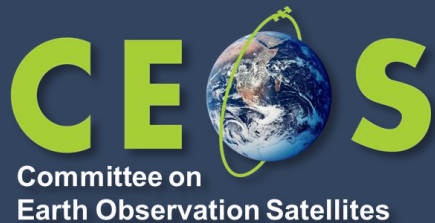


WGISS Connected Data Assets Overview



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

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

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

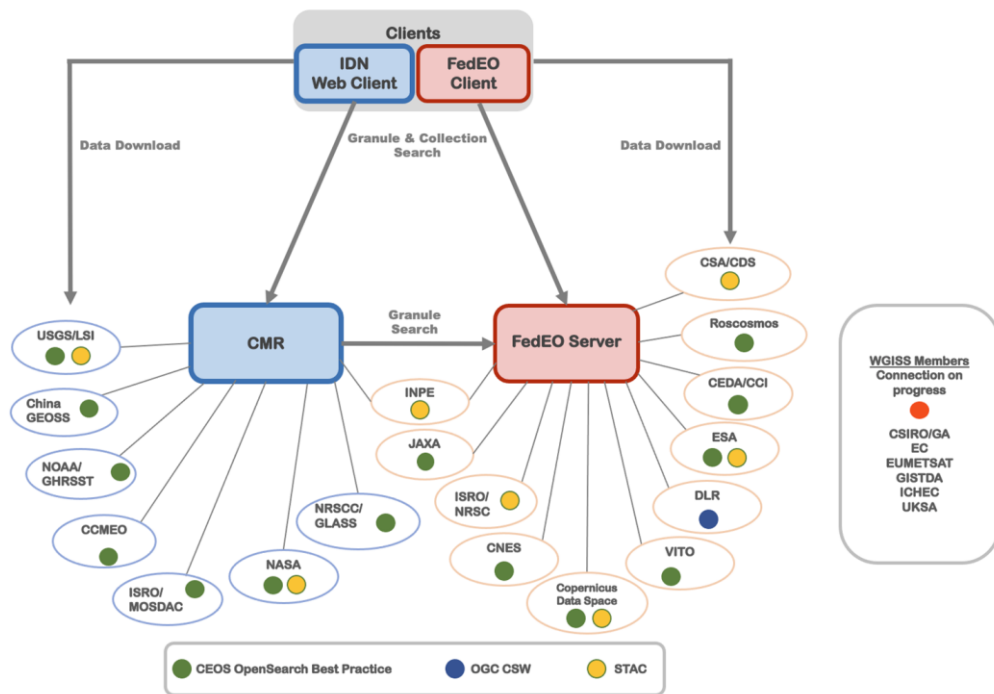
By:

- ❖ 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



Our Groups

- Other Groups
- Ad Hoc Teams
- Virtual Constellations
- Working Groups
- WGISS

Data Discovery and Access

Connected Data Assets

- Datasets by CEOS Agencies
- CEOS Missions, Instruments, and Measurements (MIM) keywords

- Federated EO Gateway (FedEO)
- International Directory Network (IDN)
- CEOS WGISS Integrated Catalog (CWIC)

Data Interoperability and Use

- Data Preservation and Stewardship
- Technology Exploration
- Best Practices and Guides
- Meetings
- Collaborations & Past Activities
- Contact Us

- WGDIsasters
- WGClimate
- WGCV
- WGCpd

CEOS / Our Groups / Working Groups / WGISS / Data Discovery and Access / Connected Data Assets

Connected Data Assets

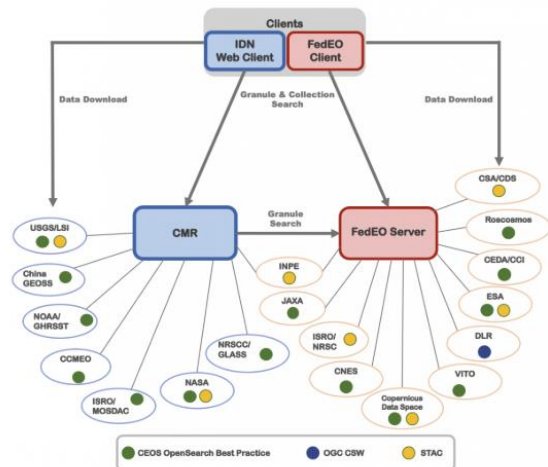
This page contains details about the CEOS Agencies' data collections that are connected via the supported WGISS standards - OGC CSW 2.0.2 and CEOS OpenSearch Best Practices - which allow independent clients to search and access their unrestricted data.

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.



WGISS Members Connection on progress
 CSIRO/GA
 EC
 EUMETSAT
 GISTDA
 ICHC
 UKSA

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
	BELSP0 (Belgian Science Policy Office) Belgium	OpenSearch STAC	IDN
	CNES (Centre National d'Etudes Spatiales) France	OpenSearch STAC	IDN
	CONAE (Comisión Nacional de Actividades Espaciales) Argentina		IDN
	CSIRO (Commonwealth Scientific and Industrial Research Organisation) Australia		IDN
	DLR (Deutsches Zentrum für Luft- und Raumfahrt) Germany	OpenSearch STAC	IDN
	ESA (European Space Agency) Europe	OpenSearch STAC	IDN
	EUMETSAT (European Organisation for the Exploitation of Meteorological Satellites) Europe	OpenSearch STAC	IDN
	European Commission Europe	OpenSearch STAC	
	GISTDA (Geo-Informatics and Space Technology Development Agency) Thailand		IDN
	INPE (Instituto Nacional de Pesquisas Espaciais) Brazil	OpenSearch STAC	IDN
	ISRO (Indian Space Research Organisation) India	OpenSearch STAC	IDN
	JAXA (Japan Aerospace Exploration Agency) Japan	OpenSearch STAC	IDN
	KARI (Korea Aerospace Research Institute) Republic of Korea		IDN
	NASA (National Aeronautics and Space Administration) United States of America		IDN
	NOAA (National Oceanic and Atmospheric Administration) United States of America		IDN

Data Access Assets – Catalog Clients



NASA | EARTHDATA SEARCH Find a DAAC ▾

CEOS IDN (CEOS International Directory Network)
Leave Portal

🔍 Type to search for data **Search**

Temporal ▾ **Spatial** ▾ **≡** **🗑️**

Showing Top 50 **View All**

<input type="checkbox"/> ACADIS	550
<input type="checkbox"/> Alaska Satellite Facility	167
<input type="checkbox"/> AR/CDA	192
<input type="checkbox"/> Atmospheric Science Data Cente...	1,712
<input type="checkbox"/> AU/AADC	3,002
<input type="checkbox"/> BCO-DMO	199
<input checked="" type="checkbox"/> BR/INPE	0
<input checked="" type="checkbox"/> BR/INPE/CPTEC	0
<input checked="" type="checkbox"/> BR/INPE/DAE/FISAT	0
<input checked="" type="checkbox"/> BR/INPE/DAS	0
<input checked="" type="checkbox"/> BR/INPE/DGI	0
<input checked="" type="checkbox"/> BR/INPE/DPI	0
<input checked="" type="checkbox"/> BR/INPE/DSA	0
<input checked="" type="checkbox"/> BR/INPE/DSR	0
<input type="checkbox"/> CEDA	189
<input type="checkbox"/> CN/NADC	168
<input type="checkbox"/> CNDP	367
<input type="checkbox"/> COLUMBIA/LDEO	170

116 Matching Collections

Showing 20 of 116 matching collections **Sort: Usage** **View: List**

Sentinel-2 image Mosaic of Brazilian Amazon Biome - 3 Months - B08B04B03
Int'l / Interagency 2024-06-01 to 2024-08-31 **🗑️ 🗑️ 🗑️**
Sentinel-2 image mosaic of Brazilian Amazon biome with 10m of spatial resolution. The mosaic was prepared in support of TerraClass project. The false...
CEOS · mosaic-s2-amazon-3m-b08b04b03-1 vNA - ESA/ESRIN **📄 +** **No image available**

MODIS-Aqua Monthly Rrs - OC-SMART AC
Int'l / Interagency 2002-07-04 to 2022-12-31 **🗑️ 🗑️ 🗑️**
The MODIS-Aqua Monthly Remote Sensing Reflectance (Rrs, unit sr-1) provides 8 spectral bands temporal resolution of one month and spatial resolution of 1 km...
CEOS · modisa-ocsmart-rrs-monthly-1 vNA - BR/INPE **📄 +** **No image available**

AMAZONIA-1/WFI - Level-2-DN
Int'l / Interagency 2023-04-01 to 2025-04-29 **🗑️ 🗑️ 🗑️**
AMAZONIA-1/WFI-Level-2 Digital Number product. Level 2 products have radiometric correction and geometric correction using satellite ephemeris and...
CEOS · AMZ1-WFI-L2-DN-1 vNA - BR/INPE **📄 +** **No image available**

AMAZONIA-1/WFI - Level-4-DN
Int'l / Interagency 2023-04-01 to 2025-04-29 **🗑️ 🗑️ 🗑️**
AMAZONIA-1/WFI-Level-4 Digital Number product.
CEOS · AMZ1-WFI-L4-DN-1 vNA - BR/INPE **📄 +** **No image available**

HOME ASSETS

Map showing Europe and surrounding regions. Collections 1-10 of 90.

rs Identifier: LCC_L8_30_1M_STK_PA-SPC-AC-Title: LCC - Bahia - LC8 30m 1M STK
to NA-1
Keywords: CLASSIFICATION, LAND USE/LAND COVER CLASSIFICATION, LAND USE CLASSES, NEURAL NETWORKS, LANDSAT-8, OLI, Landsat, Landsat-8, OLI, DIF10, classification, landsat, landsat-8, thematic, cloud optimized geotiff, cog, earth observation, brazil, machine learning, mip, land use/land cover classification, land use classes, neural networks, oli, BR/INPE
End date: 2019-08-31T00:00:00.999Z Modified: 2024-11-25T00:00:00.000Z

rs Identifier: LCC_C4_64_1M_STK_MT_RF_PA-Title: LCC - Mato Grosso - CB4 64m 1M STK
SPC-...
Keywords: CLASSIFICATION, RANDOM FOREST, LAND USE/LAND COVER CLASSIFICATION, LAND USE CLASSES, CBERS-4, WFI (CBERS 3A), CBERS, CBERS-4, WFI, DIF10, classification, cbers, cbers-4, thematic, cloud optimized geotiff, cog, earth observation, brazil, machine learning,

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:

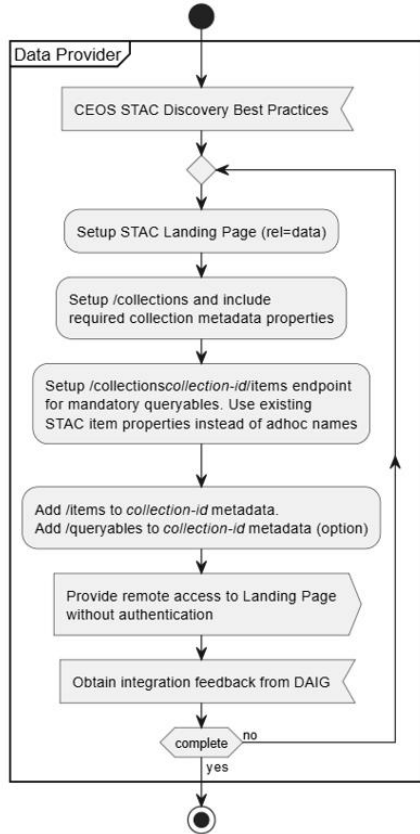
- ❖ [Atmosphere](#)
- ❖ [Gravity and Magnetic Fields](#)
- ❖ [Land](#)
- ❖ [Ocean](#)
- ❖ [Snow and Ice](#)

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.

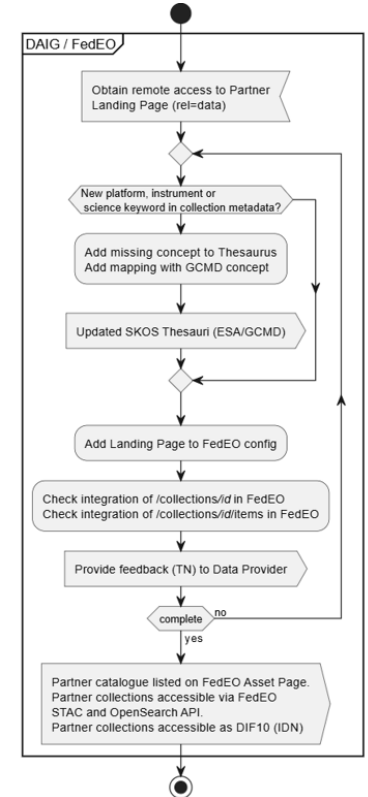
CEOS MIM Keywords	Topic	Term	Variable_Level_1	Variable_Level_2	Variable_Level_3
Aerosol Absorption Optical Depth (Column/Profile)	Atmosphere	Aerosols	Aerosol Optical Depth/Thickness		
Aerosol Effective Radius (Column/Profile)	Atmosphere	Aerosols	Aerosol Particle Properties		
Aerosol Extinction / Backscatter (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 ₂ H ₂ (Column/Profile)	Atmosphere	Atmospheric Chemistry	Carbon And Hydrocarbon Compounds	Non-Methane Hydrocarbons/Volatile Organic Compounds	
Atmospheric Chemistry - C ₂ H 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 ₃ Br (Column/Profile)	Atmosphere	Atmospheric Chemistry	Halocarbons And Halogens	Methyl Bromide	

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

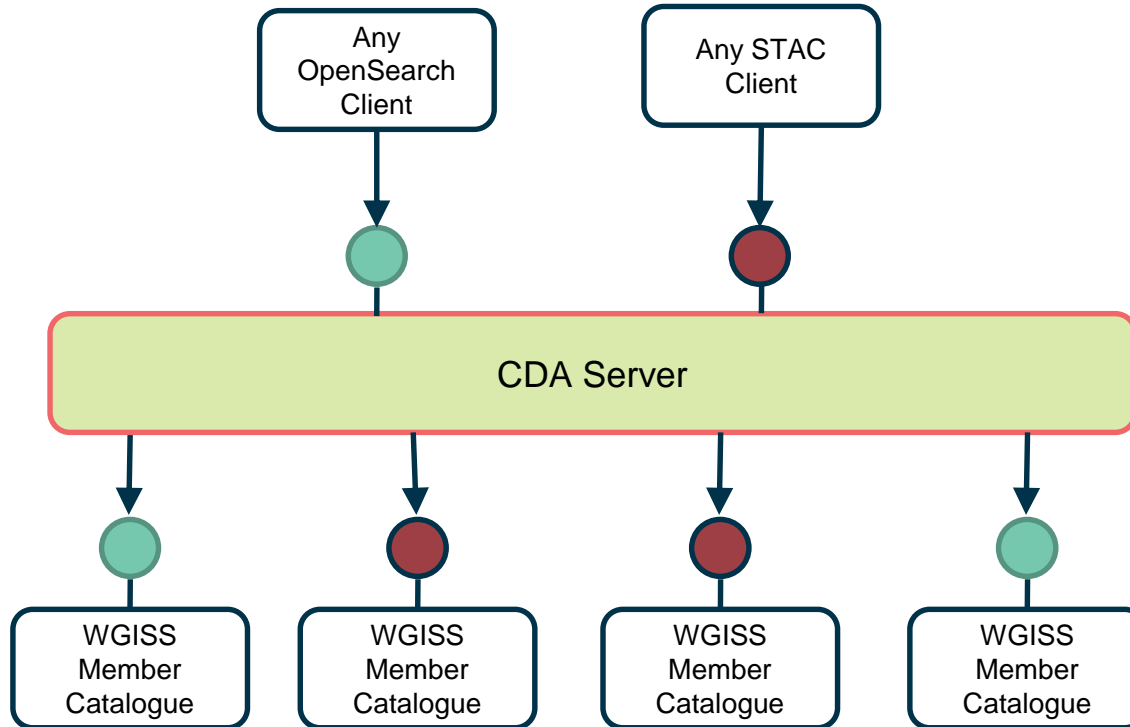
Once integrated, updates to contents are automatically captured by catalogues



Integration Use Cases

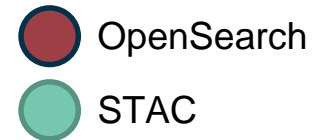


Use Cases: Granules Searches through CEOS Catalogue



Example Clients:

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



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

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

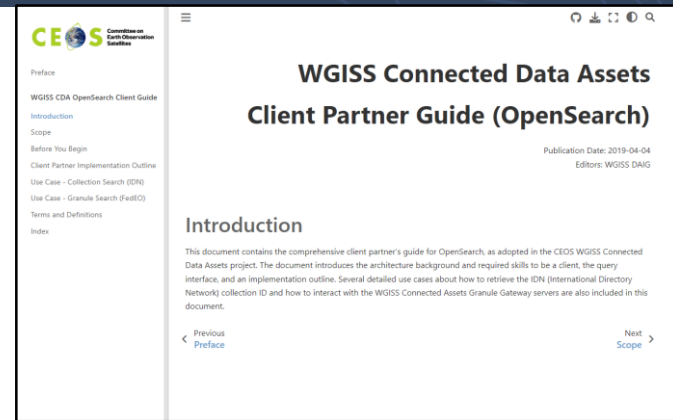
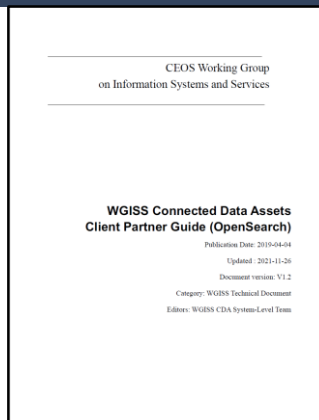
Doc. Ref.	Document Name/Link	Curator	Version	Document Date	Status	Latest Review Date
OPENSEARCH.BP	CEOS OpenSearch Best Practice	DAIG	1.3	Mar-2021	Up to date	Mar-2021
DAIG.SMDBP	CEOS Service Discovery Best Practice	DAIG	1.1	Sep-2024	Up to date	Sep-2024
DAIG.CDA.OS.CG	WGISS Connected Data Assets Client 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



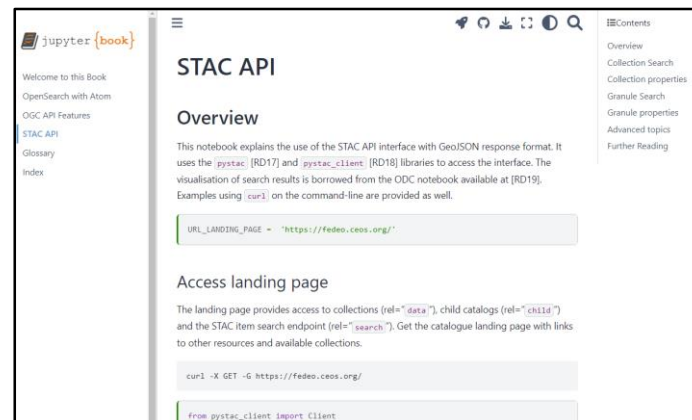
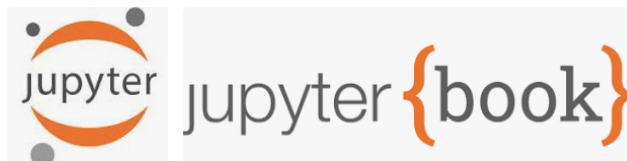
Client Partner Guide (PDF) was migrated:

- ❖ GitHub / GitHub Pages
- ❖ Jupyter Notebook / JupyterBook



Online Documentation for FedEO API

- ❖ OpenSearch API
- ❖ STAC API



FedEO API Online Documentation:

<https://fedeo.ceos.org/stac.html>

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

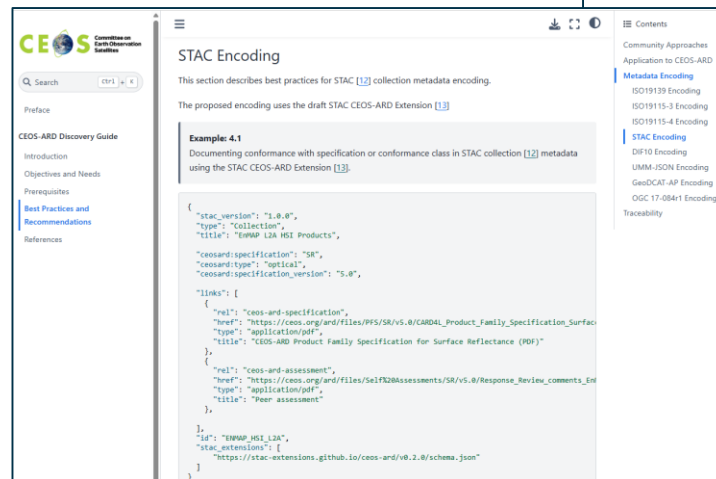
- ❖ GitHub / GitHub Pages
- ❖ e.g. CEOS-ARD compliant datasets

Documentation refactoring/regrouping
planned, e.g.

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

CEOS-ARD Discovery Guide

- Introduction
- Objectives and Needs
- Prerequisites
- Best Practices and Recommendations



STAC Encoding

This section describes best practices for STAC [12] collection metadata encoding.

The proposed encoding uses the draft STAC CEOS-ARD Extension [13]

Example: 4.1
Documenting conformance with specification or conformance class in STAC collection [12] metadata using the STAC CEOS-ARD Extension [13].

```
{
  "stac_version": "1.0.0",
  "type": "Collection",
  "title": "EOPAP L3A HSI Products",
  "ceosard:specification": "SR",
  "ceosard:type": "optical",
  "ceosard:specification_version": "5.0",
  "links": [
    {
      "rel": "ceos-ard-specification",
      "href": "https://ceos.org/ard/files/PFS/SR/v5.0/CARD4L_Product_Family_Specification_Surface",
      "type": "application/pdf",
      "title": "CEOS-ARD Product Family Specification for Surface Reflectance (PDF)"
    },
    {
      "rel": "ceos-ard-assessment",
      "href": "https://ceos.org/ard/files/SelfP20Assessments/SR/v5.0/Response_Review_comments_end",
      "type": "application/pdf",
      "title": "Peer assessment"
    },
    {
      "id": "EOPAP_HSI_L3A",
      "stac_extensions": [
        "https://stac-extensions.github.io/ceos-ard/v0.2.0/schema.json"
      ]
    }
  ]
}
```

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?

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