



GROUP ON
EARTH OBSERVATIONS

The [GEO-CRADLE Regional Data Hub](#) tool: Utilizing the GEO DAB APIs for easy access and discovery of regional EO data

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The GEO-CRADLE Regional Data Hub tool: Utilizing the GEO DAB APIs for easy access and discovery of regional EO data

Introduction to GEO-CRADLE project



- ...is a unique EU funded Coordination Action running at regional level
- ...is looking at the N. Africa, Middle East, and the Balkan territories

objectives

- **Promote** the uptake of EO services and data in response to regional needs
- **Support** the effective integration of existing Earth Observation Capacities in the region
- **Facilitate** the engagement of the complete ecosystem of EO stakeholders in the region
- **Enhance** the participation in and contribution to the implementation of **GEOSS** and **Copernicus** in **North Africa, Middle East** and the **Balkans**



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Introduction to GEO-CRADLE project



- Funded under H2020 - Climate action, environment, resource efficiency and raw materials
- ACTIVITY: Developing Comprehensive and Sustained Global Environmental Observation and Information Systems
- CALL IDENTIFIER: H2020 SC5-18b-2015 Integrating North African, Middle East and Balkan Earth Observation capacities in GEOSS
- Project GA number: 690133
- Total Budget: 2,910,800.00 €



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Introduction to GEO-CRADLE project



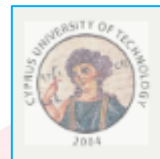
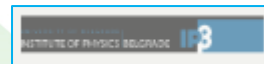
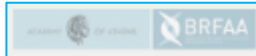
- GEO-Cradle project is coordinated by Dr. Haris KONTOES of the Institute for Astronomy, Astrophysics, Space Applications, and Remote Sensing (IAASARS) of the National Observatory of Athens (NOA).
- The various software components ([GEO-CRADLE Portal](#), [Network of Stakeholders](#) and [Regional Data Hub](#)) are development from the NOA IT team.



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Introduction to GEO-CRADLE project

The project has brought together **25 partners from 3 continents**, to work in a highly-complementary team that combines a strong background in EO coordination activities with proven scientific excellence in four key thematic areas





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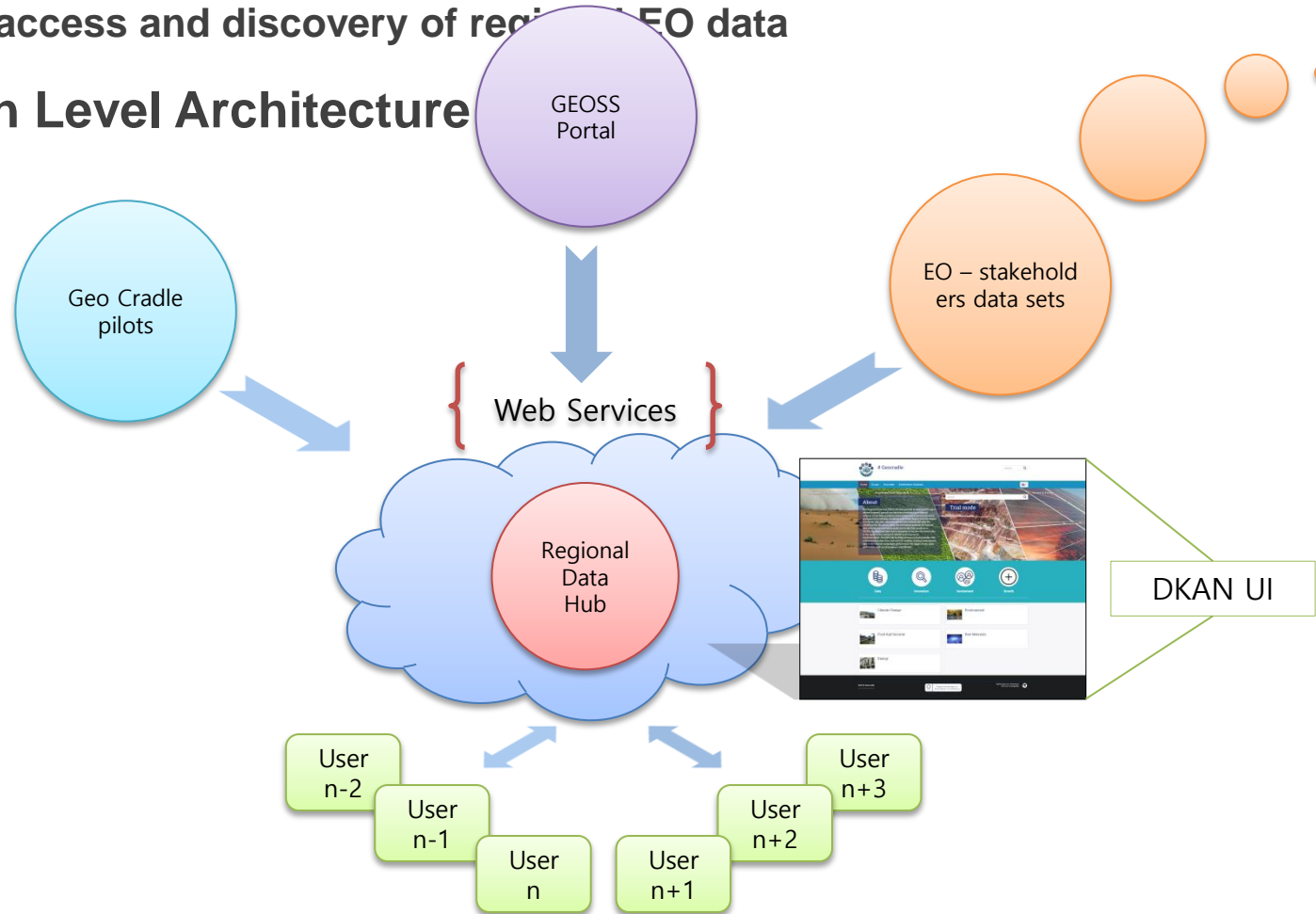
Introduction to GEO-CRADLE project



- A key output of GEO-CRADLE that can contribute to the long-term uptake of EO activities in the region is the operation of the Regional Data Hub.
- Provide access to region-related datasets and services, directly fed from the GCI, and at the same time being the centralised gateway for regional data providers to contribute easily and timely their products to GEOSS
- A successful example of being implemented Community Portal leveraging GEO DAB APIs.

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High Level Architecture




The GEO-CRADLE Regional Data Hub tool: Utilizing the GEO DAB APIs for easy access and discovery of regional EO data

Print Screens

Home Groups Geocradle Stakeholder Database Datasets Log in Register

Home Groups


Groups



Global Earth Observation System of Systems (GEOSS)

A central part of GEO's Mission is to build the Global Earth Observation System of Systems (GEOSS).


25318292 datasets



PILOT 1: Adaptation to Climate Change (ACC)

The RoI has been recognised by the Intergovernmental Panel on Climate Change as one of the most sensitive and vulnerable to climate change regions


0 datasets



PILOT 2: Improved Food Security – Water Extremes Management (IFS)

Food security depends on many aspects such as water abundance and extremes (flooding and drought), vegetation stresses, yield monitoring, soil qual


0 datasets



PILOT 3: Access to Raw Materials (ARM)

For the first time, GEO-CRADLE will make available in the RoI the roadmap for long-term monitoring, mapping, and management of mineral deposits, all

0 datasets



PILOT 4: Access to Energy (SENSE)

GEO-CRADLE will lead a coordinated effort to support and improve the regional EO infrastructures through the Solar Energy Nowcasting SystEm (SENSE)

0 datasets

The GEO-CRADLE Regional Data Hub tool: Utilizing the GEO DAB APIs for easy access and discovery of regional EO data

Print Screens cont'd

The screenshot displays the GEO-CRADLE Regional Data Hub interface. At the top, a navigation bar includes links for Home, Groups, Geocradle, Stakeholder Database, Datasets, Log in, and Register. Below the navigation bar, a breadcrumb trail shows the path: Home / climate / Dataset. On the left side, there is a sidebar with a 'Content Types' dropdown menu set to 'Dataset'. Below this, a 'Tags' section lists various climate-related datasets with their respective counts: NECLIME (160), Neogene Climate Evolution in Eurasia (160), ERA-CLIM (89), European Reanalysis of Global Climate Observations (89), Mediterranean Sea Acidification in a Changing Climate (68), MedSea (68), Abrupt Climate Changes and Environmental Responses (50), ACER (50), Climate - Biogeochemistry Interactions in the Tropical Ocean (50), and SFB754 (50). The main content area shows '8426 results' for the search term 'climate'. It includes a search bar with the text 'climate', a 'Sort by' dropdown set to 'Date changed', and an 'Order' dropdown set to 'Descending'. Below the search bar, there are five search results, each with a cube icon, a title, and a brief description. The results are: 1. 'Mediterranean Sea Acidification in a changing climate' (Increases of atmospheric CO2 and associated decreases in seawater pH and carbonate ion concentration this century and beyond are likely to have wide impacts on marine ecosystems including those of the Mediterranean Sea). 2. 'PO-SPACC - Portuguese small pelagic fish and climate change programme: a comparative retrospective analysis' (Fluctuations in small pelagic fish recruitment in the North-eastern Atlantic upwelling ecosystem have been observed, namely decreasing trends in the last decades. Sardine, horse mackerel and anchovy are). 3. 'Burkina Faso, Mali, Niger and Senegal: Agricultural Potential in Relation to Soils and Climate' (This map shows the potential for agricultural development in different areas of Burkina Faso, Mali, Niger and Senegal based on the soils and climate of these areas). 4. 'Climate Change Adaptation & Coastal Cities of North Africa Reports' (These reports are parts of the deliverables produced by the "Climate Change Adaptation & Coastal Cities of North Africa Project"). 5. 'Calcareous plankton response to orbital and millennial-scale climate changes from ODP Leg 161-975' (The paleoenvironmental conditions through MIS 15-9 at the Mediterranean Ocean Drilling Program (ODP) Site 975 were interpreted by high resolution study of calcareous plankton assemblages compared with available d18O and d13C records and high resol). 6. 'Paleo-climate reconstruction on sediment core M72/5_628-1 (25-GC-1), Black Sea' (The Marine Isotope Stage (MIS) 3 stands out due to its abrupt changes from cold and dry stadials to warm and humid interstadials, the so-called Dansgaard-Oeschger cycles that also affected temperature and rainfall in the Black Sea region).

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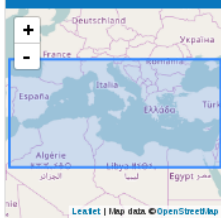
Print Screens cont'd



Global Earth Observation System of Systems (GEOSS)

A central part of GEO's Mission is to build the Global Earth Observation System of Systems (GEOSS). GEOSS is a set of coordinated, independent Earth observation, information and processing systems...

Data Extent



Mediterranean Sea Acidification in a changing climate

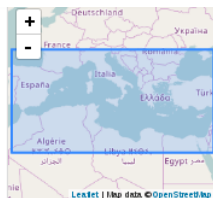
Increases of atmospheric CO₂ and associated decreases in seawater pH and carbonate ion concentration this century and beyond are likely to have wide impacts on marine ecosystems including those of the Mediterranean Sea. Consequences of this process, ocean acidification, threaten the health of the Mediterranean, adding to other anthropogenic pressures, including those from climate change. Yet in comparison to other areas of the world ocean, there has been no concerted effort to study Mediterranean acidification, which is fundamental to the social and economic conditions of more than 400 million people living in Mediterranean countries and another 175 million who visit the region each year.

The MedSeA project addresses ecologic and economic impacts from the combined influences of anthropogenic acidification and warming, while accounting for the unique characteristics of this key region. MedSeA will forecast chemical, climatic, ecological-biological, and socio-economical changes of the Mediterranean driven by increases in CO₂ and other greenhouse gases, while focusing on the combined impacts of acidification and warming on marine shell and skeletal building, productivity, and food webs. We will use an interdisciplinary approach involving biologists, earth scientists, and economists, through observations, experiments, and modelling. These experts will provide science-based projections of Mediterranean acidification under the influence of climate change as well as associated economic impacts.

Projections will be based on new observations of chemical conditions as well as new observational and experimental data on the responses of key organisms and ecosystems to acidification, which will be fed into existing ocean models that have been improved to account for the Mediterranean's fine-scale features. These scientific advances will allow us to provide the best advice to policymakers who must develop regional strategies for adaptation and mitigation.

The GEO-CRADLE Regional Data Hub tool: Utilizing the GEO DAB APIs for easy access and discovery of regional EO data

Print Screens cont'd



License

License not specified

Other Access

The information on this page (the dataset metadata) is also available in these formats.

[JSON](#) [RDF](#)

via the [DKAN API](#)

Social

[Twitter](#)

[LinkedIn](#)

[Reddit](#)

[Google+](#)

[Facebook](#)

Mediterranean acidification under the influence of climate change as well as associated economic impacts.

Projections will be based on new observations of chemical conditions as well as new observational and experimental data on the responses of key organisms and ecosystems to acidification, which will be fed into existing ocean models that have been improved to account for the Mediterranean's fine-scale features. These scientific advances will allow us to provide the best advice to policymakers who must develop regional strategies for adaptation and mitigation.

Data and Resources

Dataset Info

 These fields are compatible with [DCAT](#), an RDF vocabulary designed to facilitate interoperability between data catalogs published on the Web.

Field	Value
Publisher	Global Earth Observation System of Systems (GEOSS)
Modified Date	2012-03-02
Release Date	2012-03-02
Identifier	C1214598306-SCIOPS
Spatial / Geographical Coverage Area	POLYGON ((-8 28, 36 28, 36 46, -8 46, -8 28))
Temporal Coverage	Tuesday, February 1, 2011 - 02:00 to Saturday, February 1, 2014 - 01:59

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Why DKAN?



A. Admin panel

Powerful, ready to use admin panel

- Easy to define content types
- Easy to add content (e.g. Datasets, resources)
- Manage users, accessibility, taxonomies, etc.

B. Search & View

Ready to use/customize search and view of data

- Fully customizable page layout through panels
- A multitude of APIs in order to implement various functionalities
- Faceted full-text search through Facet, Views and Search APIs

C. Big Community

Big open-source Community

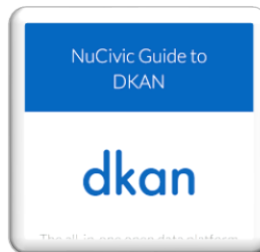
- DKAN is a complimentary offering to CKAN.
- Integrates open data catalog features into Drupal CMS, which is build upon PHP.
- PHP powers a significant percentage of Web, while Drupal powers ~2% of the Internet as a whole.
- Has a wide community of active users/developers.

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The challenge

DKAN

DKAN admin, search & display functionalities ready to use. A multitude of modules for the open data purposes.



Two mature systems

However, the eventual integration of GEO DAB APIs into the DKAN ecosystem was a great challenge itself!

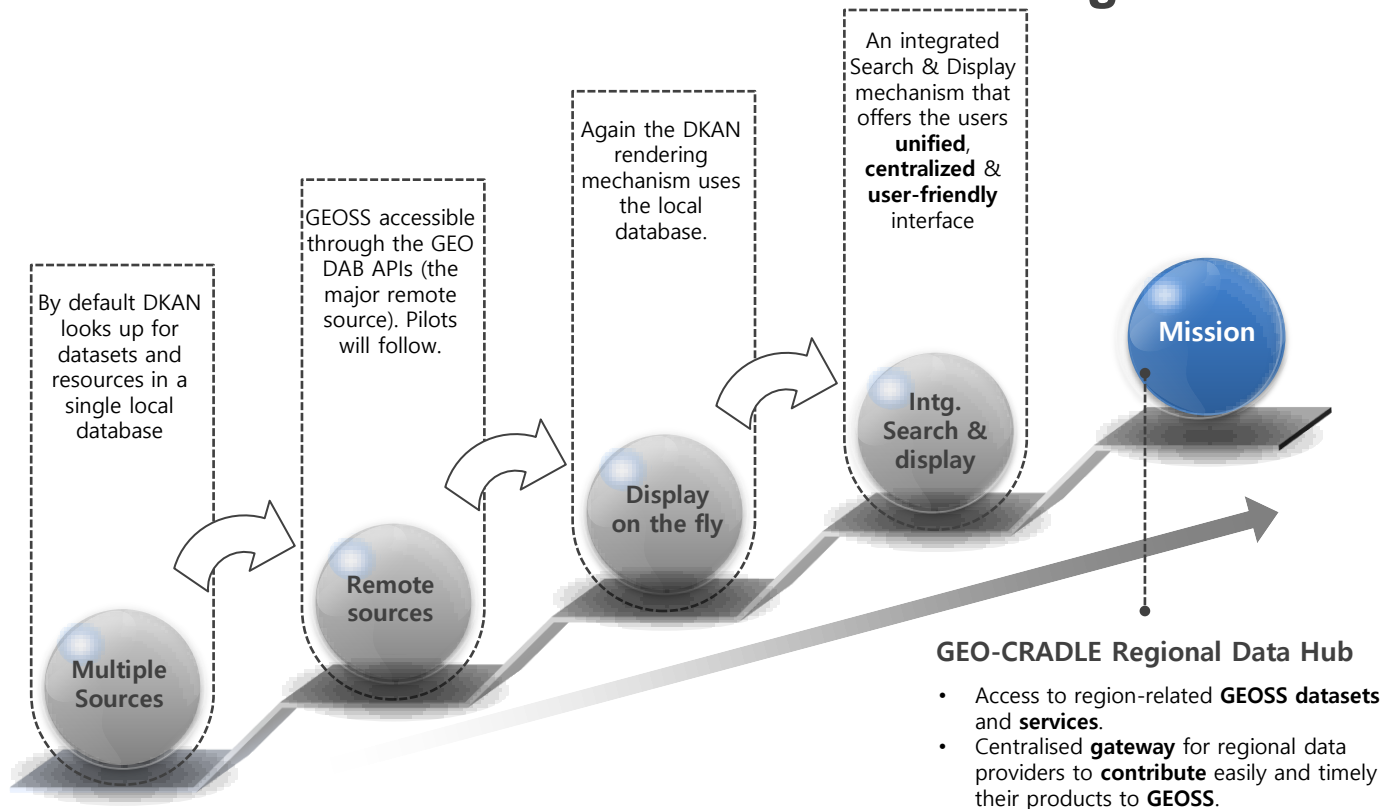


GEO DAB APIs

The GEO DAB APIs are very easy to use. You just plug and play!

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Innovation towards Challenges





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Conclusions



- GEOSS is a vital component for the creation of a universe of open EO data, together with other initiatives including NextGEOSS, DIAS platform, etc.
- The GEOSS Common Infrastructure (GCI) comprises the backbone and the necessary toolbox for the uptake of EO services & applications.



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Conclusions



- The GEO Discovery and Access Broker (DAB) is a subtle component for accessing EO data.
- Offers a rich suite of standard protocols (a.k.a. interfaces).
- It's really plug and play; once you read the documentation it requires the minimum effort to integrate those in your development.
- Its **discovery**, **access** & **semantics** functionalities support properly the development of regional data hubs.



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Conclusions

NuCivic Guide to
DKAN

dkan

The all-in-one open data platform

DKAN is suggested to be used because:

- Provides powerful plug-in modules for **access, discovery** of open data, as well as for the **visualization, registration** of them.
- Greatly decouples the data model from the data rendering mechanism.
- Enhances existing GEO discovery and access mechanisms like the ones provided by the GEO DAB APIs.



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Conclusions



- The development of GEO-CRADLE Regional Data Hub revealed issues that made evident the difficulty of integrating the GEO DAB APIs in DKAN, especially in our attempt to display "**on-the-fly**" the brokered information of GEOSS, because DKAN is a **strict** system designed to "**ingest**" content either manually or through harvesting other DKAN installations, whereas on the other hand GCI is an **abstract** system designed to broker datasets from "everywhere" and mostly in a distributed mode.
- In addition DKAN uses **taxonomies** (taxonomy **terms** & **vocabularies**) in order to classify the content according to **format, keywords, topics**, etc. While **GCI** users free text.
- The solution to problems like these should likely be the provision of tools that could bridge gap between those systems.
- For example GCI could provide an **analytics** tool allowing applications to periodically poll for statistics regarding formats, topics, keywords and other meaningful data patterns related with the GEOSS brokered resources.



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Roadmap

- Continue the developments for the GEO-CRADLE Regional Data Hub, making it the gateway of GEOSS portal in the region and operating it as a focal node towards GEOSS and Copernicus implementation.
- Use the Data Hub as a platform for making available the GEO-CRADLE pilots' data and results and allow the regional stakeholders to harvest them.
- Bring third-party data providers suitable for registration in GCI (e.g. JRC Danube Portal and some tenths of regional portals) in the course of the project. Connect Data Hub with these providers too.
- Facilitate the exchange of knowledge on existing EO capacities (data, services, models, etc.) in the region.
- Showcase concrete examples of tackling regional challenges related to adaptation of climate change, improved food security & water extremes management, better access to raw materials and energy.

A decorative graphic on the left side of the slide. It features a large light blue circle in the top left corner. Below it, there is a cluster of four ovals: a large blue one, a medium green one, and two smaller ones (one green and one pink) positioned to its right. Above the blue oval, there are three more circles: a large light green one, a medium pink one, and a small pink one to its right.

**THANK YOU
FOR YOUR
ATTENTION**