NEXTGEOSS
European Data Hub and Platform

NextGEOSS data hub and platform - connecting data providers with geosciences communities

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4. **Biodiversity portal**
   Biodiversity community
   Remote sensing enabled
   EBVs data hub

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European Data Hub and Platform

à la carte

European Data Hub

Platform Services

Pilot Applications

DATA HUB

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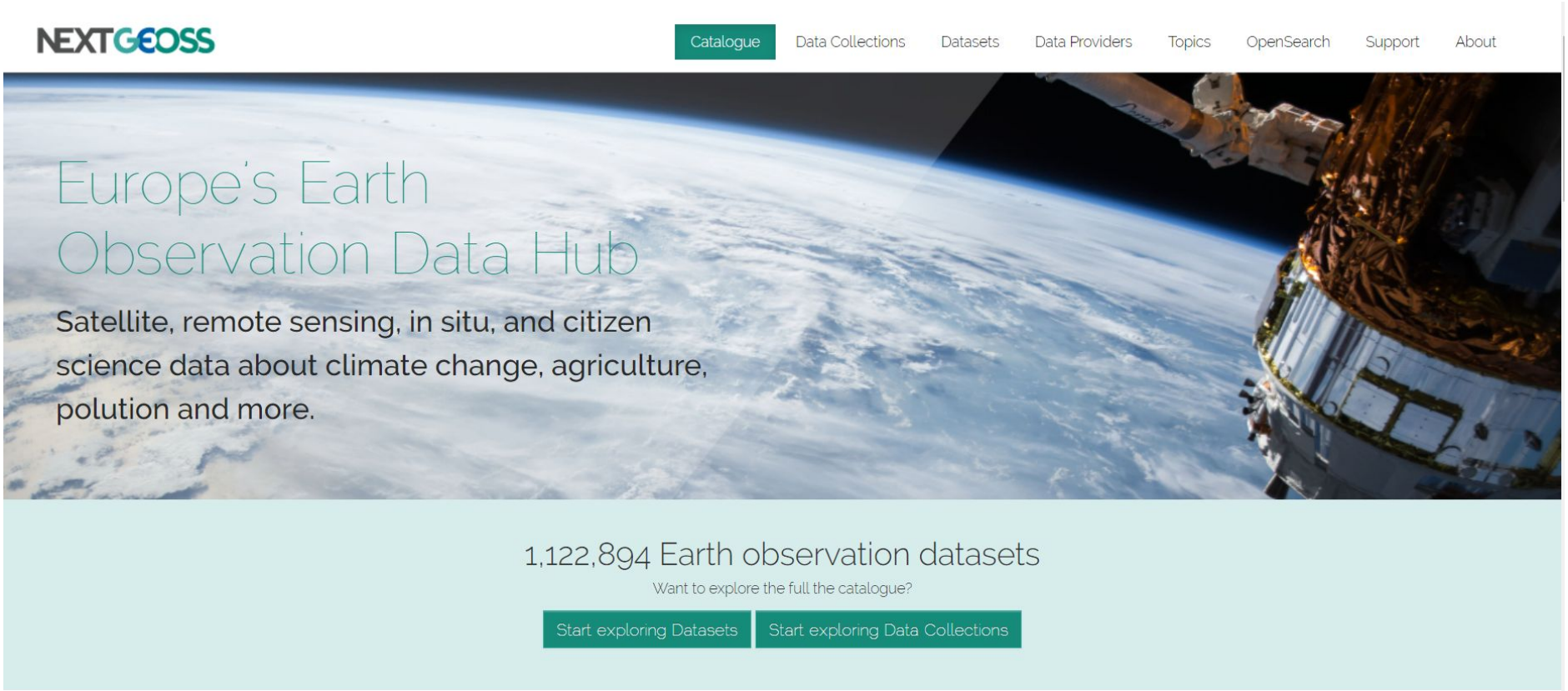

DATA HUB

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Discover data sets

Arctic Ocean Physics Analysis and Forecast
Datasets: 2908
Pilots:
Daily Arctic Ocean physics analysis to provide 10 days of forecast of the 3D physical ocean... Read More
Go to collection >

Global Ocean Gridded L4 Sea Surface Heights and Derived Variables NRT
Datasets: 740
Pilots:
Daily products processed by the DUACS multimission altimeter data processing system. The ge... Read More
Go to collection >

Global Ocean Physics Analysis and Forecast (Hourly)
Datasets: 892
Pilots:
Daily global ocean analysis and forecast system at 1/12 degree providing 10 days of 3D glob... Read More
Go to collection >

Global Total Surface and 15m Current (Hourly)
Datasets: 746
Pilots:
This product is a 6 hourly NRT L4 global total velocity field at 0m and 15m. It consists of... Read More
Go to collection >

MetOP-A GOME-2 Ozone (O3)
Datasets: 16
Pilots:
Daily global concentrations of atmospheric ozone. These data are crucial for monitoring atm... Read More
Go to collection >

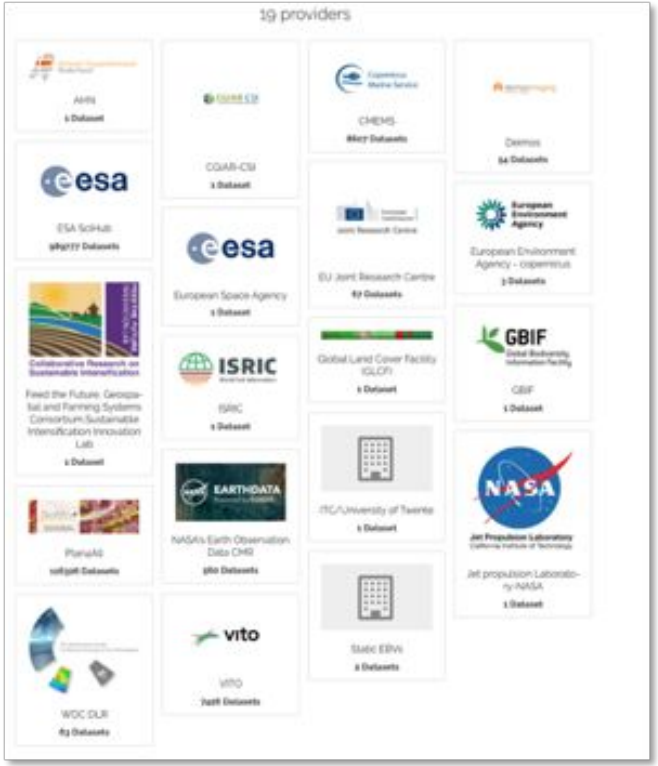
MetOP-A GOME-2 Nitrogen Dioxide (NO2)
Datasets: 12
Pilots:
Daily global concentrations of atmospheric nitrogen dioxide. These data are crucial for mon... Read More
Go to collection >

MetOP-A GOME-2 Tropospheric Nitrogen Dioxide (NO2)
Datasets: 11
Pilots:
Daily global concentrations of tropospheric nitrogen dioxide. These data are crucial for mo... Read More

MetOP-A GOME-2 Sulphur Dioxide (SO2)
Datasets: 14
Pilots:
Daily global concentrations of atmospheric sulphur dioxide. These data are crucial for moni... Read More

MetOP-A GOME-2 Sulphur Dioxide (SO2) mass
Datasets: 10
Pilots:
Daily global concentrations of atmospheric sulphur dioxide mass. These data are crucial for... Read More

Discover data providers



PILOT APPLICATIONS

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Innovative Pilot Services

- Agricultural Monitoring — vito; ALTERRA WAGENINGEN UR
- Biodiversity — University of Twente The Netherlands; ALTERRA WAGENINGEN UR
- Space & Security — SatCen
- Cold Regions — NERSC
- Air Pollution in Mega Cities — DLR
- Disaster Risk Reduction — NOA
- Co-ReSyF — ReSyF

Business Pilot Services

- Territorial Planning — deimos elecnor group
- Food Security — vito
- Smart Cities — OGC
- Energy* — ARMINES
- Marine Drift — CLS
- Geo Wetland — GEO WETLANDS Community Portal

STEP-BY-STEP ONBOARDING

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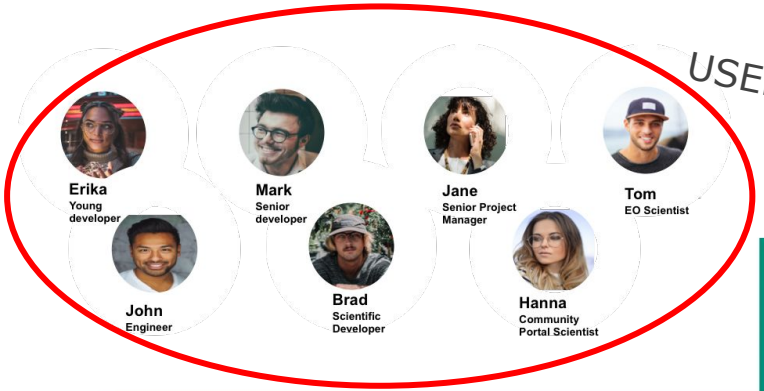
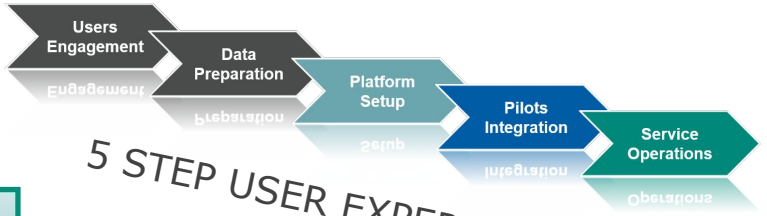
USER PERSONAS



5 STEP USER EXPERIENCE



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User Engagement & Integration process of a new pilot

- **1- User Engagement**
  - 1.1 Submit your candidate pilot
  - *1.2 (Selection of Pilots)*
  - 1.3 NextGEOSS feedback (Pilot Selected/postponed)
  - 1.4 Kickoff preparation
    - Kickoff
- **2- Data preparation**
  - 2.1 Analysis of data compared to available data & harvestors (Gap analysis)
  - 2.2 Submit the data description via NextGEOSS service Desk
  - 2.3 Technical Meetings
  - 2.4 Harvestors update if needed
  - 2.5 NextGEOSS feedback on Data readiness
- **3- Platform Setup**
  - 3.1 Analysis of ICT compared to available ICT resources
  - 3.2 Technical Meetings
  - 3.3 Provisioning of resources
  - 3.4 NextGEOSS feedback on ICT readiness
  - 3.5 Sign up and access your resources
- **4- Pilot Integration**
  - 4.1 Integrate your pilot software tools
    - 4.1.a NextGEOSS DataHub Harvestors
      - Pilot "data product" results publication into a CKAN catalogue instance
    - 4.1.b Data Discovery
    - 4.1.c Data Processing Enablers
    - 4.1.d OGC "Web Processing Service" client
    - 4.1.e OWS context enablers for Community Portals integration
    - 4.1.f Geospatial User feedback
    - 4.1.g Usage Analytics
    - 4.1.f User Management for Single Sign On
  - 4.2 Test & validate
  - 4.3 Transfer to operations
  - 4.4 Test & validate
- **5- Service Operations**
  - 5.1 Pilot Users Engagement
  - 5.1 Service Monitoring

NextGEOSS OFFERS

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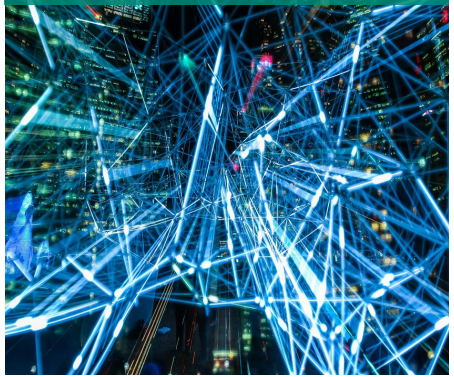
INTEGRATE YOUR PILOT

- Data cataloguing
- Service cataloguing
- Data discovery
- User Feedback
- Cloud integration
- User management
- Operations analytics and dashboards
- Future services (Sentinel Data Linker Service)

LINK YOUR DATA



- Data cataloguing

SHOWCASE YOUR APPLICATION

- Service cataloguing

https://nextgeoss.eu/join-us/

1

NextGEOSS

General introduction to the Datahub and Plattform

2

OpenSearch

OpenSearch CKAN Plugin/
OpenSearch API for CKAN

3

User Feedback Mechanism

Geospatial user feedback and NiMMbus

4

Biodiversity portal

Biodiversity community
Remote sensing enabled
EBVs data hub

OpenSearch

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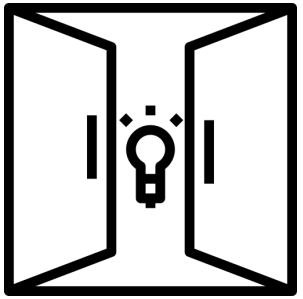
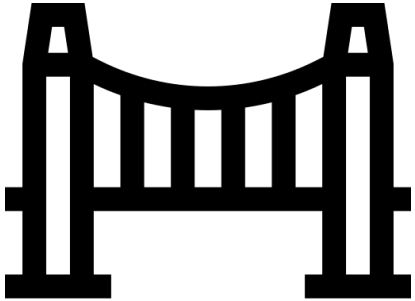
The Opensearch API on CKAN we've developed breaks the silos between open data and geospatial data.



OpenSearch

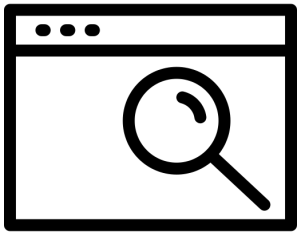


Work has been done on the metadata (geoDCAt) and this extension API to bridge the worlds of Open data (CKAN) and Geospatial data (Opensearch with EO extensions).

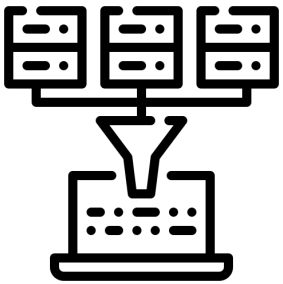
This is very innovative and needed as more and more scenarios, including disasters or the current pandemia, **need to merge social or census data with geospatial data.**

OpenSearch Introduction

OpenSearch is a collection of technologies that allow websites and search engines to publish search results in a standard and accessible format



OpenSearch Introduction – OGC Standards



Since OpenSearch is so important to the EO community, the the Open Geospatial Consortium (OGC) published the ***OpenSearch Geo and Time extensions* standard** to the query protocol to provide a very simple way to make spatial and temporal queries to a repository of geospatial content

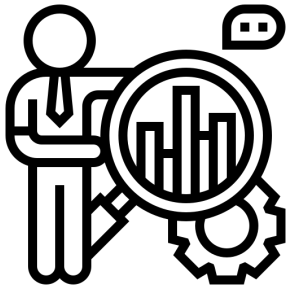
OpenSearch Introduction – CKAN

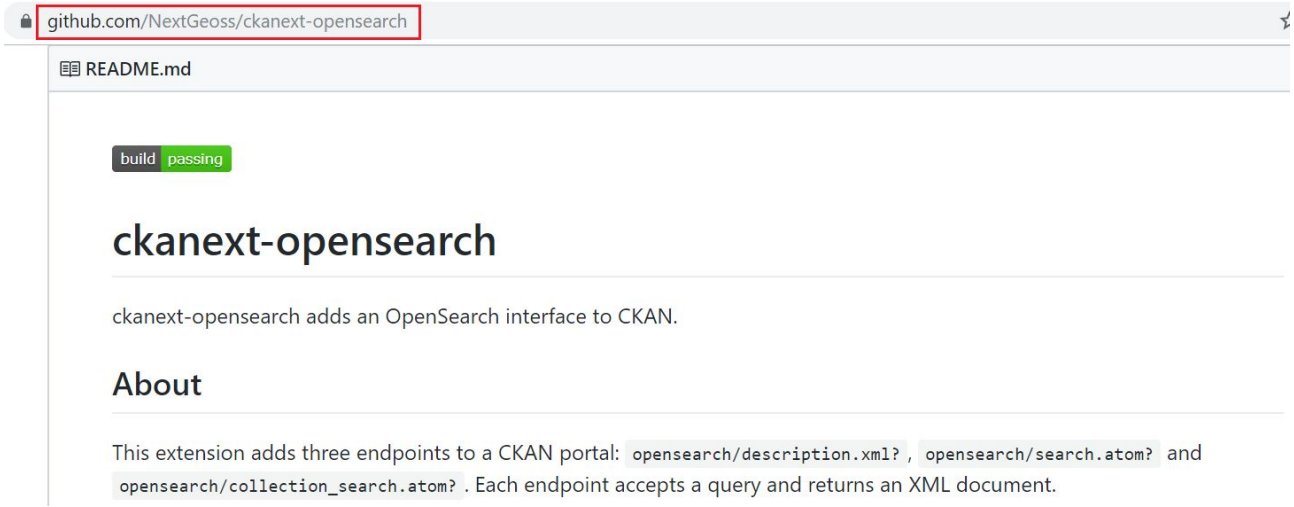
The NextGEOSS Datahub is based on **CKAN**, a fully-featured, mature, open source data management solution.

The **CKAN** architecture is specially designed to enable and encourage the creation and use of plugins to enhance and extend the platform's feature and functionality. All the plugins are freely available and open source and can themselves be modified and extended.

OpenSearch API for CKAN

OpenSearch has been **implemented in the NextGEOSS Data Hub** to support client applications and developers who need a standard-based way of interacting with it





OpenSearch API for CKAN

The OpenSearch extensions that have been implemented for the NextGEOSS DataHub are following the OGC standards and were validated to be fully compatible with the standard.

↳ The correct implementation of OpenSearch, following standards and compliance tests, allows us to easily integrate with other systems

OpenSearch Time Version 1.0 Draft 1 — Score: 100.00%

Validation	Rule	Status	Remarks	Further Information	Score
1	Time end parameter	Pass	None	None	5
2	Time namespace is present	Pass	None	None	5
3	Time start parameter	Pass	None	None	5

OpenSearch Parameter extension Version 1.0 Draft 1 — Score: 100.00%

Validation	Rule	Status	Remarks	Further Information	Score
1	Parameter attributes	Pass	None	None	5
2	Url method	Pass	None	None	5
3	Url enctype	Pass	None	None	5
4	Param namespace	Pass	None	None	5

Federation of Earth Science Information Partners (ESIP) OpenSearch Best Practices — Score: 100.00%

Validation	Rule	Status	Remarks	Further Information	Score
1	Presence of parent link element in collection level result	Pass	None	None	5
2	Categorization of link elements in res			None	5

Join our upcoming Webinar!

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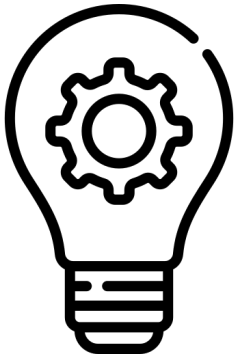
European Data Hub and Platform

If you're interested in learning how it works,
Join our upcoming NextGEOSS Webinar !

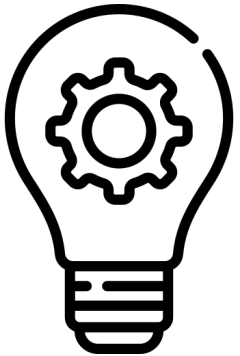


https://nextgeoss.eu/webinar-may20/

2-Step Search

How does it work?

- A general **description document** is provided with information about the **collections** that are available for searching.
- For each collection there is a separate description document providing further information about the collection specific parameters.

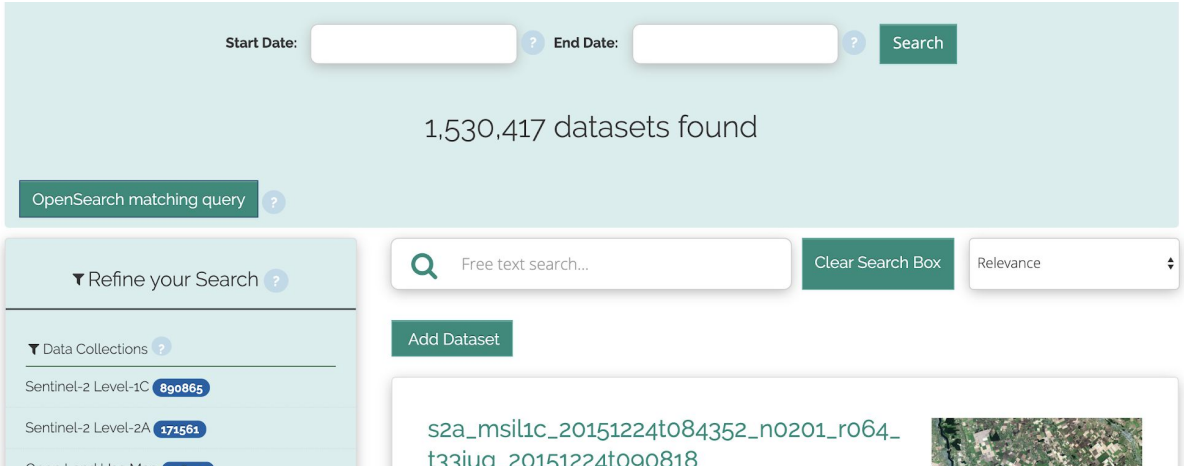


More information available at:

https://catalogue.nextgeoss.eu/opensearch

UI opensearch query generator

The NextGEOSS DataHub Portal implements the **two-step search mechanism** and allows users to search through the data via the UI and then to generate a matching OpenSearch query.



Accessing OpenSearch UI

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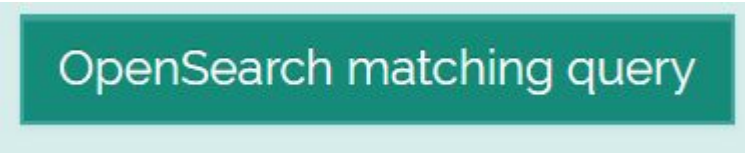
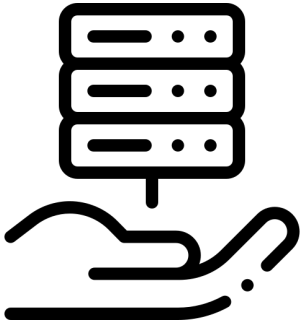
- If you are not very familiar with OpenSearch and you need an opensearch response, you can visit the Data Hub and **create your query from the UI**

- The Data Hub search page, provides an **OpenSearch button**, which translates all your filtering and searching on the UI to an Opensearch API

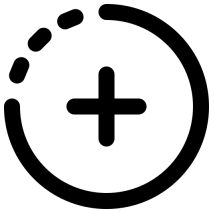


OpenSearch API improvements

We are constantly adding more data connectors to our portal and new collections that will become available through the OpenSearch API.



This will allow us to provide a variety of data for the users and accommodate their needs

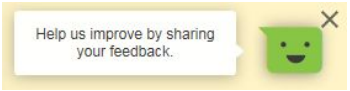


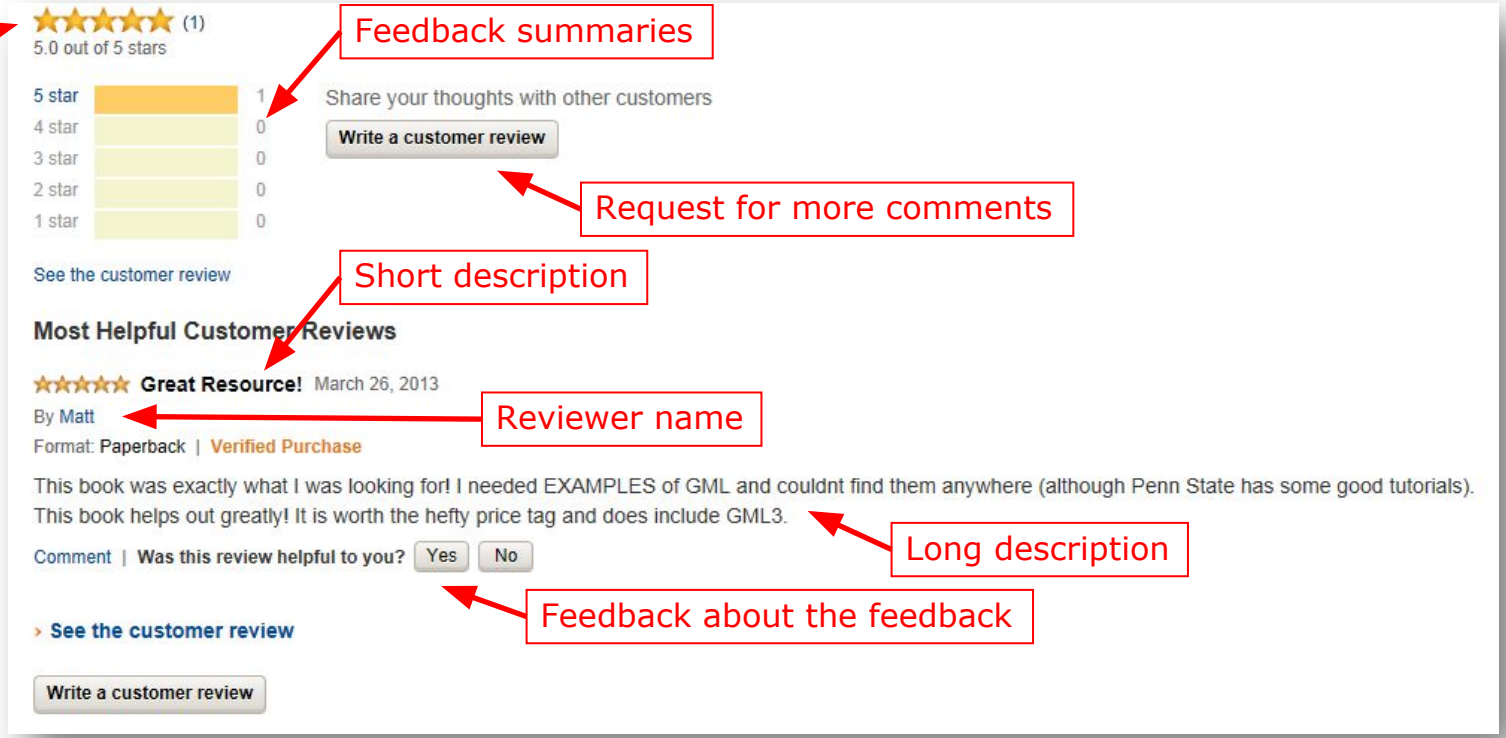
Additional collections are planned to be added to the datahub

1. **NextGEOSS**
   General introduction
2. **OpenSearch**
   OpenSearch CKAN Plugin/
   OpenSearch API for CKAN
3. **User Feedback Mechanism**
   Geospatial user feedback and NiMMbus
4. **Biodiversity portal**
   Biodiversity community
   Remote sensing enabled EBVs data hub

User feedback concept

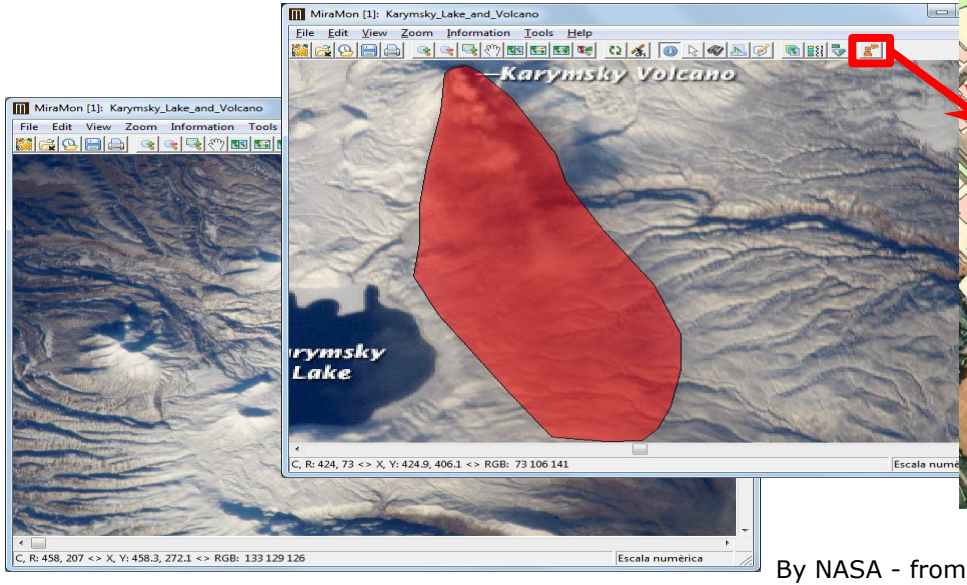
To help scientists find exactly the type of data they are looking for, feedback from other *users* can be very helpful and complementary to dataset producer's description

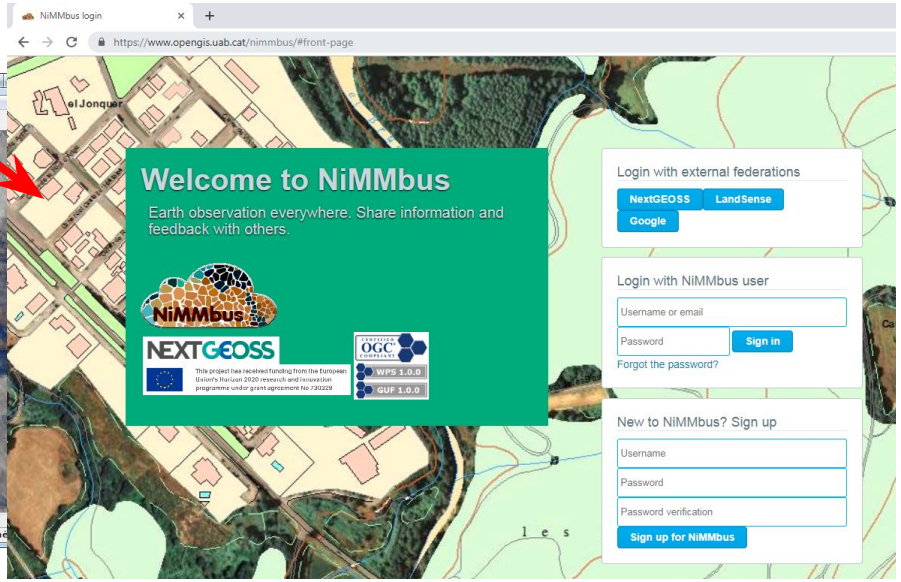




Geospatial example (1/2)

- User A is looking at a particular region of a dataset…
- …and sees something wrong…
- …and reports it to the portal



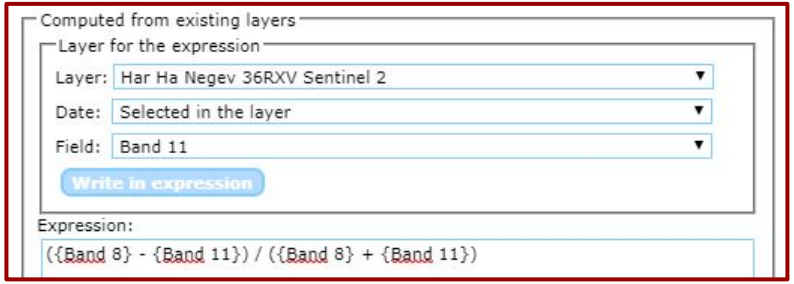


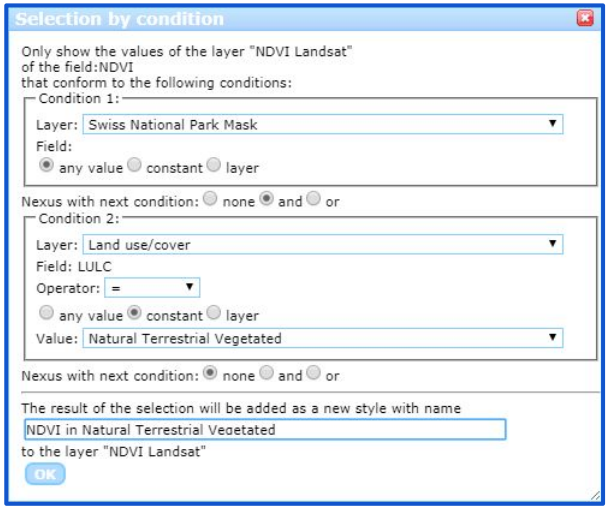
By NASA - from http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=79733, Public Domain, https://commons.wikimedia.org/w/index.php?curid=32145233

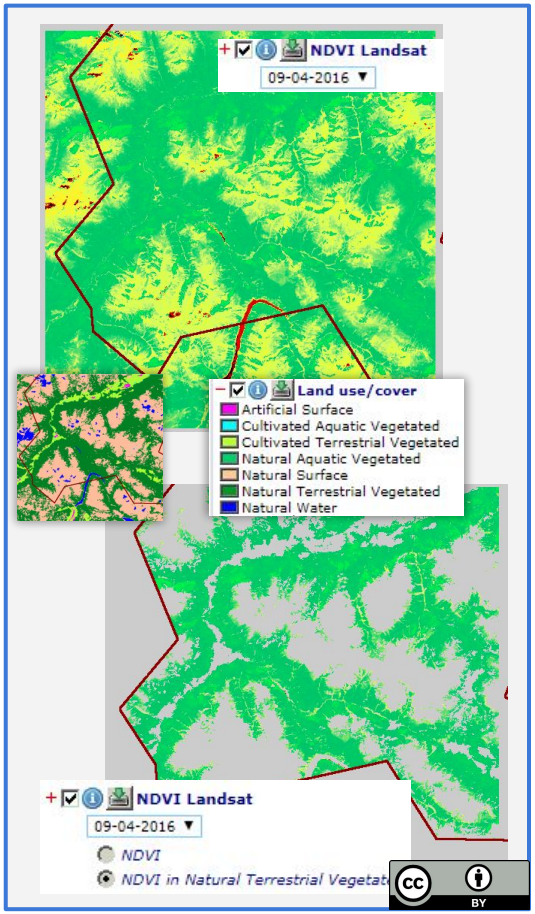
- User B can retrieve feedback on the dataset (only if affecting his/her extent (BBOX))

Geospatial example (2/2)

Computation of new layers (i.e. new vegetation index)
or spatial filtering (i.e. NDVI for Natural Terrestrial Vegetated)







Protected areas from space web map browser
http://maps.ecopotential-project.eu/

Feedback elements (1/2): Who? What? Where?

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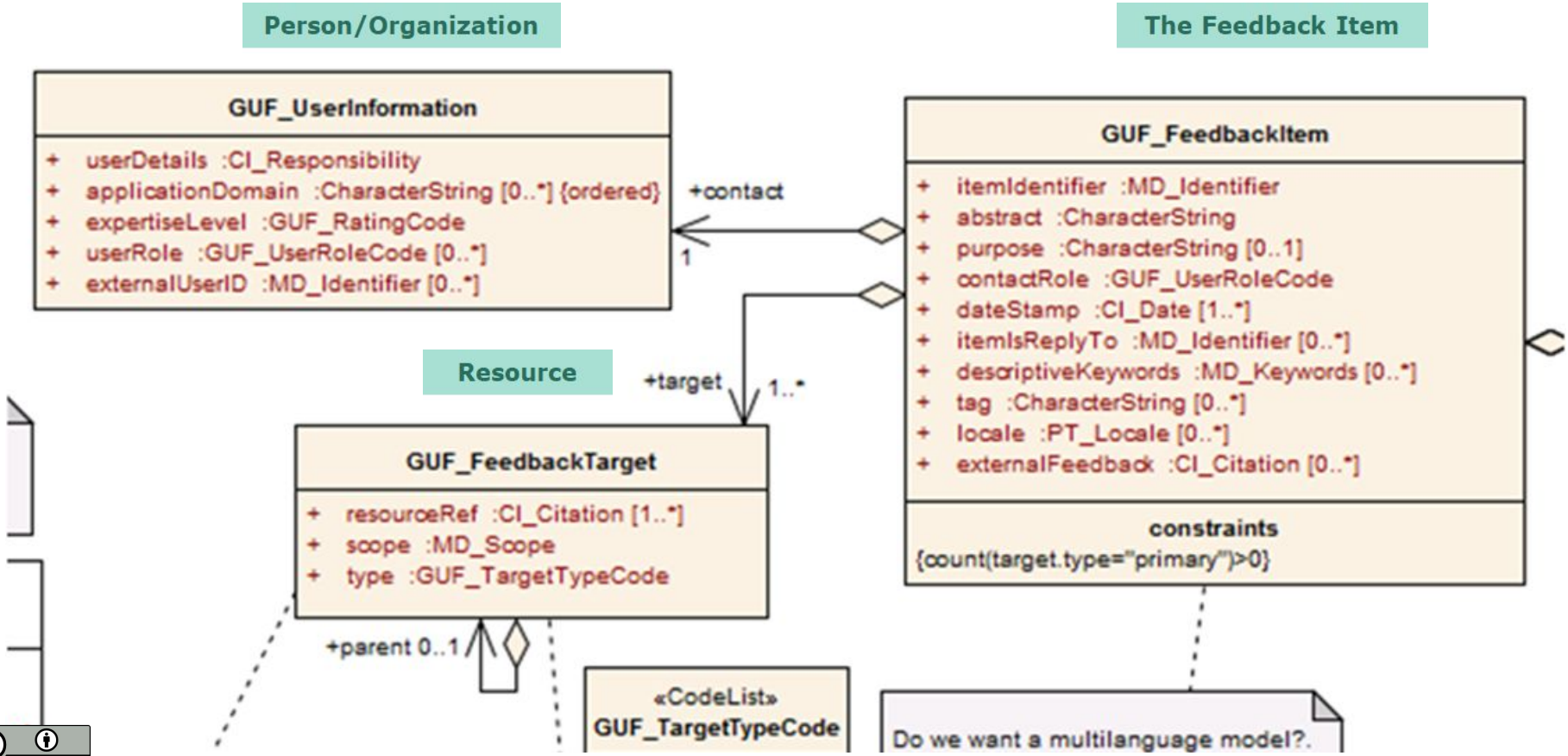

Feedback elements (2/2): usage, signif. events

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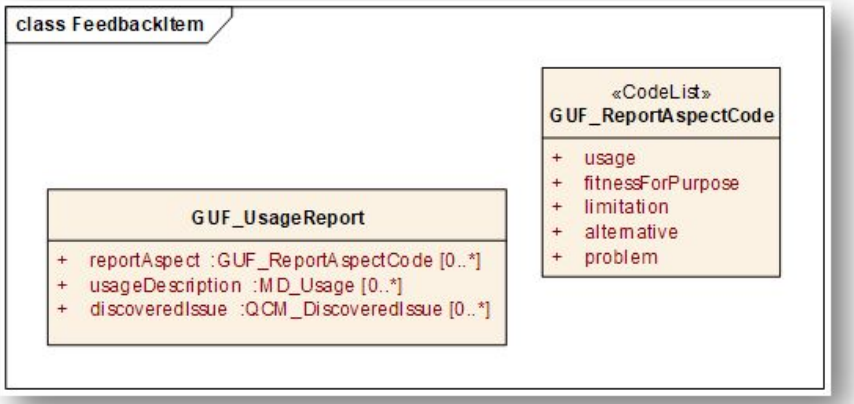
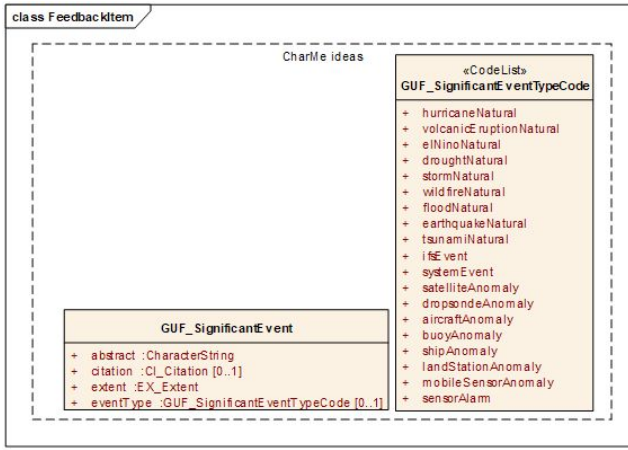
Rating

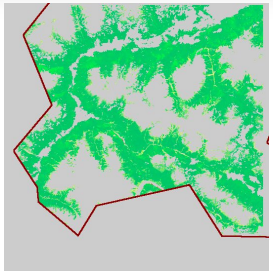
Comments

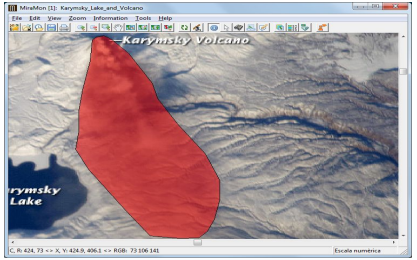
Usage Report



Significant Events







Connection to Geospatial User Feedback

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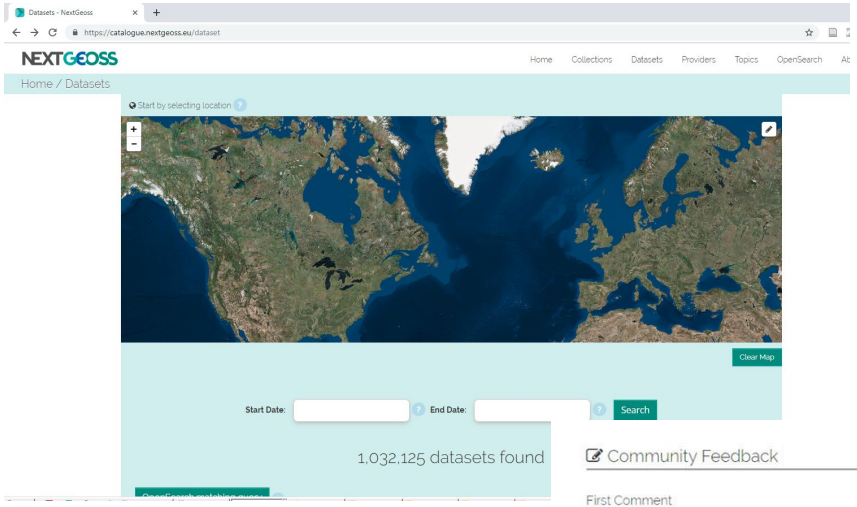
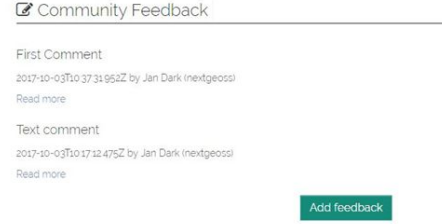
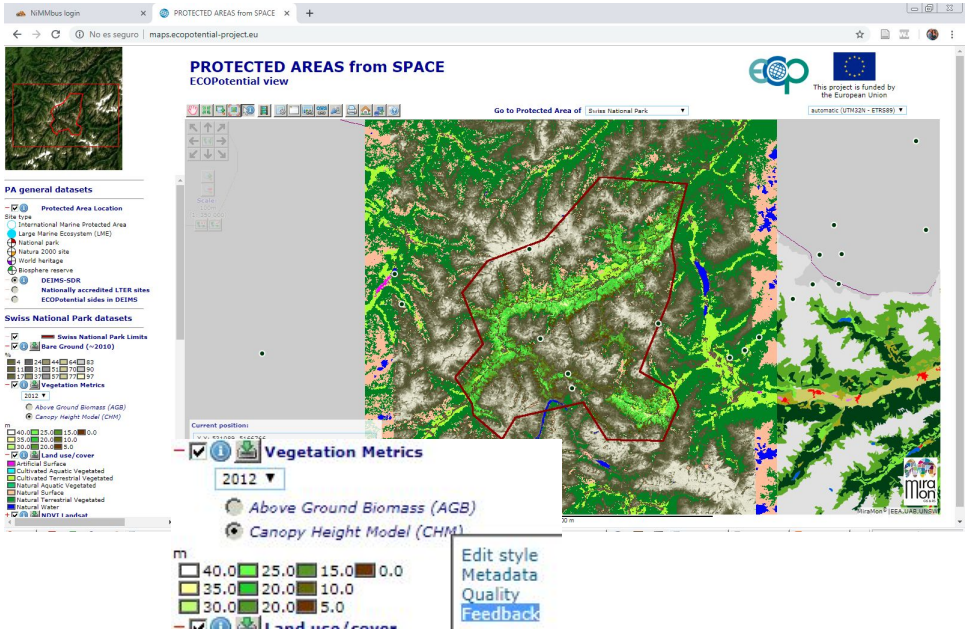
- Can be easily included from several portals using a widget







- Allows describing feedback for any resource → Unique identifiers are needed

The NiMMbus modular solution

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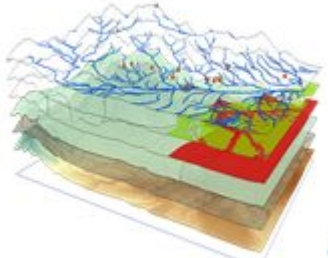
Dataset ID

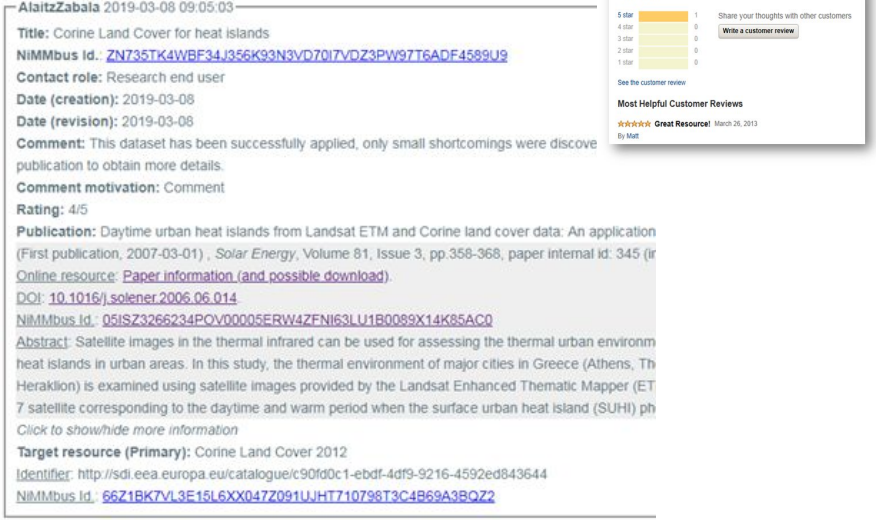


API

API

Data input portal

Widget for user feedback



AlaitzZabala 2019-03-08 09:05:03

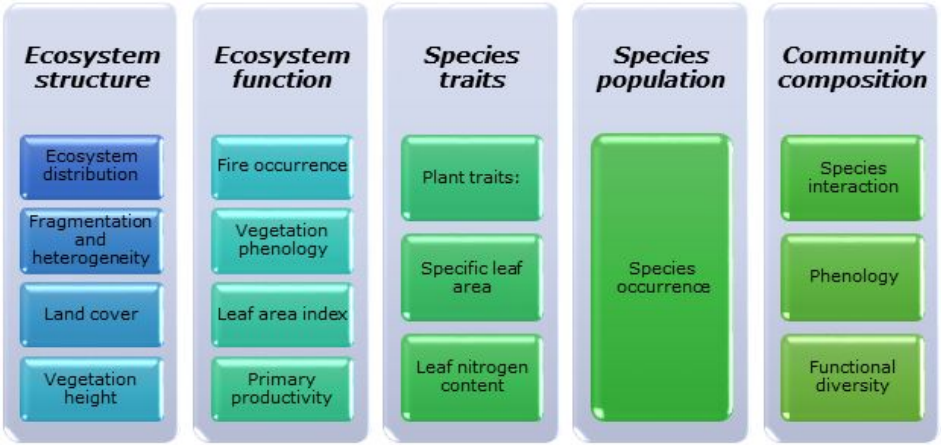
Title: Corine Land Cover for heat islands
NiMMbus Id.: ZN735TK4WBF34J356K93N3VD70I7VDZ3PW97T6ADF4589U9
Contact role: Research end user
Date (creation): 2019-03-08
Date (revision): 2019-03-08
Comment: This dataset has been successfully applied, only small shortcomings were discove
publication to obtain more details.
Comment motivation: Comment
Rating: 4/5
Publication: Daytime urban heat islands from Landsat ETM and Corine land cover data: An application
(First publication, 2007-03-01) , *Solar Energy*, Volume 81, Issue 3, pp.358-368, paper internal id: 345 (ir
Online resource: Paper information (and possible download).
DOI: 10.1016/j.solener.2006.06.014
NiMMbus Id.: 05ISZ3266234POV00005ERW4ZFNI63LU1B0089X14K85AC0
Abstract: Satellite images in the thermal infrared can be used for assessing the thermal urban environm
heat islands in urban areas. In this study, the thermal environment of major cities in Greece (Athens, Th
Heraklion) is examined using satellite images provided by the Landsat Enhanced Thematic Mapper (ET
7 satellite corresponding to the daytime and warm period when the surface urban heat island (SUHI) ph
Click to show/hide more information
Target resource (Primary): Corine Land Cover 2012
Identifier: http://sdi.eea.europa.eu/catalogue/c90fd0c1-ebdf-4df9-9216-4592ed843644
NiMMbus Id.: 66Z1BK7VL3E15L6XX047Z091UJHT710798T3C4B69A3BQZ2

1. **NextGEOSS**
   General introduction
2. **OpenSearch**
   OpenSearch CKAN Plugin/
   OpenSearch API for CKAN
3. **User Feedback Mechanism**
   Geospatial user feedback and NiMMbus
4. **Biodiversity portal**
   Biodiversity community
   Remote sensing enabled EBVs data hub

THE EUROPEAN REMOTE SENSING ENABLED ESSENTIAL BIODIVERSITY VARIABLES DATA HUB

NEXTGEOSS
European Data Hub and Platform

The European Remote Sensing (RS) enabled Essential Biodiversity Variables (EBV) data-hub was created following four stages:



Essential biodiversity variables candidates proposed by Skidmore (2015)

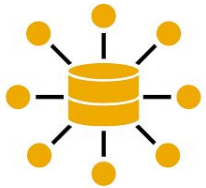
1 Prioritizing RS-enabled EBVs

2 Identifying available RS-enabled EBVs products

3 Providing metadata

4 Populating EBVs product into NextGEOSS catalogue

Genetic composition ***Species population*** ***Species traits*** ***Community composition*** ***Ecosystem function*** ***Ecosystem structure***



NextGEOSS RS-EBVs data-hub

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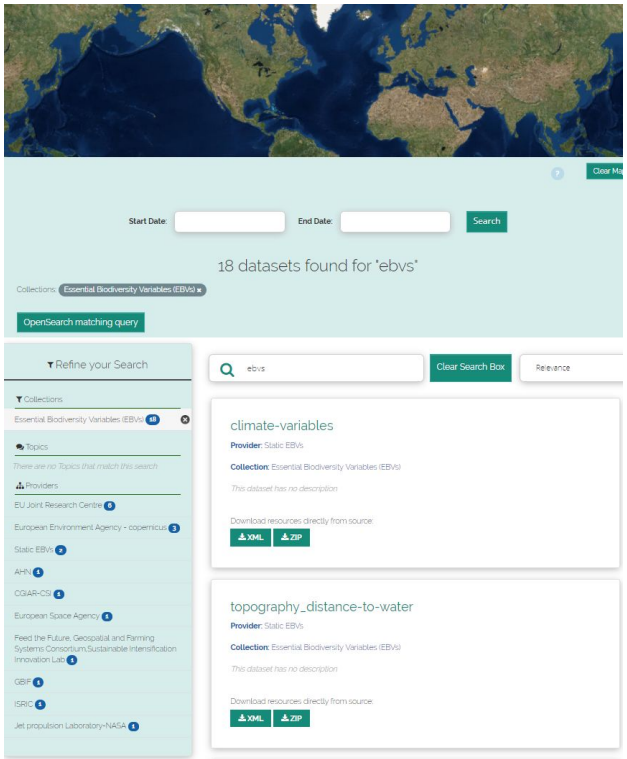
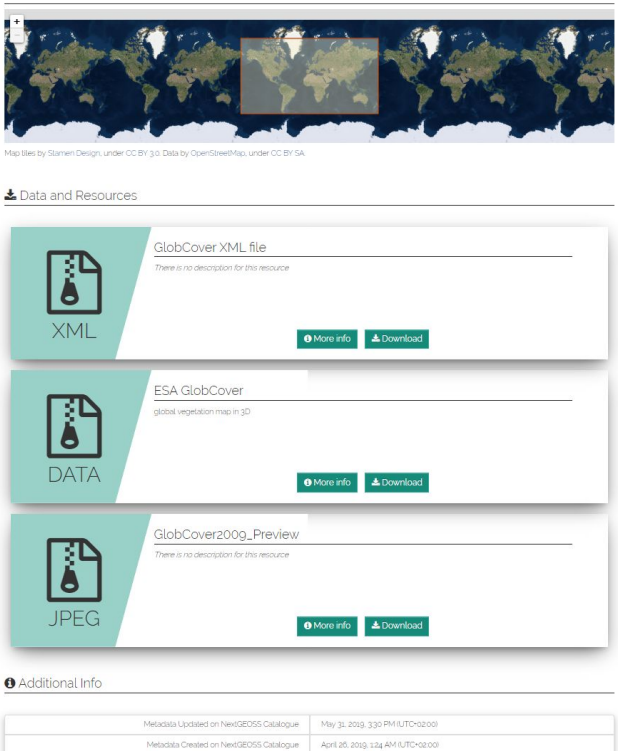
THE EUROPEAN REMOTE SENSING ENABLED EBVs DATA HUB

NEXTGEOSS
European Data Hub and Platform

Populating EBVs product into NextGEOSS catalogue

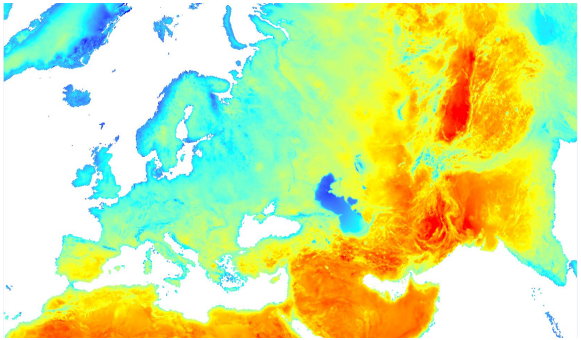




Populating EBVs metadata into the the NextGEOSS Catalogue

Finding RS-EBVs at the NextGEOSS Catalogue

Download data

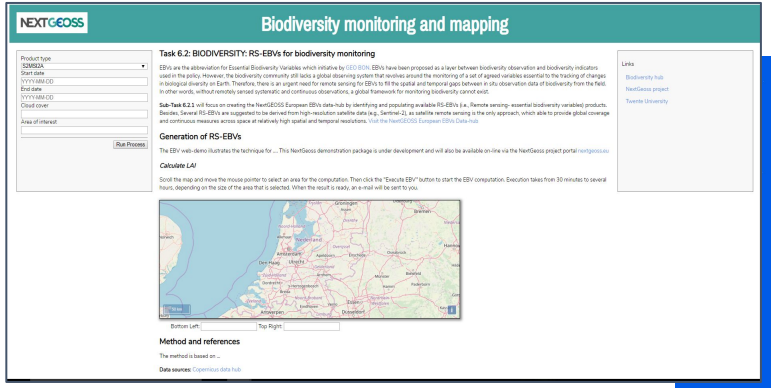


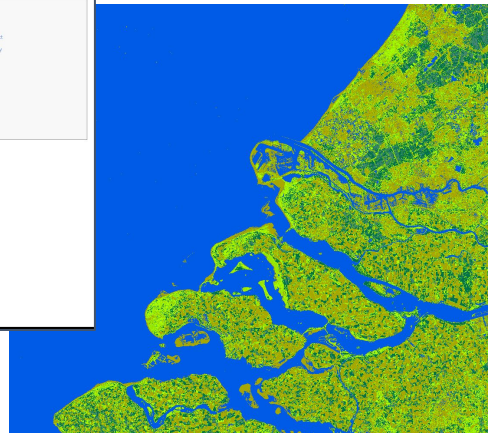
BIODIVERSITY MONITORING AND MAPPING

NEXTGEOSS
European Data Hub and Platform

Example for the NextGEOSS Cloud Integration service

With the support of the NextGEOSS Platform, the retrieval of the **Remote Sensing-enabled Essential Biodiversity Variables** (e.g., Leaf area index) is implemented by means of **Copernicus Sentinel-2** data at a global scale.





http://nextgeoss.itc.utwente.nl/ebv/

Service Integration work

- Prototyping on cloud integration environment (Sandbox) and deployed to Production;
- Access to Online **Sentinel-2** data repository

Result

- A web application processor as a Service- generating **RS-enabled EBVs** (e.g., Leaf Area Index, on demand)
- Prototype Cloud storage solution (supporting future systematic processing mode)

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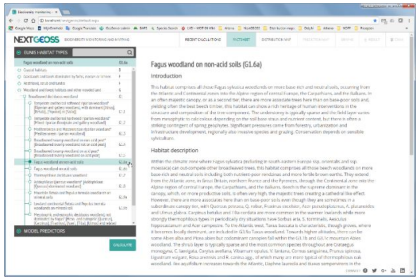
Researchers, Research & development institutions, international organizations, public and private stakeholders, decision-makers, Biodiversity, climate change and remote sensing communities will benefit from the NextGEOSS biodiversity community portal.

RS-enabled EBVs for European Habitat Mapping

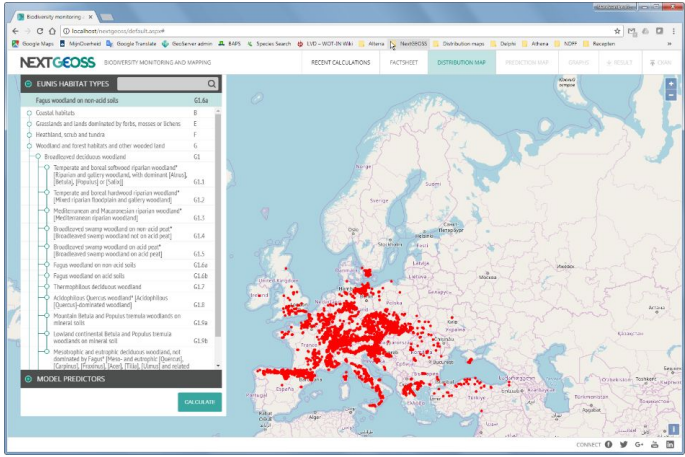
NEXTGEOSS
European Data Hub and Platform

Opening Screen
Web Application

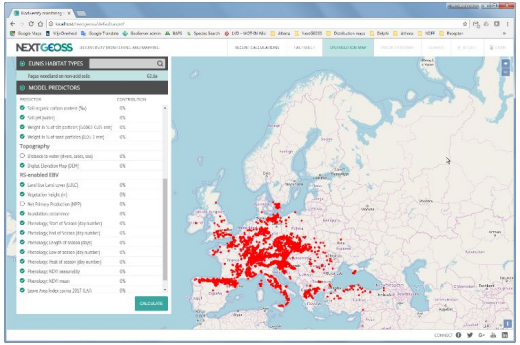
Habitat Selection



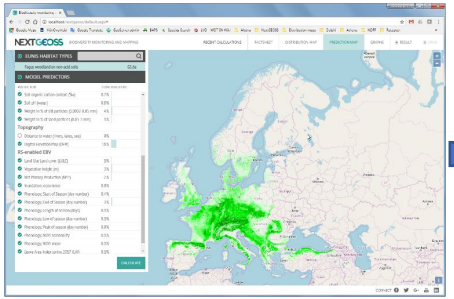
Distribution of the selected habitat type as input for the model



Select predictors (e.g. RS-EBVs) and run the model



Model output - habitat suitability map



Model output – predictor response curves

Model output – download result & registration in CKAN

Finish

https://www.synbiosys.alterra.nl/nextgeoss/

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Thank you!

REGISTER NOW!

WEDNESDAY 20th MAY 2020 - 1 PM CEST

https://nextgeoss.eu/webinar-may20/