European Direction in GCI Enhancements

D2.3

Use Cases Description and User Requirements Document – v2.0

Workpackage:	WP2	User requirements elicitation and functional analysis	
Task:	T2.1		
Author(s):	EDGE Team		
Authorized by	Joost van Bemmelen		
Doc Id:	EDGE-WP2-DEL-D2.3		
Reviewer	UTB		
Dissemination Level	Public		

Abstract:

This document describes high level user scenarios from the user communities' point of view, and corresponding requirements as first steps towards evolution of the GEOSS Platform, and the GEOSS Infrastructure as a whole. A first version of this document was delivered at Month 12 of the EDGE project. This second version, delivered at the end of the project, covers the whole project life, i.e. it includes all the use cases and requirements elicited during the project. The requirements described in this document represent an input to the functional analysis that leads to the definition of generic

scenarios (abstracting from the user community-specific use cases described in the present document) and corresponding system requirements (both described in *D2.4 - Functional and non-functional enhancements specification v2.0*).

The approach adopted for the elicitation of the scenarios highly relies on the communication with the GEO stakeholders and their direct involvement, to make sure that their actual needs and problems are well understood, and the best solutions are found and put into practice.

Document Log

Date	Author	Changes	Version	Status
25/05/2020	EDGE Team		2.0	Delivered

Executive Summary

This document describes high level user scenarios from the user communities' point of view, and corresponding requirements as first steps towards evolution of the GEOSS Platform, and the GEOSS Infrastructure as a whole. A first version of this document was delivered at Month 12 of the EDGE project. This second version, delivered at the end of the project, covers the whole project life, i.e. it includes all the use cases and requirements elicited during the project. The requirements described in this document represent an input to the functional analysis that leads to the definition of generic scenarios (abstracting from the user community-specific use cases described in the present document) and corresponding system requirements (both described in D2.4 - Functional and non-functional enhancements specification v2.0). These drive the enhancement of the GEOSS Platform and represent an input to GEOSS Evolve and to the GEOSS Infrastructure Development Foundational Task.

The approach adopted for the elicitation of the scenarios highly relies on the communication with the GEO stakeholders and their direct involvement, to make sure that their actual needs and problems are well understood, and the best solutions are found and put into practice.

Several different case studies are presented, each focusing on different dimensions of Earth and human society and showcasing the diverse contribution and community needs.

The actors in the use cases described in this document represent the various user communities from the various GEOSS thematic areas.

Main sources of the requirements are:

- User communities from the following thematic areas: Disaster Resilience Management (which is a GEO Priority Area, see 2.2), Water Resources Management, Biodiversity and Ecosystem Sustainability, Public Health Surveillance, Agriculture and Food Security, Sustainable Urban Development, Climate (another GEO Priority Area);
- GEO regional Hubs such as AmeriGEO, EuroGEO and AOGEO;
- Communities linked to the Sustainable Development Goals (another GEO Priority Area);
- Cross-thematic communities.

The requirements from the thematic communities mainly concern the need to search in a theme-specific domain through domain-specific keywords and receive in response at the same time resources from different and heterogenous sources. In some cases, specific search and visualization features are required. In other cases, discovery and access of processing services as well as their execution in a seamless and transparent way is required (e.g. in the case of the ESA Thematic Exploitation Platforms or the Copernicus Services). In some cases, specific search and visualization features, as well as access to trusted knowledge sources are required.

Requirements concerning the GEO Regional Hubs mainly regard the need to connect to their infrastructures, thus providing access to their resources to the wide GEOSS audience. In some cases, ad-hoc features such as the creation of search sub-domains within a given domain and accessibility from an ad-hoc portal are also required.

Specific search capabilities are required for the SDGs, as well as the capability to compute SDG indicators according to defined models. Comparison capabilities are also required, to be able to analytically compare SDG indicators from official sources (e.g. the UN Statistics Division) with indicator computed through defined models, provided by trusted sources.

Cross-thematic communities' requirements mainly regard ad-hoc portals with search and access capabilities as well as discovery, access and execution of processing services provided by trusted sources (e.g. DIAS platforms).

TABLE OF CONTENTS

1. Introduction

1.1 Purpose and Scope

This document describes high level user scenarios from the user communities' point of view, and corresponding requirements. A first version of this document was delivered at Month 12 of the EDGE project. This second version, delivered at the end of the project, covers the whole project life, i.e. it includes all the use cases and requirements elicited during the project. The requirements described in here represent an input to the functional analysis that leads to the definition of generic scenarios (abstracting from the user community-specific use cases described in the present document) and corresponding system requirements (both described in *D2.4 - Functional and non-functional enhancements specification v2.0*). These drive the enhancement of the GEOSS Platform and represent an input to GEOSS Evolve and to the GEOSS Infrastructure Development Foundational Task.

The approach adopted for the elicitation of the scenarios highly relies on the communication with the GEO stakeholders and their direct involvement, to make sure that their actual needs and problems are well understood, and the best solutions are found and put into practice.

1.2 Document Organisation

The document is organised as it follows:

- Section 1: Introduction: describes the purpose and scope of the document and its organization.
- Section 2: Rationale and context: it contextualizes the content of this document by providing background information and details on the operational landscape encompassing the system (the GEOSS Platform) that is being enhanced to support the implementation of the scenarios described in this document.
- Section 3: Approach and methodology: describes the approach adopted for the elicitation and the definition of the user scenarios. It also introduces briefly the end-to end validation and user assessment approach.
- Section 4: GEOSS user communities and overview of their requirements: introduces the main user communities whose needs are analysed and translated into scenarios (subject of this document) and provides a summary of their requirements.
- Section 5: Use cases: describes high level community-specific scenarios, involving the enhanced GEOSS Platform.
- Section 6: User requirements: describes the detailed, specific requirements deriving from the above-mentioned use cases.
- Section 7: Requirements traceability matrix: Traces the requirements to the use cases.
- Annex A. References: List the references used in the document.
- Annex B. Figures and Tables: Provides links to figures and tables in the document.
- Annex C. Terminology: explains the meaning of the acronyms and definitions used in the document.
- Annexes from D to K: Results from the surveys used to collect requirements from the various communities.

2. Rationale and Context

2.1 Background and operational context

At the end of its first 10-year period, GEO's key successes and shortcomings were assessed and reported in the Summative Evaluation of the GEOSS Implementation[1]. This report states that: *"The GEOSS Common Infrastructure (GCI) has greatly advanced Earth observation data interoperability; however, user expectations regarding data discoverability, access and quality assurance have not been met"*. The report recommends that: *"Access to the GEOSS Common Infrastructure (GCI) should be more user-friendly, and data discovery and accessibility should be improved, using successful Architecture Implementation Pilots (AIPs) as models".* The reason behind the identified shortcomings of the GCI in general and of the GEOSS Portal in particular, mostly resides in their "data-centric" (as opposed to "user-centric") nature, which alienates the users.

Evolution towards *user-centrality* is therefore required to stem user disaffection, in line with the GEO strategy for the period 2016-2025, which can be summarized as: *engage* all the user communities to better understand their needs, *deliver* solutions (in terms of Earth observation data, information, tools and services) in response to them, *advocate* the benefits of using GEOSS.

As already identified by the former GEO Infrastructure Implementation Board (IIB), the gap between the GEOSS providers (of data and technology) and the users shall be bridged by ***working very closely with user communities***, understanding their needs for information, data, indicators, etc., feeding this information into GEOSS and contributing to best practices in data sharing and management.

Evolution from data-centrality towards user centrality inevitably brings with it a need for evolution from a data-oriented platform towards a *knowledge-oriented* one.

The European Space Agency, as the implementing and operating organisation of the GEOSS Web Portal (GWP), recognised the need for improvement and submitted a proposal to the European Commission to implement the relevant enhancements of the GEOSS Web Portal.

The original proposal recognises three phases: the first phase, financed by ESA, implements short-term GWP enhancements and defines preliminarily the GWP system technical baseline; the second phase, co-funded by the European Commission and ESA, regards the revision of the technical baseline, the implementation, the transit to full operations and the initial operations of the enhanced GEOSS Platform; the third phase, also co-funded, regards the GWP routine operations and maintenance and might include further enhancements in response to user feedback.

The current document describes user scenarios and requirements analysed and implemented during the second phase, which evolves the GEOSS Web Portal and the GEO Discovery and Access Broker, as main components of the GEOSS Platform, in line with this vision, to better respond to the user needs, following a user-centric approach.

2.2 The GEO's global priorities

The GEO work plan recognizes the following Global priorities:

- The **UN 2030 Agenda for Sustainable Development:** *Earth observations* play a major role in achieving the SDGs. GEO is instrumental in integrating Earth observation data into the methodology of measuring and achieving SDG indicators.

[1] GEOSS (2005-2015) Summative Evaluation Report – July 2015

- **The Paris Agreement on Climate Change**: GEO makes available *Earth observations* in support of effective policy responses for climate change adaptation and mitigation, working with partners to enhance global observation systems in order to strengthen resilience and adaptive capacity to climate-related hazards.
- **The Sendai Framework for Disaster Risk Reduction**: *Earth observations* contribute to disaster preparedness and better mitigation and response. GEO supports disaster resilience by increasing coordination of Earth observations to forecast and prepare for disasters, to reduce damage and to better manage and recover from disasters.

These global priorities drive the specification and the prioritization of the enhancements of the GEOSS Platform deriving from the use cases and requirements described in this document.

3. Approach and methodology: user centrality

The elicitation of the users' needs and consequent specification of user scenarios, as well as the end-to-end validation and assessment of the developed solutions, is achieved through a user-centric approach, focussed on the direct involvement of the users in both activities on a frequently iterative basis. The purpose is to minimize requirement misunderstandings and to guarantee the ability to quickly adjust to changing requirements, within the time and budget limits.

3.1 Use cases definition approach

The use cases definition approach is depicted in Figure 1. As a first step, it is necessary to liaise with the identified users (see 4) to understand them, in terms of needs, problems, domain and working habits.

An analysis phase follows, focussed on brainstorming on the user needs, defining preliminary scenarios and (if needed because of unclear requirements) sketching mock-ups of the proposed solution, for easier user evaluation.

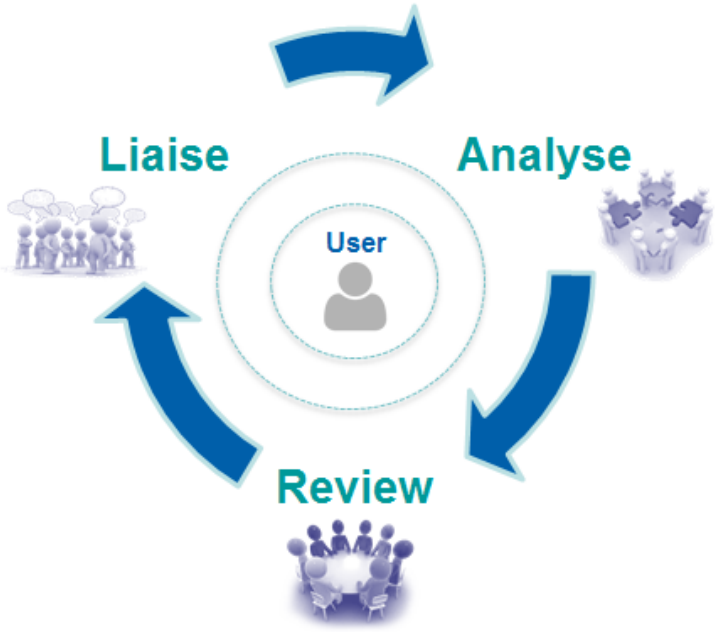


Figure 1: Use cases definition approach

Scenarios and mock-ups are then reviewed with the user and refined, until the needs of the users are correctly and comprehensively captured and their interest and satisfaction is met.

The user community-specific scenarios are then analysed to abstract generic scenarios and corresponding capabilities, to be implemented to respond to the user needs.

4. GEOSS user communities and overview of their requirements

GEOSS is opening to a wider spectrum of data providers and users, ranging from specialists and researchers to non-scientists, including decision makers from the public and the private sector. There is also increased interest from citizens. The GEOSS Community has evolved by including stakeholders from non-EO domains and new user categories.

The actors in the use cases described in this document represent the various user communities from the various GEOSS thematic areas.

Several different case studies are presented, each focusing on different dimensions of Earth and human society and showcasing the diverse contribution and community needs.

The actors in the use cases described in this document represent the various user communities from the various GEOSS thematic areas.

Main sources of the requirements are:

- User communities from the following thematic areas: Disaster Resilience Management (which is a GEO Priority Area, see 2.2), Water Resources Management, Biodiversity and Ecosystem Sustainability, Public Health Surveillance, Agriculture and Food Security, Sustainable Urban Development, Climate (another GEO Priority Area);
- GEO regional Hubs such as AmeriGEO, EuroGEO and AOGEO;
- Communities linked to the Sustainable Development Goals (another GEO Priority Area);
- Cross-thematic communities.

The requirements from the thematic communities mainly concern the need to search in a theme-specific domain through domain-specific keywords and receive in response at the same time resources from different and heterogenous sources. In some cases, specific search and visualization features are required. In other cases, discovery and access of processing services as well as their execution in a seamless and transparent way is required (e.g. in the case of the ESA Thematic Exploitation Platforms or the Copernicus Services). In some cases, specific search and visualization features, as well as access to trusted knowledge sources are required.

Requirements concerning the GEO Regional Hubs mainly regard the need to connect to their infrastructures, thus providing access to their resources to the wide GEOSS audience. In some cases ad-hoc features such as the creation of search sub-domains within a given domain and accessibility from an ad-hoc portal are also required.

Specific search capabilities are required for the SDGs, as well as the capability to compute SDG indicators according to defined models. Comparison capabilities are also required, to be able to analytically compare SDG indicators from official sources (e.g. the UN Statistics Division) with indicator computed through defined models, provided by trusted sources.

Cross-thematic communities' requirements mainly regard ad-hoc portals with search and access capabilities as well as discovery, access and execution of processing services provided by trusted sources (e.g. DIAS platforms).

Detailed use cases are reported in Section 5, detailed requirements are reported in Section 6.

5. Use cases

The following sections report the use case descriptions resulting at the end of the use cases definition process presented in 3.1. When necessary for easier communication with the stakeholders, mock-ups have been developed in the process: an excerpt of them is reported, along with a reference to the full version.

5.1 Introduction

This section describes the use cases that drive the development of the GEOSS Portal Enhancements in the EDGE Project. They are grouped by thematic area/context and have the following attributes:

- 'Identifier': a code following the naming convention UC-<Theme>-<Counter>, where:
  - <Theme> is a three-letter identifier of the thematic area/context to which the use case refers. It could be one of the following: DRM (Disaster Resilience Management), CLI (Climate), WRM (Water Resources Management), BES (Biodiversity and Ecosystem Sustainability), AFS (Agriculture and Food Security), PHS (Public Health Surveillance), SUD (Sustainable Urban Development), GRH (GEO Regional Hub), SDG (Sustainable Development Goal), CRT (Cross-Thematic).
  - <Counter> is a two-digit counter that uniquely identifies the use case.
- 'Title': a very concise textual description of the use case;
- 'Background and Rationale': a description of the context in which the use case finds its application and of the rationale at its basis.
- 'Use Case': full specification of the use case (actors involved, brief description, data domain, use case flow, etc. - this will be more or less detailed according to the maturity of the use case itself). Excerpts of the mock-ups could be used here for better conveying the information.
- 'Case Study Survey': a pointer to the survey used to interview the community (when available, since in some cases the requirements were elicited via other means, such as phone calls, e-mails, face-to-face meetings during networking events, etc.) and its results (provided in annexes);
- 'Mock-up': a pointer to the full mock-ups produced for discussing the requirements with the community. All the mock-ups are stored in the project document management system and available from the EDGE team on request.
- 'Mock-up evaluation': a description of any modification requested by the community wrt. the mock-ups;
- 'Related user requirements': the list of the identifiers of the user requirements (fully described in Section 6) that derive from the use case.

5.2 Disaster resilience use cases

5.2.1 UC-DRM-01 - Earthquake search and visualization

Identifier

UC-DRM-01

Title

Earthquake search and visualization

Background and Rationale

In response to one of the GEO Global Priorities, the Sendai Framework for Disaster Risk Reduction, GEOSS wants to contribute to disaster preparedness and better mitigation and response.

Use Case

Actor - The actor in this use case is any user willing to visualize occurred earthquakes information, such as localization, magnitude and depth.

Brief description - This actor shall be enabled to perform a search for earthquakes based on magnitude range and depth range and visualize them on a map.

Data domain - The search domain shall include earthquake data from the available sources, in particular the USGS Earthquake Events.

Flow - The user performs a search for earthquakes (e.g. latest earthquakes) and has the possibility to filter the results based on geographical area, time range, magnitude range and depth range. Earthquakes are visualized on a map intuitively.

See an excerpt of the mock-up produced in Figure 2.

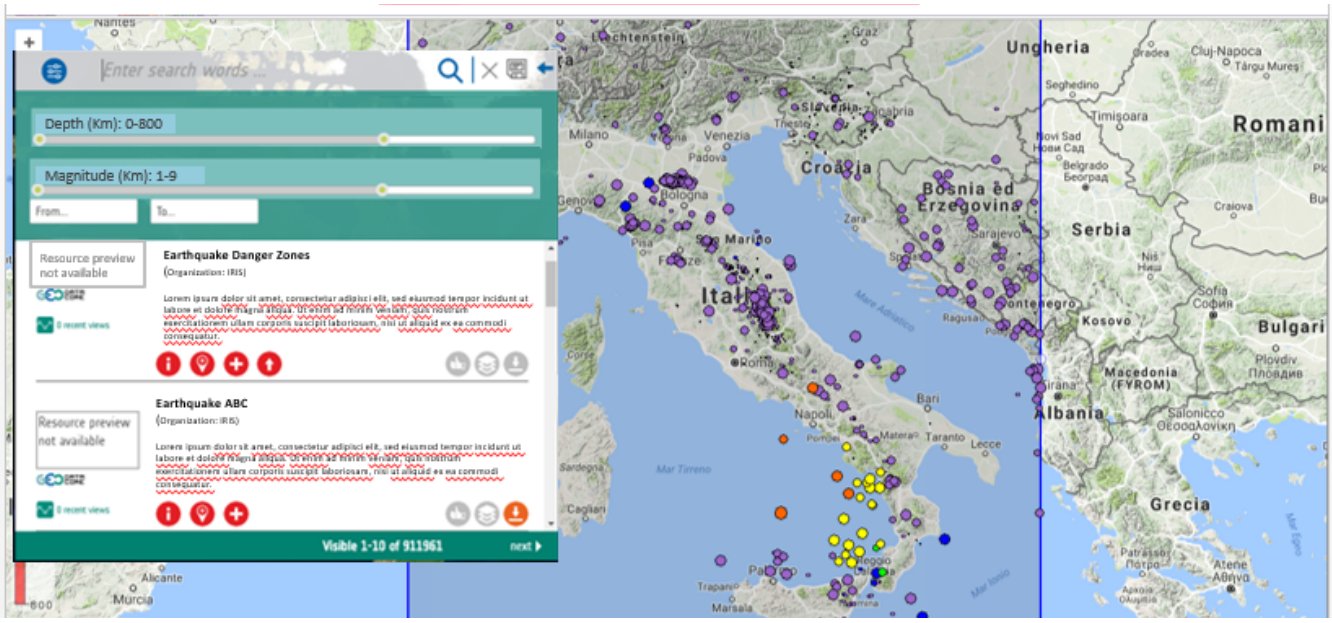


Figure 2: Earthquake search and visualization

Case Study Survey

N.A.

Mock-up

The full mock-up is stored in the project document management system and available from the EDGE team on request.

Mock-up evaluation

The functionalities shown via the mock-ups during the “GCI for Disasters” virtual workshop were well received by the audience and inserted in the development pipeline. A solution is available. See video at https://www.youtube.com/watch?v=Z7W9KP8RfkI

Related User Requirements

UR-DRM-001 – Earthquake search

UR-DRM-002 – Earthquake search results

UR-DRM-003 – Sorting earthquake search results

UR-DRM-004 – Selecting the earthquake magnitude type

5.2.2 UC-DRM-02 – Access to data from the Copernicus Emergency Management Service

Identifier

UC-DRM-02

Title

Access to data from the Copernicus Emergency Management Service

Background and Rationale

The Copernicus Emergency Management Service (Copernicus EMS) provides information for emergency response in relation to different types of disasters, including meteorological hazards, geophysical hazards, deliberate and accidental man-made disasters and other humanitarian disasters as well as prevention, preparedness, response and recovery activities. The GEOSS Platform can support Disasters Resilience Management by providing access to CEMS data and information.

Use Case

Actor - The actor in this use case is any user willing to access emergency information regarding different type of disaster events, such as specific earthquakes, forest fires, hurricanes, floods, etc.

Brief description - This actor shall be enabled to search for emergency data on a given disaster event

Data domain - The search domain shall include data and information made available by the Copernicus Emergency Management Service, which are provided by the Joint Research Center data catalogue.

Flow - The user performs a search for a specific disaster event, e.g. a specific earthquake and finds the corresponding information as provided by the CEMS and a link to the CEMS webpage corresponding to the service activation in question.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-DRM-005 – Accessing data and information from the Copernicus Emergency Management Service

5.2.3 UC-DRM-03 – Access to GEOHazards TEP

Identifier

UC-DRM-03

Title

Access to GEOHazards TEP

Background and Rationale

The Geohazards Exploitation Platform or GEP aims to support the exploitation of satellite EO for geohazards. It follows the Supersites Exploitation Platform (SSEP), originally initiated in the context of the Geohazard Supersites & Natural Laboratories initiative (GSNL). The geohazards platform has been expanded to address broader objectives of the geohazards community. In particular it is a contribution to the CEOS WG Disasters to support its Seismic Hazards Pilot and terrain deformation applications of its Volcano Pilot. The geohazards platform and SSEP are sourced with elements – data, tools, and processing including INSAR – relevant to the Geohazards theme and related exploitation scenarios.

One of the core user communities for the GEP is the group of users and practitioners working on the CEOS Seismic Hazards Pilot, a three-year demonstration project of the Committee on Earth Observation Satellites to showcase how satellite EO can be applied to seismic hazard research.

Use Case

Actor - The actor in this use case is any user willing to exploit satellite Earth Observations for GEOhazards.

Brief description - This actor shall be enabled to search for geohazards related data or information.

Data domain - The search domain shall include products, data, information and services made available by the GeoHazards TEP

Flow - The user searchers for geohazards data and finds among other relevant information:

- the Geohazards TEP access point (URL);
- preregistered (or systematically registered) products outputs of the geohazards TEP;
- Geohazards TEP services that can be executed through the GEOSS Platfrom to generate the products of interest.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-DRM-006 – Discovery of ESA GEOHazards TEP

UR-DRM-007 – Discovery and access of data and information produced by the Geohazards TEP

UR-DRM-008 – Geohazards TEP service execution and products generation

5.3 Climate use cases

5.3.1 UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.

Identifier

UC-CLI-01

Title

Searching climate resources in GEOSS by the GCOS Essential Climate Variables.

Background and Rationale

An Essential Climate Variable (ECV) is a physical, chemical or biological variable or group of linked variables that critically contributes to the characterization of Earth's climate.

The Essential Climate Variables are important to understand the evolution of climate, to guide mitigation measures, to assess risks and enable attribution of climatic events to causes, to underpin climate services.

The vision of the Global Climate Observing System (GCOS) is for all users to have access to the climate observations, data records and information they need to address pressing climate-related concerns. GCOS users include individuals, national and international organizations, institutions and agencies. GCOS works with partners to ensure the sustained provision of reliable physical, chemical and biological observations and data records for the total climate system – across the atmospheric, oceanic and terrestrial domains, including hydrological and carbon cycles and the cryosphere.

GCOS ECVs are grouped by **measurement domain** and **area** covered as shown in Figure 3. (See the GCOS Implementation Plan 2016 [2] for more details).

	Atmosphere	Terrestrial	Ocean
Energy and temperature	Surface radiation budget, Earth radiation budget, surface temperature, upper-air temperature, surface and upper-air sind speed	Albedo, *latent and sensible heat* fluxes, land surface temperature	Ocean surface heat flux, sea surface temperature, subsurface temperature
Other physical properties	Surface wind, upper-air wind, pressure, lightning, aerosol properties		Surface currents, subsurface currents, ocean surface stress, sea state, transient traces
Carbon cycle and other GHGs	Carbon dioxide, methane, other long-lived GHG, ozone, precursors for aerosol and ozone	Soil carbon, above-ground biomass	Inorganic carbon, nitrous oxide
Hydrosphere	Precipitation, cloud properties, water vapour (surface), water vapour (upper-air), surface temperature,	Soil moisture, river discharge, lakes, groundwater,	Sea surface salinity, subsurface salinity, sea level, sea surface temperature
Snow and ice		Glaciers, ice sheets and ice shelves, permafrost, snow	Sea Ice
Biosphere		Land cover, LAI, FAPAR, fire	Plankton, oxygen, nutrients, ocean colour, marine habitat properties
Human use of natural resources		Water use, GHG fluxes	Marine habitat properties

Figure 3: ECVs grouped by measurement domain and area

Observations across all the measurement domains are needed to capture specific phenomena or issues.

Use Case

Actor - The actor in this use case is any user willing to have access to the climate observations, data records and information necessary to address pressing climate-related concerns.

Brief description - This actor shall be enabled to perform a search for climate data using as search criteria the ECV grouped by measurement domain and the focus area (see Figure 3).

Data domain - The search domain shall include climate-datasets from the various heterogeneous sources providing it, including UNEP/GRID Geneva, ECMWF, JRC, Copernicus Climate Change Service and the Copernicus Atmosphere Monitoring Service.

Flow - The user selects one or more ECV of interest; he/she could also select a complete measurement domain, and so all the corresponding ECVs. See as an example, the excerpt of the produced mock-up in Figure 4.

Figure 4: Search by Essential Climate Variables, grouped by measurement domain

Alternatively, or in addition to that, he/she could select a focus area of interest, which would limit the selection to only the ECVs pertaining to that focus area (see Figure 5).

Figure 5: Search by Focus Area

Once the search criteria are defined, the user will start the query and wait for the result list. He/she will then be able to scroll the list, filter the results and browse those of interest. For full mock-ups refer to the *Mock-up* section here below.

Case Study Survey

N.A.

Mock-up

The full mock-up is stored in the project document management system and available from the EDGE team on request.

Mock-up evaluation

As a result of the mock-up evaluation performed during the "GCI for Climate" virtual workshop, it was brought to attention that the possibility to also search based on products as "subcategories" of the Variables, could be beneficial. See "ANNEX A: ECV product requirement tables" of the GCOS Implementation Plan 2016 [2], which contains the tables that list the ECV products corresponding to

each ECV. Given the hierarchical nature of the desired search criteria, a graph-based navigation could be envisaged.

Related User Requirements

UR-CLI-001 – Climate search domain

UR-CLI-002 – Search by GCOS ECV

UR-CLI-003 – Search by GCOS Measurement Domain

UR-CLI-004 – Search by GCOS focus “area”

UR-CLI-005 - Search by GCOS ECV products

UR-CLI-006 – Changing automatic ECV selections

UR-CLI-007 – Changing automatic ECV products selections

UR-CLI-008 – Graph navigation of the climate concepts

5.3.2 UC-CLI-02 – Access to data from the Copernicus Climate Change Service

Identifier

UC-CLI-02

Title

Access to data from the Copernicus Climate Change Service (C3S)

Background and Rationale

The Copernicus Climate Change Service provides access to information for monitoring and predicting climate change to support adaptation and mitigation. It benefits from a sustained network of in situ and satellite-based observations, re-analysis of the Earth climate and modelling scenarios, based on a variety of climate projections.

The service provides access to several climate indicators (e.g. temperature increase, sea level rise, ice sheet melting, warming up of the ocean) and climate indices (e.g. based on records of temperature, precipitation, drought event) for both the identified climate drivers and the expected climate impacts.

The GEOSS Platform can support the GEO Priority Climate Change by providing access to C3S data and information.

Use Case

Actor - The actor in this use case is any user willing to access information for monitoring and predicting climate change.

Brief description - This actor shall be enabled to search for climate change data, indicators, etc.

Data domain - The search domain shall include data and information made available by the Copernicus Climate Change Service, which are provided by the ECMWF.

Flow - The user performs a search for a climate change data and finds the corresponding information as provided by the C3S and a link to the C3S webpage corresponding to the data or information in question.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-CLI-009 – Accessing data and information from the Copernicus Climate Change Service

5.3.3 UC-CLI-03 – Retrieval of publications from Zenodo regarding Coastline changes on Koh Tao island

Identifier

UC-CLI-03

Title

Retrieval of publications from Zenodo regarding Coastline changes on Koh Tao island

Background and Rationale

Coastal tourism may degrade the environment if poorly managed. A research published on Zenodo investigated the shoreline change at Koa Toa Island, one of the most famous tourist destinations. Aerial photographs and satellite images from three different periods were collected and analyzed. The results showed that the noticeable shoreline change before and after the tourism on the island had expanded. Between 1995 and 2002 when the tourism on Koh Toa Island was not intensive, sediment deposition occurred along most of the coastline. However, after the tourism had grown during 2002 to 2015, the coast evidently experienced less deposition and more erosion. The erosion resulted from less land-based sediment being provided to the littoral system. If the coastline of Koh Toa Island is not carefully sustained, the tourism will disappear along with the beautiful beach.

Zenodo is a general-purpose open-access repository developed under the European OpenAIRE program and operated by CERN. It allows researchers to deposit data sets, research software, reports, and any other research related digital artifacts. For each submission, a persistent digital object identifier (DOI) is minted, which makes the stored items easily citeable.

This is an example of the need for users to access specific knowledge bases they trust.

Use Case

Actor - The actor in this use case is any user willing to access information regarding Coastline changes on Koh Tao island.

Brief description - This actor shall be enabled to search for coastline changes on Koh Tao island and retrieve relevant publications.

Data domain - The search domain shall include information and publications made available Zenodo.

Flow - The user performs a search for a coastline changes on Koh Tao Island and finds the corresponding information and publications as provided by Zenod, as well as other data and knowledge sources.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-CLI-010 – Accessing climate information on coastline changes

UR-CLI-011 – Retrieving climate information from different knowledge sources

5.3.4 UC-CLI-04 – Making visible to GEOSS users own knowledge regarding coastline change

Identifier

UC-CLI-04

Title

Making visible to GEOSS users own knowledge regarding coastline change.

Background and Rationale

Researchers may want to make available to GEOSS users their knowledge and publications. This use case is an example of how a research provider, such as Zenodo, can easily connect their resources to GEOSS.

Use Case

Actor - Actors in this use case are research providers/publishers who want to make their knowledge and publications available to GEOSS users.

Brief description - This actor shall be enabled to register their resources in GEOSS, and these shall become discoverable and accessible.

Data domain - The search domain shall include information and publications made available by Zenodo.

Flow - The stakeholder is enabled to connect own knowledge sources to GEOSS in a mediated way.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-CLI-012 – Registering own knowledge sources regarding coastline changes to GEOSS

5.3.5 UC-CLI-05 – Accessing Climate risk information for Central America from the GEO regional node AmeriGEO

Identifier

UC-CLI-05 - Accessing Climate risk information for Central America from the GEO regional node AmeriGEO

Title

Accessing Climate risk information for Central America from the GEO regional node AmeriGEO

Background and Rationale

The AmeriGEOSS initiative is a framework that seeks to promote collaboration and coordination among the GEO members in the American continent, "to realize a future wherein decisions and actions, for the benefit of the region, are informed by coordinated, comprehensive and sustained Earth observations and information". The proposed initiative focuses its efforts in the four Societal Benefit Areas (SBA's) selected and prioritized by the Americas Caucus country-members, which are:

- Agriculture, associated with climate variability, climate change, and food security.
- Disaster risk reduction, particularly for data exchange associated with early warnings and for the generation of regional products of early warnings.
- Water, associated with the management approach of water resources and data management.
- Biodiversity and Ecosystem Monitoring including biodiversity observation in coastal, marine, and continental habitats, in the context of capacity building for better monitoring, management, and maintenance of ecosystems and biodiversity they support; also to predict future changes.

GEOSS users shall be able to access AmeriGEO and all the other regional GEO through the GEOSS Platform.

Use Case

Actor - The actor in this use case is any user willing to access information regarding climate risk in Central America.

Brief description - This actor shall be enabled to search for climate change data, indicators, etc. in the Central America region.

Data domain - The search domain shall include data and information made available by AmeriGEO.

Flow - The user performs a search for climate change data in Central America and finds the corresponding information as provided by AmeriGEO.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-CLI-013 – Accessing climate data from AmeriGEO

5.3.6 UC-CLI-06 – Access to ESA Coastal TEP

Identifier

UC-CLI-06

Title

Access to ESA Coastal TEP

Background and Rationale

Through the provision of access to large volumes of EO and in-situ data, computing resources, algorithm development space and the fundamental processing software required to extract temporal and spatial information from Big Data, the Coastal TEP provides a dedicated service for the observation and monitoring of our coastal environment and society. Integration of satellite EO data, in-situ sensor data and model predictions provide an effective means of analysing and understanding the many linked coastal processes across a wide range of space and time scales.

Use Case

Actor - The actor in this use case is any user willing to exploit satellite Earth Observations for coastal environment monitoring.

Brief description - This actor shall be enabled to search for coastal monitoring related data or information.

Data domain - The search domain shall include products, data, information and services made available by the Coastal TEP

Flow - The user searchers for coastal data and finds among other relevant information:

- the Coastal TEP access point (URL);
- preregistered (or systematically registered) products outputs of the Coastal TEP;
- Geohazards TEP services that can be executed through the GEOSS Platform to generate the products of interest.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-CLI-014 – Discovery of ESA Coastal TEP

UR-CLI-015 – Discovery and access of data and information produced by the Coastal TEP

UR-CLI-016 – Coastal TEP service execution and products generation

5.3.7 UC-CLI-07 – Access to ESA Polar TEP

Identifier

UC-CLI-07

Title

Access to ESA Polar TEP

Background and Rationale

Earth Observation is especially import in the polar regions at a time when climate change is having a profound impact and excitement about new economic opportunities is driving increased attention and traffic, resulting in concerns about the state of the region's delicate ecosystems. Developing tools to model, understand and monitor these changes is vitally important in order to better predict and mitigate the resulting global economic and environmental consequences. Polar TEP provides new ways to exploit EO data for research scientists, industry, operational service providers, regional authorities and in support of policy development.

Use Case

Actor - The actor in this use case is any user willing to exploit satellite Earth Observations for understanding and monitoring polar changes.

Brief description - This actor shall be enabled to search for polar changes information, data and models .

Data domain - The search domain shall include products, data, information and services made available by the Polar TEP

Flow - The user searchers for Polar changes information and finds among other relevant information:

- the Polar TEP access point (URL);
- preregistered (or systematically registered) products outputs of the Polar TEP;
- Polar TEP services that can be executed through the GEOSS Platform to generate the products of interest.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-CLI-017 – Discovery of ESA Polar TEP

UR-CLI-018 – Discovery and access of data and information produced by the Polar TEP

UR-CLI-019 – Polar TEP service execution and products generation

5.4 Water use cases

5.4.1 UC-WRM-01 - AtlantOs: Optimising and Enhancing the Integrated Atlantic Ocean Observing Systems

Identifier

UC-WRM-01

Title

AtlantOS: Optimising and Enhancing the Integrated Atlantic Ocean Observing Systems

Background and Rationale

Atlantic Ocean observation is currently undertaken through loosely-coordinated, in-situ observing networks, satellite observations and data management arrangements of heterogeneous international, national and regional design to support science and a wide range of information products. Thus there is an opportunity to develop the systems towards a fully integrated Atlantic Ocean Observing System (AtlantOS) consistent with the recently developed 'Framework of Ocean Observing' (FOO).

The vision of AtlantOS is to improve and innovate Atlantic observing by using the Framework of Ocean Observing to obtain an international, more sustainable, more efficient, more integrated, and fit-for-purpose system. Among others, Atlantos has the objective to facilitate free and open access to ocean data and information, objective that can be supported by the GEOSS Platform.

Use Case

Actor - The actor in this use case is any user in need of Atlantic Ocean observation data or information.

Brief description - This actor shall be enabled to access a dedicated portal offering ad-hoc functionalities for discovering, accessing and visualizing Atlantic Ocean observation data or information.

Data domain - The search domain shall include in situ and satellite data concerning the entire Atlantic Ocean - North and South. Specific providers are detailed in the requirements section (see 6.4).

Flow - The user accesses the AtlantOS Portal and performs a search, within the above mentioned data domain, by using capabilities that mirror the ones offered by the GEOSS Portal (general purpose Portal). The user can then filter, browse through, select and access or visualize the search results by using capabilities that, again, mirror the ones offered by the GEOSS Portal.

Case Study Survey

The result of the survey regarding this case study are provided in Annex D.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-WRM-001 – A dedicated portal for the AtlantOs

UR-WRM-002 – the AtlantOs search keywords

UR-WRM-003 – The AtlantOs Region Of Interest

UR-WRM-004 – The AtlantOs search domain

5.4.2 UC-WRM-02 - GEO-GNOME: GEO Global Network for Observation and Information in Mountain Environments

Identifier

UC-WRM-02

Title

GEO-GNOME: GEO Global Network for Observation and Information in Mountain Environments

Background and Rationale

GEO-GNOME collects information on existing datasets on mountain environments and ecosystems and makes them available through GEOSS thus contributing to the GEOSS Data CORE. The GEO-GNOME community needs free and open access to mountain environments data and information, objective that can be supported by the GEOSS Platform.

Use Case

Actor - The actor in this use case is any user who wants to explore datasets on mountain environments and ecosystems.

Brief description - This actor shall be enabled to access a dedicated portal offering ad-hoc functionalities for discovering, accessing and visualizing data on mountain environments and ecosystems.

Data domain - The search domain shall include in situ data, satellite data and relevant information concerning the mountains of the world. Specific providers are detailed in the requirements section (see 6.4).

Flow - The user accesses the GEO-GNOME Portal and performs a search, within the above mentioned data domain, by using capabilities that mirror the ones offered by the GEOSS Portal (general purpose Portal) and some more specific ones (e.g. predefined mountains extension layer to help users to select the Region of Interest). The user can then filter, browse through, select and access or visualize the search results by using capabilities that, again, mirror the ones offered by the GEOSS Portal.

Case Study Survey

The result of the survey regarding this case study are provided in Annex E.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-WRM-005 – A dedicated portal for the GEO-GNOME

UR-WRM-006 – The GEO-GNOME search keywords

UR-WRM-007 – The GEO-GNOME Region Of Interest

UR-WRM-008 – The GEO-GNOME search domain

5.4.3 UC-WRM-03 – GTN-H: The Global Terrestrial Network for Hydrology

Identifier

UC-WRM-03

Title

GTN-H: The Global Terrestrial Network for Hydrology

Background and Rationale

GTN-H links existing networks and systems for integrated observations of the global water cycle.

The GTN-H community needs to discover, access, use and share hydrological data and products. The GEOSS Platform can help in this.

Use Case

Actor - The actor in this use case is a hydrologist who needs to find and explore hydrological data.

Brief description - This actor shall be enabled to access a dedicated portal offering ad-hoc functionalities for discovering, accessing and visualizing hydrological data.

Data domain - The search domain shall include in situ data, satellite data and relevant information concerning hydrological issues. Specific providers are detailed in the requirements section (see 6.4).

Flow - The user accesses the GTN-H Portal and performs a search, within the above mentioned data domain, by using capabilities that mirror the ones offered by the GEOSS Portal (general purpose Portal). The user can then filter, browse through, select and access or visualize the search results by using capabilities that, again, mirror the ones offered by the GEOSS Portal.

Case Study Survey

The result of the survey regarding this case study are provided in Annex G.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-WRM-009 – A dedicated portal for the GTN-H

UR-WRM-010 – The GTN-H search keywords

UR-WRM-011 – The GTN-H search domain

5.4.4 UC-WRM-04 – Access to data from the Copernicus Marine Environment Monitoring Service

Identifier

UC-WRM-04

Title

Access to data from the Copernicus Marine Environment Monitoring Service (CMEMS)

Background and Rationale

The Copernicus Marine Environment Monitoring Service (CMEMS) provides regular and systematic reference information on the physical state, variability and dynamics of the ocean and marine ecosystems for the global ocean and the European regional seas.

The observations and forecasts produced by the service support all marine applications, including marine safety, marine resources, coastal and marine environment, weather, seasonal forecasting and climate. The GEOSS Portal can support these applications too by connecting to the Service.

Use Case

Actor - The actor in this use case is any user willing to access marine related information for the above mentioned applications.

Brief description - This actor shall be enabled to search and access relevant information regarding the marine environment for monitoring purposes.

Data domain - The search domain shall include data and information made available by the Copernicus Marine Environment Monitoring Service.

Flow - The user performs a search for marine environment data and finds the corresponding information as provided by the CMEMS and links to the CMEMS webpages corresponding to the data or information in question.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-WRM-012 – Accessing data and information from the Copernicus Marine Environment Monitoring Service

5.4.5 UC-WRM-05 – Access to data from the Copernicus Land Monitoring Service

Identifier

UC-WRM-05

Title

Access to data from the Copernicus Land Monitoring Service (CLMS)

Background and Rationale

The Copernicus Land Monitoring Service (CLMS) provides geographical information on land cover and on variables related, for instance, the vegetation state or the water cycle.

It supports applications in a variety of domains such as spatial planning, forest management, water management, agriculture and food security.

CLMS consists of three main components:

- The Global component is coordinated by the European Commission DG Joint Research Centre (JRC). It produces data across a wide range of biophysical variables at a global scale (i.e. worldwide), which describe the state of vegetation (e.g. leaf area index, fraction of green vegetation cover, vegetation condition index), the energy budget (e.g. albedo, land surface temperature, top of canopy reflectance) and the water cycle (e.g. soil water index, water bodies).

- The Pan-European component is coordinated by the European Environment Agency (EEA) and will produce 5 high resolution data sets describing the main land cover types: artificial surfaces (e.g. roads and paved areas), forest areas, agricultural areas (grasslands), wetlands, and small water bodies. The pan-European component is also updating the Corine Land Cover dataset to the reference year 2012.

- The Local component is coordinated by the European Environment Agency (EEA) and aims to provide specific and more detailed information that is complementary to the information obtained through the Pan-European component. It focuses on "hotspots" which are prone to specific environmental challenges. It provides detailed land cover and land used information (over major European cities, which are the first type of "hotspots"). This is the so-called Urban Atlas. Besides an update of the Urban Atlas, the next local component will address biodiversity in areas around rivers (riparian areas).

By providing access to data and information from all of the three components of the CLMS, the GEOSS Platform supports land monitoring applications.

Use Case

Actor - The actor in this use case is any user willing to access data and information relevant for land monitoring (see above).

Brief description - This actor shall be enabled to search and access data and information relevant for land monitoring.

Data domain - The search domain shall include data and information made available by all of the three components of the CLMS, namely the Global, the pan-European and the Local ones.

Flow - The user performs a search for land monitoring data and finds the corresponding information as provided by the CLMS and links to the CLMS webpages corresponding to the data or information in question.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-WRM-013 – Accessing data and information from the Copernicus Land Monitoring Service

5.4.6 UC-WRM-06 – GEOSS for the Space4Water

Identifier

UC-WRM-06

Title

GEOSS for the Space4Water

Background and Rationale

Risultati di ricerca

The Space4Water Portal is a multi-stakeholder platform for interdisciplinary knowledge exchange on space technologies and water-related topics. It serves stakeholders of both the space technologies sector and the water sector and aims at strengthening the links between the various actors and communities.

The Space4Water enable all stakeholders involved in the space and water communities to access data and knowledge, to be creative and to realize their full potential in contributing to a world in which the availability and sustainable management of water and sanitation for all has become a reality.

Use Case

Actor – The typical actor in this use case is a user of the Space4Water portal.

Brief description – The actor accesses the Space4Water portal and performs a search for satellite data through GEOSS.

Data domain – The GEOSS resources.

Flow – The user accesses the Space4Water Portal and performs a search for EO resources by exploiting the search, filtering and browsing capabilities offered by the GEOSS Platform.

Case Study Survey

N.A.

Mock-up

N.A.

Related Requirements

UR-WRM-014 – Searching for GEOSS data via the Space4Water Portal

UR-WRM-015 – Browsing through GEOSS data via the Space4Water Portal

5.4.7 UC-WRM-07 – Access to ESA Hydrology TEP

Identifier

UC-WRM-07

Title

Access to ESA Hydrology TEP

Background and Rationale

The Thematic Exploitation Platform (TEP) for Hydrology is a heterogeneous community of scientific users, river basin organisations and service providers. The aim of this community is to exchange data, services and knowledge through a common collaboration framework.

Use Case

Actor - The actor in this use case is any user willing to exploit satellite Earth Observations for water resources management.

Brief description - This actor shall be enabled to search for hydrology information, data and models.

Data domain - The search domain shall include products, data, information and services made available by the Hydrology TEP

Flow - The user searches for information and finds among other relevant information:

- the Hydrology TEP access point (URL);
- preregistered (or systematically registered) products outputs of the Hydrology TEP;
- Hydrology TEP services that can be executed through the GEOSS Platform to generate the products of interest.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-WRM-016 – Discovery of ESA Hydrology TEP

UR-WRM-017 – Discovery and access of data and information produced by the Hydrology TEP

UR-WRM-018 – Hydrology TEP service execution and products generation

5.5 Biodiversity and ecosystems sustainability use cases

5.5.1 UC-BES-01 - The ECOPotential Knowledge Generator

Identifier

UC-BES-01

Title

The ECOPotential Knowledge Generator

Background and Rationale

Terrestrial and marine ecosystems provide essential goods and services to human societies. In the last decades, however, anthropogenic pressure has caused serious threat to ecosystem integrity, functions and processes. Knowledge-based conservation, management and restoration policies are thus urgently needed, in order to improve ecosystem benefits in face of increasing pressures. Fundamental to all these is effective monitoring and modelling of the state and trends in ecosystem conditions and services.

GEOSS can leverage the efforts and workflows developed by the ECOPOTENTIAL Project in this respect to provide GEOSS users with knowledge production tools.

The ECOPOTENTIAL project defines the following concepts:

- **Ecosystem** (arid/Semiarid, Coastal/Marine, Mountains);
- **Protected Area**: ECOPOTENTIAL focuses its activities and pilot actions on a targeted set of internationally recognised Protected Areas in Europe, European Territories and beyond. These Protected Areas include mountain, arid and semi-arid, and coastal and marine ecosystems, blending Earth Observations from remote sensing and field measurements, data analysis and modelling of current and future ecosystem conditions and services.
- **Storylines:** narratives that contextualize the below defined workflows and link real-life issues which have broad relevance to Protected Areas included in the ECOPOTENTIAL project. The storylines specify the needs for Earth Observation data and in-situ data for ecosystem modelling, ecosystem services, cross-scale topics, demands for future protections, policy and capacity building. Each storyline is focused within at least one Protected Area and it puts the basis for further operational work in the field, adding specifics, defining a work plan, assigning tasks, and allocating resources (person-months) among partners. Storylines are iterative processes whose flow of activity and practical implementation evolves with the increase of knowledge and the demands by stakeholders.
- **Workflow:** The specific model and processor used for deriving knowledge from data.

These concepts are linked by many-to-many relationships as shown in the graph in Figure 6.

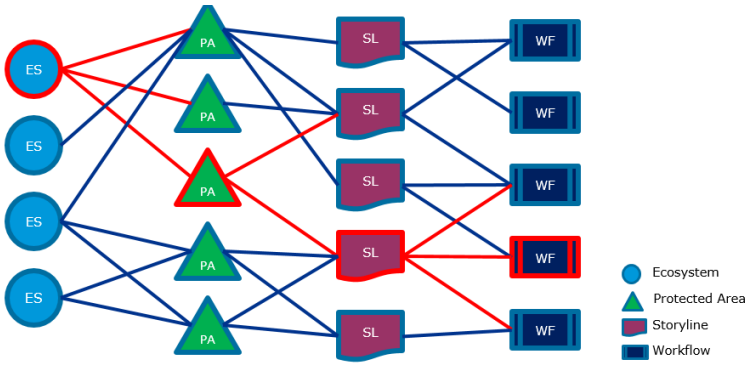


Figure 6: ECOPOTENTIAL concepts inter-relations

Use Case

Actor – The typical actor in this use case is a user interested in monitoring the state and trends in ecosystems conditions.

Brief description – The actor searches for, selects and runs one of the workflows developed by the ECOPOTENTIAL project for monitoring ecosystems.

Data domain – the GEOSS resources and the ECOPOTENTIAL workflows

Flow – The user browses the defined ecosystems and is enabled to select one of them, localizes on the map the corresponding Protecting Areas (see a mock-up excerpt in Figure 7) and browses them (Figure 8).

Figure 7: Browsing ecosystems

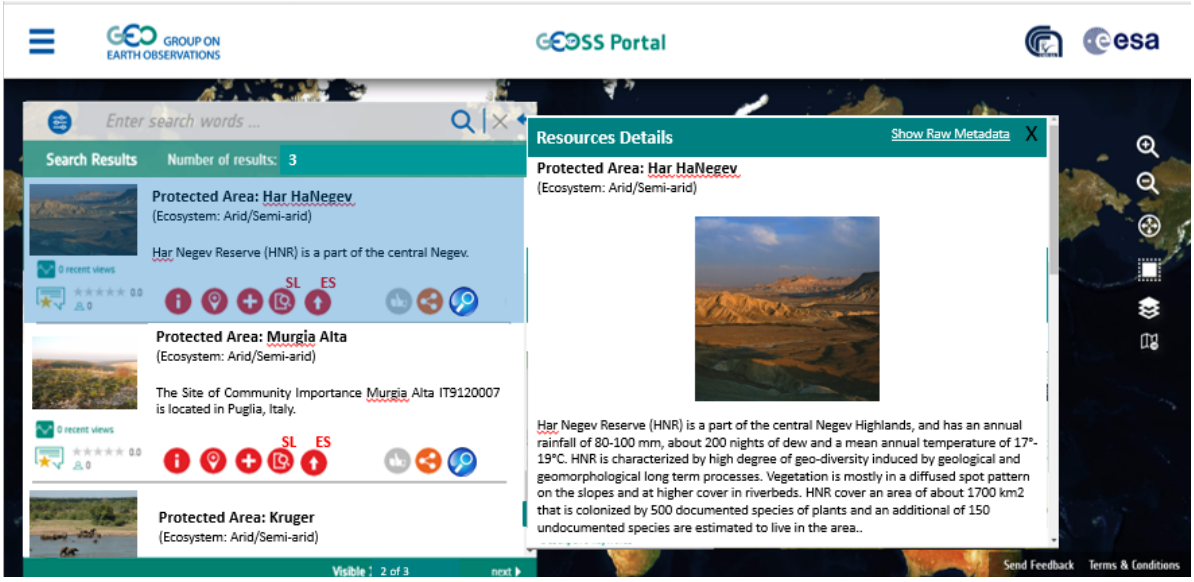


Figure 8: Browsing Protected Areas

He/she can then select a PA (Figure 8) and visualize and browse the corresponding Storylines (Figure 9).

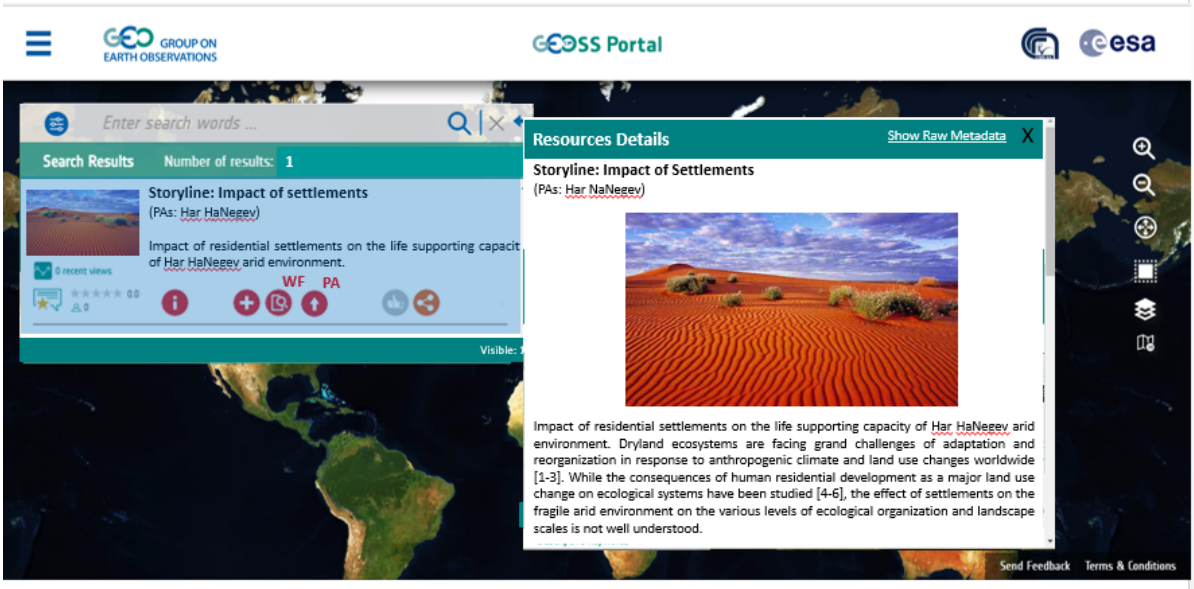


Figure 9: Browsing Storylines

He/she can then select a storyline of interest (Figure 9) and visualize and browse the corresponding Workflows (Figure 10).

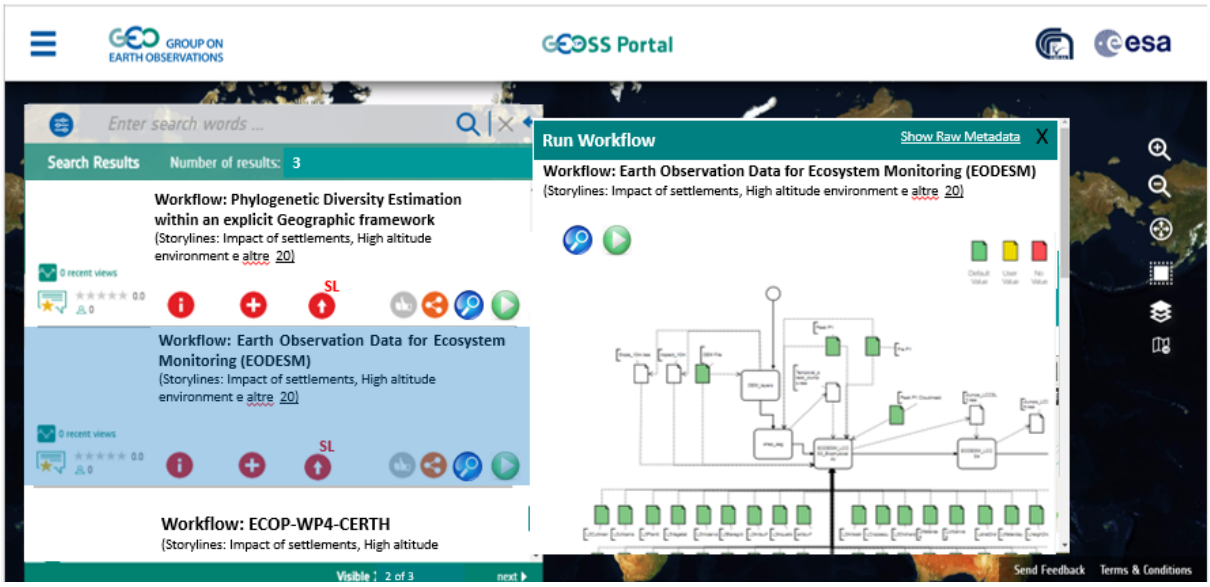


Figure 10: Running Workflow

At this point, he/she can select a workflow, run it using as input GEOSS resources and access the results. Alternatively, the user can search directly for a PA, or a SL or a WF and go back and forth (from PA to associated ecosystems, from SL to WF, etc) according to his/her needs.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-BES-001 – Search for Ecosystems, Protected Areas, Storylines and Workflows

UR-BES-002 – Running ECOPOTENTIAL workflows

UR-BES-003 – Graph-based navigation of the ECOPOTENTIAL Ontology concepts

UR-BES-004 – Input data for ECOPOTENTIAL workflows in GEOSS

5.5.2 UC-BES-02 – GEOSS for the Satellite-based Wetland Observation Service

Identifier

UC-BES-02

Title

GEOSS for the Satellite-based Wetland Observation Service

Background and Rationale

A wetland is defined as a biome (an ecological area) that is either permanently or seasonally saturated with water. Despite their richness in biodiversity and ecosystem services, wetlands are one of the fastest declining ecosystems worldwide – 64% of the world's wetlands have disappeared since 1900.

Information on the location of wetlands, their ecological character and their services is often sparse and difficult to find or access.

The Satellite-based Wetland Observation Service (SWOS - http://swos-service.eu) fills the information gap, which is currently hindering adequate management and protection of wetlands. SWOS generates information on wetland ecosystems using the new possibilities offered by free satellite data.

The GEO Wetlands community has expressed the need to import in their own portal (SWOS Service Portal) the search and browsing capabilities of the GEOSS Platform (the so-called GEOSS Widget) to have access to defined collections of GEOSS data.

Use Case

Actor – The typical actor in this use case is a wetland manager, policy-maker or scientist who wants to access maps and indicators of wetland condition and changes.

Brief description – The actor accesses the SWOS Service Portal and performs a search for satellite data through GEOSS.

Data domain – The GEOSS resources, in particular Sentinel and Landsat as satellite data and GBIF as in situ data.

Flow – The user accesses the Satellite-based Wetland Observation Service Portal and performs a search for Sentinel data and/or for Landsat data and/or for GBIF data by exploiting the search, filtering and browsing capabilities offered by the GEOSS Platform.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-BES-005 – Searching for GEOSS data via the SWOS Portal

UR-BES-006 – Browsing through GEOSS data via the SWOS Portal

5.5.3 UC-BES-03 – Access to ESA Forestry TEP

Identifier

UC-BES-03

Title

Access to ESA Forestry TEP

Background and Rationale

Forests, which occupy approximately 40% of the global land surface, are the dominant terrestrial ecosystem of the Earth. Deforestation, mainly the conversion of forest land to agricultural land, continues to be a major land cover change process, particularly in the tropics.

The ongoing outburst of new satellite data sources presents new opportunities for forest monitoring. Particularly interesting for the global forestry community are the optical and radar instruments onboard the Sentinel satellites that provide global data with high acquisition frequency free of charge.

The Forestry Thematic Exploitation Platform (Forestry TEP) enables commercial, research and public sector users in the forestry sector globally to efficiently access satellite data-based processing services and tools for generating value-added forest information products.

Use Case

Actor - The actor in this use case is any user willing to exploit satellite Earth Observations for forest monitoring.

Brief description - This actor shall be enabled to search for forest monitoring information, data and models .

Data domain - The search domain shall include products, data, information and services made available by the Forestry TEP

Flow - The user searchers for forest monitoring information and finds among other relevant information:

- the Forestry TEP access point (URL);
- preregistered (or systematically registered) products outputs of the Forestry TEP;
- Forestry TEP services that can be executed through the GEOSS Platform to generate the products of interest.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-BES-007 – Discovery of ESA Forestry TEP

UR-BES-008 – Discovery and access of data and information produced by the Forestry TEP

UR-BES-009 – Forestry TEP service execution and products generation

5.6 Public Health Surveillance use cases

5.6.1 UC-PHS-01 - GOS4M: Global Observation System for Mercury

Identifier

UC-PHS-01

Title

GOS4M: Global Observation System for Mercury

Background and Rationale

The Global Observation System for Mercury aims to federate existing regional and monitoring network and work closely with Nations in providing assistance and promote capacity building for filling existing geographical gaps in the global monitoring.

Use Case

Actor - The actor in this use case is any user in need of mercury observation data.

Brief description - This actor shall be enabled to access a dedicated portal offering ad-hoc functionalities for discovering, accessing and visualizing in situ and satellite data relevant for global monitoring of mercury.

Data domain - The search domain shall include the above mentioned data.

Flow - The user accesses the GOS4M Portal and performs a search, within the above mentioned data domain, by using capabilities that mirror the ones offered by the GEOSS Portal (general purpose Portal). The user can then filter, browse through, select and access or visualize the search results by using capabilities that, again, mirror the ones offered by the GEOSS Portal.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-PHS-001 – A dedicated portal for the GOS4M

5.6.2 UC-PHS-02 – Access to data from the Copernicus Atmosphere Monitoring Service

Identifier

UC-PHS-02

Title

Access to data from the Copernicus Atmosphere Monitoring Service

Background and Rationale

The Copernicus Atmosphere Monitoring Service (CAMS) provides continuous data and information on atmospheric composition. It describes the current situation, forecasts the situation a few days ahead, and analyses consistently retrospective data records for recent years.

The Copernicus Atmosphere Monitoring Service supports many applications in a variety of domains including health, environmental monitoring, renewable energies, meteorology and climatology. It focuses on five main areas: Air quality and atmospheric composition, Ozone layer and ultra-violet radiation, Emissions and surface fluxes, Solar radiation, Climate forcing.

Use Case

Actor - The actor in this use case is any user willing to access data and information on atmospheric composition (current, past and forecasts, see above).

Brief description - This actor shall be enabled to search and access data and information relevant for atmosphere monitoring.

Data domain - The search domain shall include data and information made available by the Copernicus Atmosphere Monitoring Service.

Flow - The user performs a search for atmosphere data and finds the corresponding information as provided by the CAMS and links to the CAMS webpages corresponding to the data or information in question.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-PHS-002 – Accessing data and information from the Copernicus Atmosphere Monitoring Service

5.7 Agriculture and food security use cases

5.7.1 UC-AFS-01 – Land degradation due to forest fires

Identifier

UC-AFS-01

Title

Land degradation due to forest fires

Background and Rationale

Soil erosion rates are highly affected by forest fires due to the removal of the above ground vegetation, the heat impact on the soil, the reduction of the organic matter, the ash cover, and the changes introduced by the rainfall on the soil surface.

Use Case

Actor - The actor in this use case might be an Earth scientist willing to study the effects of forest fires on land degradation.

Brief description - The user can find a showcase made available by EuroGEO and re-run the demo by using the external platform.

Data domain - The search domain shall include data, information and knowledge from EuroGEO.

Flow - The user finds a showcase (from EuroGEO) that demonstrates how Copernicus Sentinel high-resolution can be used to generate policy-relevant knowledge (at local, national or regional scale) for assessing land degradation due to forest fires.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-AFS-001 – Discovering and accessing land degradation showcases from EuroGEO

5.7.2 UC-AFS-02 – Creating a crop mask

Identifier

UC-AFS-02

Title

Creating a crop mask

Background and Rationale

Land cover maps are often required in Earth Observation (EO) data analysis to isolate regions where specific land classes are present. They are normally derived from remote sensing images and ground truthed inputs. The crop cover maps that target specific crop classes are defined as “crop masks”. They are used in agricultural applications such as crop-specific yield forecasting.

Use Case

Actor - The actor in this use case might be an Earth scientist willing to create a crop mask.

Brief description - The user can find information regarding the creation of a crop mask and generate it.

Data domain - The search domain shall include data, information and knowledge from on crop masks.

Flow - The user selects a geographical area and searches for a crop mask. (S)he finds information on how this mask can be generated and creates it.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-AFS-002 – Retrieving knowledge on the creation of a crop mask

5.7.3 UC-AFS-03 – Access to ESA Food Security TEP

Identifier

UC-AFS-03

Title

Access to ESA Food Security TEP

Background and Rationale

EO data plays a major role in understanding and managing the global food supply on all scales. Food Security TEP provides services and applications where the full power of Copernicus Sentinel-1 and -2 satellites as well as additional datasets are required. It serves as a platform where users can easily access comprehensive satellite datasets in a timely manner and process these directly by using a range of available generic applications. By providing a service to efficiently generate spatial information in a cloud and download resulting products, Food Security TEP aligns with the paradigm shift of bringing the users to the data and thus enabling the processing of large datasets.

Use Case

Actor - The actor in this use case is a scientist willing to exploit satellite Earth Observations for understanding and managing the global food supply on all scales.

Brief description - This actor shall be enabled to search for food security information, data and models .

Data domain - The search domain shall include products, data, information and services made available by the Food Security TEP

Flow - The user searchers for food security related information and finds among other relevant information:

- the Food Security TEP access point (URL);
- preregistered (or systematically registered) products outputs of the Forestry TEP;
- Forestry TEP services that can be executed through the GEOSS Platform to generate the products of interest.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-AFS-003 – Discovery of ESA Food Security TEP

UR-AFS-004 – Discovery and access of data and information produced by the Food Security TEP

UR-AFS-005 – Food Security TEP services execution and products generation

5.8 Sustainable Urban Development use cases

5.8.1 UC-SUD-01 – Access to ESA Urban TEP

Identifier

UC-SUD-01

Title

Access to ESA Urban TEP

Background and Rationale

Sustainable urban and rural development requires knowledge about status, properties, cross-linking and dynamics of settlements and their hinterland. Here, key elements are effective and efficient instruments for the observation, analysis and control of the built environment.

In this context the TEP Urban platform aims at opening up new opportunities to enable the creation and safeguarding of livable cities by exploring:

- Unique EO capabilities in Europe;
- Big data perspective;
- High-level IT-infrastructures;
- Massive processing power;
- Vast expert knowledge;
- New media and ways of communication;
- Increasing connectivity and networks.

By exploiting these opportunities TEP Urban will contribute to initiate step changes regarding:

- Remote processing (users-to-the-data);
- Enabling technology (large-scale exploitation, timeliness);
- Distribution of expertise (increase assets);
- Sharing data and technology (innovation, benchmarking);
- Open, integrative, participatory, collaborative concepts (community stimulation, outreach).

Use Case

Actor - The actor in this use case is an Earth Scientist willing to exploit satellite Earth Observations for urban development observation, analysis and control.

Brief description - This actor shall be enabled to search for urban development information, data and models .

Data domain - The search domain shall include products, data, information and services made available by the Urban TEP

Flow - The user searchers for urban development information and finds among other relevant information:

- the Urban TEP access point (URL);
- preregistered (or systematically registered) products outputs of the Urban TEP;
- Urban TEP services that can be executed through the GEOSS Platform to generate the products of interest.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-SUD-001 – Discovery of ESA Urban TEP

UR-SUD-002 – Discovery and access of data and information produced by the Urban TEP

UR-SUD-003 – Urban TEP service execution and products generation

5.8.2 UC-SUD-02 – Exploring SDG Indicator 11.6.2 and its sensitivity to a city's definition and comparing with values from other sources

Identifier

UC-SUD-02

Title

Exploring SDG Indicator 11.6.2 and its sensitivity to a city's definition and comparing with values from other sources.

Background and Rationale

The UN 2030 Agenda for Sustainable Development is listed as one of the GEO global priorities; there is therefore increasing interest among the GEOSS communities in searching for and using data related to SDG indicators. The use case described below refer to the capabilities that users interested in SDGs expect to access through the GEOSS Portal. Indicator 11.6.2 is the “Annual mean levels of fine particulate matter (PM2.5) in cities (population weighted)”.

Use Case

Actor - The actor in this use case is a decision or policy maker or any user willing to explore SDG Indicator 11.6.2 and its sensitivity to a city's definition and comparing with values from other sources e.g. the UNSD.

Brief description - This actor shall be enabled to explore SDG indicator 11.6.2 and compare the results with the one provided by the UNSD.

Data domain - The data domain shall include a least Data from the United Nations Statistics Division (custodian source) and indicator values as computed by the SMURBS/ERA-PLANET platfrom. The platform utilises the annual average regional reanalysis product of the Copernicus Atmospheric Monitoring Service (CAMS) for PM2.5 concentrations, as well as city definitions (i.e. shapefiles and necessary attributes such as population) from the JRC's Global Human Settlement Layer and the Urban Atlas of the Copernicus Land Monitoring Service (CLMS), both based on the Degree of Urbanization (DEGURBA) concept. The years of validated data are 2014-2017 and will be updated annually for future years.

Flow – The user uses the GEOSS Platform to explore the SDG Indicator 11.6.2 as computed by the SMURBS/ERA-Planet platform. (S)he can compare this value with the officially reported one from the UNSD which is based on in situ measurements with varying city definitions. The user can choose between city definitions (Functional Urban Area-FUA or Urban Centre-UC) and year of interest to view the Indicator value at the country but also at the city level.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-SUD-004 – Visualizing and retrieving SDG indicator values from the SMURBS/ERA-PLANET platform

UR-SUD-005 – Comparison of SDG indicator 11.6.2 from multiple sources

5.9 The GEO Regional HUBs

5.9.1 UC-GRH-01 – AmeriGEO Community Portal

Identifier

UC-GRH-01

Title

AmeriGEO

Background and Rationale

The AmeriGEO community Platform is a regional resource to promote collaboration and coordination among the GEO members in the Americas.

Use Case

Actor - The actor in this use case is any user who wants to explore geospatial data and information regarding the Americas.

Brief description - This actor shall be enabled to access a dedicated portal offering ad-hoc functionalities for discovering, accessing and visualizing these data.

Data domain - The search domain shall include all the GEOSS resources and in particular data from National, Regional and Global providers of Social, Economic, Environmental and other data, tools, applications and services (see 6.9.4).

Flow - The user accesses the AmeriGEO Portal and performs a search, within the above mentioned data domain, by using capabilities that mirror the ones offered by the GEOSS Portal. The user can then filter (also by some defined AmeriGEO topics), browse through, select and access or visualize the search results.

Case Study Survey

The result of the survey regarding this case study are provided in Annex I

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-GRH-001 – A dedicated portal for the AmeriGEO

UR-GRH-002 – The AmeriGEO search keywords

UR-GRH-003 – The AmeriGEO Region Of Interest

UR-GRH-004 – The AmeriGEO search domain

UR-GRH-005 – The AmeriGEO filtering capabilities

5.9.2 UC-GRH-02 - DBAR: Digital Belt And Road

Identifier

UC-GRH-02

Title

DBAR: Digital Belt and Road

Background and Rationale

The Belt & Road region covers a vast area and involves 65 countries and a population of 4.3 billion, facing numerous challenges related to sustainable development.

The vision of DBAR is to exploit and integrate Earth observation science, data, technology and applications to deal with environment change and to attain SDGs in the B&R region. One of the objectives to achieve this vision is to promote advanced science and decision support services to extract effective information from massive and diverse data in light of Big Earth Data. The GEOSS Platform can help in this.

Use Case

Actor - The actor in this use case is a decision maker or other user interested in information regarding the DBAR challenge areas (see below) over the DBAR region.

Brief description - This actor shall be enabled to access a dedicated portal offering ad-hoc functionalities for discovering, accessing and visualizing data and information concerning the DBAR challenges (see below).

Data domain - The search domain shall include in situ and satellite data concerning the DBAR challenges. Specific providers are detailed in the requirements section (see 6.9).

Flow - The user accesses the DBAR Portal and performs a search, within the above mentioned data domain, using as search criteria the ones offered by the GEOSS Portal and, in particular, the DBAR focus areas (challenges). See an excerpt of the realized mock up in Figure 11 and Figure 12.

Figure 11: The DBAR Portal advanced search criteria

Figure 12: The DBAR Focus Areas (challenges)

The user can then filter, browse through, select and access or visualize the search results by using capabilities that, again, mirror the ones offered by the GEOSS Portal.

Case Study Survey

The result of the survey regarding this case study are provided in Annex J.

Mock-up

The full mock-up is stored in the project document management system and available from the EDGE team on request.

Mock-up evaluation

The mock-up was well perceived and all the proposed functions accepted.

Related User Requirements

UR-GRH-007 – A dedicated Portal for the DBAR

UR-GRH-008 – Search by DBAR focus “area”

UR-GRH-009 – The DBAR search domain

UR-GRH-010 – Chinese language support

5.9.3 UC-GRH-03 – Discovery and visualization of resources from EuroGEO

Identifier

UC-GRH-03

Title

Discovery and visualization of resources from EuroGEO

Background and Rationale

EuroGEO is the European component of the Global Earth Observation System of Systems (GEOSS) with a focus on coordination and scaling-up user-driven applications being developed in Europe.

This GEO regional initiative aims to improve user uptake of Earth Observation data and improve forecasting capabilities for sound decision-making by governments for Europe's benefit.

EuroGEO represents a gateway for European Earth Observation programmes and projects to GEOSS, with Copernicus as a major element.

The GEOSS Platform users shall be able to access EuroGEO-related resources and all the other regional GEO through the GEOSS Platform.

Use Case

Actor - The actor in this use case is any user willing to access data, information or knowledge from EuroGEO.

Brief description - This actor shall be enabled to discover EuroGEO-related resources.

Data domain - The search domain shall include data and information made available by EuroGEO.

Flow - The user performs a search for EuroGEO – related resources and finds, browses and visualizes them.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-GRH-011 – Accessing data, information and knowledge from EuroGEO

5.9.4 UC-GRH-04 – Discovery and visualization of resources from AmeriGEO

Identifier

UC-GRH-04

Title

Discovery and visualization of resources from AmeriGEO

Background and Rationale

The AmeriGEO initiative is a framework that seeks to promote collaboration and coordination among the GEO members in the American continent, "to realize a future wherein decisions and actions, for the benefit of the region, are informed by coordinated, comprehensive and sustained Earth observations and information". The proposed initiative focuses its efforts in the four Societal Benefit Areas (SBA's) selected and prioritized by the Americas Caucus country-members, which are:

- Agriculture, associated with climate variability, climate change, and food security.
- Disaster risk reduction, particularly for data exchange associated with early warnings and for the generation of regional products of early warnings.

- Water, associated with the management approach of water resources and data management.
- Biodiversity and Ecosystem Monitoring including biodiversity observation in coastal, marine, and continental habitats, in the context of capacity building for better monitoring, management, and maintenance of ecosystems and biodiversity they support; also to predict future changes.

GEOSS users shall be able to access AmeriGEO and all the other regional GEO through the GEOSS Platform.

Use Case

Actor - The actor in this use case is any user willing to access data, information or knowledge from AmeriGEO.

Brief description - This actor shall be enabled to discover data in AmeriGEO.

Data domain - The search domain shall include data and information made available by AmeriGEO.

Flow - The user performs a search for resources in AmeriGEO and finds, browses and visualizes them.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-GRH-012 – Accessing data, information and knowledge from AmeriGEO

5.10 SDG use cases

5.10.1 UC-SDG-01 - GEO Essential and the Essential Variables Portal

Identifier

UC-SDG-01

Title

GEO Essential and the Essential Variables Portal

Background and Rationale

The Essential Variables communities need to discover and access Essential Climate, Biodiversity, Water variables.

The GEO Essential project is defining a list of EVs and corresponding data providers for specific domains. The project is also defining keywords for discovering them.

Use Case

Regarding the ECVs, please refer to section 5.3.1. As regards EWV and EBV, capabilities are very similar: they will be better specified in the future.

Regarding the EWV, an idea could be the possibility to search based on EWV (see mock-up excerpt in Figure 13) and Analysis Focus (see Figure 14).

Figure 13: Search by EWV

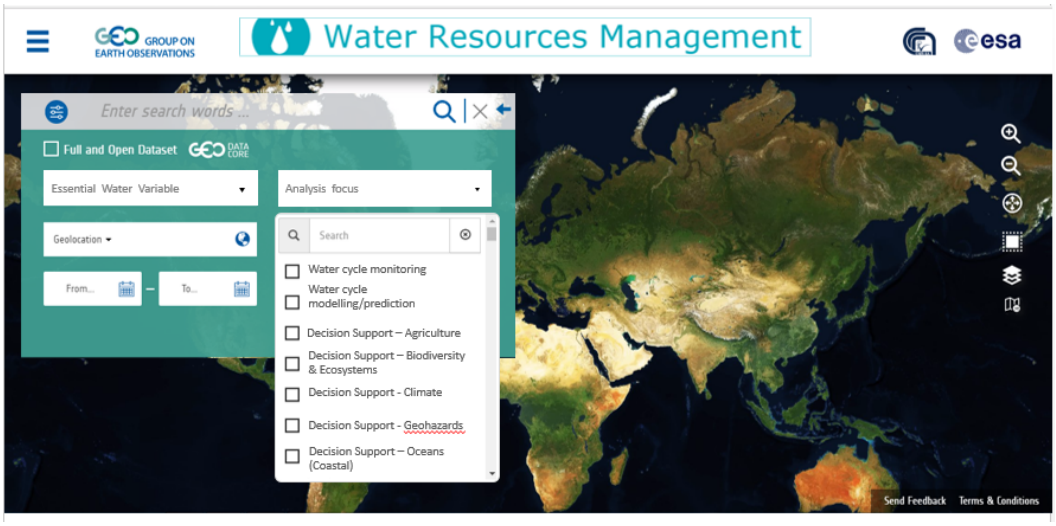


Figure 14: Search by Analysis Focus

Case Study Survey

The result of the survey regarding this case study are provided in Annex H.

Mock-up

Regarding the ECV case, please refer to the information provided in section 5.3.1. The full mock-up regarding the EWV case is stored in the project document management system and available from the EDGE team on request.

Mock-up evaluation

N.A.

Related User Requirements

Detailed requirements have been defined for the ECV case, for this refer to the information provided in 5.3.1 (and 6.3).

Preliminary requirements for the EWV and EBV case are:

UR-SDG-001 – The Essential Variables Portal

UR-SDG-002 – Search by EBV

UR-SDG-003 – Search by EWV

5.10.2 UC-SDG-02 – Searching for SDG indicators

Identifier

UC-SDG-02

Title

Searching for SDG indicators

Background and Rationale

The UN 2030 Agenda for Sustainable Development is listed as one of the GEO global priorities; there is therefore increasing interest among the GEOSS communities in searching for and using data related to SDG indicators. The use case described below refer to the capabilities that users interested in SDGs expect to access through the GEOSS Portal.

Use Case

Actor - The actor in this use case is any user willing to have access to the SDG-related data observe.

Brief description - This actor shall be enabled to perform a search for SDG data using as search criteria selected Goals, Targets and Indicators.

Data domain - The search domain shall include a least:

- Data from the United Nations Statistics Division (custodian source);
- Previously computed indicator values through the available GEOSS platform services;
- Services that can be used to generate the indicator of interest;
- Related concepts.

Flow – The user performs a search for a given indicator (either directly or by browsing the Goal->Target->Indicator tree and selecting the indicator of interest) on a given time range and a given region of interest, that might be at country, regional or global level depending on the provider. In response to such a query the user can choose (e.g. on a configurable basis) one or more of the following results categories:

- SDG indicator values, that can be from the custodian source (UNSD) or previously generated using the available services;
- Services that allow the computation of the indicator of interest;
- Related concepts.

Case Study Survey

No specific survey was conducted in this case; the requirements described in this document where gathered and discussed during the “GCI for SDGs” workshop.

Mock-up

The full mock-up is stored in the project document management system and available from the EDGE team on request.

Mock-up evaluation

The mock-up was well perceived and received minor comments, addressed in this latest version.

Related User Requirements

UR-SDG-004 – Searching SDG-relevant data

UR-SDG-005 – SDG search by country

UR-SDG-006 – SDG search by indicator-relevant keywords

5.10.3 UC-SDG-03 – Access to SDG indicator values from UNSD

Identifier

UC-SDG-03

Title

Access to SDG indicator values from UNSD

Background and Rationale

The UN 2030 Agenda for Sustainable Development is listed as one of the GEO global priorities; there is therefore increasing interest among the GEOSS communities in searching for and using data related to SDG indicators. The use case described below refer to the capabilities that users interested in SDGs expect to access through the GEOSS Portal.

Use Case

Actor - The actor in this use case is a decision or policy maker or any user willing to visualize the SDG indicator values provided by the UNSD.

Brief description - This actor shall be enabled to discover SDG values provided by the UNSD.

Data domain - The search domain shall include a least Data from the United Nations Statistics Division (custodian source).

Flow – The user performs a search for a given indicator (including SDG indicators 15.1.2, 15.3.1 and 6.1.2) and receives in response corresponding data from the custodian source (UNSD) for each country (or for the selected country of interest).

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-SDG-007 – Visualizing and retrieving SDG indicator values from the UNSD

5.10.4 UC-SDG-04 – Generating SDG indicator 15.3.1 and comparing with values from other sources

Identifier

UC-SDG-04

Title

Generating SDG indicator 15.3.1 and comparing with values from other sources

Background and Rationale

The UN 2030 Agenda for Sustainable Development is listed as one of the GEO global priorities; there is therefore increasing interest among the GEOSS communities in searching for and using data related to SDG indicators. The use case described below refer to the capabilities that users interested in SDGs expect to access through the GEOSS Portal. Indicator 15.3.1 is the "Proportion of land that is degraded over total land area".

Use Case

Actor - The actor in this use case is a decision or policy maker or any user willing to generate SDG indicator 15.3.1 using the model provided by the GEO Essential project and compare the results with values from other sources, e.g. the UNSD.

Brief description - This actor shall be enabled to compute SDG indicator 15.3.1 and compare the results with the one provided by the UNSD.

Data domain - The data domain shall include a least Data from the United Nations Statistics Division (custodian source) and input data for the processing.

Flow – The stakeholder uses the GEOSS Platform to calculate the SDG indicator 15.3.1 ("Proportion of land that is degraded over total land area") for Europe, Uganda and China using the model provided by the GEO Essential project. (S)he can then compare this value with the one provided by the UNSD.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-SDG-008 – SDG indicator 15.3.1 computation service discovery

UR-SDG-009 – SDG indicator 15.3.1 computation service execution

UR-SDG-010 – Visual representation of SDG indicator 15.3.1 computations

UR-SDG-011 – Comparison of SDG indicator 15.3.1 from multiple sources

5.10.5 UC-SDG-05 – Generating SDG indicator 14.1.1 and comparing with values from other sources

Identifier

UC-SDG-05

Title

Generating SDG indicator 14.1.1 and comparing with values from other sources

Background and Rationale

The UN 2030 Agenda for Sustainable Development is listed as one of the GEO global priorities; there is therefore increasing interest among the GEOSS communities in searching for and using data related to SDG indicators. The use case described below refer to the capabilities that users interested in SDGs expect to access through the GEOSS Portal. Indicator 14.1.1 is the "Index of coastal eutrophication and floating plastic debris density"

Use Case

Actor - The actor in this use case is a decision or policy maker or any user willing to generate SDG indicator 14.1.1 and compare the results with values from other sources, e.g. the UNSD.

Brief description - This actor shall be enabled to compute SDG indicator 14.1.1 and compare the results with the one provided by the UNSD.

Data domain - The data domain shall include a least Data from the United Nations Statistics Division (custodian source) and input data for the processing.

Flow – The stakeholder uses the GEOSS Platform to calculate the SDG indicator 14.1.1 and can then compare this value with the one provided by the UNSD.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-SDG-012 – SDG indicator 14.1.1 computation service discovery

UR-SDG-013 – SDG indicator 14.1.1 computation service execution

UR-SDG-014 – Visual representation of SDG indicator 14.1.1 computations

UR-SDG-015 – Comparison of SDG indicator 14.1.1 from multiple sources

5.10.6 UC-SDG-06 – Generating SDG indicator 11.3.1 and comparing with values from other sources

Identifier

UC-SDG-06

Title

Generating SDG indicator 11.3.1 and comparing with values from other sources

Background and Rationale

The UN 2030 Agenda for Sustainable Development is listed as one of the GEO global priorities; there is therefore increasing interest among the GEOSS communities in searching for and using data related to SDG indicators. The use case described below refer to the capabilities that users interested in SDGs expect to access through the GEOSS Portal. Indicator 11.3.1 is the "Ratio of land consumption rate to population growth rate".

The indicator aims at monitoring and measuring urban development by comparing the urban expansion rate with the population growth rate on similar temporal and spatial scales. Indicator 11.3.1 measures how efficiently cities utilize land, which is measured as a ratio of the rate at which cities spatially consume land against the rate at which their populations grow.

Earth Observation data is well equipped for mapping built-up areas and as of today several global datasets are available including the Global Human Settlement Built-up (GHS BU) developed by JRC/EC and the Global Urban Footprint (GUF) developed by DLR/ESA.

The new World Settlement Footprint 2015 (WSF-2015) developed by DLR/ESA is addressing some of the issues with GHS BU and GUF by using Landsat 8 and Sentinel 1 radar imagery to provide a global overview of the world's human settlements in 10-meter resolution. Currently, WSF 2015 is only available for online visualization on the Urban TEP, but it should be mentioned that ESA and DLR have initiated WSF 2018 an update and evolution of WSF 2015 based on the joint use of Sentinel 1 and Sentinel 2 imagery. The WSF 2018 will be freely and openly available by end of 2019. The WSF evolution should also be mentioned as it will use Landsat imagery to provide detailed information about the spatiotemporal development for each human settlement identified in the WSF 2015.

An alternative and user-driven solution for mapping built-up areas are Trends.Earth Urban Mapper which is an online interactive platform for mapping built-up and non-built up impervious areas from archived Landsat imagery (i.e. from 2000 to 2015).

By using global datasets users will be restricted e.g. in terms of definitions, available reference years and the spatial resolution. By example, the definition of built-up area adopted by GHS BU, GUF and WSF only consider the extent of buildings i.e. impervious areas with vertical dimension and hence excluding streets and parking lots which is part of the urban extent definition under SDG 11.3.1. While Trends.Earth Urban Mapper is better aligned in terms of the built-up area definition then the approach is restricted Landsat imagery which has an inferior spatial resolution compared to Sentinel imagery.

These issues can be addressed and controlled by countries if they invest their own resources in the mapping of built up areas. By example, countries such as Mexico and Colombia are already developing Geospatial Data Cubes to enable processing and analysis of satellite images for mapping built-up areas as well as other critical land surface indicators.

Today, the most realistic and feasible option for national built-up area mapping is to use the freely available datasets provided by the European Sentinel-1 (SAR) and Sentinel-2 (multispectral) as well as the US Landsat (multispectral) missions. These open datasets provide systematic multi-sensor acquisitions in 10-30 meter resolution with a huge potential for advancing the mapping of built-up areas.

Use Case

Actor - The actor in this use case is a decision or policy maker or any user willing to generate SDG indicator 11.3.1 using the model provided by the ESA Urban Thematic Exploitation Platform, and compare the results with values from other sources, e.g. the UNSD.

Brief description - This actor shall be enabled to compute SDG indicator 11.3.1 and compare the results with the one provided by the UNSD.

Data domain - The data domain shall include a least Data from the United Nations Statistics Division (custodian source) and input data for the processing.

Flow – The stakeholder uses the GEOSS Platform to calculate the SDG indicator 11.3.1 and can then compare this value with the one provided by the UNSD.

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-SDG-016 – SDG indicator 11.3.1 computation service discovery

UR-SDG-017 – SDG indicator 11.3.1 computation service execution

UR-SDG-018 – Visual representation of SDG indicator 11.3.1 computations

UR-SDG-019 – Comparison of SDG indicator 11.3.1 from multiple sources

5.11 Cross-thematic use cases

5.11.1 UC-CRT-01 - ENERGIC OD: European NEtwork for Redistributing Geospatial Information to user Communities - Open Data

Identifier

UC-CRT-01

Title

ENERGIC OD: European NEtwork for Redistributing Geospatial Information to user Communities - Open Data

Background and Rationale

ENERGIC-OD developed a Virtual Hub solution based on the brokering technology adopted in the GEOSS Platform. The ENERGIC OD community has expressed the need for the data discovery and access functionalities offered by the GEOSS Platform.

Use Case

Actor - The actor in this use case is any user (Decision makers, business, farmers) who wants to access geospatial data for their purposes.

Brief description - This actor shall be enabled to access a dedicated portal offering ad-hoc functionalities for discovering, accessing and visualizing heterogeneous geo-spatial data.

Data domain - The search domain consists of data from the ENERGIC-OD data providers, exposed through the various Virtual Hubs. Data providers are typically public administrations, public agencies, research centres and citizens. Details are provided in the requirements section (see 6.11).

Flow - The user accesses the ENERGIC-OD Portal and performs a search, within the above mentioned data domain, by using capabilities that mirror the ones offered by the GEOSS Portal (general purpose Portal). The user can then filter, browse through, select and access or visualize the search results by using capabilities that, again, mirror the ones offered by the GEOSS Portal.

Case Study Survey

The result of the survey regarding this case study are provided in Annex F.ENERGIC-OD Community profile

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-CRT-001 – A dedicated Portal for the ENERGIC-OD

UR-CRT-002 – The ENERGIC-OD search domain

5.11.2 UC-CRT-02 – EnviDat: The Environmental Data Portal of the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL)

Identifier

UC-CRT-02

Title

EnviDat: The Environmental Data Portal of the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL)

Background and Rationale

The EnviDat project aims at developing an efficient, unified and managed access portal for WSL's rich reservoir of environmental monitoring and research data, according to the data policy of WSL. EnviDat is designed as a portal to publish, connect and search across existing data, rather than as a large data centre. The responsibility to curate research data remains with the original data providers.

Use Case

Actor - The actor in this use case is data user who wants to access environmental data and, in particular the environmental monitoring and research data of the WSL.

Brief description - This actor shall be enabled to access a dedicated portal offering ad-hoc functionalities for discovering, accessing and visualizing heterogeneous environmental data.

Data domain - The search domain consists of environmental data from the WSL and from other GEOSS resources (see 6.11.6 for details). WSL has indeed a long tradition in data collection (including time series spanning over 100 years) and operates a comprehensive network for environmental

research that includes more than six thousand monitoring or observation sites for studying forests, biodiversity, landscapes, snow, permafrost, and natural hazards.

Flow - The user accesses the EnviDat Portal and performs a search, within the above mentioned data domain, by using capabilities that mirror the ones offered by the GEOSS Portal (general purpose Portal). The user can then filter, browse through, select and access or visualize the search results by using capabilities that, again, mirror the ones offered by the GEOSS Portal.

Case Study Survey

The result of the survey regarding this case study are provided in Annex K.ENERGIC-OD Community profile

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-CRT-003 – A dedicated Portal for the EnviDat

UR-CRT-004 – The EnviDat search keywords

UR-CRT-005 – The Envidat Region Of Interest

UR-CRT-006 – The EnviDat search domain

5.11.1 UC-CRT-03 – Access to DIAS platforms

Identifier

UC-CRT-03

Title

Access to DIAS Platforms

Background and Rationale

The European Commission has launched an initiative to facilitate access to Copernicus data and information services. DIAS is designed to improve users' ability to access as well as process Copernicus data and information by standardizing access to data through five cloud-based platforms: CREODIAS, MUNDI, ONDA, SOBLOO and WEKEO.

The European Union's Copernicus programme produces up to 12 terabytes of data each day: downloading and storing these data involves some complex logistical challenges.

DIAS is an answer to these logistical challenges as users no longer have to download bulky files from several access points and process them locally. Instead, DIAS platforms provide mass cloud storage of satellite data and also act as a single point of access for the Copernicus data, allowing users to develop and host new applications in the Cloud.

GEOSS need to connect to the DIAS platforms, since they represent a trusted source of data with capabilities to process them using available services.

Use Case

Actor - The actor in this use case is any user interested in access and use of Copernicus data, products and services.

Brief description - This actor shall be enabled to perform a search for Copernicus data and obtain in response access to the DIAS Platform providing those data.

Data domain - The search domain includes the DIAS platforms themselves, the services and applications hosted by these DIAS Platforms.

Flow - The user accesses the GEOSS Portal and performs a search for Copernicus data or directly for a DIAS Platform or DIAS Platform application of interest. As a result of this query the user can access the DIAS Platform of interest (or providing the data of interest), or the DIAS service(s) of interest (or producing the data of interest).

Case Study Survey

N.A.

Mock-up

N.A.

Mock-up evaluation

N.A.

Related User Requirements

UR-CRT-007 – Discovering and accessing DIAS Platforms

UR-CRT-008 – Discovering and accessing DIAS Platform services

6. User requirements

6.1 Introduction

The following sections provide detailed descriptions of the user requirements that will drive the GEOSS Platform Enhancements. The following definitions apply:

- 'Shall': Requirements containing 'shall' are considered essential, i.e. mandatory;
- 'Should': These are strongly recommended requirements although non-mandatory;
- 'Could': These are nice-to-have requirement (time and resources permitting), but the solution will still be accepted if the functionality is not included;
- 'Will': this can be used in a requirement text to provide additional information such as background or rationale, to help understand the requirement genesis and meaning. *Will* statements are not subject to verification.

User requirements are categorized by thematic area/context from which they arise

Each requirement has the following attributes:

- 'Identifier': Symbolic identifier following the convention: UR-<Theme>-<Counter>, where:
    - <Theme> is a three letter identifier of the thematic area/context to which the requirement refers. It could be one of the following: DRM (Disaster Resilience Management), CLI (Climate), WRM (Water Resources Management), BES (Biodiversity and Ecosystem Sustainability), AFS (Agriculture and Food Security), PHS (Public Health Surveillance), SUD (Sustainable Urban Development), GRH (GEO Regional Hub), SDG (Sustainable Development Goal).
    - <Counter> is a three-digit counter that uniquely identifies the requirement.
- 'Title': a very concise textual description of the requirement;
- 'Requirement Description': This is the formulation of the requirement. Each requirement attempts to be clear, concise and unambiguous, with each statement containing one and only one requirement;
- 'Source': Origin of requirement, used for backwards traceability. This is normally the use case from which it derives, but it could also be a document cross-reference, the name of a body or organisation, a particular meeting;
- 'Priority': This can be High, Medium or Low. High priority means early delivery needed, low means late delivery acceptable. They reflect the importance and urgency given to each requirement.
- 'Stability': this allows flagging requirements which are unstable, i.e. which are still under discussion and as such might change.

6.2 Requirements from Disaster Resilience Management communities

6.2.1 UR-DRM-001 – Earthquake search

Identifier

UR-DRM-001

Title

Earthquake search

Requirement Description

The user shall be enabled to search for any earthquake event based on one of the following criteria or any combination of them: geographical area, time range, earthquake magnitude range, depth range in a search domain including at least earthquake data from USGS Earthquake Events.

Source

UC-DRM-01 - Earthquake search and visualization

Priority

High

Stability

Stable. However the specific data sources can be better defined in the future.

6.2.2 UR-DRM-002 – Earthquake search results

Identifier

UR-DRM-002

Title

Earthquake search results

Requirement Description

The user shall be enabled to visualize graphically on a map the earthquake event concerning the results of a search for earthquakes, i.e. earthquake localization, depth and magnitude.

Source

UC-DRM-01 - Earthquake search and visualization

Priority

High

Stability

Stable.

6.2.3 UR-DRM-003 – Sorting earthquake search results

Identifier

UR-DRM-003

Title

Sorting earthquake search results

Requirement Description

The user shall be enabled to sort the earthquakes resulting from a search based on time (ascending, descending) and magnitude (ascending and descending).

Source

UC-DRM-01 - Earthquake search and visualization

Priority

High

Stability

Stable.

6.2.4 UR-DRM-004 – Selecting the earthquake magnitude type

Identifier

UR-DRM-004

Title

Selecting the earthquake magnitude type

Requirement Description

The user shall be enabled to select the earthquake magnitude type, based on which he/she wants to perform the earthquake search, among the following: Richter, Surface wave, Body wave, Moment, All.

Source

UC-DRM-01 - Earthquake search and visualization

Priority

High

Stability

Stable.

6.2.5 UR-DRM-005 – Accessing data and information from the Copernicus Emergency Management Service

Identifier

UR-DRM-005

Title

Accessing data and information from the Copernicus Emergency Management Service

Requirement Description

The user shall be enabled to search for and access data and information as provided by the Copernicus Emergency Management Service.

Source

UC-DRM-02 – Access to data from the Copernicus Emergency Management Service

Priority

High

Stability

Stable.

6.2.6 UR-DRM-006 – Discovery of ESA GEOHazards TEP

Identifier

UR-DRM-006

Title

Discovery of ESA GEOHazards TEP

Requirement Description

The user shall be enabled to discover the ESA GEOHazards Thematic Exploitation Platform and find the corresponding access URL.

Source

UC-DRM-03 – Access to GEOHazards TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.2.7 UR-DRM-007 – Discovery and access of data and information produced by the Geohazards TEP

Identifier

UR-DRM-007

Title

Discovery and access of data and information produced by the geohazards TEP

Requirement Description

The user performing a search for geohazards data shall be enabled to find products and information produced by the GEOHazards TEP (preregistered, or systematically registered).

Source

UC-DRM-03 – Access to GEOHazards TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.2.8 UR-DRM-008 – Geohazards TEP service execution and products generation

Identifier

UR-DRM-008

Title

Geohazards TEP service execution and products generation

Requirement Description

The user performing a search for geohazards data, information and services shall be enabled to find one (or more) geohazards TEP service(s) that can generate that information and can be executed through the GEOSS Platform. This means that the user shall be enabled to select the service, define/refine the area of interest and time range, search for and select the input data (ideally in the GEOSS), select the Cloud computing platform of preference among the available and start the service execution. The user shall also be able to visualize information on the underlying workflow and logging info. The results will then be available in the user workspace. The user shall be notified when the results become available.

Source

UC-DRM-03 – Access to GEOHazards TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.3 Requirements from Climate communities

6.3.1 UR-CLI-001 – Climate search domain

Identifier

UR-CLI-001

Title

Climate search domain

Requirement Description

The user shall be enabled to search in a search domain focussed on climate-related data, whic includes The search domain shall include climate-datasets from the various heterogeneous sources providing it, including UNEP/GRID Geneva, ECMWF, JRC, Copernicus Climate Change Service and the Copernicus Atmosphere Monitoring Service.Source

UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.

Priority

High

Stability

Stable. However the specific data sources will be better defined in the future.

6.3.2 UR-CLI-002 – Search by GCOS ECV

Identifier

UR-CLI-002

Title

Search by GCOS ECV

Requirement Description

The user shall be enabled to search for climate data by selecting as search criteria the Essential Climate Variable(s) of interest among the ones defined in the GCOS Implementation Plan 2016 [2].

This should automatically pre-select all the corresponding ECV products.

Source

UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.

Priority

High.

Stability

Stable.

6.3.3 UR-CLI-003 – Search by GCOS Measurement Domain

Identifier

UR-CLI-003

Title

Search by GCOS Measurement Domain

Requirement Description

The user shall be enabled to search for climate data by selecting as search criteria one or more measurement domain(s) among the ones defined in the GCOS Implementation Plan 2016 [2], which are: Atmosphere, Terrestrial, Ocean. This shall automatically pre-select all the corresponding ECVs.

Source

UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.

Priority

High.

Stability

Stable.

6.3.4 UR-CLI-004 – Search by GCOS focus “area”

Identifier

UR-CLI-004

Title

Search by GCOS focus “area”

Requirement Description

The user shall be enabled to search for climate data by selecting as search criteria the focus area(s) of interest among the ones defined in the GCOS Implementation Plan 2016 [2], which are:

- Energy and Temperature;
- Other physical properties;
- Carbon Cycle and other GHGs;
- Hydrosphere;
- Snow and Ice;
- Biosphere;
- Human use of natural resources.

This shall automatically pre-select all the corresponding ECVs.

Source

UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.

Priority

High.

Stability

Stable.

6.3.5 UR-CLI-005 - Search by GCOS ECV products

Identifier

UR-CLI-005

Title

Search by GCOS ECV products

Requirement Description

The user should be enabled to search based on the ECV products defined in the “ANNEX A: ECV product requirement tables” of the GCOS Implementation Plan 2016 [2].

Source

UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.

Priority

High.

Stability

Stable.

6.3.6 UR-CLI-006 – Changing automatic ECV selections

Identifier

UR-CLI-006

Title

Changing automatic ECV selections

Requirement Description

The user shall be enabled to change (select/unselect) automatic ECV pre-selections, i.e. the selection automatically performed by the system in case of a previous selection, by the user, of a given measurement domain or focus area.

Source

UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.

Priority

High.

Stability

Subject to changes, since still under discussion.

6.3.7 UR-CLI-007 – Changing automatic ECV products selections

Identifier

UR-CLI-007

Title

Changing automatic ECV products selections

Requirement Description

The user should be enabled to change (select/unselect) automatic ECV products pre-selections, i.e. the selection automatically performed by the system in case of a previous selection, by the user, of a given ECV.

Source

UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.

Priority

High

Stability

Subject to changes, since still under discussion.

6.3.8 UR-CLI-008 – Graph navigation of the climate concepts

Identifier

UR-CLI-008

Title

Graph navigation

Requirement Description

Given the hierarchical nature of the search criteria for climate data (measurement domain, ECV, ECV product; focus area, ECV), the user should be provided with a graph-based navigation capability.

Source

UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.

Priority

High.

Stability

Subject to changes, since still under discussion.

6.3.9 UR-CLI-009 – Accessing data and information from the Copernicus Climate Change Service

Identifier

UR-CLI-009

Title

Accessing data and information from the Copernicus Climate Change Service

Requirement Description

The user shall be enabled to search for and access data and information as provided by the Copernicus Climate Change Service.

Source

UC-CLI-02 – Access to data from the Copernicus Climate Change ServiceUC-DRM-01 - Earthquake search and visualization

Priority

High

Stability

Stable.

6.3.10 UR-CLI-010 – Accessing climate information on coastline changes

Identifier

UR-CLI-010

Title

Accessing climate information on coastal changes

Requirement Description

The user shall be enabled to search for and access climate information on coastline changes regarding specific locations, including Koh Tao Island.

Source

UC-CLI-03 – Retrieval of publications from Zenodo regarding Coastline changes on Koh Tao island

Priority

High

Stability

Stable.

6.3.11 UR-CLI-011 – Retrieving climate information from different knowledge sources

Identifier

UR-CLI-011

Title

Retrieving climate information from different knowledge sources.

Requirement Description

The user shall be enabled to search for and access peer-reviewed publications on coastline changes provided by well-known and reliable knowledge sources including Zenodo.

Source

UC-CLI-03 – Retrieval of publications from Zenodo regarding Coastline changes on Koh Tao island

Priority

High

Stability

Stable.

6.3.12 UR-CLI-012 – Registering own knowledge sources regarding coastline changes to GEOSS

Identifier

UR-CLI-012

Title

Registering own knowledge sources regarding coastline changes to GEOSS.

Requirement Description

Knowledge providers shall be enabled to register their resources to GEOSS by configuring metadata and access links.

Source

UC-CLI-04 – Making visible to GEOSS users own knowledge regarding coastline change

Priority

High

Stability

Stable.

6.3.13 UR-CLI-013 – Accessing climate data from AmeriGEO

Identifier

UR-CLI-013

Title

Accessing climate data from the AmeriGEO regional GEO

Requirement Description

Users looking for climate risk information in Central America shall be enabled to search in the AmeriGEO Regional Node, explore the relevant data with the possibility to filter by the organizations that provide them and visualize and/or download the results.

Source

UC-CLI-05 – Accessing Climate risk information for Central America from the GEO regional node AmeriGEO

Priority

High

Stability

Stable.

6.3.14 UR-CLI-014 – Discovery of ESA Coastal TEP

Identifier

UR-CLI-014

Title

Discovery of ESA Coastal TEP

Requirement Description

The user shall be enabled to discover the ESA Coastal Thematic Exploitation Platform and find the corresponding access URL.

Source

UC-CLI-06 – Access to ESA Coastal TEPUC-DRM-03 – Access to GEOHazards TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.3.15 UR-CLI-015 – Discovery and access of data and information produced by the Coastal TEP

Identifier

UR-CLI-015

Title

Discovery and access of data and information produced by the Coastal TEP

Requirement Description

The user performing a search for coastal data shall be enabled to find products and information produced by the Coastal TEP (preregistered, or systematically registered).

Source

UC-CLI-06 – Access to ESA Coastal TEPUC-DRM-03 – Access to GEOHazards TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.3.16 UR-CLI-016 – Coastal TEP service execution and products generation

Identifier

UR-CLI-016

Title

Coastal TEP service execution and products generation

Requirement Description

The user performing a search for coastal monitoring data, information and services shall be enabled to find one (or more) coastal TEP service(s) that can generate that information and can be executed through the GEOSS Platform. This means that the user shall be enabled to select the service, define/refine the area of interest and time range, search for and select the input data (ideally in the GEOSS), select the Cloud computing platform of preference among the available and start the service execution. The user shall also be able to visualize information on the underlying workflow and logging info. The results will then be available in the user workspace. The user shall be notified when the results become available.

Source

UC-CLI-06 – Access to ESA Coastal TEPUC-DRM-03 – Access to GEOHazards TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.3.17 UR-CLI-017 – Discovery of ESA Polar TEP

Identifier

UR-CLI-017

Title

Discovery of ESA Polar TEP

Requirement Description

The user shall be enabled to discover the ESA Polar Thematic Exploitation Platform and find the corresponding access URL.

Source

UC-CLI-07 – Access to ESA Polar TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.3.18 UR-CLI-018 – Discovery and access of data and information produced by the Polar TEP

Identifier

UR-CLI-018

Title

Discovery and access of data and information produced by the Polar TEP

Requirement Description

The user performing a search for polar data shall be enabled to find products and information produced by the Polar TEP (preregistered, or systematically registered).

Source

UC-CLI-07 – Access to ESA Polar TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.3.19 UR-CLI-019 – Polar TEP service execution and products generation

Identifier

UR-CLI-019

Title

Polar TEP service execution and products generation

Requirement Description

The user performing a search for coastal monitoring data, information and services shall be enabled to find one (or more) Polar TEP service(s) that can generate that information and can be executed through the GEOSS Platform. This means that the user shall be enabled to select the service, define/refine the area of interest and time range, search for and select the input data (ideally in the GEOSS), select the Cloud computing platform of preference among the available and start the service execution. The user shall also be able to visualize information on the underlying workflow and logging info. The results will then be available in the user workspace. The user shall be notified when the results become available.

Source

UC-CLI-07 – Access to ESA Polar TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.4 Requirements from the Water Resources management Communities

6.4.1 UR-WRM-001 – A dedicated portal for the AtlantOs community

Identifier

UR-WRM-001

Title

A dedicated portal for the AtlantOs community

Requirement Description

The AtlantOS user shall be enabled to access a dedicated Portal, the AtlantOS Portal, providing search capabilities that mirror the ones offered by the GEOSS Portal, in particular as regards the search criteria, the filtering criteria, the results browse, selection and visualization capabilities.

Source

UC-WRM-01 - AtlantOs: Optimising and Enhancing the Integrated
Atlantic Ocean Observing SystemsUC-WRM-01 - AtlantOs: Optimising and Enhancing the Integrated Atlantic Ocean Observing Systems

Priority

High

Stability

Stable.

6.4.2 UR-WRM-002 – the AtlantOs search keywords

Identifier

UR-WRM-002

Title

The AtlantOS search keywords

Requirement Description

AtlantOS Portal users shall be enabled to perform their searches based on the following search keywords:

- Ocean data
- Atlantic Ocean
- EOV (essential Ocean Variables)

- Water column
- Sediment
- Ocean monitoring
- Platforms
- Temperature
- sea surface
- Salinity
- sea surface
- column
- Current
- Sea Level
- bottom depth
- Oxygen
- Chla
- Fluorescence
- Nutrients (NO3/NO2 - PO4 - SiO3
- Carbonate system (inorganic carbon) pCO2, DIC, Total alkalinity, pH
- sea surface pCO2
- Dissolved Organic Matter (DOC,DON)
- N2O
- Turbidity
- Transient Tracers (CFC-11, CFC-12, SF6 3H/3HE)
- Zooplankton
- Phytoplankton
- Species
- Eggs and larvae (abundance, stages, quantity)

Source

UC-WRM-01 - AtlantOs: Optimising and Enhancing the Integrated Atlantic Ocean Observing Systems

Priority

High

Stability

Stable.

6.4.3 UR-WRM-003 – The AtlantOs Region Of Interest

Identifier

UR-WRM-003

Title

The AtlantOS Region Of Interest

Requirement Description

AtlantOS Portal users shall be enabled to select as Region of Interest for their searches any geographical area in the entire Atlantic Ocean (North and South).

Source

UC-WRM-01 - AtlantOs: Optimising and Enhancing the Integrated
Atlantic Ocean Observing Systems

Priority

High

Stability

Stable.

6.4.4 UR-WRM-004 – The AtlantOs search domain

Identifier

UR-WRM-004

Title

The AtlantOS search domain

Requirement Description

AtlantOS Portal users shall be enabled to search in a domain focussed on Atlantic Ocean Observations, including in particular, data from the following providers:

- PANGAEA
- SEADATANET
- SAEON
- USGS Geoscience Data Catalog
- Global river discharge GEOWOW
- MEDINA
- MARIS EYE on water
- Soil Moisture and Ocean Salinity

Source

UC-WRM-01 - AtlantOs: Optimising and Enhancing the Integrated
Atlantic Ocean Observing Systems

Priority

High

Stability

Stable. However the providers list might change in the future; in particular new providers could be added.

6.4.5 UR-WRM-005 – A dedicated portal for the GEO-GNOME community

Identifier

UR-WRM-005

Title

A dedicated portal for the GEO-GNOME community

Requirement Description

The GEO-GNOME user shall be enabled to access a dedicated Portal, the GEO-GNOME Portal, providing search capabilities that mirror the ones offered by the GEOSS Portal, in particular as regards the search criteria, the filtering criteria, the results browse, selection and visualization capabilities.

Source

UC-WRM-02 - GEO-GNOME: GEO Global Network for Observation and Information in Mountain Environments

Priority

High

Stability

Stable.

6.4.6 UR-WRM-006 – The GEO-GNOME search keywords

Identifier

UR-WRM-006

Title

The GEO-GNOME search keywords

Requirement Description

GEO-GNOME Portal users shall be enabled to perform their searches based on the following search keywords:

- Mountain;
- mountain definition;
- livelihood;
- population;
- ecosystem;
- ecosystem services;
- socio-economic measures;
- hydrology;
- wind;
- precipitation;
- food;

- services;
- land use;
- land cover;
- water;
- energy;
- risk;
- biodiversity;
- observatories;
- population;
- infrastructure;
- natural resources;
- land management.

Source

UC-WRM-02 - GEO-GNOME: GEO Global Network for Observation and Information in Mountain Environments

Priority

High

Stability

Stable.

6.4.7 UR-WRM-007 – The GEO-GNOME Region Of Interest

Identifier

UR-WRM-007

Title

The GEO-GNOME Region Of Interest

Requirement Description

GEO-GNOME Portal users shall be enabled to select as Region of Interest for their searches any geographical area in the entire region covered by the Mountains of the World.

Source

UC-WRM-02 - GEO-GNOME: GEO Global Network for Observation and Information in Mountain Environments

Priority

High

Stability

Stable.

6.4.8 UR-WRM-008 – The GEO-GNOME search domain

Identifier

UR-WRM-008

Title

The GEO-GNOME search domain

Requirement Description

GEO-GNOME Portal users shall be enabled to search in a domain focussed on mountain information, including in particular, data from the following providers:

- Geodata: Centre for Development and the Environment;
- ArcGIS online ESRI;
- CCI Open Data Portal;
- Cropland data layer;
- CropScape;
- Digital Globe;
- Droughts WCS Server;
- EnviroGrids;
- Environmental data on the Mediterranean and Black Sea regions;
- Esri GEOSS Portal;
- Eumetsat;
- European Environmenta Agency SDI catalog;
- EvK2 CNR;
- CEOS;
- Finnish Open Data;
- GBIF;
- GEO SUR;
- Geodatenbank-DE;
- geonetwork GRID;
- geoportal.de;
- IMERG NASA;
- GRDC/GEOWOW;
- GMU LAITS;
- Haiti Data Store;
- CUAHSI-HIS;
- ICIMOD;
- IGN;
- IMERG;
- ISRO;
- ISPRA;

- ISRIC;
- Joint Research Center Data Catalog;
- NASA;
- ORNL;
- One Geology;
- Open Topograpy;
- OpenAerialMap;
- PREVIEW;
- RCMRD;
- SEDAC;
- Sentinel;
- SAEON;
- Swiss Federal Spatial Data Infrastructure;
- TRMM;
- UK Data.Gov;
- UNEP;
- US Data Gov;
- VegScape;
- VITO.

Source

UC-WRM-02 - GEO-GNOME: GEO Global Network for Observation and Information in Mountain Environments

Priority

High

Stability

Stable. However the providers list might change in the future; in particular new providers could be added.

6.4.9 UR-WRM-009 – A dedicated portal for the GTN-H community

Identifier

UR-WRM-009

Title

A dedicated portal for the GTN-H community

Requirement Description

The GNT-H user shall be enabled to access a dedicated Portal, the GTN-H Portal, providing search capabilities that mirror the ones offered by the GEOSS Portal, in particular as regards the search criteria, the filtering criteria, the results browse, selection and visualization capabilities.

Source

UC-WRM-03 – GTN-H: The Global Terrestrial Network for Hydrology

Priority

High

Stability

Stable.

6.4.10 UR-WRM-010 – The GTN-H search keywords

Identifier

UR-WRM-010

Title

The GTN-H search keywords

Requirement Description

GTN-H Portal users shall be enabled to perform their searches based on the following search keywords:

- Water
- Water quality
- Isotopes
- Precipitation
- Rain
- Rivers
- Runoff
- Discharge
- Lakes
- Reservoirs
- Groundwater
- Soil moisture
- Snow
- Ice
- Glacier
- Terrestrial
- Observations

Source

UC-WRM-03 – GTN-H: The Global Terrestrial Network for Hydrology

Priority

High

Stability

Stable.

6.4.11 UR-WRM-011 – The GTN-H search domain

Identifier

UR-WRM-011

Title

The GTN-H search domain

Requirement Description

GNT-H Portal users shall be enabled to search in a domain that includes data and information from the following providers:

- AQUASTAT
- GEMS/Water
- GNIP/GNIR
- GPCC
- GRDC
- HYDROLARE
- IGRAC
- ISMN
- LEGOS
- NSIDC
- WGMS
- Earth2Observe
- FAO
- Global River Discharge Datasets (GRDC)
- CUAHSI-HIS
- SMOS (ESA)
- UNEP Env Data Expl (WMS)

Source

UC-WRM-03 – GTN-H: The Global Terrestrial Network for Hydrology

Priority

High

Stability

Stable. However the providers list might change and be further detailed in the future; in particular new providers could be added.

6.4.12 UR-WRM-012 – Accessing data and information from the Copernicus Marine Environment Monitoring Service

Identifier

UR-WRM-012

Title

Accessing data and information from the Copernicus Marine Environment Monitoring Service

Requirement Description

The user shall be enabled to search for and access data and information as provided by the Copernicus Marine Environment Monitoring Service.

Source

UC-WRM-04 – Access to data from the Copernicus Marine Environment Monitoring Service

Priority

High

Stability

Stable.

6.4.13 UR-WRM-013 – Accessing data and information from the Copernicus Land Monitoring Service

Identifier

UR-WRM-013

Title

Accessing data and information from the Copernicus Land Monitoring Service

Requirement Description

The user shall be enabled to search for and access data and information as provided by all of the three components of the Copernicus Land Monitoring Service (Global, Pan European, Local).

Source

UC-WRM-05 – Access to data from the Copernicus Land Monitoring Service

Priority

High

Stability

Stable.

6.4.14 UR-WRM-014 – Searching for GEOSS data via the Space4Water Portal

Identifier

UR-WRM-014

Title

Searching for GEOSS data via the Space4Water Portal

Requirement Description

The Space4Water Portal user shall be enabled to search for GEOSS data, by making use of the GEOSS Platform search and filtering capabilities, including the filters foreseen by the GEOSS Platform.

Source

UC-WRM-06 – GEOSS for the Space4Water

Priority

High

Stability

Stable.

6.4.15 UR-WRM-015 – Browsing through GEOSS data via the Space4Water Portal

Identifier

UR-WRM-015

Title

Browsing through GEOSS data via the SWOS Portal

Requirement Description

The Space4Water Portal user, in response to a search for GEOSS data, shall be enabled to browse through the search results using the same tools offered by the GEOSS Platform and to benefit from the same visualization options (e.g. footprints) in the Space4Water Portal map viewer.

Source

UC-WRM-06 – GEOSS for the Space4Water

Priority

High

Stability

Stable.

6.4.16 UR-WRM-016 – Discovery of ESA Hydrology TEP

Identifier

UR-WRM-016

Title

Discovery of ESA Hydrology TEP

Requirement Description

The user shall be enabled to discover the ESA Hydrology Thematic Exploitation Platform and find the corresponding access URL.

Source

UC-WRM-07 – Access to ESA Hydrology TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.4.17 UR-WRM-017 – Discovery and access of data and information produced by the Hydrology TEP

Identifier

UR-WRM-017

Title

Discovery and access of data and information produced by the Hydrology TEP

Requirement Description

The user performing a search for geohazards data shall be enabled to find products and information produced by the Hydrology TEP (preregistered, or systematically registered).

Source

UC-WRM-07 – Access to ESA Hydrology TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.4.18 UR-WRM-018 – Hydrology TEP service execution and products generation

Identifier

UR-WRM-018

Title

Hydrology TEP service execution and products generation

Requirement Description

The user performing a search for geohazards data, information and services shall be enabled to find one (or more) Hydrology TEP service(s) that can generate that information and can be executed through the GEOSS Platform. This means that the user shall be enabled to select the service, define/refine the area of interest and time range, search for and select the input data (ideally in the GEOSS), select the Cloud computing platform of preference among the available and start the service execution. The user shall also be able to visualize information on the underlying workflow and logging info. The results will then be available in the user workspace. The user shall be notified when the results become available.

Source

UC-WRM-07 – Access to ESA Hydrology TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.5 Requirements from Biodiversity and Ecosystem Sustainability communities

6.5.1 UR-BES-001 – Search for Ecosystems, Protected Areas, Storylines and Workflows

Identifier

UR-BES-001

Title

Search for Ecosystems, Protected Areas, Storylines and Workflows.

Requirement Description

The user shall be able to search for the ECOPOTENTIAL-defined Ecosystems, Protected Areas, Storylines and Workflows and visualize, upon selection, the corresponding information.

Source

UC-BES-01 - The ECOPotential Knowledge Generator

Priority

High

Stability

Stable.

6.5.2 UR-BES-002 – Running ECOPOTENTIAL workflows

Identifier

UR-BES-002

Title

Running ECOPOTENTIAL workflows

Requirement Description

The user shall be able to execute the workflows developed by the ECOPOTENTIAL project and access the corresponding results.

Source

UC-BES-01 - The ECOPotential Knowledge Generator

Priority

High

Stability

Stable.

6.5.3 UR-BES-003 – Graph-based navigation of the ECOPOTENTIAL Ontology concepts

Identifier

UR-BES-003

Title

Graph-based navigation of the ECOPOTENTIAL Ontology concepts

Requirement Description

The user shall be able to execute through the GEOSS Platform the workflows developed by the ECOPOTENTIAL project. This means that the user shall be enabled to select the workflow, define/refine the area of interest and time range, search for and select the input data (ideally in the GEOSS), select the Cloud computing platform of preference among the available and start the service execution. The user shall also be able to visualize information on the underlying workflow and logging info. The results will then be available in the user workspace. The user shall be notified when the results become available.

.

Source

UC-BES-01 - The ECOPotential Knowledge Generator

Priority

High

Stability

Stable.

6.5.4 UR-BES-004 – Input data for ECOPOTENTIAL workflows in GEOSS

Identifier

UR-BES-004

Title

Input data for ECOPOTENTIAL workflows in GEOSS

Requirement Description

The user shall be enabled to search and select the input data for the ECOPOTENTIAL workflows among the GEOSS resources.

Source

UC-BES-01 - The ECOPotential Knowledge Generator

Priority

High

Stability

Stable.

6.5.5 UR-BES-005 – Searching for GEOSS data via the SWOS Portal

Identifier

UR-BES-005

Title

Searching for GEOSS data via the SWOS Portal

Requirement Description

The SWOS Portal user shall be enabled to search for GEOSS data, in particular Landsat, Sentinel and GBIF data, making use of the GEOSS Platform search and filtering capabilities, including the “smart filters” the GEOSS Platform foresees for Sentinel data and for Landsat data.

Source

UC-BES-02 – GEOSS for the Satellite-based Wetland Observation Service

Priority

High

Stability

Stable. However new data sources could be added in the future.

6.5.6 UR-BES-006 – Browsing through GEOSS data via the SWOS Portal

Identifier

UR-BES-006

Title

Browsing through GEOSS data via the SWOS Portal

Requirement Description

The SWOS Portal user, in response to a search for GEOSS data, shall be enabled to browse through the search results using the same tools offered by the GEOSS Platform and to benefit from the same visualization options (e.g. footprints) in the SWOS Portal map viewer.

Source

UC-BES-02 – GEOSS for the Satellite-based Wetland Observation Service

Priority

High

Stability

Stable.

6.5.7 UR-BES-007 – Discovery of ESA Forestry TEP

Identifier

UR-BES-007

Title

Discovery of ESA Forestry TEP

Requirement Description

The user shall be enabled to discover the ESA Forestry Thematic Exploitation Platform and find the corresponding access URL.

Source

UC-BES-03 – Access to ESA Forestry TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.5.8 UR-BES-008 – Discovery and access of data and information produced by the Forestry TEP

Identifier

UR-BES-008

Title

Discovery and access of data and information produced by the Forestry TEP

Requirement Description

The user performing a search for forestry data shall be enabled to find products and information produced by the Forestry TEP (preregistered, or systematically registered).

Source

UC-BES-03 – Access to ESA Forestry TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.5.9 UR-BES-009 – Forestry TEP service execution and products generation

Identifier

UR-BES-009

Title

Forestry TEP service execution and products generation

Requirement Description

The user performing a search for forestry data, information and services shall be enabled to find one (or more) Forestry TEP service(s) that can generate that information and can be executed through the GEOSS Platform. This means that the user shall be enabled to select the service, define/refine the area of interest and time range, search for and select the input data (ideally in the GEOSS), select the Cloud computing platform of preference among the available and start the service execution. The user shall also be able to visualize information on the underlying workflow and logging info. The results will then be available in the user workspace. The user shall be notified when the results become available.

Source

UC-BES-03 – Access to ESA Forestry TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.6 Requirements from Public Health Surveillance communities

6.6.1 UR-PHS-001 – A dedicated portal for the GOS4M community

Identifier

UR-PHS-001

Title

A dedicated portal for the GOS4M community

Requirement Description

The GOS4M user shall be enabled to access a dedicated Portal, the GOS4M Portal, providing search capabilities that mirror the ones offered by the GEOSS Portal, in particular as regards the search criteria, the filtering criteria, the results browse, selection and visualization capabilities.

Source

UC-PHS-01 - GOS4M: Global Observation System for Mercury

Priority

High

Stability

Stable.

6.6.2 UR-PHS-002 – Accessing data and information from the Copernicus Atmosphere Monitoring Service

Identifier

UR-PHS-002

Title

Accessing data and information from the Copernicus Atmosphere Monitoring Service

Requirement Description

The user shall be enabled to search for and access data and information on atmospheric composition (current, past and forecasts) as provided by the Copernicus Atmosphere Monitoring Service.

Source

UC-PHS-02 – Access to data from the Copernicus Atmosphere Monitoring Service

Priority

High

Stability

Stable.

6.7 Requirements from Agriculture and Food Security communities

6.7.1 UR-AFS-001 – Discovering and accessing land degradation showcases from EuroGEO

Identifier

UR-AFS-001

Title

Discovering and accessing land degradation showcases from EuroGEO

Requirement Description

The user shall be enabled to discover services, applications and showcases provided by EuroGEO in response to a query for land degradation due to forest fires.

Source

UC-AFS-01 – Land degradation due to forest fires

Priority

High

Stability

Stable.

6.7.2 UR-AFS-002 – Retrieving knowledge on the creation of a crop mask

Identifier

UR-AFS-001

Title

Retrieving knowledge on the creation of a crop mask

Requirement Description

The user shall be enabled to find a Knowledge Package that describes the solution to create a Crop Mask, which includes (as provided by the GEO Knowledge Hub) information on:

- Research publication;
- Input data;
- Satellite Data;
- In Situ Data;
- Software/ Algorithms/ Models;
- Working environment (Processing power);
- Documentation.

Source

UC-AFS-02 – Creating a crop mask

Priority

High

Stability

Stable.

6.7.3 UR-AFS-003 – Discovery of ESA Food Security TEP

Identifier

UR-AFS-003

Title

Discovery of ESA Food Security TEP

Requirement Description

The user shall be enabled to discover the ESA Food Security Thematic Exploitation Platform and find the corresponding access URL.

Source

UC-AFS-03 – Access to ESA Food Security TEP

Priority

Medium

Stability

Stable.

6.7.4 UR-AFS-004 – Discovery and access of data and information produced by the Food Security TEP

Identifier

UR-AFS-004

Title

Discovery and access of data and information produced by the Food Security TEP

Requirement Description

The user shall be enabled to search for and access high-accuracy, quality checked biophysical parameters, suitable for use in operational scenarios, which are:

- Leaf Area,
- fAPAR,
- fCOVER,
- NDVI)

Source

UC-AFS-03 – Access to ESA Food Security TEP

Priority

Medium

Stability

Stable

6.7.5 UR-AFS-005 – Food Security TEP services execution and products generation

Identifier

UR-AFS-005

Title

Food Security TEP service execution and products generation

Requirement Description

The user searching for indices such as vegetation and water content indices from Sentinel-2 data as well as chlorophyll, soil and red edge indices, shall be enabled to access the TEP service that enables the computation of the index in question. This means that the user shall be enabled to select the service, define/refine the area of interest and time range, search for and select the input data (ideally in the GEOSS), select the Cloud computing platform of preference among the available and start the service execution. The user shall also be able to visualize information on the underlying workflow and logging info. The results will then be available in the user workspace. The user shall be notified when the results become available.

The specific indices available from the Food Security TEP are:

- Normalized Water Difference: The NDWI correlates with the water content of vegetation and is complementary to the NDVI.
- Brightness Index: The brightness index is linked with soil humidity and the presence of salts in the soil.
- Mean Clorophyll Absorption: MCARI is responsive to leaf chlorophyll concentration and ground reflectance. Generally, high MCARI values indicate low leaf chlorophyll content.
- Red Edge Position: S2REP is sensitive to both (crop) chlorophyll content and growth status. Generally, the higher the S2REP value, the higher the chlorophyll content.
- Band Ratio: This service provides users the ability to configure Sentinel-2 bands for the processing of (Band_A) / (Band_B).
- Normalized Band Difference: This service provides users the ability to configure Sentinel-2 bands for the processing of (Band_A - Band_B)/ (Band_A + Band_B).

Source

UC-AFS-03 – Access to ESA Food Security TEP

Priority

Medium

Stability

Stable.

6.8 Requirements from Sustainable Urban Development communities

6.8.1 UR-SUD-001 – Discovery of ESA Urban TEP

Identifier

UR-SUD-001

Title

Discovery of ESA Urban TEP

Requirement Description

The user shall be enabled to discover the ESA Urban Thematic Exploitation Platform and find the corresponding access URL.

Source

UC-SUD-01 – Access to ESA Urban TEP

Priority

Medium

Stability

Stable.

6.8.2 UR-SUD-002 – Discovery and access of data and information produced by the Urban TEP

Identifier

UR-SUD-002

Title

Discovery and access of data and information produced by the Urban TEP

Requirement Description

The user performing a search for urban development data shall be enabled to find products and information produced by the Urban TEP (preregistered, or systematically registered).

Source

UC-SUD-01 – Access to ESA Urban TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.8.3 UR-SUD-003 – Urban TEP service execution and products generation

Identifier

UR-SUD-003

Title

Urban TEP service execution and products generation

Requirement Description

The user performing a search for urban development data, information and services shall be enabled to find one (or more) Urban TEP service(s) that can generate that information and can be executed through the GEOSS Platform. This means that the user shall be enabled to select the service, define/refine the area of interest and time range, search for and select the input data (ideally in the GEOSS), select the Cloud computing platform of preference among the available and start the service execution. The user shall also be able to visualize information on the underlying workflow and logging info. The results will then be available in the user workspace. The user shall be notified when the results become available.

Source

UC-SUD-01 – Access to ESA Urban TEP

Priority

Medium

Stability

To be better detailed regarding type of data.

6.8.4 UR-SUD-004 – Visualizing and retrieving SDG indicator values from the SMURBS/ERA-PLANET platform

Identifier

UR-SUD-004

Title

Visualizing and retrieving SDG indicator values from the SMURBS/ERA-PLANET platform.

Requirement Description

The user shall be able to access SDG computations provided by the SMURBS/ERA-PLANET, visualizing them as map layers and retrieving them in table format (spreadsheet). The user shall be able to choose between city definitions (Functional Urban Area-FUA or Urban Centre-UC) and year of interest to view the Indicator value at the country but also at the city level.

Source

UC-SUD-02 – Exploring SDG Indicator 11.6.2 and its sensitivity to a city's definition and comparing with values from other sources

Priority

High

Stability

Stable

6.8.5 UR-SUD-005 – Comparison of SDG indicator 11.6.2 from multiple sources

Identifier

UR-SUD-005

Title

Comparison of SDG indicator 11.6.2 from multiple sources

Requirement Description

The user shall be provided with tools that enable the graphical comparison, in a selected geographical area and time range, of SDG indicator 11.6.2 values coming from different sources, which include, if available and according to the user preference: (i) values computed by the SMURBS/ERA Planet platform; (ii) "official" values from the UNSD.

Source

UC-SUD-02 – Exploring SDG Indicator 11.6.2 and its sensitivity to a city's definition and comparing with values from other sources

Priority

High

Stability

Stable

6.9 Requirements from GEO Regional Hubs

6.9.1 UR-GRH-001 – A dedicated portal for the AmeriGEO community

Identifier

UR-GRH-001

Title

A dedicated portal for the AmeriGEO community

Requirement Description

The AmeriGEO users shall be enabled to access a dedicated Portal, the AmeriGEO Portal, providing search capabilities that mirror the ones offered by the GEOSS Portal, in particular as regards the search criteria, the filtering criteria, the results browse, selection and visualization capabilities.

Source

UC-GRH-01 – AmeriGEO

Priority

High

Stability

Stable.

6.9.2 UR-GRH-002 – The AmeriGEO search keywords

Identifier

UR-GRH-002

Title

The AmeriGEO search keywords

Requirement Description

AmeriGEO users shall be enabled to perform their searches based at list on the following search keywords:

- Water,
- Agua,
- Disasters,
- desastre,
- Agriculture,
- Agricultura,
- Ecosystems,
- ecosistemas,
- indicators,
- vegetación,
- preparedness,
- geoservice,
- infraestructurera,
- infrastructure,
- Topografiia,
- Ocean,
- Cartografia,
- Geodata,

- hidrografía,
- educación,
- Education,
- Hydrography,
- Cartography.

Source

UC-GRH-01 – AmeriGEO

Priority

High

Stability

Stable.

6.9.3 UR-GRH-003 – The AmeriGEO Region Of Interest

Identifier

UR-GRH-003

Title

The AmeriGEO Region Of Interest

Requirement Description

AmeriGEO users shall be enabled to select as Region of Interest for their searches any geographical area in the entire Americas geographical extent.

Source

UC-GRH-01 – AmeriGEO

Priority

High

Stability

Stable.

6.9.4 UR-GRH-004 – The AmeriGEO search domain

Identifier

UR-GRH-004

Title

The AmeriGEO search domain

Requirement Description

AmeriGEO users shall be enabled to search in a domain that includes all the GEOSS resources over the Americas and, in particular, data from National, Regional and Global providers of Social, Economic, Environmental and other data, tools, applications and services.

Source

UC-GRH-01 – AmeriGEO

Priority

High

Stability

Unstable. The providers list might need to be better defined in the future.

6.9.5 UR-GRH-005 – The AmeriGEO filtering capabilities

Identifier

UR-GRH-005

Title

The AmeriGEO filtering capabilities

Requirement Description

AmeriGEO users should be enabled to filter the search results based on customized filter criteria including:

- Filter by Country;
- Filter by AmeriGEO Providers - see https://data.amerigeoss.org/api/3/action/organization_list;
- Filter by AmeriGEO topics - see https://data.amerigeoss.org/api/3/action/group_list;
- Filter by AmeriGEO Communities: Agriculture, Biodiversity and Ecosystems, Disasters, Water, Sustainable Development Goals.

Source

UC-GRH-01 – AmeriGEO

Priority

Medium

Stability

Stable

6.9.6 UR-GRH-007 – A dedicated Portal for the DBAR community

Identifier

UR-GRH-007

Title

A dedicated Portal for the DBAR community

Requirement Description

The DBAR users shall be enabled to access a dedicated Portal, the DBAR Portal, offering ad-hoc functionalities for discovering, accessing and visualizing data and information concerning the DBAR.

Source

UC-GRH-02 - DBAR: Digital Belt And Road

Priority

High

Stability

Stable.

6.9.7 UR-GRH-008 – Search by DBAR focus “area”

Identifier

UR-GRH-008

Title

Search by DBAR focus “area”

Requirement Description

The user shall be enabled to search for geospatial data and information over the DBAR region by selecting as search criteria the focus area(s) of interest among the ones defined as DBAR challenges, which are:

- Agriculture and Food Security;
- Environmental Change;
- Water;
- Natural and Cultural Heritage;
- Disaster Risk Reduction;
- Urban Environment;
- Coastal Zone;
- High Mountains and Cold regions.

Source

UC-GRH-02 - DBAR: Digital Belt And Road

Priority

High.

Stability

Stable.

6.9.8 UR-GRH-009 – The DBAR search domain

Identifier

UR-GRH-009

Title

The DBAR search domain

Requirement Description

DBAR Portal users shall be enabled to search in a domain that includes data relevant for the DBAR challenges and in particular data from the China GEOSS catalogue.

Source

UC-GRH-02 - DBAR: Digital Belt And Road

Priority

High

Stability

Unstable. The providers list might need to be better defined in the future.

6.9.9 UR-GRH-010 – Chinese language support

Identifier

UR-GRH-010

Title

Chinese language support

Requirement Description

DBAR Portal users shall be supported with a translation function in Chinese of at least the Graphical User Interface textual elements.

Source

UC-GRH-02 - DBAR: Digital Belt And Road

Priority

High.

Stability

Stable.

6.9.10 UR-GRH-011 – Accessing data, information and knowledge from EuroGEO

Identifier

UR-GRH-011

Title

Accessing data, information and knowledge from EuroGEO

Requirement Description

Users shall be enabled to search EuroGEO-related resources, explore the relevant data with the possibility to filter by the organizations that provide them and visualize and/or download the results.

Source

UC-GRH-03 – Discovery and visualization of resources from EuroGEO

Priority

High

Stability

Stable.

6.9.11 UR-GRH-012 – Accessing data, information and knowledge from AmeriGEO

Identifier

UR-GRH-012

Title

Accessing data, information and knowledge from AmeriGEO

Requirement Description

Users shall be enabled to search in the AmeriGEO Regional Node, explore the relevant data with the possibility to filter by the organizations that provide them and visualize and/or download the results.

Source

UC-GRH-04 – Discovery and visualization of resources from AmeriGEO

Priority

High

Stability

Stable.

6.10 SDG Requirements

6.10.1 UR-SDG-001 – The Essential Variables Portal

Identifier

UR-SDG-001

Title

The Essential Variables Portal

Requirement Description

The Essential Variables Communities shall be enabled to access a dedicated Portal, the EV Portal, providing Essential Variables – based search capabilities.

Source

UC-SDG-01 - GEO Essential and the Essential Variables Portal

Priority

High

Stability

Unstable. This requirement needs to be better defined and articulated as needed in more specific requirements for the EWV and EBV cases. This has already been done for the ECVs (see 5.3.1 and 6.3).

6.10.2 UR-SDG-002 – Search by EBV

Identifier

UR-SDG-002

Title

Search by EBV

Requirement Description

The EV Portal user shall be enabled to search for biodiversity data by selecting as search criteria the Essential Biodiversity Variable(s) of interest among the ones defined at http://geobon.org/essential-biodiversity-variables/classes/.

Source

UC-SDG-01 - GEO Essential and the Essential Variables Portal

Priority

High.

Stability

Stable.

6.10.3 UR-SDG-003 – Search by EWV

Identifier

UR-SDG-003

Title

Search by EWV

Requirement Description

The EV Portal user shall be enabled to search for water data by selecting as search criteria the Essential Water Variable(s) of interest.

Source

UC-SDG-01 - GEO Essential and the Essential Variables Portal

Priority

High.

Stability

Unstable. EWV list to be used needs to be specified.

6.10.4 UR-SDG-004 – Searching SDG-relevant data

Identifier

UR-SDG-004

Title

Searching SDG-relevant data

Requirement Description

The SDG community shall be enabled to discover SDG-relevant data by navigating the hierarchical structure: goal, target, indicator, sub-indicator (if any) and starting the search at any of those levels.

Source

UC-SDG-02 – Searching for SDG indicators

Priority

High

Stability

Stable

6.10.5 UR-SDG-005 – SDG search by country

Identifier

UR-SDG-005

Title

SDG search by country

Requirement Description

The SDG community shall be enabled to restrict the search for SDG-relevant data to a specific country in the world.

Source

UC-SDG-02 – Searching for SDG indicators

Priority

High

Stability

Stable

6.10.6 UR-SDG-006 – SDG search by indicator-relevant keywords

Identifier

UR-SDG-006

Title

SDG search by indicator-relevant keywords

Requirement Description

The SDG community shall be enabled to search for SDG indicator –relevant data by indicator-relevant keywords.

Source

UC-SDG-02 – Searching for SDG indicators

Priority

High

Stability

Stable

This showcase is about accessing SDG computations provided by authoritative and reliable source (the UN Statistics Division), visualizing them as map layers and/or retrieving them in table format (spreadsheet).

6.10.7 UR-SDG-007 – Visualizing and retrieving SDG indicator values from the UNSD

Identifier

UR-SDG-007

Title

Visualizing and retrieving SDG indicator values from the UNSD

Requirement Description

The user shall be able to access SDG computations provided by authoritative and reliable sources such as the UN Statistics Division, visualizing them as map layers and/or retrieving them in table format (spreadsheet).

Source

UC-SDG-03 – Access to SDG indicator values from UNSD

Priority

High

Stability

Stable

6.10.8 UR-SDG-008 – SDG indicator 15.3.1 computation service discovery

Identifier

UR-SDG-008

Title

SDG indicator 15.3.1 computation service discovery

Requirement Description

When searching for the SDG indicator 15.3.1, the user shall receive a results list including a service that enables the computation of this indicator.

Source

UC-SDG-04 – Generating SDG indicator 15.3.1 and comparing with values from other sources

Priority

High

Stability

Stable

6.10.9 UR-SDG-009 – SDG indicator 15.3.1 computation service execution

Identifier

UR-SDG-009

Title

SDG indicator 15.3.1 computation service execution

Requirement Description

The user shall be enabled to select the SDG indicator 15.3.1 calculation service, define/refine the area of interest (this depending of the level – global, regional or country, at which the indicator is provided, and inside the service-specific macro-area) and time range, search for and select the input data, select the Cloud computing platform of preference among the available and start the service execution. The user shall also be able to visualize information on the underlying workflow and logging info.

Source

UC-SDG-04 – Generating SDG indicator 15.3.1 and comparing with values from other sources

Priority

High

Stability

Stable

6.10.10 UR-SDG-010 – Visual representation of SDG indicator 15.3.1 computations

Identifier

UR-SDG-010

Title

Visual representation of SDG indicator 15.3.1 computations

Requirement Description

The user shall be enabled to visualize the values resulting from the calculation of SDG indicator 15.3.1 as a layer on the map (with legend).

Source

UC-SDG-04 – Generating SDG indicator 15.3.1 and comparing with values from other sources

Priority

High

Stability

Stable

6.10.11 UR-SDG-011 – Comparison of SDG indicator 15.3.1 from multiple sources

Identifier

UR-SDG-011

Title

Comparison of SDG indicator 15.3.1 from multiple sources

Requirement Description

The user shall be provided with tools that enable the graphical comparison, in a selected geographical area and time range, of SDG indicator 15.3.1 values coming from different sources, which include, if available and according to the users's preference: (i) results from own computations; (ii) previously computed indicator values from other users; (iii) "official" values from the UNSD.

Source

UC-SDG-04 – Generating SDG indicator 15.3.1 and comparing with values from other sources

Priority

High

Stability

Stable

6.10.12 UR-SDG-012 – SDG indicator 14.1.1 computation service discovery

Identifier

UR-SDG-012

Title

SDG indicator 14.1.1 computation service discovery

Requirement Description

When searching for the SDG indicator 14.1.1, the user shall receive a results list including a service that enables the computation of this indicator.

Source

UC-SDG-04 – Generating SDG indicator 15.3.1 and comparing with values from other sources

Priority

High

Stability

Stable

6.10.13 UR-SDG-013 – SDG indicator 14.1.1 computation service execution

Identifier

UR-SDG-013

Title

SDG indicator 14.1.1 computation service execution

Requirement Description

The user shall be enabled to select the SDG indicator 14.1.1 calculation service, define/refine the area of interest (this depending of the level – global, regional or country, at which the indicator is provided, and inside the service-specific macro-area) and time range, search for and select the input data, select the Cloud computing platform of preference among the available and start the service execution. The user shall also be able to visualize information on the underlying workflow and logging info.

Source

UC-SDG-05 – Generating SDG indicator 14.1.1 and comparing with values from other sources

Priority

High

Stability

Stable

6.10.14 UR-SDG-014 – Visual representation of SDG indicator 14.1.1 computations

Identifier

UR-SDG-014

Title

Visual representation of SDG indicator 14.1.1 computations

Requirement Description

The user shall be enabled to visualize the values resulting from the calculation of SDG indicator 14.1.1 as a layer on the map (with legend).

Source

UC-SDG-05 – Generating SDG indicator 14.1.1 and comparing with values from other sources

Priority

High

Stability

Stable

6.10.15 UR-SDG-015 – Comparison of SDG indicator 14.1.1 from multiple sources

Identifier

UR-SDG-015

Title

Comparison of SDG indicator 14.1.1 from multiple sources

Requirement Description

The user shall be provided with tools that enable the graphical comparison, in a selected geographical area and time range, of SDG indicator 14.1.1 values coming from different sources, which include, if available and according to the user preference: (i) results from own computations; (ii) previously computed indicator values from other users; (iii) "official" values from the UNSD.

Source

UC-SDG-05 – Generating SDG indicator 14.1.1 and comparing with values from other sources

Priority

High

Stability

Stable

6.10.16 UR-SDG-016 – SDG indicator 11.3.1 computation service discovery

Identifier

UR-SDG-016

Title

SDG indicator 11.3.1 computation service discovery

Requirement Description

When searching for the SDG indicator 11.3.1, the user shall receive a results list including a service that enables the computation of this indicator.

Source

UC-SDG-06 – Generating SDG indicator 11.3.1 and comparing with values from other sources

Priority

High

Stability

Stable

6.10.17 UR-SDG-017 – SDG indicator 11.3.1 computation service execution

Identifier

UR-SDG-017

Title

SDG indicator 11.3.1 computation service execution

Requirement Description

The user shall be enabled to select the SDG indicator 11.3.1 calculation service, define/refine the area of interest (this depending of the level – global, regional or country, at which the indicator is provided, and inside the service-specific macro-area) and time range, search for and select the input data, select the Cloud computing platform of preference among the available and start the service execution. The user shall also be able to visualize information on the underlying workflow and logging info.

Source

UC-SDG-06 – Generating SDG indicator 11.3.1 and comparing with values from other sources

Priority

High

Stability

Stable

6.10.18 UR-SDG-018 – Visual representation of SDG indicator 11.3.1 computations

Identifier

UR-SDG-018

Title

Visual representation of SDG indicator 11.3.1 computations

Requirement Description

The user shall be enabled to visualize the values resulting from the calculation of SDG indicator 11.3.1 as a layer on the map (with legend).

Source

UC-SDG-06 – Generating SDG indicator 11.3.1 and comparing with values from other sources

Priority

High

Stability

Stable

6.10.19 UR-SDG-019 – Comparison of SDG indicator 11.3.1 from multiple sources

Identifier

UR-SDG-019

Title

Comparison of SDG indicator 11.3.1 from multiple sources

Requirement Description

The user shall be provided with tools that enable the graphical comparison, in a selected geographical area and time range, of SDG indicator 11.3.1 values coming from different sources, which include, if available and according to the user preference: (i) results from own computations; (ii) previously computed indicator values from other users; (iii) "official" values from the UNSD.

Source

UC-SDG-06 – Generating SDG indicator 11.3.1 and comparing with values from other sources

Priority

High

Stability

Stable

6.11 Cross-thematic Requirements

6.11.1 UR-CRT-001 – A dedicated Portal for the ENERGIC-OD community

Identifier

UR-CRT-001

Title

A dedicated Portal for the ENERGIC-OD community

Requirement Description

The ENERGIC-OD user shall be enabled to access a dedicated Portal, the ENERGIC-OD Portal, providing search capabilities that mirror the ones offered by the GEOSS Portal, in particular as regards the search criteria, the filtering criteria, the results browse, selection and visualization capabilities.

Source

UC-CRT-01 - ENERGIC OD: European NEtwork for Redistributing Geospatial Information to user Communities - Open Data

Priority

High

Stability

Stable.

6.11.2 UR-CRT-002 – The ENERGIC-OD search domain

Identifier

UR-CRT-002

Title

The ENERGIC-OD search domain

Requirement Description

ENERGIC-OD Portal users shall be enabled to search in a domain of heterogeneous geospatial data and information. Data include: historical maps (Zaragoza, Milan) for citizens (e.g. tourism) and professional (e.g. geology) applications, crowdsourcing data (e.g. for coastal monitoring, sensor acquisition, noise maps), model outputs for agriculture, ecosystems and biodiversity and other geographical data.

Source

UC-WRM-02 - GEO-GNOME: GEO Global Network for Observation and Information in Mountain Environments

Priority

High

Stability

Stable. However the providers list might change in the future; in particular new providers could be added.

6.11.3 UR-CRT-003 – A dedicated Portal for the EnviDat community

Identifier

UR-CRT-003

Title

A dedicated Portal for the EnviDat community

Requirement Description

The EnviDat user shall be enabled to access a dedicated Portal, the EnviDat Portal, providing search capabilities that mirror the ones offered by the GEOSS Portal, in particular as regards the search criteria, the filtering criteria, the results browse, selection and visualization capabilities.

Source

UC-CRT-02 – EnviDat: The Environmental Data Portal of the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL)

Priority

High

Stability

Stable.

6.11.4 UR-CRT-004 – The EnviDat search keywords

Identifier

UR-CRT-004

Title

The Envidat search keywords

Requirement Description

EnviDat users shall be enabled to perform their searches based on the search keywords reported in Annex K.

Source

UC-CRT-02 – EnviDat: The Environmental Data Portal of the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL)

Priority

High

Stability

Stable.

6.11.5 UR-CRT-005 – The Envidat Region Of Interest

Identifier

UR-CRT-005

Title

The EnviDat Region Of Interest

Requirement Description

EnviDat users shall be enabled to select as Region of Interest for their searches any geographical area over Switzerland.

Source

UC-CRT-02 – EnviDat: The Environmental Data Portal of the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL)

Priority

High

Stability

Stable.

6.11.6 UR-CRT-006 – The EnviDat search domain

Identifier

UR-CRT-006

Title

The EnviDat search domain

Requirement Description

Envidat users shall be enabled to search in a domain that includes:

- data collected and archived by WSL and, in particular:

    - data from the research units and research programs in the areas of Forest, Landscape, Biodiversity, Natural hazards, and Snow and ice
    - Environmental datasets from providers associated with organizations of the ETH Domain as well as the ETH Competence Center Environment and Sustainability (CCES).
- Copernicus Sentinel data;
- Data from the SWISS Federal Spatial Data Infrastructure;
- USGS Landsat 8.

Source

UC-CRT-02 – EnviDat: The Environmental Data Portal of the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL)

Priority

High

Stability

Stable. However the providers list might change in the future; in particular new providers could be added.

6.11.7 UR-CRT-007 – Discovering and accessing DIAS Platforms

Identifier

UR-CRT-007

Title

Discovering and accessing DIAS Platforms

Requirement Description

The user shall be enables to discover the DIAS Platforms in response to a search for:

- Data provided by those platform;
- One or more DIAS Platforms of interest.

Source

UC-CRT-03 – Access to DIAS platforms

Priority

High

Stability

Stable.

6.11.8 UR-CRT-008 – Discovering and accessing DIAS Platform services

Identifier

UR-CRT-008

Title

Discovering and accessing DIAS Platform services

Requirement Description

The user shall be enabled to discover services and applications hosted by the DIAS Platforms in response to a query for:

- the corresponding thematic areas;
- products generated by those applications or services;
- the application/services themselves.

Source

UC-CRT-03 – Access to DIAS platforms

Priority

High

Stability

Stable.

7. Requirements traceability

	Req. Code	Req Title	Source Use Case
1.	UR-DRM-001	Earthquake search	UC-DRM-01 - Earthquake search and visualization
2.	UR-DRM-002	Earthquake search results	UC-DRM-01 - Earthquake search and visualization
3.	UR-DRM-003	Sorting earthquake search results	UC-DRM-01 - Earthquake search and visualization
4.	UR-DRM-004	Selecting the earthquake magnitude type	UC-DRM-01 - Earthquake search and visualization
5.	UR-DRM-005	Accessing Data and information from the Copernicus Emergency Service	UC-DRM-02 – Access to data from the Copernicus Emergency Management Service
6.	UR-DRM-006	Discovery of ESA GEOHazards TEP	UC-DRM-03 - Access to GEOHazards TEP
7.	UR-DRM-007	Discovery and access of data and information produced by the Geohazards TEP	UC-DRM-03 - Access to GEOHazards TEP
8.	UR-DRM-008	Geohazards TEP service execution and products generation	UC-DRM-03 - Access to GEOHazards TEP
9.	UR-CLI-001	Climate search domain	UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.
10.	UR-CLI-002	Search by GCOS ECV	UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.
11.	UR-CLI-003	Search by GCOS Measurement Domain	UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.
12.	UR-CLI-004	Search by GCOS focus “area”	UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.
13.	UR-CLI-005	Search by GCOS ECV products	UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.

	Req. Code	Req Title	Source Use Case
14.	UR-CLI-006	Changing automatic ECV selections	UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.
15.	UR-CLI-007	Changing automatic ECV products selections	UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.
16.	UR-CLI-008	Graph navigation of the climate concepts	UC-CLI-01 - Searching climate resources in GEOSS by the GCOS Essential Climate Variables.
17.	UR-CLI-009	Accessing data and information from the Copernicus Climate Change Service	UC-CLI-02 – Access to data from the Copernicus Climate Change Service.
18.	UR-CLI-010	Accessing climate information on coastal changes	UC-CLI-03 – Retrieval of publications from Zenodo regarding Coastline changes on Koh Tao island
19.	UR-CLI-011	Retrieving climate information from different knowledge sources	UC-CLI-03 – Retrieval of publications from Zenodo regarding Coastline changes on Koh Tao island
20.	UR-CLI-012	Registering own knowledge sources regarding coastline changes to GEOSS	UC-CLI-04 – Making visible to GEOSS users own knowledge regarding coastline change
21.	UR-CLI-013	Accessing climate data from AmeriGEO	UC-CLI-05 – Accessing Climate risk information for Central America from the GEO regional node AmeriGEO
22.	UR-CLI-014	Discovery of ESA Coastal TEP	UC-CLI-06 – Access to ESA Coastal TEP
23.	UR-CLI-015	Discovery and access of data and information produced by the Coastal TEP	UC-CLI-06 – Access to ESA Coastal TEP
24.	UR-CLI-016	Coastal TEP service execution and products generation	UC-CLI-06 – Access to ESA Coastal TEP
25.	UR-CLI-017	Discovery of ESA Polar TEP	UC-CLI-07 – Access to ESA Polar TEP

	Req. Code	Req Title	Source Use Case
26.	UR-CLI-018	Discovery and access of data and information produced by the Polar TEP	UC-CLI-07 – Access to ESA Polar TEP
27.	UR-CLI-019	Polar TEP service execution and products generation	UC-CLI-07 – Access to ESA Polar TEP
28.	UR-WRM-001	A dedicated Portal for the AtlantOs community	UC-WRM-01 - Atlantos: Optimising and Enhancing the Integrated Atlantic Ocean Observing Systems
29.	UR-WRM-002	The AtlantOs search keywords	UC-WRM-01 - Atlantos: Optimising and Enhancing the Integrated Atlantic Ocean Observing Systems
30.	UR-WRM-003	The AtlantOs Region Of Interest	UC-WRM-01 - Atlantos: Optimising and Enhancing the Integrated Atlantic Ocean Observing Systems
31.	UR-WRM-004	The AtlantOs search domain	UC-WRM-01 - Atlantos: Optimising and Enhancing the Integrated Atlantic Ocean Observing Systems
32.	UR-WRM-005	A dedicated Portal for the GEO-GNOME community	UC-WRM-02 - GEO-GNOME: GEO Global Network for Observation and Information in Mountain Environments
33.	UR-WRM-006	The GEO-GNOME search keywords	UC-WRM-02 - GEO-GNOME: GEO Global Network for Observation and Information in Mountain Environments
34.	UR-WRM-007	The GEO-GNOME Region Of Interest	UC-WRM-02 - GEO-GNOME: GEO Global Network for Observation and Information in Mountain Environments
35.	UR-WRM-008	The GEO-GNOME search domain	UC-WRM-02 - GEO-GNOME: GEO Global Network for Observation and Information in Mountain Environments
36.	UR-WRM-009	A dedicated portal for the GTN-H community	UC-WRM-03 – GTN-H: The Global Terrestrial Network for Hydrology

	Req. Code	Req Title	Source Use Case
37.	UR-WRM-010	The GTN-H search keywords	UC-WRM-03 – GTN-H: The Global Terrestrial Network for Hydrology
38.	UR-WRM-011	The GTN-H search domain	UC-WRM-03 – GTN-H: The Global Terrestrial Network for Hydrology
39.	UR-WRM-012	Accessing data and information from the Copernicus Marine Environment Monitoring Service	UC-WRM-04 – Access to data from the Copernicus Marine Environment Monitoring Service
40.	UR-WRM-013	Accessing data and information from the Copernicus Land Monitoring Service	UC-WRM-05 – Access to data from the Copernicus Land Monitoring Service
41.	UR-WRM-014	Searching for GEOSS data via the Space4Water Portal	UC-WRM-06 – GEOSS for the Space4Water
42.	UR-WRM-015	Browsing through GEOSS data via the Space4Water Portal	UC-WRM-06 – GEOSS for the Space4Water
43.	UR-WRM-016	Discovery of ESA Hydrology TEP	UC-WRM-07 – Access to ESA Hydrology TEP
44.	UR-WRM-017	Discovery and access of data and information produced by the Hydrology TEP	UC-WRM-07 – Access to ESA Hydrology TEP
45.	UR-WRM-018	Hydrology TEP service execution and products generation	UC-WRM-07 – Access to ESA Hydrology TEP
46.	UR-BES-001	Search for Ecosystems, Protected Areas, Storylines and Workflows	UC-BES-01 - The ECOPotential Knowledge Generator
47.	UR-BES-002	Running ECOPOTENTIAL workflows	UC-BES-01 - The ECOPotential Knowledge Generator
48.	UR-BES-003	Graph-based navigation of the ECOPOTENTIAL Ontology concepts	UC-BES-01 - The ECOPotential Knowledge Generator
49.	UR-BES-004	Input data for ECOPOTENTIAL workflows in GEOSS	UC-BES-01 - The ECOPotential Knowledge Generator
50.	UR-BES-005	Searching for GEOSS data via the SWOS Portal	UC-BES-02 – GEOSS for the Satellite-based Wetland Observation Service
51.	UR-BES-006	Browsing through GEOSS data via the SWOS Portal	UC-BES-02 – GEOSS for the Satellite-based Wetland Observation Service
52.	UR-BES-007	Discovery of ESA Forestry TEP	UC-BES-03 – Access to ESA Forestry TEP

	Req. Code	Req Title	Source Use Case
53.	UR-BES-008	Discovery and access of data and information produced by the Forestry TEP	UC-BES-03 – Access to ESA Forestry TEP
54.	UR-BES-009	Forestry TEP service execution and products generation	UC-BES-03 – Access to ESA Forestry TEP
55.	UR-PHS-001	A dedicated Portal for the GOS4M community	UC-PHS-01 - GOS4M: Global Observation System for Mercury
56.	UR-PHS-002	Accessing data and information from the Copernicus Atmosphere Monitoring Service	UC-PHS-02 – Access to data from the Copernicus Atmosphere Monitoring Service
57.	UR-AFS-001	Discovering and accessing land degradation showcases from EuroGEO	UC-AFS-01 – Land degradation due to forest fires
58.	UR-AFS-002	Retrieving knowledge on the creation of a crop mask	UC-AFS-02 – Creating a crop mask
59.	UR-AFS-003	Discovery of ESA Food Security TEP	UC-AFS-03 – Access to ESA Food Security TEP
60.	UR-AFS-004	Discovery and access of data and information produced by the Food Security TEP	UC-AFS-03 – Access to ESA Food Security TEP
61.	UR-AFS-005	Food Security TEP services execution and products generation	UC-AFS-03 – Access to ESA Food Security TEP
62.	UR-SUD-001	Discovery of ESA Urban TEP	UC-SUD-01 – Access to ESA Urban TEP
63.	UR-SUD-002	Discovery and access of data and information produced by the Urban TEP	UC-SUD-01 – Access to ESA Urban TEP
64.	UR-SUD-003	Urban TEP service execution and products generation	UC-SUD-01 – Access to ESA Urban TEP
65.	UR-SUD-004	Visualizing and retrieving SDG indicator values from the SMURBS/ERA-PLANET platform	UC-SUD-02 – Exploring SDG Indicator 11.6.2 and its sensitivity to a city's definition and comparing with values from other sources
66.	UR-SUD-005	Comparison of SDG indicator 11.6.2 from multiple sources	UC-SUD-02 – Exploring SDG Indicator 11.6.2 and its sensitivity to a city's definition and comparing with values from other sources
67.	UR-GRH-001	A dedicated Portal for the AmeriGEO community	UC-GRH-01 - AmeriGEO
68.	UR-GRH-002	The AmeriGEO search keywords	UC-GRH-01 - AmeriGEO

	Req. Code	Req Title	Source Use Case
69.	UR-GRH-003	The AmeriGEO Region Of Interest	UC-GRH-01 - AmeriGEO
70.	UR-GRH-004	The AmeriGEO search domain	UC-GRH-01 - AmeriGEO
71.	UR-GRH-005	The AmeriGEO filtering capabilities	UC-GRH-01 - AmeriGEO
72.	UR-GRH-007	A dedicated Portal for the DBAR community	UC-GRH-02 - DBAR: Digital Belt And Road
73.	UR-GRH-008	Search by DBAR focus “area”	UC-GRH-02 - DBAR: Digital Belt And Road
74.	UR-GRH-009	The DBAR search domain	UC-GRH-02 - DBAR: Digital Belt And Road
75.	UR-GRH-010	Chinese language support	UC-GRH-02 - DBAR: Digital Belt And Road
76.	UR-GRH-011	Accessing data, information and knowledge from EuroGEO	UC-GRH-03 – Discovery and visualization of resources from EuroGEO
77.	UR-GRH-012	Accessing data, information and knowledge from AmeriGEO	UC-GRH-04 – Discovery and visualization of resources from AmeriGEO
78.	UR-SDG-001	The Essential Variables Portal	UC-SDG-01 - GEO Essential and the Essential Variables Portal
79.	UR-SDG-002	Search by EBV	UC-SDG-01 - GEO Essential and the Essential Variables Portal
80.	UR-SDG-003	Search by EWV	UC-SDG-01 - GEO Essential and the Essential Variables Portal
81.	UR-SDG-004	Searching SDG-relevant data	UC-SDG-02 – Searching for SDG indicators
82.	UR-SDG-005	SDG search by country	UC-SDG-02 – Searching for SDG indicators
83.	UR-SDG-006	SDG search by indicator-relevant keywords	UC-SDG-02 – Searching for SDG indicators
84.	UR-SDG-007	Visualizing and retrieving SDG indicator values from the UNSD	UC-SDG-03 – Access to SDG indicator values from UNSD
85.	UR-SDG-008	SDG indicator 15.3.1 computation service discovery	UC-SDG-04 – Generating SDG indicator 15.3.1 and comparing with values from other sources
86.	UR-SDG-009	SDG indicator 15.3.1 computation service execution	UC-SDG-04 – Generating SDG indicator 15.3.1 and comparing with values from other sources

	Req. Code	Req Title	Source Use Case
87.	UR-SDG-010	Visual representation of SDG indicator 15.3.1 computations	UC-SDG-04 – Generating SDG indicator 15.3.1 and comparing with values from other sources
88.	UR-SDG-011	Comparison of SDG indicator 15.3.1 from multiple sources	UC-SDG-04 – Generating SDG indicator 15.3.1 and comparing with values from other sources
89.	UR-SDG-012	SDG indicator 14.1.1 computation service discovery	UC-SDG-04 – Generating SDG indicator 14.1.1 and comparing with values from other sources
90.	UR-SDG-013	SDG indicator 14.1.1 computation service execution	UC-SDG-05 – Generating SDG indicator 14.1.1 and comparing with values from other sources
91.	UR-SDG-014	Visual representation of SDG indicator 14.1.1 computations	UC-SDG-05 – Generating SDG indicator 14.1.1 and comparing with values from other sources
92.	UR-SDG-015	Comparison of SDG indicator 14.1.1 from multiple sources	UC-SDG-05 – Generating SDG indicator 14.1.1 and comparing with values from other sources
93.	UR-SDG-016	SDG indicator 11.3.1 computation service discovery	UC-SDG-06 – Generating SDG indicator 11.3.1 and comparing with values from other sources
94.	UR-SDG-017	SDG indicator 11.3.1 computation service execution	UC-SDG-06 – Generating SDG indicator 11.3.1 and comparing with values from other sources
95.	UR-SDG-018	Visual representation of SDG indicator 11.3.1 computations	UC-SDG-06 – Generating SDG indicator 11.3.1 and comparing with values from other sources
96.	UR-SDG-019	Comparison of SDG indicator 11.3.1 from multiple sources	UC-SDG-06 – Generating SDG indicator 11.3.1 and comparing with values from other sources
97.	UR-CRT-001	A dedicated Portal for the ENERGIC-OD community	UC-CRT-01 - ENERGIC OD: European NEtwork for Redistributing Geospatial Information to user Communities - Open Data

	Req. Code	Req Title	Source Use Case
98.	UR-CRT-002	The ENERGIC-OD search domain	UC-CRT-01 - ENERGIC OD: European NEtwork for Redistributing Geospatial Information to user Communities - Open Data
99.	UR-CRT-003	A dedicated Portal for the EnviDat community	UC-CTR-02 – EnviDat: The Environmental Data Portal of the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL)
100.	UR-CRT-004	The EnviDat search keywords	UC-CTR-02 – EnviDat: The Environmental Data Portal of the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL)
101.	UR-CRT-005	The Envidat Region Of Interest	UC-CTR-02 – EnviDat: The Environmental Data Portal of the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL)
102.	UR-CRT-006	The EnviDat search domain	UC-CTR-02 – EnviDat: The Environmental Data Portal of the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL)
103.	UR-CRT-007	Discovering and accessing DIAS Platforms	UC-CRT-03 – Access to DIAS platforms
104.	UR-CRT-008	Discovering and accessing DIAS Platform services	UC-CRT-03 – Access to DIAS platforms

Annex A. References

[1]. EDGE: European Direction in GEOSS Common Infrastructure Enhancements – Grant Agreement Number 776136

[2]. GCOS Implementation Plan 2016 - https://ane4bf-datap1.s3-eu-west-1.amazonaws.com/wmocms/s3fs-public/programme/brochure/GCOS-200_OnlineVersion.pdf?PlowENiCc1RGh9ReoeAoGBT0QhnJYm6_

[3]. ECOPOTENTIAL Project: http://www.ecopotential-project.eu/

Annex B. Figures and Tables

B.1 List of Figures

Annex C. Terminology

C.1 Acronyms and Abbreviations

EDGE	European Direction in GCI Enhancements
BON	Biodiversity Observation Network
CA	Consortium Agreement
CAMS	Copernicus Atmosphere Monitoring Service
C3S	Copernicus Climate Change Service
CEOS	Committee on Earth Observation Satellites
CLMS	Copernicus Land Monitoring Service
CMEMS	Copernicus Marine Environment Monitoring Service
CNR-IIA	Consiglio Nazionale delle Ricerche – Istituto per l'Inquinamento Atmosferico
CO	Confidential
DESCA	Development of a Simplified Consortium Agreement
DEL	Deliverable
DG	Directorate-General
DN	Direct Negotiation
DOW	Description of Work
EAB	External Advisory Board
ECV	Essential Climate Variable
EC	European Commission
EGU	European Geosciences Union
EMS	Emergency Management Service
EO	Earth Observation
EOP	Earth Observation Programme
ESA	European Space Agency
ESAW	European Ground System Architecture Workshop
ESRIN	European Space Research Institute
EU	European Union
EV	Essential Variable
EWV	Essential Water Variable
FP7	Seventh Framework Programme
GA	Grant Agreement
GCI	GEOSS Common Infrastructure
GEO	Group on Earth Observation
GEO DAB	GEO Discovery and Access Broker
GEOSS	Global Earth Observation System of Systems
GFOI	Global Forest Observation Initiative

GLAM	Global Agriculture Monitoring
GPE	GEOSS Portal Enhancements
GSNL	Geohazard Supersites and Natural Laboratories
GWOS	Global Wetlands Observing System
H2020	Horizon 2020
INT	Internal Note
IPR	Intellectual Property Right
JRC	Joint Research Centre
MOM	Minutes of Meeting
N.A.	Not Applicable
OTH	Other
PD	Project Director
PP	Programme Participants
PQMP	Project Quality Management Plan
PRE	Presentation
PSB	Project Strategic Board
PU	Public Usage
QA	Quality Assurance
QAS	Quality Assurance Support
RE	Restricted
SDG	Sustainable Development Goal
SUS	System Usability Scale
TBD	To Be Defined
TEP	Thematic Exploitation Platform
UNICEF	United Nations International Children's Emergency Fund
USGS	United States Geological Survey
UTB	User and Technical Board
WBS	Work Breakdown Structure
WGISS	Working Group on Information Systems and Services
WP	Work Package
WPL	Work Package Leader

Annex D. AtlantOs Community profile

Background

This is the document template "Community Data Profile" for the Communities to fill-in to set-up the Community mirror site behaviour and data requirements of interest starting from data content already present in GEOSS (and other information …).

Please fill-in the different questions (yellow marked), add any section and attach any material you think is useful, and send back to guido.colangeli@esa.int

Many thanks for your time.

The GEOSS Platform Team.

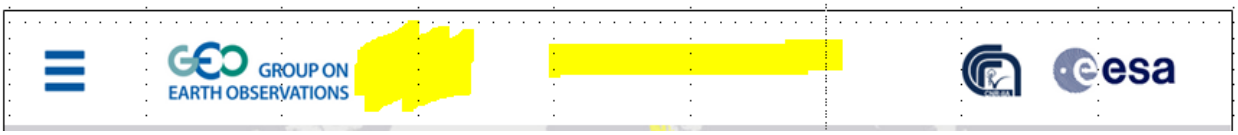
Header

Fill-in this section with this information:

- *The logo of your Community:*

- *The name of your Community:* AtlantOS

They might be used to customize the header of your Community/GEOSS Portal mirror site.



Community Main Data Providers

Fill-in this section with the main Data Providers your Community is in relation with.

Data providers are in the AtlantOS catalog which is in the GEOSS portal here

Discovery

Keywords

Using the GEOSS Portal (www.geoportal.org), what are the searching word(s)/keyword(s) you use to discover the data you are interested in (e.g.,"water", "rain gauge", etc.)? Please write them down in a list.

- Ocean data
- Atlantic Ocean
- EOV (essential Ocean Variables)
- Water column
- Sediment
- Ocean monitoring
- Platforms
- Temperature
- sea surface
- Salinity
- sea surface
- column
- Current
- Sea Level
- bottom depth
- Oxygen
- Chla
- Fluorescence
- Nutrients (NO3/NO2 - PO4 - SiO3
- Carbonate system (inorganic carbon) pCO2, DIC, Total alkalinity, pH
- sea surface pCO2
- Dissolved Organic Matter (DOC,DON)
- N2O
- Turbidity
- Transient Tracers (CFC-11, CFC-12, SF6 $^{3}H/^{3}HE$)
- Zooplankton
- Phytoplankton
- Species
- Eggs and larvae (abundance, stages, quantitiy)

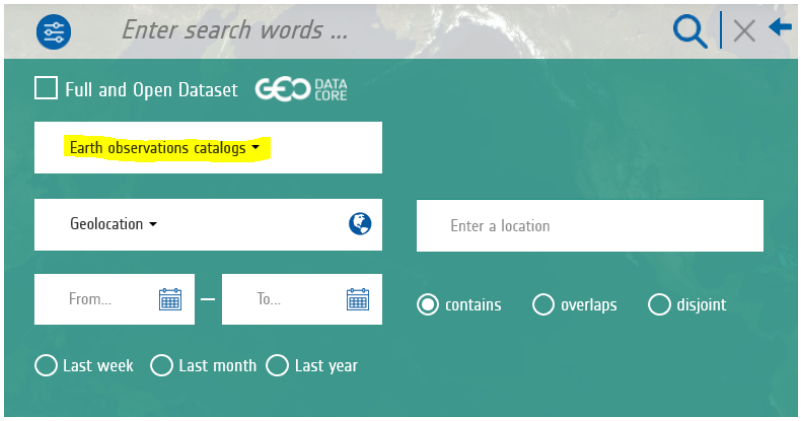
Geograhical Area Of Interest

What are the main geographical area you use to discover the data you are interested in? Is there any KML/shapefile/etc. you would like to share with us? Please write them down and/or attach any KML/shapefile/etc.

Entire Atlantic Ocean - North and South

Catalogues

With reference to the Earth Observation Catalogues (see figure below), are there any specific Catalogue your Community is interested in? Please write them down in a list.



PANGAEA

SEADATANET

SAEON

USGS Geoscience Data Catalog

Global river discharge GEOWOW

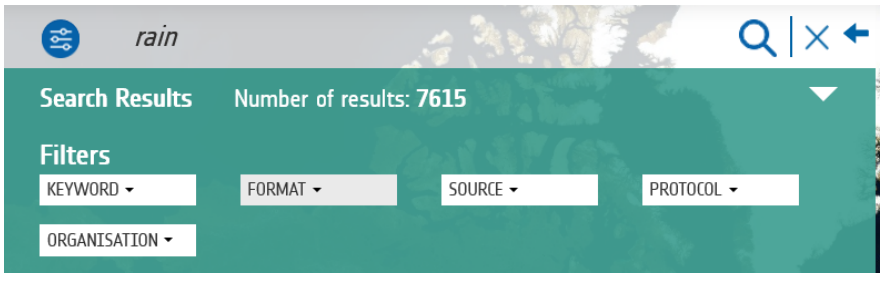
MEDINA

MARIS EYE on water

Soil Moisture and Ocean Salinity

Format/Protocol/Organisation

With reference to the Filters (see figure below), are there any specific Format/Protocol/Organisation your Community is interested in? Please write them down in a list.



NO preference

Basemap

Have you any specific basemap(s)/projection your Community is using? Please write them down and give us a snapshot and/or the location of this basemap

No sure exactly what you are looking for here

On the AtlantOS webpage - https://www.atlantos-h2020.eu/ (at the end of frontpage) we have the following in map

Access

In terms of access, are there any specific data format your Community is dealing with (e.g., NetCDF, WMS, jpg, etc.)? Please write them down in a list.

No specific access restrictions

Annex E. GEO-GNOME Community profile

Background

At the last GEOSS Portal Reuse call #2, it has been agreed to share a template for the document "Community Data Profile" for the Communities to fill-in data requirements of interest starting from data content already present in GEOSS (and other information …).

This is the template. Please fill-in the different questions (yellow marked), add any section and attach any material you think is useful, and send back to g.colangeli@rheagroup.com

Many thanks for your time.

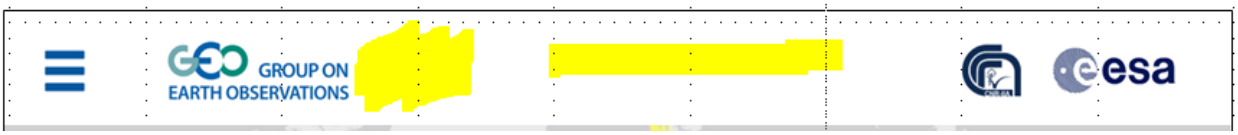
The GEOSS Portal ReUse Team.

Header

Fill-in this section with this information:

- *The logo of your Community:* TBW
- *The name of your Community:* GEO-GNOME

They might be used to customize the header of your Community/GEOSS Portal mirror site.



Community Main Data Providers

Fill-in this section with the main Data Providers your Community is in relation with.

TBWGeodata: Center for Development and the Environmentge

Discovery

Keywords

*Using the GEOSS Portal (*www.geoportal.org*), what are the searching word(s)/keyword(s) you use to discover the data you are interested in (e.g.,"water", "rain gauge", etc.)? Please write them down in a list.*

Mountain; mountain definition; livelihood; population; ecosystem; ecosystem services; socio-economic measures; hydrology; wind; precipitation; food; services; land use; land cover; water; energy; risk; biodiversity; observatories; population; infrastructure; natural resources; land management;

Geograhical Area Of Interest

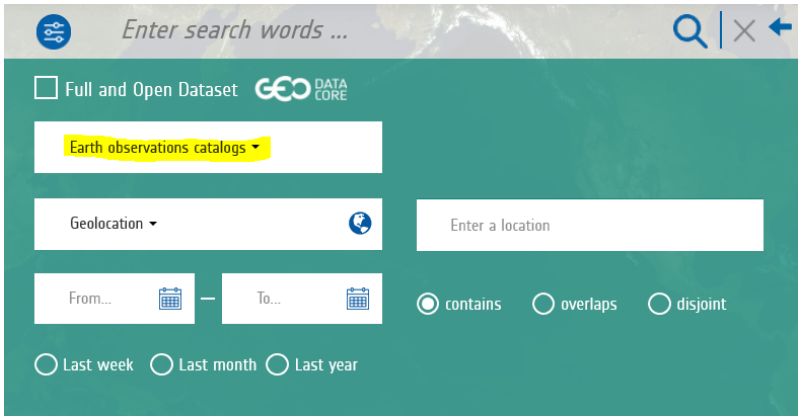
What are the main geographical area you use to discover the data you are interested in? Is there any KML/shapefile/etc. you would like to share with us? Please write them down and/or attach any KML/shapefile/etc.

Mountains of the world:

- a mountain inventory (shape files) can be downloaded under: https://ilias.unibe.ch/goto_ilias3_unibe_cat_1000515.html
- other mountain layers are available under: https://ilias.unibe.ch/goto_ilias3_unibe_cat_1029094.html

Catalogues

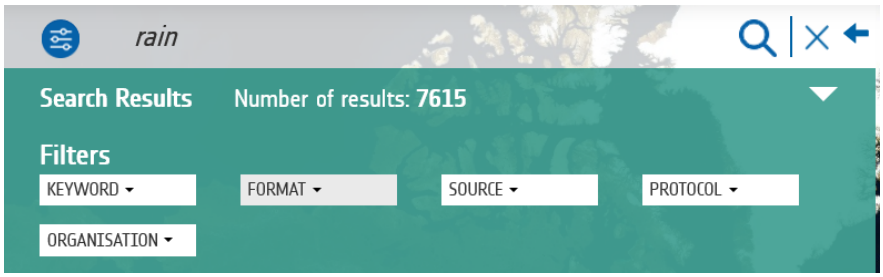
With reference to the Earth Observation Catalogues (see figure below), are there any specific Catalogue your Community is interested in? Please write them down in a list.



ArcGIS online ESRI; CCI Open Data Portal; Cropland data layer; CropScape; Digital Globe; Droughts WCS Server; EnviroGrids; Environmental data on the Mediterranean and Black Sea regions; Esri GEOSS Portal; Eumetsat; European Environmenta Agency SDI catalog; EvK2 CNR; CEOS; Finnish Open Data; GBIF; GEO SUR; Geodatenbank-DE; geonetwork GRID; geoportal.de; IMERG NASA; GRDC/GEOWOW; GMU LAITS; Haiti Data Store; CUAHSI-HIS; ICIMOD; IGN; IMERG; ISRO; ISPRA; ISRIC; Joint Research Center Data Catalog; NASA; ORNL; One Geology; Open Topograpy; OpenAerialMap; PREVIEW; RCMRD; SEDAC; Sentinel; SAEON; Swiss Federal Spatial Data Infrastructure; TRMM; UK Data.Gov; UNEP; US Data Gov; VegScape; VITO

Format/Protocol/Organisation

With reference to the Filters (see figure below), are there any specific Format/Protocol/Organisation your Community is interested in? Please write them down in a list.



Shape, Geotiff, gdb

Basemap

Have you any specific basemap(s)/projection your Community is using? Please write them down and give us a snapshot and/or the location of this basemap

WGS, UTM, SwissGrids

Access

In terms of access, are there any specific data format your Community is dealing with (e.g., NetCDF, WMS, jpg, etc.)? Please write them down in a list.

GIS formats; database formats (excel; access; etc)

Annex F. ENERGIC-OD Community profile

Background

At the last GEOSS Portal Reuse call #2, it has been agreed to share a template for the document "Community Data Profile" for the Communities to fill-in data requirements of interest starting from data content already present in GEOSS (and other information …).

This is the template. Please fill-in the different questions (yellow marked), add any section and attach any material you think is useful, and send back to g.colangeli@rheagroup.com

Many thanks for your time.

The GEOSS Portal ReUse Team.

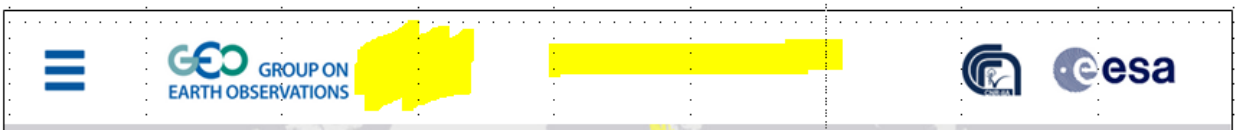
Header

Fill-in this section with this information:

- *The logo of your Community:*

- *The name of your Community:* ENERGIC OD

They might be used to customize the header of your Community/GEOSS Portal mirror site.



Community Main Data Providers

Fill-in this section with the main Data Providers your Community is in relation with.

ENERGIC OD (https://www.energic-od.eu/[2]) is a CIP ICT PSP[3] project funded by the European Commission (DG-CONNECT) that aims at building Virtual Hubs facilitating the use of geospatial open data (including those from INSPIRE, GEOSS and Copernicus initiatives) by app developers.

ENERGIC OD developed a Virtual Hub solution based on the brokering technology adopted in the GCI. It deployed one regional VH (Berlin metropolitan area), five national VHs (France, Germany, Italy, Poland, Spain) and the main pan-European VH.

ENERGIC OD developed ten pilot applications to demonstrate the capabilities and performances of the VHs.

The ENERGIC OD pan-European Virtual Hub connects the five national VHs and some other European data sources.

The national VHs collects geospatial open data relevant for national applications. The national VH manager adopted different approaches in the selection of data sources. In some cases (France, Spain, Poland) they focused on data sources needed to develop specific pilot applications. In other cases (Italy, Germany) they focused on connecting previously unpublished data sources (dark data).

Data providers are typically public administrations, public agencies, research centers, citizens. Data include: historical maps (Zaragoza, Milan) for citizens (e.g. tourism) and professional (e.g. geology) applications, crowdsourcing data (e.g. for coastal monitoring, sensor acquisition, noise maps), model outputs for agriculture, ecosystems and biodiversity and other geographical data for a total of 171.695 datasets.

The pan-European Virtual Hubs also provides direct access to Landsat 8, Sentinel 1 and Sentinel 2, although the plan for the final deployment is that those sources will be accessed from GEOSS.

It is expected that during the pre-operational phase - period 2018-2020 as for the exploitation plan – several new data sources will be connected.

Currently, the pan-European VH is not a GEOSS provider, although it is expected that a request to become a GEO Data Provider will be issued during the pre-operational phase.

The ENERGIC OD VH is accessible at the URL: http://vh-eu.energic-od.eu (test portal) and http://vh-eu.energic-od.eu/gi-cat/services/opensearch?getDescriptionDocument (OpenSearch interface)

Discovery

Keywords

Using the GEOSS Portal (www.geoportal.org), what are the searching word(s)/keyword(s) you use to discover the data you are interested in (e.g.,"water", "rain gauge", etc.)? Please write them down in a list.

No

[2] On July 2017 the web site will be under restructuring

[3] The ICT Policy Support Programme as part of the Competitiveness and Innovation framework Programme (CIP) aimed at stimulating innovation and competitiveness through the wider uptake and best use of ICT by citizens, governments and businesses. The Programme ended in 2013, and innovation programme is now part of H2020 programme.

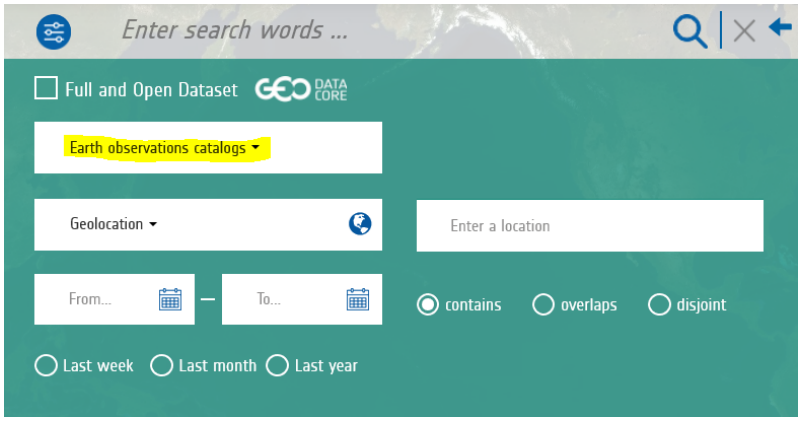
Geograhical Area Of Interest

What are the main geographical area you use to discover the data you are interested in? Is there any KML/shapefile/etc. you would like to share with us? Please write them down and/or attach any KML/shapefile/etc.

Europe

Catalogues

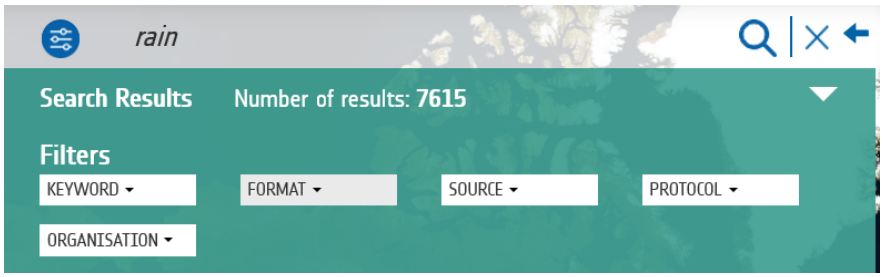
With reference to the Earth Observation Catalogues (see figure below), are there any specific Catalogue your Community is interested in? Please write them down in a list.



TBD

Format/Protocol/Organisation

With reference to the Filters (see figure below), are there any specific Format/Protocol/Organisation your Community is interested in? Please write them down in a list.



Probably WMS, geoJSON

Basemap

Have you any specific basemap(s)/projection your Community is using? Please write them down and give us a snapshot and/or the location of this basemap

No

Access

In terms of access, are there any specific data format your Community is dealing with (e.g., NetCDF, WMS, jpg, etc.)? Please write them down in a list.

Most requestes data formats are: WMS (png, jpg, geoTIFF), WFS (geoJSON) for developing mobile/desktop applications

Annex G. Global Terrestrial Network for Hydrology Community profile

Background

At the last GEOSS Portal Reuse call #2, it has been agreed to share a template for the document "Community Data Profile" for the Communities to fill-in data requirements of interest starting from data content already present in GEOSS (and other information …).

This is the template. Please fill-in the different questions (yellow marked), add any section and attach any material you think is useful, and send back to g.colangeli@rheagroup.com

Many thanks for your time.

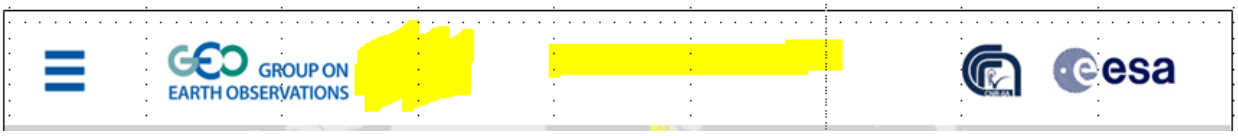
The GEOSS Portal ReUse Team.

Header

Fill-in this section with this information:

- *The logo of your Community:*
- *The name of your Community:* Global Terrestrial Network - Hydrology

They might be used to customize the header of your Community/GEOSS Portal mirror site.



Community Main Data Providers

Fill-in this section with the main Data Providers your Community is in relation with.

- AQUASTAT
- GEMS/Water
- GNIP/GNIR
- GPCC
- GRDC
- HYDROLARE
- IGRAC
- ISMN
- LEGOS
- NSIDC
- WGMS

Discovery

Keywords

Using the GEOSS Portal (www.geoportal.org), what are the searching word(s)/keyword(s) you use to discover the data you are interested in (e.g.,"water", "rain gauge", etc.)? Please write them down in a list.

- Water
- Water quality
- Isotopes
- Precipitation
- Rain
- Rivers
- Runoff
- Discharge
- Lakes
- Reservoirs
- Groundwater
- Soil moisture
- Snow
- Ice
- Glacier
- Terrestrial
- Observations

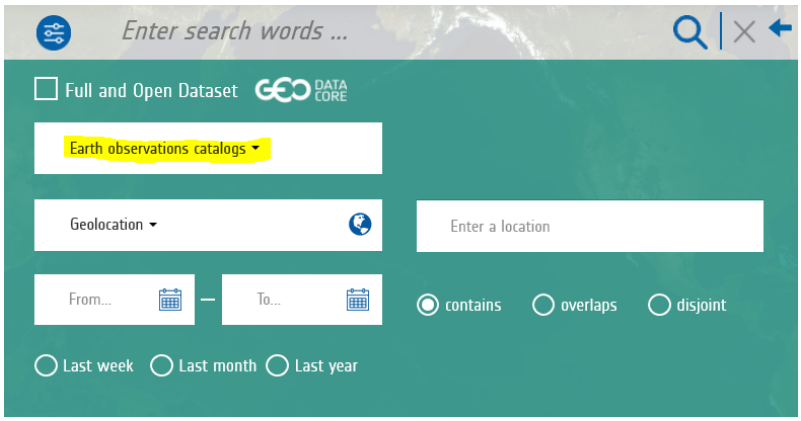
Geograhical Area Of Interest

What are the main geographical area you use to discover the data you are interested in? Is there any KML/shapefile/etc. you would like to share with us? Please write them down and/or attach any KML/shapefile/etc.

- global

Catalogues

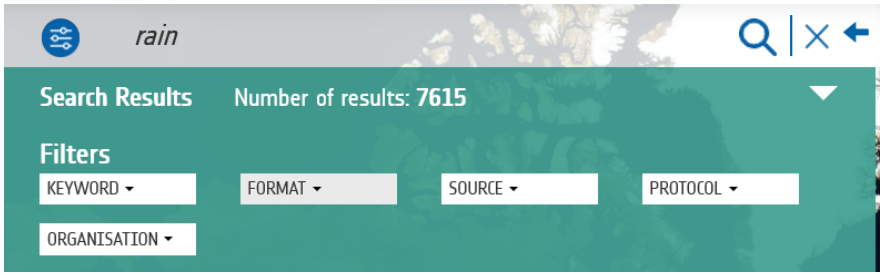
With reference to the Earth Observation Catalogues (see figure below), are there any specific Catalogue your Community is interested in? Please write them down in a list.



- Earth2Observe
- FAO
- Global River Discharge Datasets (GRDC)
- CUAHSI-HIS
- SMOS (ESA)
- UNEP Env Data Expl (WMS)

Format/Protocol/Organisation

With reference to the Filters (see figure below), are there any specific Format/Protocol/Organisation your Community is interested in? Please write them down in a list.



- netCDF
- geoTIFF
- WaterML
- WMS

Basemap

Have you any specific basemap(s)/projection your Community is using? Please write them down and give us a snapshot and/or the location of this basemap

- Global (default)

Access

In terms of access, are there any specific data format your Community is dealing with (e.g., NetCDF, WMS, jpg, etc.)? Please write them down in a list.

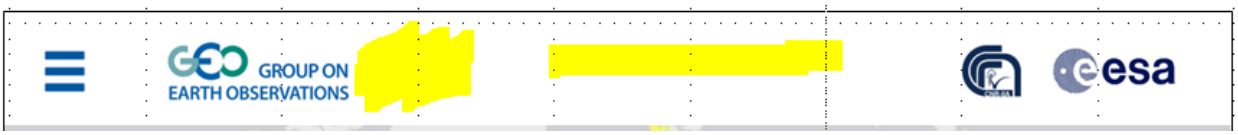
- netCDF
- geoTIFF
- WaterML
- WMS

Header

Fill-in this section with this information:

- *The logo of your Community:* Here we should agree with GEO, CNR, ESA about a logo for EVs. This does not make sense having the GEOEssential logo (http://www.geoessential.eu).
- *The name of your Community:* Essential Variables

They might be used to customize the header of your Community/GEOSS Portal mirror site.



Community Main Data Providers

Fill-in this section with the main Data Providers your Community is in relation with.

Our objective is mostly to enable discovery and access to Essential Climate, Biodiversity, Water variables. If time allows, then we will be able to expend to other EV domains.

During the GEOEssential project, we will come up with a list of EVs + data providers for specific domains. We will also add keywords for discovering them.

Discovery

Keywords

Using the GEOSS Portal (www.geoportal.org), what are the searching word(s)/keyword(s) you use to discover the data you are interested in (e.g.,"water", "rain gauge", etc.)? Please write them down in a list.

climate, water, biodiversity.

Essential climate variables, Essential Biodiversity Variables, Essential Water Variables

We can also add the name of the different ECV (https://www.ncdc.noaa.gov/gosic/gcos-essential-climate-variable-ecv-data-access-matrix) and EBV (http://geobon.org/essential-biodiversity-variables/classes/) as keywords.

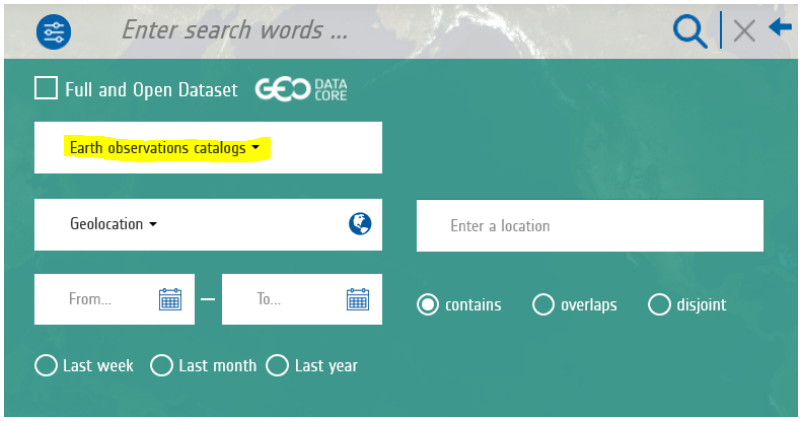
Geograhical Area Of Interest

What are the main geographical area you use to discover the data you are interested in? Is there any KML/shapefile/etc. you would like to share with us? Please write them down and/or attach any KML/shapefile/etc.

Global extent

Catalogues

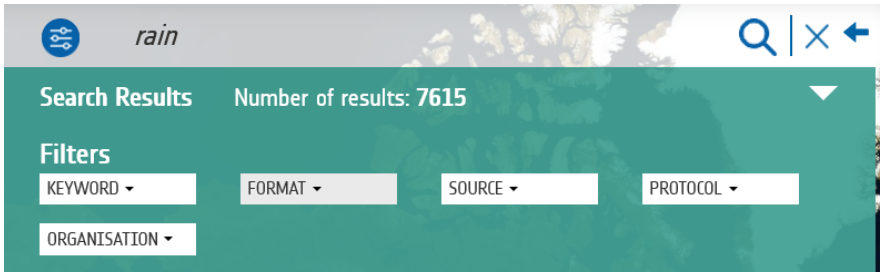
With reference to the Earth Observation Catalogues (see figure below), are there any specific Catalogue your Community is interested in? Please write them down in a list.



No particular catalogs, we wish to be as exhaustive as possible

Format/Protocol/Organisation

With reference to the Filters (see figure below), are there any specific Format/Protocol/Organisation your Community is interested in? Please write them down in a list.



No particular format/protocol/organisation

Basemap

Have you any specific basemap(s)/projection your Community is using? Please write them down and give us a snapshot and/or the location of this basemap

No

Access

In terms of access, are there any specific data format your Community is dealing with (e.g., NetCDF, WMS, jpg, etc.)? Please write them down in a list.

No

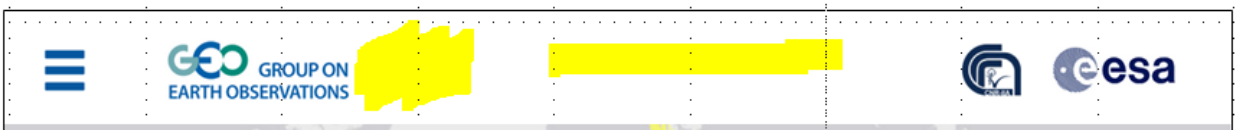
Annex H. Essential Variables Community profile

Header

Fill-in this section with this information:

- *The logo of your Community:* Here we should agree with GEO, CNR, ESA about a logo for EVs. This does not make sense having the GEOEssential logo (http://www.geoessential.eu).
- *The name of your Community:* Essential Variables

They might be used to customize the header of your Community/GEOSS Portal mirror site.



Community Main Data Providers

Fill-in this section with the main Data Providers your Community is in relation with.

Our objective is mostly to enable discovery and access to Essential Climate, Biodiversity, Water variables. If time allows, then we will be able to expend to other EV domains.

During the GEOEssential project, we will come up with a list of EVs + data providers for specific domains. We will also add keywords for discovering them.

Discovery

Keywords

Using the GEOSS Portal (www.geoportal.org), what are the searching word(s)/keyword(s) you use to discover the data you are interested in (e.g.,"water", "rain gauge", etc.)? Please write them down in a list.

climate, water, biodiversity.

Essential climate variables, Essential Biodiversity Variables, Essential Water Variables

We can also add the name of the different ECV (https://www.ncdc.noaa.gov/gosic/gcos-essential-climate-variable-ecv-data-access-matrix) and EBV (http://geobon.org/essential-biodiversity-variables/classes/) as keywords.

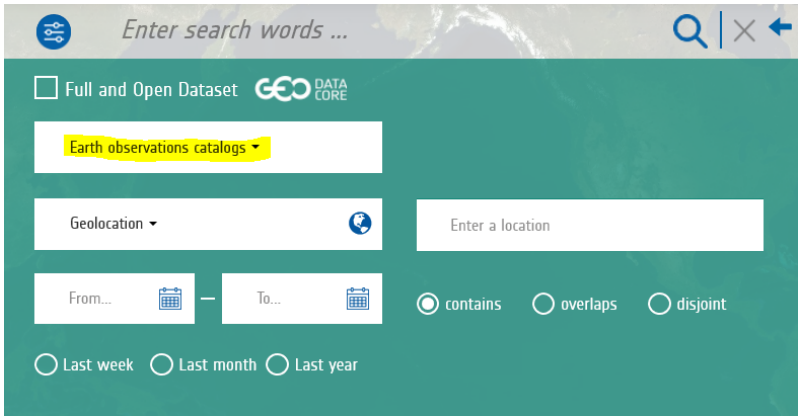
Geograhical Area Of Interest

What are the main geographical area you use to discover the data you are interested in? Is there any KML/shapefile/etc. you would like to share with us? Please write them down and/or attach any KML/shapefile/etc.

Global extent

Catalogues

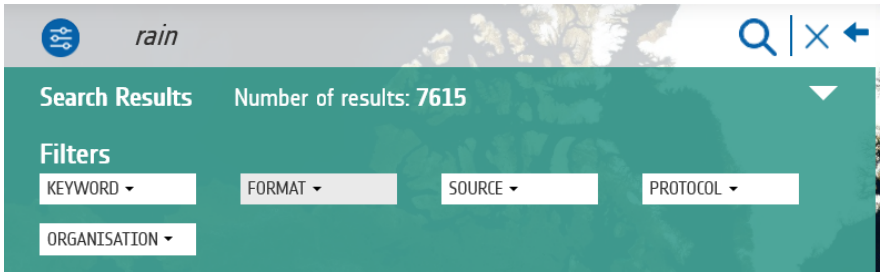
With reference to the Earth Observation Catalogues (see figure below), are there any specific Catalogue your Community is interested in? Please write them down in a list.



No particular catalogs, we wish to be as exhaustive as possible

Format/Protocol/Organisation

With reference to the Filters (see figure below), are there any specific Format/Protocol/Organisation your Community is interested in? Please write them down in a list.



No particular format/protocol/organisation

Basemap

Have you any specific basemap(s)/projection your Community is using? Please write them down and give us a snapshot and/or the location of this basemap

No

Access

In terms of access, are there any specific data format your Community is dealing with (e.g., NetCDF, WMS, jpg, etc.)? Please write them down in a list.

No

Annex I. The AmeriGEO Community profile

Background

This is the document template "Community Data Profile" for the Communities to fill-in to set-up the Community mirror site behaviour and data requirements of interest starting from data content already present in GEOSS (and other information …).

Please fill-in the different questions (yellow marked), add any section and attach any material you think is useful, and send back to guido.colangeli@esa.int

Many thanks for your time.

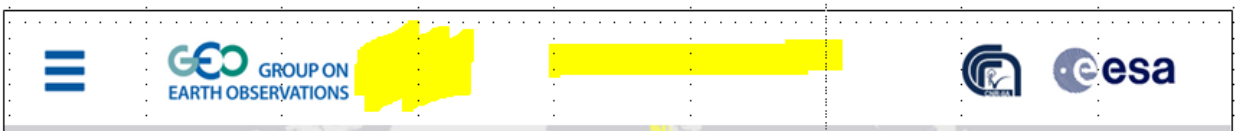
The GEOSS Platform Team.

Header

Fill-in this section with this information:

- *The logo of your Community:* Please use the AmeriGEO Logo
- *The name of your Community:* AmeriGEO Community Portal View (BETA)

They might be used to customize the header of your Community/GEOSS Portal mirror site.



Community Main Data Providers

Fill-in this section with the main Data Providers your Community is in relation with.

AmeriGEO includes provider contributions from National, Regional and Global providers of Social, Economic, Environmental and other data, tools, applications and services.

Discovery

Keywords

*Using the GEOSS Portal (*www.geoportal.org*), what are the searching word(s)/keyword(s) you use to discover the data you are interested in (e.g.,"water", "rain gauge", etc.)? Please write them down in a list.*

We can start with these: Water, Agua, Disasters, desastre, Agriculture, Agricultura, Ecosystems, ecosistemas, indicators, vegetación, preparedness, geoservico, infraestructurera, infrastructure, Topografiia, Ocean, Cartografia, Geodata, hidrografía, educación, Education, Hydrography, Cartography

A list of all our current top tags, keywords etc.
https://data.amerigeoss.org/api/action/package_search?facet.field=[%22tags%22]&facet.limit=1000&rows=0

All tags

https://data.amerigeoss.org/api/3/action/tag_list

TBW

Geograhical Area Of Interest

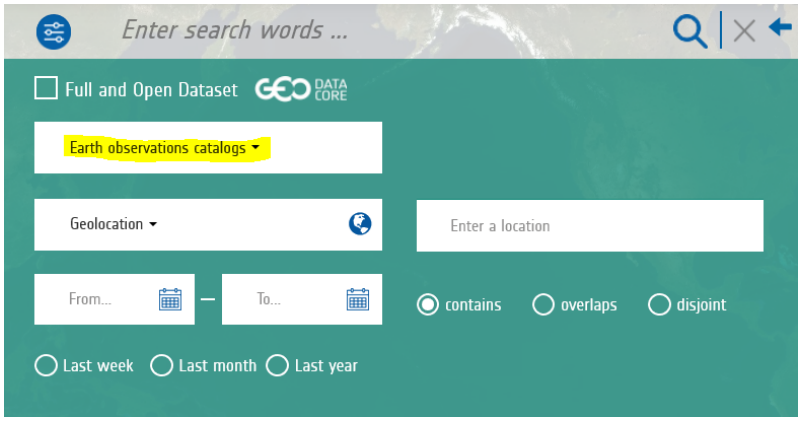
What are the main geographical area you use to discover the data you are interested in? Is there any KML/shapefile/etc. you would like to share with us? Please write them down and/or attach any KML/shapefile/etc.

The Americas extent

TBW

Catalogues

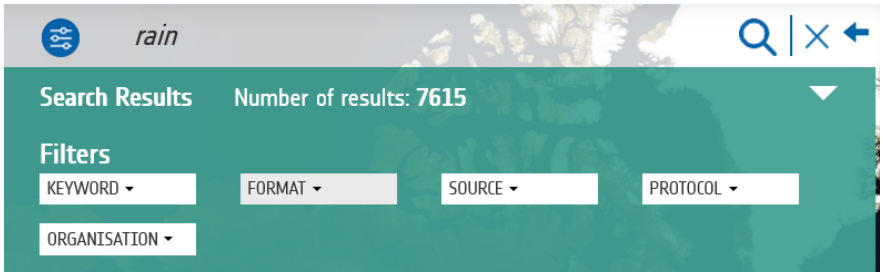
With reference to the Earth Observation Catalogues (see figure below), are there any specific Catalogue your Community is interested in? Please write them down in a list.



Not specifically we will take them all for now. TBW

Format/Protocol/Organisation

With reference to the Filters (see figure below), are there any specific Format/Protocol/Organisation your Community is interested in? Please write them down in a list.



Not specifically at this time. However if you can add a country specific list that would be great. TBW

If you can create filters by the following it would be helpful:

1. AmeriGEO Providers = https://data.amerigeoss.org/api/3/action/organization_list
2. AmeriGEO Topics - https://data.amerigeoss.org/api/3/action/group_list
3. AmeriGEO Communities = Agriculture, Biodiversity and Ecosystems, Disasters, Water, Sustainable Development Goals

Basemap

Have you any specific basemap(s)/projection your Community is using? Please write them down and give us a snapshot and/or the location of this basemap

Nothing specific at this time. You can use the standard basemap or streetmap basemap at this time. TBW

Access

In terms of access, are there any specific data format your Community is dealing with (e.g., NetCDF, WMS, jpg, etc.)? Please write them down in a list.

We use them all right now. TBW

https://data.amerigeoss.org/dataset?_res_format_limit=0

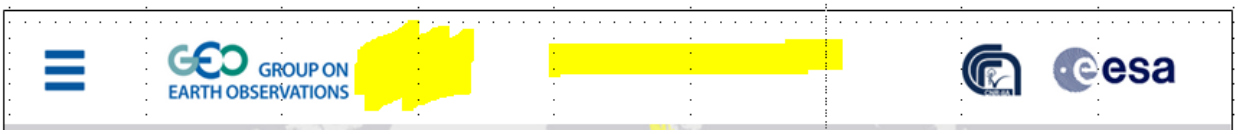
Annex J. The DBAR Community profile

Header

Fill-in this section with this information:

- *The logo of your Community:*
- *The name of your Community:* DBAR

They might be used to customize the header of your Community/GEOSS Portal mirror site.



Community Main Data Providers

Fill-in this section with the main Data Providers your Community is in relation with.

Discovery

Keywords

Using the GEOSS Portal (www.geoportal.org), what are the searching word(s)/keyword(s) you use to discover the data you are interested in (e.g.,"water", "rain gauge", etc.)? Please write them down in a list.

No

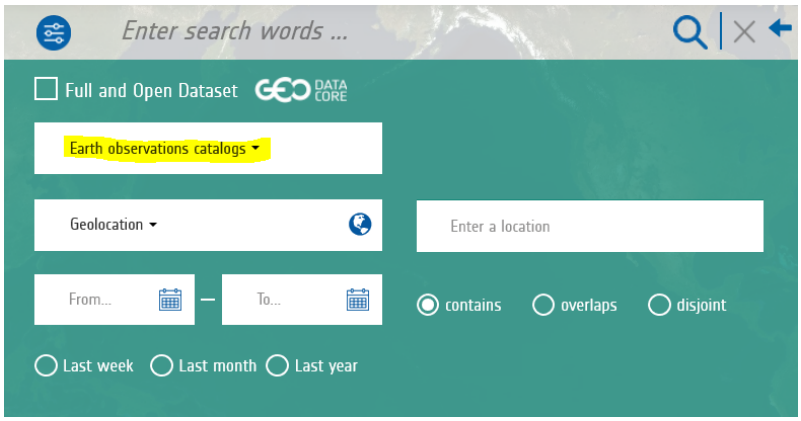
Geograhical Area Of Interest

What are the main geographical area you use to discover the data you are interested in? Is there any KML/shapefile/etc. you would like to share with us? Please write them down and/or attach any KML/shapefile/etc.

Global extent

Catalogues

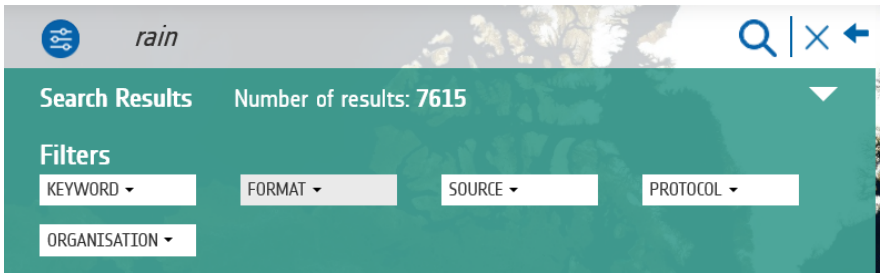
With reference to the Earth Observation Catalogues (see figure below), are there any specific Catalogue your Community is interested in? Please write them down in a list.



China GEOSS

Format/Protocol/Organisation

With reference to the Filters (see figure below), are there any specific Format/Protocol/Organisation your Community is interested in? Please write them down in a list.



No particular format/protocol/organisation

Basemap

Have you any specific basemap(s)/projection your Community is using? Please write them down and give us a snapshot and/or the location of this basemap

No

Access

In terms of access, are there any specific data format your Community is dealing with (e.g., NetCDF, WMS, jpg, etc.)? Please write them down in a list.

No

Annex K. Envidat Community profile

Background

This is the document template "Community Data Profile" for the Communities to fill-in to set-up the Community mirror site behaviour and data requirements of interest starting from data content already present in GEOSS (and other information …).

Please fill-in the different questions (yellow marked), add any section and attach any material you think is useful, and send back to guido.colangeli@esa.int

Many thanks for your time.

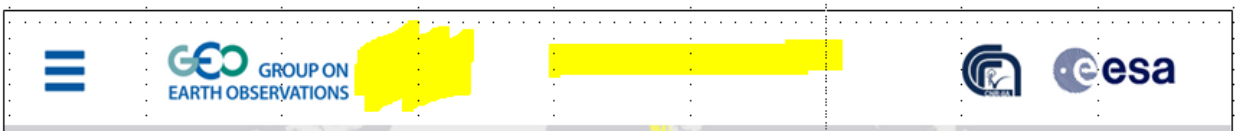
The GEOSS Platform Team.

Header

Fill-in this section with this information:

- *The logo of your Community:* For the moment, we can use the WSL institutional logo https://upload.wikimedia.org/wikipedia/de/thumb/9/94/Logo_WSL.svg/1200px-Logo_WSL.svg.png.
  Note: a new EnviDat logo is being redesigned and should be available until mid of March. I will have to check with my programme manager next week though.
  Question: what are the optimal dimensions for the image?
- *The name of your Community:* EnviDat (The Environmental Data Portal of the Swiss Federal Institute for Forest, Snow and Landscape Research WSL)

They might be used to customize the header of your Community/GEOSS Portal mirror site.



Community Main Data Providers

Fill-in this section with the main Data Providers your Community is in relation with.

The Swiss Federal Institute for Forest, Snow and Landscape WSL is a research institute of the national network of Swiss federal institutes of technology and research institutions (ETH Domain). WSL has a long tradition in data collection and data sets include time series spanning over 100 years and operates a comprehensive network for environmental research that includes more than six thousand monitoring or observation sites for studying forests, biodiversity, landscapes, snow, permafrost, and natural hazards.

Therefore, the main data providers are the research units and research programs in the areas of Forest, Landscape, Biodiversity, Natural hazards, and Snow and ice. Furthermore, we host

environmental datasets from providers associated with organizations of the ETH Domain as well as the ETH Competence Center Environment and Sustainability (CCES).

Discovery

Keywords

Using the GEOSS Portal (www.geoportal.org), what are the searching word(s)/keyword(s) you use to discover the data you are interested in (e.g.,"water", "rain gauge", etc.)? Please write them down in a list.

"ENVIRONMENT", "ENVIDAT", "WSL", "SLF", "CRYOS", "GCW", "GLOBAL CRYOSPHERE WATCH", "SWISS NFI", "SWISS NATIONAL FOREST INVENTORY", "FOREST", "LANDSCAPE", "BIODIVERSITY", "NATURAL HAZARDS", "SNOW AND ICE", "ADVECTION", "AIR TEMPERATURE", "ALPINE3D", "ALPINE3D SIMULATIONS", "ALPINE PRECIPITATION", "ANTARTIC", "AVAILABILITY", "AVALANCHE ACCIDENT", "AVALANCHE ACCIDENTS", "AVALANCHE ACCIDENT STATISTICS", "AVALANCHE ACTIVITY", "AVALANCHE FATALITIES", "BIOENERGY", "BIOGEOCHEMISTY", "BIOMASS RESOURCES", "BOREHOLE", "BOUNDARY LAYER WINDS", "CARBON DIOXIDE", "CLIMATE CHANGE", "COMPLEX TOPOGRAPHY", "CROWN CONDITION", "CRYOSPHERIC SCIENCE", "DBH", "DIAMETER AT BREAST HEIGHT", "DISCHMEX", "DROUGHT", "EDDY-COVARIANCE MEASUREMENTS", "EMPIRICAL MORTALITY MODELS", "EROSION", "FAGUS SYLVATICA", "FORCING", "FOREST", "FOREST ACCESS ROADS", "FOREST INVENTORY", "FOREST RESERVES", "FOREST TRANSPORTATION SYSTEMS", "FORESTY", "FREEZING", "FRESHWATER FLUX", "GCOS", "HUMIDITY", "HYDROLOGICAL RESPONSE", "INVENTORY DATA", "IRRIGATION", "LANDSLIDES", "LEE-SIDE FLOW FIELD", "LIDAR", "LONG-TERM", "LONGWAVE RADIATION", "MASS BALANCE", "MELTING", "METAMORPHISM", "METEO", "METEOROLOGY", "METEO STATION", "MONITORING", "MORTALITY MODELS", "MOUNTAIN ECOLOGY", "PATCHY SNOW COVERS", "PERMAFROST", "PHYSICAL OCEANOGRAPHY", "PLAGUE INVENTORY", "POLAR", "PORE WATER", "POTENTIAL ASSESSMENT", "PRECIPITATION", "PRECIPITATION AMOUNT", "PREFERENTIAL DEPOSITION", "PRIMEVAL FORESTS", "RELATIVE HUMIDITY", "RUNOFF", "SALINITY", "SALT", "SALTATION", "SATELLITE", "SCOTS PINE", "SEA ICE", "SEA ICE DIVERGENCE", "SEA ICE ELEVATION", "SEA ICE VOLUME", "SEDIMENT TRANSPORT", "SEISMIC", "SHORTWAVE RADIATION", "SILVOPASTORAL SYSTEMS", "SMP", "SNOW", "SNOW ABLATION RATES", "SNOW CONSERVATION", "SNOW COVER", "SNOW DENSITY", "SNOW DEPTH", "SNOW DISTRIBUTION", "SNOW FARMING", "SNOW HEIGHT", "SNOW HYDROLOGY", "SNOW ICE TEMPERATURE", "SNOWMELT", "SNOWMICROPEN", "SNOW MODELING", "SNOW MODELS", "SNOWPACK", "SNOW STRATIGRAPHY", "SNOW TEMPERATURES", "SNOW WATER EQUIVALENT", "SOIL MOISTURE", "SOIL MOISTURE WATER CONTENT", "SOIL TEMPERATURE", "SOUTHERN OCEAN", "SPATIAL VARIABILITY", "STABLE WATER ISOTOPE", "SUSTAINABILITY", "TEMPERATURE", "TERRESTIRAL LASERSCANNING", "TERRESTRIAL LASER SCANNING", "TIMBER HARVESTING", "TLS", "TRAFFICABILITY", "TRANSPLANTATION EXPERIMENT", "TRANSPORT", "TREE", "TREE GROWTH", "TREE MORTALITY", "TREE SPECIES", "TURBULENT SENSIBLE HEAT FLUXES", "VEGETATION", "VEGETATION HEIGHT MODEL", "VERTICAL WIND MOTION", "WIND CRUST", "WIND DIRECTION", "WIND-PACKING", "WIND SPEED"

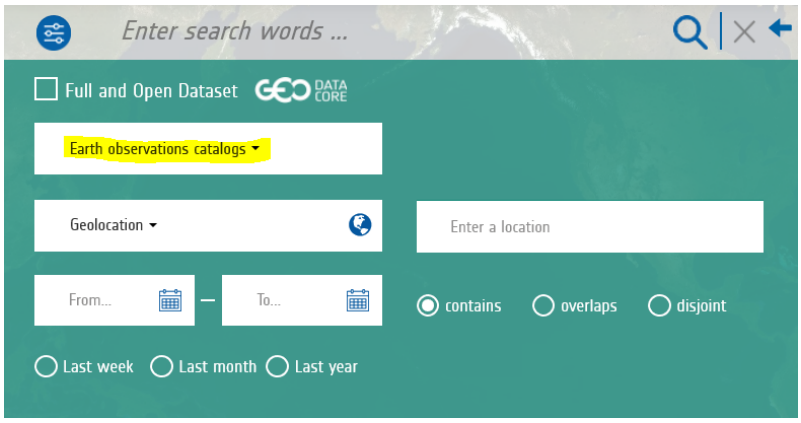
Geograhical Area Of Interest

What are the main geographical area you use to discover the data you are interested in? Is there any KML/shapefile/etc. you would like to share with us? Please write them down and/or attach any KML/shapefile/etc.

Switzerland – shapefile here: http://data.geo.admin.ch/ch.swisstopo.swissboundaries3d-land-flaeche.fill/data.zip

Catalogues

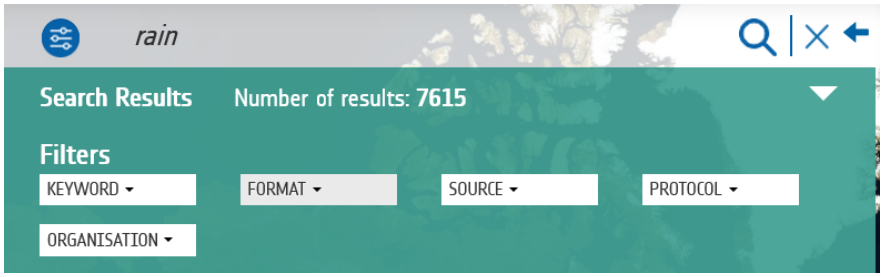
With reference to the Earth Observation Catalogues (see figure below), are there any specific Catalogue your Community is interested in? Please write them down in a list.



1. SWISS Federal Spatial Data Infrastructure
2. Sentinel
3. USGS Landsat 8

Format/Protocol/Organisation

With reference to the Filters (see figure below), are there any specific Format/Protocol/Organisation your Community is interested in? Please write them down in a list.



no specific interests

Basemap

Have you any specific basemap(s)/projection your Community is using? Please write them down and give us a snapshot and/or the location of this basemap

Yes, there is the CH LV 95 projection, please refer to: https://map.geo.admin.ch/, but a projection change is not necessary! (WGS 84 default projection is just fine for our purposes, since we also have global datasets.)

Access

In terms of access, are there any specific data format your Community is dealing with (e.g., NetCDF, WMS, jpg, etc.)? Please write them down in a list.

We do not impose any specific formats; researchers have the freedom to upload the data in the formats that they want.