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# Evaluation of current GMES and related data portals

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## Acronyms

CDIAC	Carbon Dioxide Information Analysis Center
CORINE	Coordinated Information on the European Environment
DIF	Directory Interchange Format
DODS	Distributed Oceanographic Data Systems
EEA	European Environment Agency
EFDAC	European Forest Data Center
EFFIS	European Forest Fire Information System
ESA	European Space Agency
ETC LUSI	European Topic Center on Land Use and Spatial Information
FAO	Food and Agriculture Organization of the United Nations
FGDC	[US] Federal Geographic Data Committee
GCMD	Global Change Master Directory
GEO	Group on Earth Observations
GEOS	Group on Earth Observations System of Systems
GES DISC	Goddard Earth Sciences Data and Information Services Center
GMES	Global Monitoring of Environment and Security
GNU	GMES Network of Users
GSE FM	GMES Service Element Forest Monitoring
INSPIRE	Infrastructure for Spatial Information in the European Community
IOOS	Integrated Ocean Observing System
JRC	Joint Research Center
LAADS	Level 1 and Atmosphere Archive and Distribution System
NASA	North American Space Agency
NDBC	National Data Buoy Center [US]
NOAA	National Oceanic and Atmospheric Administration [US]
NWS	National Weather Service [US]
OPeNDAP	Open Source Project for a Network Data Access Protocol
SERF	Service Entry Resource Format
UNESCO	United Nations Educational, Scientific and Cultural Organization
USGS	United States Geological Survey

## Purpose of this document

This document provides a summary of a review of portals carried out by partners in the GNU consortium. The aim of the exercise was to (I) evaluate the portals and (II) identify the desirable and non-desirable characteristics of an ideal GMES portal. Part I is the subject of this report, and part II is covered in a separate report.

A list of portals was drawn up that GNU consortium members were familiar with, and all consortium members were asked to review one or two portals of their choice using a set of criteria worked out during GNU meetings. These criteria are in depth documented and explained in the deliverable 2.4b, *GNU Criteria for optimised GMES Data Portals*.

The portals listed reflect the ones which certain GNU consortium members are familiar with. In order to get a wide range of experiences, the portals represent a range of information sources, from sub-national, to national to European and global sources of geospatial information, from prototype to operational services, and from satellite image catalogues to metadatabases for particular subject themes.

## Working Method

Currently there is a very large and increasing number of web-sites (or portals) providing access to geo-related data, products and services. These portals have a wide range of functionality, some providing direct access to data, some acting as a gateway to diverse sources of information, some providing visualisation tools. During the GNU consortium meetings, participants listed the portals that they were familiar with, and discussed the good and bad aspects of the portals, and what components an 'ideal' portal should contain. Two related tasks of the GNU work on data portals were to carry out an evaluation of GMES and related data portals (the subject of this report), and to identify criteria for an optimised setup of GMES and related data portals (the subject of a sister report, Deliverable 2.4b).

Based on these identified criteria for evaluating data portals, a questionnaire was drafted. The questionnaire was distributed to the consortium members and each member was asked to carry out a review of one or more of the 60 portals that the members had listed using the questionnaire to evaluate different aspects of the portal.

In total twenty-two portals were evaluated; one of the evaluations was for a prototype service that is no longer available (Geonode of ETC LUSI). The portals encompass a wide range of information services available via the Web, from prototypes and demonstrators to operational services, from GMES-related sites to non-GMES web-sites, and from satellite image catalogues to gateways providing specific thematic content.

The reviews were carried out in the summer of 2009. Since the reviews were carried out, some of the portals have changed – some portals have changed URLs, some have added content, and some are not available anymore. Where URLs have changed the new URLs are given and descriptions have been updated. However, the analysis of the different aspects of the portals is based on the comments in the original reviews that were carried out in the summer of 2009.

## Portals reviewed

### Enviroportal [Slovakia]

The Environmental Monitoring System in the Slovak Republic consists of several sub-monitoring systems (including atmosphere, water, meteorology and climatology, geology, waste, biota, land, forests) installed at selected centres. The Information monitoring system was created with the goal to create a homogeneous, interconnected information unit consisting of partial Information Monitoring Systems. The unit is able to provide most objective reports on the actual state of the components of the environment and due to interconnected databases is generally accessible through the internet (one-stop-shop). The portal has a national target audience and therefore the content is in Slovak.

URL: <http://enviroportal.sk/ism/cms.php>



### EFDAC (European Forest Data Center)

[There was a major update of EFDAC in the first quarter of 2010. EFDAC now consists of more components than the EFDAC map viewer. The original review of the portal consisted of a review of the map viewer only. The description has been updated to take into account the new components.]

The specific goal of the European Forest Data Center (EFDAC) is to become a focal point for policy relevant forest data and information by hosting and pointing to relevant forest information as well as providing web-based tools for accessing information located in EFDAC. The following applications are the core elements of the EFDAC: Metadata Catalogue, Forest Maps/Patterns & Forest Condition (Map Viewer), European Forest Fire Information System (EFFIS), European Forest Resources (Map Viewer), and Dominant Tree Species Distribution & Species Habitat Suitability (Map Viewer); GUIDOS software (spatial pattern analysis software toolbox).

URL: <http://efdac.jrc.ec.europa.eu/viewer/> [EFDAC Map Viewer]

URL: <http://efdac.jrc.ec.europa.eu/> [EFDAC]



### Geoproxy Thüringen

Geoproxy Thüringen is a service of the Thuringian Land Surveying Office. It should be possible to access different geo-information systems in accordance with the guidelines of the Open Geospatial Consortium. The target group for the Geoproxy Thüringen portal is local and therefore the content is in German only. The Geoproxy Thüringen allows for the production of maps (pdf- or png-format). It is not possible to download data. Unregistered users only have partial access to the functionality of the portal.

Topics covered include: Protected areas, Environment (including the water and land use issues), Administrative boundaries, Agriculture, Geospatial data.

URL: [http://www.geoproxy.geoportal-th.de/geoclient/start\\_geoproxy.jsp](http://www.geoproxy.geoportal-th.de/geoclient/start_geoproxy.jsp)



## Giovanni

Giovanni is a Web-based application developed by the Goddard Earth Sciences Data and Information Services Center (GES DISC) that provides a simple and intuitive way to visualize, analyze, and access vast amounts of Earth science remote sensing data without having to download the data. Giovanni is comprised of a number of interfaces, called instances, each tailored to meet the needs of different Earth science research communities. The instances are: Atmospheric; Environmental; Ocean; and Hydrology.

**URL:** <http://daac.gsfc.nasa.gov/giovanni/>



## Google Earth

Representation of Earth Surface using remote sensing data and maps including practical information. Route planning and tourism is offered. Animation tools are available.

**URL:** <http://earth.google.com/>



## GSE Forest Monitoring Catalogue

The GSE FM catalogue provides: (1) general information on the services offered within the GSE Forest Monitoring Project; (2) data sheets for the services already provided to users; and (3) access to GSE-FM documents and data products. Information can be browsed by area, service type, service provider, user and keywords.

**URL:** <http://brubu.gaf.de/portal/>

**URL:** <http://www.gmes-forest.info/> [GSE FM web-site]



## INSPIRE Geoportal [European Commission]

The INSPIRE geoportal provides the means to search for spatial data sets and spatial data services, and subject to access restrictions, view and download spatial data sets from the EU Member States within the framework of the Infrastructure for Spatial Information in the European Community (INSPIRE) Directive (2007/2/EC).

This version is a prototype INSPIRE geoportal and allows for discovery and viewing of spatial data sets and services. The aim of the prototype is to identify issues related to its implementation and accessing distributed INSPIRE services, to help towards the development of the operational geoportal. [The operational portal will probably be developed after a European tender.]

The prototype INSPIRE geoportal currently accesses a limited number of discovery and view services and therefore only a few metadata for spatial data sets and services may be found and viewed. These will increase as more services become available from the EU Member States.

The INSPIRE geoportal does not store or maintain the data. It acts as a gateway to geographic data and services, distributed around Europe, allowing users to search, view or, subject to access restrictions, download geographic data or use available services to derive information.

It is intended that the portal will cover in the end, following the implementation scheme of INSPIRE, all the themes and data of annexes I, II and III by using regional and national service technology.

The portal provides access to CORINE (*Coordinated Information on the European Environment*) land cover data and some regional and national service of different kind of topics (images, cadastral, agriculture, administrative units at European level, rivers and lakes).

URL: <http://www.inspire-geoportal.eu/>



### NASA LAADS (Level 1 and Atmosphere Archive and Distribution System)

LAADS Web is the web interface to the Level 1 and Atmosphere Archive and Distribution System (LAADS). The mission of LAADS is to provide quick and easy access to MODIS level 1 and atmosphere data products.

URL: <http://ladsweb.nascom.nasa.gov/>



### OneGeology

OneGeology is an international coordinated initiative of the geological surveys of the world and a flagship project of the 'International Year of Planet Earth'. Its aim is to create dynamic geological map data of the world available via the web. This will create a focal point for allowing everybody to access geological information.

OneGeology makes geological map data available using Web Map Service technology. It is planned as a distributed map service – i.e. the geological map data are served mostly on a national basis by individual geological surveys and other bodies (e.g. the polar and marine surveys and research bodies) to a web portal and as such will be frequently updated and improved by them and reflect the most up-to-date data available. Some 116 nations around the world are currently participating in OneGeology (as of May 2010). Each nation is represented by its Geological Survey. OneGeology is supported by UNESCO and six other international umbrella bodies: International Union of Geological Sciences (IUGS), International Consortium of Geological Surveys (ICOGS), EuroGeoSurveys, Commission for the Geological Map of the

World (CGMW), International Steering Committee for Global Mapping (ISCGM), International Lithosphere Program.

**URL:** <http://www.onegeology.org/> [website providing information on the project]

**URL:** <http://portal.onegeology.org/> [portal providing access to the layers]



**PortalU (German Environmental Information Portal)**

PortalU offers central access to over 2,500,000 web pages and about 500,000 database entries from public organisations in Germany. The portal guides users directly to up-to-date environmental news and upcoming events, environmental monitoring data, maps and historical environmental events. Furthermore the option “topics” provides an easy access to 21 selected environmental themes. The search query can be specified in the "Advanced Search" mode by semantic, spatial and temporal limitations. Furthermore laws, research projects and addresses can be searched separately.

Altogether 28 databases from public administrations are available; 17 of these are environmental data catalogues (Umwelt Daten Katalog - UDKs). The UDKs are metadata catalogues of environmental data in public administration.

PortalU has a national target audience and therefore the content is in German.

**URL:** <http://www.portalu.de/>



### SPOTCatalogue (formerly SIRIUS)

SPOTCatalogue is the product catalogue of Spot Image, the distributor of geographic information products and services derived from the Spot Earth observation satellites. The catalogue has different functions, including a world map and a search tool encompassing: area, product selection, acquisition date, etc. The SPOT archives have more than 20 million images covering almost the whole surface of the Earth. Users do not need to register before using the catalogue, but additional functionality is available if users do register (e.g. searches, search results can be saved).

URL: <http://catalog.spotimage.com/>



### USGS - US Geological Survey

The US Geological Survey (USGS) collects, monitors, analyzes, and provides scientific understanding about natural resource conditions, issues, and problems. The diversity of their scientific expertise enables them to carry out large-scale, multi-disciplinary investigations and provide impartial scientific information to resource managers, planners, and other customers. The portal provides information on the activities and the results of the USGS.

URL: <http://www.usgs.gov/>



### CDIAC (Carbon Dioxide Information Analysis Center)

CDIAC is the primary climate-change data and information analysis center of the US Department of Energy (DOE). CDIAC includes the World Data Center for Atmospheric Trace Gases.

CDIAC's data holdings include records of the atmospheric concentrations of CO<sub>2</sub> and other radiatively active gases; the role of the terrestrial biosphere and the oceans in the biogeochemical cycles of greenhouse gases; emissions of carbon dioxide from fossil-fuel consumption and land-use changes; long-term climate trends; the effects of elevated CO<sub>2</sub> on vegetation; and the vulnerability of coastal areas to rising sea level. CDIAC provides data management support for major projects, including the AmeriFlux Network, continuous observations of ecosystem level exchanges of CO<sub>2</sub>, water, energy and momentum at different time scales for sites in the Americas; the Ocean CO<sub>2</sub> Data Program of CO<sub>2</sub> measurements taken aboard ocean research vessels; DOE-supported FACE experiments, which evaluate plant and ecosystem response to elevated CO<sub>2</sub> concentrations, and NARSTO, which assesses ozone and fine particle processes in the troposphere over North America.

URL: <http://cdiac.ornl.gov/>



### European Forest Information Portal (EUROFOREST Portal)

The European Forest Information Portal (EUROFOREST) is a free, non-commercial service providing information for forest information users. The portal aims to meet demands for better access to current web-based information on European forests and forestry by providing an entry point into pan-European forest information in selected topics. The EUROFOREST portal does not provide direct access to data, but rather provides an indication of where web-based information about a certain topic or a particular country can be found. Information can be browsed by subject area, geographical area, as well as by simple and advanced free-text search.

URL: <http://forestportal.efi.int/>



## Forest Carbon Portal

The Forest Carbon Portal (by Ecosystem Marketplace) is a clearinghouse of information, articles, event listings, project details, 'how-to' guides, news, and market analysis on land-based carbon sequestration projects—from forest to farm. The portal contains information about a limited set of carbon projects.

**URL:** <http://www.forestcarbonportal.com/>



## Global Change Master Directory (GCMD)

The portal is a directory providing access to data sets and services relevant to global change and Earth science research. The GCMD database holds more than 30,000 descriptions of Earth science data sets, services and ancillary descriptions covering all aspects of Earth and environmental sciences. One can use the search box or select from the available keywords to search for data and services from a wide range of projects and programmes. The portal pages give an overview of, and links to, projects, platforms, instruments and locations of data.

Metadata data descriptions are provided according to the Directory Interchange Format (DIF) which is compliant with Federal Geographic Data Committee's (FGDC) standard and the ISO 19115 standard, and service descriptions are provided according to the Service Entry Resource Format (SERF).

**URL:** <http://gcmd.nasa.gov/>



## GEO Portal (Group on Earth Observations)

[Four rounds of usability testing were carried in 2009-2010 for three prototype versions of the GEO portal: the ESRI GEO Portal; the ESA/FAO GEO Portal; and the Compusult GEO Portal. A fifth round of testing is currently being carried out for the ESRI GEO Portal and the ESA/FAO GEO Portal. The aim of the fifth round is to compare and contrast the usability of the two remaining portals connected to the same unique GEOSS Clearinghouse.

The reviewer for this GNU analysis carried out an evaluation of the ESA/FAO GEO portal. Some of the information is the same for both portals, but some of the review of functionality is relevant only to the ESA/FAO GEO portal.]

The GEO Portal provides a gateway to remote sensing, geospatial-static and in-situ data, information and services. It provides access to comprehensive, coordinated and sustained observations of the Earth system and provides quick, reliable and up-to-date user-friendly cartographic products as a basis for planning and monitoring activities of decision makers, sustainable development planners and humanitarian and emergency managers.

**URL:** <http://www.geoportal.org/> [ESA/FAO GEO Portal]

**URL:** <http://geoss.esri.com/geoportal/> [ESRI GEO Portal]



## GeoPortal.Bund

The GeoPortal.Bund (launched in 2005) is Germany's new geodata portal and it integrates the GeoMIS.Bund geodata search engine that was operational since 2003 into a new technical platform. The new system allows locally-held spatial data from various public bodies to be visualized. The user can find and visualize geodata in interactive maps that allow layers from different sources to be combined in a basic viewer or expert viewer.

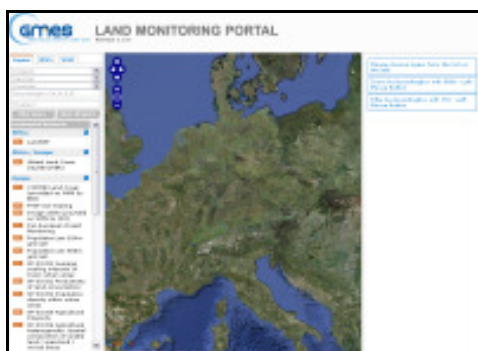
**URL:** <http://geoportal.bkg.bund.de/>



## Land monitoring portal

The Land portal provides a common entry point to GMES data-sets across a variety of data repositories across Europe (e.g. on servers hosted by legally mandated bodies such as EEA and JRC, or numerous project web-sites). The portal uses web-map services of other portals to integrate their data. It provides previews of existing datasets ranging from local urban information to global datasets.

**URL:** <http://www.land.eu/portal/>

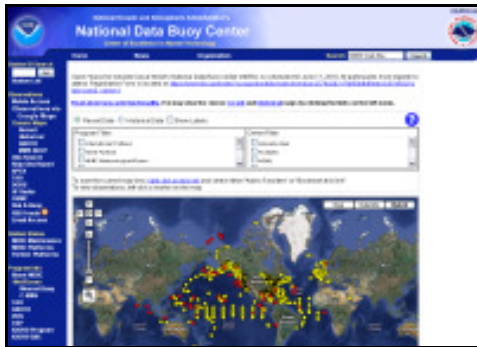


## NDBC OPeNDAP/DODS Data (National Oceanic and Atmospheric Administration's National Data Buoy Center)

The Distributed Oceanographic Data Systems (DODS) is a framework for data providers to share data with each other and with end users. It uses an Open Source Project for a Network Data Access Protocol (OPeNDAP) software, which has been adopted by the National Office for Integrated and Sustained Ocean Observations (OCEAN.US) in its Data Management and

Communications (DMAC) Plan. The National Data Buoy Center (NDBC) has established this DODS server to participate in the DMAC plan for establishing the US Integrated Ocean Observing System (IOOS), as both a data provider and a Data Assembly Center. In implementing this DODS server, NDBC has chosen the network Common Data Form (netCDF) method to serve the data. The NDBC is a part of the US National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS). NDBC designs, develops, operates, and maintains a network of data collecting buoys and coastal stations.

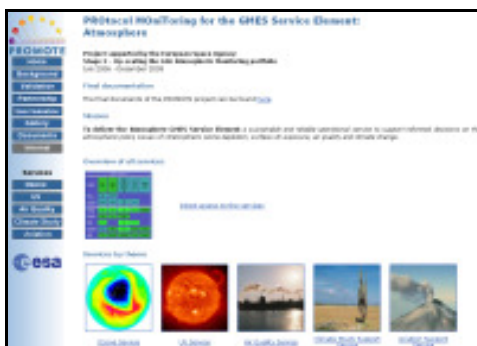
**URL:** <http://www.ndbc.noaa.gov/>



### **PROMOTE (PROtocol MONiTORing for the GMES Service Element: Atmosphere)**

The portal provides GMES services relevant to the ozone layer, UV-exposure on the ground, air quality, climate change and special applications. These services are directed at the needs for information on environment and climate by public authorities and governmental agencies. Some services are directed at the general public.

**URL:** <http://www.gse-promote.org/>



## Portal Evaluations Summary

### Target group

A clear identification of target groups is important for the clear presentation of the portal content and other functionalities, such as the support offered to users.

The reviewed portals covered a range of geospatial related sectors (Figure 1). Sectors and other types of information provided that were mentioned under 'other' included Hydrology, NUTS, cadastral information, geology, earth observation images, hazards, contaminants, energy and minerals, human health, CO<sub>2</sub>, trace gases, aerosols, radiation, land-based carbon, infrastructure, animal science, agriculture.

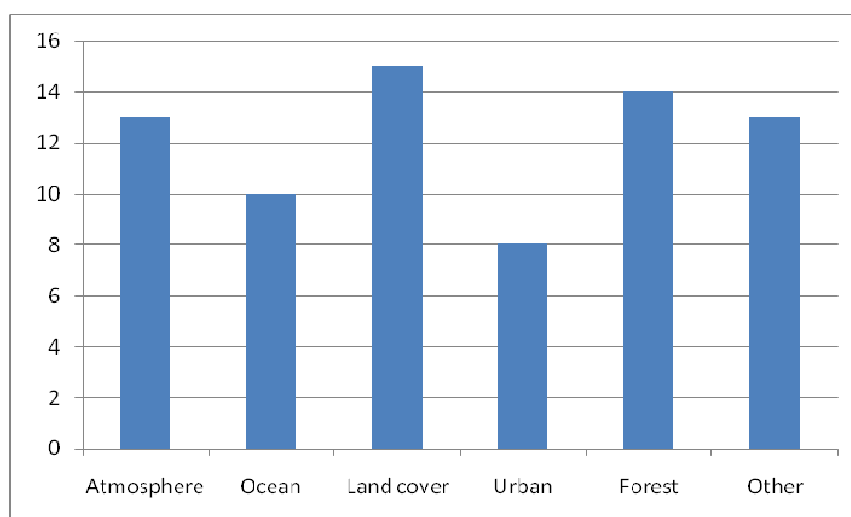


Figure 1: sector coverage of the reviewed portals.

Of the portals reviewed, one had a subnational focus, three had a national focus, five had a European focus, and twelve had a global focus. Most of the portals were mono-lingual, and most of these were in English only. The portals that were only available in languages other than English had a national or subnational focus. Thirteen portals were targeted at professional users, and six at the general public (one was targeted at both groups, and for one portal, it was not clear whether the intended was for professionals or the general public).

### Usability

#### Portal Design

The design and structure of a portal is one aspect either drawing potential users into the portal, or turning them away.

The reviewers reported that they found the visual design of the evaluated portals appealing. One of the portals had a mixed review. The structure, interface and presentation of the portals was generally judged as "easy/intuitive", except for two portals that were judged as complicated. A logical structure is vital to enable users to navigate their way through the information. Some of the portals were judged to have too deep layering of the information; however, the reviewers mentioned that although at first glance the structure was complicated, after a few visits they became familiar with the structure and found information more easily.

### System speed

The overall system speed is another important aspect that affects the users' experience of using portals. Eighteen of the portals were evaluated as fast and three as slow by the portal reviewers.

The speed of browsing, map visualization and map/data download were other aspects evaluated (Figure 2).

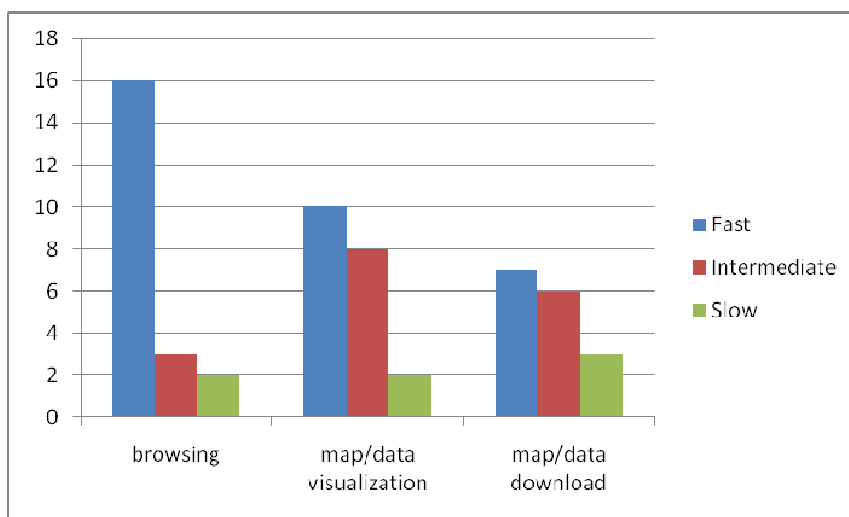


Figure 2: speed of different aspects of the reviewed portals.

### Browser Compatibility

Browser compatibility was an issue for some of the prototype/demonstrator portals, with not all functions working in both Internet Explorer and Firefox.

### **Metadata**

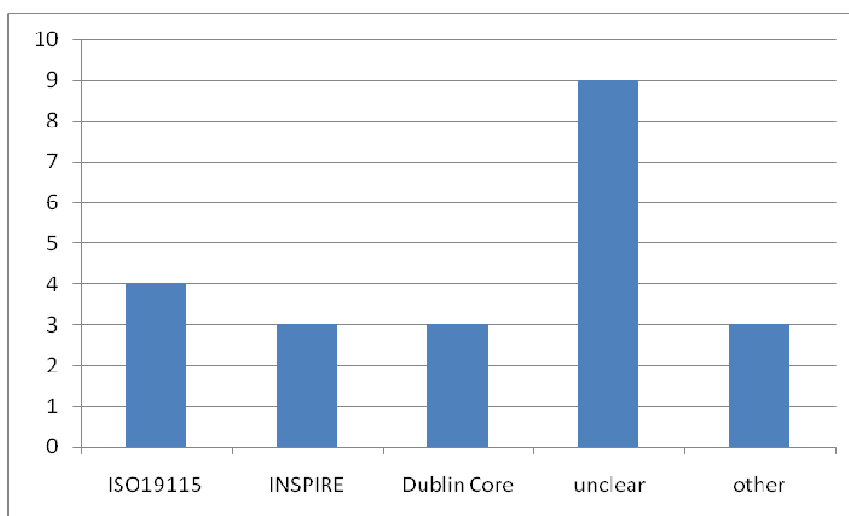


Figure 3: metadata standards used by the reviewed portals.

Metadata standards mentioned as standards for the metadata catalogues included ISO19115, INSPIRE, Dublin Core. (Figure 3) Not all of the evaluated portals provided clear information about the metadata standards used in the catalogues. Other standards used included the NARSTO metadata standard, Climate & Forecast (C&F), Directory Interchange Format (DIF), and Service Entry Resource Format (SERF),

Some of the portals rely on data providers to supply the metadata, and the portals act as a gateway to many sources of information. In order to keep the barriers to providing data and metadata low, the mandatory metadata is often simple, and a criticism of reviewers of several of the portals was that the metadata was often incomplete or insufficient to enable the content to be searched efficiently. Clearly there is a need for a compromise between the needs of the portal end-users (to provide clear, consistently produced and comprehensive metadata) to enable resources to be found easily, and the needs of the data providers (to use metadata that is already available, and to keep additional metadata relatively simple).

Most of the portals were judged to meet the metadata standards they used and provided complete and up-to-date metadata. Some of the prototype/demonstrator portals are not updated.

### Search functionality

The search functionalities of 18 of the portals were evaluated as useful, and three were evaluated as not useful. However, some of the reviewers qualified their judgments with comments suggesting additional search functionalities.

Like	Dislike
<ul style="list-style-type: none"> <li>• Easy to use. Simple geographical search.</li> <li>• Pre-defined data queries according to the primary usage forms of the MODIS data.</li> <li>• Relatively few search fields, main search text based.</li> <li>• Information can be browsed by subject area, geographical area, as well as by simple and advanced free-text search.</li> <li>• Suggested subject areas follow the classification of the International Union of Forest Research Organisations, which is a standard in the forest research community.</li> <li>• Projects can be searched either through setting category filters for different types of categories or with free text search.</li> <li>• Filtering provides a good overview of what types of databases (themes) are available from the portal.</li> <li>• Easy to navigate around and self explanatory functionality.</li> <li>• Useful 'Advanced Search' with the selection of information layers and the results provide a list of interactive links to appropriate data portals.</li> <li>• Filter function for finding layers.</li> <li>• Convenient filter for stations around the world by programme and/or operator using check boxes on the main page.</li> <li>• Listings are good for most of the sub-services, e.g. data presented year by year and/or by instrument.</li> </ul>	<ul style="list-style-type: none"> <li>• Problem searching if you do not the exact name of location or the exact NUTS code because search terms cannot be chosen from drop-down lists.</li> <li>• Lack of search functions by attributes (e.g. finding information related to specific habitats).</li> <li>• During the test the discovery service didn't work.</li> <li>• Not all fields of metadata can be searched.</li> <li>• All countries worldwide are listed (about 180), however the catalogue covers only information from 16 countries, so using the area search is quite cumbersome.</li> <li>• Search functionality incomplete.</li> <li>• Only allows free text searching.</li> <li>• Continents not recognised as geographic names (e.g. "Europa" or "Europe" gives "No geographic name could be found" when using the geographic name lists).</li> <li>• Category specific search terms are not removed when changing categories which gives misleading search results.</li> <li>• Different search categories should be more clearly separated from each other.</li> <li>• No filtering available. The use of keywords does not limit searches enough.</li> <li>• Prior knowledge is needed to get good search results.</li> <li>• Some functions do not work.</li> <li>• Not possible to get an overview of portal content.</li> </ul>

## Help systems

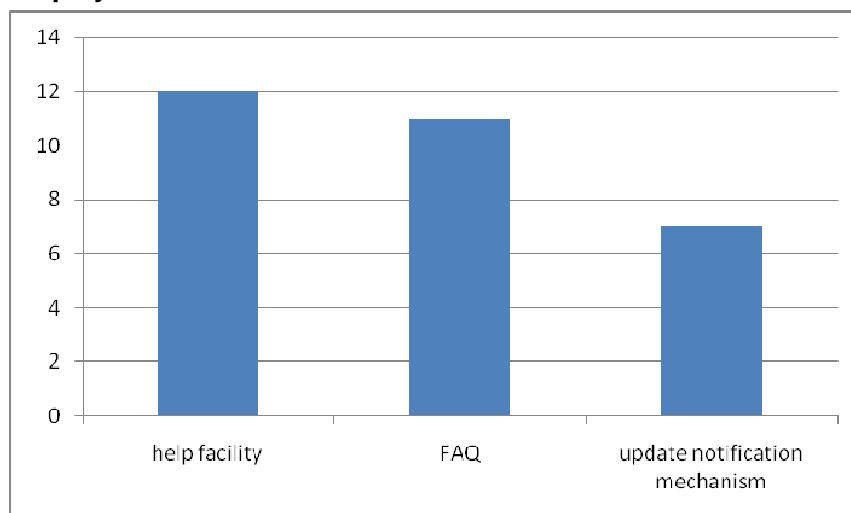


Figure 4: user support offered by the reviewed portals.

Not all of the portals provided help systems in the form of user manuals, examples of searches, FAQs or options to provide feedback (e.g. email, telephone, feedback forms) (Figure 4).

## Feedback

In the GNU discussions, user feedback has been considered as a crucial component of a user-involved geo-portal. Of the portals reviewed, 16 provided users with the opportunity to submit feedback. This was usually through providing an email, telephone contact or feedback form for the general parts of the portal. A few portals provided the opportunity to provide feedback for specific contents within the portal. One reviewer mentioned that it should be possible to submit feedback anonymously (not possible for the portal that was reviewed). One reviewer mentioned that it would be useful to rank or rate individual items in the portals. None of the portals reviewed offered this possibility.

## Registration

Access to the information held within a portal should be made as easy as possible. None of the portals required registration to view the contents. However, additional functionalities (e.g. purchase or download of data, customisable queries to be saved, notification of updated content) were offered to registered users by some of the portals.

## Data access

Most of the evaluated portals provided easy access to the data held within the portal and clear information about the costs and limitations on the data access.

## Recommendations

### Portal Components to be inherited for the ideal geo-portal

Reviewers were asked to comment on what components the ideal geo-portal should inherit from the evaluated portals.

- Comprehensive search/browsing options.
- Options to define the geographic extent or selection of a particular country.
- Glossary/thesaurus (allows consistent/easy compilation of metadata, and searching of content).
- Complete metadata for the data (data provider incl. address, contact person, email; last update, acquisition period, update period; data quality; thematic and spatial accuracy; minimum map unit; reference system, scale, etc.).
- Fast system speed / fast browsing.
- Possibility to print the map.
- Tool that allow visualization, analysis, and access to Earth science remote sensing data without having to download the data.
- Linkage to related documents.
- Linkage to available information on the policy drivers: national or international, legal obligation.
- Simple, stripped bare to the essentials, structure of the entire portal (i.e. separation from background information).
- High quality data.
- Transparent assesment of data quality.
- Google Map tool to show GMES service case areas in a harmonized way [Google maps were used to represent location of items by five of the evaluated portals.]
- Interactive links to web portals for each topic/component – allows fast access to sources of information
- Tight link between data viewer and catalogue of metadata allowing better data discovery using all the metadata fields.
- The availability of the published services should be tested periodically.
- Possibility to create transparent layers.
- Service overview table.

### **Missing functionalities**

Reviewers were also asked to highlight functionalities that they missed in the portals that they reviewed.

- Comprehensive help functionality
- A more detailed explanation of the contents of the layers (data quality, year, institution who developed the layer, etc.)
- Overview of portal contents
- Direct access to the data
- Links to the official website or contact details of responsible organization [for data items]
- Legend of what is displayed in the map
- Discovery service not working
- Full metadata descriptions according to European or international standards
- Freehand zoom function on the image browser
- Dropdown menus for navigation within the different instruments, platforms and products
- Information on how to use the 'Map Viewer' and portal in general. A lot of the metadata and information links on layers selected on the Map Viewer section are inactive and the 'Layers' banner provides no additional information (if it is indeed intended to do so).

## Annex I: GNU Portal Review Questionnaire

**Practical Note:** Clicking on **grey fields with the text “Please select”** will show a drop-down menu from which a preferred option can be selected. Textual feedback can be entered in the **empty fields**. Yes/No options can be selected by clicking in the checkbox . Please summarise feedback into concise statements, preferably not exceeding eight lines of text. Should you have technical difficulties with the form or with interpretation of the questions, then please contact Simo Varis at EFI by emailing to [simo.varis@efi.int](mailto:simo.varis@efi.int) ; cc: [jo.vanbrusselen@efi.int](mailto:jo.vanbrusselen@efi.int)

### Reviewer info

Reviewer name:

Email address:

Are you an information user or supplier of this portal? Please select

### General portal info

Portal name:

Portal URL:

What is the target group of the portal?

- Please select geographical scope  
Feel free to comment:
- Please select expertise level  
Feel free to comment:
- Sectors covered:  Atmosphere;  Ocean;  Land cover;  Urban;  Forest;  
Other/details:

Short description of the portal

Is registration necessary before accessing the portal?  Yes;  No

- If you answered “Yes”, please comment if there are any benefits from registering for the user?
- If you answered “Yes”, is the registration procedure easy or tedious?  
 Easy;  Tedious; Comment:

## GNU Portal Review Questionnaire



### Portal design

Do you find the portal visually appealing?

Yes;  No; Please comment:

How do you judge the overall structure, interface, and presentation of the portal?

Please select; Please comment:

Assess the speed of browsing and, if possible, data download:

- Speed of browsing: Please select
- Speed of map visualization: Please select
- Speed of map download: Please select

Is the system fast or slow?  Fast;  Slow; Comment:

Can you visualize data/maps in a viewer?  Yes;  No

Indicate if guidelines and support are built in, such as:

help facility;  FAQ;  notification mechanisms of updates

Please indicate if information about data are provided, such as:

data quality,  description,  preview,  quick look,  comparison of different data sets

Which components should the ideal geo-portal inherit from the reviewed portal?

*Also provide the URL to any referred 'good practice' portal section.*

Do you find any functionality missing from the portal?

Please explain:

Can you bookmark internal pages of the portal?

Yes;  No; Feel free to comment:

Does the portal have a feedback mechanism?

Yes;  No; Please comment if it is any good:

### Search functionality

Are the query options and filtering useful?

Yes;  No; Please comment:

How do you like (or *don't* like) the search functionality? Please describe:

## GNU Portal Review Questionnaire



### Metadata, completeness and timeliness

Are all or most data sets provided with complete metadata information?

Yes;  No; Please comment:

Is all needed metadata provided? Which metadata are typically missing? Which metadata are superfluous?

Do the metadata meet metadata standards?

Yes;  No; Please comment:

Timeliness of data content - how well is portal content kept up to date?

Please select; Please comment:

What metadata standard is used to describe information sources?

ISO19115;  ISO19139;  Dublin-core;  Don't know; Other:

### Data access

Is information on costs and legal limitations of data access clearly provided?

Yes;  No; Please comment:

Are data access condition easy (quick, batch) or complicated?

Easy;  Complicated; Comment:

**Thank You for your contribution!**



# Annex: Summary of Questionnaire results

Portal name	Enviroportal	EPDAC Map Viewer	Geoproxy Thuringen	Giovanni	Google Earth	GSE Forest Monitoring Catalogue	European Commission INSPIRE Geoportal	NASA LAADS	OneGeology	Portailu	SPOTcatalogue (former SIRIUS)
Portal URL (review August 2009) new URL (update April 2010)	<a href="http://enviroportal.sk/son">http://enviroportal.sk/son</a>	<a href="http://etdarc.fr/ec/europe">http://etdarc.fr/ec/europe</a>	<a href="http://www.geoproxy.ge">http://www.geoproxy.ge</a>	<a href="http://data.gis.nasa.gov">http://data.gis.nasa.gov</a>	<a href="http://earth.google.com/">http://earth.google.com/</a>	<a href="http://www.informus.de">http://www.informus.de</a>	<a href="http://www.inspire-geoportal.eu">http://www.inspire-geoportal.eu</a>	<a href="http://adsweb.nascom.nasa.gov">http://adsweb.nascom.nasa.gov</a>	<a href="http://www.onegeology.com">http://www.onegeology.com</a>	<a href="http://www.portailu.de/">http://www.portailu.de/</a>	<a href="http://catalog.spotimage.com">http://catalog.spotimage.com</a>
General portal info	National	EU General public	Sub-national General public	Global Professional users	Global General public	Global Professional users	EU Professional users	Global Professional users	Global General public	National Both	Global General public
Target group	n.n.										
Expertise level											
Sectors covered:											
- Atmosphere	X			X	X	X				X	X
- Ocean	X			X	X	X	X			X	X
- Land cover	X	X		X	X	X	X			X	X
- Urban	X	X		X	X	X	X			X	X
- Forest	X	X		X	X	X	X			X	X
- Other				Hydrology	Earth surface					many sectors	satellite imagery
							NUTS level information; rivers and lakes; cadastral info				
Registry necessary	NO	NO	NO	NO	Easy	NO	NO	NO	Easy	NO	NO
Portal design	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Portal visual appeal	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive	Complicated	Easy/Intuitive
Overall Structure, interface and presentation of portal											
Speed of browsing	Intermediate/Normal	Fast	Slow	Fast	Fast	Fast	Fast	Intermediate/Normal	Fast	Intermediate/Normal	Fast
Speed of map visualization	Intermediate/Normal	Fast	Slow	Intermediate/Normal	Fast	Fast	Intermediate/Normal	Intermediate/Normal	Fast	Intermediate/Normal	Fast
Speed of map download	Slow	Fast	Slow	Intermediate/Normal	n.n.	Fast	Fast	Intermediate/Normal	Fast	Intermediate/Normal	Fast
System speed	Fast	Fast	Slow	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast
Data/map visualizer	Yes	Yes	Yes	Yes	Yes	NO	Yes	Yes	Yes	Yes	Yes
Support system:											
- help facility			X	X	X	X	X	X	X	X	X
- FAQ			X	X	X	X	X	X	X	X	X
- update notification mechanism	X			X				X			X
Metadata:											
- data quality		X		X	X	X	X	X	X	X	X
- description				X	X	X	X	X	X	X	X
- preview	X			X	X	X	X	X	X	X	X
- quicklook				X	X	X	X	X	X	X	X
- comparison of different datasets											
Good practice ref. Possible to bookmark internal pages	NO	NO	NO	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Feedback mechanism	NO	NO	NO	Yes	Yes	Yes	NO	Yes	Yes	Yes	Yes

Public dissemination level

Portal name	Enviroportal	EPDAC Map Viewer	Geoproxy Thuringen	Giovanni	Google Earth	GSE Forest Monitoring Catalogue	European Commission INSPIRE Geoportail	NASA LAADS	OneGeology	Portailu	SPOCatalogue (former SIRIUS)
Search functionality	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Useful query and filtering options											
Metadata completeness and timeliness	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Complete metadata information available											
metadata missing											
metadata superfluous											
metadata meet metadata standards	Yes	No	No	Yes	Yes	No	Yes	Yes	No	No	Yes
Up-to-dateness of portal content	Up to date	Up to date	Up to date	Up to date	Not updated	Not updated	Unclear	Up to date		some up some out	Up to date
Metadata standards	X										
- ISO19115											
- ISO19139											
- Dublin-core	X					X					
- unclear		X		X				X		X	X
- other							INSPIRE				
Data access											
Clear info on costs and legal data access	Yes	No	No	Yes	Yes	No	Yes	No	Yes	Yes	Yes
limitations											
Data access conditions	Easy	n.n.	Complicated	Easy	Easy	Complicated	Easy	Easy	Easy	Easy	Easy

GMES Network of Users

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Portal name	USGS - U.S. Geological Survey	CDIAC	EUROFOREST Portal	Forest Carbon Portal	GMOD	Genode of ETC USI	Geoportal bund	Inspire Geoportal	Land monitoring portal	NDBC ORENDAW/DODS	PROMOTE	Inspire geoportal	GEO Portal
Portal URL (review August 2008)	<a href="http://www.usgs.gov/">http://www.usgs.gov/</a>	<a href="http://cdiac.ornl.gov/">http://cdiac.ornl.gov/</a>	<a href="http://foreportal.efri.inh.fr/">http://foreportal.efri.inh.fr/</a>	<a href="http://www.forestcarbon.gov/">http://www.forestcarbon.gov/</a>	<a href="http://gmod.nasa.gov/">http://gmod.nasa.gov/</a>	<a href="http://158.109.174.72:80/">http://158.109.174.72:80/</a>	<a href="http://geportal.bkg.bund.de/">http://geportal.bkg.bund.de/</a>	<a href="http://www.inspire-geop.com/">http://www.inspire-geop.com/</a>	<a href="http://www.land.eu">http://www.land.eu</a>	<a href="http://www.ndbc.noaa.gov/">http://www.ndbc.noaa.gov/</a>	<a href="http://www.gps-promote.com/">http://www.gps-promote.com/</a>	<a href="http://www.inspire-geop.com/">http://www.inspire-geop.com/</a>	<a href="http://www.geoportal.org/">http://www.geoportal.org/</a>
General portal info	Global	Global	Europe	Global	Global	Europe	National	Europe	Europe	Global	Europe	EU	Global
Target group	Professional users	Professional users	General public	Professional users	Professional users	General public	Professional user	Professional user	Professional user	Professional user	Professional users	General public	Professional users
Expertise level	Professional	Professional	General	Professional	Professional	General	Professional	Professional	Professional	Professional	Professional	General	Professional
Sectors covered:	- Atmosphere - Ocean - Land cover - Urban - Forest - Other			Land-based carbon			Geology, Water, Agriculture, Air, Infrastructure, Nature and Environment, Statistics					EO images, cadastre, agriculture	Diseases, health, energy, climate, water, weather, ecosystems, agriculture and biodiversity.
Registry necessary	No	No	No	No	No	No	No	No	No	No	No	No	No
Portal design	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes and No	Yes
Overall appeal	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive	Complicated	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive	Easy/Intuitive
Interface and presentation of portal	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast
Speed of browsing	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast
Speed of map visualization	Intermediate/Normal	Intermediate/Normal	Fast	Fast	Intermediate/Normal	Fast	Fast	Slow	Fast	Fast	Fast	Slow	Intermediate/Normal
Speed of map download	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Slow	Fast	Fast	Fast	Slow	Fast and Slow
System speed	Yes	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Data/map visualizer													
Support system:	- help facility												
- FAQ	X	X		X	X	X	X	X	X	X	X	X	X
- update notification mechanism													
Metadata:													
- data quality	X	X		X	X	X	X	X	X	X	X	X	X
- description	X	X	X	X	X	X	X	X	X	X	X	X	X
- preview													
- quicklook	X												
- comparison of different datasets													
Good practice reference	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	No	No
Possible to bookmark internal pages													
Feedback mechanism	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes

GMES Network of Users

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Portal name	USGS - U.S. Geological Survey		CDIAC	EUROFOREST Portal	Forest Carbon Portal	GCMD	Geonode of ETC USI	GeoPortal Bund	Inspire Geportal	Land monitoring portal	NDBC OPeNDAP/DOOS Data	PROMOTE	Inspire geportal	GEO Portal
	Search functionality	User query and filtering options												
Metadata, completeness and timeliness	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes
Complete metadata information available	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes and No	No
metadata missing								user rights						
metadata superfluous														
metadata meet metadata standards		No	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Up to date
Up-to-dateness of portal content	Up to date	Up to date	Up to date	Up to date	Up to date	Up to date	Up to date	Up to date	Unclear	Not updated	Up to date	Up to date	Not updated	Up to date
Metadata standards - ISO19115						X	X	X						
- ISO19139							X	X						X
- Dublin-core							X	X						
- unclear	X									X				
Data access		NAESTO					ESPN		INSPIRE		Climate & Forecast (CF) Metadata Convention	X	INSPIRE	
Clear info on costs and legal data access limitations	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No	No	Yes	No	No
Data access conditions	Easy	Easy	Easy	Easy	Yes	Yes	Easy	Easy and Complicated	Yes	Complicated	Easy/intuitive	Easy		N.A.

This report and all other reports by GNU can be  
downloaded from the project website:

[www.gmes-network-of-users.eu](http://www.gmes-network-of-users.eu)