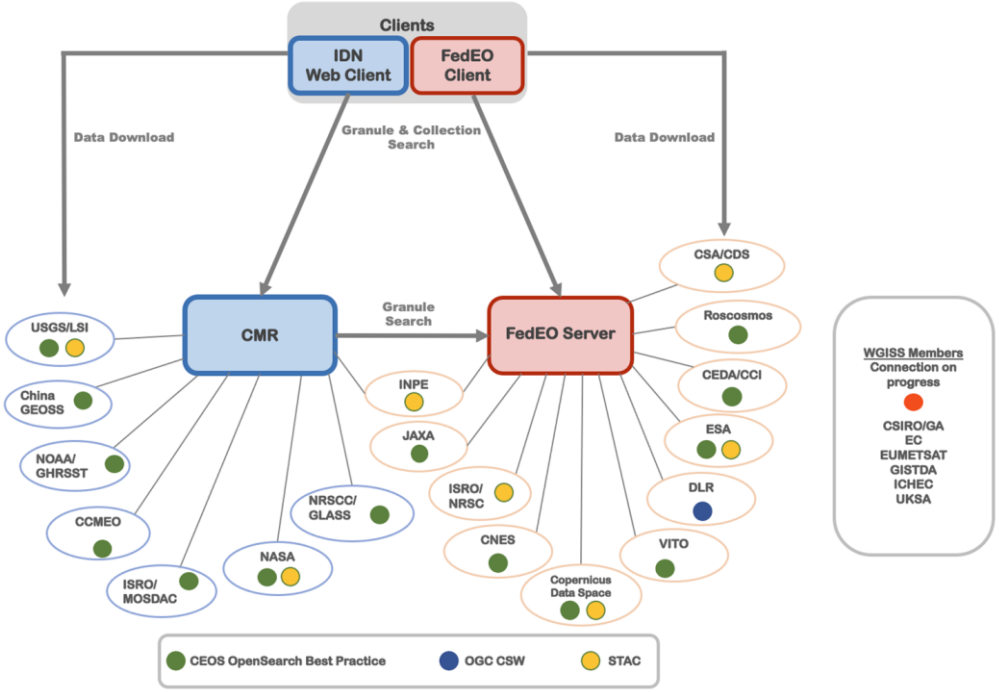
1. Ensures data users have easy and efficient ways of **discovering** and **accessing data** and associated services through the exploitation of standard protocols and the harmonising of search and data retrieval processes
2. Explores scenarios for a federated authentication and authorization mechanism

By:

- Constant evolution of CEOS Catalog components for demonstrating and implementing new interfaces
- Defining best practises and guidelines for increasing interoperability
- Supporting organisations in testing and opening their catalogues
- Enlargement of metadata ingestion for dataset of CEOS members

Data Access Assets - Architecture

Connected Data Assets *are intended as the CEOS Agencies' data collections that are connected via CEOS tools (FedEO and IDN), allowing independent clients to search and access their unrestricted data*



Federated EO Gateway (FedEO)

*D. Guerrucci (**ESA**),*

Y. Coene (Spacebel/ESA)

Provides a unique entry point to a growing number of scientific catalogues and services for EO missions.

International Directory Network (IDN)

*D. Newmann (**NASA**),*

M. Morahan (KBR/NASA)

Assists researchers by providing free, online access to information on scientific datasets (metadata) in the Earth sciences domains.

The ingested metadata describes data held by university departments, government agencies, multinational organizations, and other organizations all over the world.

Data Access Assets - Discoverability

Connected Data Assets

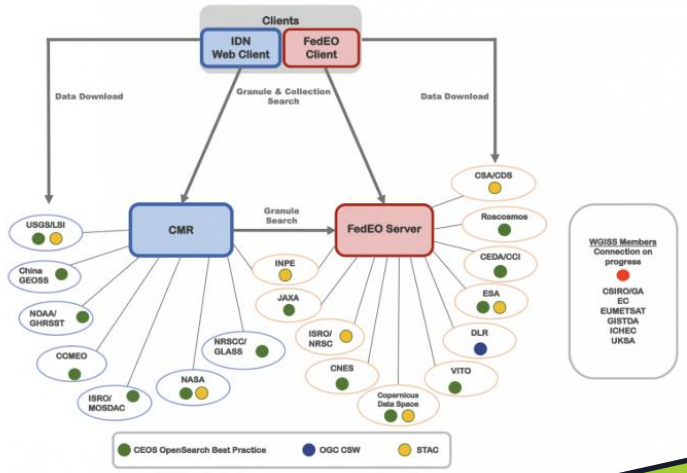
This page contains details about the CEOS Agencies' data collections that are connected via the supported WGISS standards – OGC CSW 2.0.2 and CEOS OpenSearch Best Practices – which allow independent clients to search and access their unrestricted data.

Full list of CEOS Agency Datasets through WGISS CDA are available here with dedicated filtered results via FedEO and/or IDN systems.

Each system link listed below will provide information about which collections and how many granules the system connects to. These metrics will be updated regularly, as often as monthly.

A data collection consists of the data records of one mission, sensor, and product type and the associated knowledge. It is an ensemble of some products/granules having a common focus or theme or purpose and is generally located at a single Data Partner.

A data granule is the smallest aggregation of data which is independently managed (i.e. described, inventoried). A data collection can consist of many granules.



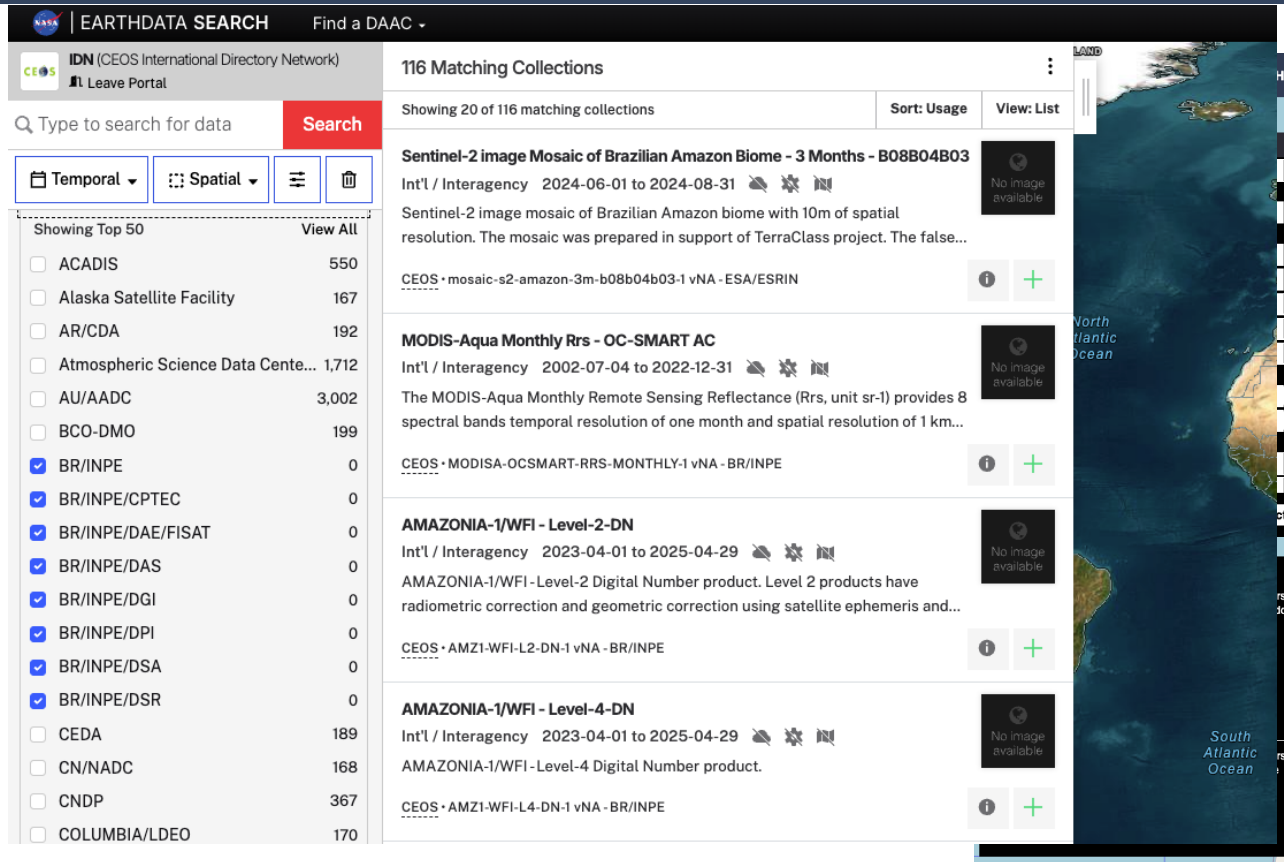
Explore CEOS Agency Datasets Available Through WGISS CDA

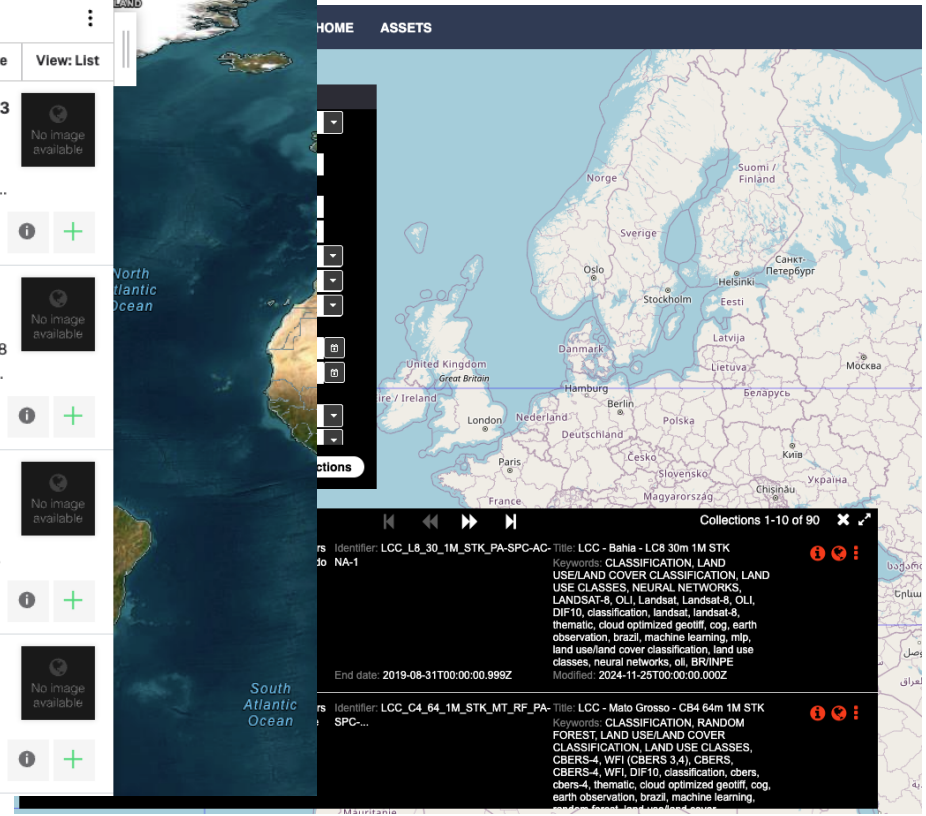
Datasets by CEOS Agencies

In order to provide direct access to these data, each CEOS Agency with datasets in FedEO and/or IDN has been mapped to FedEO Search Portal query and/or IDN Search Portal query in Earthdata Search. Click on the relevant links associated with each agency below to view related datasets.

Logo	Agency	FedEO Access	IDN Access
belspo	BELSPO (Belgian Science Policy Office) *Belgium*	OpenSearch | STAC	IDN
cnes	CNES (Centre National d'Etudes Spatiales) *France*	OpenSearch | STAC	IDN
CONAE	CONAE (Comisión Nacional de Actividades Espaciales) *Argentina*		IDN
CSIRO	CSIRO (Commonwealth Scientific and Industrial Research Organisation) *Australia*		IDN
DLR	DLR (Deutsches Zentrum für Luft-und Raumfahrt) *Germany*	OpenSearch | STAC	IDN
esa	ESA (European Space Agency) *Europe*	OpenSearch | STAC	IDN
EUMETSAT	EUMETSAT (European Organisation for the Exploitation of Meteorological Satellites) *Europe*	OpenSearch | STAC	IDN
	European Commission *Europe*	OpenSearch | STAC	
GISTDA	GISTDA (Geo-Informatics and Space Technology Development Agency) *Thailand*		IDN
INPE	INPE (Instituto Nacional de Pesquisas Espaciais) *Brazil*	OpenSearch | STAC	IDN
इसरो ISRO	ISRO (Indian Space Research Organisation) *India*	OpenSearch | STAC	IDN
JAXA	JAXA (Japan Aerospace Exploration Agency) *Japan*	OpenSearch | STAC	IDN
KARI	KARI (Korea Aerospace Research Institute) *Republic of Korea*		IDN
NASA	NASA (National Aeronautics and Space Administration) *United States of America*		IDN
NOAA	NOAA (National Oceanic and Atmospheric Administration) *United States of America*		IDN

Data Access Assets – Catalog Clients





Keywords managements - MIM

The CEOS Missions, Instruments, and Measurements (MIM) keywords contain information on many key measurements of interest to users of Earth observation satellite data.

Datasets related to each keyword:

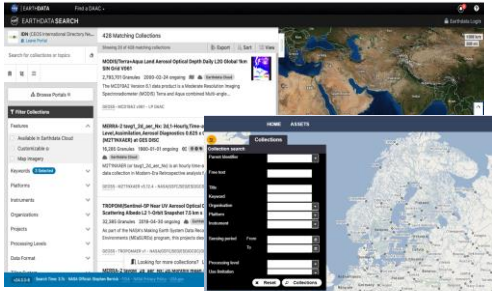
- Atmosphere
- Gravity and Magnetic Fields
- Land
- Ocean
- Snow and Ice

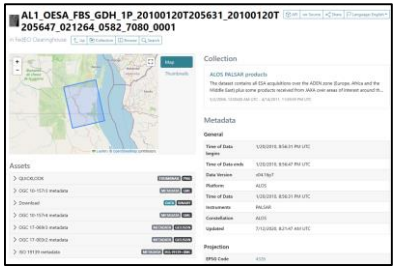
CEOS MIM Keywords mapped to GCMD Keywords

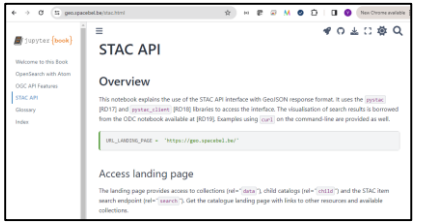
Each Committee on Earth Observation Satellites (CEOS) Missions, Instruments, and Measurements (MIM) keyword has been mapped to a Global Change Master Directory (GCMD) Keyword. This table shows the mapping between the MIM keywords and the GCMD keywords.

CEOS MIM Keywords	Topic	Term	Variable_Level_1	Varaiable_Level_2	Variable_Level_3
Aerosol Absorption Optical Depth (Column/Profile)	Atmosphere	Aerosols	Aerosol Optical Depth/Thickness		
Aerosol Effective Radius (Column/Profile)	Atmosphere	Aerosols	Aerosol Particle Properties		
Aerosol Extinction / Backscatter (Column/Profile)	Atmosphere	Aerosols	Aerosol Backscatter		
Aerosol Optical Depth (Column/Profile)	Atmosphere	Aerosols	Aerosol Optical Depth/Thickness		
Atmospheric Chemistry – BrO (Column/Profile)	Atmosphere	Atmospheric Chemistry	Halocarbons And Halogens	Bromine Monoxide	
Atmospheric Chemistry – C_2H_2 (Column/Profile)	Atmosphere	Atmospheric Chemistry	Carbon And Hydrocarbon Compounds	Non-Methane Hydrocarbons/Volatile Organic Compounds	
Atmospheric Chemistry – C_2H_6 (Column/Profile)	Atmosphere	Atmospheric Chemistry	Carbon And Hydrocarbon Compounds	Non-Methane Hydrocarbons/Volatile Organic Compounds	
Atmospheric Chemistry – CFC-11 (Column/Profile)	Atmosphere	Atmospheric Chemistry	Halocarbons And Halogens	Chlorofluorocarbons	
Atmospheric Chemistry – CFC-12 (Column/Profile)	Atmosphere	Atmospheric Chemistry	Halocarbons And Halogens	Chlorofluorocarbons	
Atmospheric Chemistry – CH_3Br (Column/Profile)	Atmosphere	Atmospheric Chemistry	Halocarbons And Halogens	Methyl Bromide	

CEOS Data Access Resources





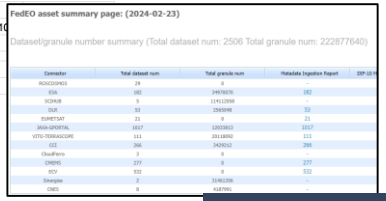


IDN Collection & Collaboration:

FedEO Provider	Collections	Granules
ESA	198	37,945,487
ESA Climate Change Initiative	279	3,468,626
VITO	117	21,023,269
DLR	40	2,544,945

Provider (collections thru FedEO)	Collections
JAXA	10
INPE	

CWIC Provider	Collections
ISRO	



OpenSearch

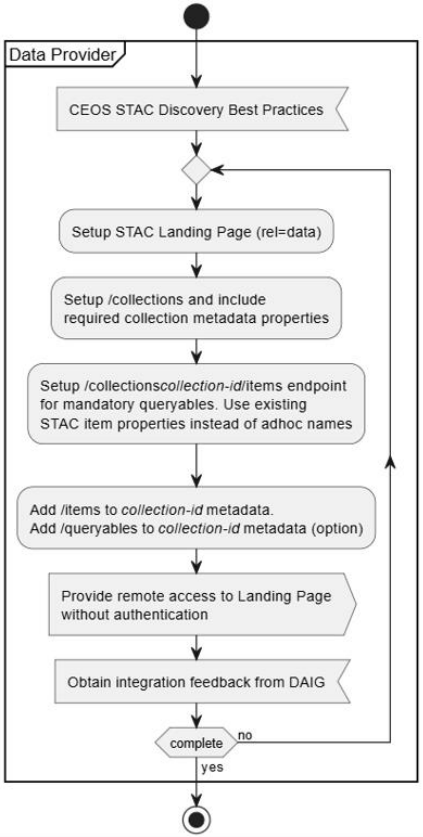
STAC
SpatioTemporal
Asset Catalog

jupyter {book}

ASSETS CLIENT STAC BROWSER DOC

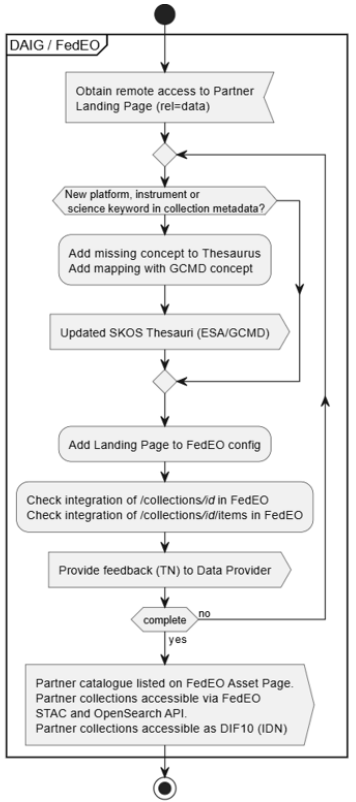
CEOS Committee on Earth Observation Satellites

Integration process



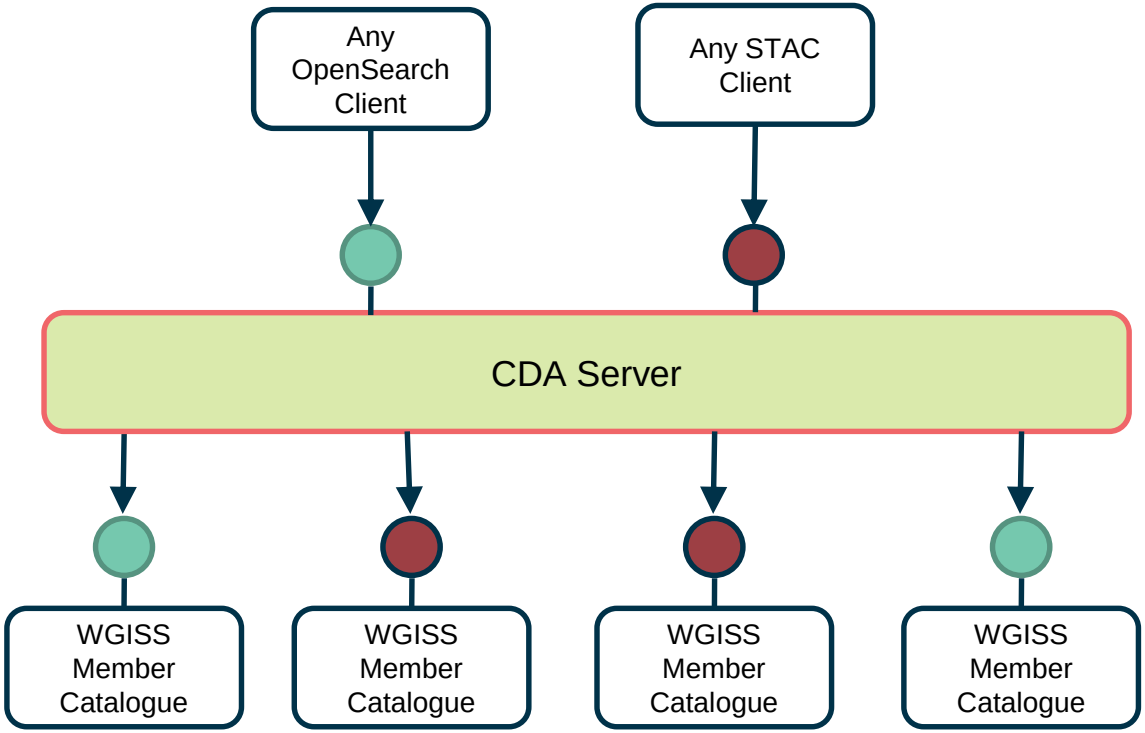
- (1) Partner (data owner) makes Catalogue endpoint accessible
- (2) Feedback from DAIG team to Partner about integration results and issues (if any).
- (n) Iteration until ingestion completed

Once integrated, updates to contents are automatically captured by catalogues



Integration Use Cases

Use Cases: Granules Searches through CEOS Catalogue



Example Clients:

- CMR (OpenSearch)
- FedEO Client (OpenSearch)
- pystac_client
- STAC BROWSER (STAC)

OpenSearch

STAC

Granule search requests distributed to n Member Catalogue(s) via collection-id

DAIG Documentation

Last deliverable published

- *CEOS EO Collection and Granule Discovery Best Practice with STAC*

Next deliverable + CEOS GitHub

- *Federated Authentication and Authorization White Paper*
  - *https://github.com/ceos-org/Fed-AuthNZ*
  - *Delivery for Q1 – 2027*

Continuous documentation review

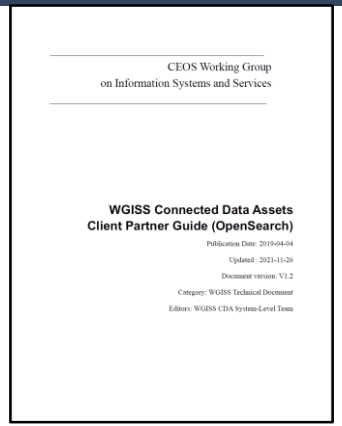
Data Discovery and Access

Doc. Ref.	Document Name/Link	Curator	Version	Document Date	Status	Latest Review Date
OPENSEARCH.BP	CEOS OpenSearch Best Practice	DAIG	1.3	Mar-2021	Up to date	Mar-2021
DAIG.SMDBP	CEOS Service Discovery Best Practice	DAIG	1.1	Sep-2024	Up to date	Sep-2024
DAIG.CDA.OS.CG	WGISS Connected Data Assets Client Guide (OpenSearch)	DAIG	1.2	Nov-2021	Up to date	Nov-2021
OPENSEARCH.CTP	CEOS OpenSearch Conformance Test Plan	DAIG	1.0	May-2017	Up to date	May-2017
OPENSEARCH.DG	CEOS OpenSearch Developer Guide	DAIG	2.0	Nov-2016	Up to date	Nov-2016
DAIG.CDA.FEO	FedEO Data Partner Guide	DAIG	1.1	Sep-2021	Up to date	Sep-2021
DAIG.CDA.CWIC	CWIC Data Partner Guide	DAIG	1.0	Aug-2018	Up to date	Aug-2018
ESDS-RFC-014	Interoperability Between OGC CS/W and WCS Protocols	DAIG		Mar-2009	Up to date	Mar-2009
DAIG.CWICDIF	CWIC DIF Guide	DAIG	1.0	Aug-2012	Up to date	Aug-2012
	CEOS EO Collection and Granule Discovery Best Practice with STAC	DAIG	1.0.1	Dec-2024	Up to date	Dec-2024

Updates to Online Documentation

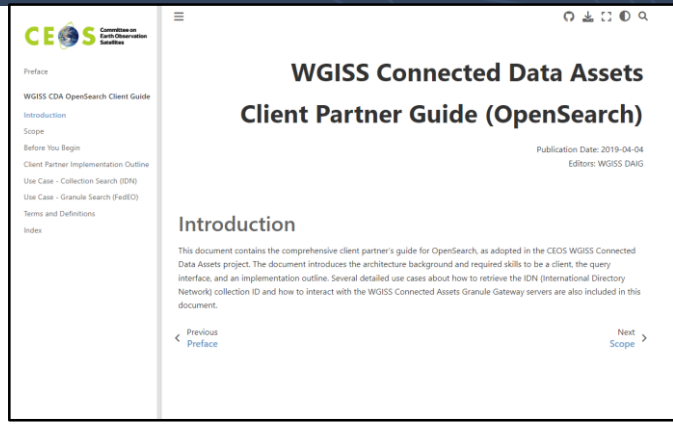
Client Partner Guide (PDF) was migrated:

- GitHub / GitHub Pages
- Jupyter Notebook / JupyterBook


CEOS Working Group
on Information Systems and Services

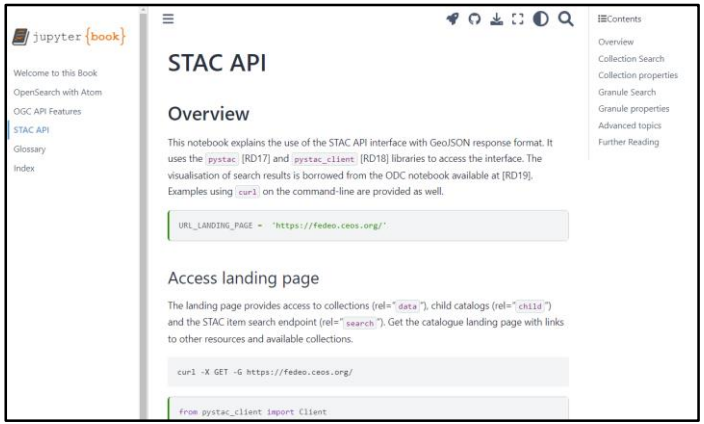
WGISS Connected Data Assets
Client Partner Guide (OpenSearch)

Publication Date: 2019-04-04
Updated : 2021-11-26
Document version: V1.2
Category: WGISS Technical Document
Editors: WGISS CDA System-Level Team



Online Documentation for FedEO API

- OpenSearch API
- STAC API

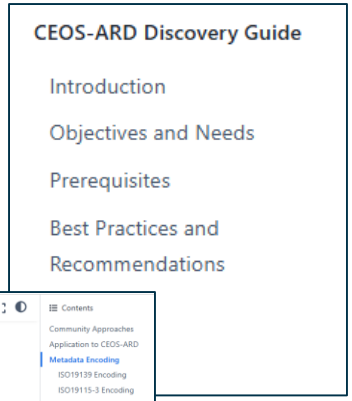


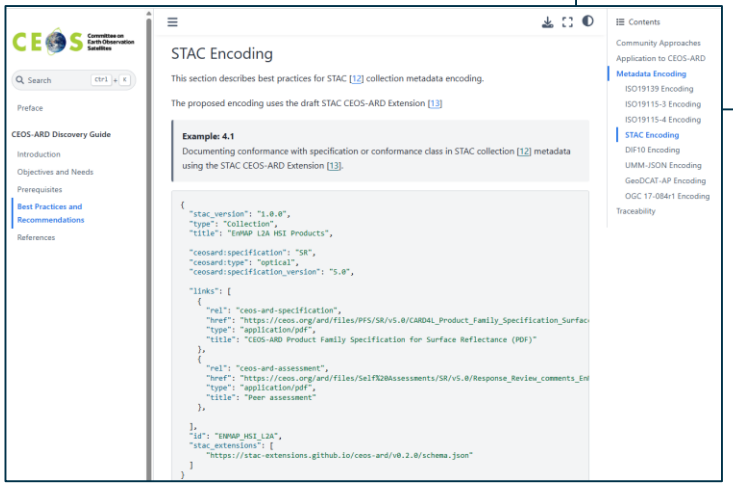
FedEO API Online Documentation:
https://fedeo.ceos.org/stac.html

Updates to Online Documentation

Guidance for discovery of special datasets being prepared (with WGCV)

- GitHub / GitHub Pages
- e.g. CEOS-ARD compliant datasets





Documentation refactoring/regrouping planned, e.g.

- Client Guide (for Data Consumers)
- Partner Guide (for Data Providers)
- Best Practices

Conclusion

Data Discovery Access Interest Group - DAIG

Access-SysTeam-Help@wgiss.ceos.org

- List of members

Coordinator - D. Guerrucci (ESA)

FedEO - D. Guerrucci (ESA), Y. Coene (Spacebel for ESA)

IDN - M. Morahan (NASA)

CWIC - D. Newman (NASA)

Current members: NASA, JAXA, CSA/CDS, CSIRO, DLR, GITSDA, ICHEC, INPE, ISRO, USGS, CNES, EUMETSAT, UKSA


QUESTIONS?
HOW?
WHERE?
Where?
WHEN?
WHO?
WHAT?
WHEN?
WHAT?
WHERE?
WHAT?
WHERE?
HOW?
WHEN?
Where?
When?
What?
When?
When?
WHERE?
Why?
WHEN?
WHAT?
When?
Why?
When?
What?
WHO?
HOW?
WHAT?
Why?
Where?
When?
HOW?
What?
WHERE?
When?
HOW?