

Friday 7 December 2018
@ CRTS, Rabat, Morocco

Overview of what GEO-CRADLE has achieved

Alexia Tsouni
GEO-CRADLE Project Coordination Team
National Observatory of Athens

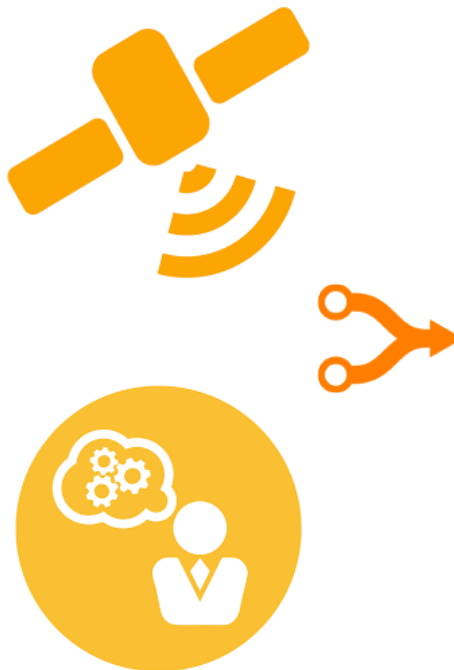


Why sustained EO activities at regional level are important?

The continuous provision of **useful, accurate and timely information** through coordinated and sustained **Earth Observation** together with INSPIRE data, Copernicus, and GCI information

is a **key enabler**

for **informed decision making**, in response to regional challenges and towards the achievement of the **UN SDGs** and the implementation of the relevant **EU Directives**.



The GEO-CRADLE contribution

GEO-CRADLE coordinates and integrates state-of-the-art EO activities in the regions of **North Africa, Middle East, and Balkans** (NAMEBA) and develops links with GEO related initiatives towards GEOSS, contributing amongst others to EuroGEOSS and AfriGEOSS.



GEO-CRADLE brings together **key players** representing the **entire EO value chain** and promotes the **uptake and exploitation of innovative EO activities in NAMEBA** through:

- ✓ **Cooperation**
- ✓ **Awareness raising**
- ✓ **Capacity building**
- ✓ **Open data sharing principles**
- ✓ **Interoperability**

<http://geocradle.eu>


















The **GEO-CRADLE** project has received funding from the European Union's **Horizon 2020** research and innovation programme under grant agreement No 690133



The GEO-CRADLE links



GEO_CRADLE: Coordinating and Integrating State-of-the-Art Earth Observation Activities in the Regions of North Africa, Middle East, and Balkans and Developing Links With GEO Related Initiatives Towards GEOSS H2020-SC5-2015, GA : No 690133
 2016-2019
 2.910.800 EUR
<http://geocradle.eu/en/>

IN SUPPORT TO	LINKED TO GEO SOCIETAL BENEFIT AREA	LINKED TO COPERNICUS THEMATIC AREA	LINKED TO UN SUSTAINABLE DEVELOPMENT GOAL (SDG)	PROJECT TYPE
 <input checked="" type="checkbox"/>	 DISASTERS  ENERGY <input checked="" type="checkbox"/>  FOOD SECURITY <input checked="" type="checkbox"/>  PUBLIC HEALTH <input checked="" type="checkbox"/>  WATER MANAGEMENT <input checked="" type="checkbox"/>	 ATMOSPHERE <input checked="" type="checkbox"/>  MARINE <input checked="" type="checkbox"/>  LAND <input checked="" type="checkbox"/>  CLIMATE <input checked="" type="checkbox"/>  EMERGENCY <input checked="" type="checkbox"/>  SECURITY	 ZERO HUNGER <input checked="" type="checkbox"/>  AFFORDABLE ENERGY <input checked="" type="checkbox"/>  CLIMATE CHANGE <input checked="" type="checkbox"/>  LIFE ON LAND <input checked="" type="checkbox"/>  SUSTAINABLE CITIES	COORDINATION ACTION <input checked="" type="checkbox"/> RESEARCH & INNOVATION <input type="checkbox"/> INNOVATION ACTION <input type="checkbox"/>

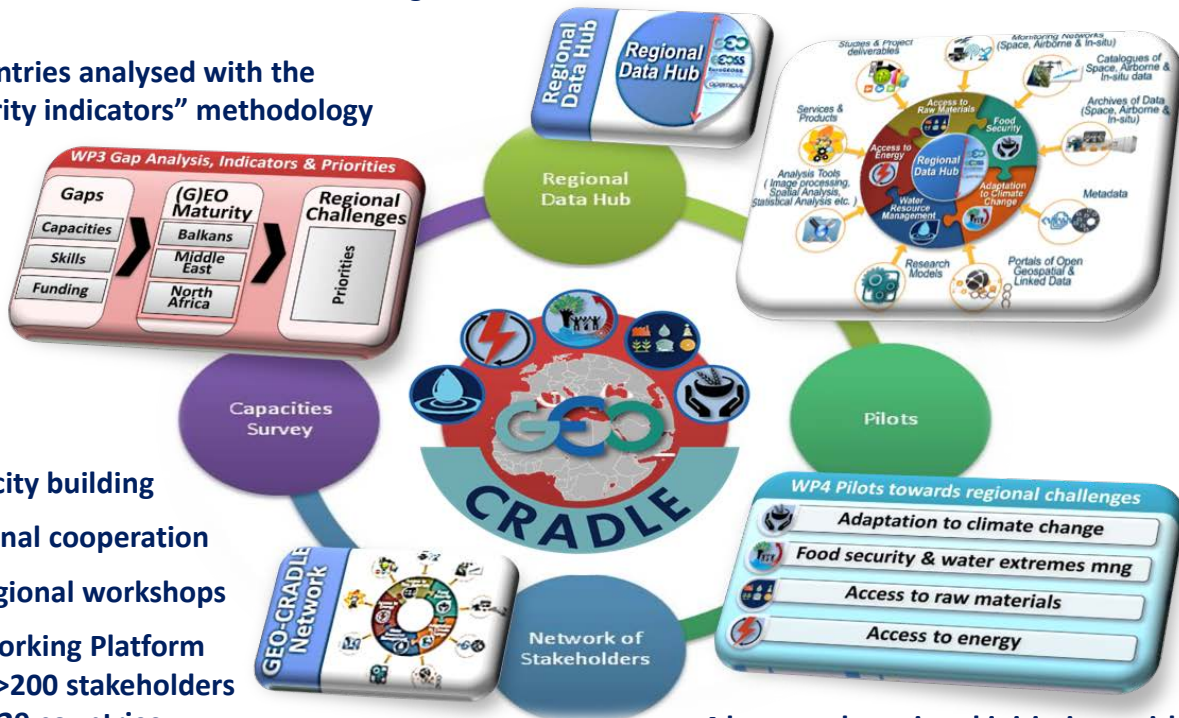
The GEO-CRADLE overview

11 countries analysed with the “maturity indicators” methodology

Regional Data Hub with >25,000,000 datasets

Capacity building
Regional cooperation
16 regional workshops
Networking Platform
with >200 stakeholders
from 29 countries

4 large scale regional initiatives with
capacity building and delivery of innovative
services in support of 11 UN SDGs



The GEO-CRADLE Pilots



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[Regional Capacities](#)

[Outreach](#)

[Resources](#)

[Tools](#)

[News & Events](#)

[English](#)

Search



GEO-CRADLE Project

Coordinating and integrating Earth Observation activities



Pilot Activities

Follow our pilot activities in four thematic areas:



Survey & Networking Platform

Take part in our



DataHub

Access, search and share Earth Observation Data for the three regions.



Funding Opportunities

Explore the available funding opportunities and the benefit of

The GEO-CRADLE Pilots

GEO-CRADLE Thematic Areas in support of the UN SDGs



Pilots applicable & adaptable to all countries

Adaptation to Climate Change (ACC)

13 CLIMATE ACTION



3 GOOD HEALTH AND WELL-BEING



11 SUSTAINABLE CITIES AND COMMUNITIES



15 LIFE ON LAND



Improved Food Security – Water Extremes Management (IFS-WEM)

2 ZERO HUNGER



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Access to Raw Materials (ARM)

1 NO POVERTY



2 ZERO HUNGER



Access to Solar Energy (SENSE)

7 AFFORDABLE AND CLEAN ENERGY



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



17 PARTNERSHIPS FOR THE GOALS



5 GENDER EQUALITY



End users & stakeholders engagement

The GEO-CRADLE Pilots

GEO-CRADLE Pilot 1: Adaptation to Climate Change

DEAR-Clima

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Welcome

The Data Extraction Application for Regional Climate (DEAR-Clima) is a user friendly interactive web application tool that visualizes and provides time series of essential climate variables and climate indices based on high horizontal resolution Regional Climate Model (RCM) simulations from the Coordinated Regional Downscaling Experiment (CORDEX) research program. Reliable and user friendly open access of future climate change data from high resolution RCM projections is essential to support decision makers, stakeholders, intermediary users and end-users for climate change impacts, mitigation and adaptation. The RCM data processed in this web application tool have a high spatial resolution (0.11°) over the european doamin and cover a time period from 1950 to 2100. The historical period of each experiment refers to 1950-2004, while the future period is 2006-2100 under the influence of three Representative Concentration Pathways (RCPs) adopted by the IPCC for its fifth Assessment Report (AR5): rcp26, rcp45 and rcp85. The simulation experiments are a product of various RCMs driven by several Global Climate Models (GCMs).

The development of this web application tool was funded by the GEO-CRADLE project that aims to coordinate and integrate state-of-the-art Earth Observation activities in the regions of North Africa, Middle East, and Balkans and develop links with GEO related initiatives towards GEOSS. The server is located at the Department of Meteorology and Climatology, School of Geology, Aristotle University of Thessaloniki, Greece.

[Go to Application](#)

<http://meteo3.geo.auth.gr:3838>



The GEO-CRADLE Pilots

DEAR-Clima

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Subscribe

Input

Plot

Plot (ΔT)

Graphical Options

1. Temporal & Variable Selection

Temporal Selection ⓘ

Yearly

Variable

Temperature (2m)

2. Grid Selection

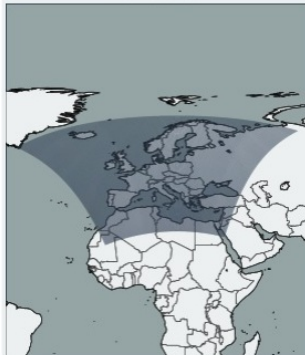
Insert Coordinates

Select on Map

Selected Longitude: 28.5668245366239

Selected Latitude: 40.615259680776

Selection Map



Display Map



3. Initiate Processing

Process

The GEO-CRADLE Pilots

DEAR-Clima [Home](#) [Domain](#) [Experiments](#) [Scenarios](#) [Variables](#) [Application](#) [About](#) [Contact](#)

Guidelines

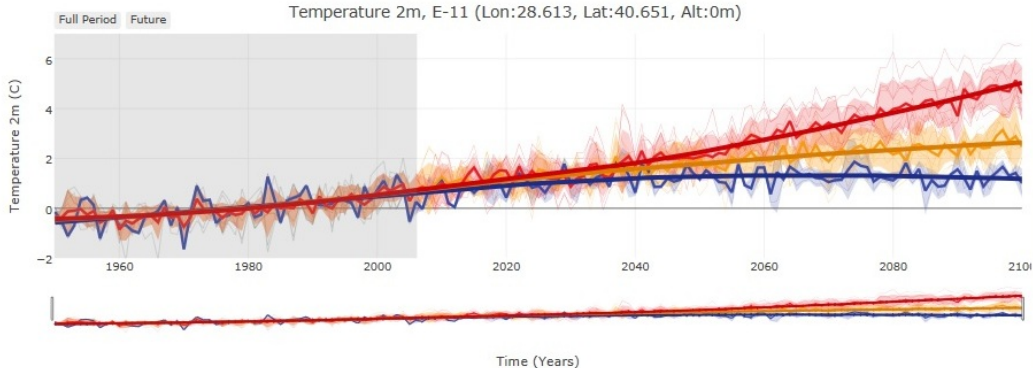
Subscribe

[Input](#) [Plot](#) **Plot (ΔT)** [Graphical Options](#)

Download

csv (ΔT)

Hints: Drag-and-drop to zoom into a specific period. Return back to the initial stage by double clicking anywhere in the plot area. Change the displayed features using the Graphical Options panel. The ΔT plot is calculated by subtracking the mean value of the historical period 1960-1990 from all the values of the historical, rcp26, rcp45 and rcp85 experiments.



The GEO-CRADLE Pilots



PRETECT

About - School - Data - Latest forecasts - News -

The PRE-TECT campaign
Revealing the secrets of desert dust

1st – 30th April, 2017



Organized by the
National Observatory of Athens



The goal

PRE-TECT is an atmospheric experiment organized by the National Observatory of Athens in the framework of the ACTRIS. The experiment will take place from 1st 30th April 2017, aiming to advance desert dust characterization from remote sensing measurements. It will employ advanced inversion techniques developed in the framework of ACTRIS, focusing on aerosol absorption and aiming to fulfil the objectives of the ACTRIS JRA1 activity ("Improving the accuracy of aerosol light absorption determinations"). The specific aim of the campaign is to validate the remote sensing retrievals against surface and airborne in-situ measurements. The campaign is framed by a number of parallel activities. [Learn more](#)

<http://pre-TECT.space.noa.gr>

The GEO-CRADLE Pilots

					Select date		
17	18	19	20	21	22	23	
AERONET	AERONET	AERONET	AERONET	AERONET	CAMS cross-section:	AERONET	
CAMS cross-section:	CAMS cross-section:	CAMS cross-section:	CAMS cross-section:	CAMS cross-section:	CAMS maps	CAMS cross-section:	
CAMS maps	CAMS maps	CAMS maps	CAMS maps	CAMS maps	CAPS PMssa	CAMS maps	
CAPS PMssa	CAPS PMssa	CAPS PMssa	CAPS PMssa	CAPS PMssa	Cloud radar	CAPS PMssa	
Cloud radar	Cloud radar	Cloud radar	Cloud radar	Cloud radar	Dust forecast	Cloud radar	
DREAM-NMM-ECM	DREAM-NMM-ECM	DREAM-NMM-ECM	DREAM-NMM-ECM	DREAM-NMM-ECM	Dust forecast (MSG ;	DREAM-NMM-ECM	
Dust forecast	Dust forecast	Dust forecast	Dust forecast	Dust forecast	Dust forecast at Skin	Dust forecast	
Dust forecast (MSG ;	Dust forecast (MSG ;	Dust forecast (MSG ;	Dust forecast (MSG ;	Dust forecast (MSG ;	FLEXPART	Dust forecast (MSG ;	
Dust forecast at Skin	Dust forecast at Skin	Dust forecast at Skin	Dust forecast at Skin	Dust forecast at Skin	HALO	Dust forecast at Skin	
FLEXPART	FLEXPART	FLEXPART	FLEXPART	FLEXPART	Microwave Radiomet	FLEXPART	
HALO	HALO	HALO	HALO	HALO	MSG-Dust	HALO	
Microwave Radiomet	Microwave Radiomet	Microwave Radiomet	Microwave Radiomet	Microwave Radiomet	PollyXT	Microwave Radiomet	
MSG-Dust	MSG-Dust	MSG-Dust	MSG-Dust	MSG-Dust	PollyXT classifier	MSG-Dust	
PollyXT	PollyXT	PollyXT	PollyXT	PollyXT	PREDE POM-01	PollyXT	
PollyXT classifier	PollyXT classifier	PollyXT classifier	PollyXT classifier	PollyXT classifier	PSR observations	PollyXT classifier	
PREDE POM-01	PREDE POM-01	PREDE POM-01	PREDE POM-01	PREDE POM-01	Pyranometer GHI & I	PREDE POM-01	
PSR observations	PSR observations	PSR observations	PSR observations	PSR observations	Sea salt forecast	PSR observations	
Pyranometer GHI & I	Pyranometer GHI & I	Pyranometer GHI & I	Pyranometer GHI & I	Pyranometer GHI & I	SENSE	Pyranometer GHI & I	
Sea salt forecast	Sea salt forecast	Sea salt forecast	Sea salt forecast	Sea salt forecast	Smoke forecast	Sea salt forecast	
SENSE	SENSE	SENSE	SENSE	SENSE	WRF overview	SENSE	
Smoke forecast	Smoke forecast	Smoke forecast	Smoke forecast	Smoke forecast	WRF WIND(...)	Smoke forecast	
WRF overview	WRF overview	WRF overview	WRF overview	WRF overview		WRF overview	
WRF WIND(...)	WRF WIND(...)	WRF WIND(...)	WRF WIND(...)	WRF WIND(...)		WRF WIND(...)	

The GEO-CRADLE Pilots

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- AERONET
- CAMS cross-section
- CAMS maps
- CAPS PM_{ss}
- Cloud radar
- DREAM-NMM-ECM
- Dust forecast
- Dust forecast (MSG)
- Dust forecast at Skin
- FLEXPART
- HALO
- Microwave Radiometer
- MSG-Dust
- PollyXT
- PollyXT classifier
- PREDE POM-01
- PSR observations
- Pyranometer GHI & I
- Sea salt forecast
- SENSE
- Smoke forecast
- WRF overview
- WRF WIND(...)

AERONET

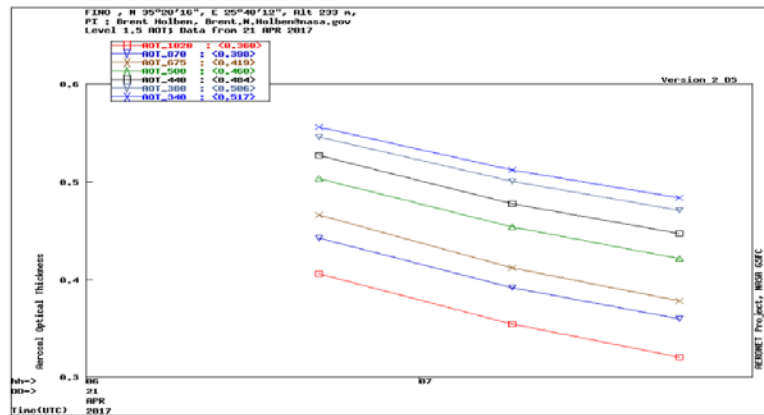
Uploaded on 2017-04-21 17:15:28

Start time	April 21, 2017, midnight	Duration	1 day
Stop time	April 22, 2017, midnight	Instrument	CIMEL sunphotometer

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Related graphs



Graph 1: Aerosol optical depth

Aerosol optical depth by AERONET sun-photometer

The GEO-CRADLE Pilots

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- PollyXT
- PollyXT classifier
- PREDE POM-01
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- Pyranometer GHI & I
- Sea salt forecast
- SENSE
- Smoke forecast
- WRF overview
- WRF WIND(...)



Cloud radar

Uploaded on 2017-04-22 13:11:12

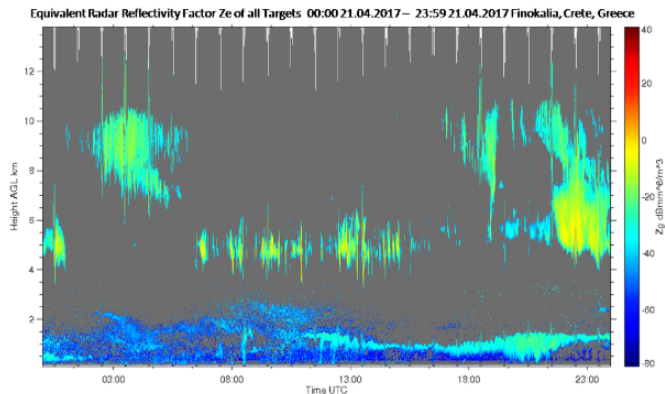
Start time April 21, 2017, midnight **Duration** 1 day

Stop time April 22, 2017, midnight **Instrument** Doppler Cloud Radar MIRA-35

[← Previous](#)

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Related graphs



Cloud and
aerosol
properties

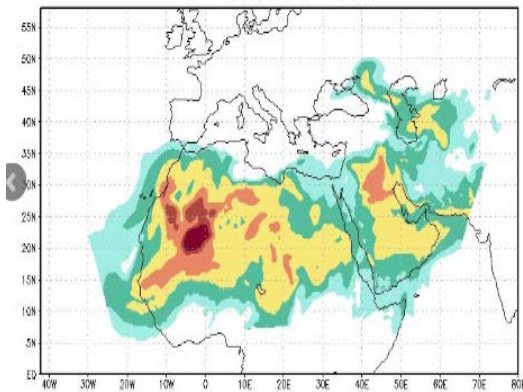
The GEO-CRADLE Pilots

21

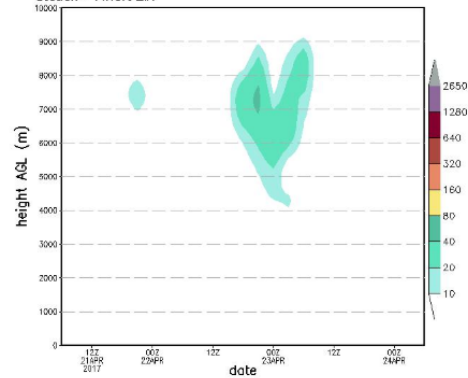
- AERONET
- CAMS cross-section:
- CAMS maps
- CAPS PM_{ss}a
- Cloud radar
- DREAM-NMM-ECMWF
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IAASARS/NOA NMME-DREAM MSG Assimilation Run
AOD 23APR2017 03UTC



NMME-DREAM Total dust concentration [ug/m³]
Station = FINOKALIA



Horizontal and vertical dust forecasts
with satellite assimilation

The GEO-CRADLE Pilots

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- PollyXT
- PollyXT classification**
- PREDE POM-01
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- Sea salt forecast
- SENSE
- Smoke forecast
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- WRF WIND(...)



PollyXT classification

Uploaded on 2017-04-24 16:27:56

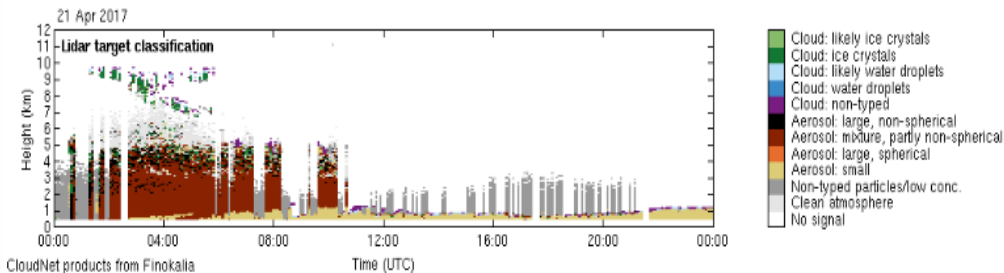
Start time April 21, 2017, midnight **Duration** 1 day

Stop time April 22, 2017, midnight **Instrument** PollyXT lidar

[← Previous](#)

[Next →](#)

Related graphs



Graph 1: Multiwavelength aerosol classification - 2017-04-21

Aerosol Classification by the PollyXT Lidar

The GEO-CRADLE Pilots

Engagement of end-users and key stakeholders of Pilot 1



Office National de la Meteorologie - Algeria



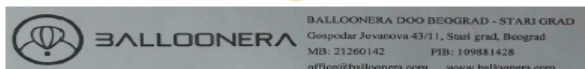
Ministry of Electricity and Renewable Energy – Egypt

Kuwait Institute for Scientific Research



معهد الكويت للأبحاث العلمية

Institute for scientific research – Kuwait



Balloonera Company – Serbia



GEO-CRADLE SENSE pilot solea company for solar energy



University of Belgrade FACULTY OF PHYSICS
Studentski trg 12, 11000 Belgrade
Postal Box 44
Phone: +381 11 7158 151, Fax: +381 11 3282 619
www.ft.bg.ac.rs, dekanat@ft.bg.ac.rs

University of Belgrade – Serbia



Department of Meteorology – Cyprus



Vasellios A. Tsibrintzis, Ph.D., P.E., P.H.
Professor of Electrical Engineering and Technology
Centre for the Assessment of Natural Hazards and Proactive Planning
in Laboratory of Water and Water Resources Management
Director, Department of Infrastructure and Rural Development
School of Rural and Surveying Engineering
NATIONAL TECHNICAL UNIVERSITY OF ATHENS

National Technical University of Athens – Greece

Royaume du Maroc
Agence du Bassin Hydraulique du Sebou

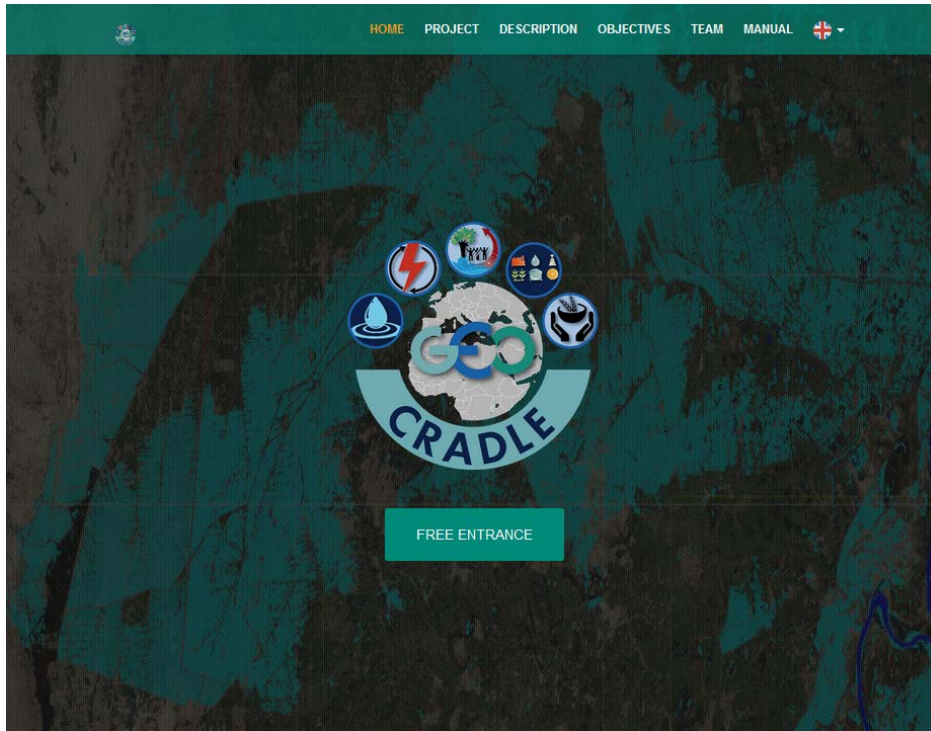


المملكة المغربية
وكالة الحوض المائي سبو

Agence du Bassin Hydraulique du Sebou – Morocco

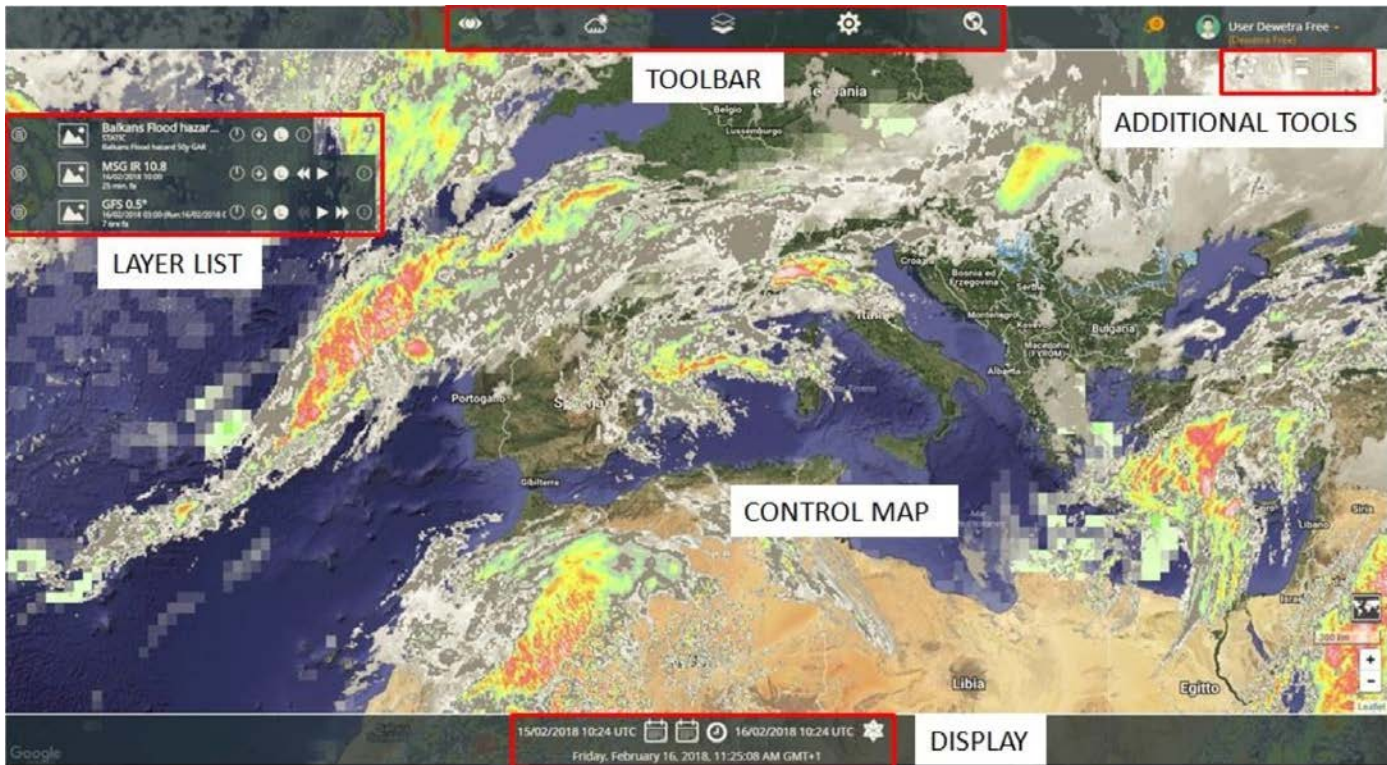
The GEO-CRADLE Pilots

GEO-CRADLE Pilot 2: Improved Food Security - Water Extremes Management

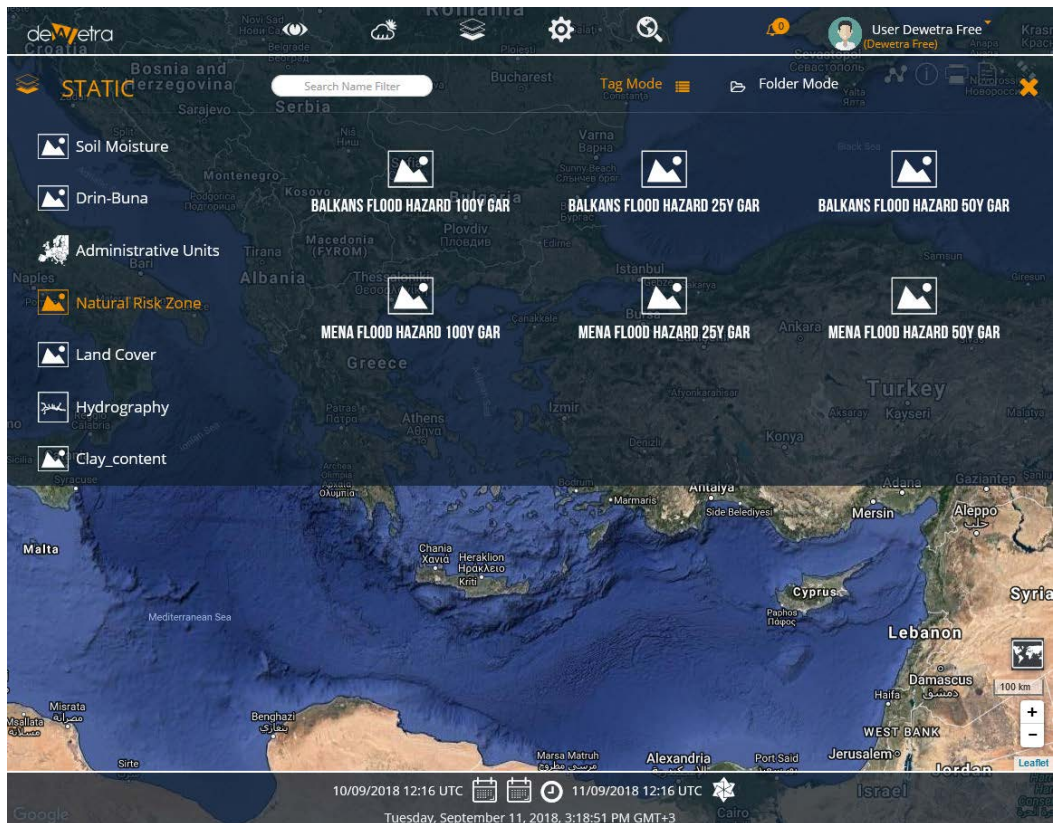


<http://geo-cradle.mydewetra.org>

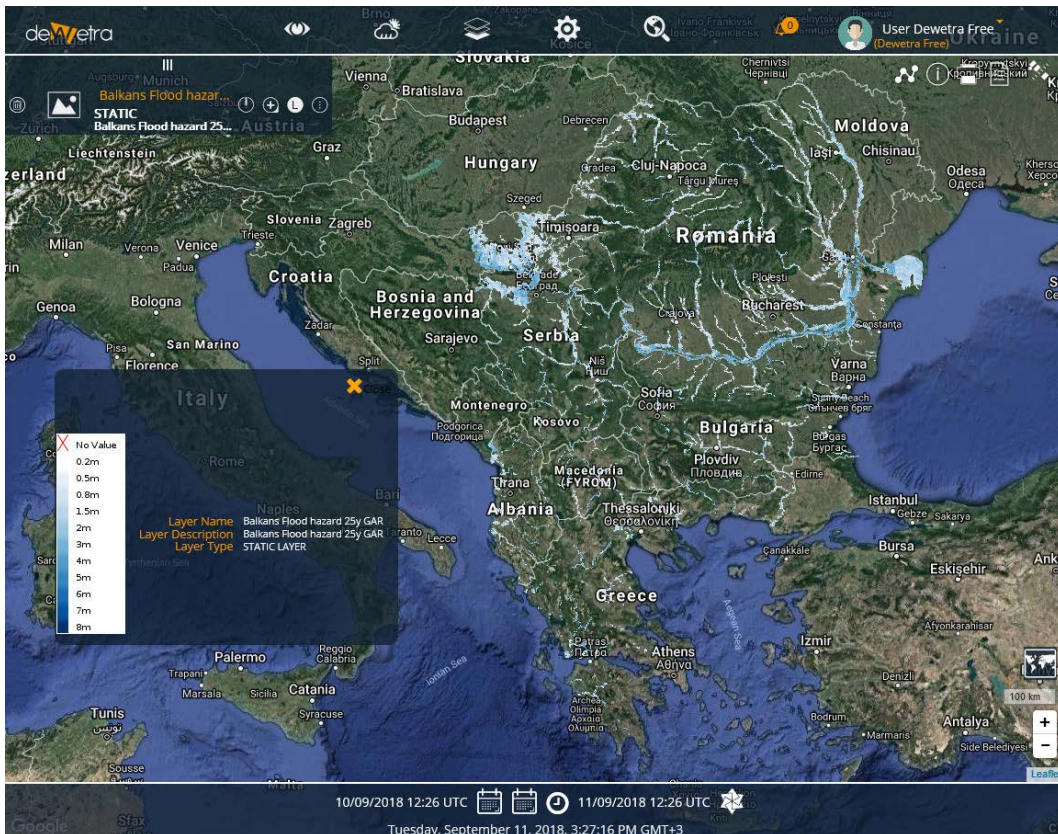
The GEO-CRADLE Pilots



The GEO-CRADLE Pilots

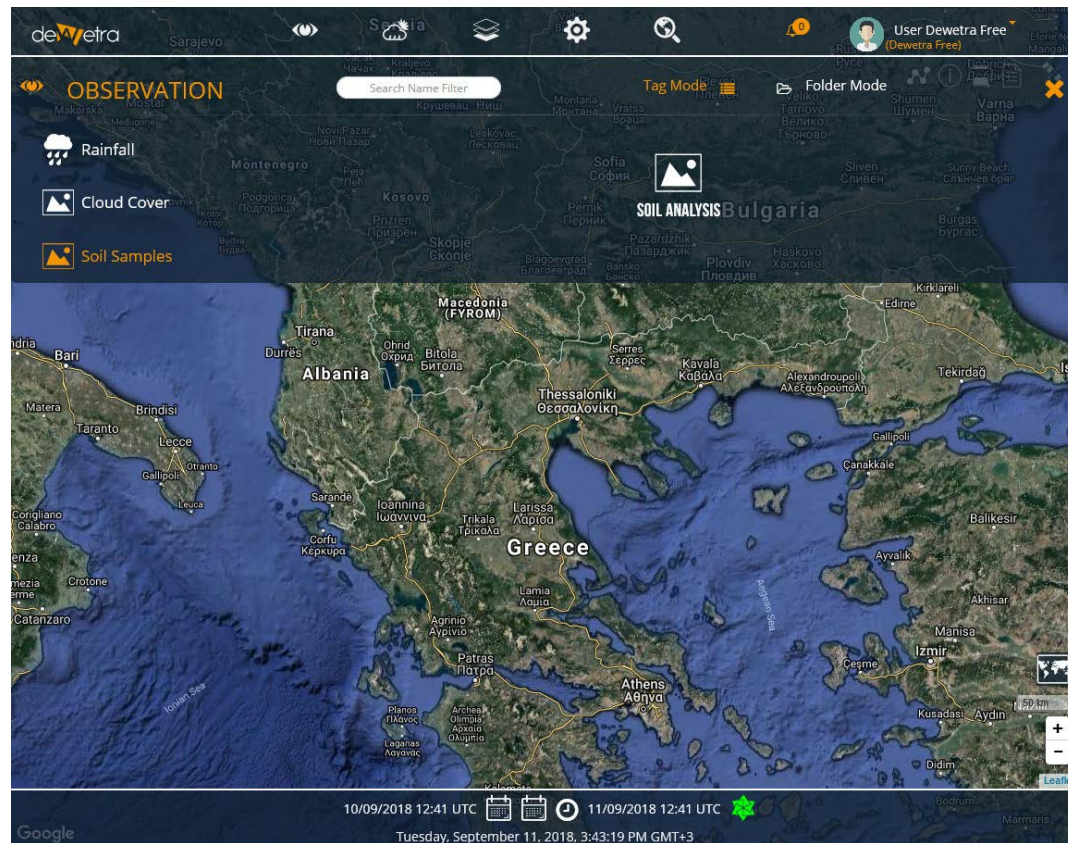


The GEO-CRADLE Pilots



Balkans –
25y Flood Hazard

The GEO-CRADLE Pilots



Soil Samples
SOIL ANALYSIS

The GEO-CRADLE Pilots



"Spectral_analysis": GR-CM-030-00317 Date: 2015-07-10

CHEMICAL ANALYSIS SOIL SPECTRUM

Chemical parameter	Value
DM	1.75 %
CaCO3	0.00 %
sand_fraction	53.00 %
silt_fraction	24.00 %
clay_fraction	23.00 %
NO3	35.00 ppm

Tuesday, September 11, 2018, 3:50:21 PM GMT+3

- Visualization and download of the spectrum / chemical results

The GEO-CRADLE Pilots

Home / Datasets / Regional Soil Spectral Library

View Revisions



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 quality monitoring and sustainability. Plants need...

Data Extent



License

Open Data Commons Open Database License (ODbL)

Other Access

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

Regional Soil Spectral Library

Regional Soil Spectral Library



Part of pilot 2 - Improved Food Security and Water Extremes Management

The importance of soils is ubiquitously recognized; they provide essential services such as food production, prevention of land degradation, water quality, and they act as carbon sinks. It has been thus recognized that a spatio-temporal monitoring of soil quality and soil properties is necessary. One of the most important technologies used to monitor soils is soil spectroscopy which utilizes the spectral information of soil samples to derive their properties. For the successful upscaling (i.e. use of Earth Observation tools) of soil spectroscopy it is important to create detailed soil spectral libraries on the ground, which assist in the validation of the sensors as well as development of soil models.

The Regional Soil Spectral Library

The current dataset contains a regional vis-NIR (350-2500 nm) soil spectral library of the region. It contains metadata regarding the soils sampled, their key properties, and their spectral signature. The spectral signatures were obtained using a standardization protocol. The dataset encompasses the following countries and soil properties:

Country	Samples	SOM	Texture	CaCO3	pH	NO3	EC	CEC
Albania	107	107	107	X	X	X	X	X
Bulgaria	105	105	105	X	105	X	X	105
Cyprus	96	96	94	96	96	X	93	X
Egypt	10	6	X	4	6	X	6	X
FYROM	124	124	124	X	124	X	X	X
Greece	928	928	928	928	X	928	X	X
Israel	221	106	193	150	137	X	141	X
Serbia	63	63	63	63	63	63	X	X
Turkey	100	94	98	100	100	X	100	X
All	1754	1629	1712	1341	631	991	334	105

Form of the datasets

To assist future researchers using this soil spectral library, the datasets are provided in the following formats:

- Per country SSLs in .csv format
- Complete GEO-CRADLE SSL in .csv format

The documentation describing what each column represents may be found in D4.6.

Data and Resources



SSL Albania

This SSL was established by the Institute for Nature Conservation in Albania...

Download



SSL Bulgaria

This SSL was established by the Space Research and Technology Institute (...)

Download



SSL Cyprus

This SSL was established by the Cyprus University of Technology (CUT).

Download



SSL Egypt

This SSL was established by the Centre for Environment and Development for...

Download



SSL FYROM

This SSL was established by the St. Cyril and Methodius University (USCM)...

Download



SSL Greece

This SSL was established by the Inter-Balkan Environment Center (I-BEC).

Download



SSL Israel

This SSL was established by the Tel-Aviv University (TAU).

Download



SSL Serbia

This SSL was established by the Institute of Physics Belgrade (IPB).

Download



SSL Turkey

This SSL was established by the Space Technologies Research Institute (...)

Download



SSL GEO-CRADLE

This dataset contains the complete GEO-CRADLE SSL (i.e. all of the countries...

Download

Download All

<http://datahub.geocradle.eu/dataset/regional-soil-spectral-library>

Engagement of end-users and key stakeholders of Pilot 2

- Ministry of Economic Development, Tourism, Trade & Entrepreneurship of Albania.
- Ministry of Environment of Albania regarding the development of the hydrological model using EO data.
- GEO's Secretariat regarding the task's activities - particular interest in the countries Albania, FYROM, and Cyprus which are not represented in GEO.
- The agriculture cooperatives of Nestos, NESPAR, Cooperatives of Xanthi, Eleftheroupoli, and Volvi in Greece.
- The Golan Heights Winery

The GEO-CRADLE Pilots

GEO-CRADLE Pilot 3: Access to Raw Materials



<http://www.europe-geology.eu/map-viewer>

Onshore | Marine | Minerals | Geohazards | Energy | Soil | Groundwater | All Maps | Metadata | About EGDI

EGDI is
EuroGeoSurveys'
European
Geological
Data
Infrastructure

A screenshot of the EGDI map viewer interface. The left sidebar shows a list of data sets, with 'Mineral Resources' highlighted and circled in red. The main map area displays a map of Europe with a grid overlay. The interface includes a search bar, zoom controls, and a scale bar.

EGDI - All maps

EGDI

This map shows all available data sets registered in EGDI.

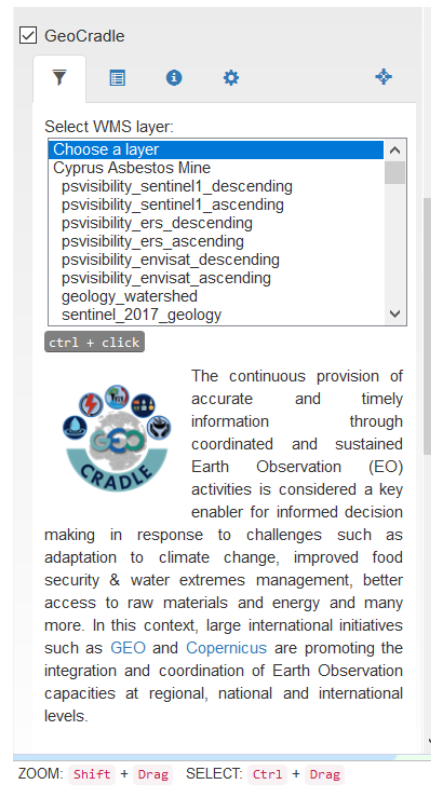
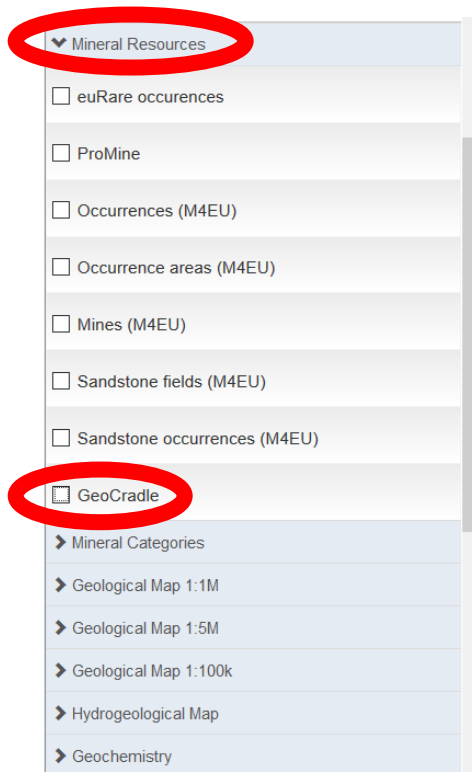
Go to [The Portal](#) for more details or choose a thematic map here:

- Mineral Resources
- Geological Map 1:1M
- Geological Map 1:5M
- Geological Map 1:100k
- Hydrogeological Map
- Geochemistry
- Marine Geology
- Southern Permian Basin Atlas
- Geohazards
- Boreholes

ZOOM: Shift + Drag SELECT: Ctrl + Drag

EPSG 3034 : EPSG 4326

The GEO-CRADLE Pilots



The GEO-CRADLE Pilots

The screenshot displays the GeoCradle web application interface. On the left, a sidebar contains a 'Select WMS layer:' dropdown menu with several options. The option 'ndvi_2017_aoi' is highlighted with a red circle. Below the menu is a 'Layer description' section, also circled in red, which contains a CRADLE logo and text describing the continuous provision of accurate and timely information through coordinated and sustained Earth Observation (EO) activities. The main map area shows a satellite-derived NDVI map of a region, with a color scale ranging from purple (low vegetation) to yellow (high vegetation). The map is overlaid on a street map background. The interface includes a search bar at the top, a 'Go to location...' field, and a 'Zoom' control. The bottom of the interface shows a coordinate string: POINT(6060740.704443766 1269568.4157312752) and projection codes: EPSG:3034 and EPSG:4326.

GeoCradle

Select WMS layer:

- sentinel_watershed_amiantos
- ferric_oxides_aoi
- ndvi_2015_aoi
- ndvi_2017_aoi**
- sentinel_2015
- sentinel_2017
- Turkey ?elebi-Kesik?pr? District
- iron_oxides_index_2017

ctrl + click

The continuous provision of accurate and timely information through coordinated and sustained Earth Observation (EO) activities is considered a key enabler for informed decision making in response to challenges such as adaptation to climate change, improved food security & water extremes management, better access to raw materials and energy and many more. In this context, large international initiatives such as GEO and Copernicus are promoting the integration and coordination of Earth Observation capacities at regional, national and international

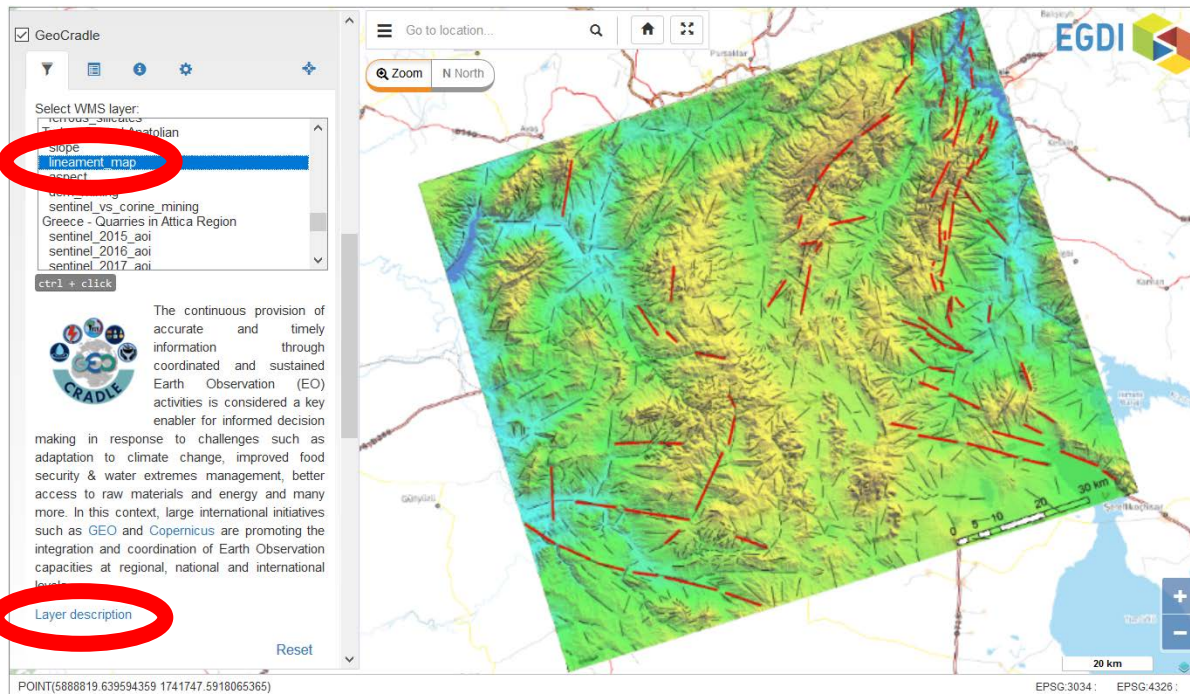
Layer description

Reset

POINT(6060740.704443766 1269568.4157312752) EPSG:3034 : EPSG:4326 :

Normalized difference vegetation index (NDVI) calculated from Sentinel-2 image from 2017. The index was calculated based on the formula: $((NIR-RED)/(NIR+RED))$, where individual components correspond to the spectral band of the satellite.

The GEO-CRADLE Pilots



Lineament map extracted from 5 different techniques (DEM, Directional Filters, Principal Component Analysis, False Color Composite and Rationing) based on Landsat-8 image and SRTM.

Engagement of end-users and key stakeholders of Pilot 3



- Greek Ministry of Environment and Energy: a close collaboration has started in order to implement the pilot project as a tool, used for an attempt to mitigate illegal quarrying.



ΔΗΜΟΣ
ΑΛΕΞΑΝΔΡΟΥΠΟΛΗΣ

- Municipality of Alexandroupolis in Greece: an exchange of information upon the strong interest on establishing environmental monitoring of Ayios Filippos abandoned public mine of mixed sulphide ores (Kirki Village, North Greece) lead to the possible future collaboration with Geological Survey of Greece.



- Cyprus GSD-FD-Ministry of Agriculture, Rural Development and Environment: the scoop of the feasibility study for monitoring of ground deformation and stability in the under restoration of the Asbestos Mine was established.



- Hellenic Copper Mines Ltd and Ministry of Agriculture, Rural Development and Environment: the exchange of information on environmental monitoring before the closure of the mine and the possible use of EO data for Skourriotissa Village area can lead to future collaboration with Geological Survey of Cyprus.

Engagement of end-users and key stakeholders of Pilot 3



- JADE - Association of Geological Researches, Turkey: Through previous cooperation in the field of research, we managed to establish contact also in the Geo-CRADLE project. JADE proposed one of the test areas and was available during the entire pilot process. The results of the pilot can be used as a starting point for further cooperation in the area of coal deposits in Turkey.



- JeoDijital Bilisim Teknoloji Madencilik, Turkey: The company expressed interest in using remote sensing for environmental research and the potential of iron deposits in the Central Turkey. Consultations with the company lasted throughout the entire pilot phase.

ROYAUME DU MAROC



- Minister of Energy, Mining, Water and Environment of the Kingdom of Morocco and Morocco stakeholders: 17-18 October 2016 in Rabat (Morocco) event “Addressing GEO-CRADLE regional challenges - Access to raw materials”, & 2nd EGS Networking event “Aimed at in-situ network operators and Geological Surveys – especially in MENA” and Stakeholders’ workshop “Using geo-information services in MENA”.

MINISTÈRE DE L'ÉNERGIE, DES MINES
DE L'EAU ET DE L'ENVIRONNEMENT

The GEO-CRADLE Pilots

GEO-CRADLE Pilot 4: Access to Solar Energy

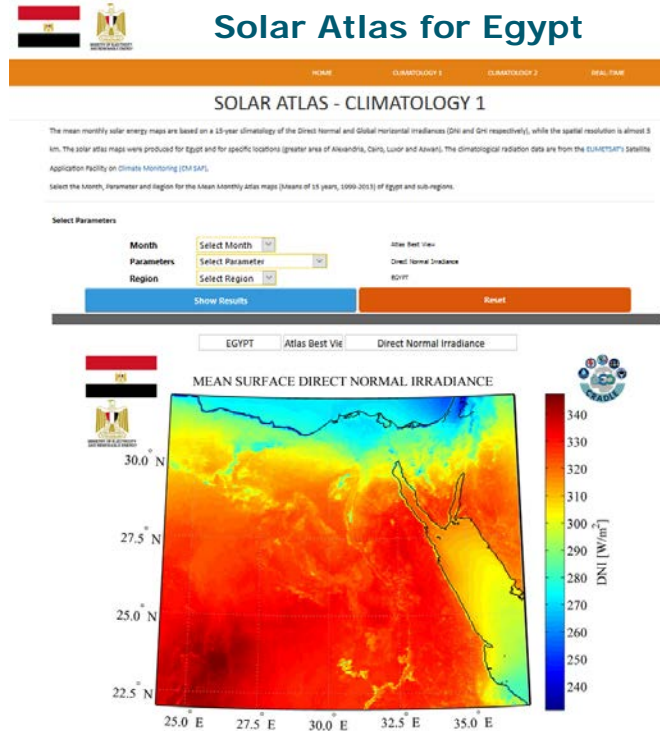
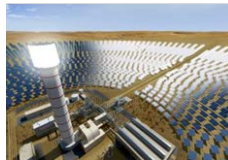
Application developed in support to the Ministry of Electricity & Renewable Energy of Egypt

Provides the solar power information in climatological basis for the Global Horizontal Irradiance (GHI) and the Direct Normal Irradiance (DNI)

GHI applies to PhotoVoltaic (PV) installations



DNI applies to Concentrated Solar Power (CSP) plants



<http://cedarekmp.net/solaratlas/web2>

The GEO-CRADLE Pilots

A static applications based on an analytical database of climatological solar energy maps of Greece (GHI, DNI).

The user is able to choose additionally fixed or color optimized scale.

Such applications provided for the first time for Greece through the Geo-Cradle project and are able to provide useful information about the solar energy potential for potential solar farm installations.



Solar Atlas for Greece

PILOT 4: Access to Energy (SENSE)

The screenshot shows the "Solar Atlas for Greece" web application interface. At the top, the title "The Solar Atlas of Greece" is displayed. Below it, a paragraph explains that the mean monthly solar energy maps are based on a 15-year climatology of Direct Normal and Global Horizontal Irradiances (DNI and GHI respectively), with a spatial resolution of almost 5 km. The data is sourced from EUMETSAT's Satellite Application Facility on Climate Monitoring (CM SAF). The interface includes a control panel with four dropdown menus: "15 Years Me", "Direct Norm", "15 Years Me", and "Color Optim", along with a play button icon. The background of the interface is a satellite-style map of Greece. At the bottom, there are logos for GEO-CRADLE, HORIZON 2020, the European Union flag, and the GEO logo. Text at the bottom right states: "The GEO-CRADLE project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 690133".

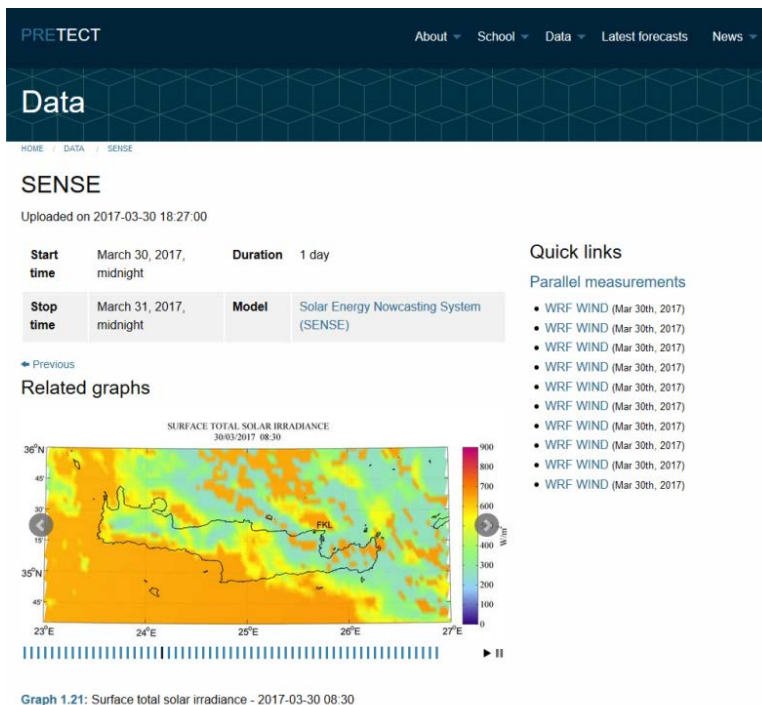
<http://datahub.geocradle.eu/solar>

The GEO-CRADLE Pilots

The Solar Energy Nowcasting System (SENSE) was applied for a scientific campaign in Crete (PRE-TECT).

Through this portal the user is able to retrieve the produced maps of Crete in high spectral, spatial and temporal resolution (1 nm, 0.05 x 0.05 degrees, 15 min).

The aerosol and cloud impacts were simulated through data input from the Copernicus Atmosphere Monitoring Service (CAMS) and the Meteosat Second Generation (MSG).



<http://pre-TECT.space.noaa.gov/instruments/25>

The GEO-CRADLE Pilots

Dynamic application with background databases of solar power, energy and Photosynthetically Active Radiation (PAR) for Greece, Cyprus and Egypt.

The user is able to download the selected area data in the form of json files.

The solar power describes the "strength" of the irradiance (W/m^2).

The solar energy calculates the potential energy production by a PV or CSP system (kWh/m^2)

The PAR quantifies the energy that supports photosynthesis.



Step 1: Select Country

Cyprus

Step 2: Select Year

2000

Step 3: Select Month

April

Step 4: Select Type of Data

Direct Normal Irradiance

View Solar Map

Power: 209 W/m²
Mean Power: 263.08 W/m²
Energy: 150.48 kWh/m²
Annual Energy: 2208.97 kWh/m²
Download Selected Area Data

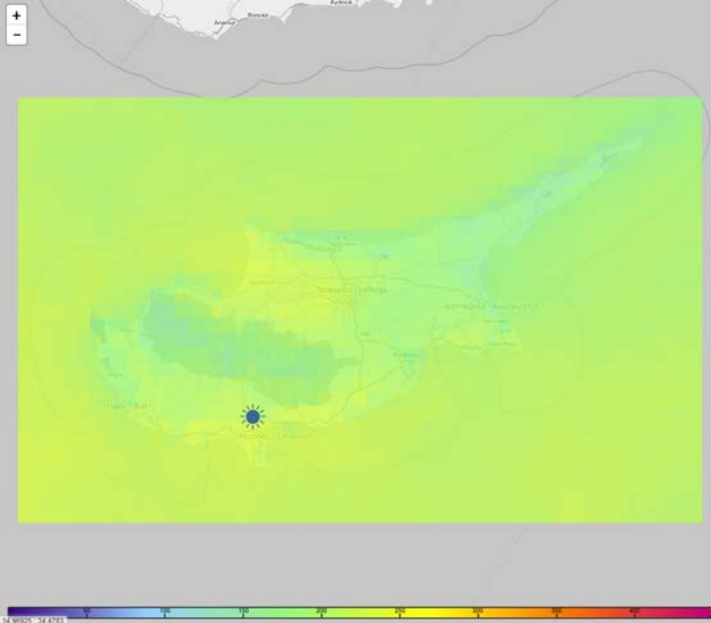


This service has been implemented in the framework of solar Energy forecasting System (SENSE) pilot of the GEO-CRADLE project.

The initial solar radiation database was retrieved by the ELNEDRA's GIS-SP.

For more information please contact Stelios Kazantzis (PI of SENSE) from PASCARAC and Panagiotis Kozmopoulos (Developer of SENSE from INO).

PAR Atlas for Greece, Cyprus, Egypt



<http://beyond-eocenter.eu/solarapp>

Engagement of end-users and key stakeholders of Pilot 4



MINISTRY OF ELECTRICITY
AND RENEWABLE ENERGY



MAGDI YACOUB
HEART FOUNDATION
ASWAN HEART CENTRE



ΑΔΜΗΕ
ΑΝΕΞΑΡΤΗΤΟΣ ΔΙΑΧΕΙΡΙΣΤΗΣ
ΗΛΕΚΤΡΙΚΗΣ ΕΝΕΡΓΕΙΑΣ



The GEO-CRADLE Networking Platform



[About GEO-CRADLE](#)

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[Activities](#)

[Regional Capacities](#)

[Outreach](#)

[Resources](#)

[Tools](#)

[News & Events](#)

[English](#)

Search



GEO-CRADLE Project

Coordinating and integrating Earth Observation activities



Pilot Activities

Follow our pilot activities in four thematic areas:



Survey & Networking Platform

Take part in our



DataHub

Access, search and share Earth Observation Data for the three regions.



Funding Opportunities

Explore the available funding opportunities and the benefit of

The GEO-CRADLE Networking Platform

<http://geocradle.eu/platform/>

Available for the first time in NAMEBA with open access:

- inventory of regional capacities
- profiles of stakeholders
- assessment of country maturity
- potential partnerships

The screenshot displays the GEO-CRADLE Networking Platform interface. At the top, there are navigation links for 'HOME', 'PROFILES', and 'USER MANUAL', along with 'Register' and 'Login' buttons. The main area features a map of Europe with various countries marked by numbered icons. A search bar is visible with the text 'Search by Keywords: e.g. word1, word2'. Below the map, there are three numbered steps: 1. GO TO SEARCH PAGE, 2. CHOOSE YOUR FILTERS, and 3. GET YOUR SEARCH RESULTS. At the bottom, there are three statistics: 'COUNTRIES 29', 'STAKEHOLDERS 190', and 'PROFILES VIEWS 5060'. A zoomed-in view of Greece is shown in a separate window, highlighting the platform's focus on regional capacities.

The GEO-CRADLE Networking Platform: search example

Advanced search example:
Region: Middle East
Thematic Area: Food security
Role: Value-adder

<http://geocradle.eu/platform/>

22 Search Results Found

The screenshot shows the search interface of the GEO-CRADLE Networking Platform. The search bar contains the text "Search by keyword, word1, word2". Below the search bar, there are three filter sections, each circled in red:

- Thematic Areas:** A list of checkboxes including "Access to raw materials", "Climate change", "Energy", "Food security", and "Other".
- Role in the value chain:** A list of checkboxes including "Raw data/provider", "Value-adder(data process-modelling)", "GIS/mapping service provider", "End User with in house GIS/ mapping capabilities", and "End User".
- Region:** A list of radio buttons including "Balkans", "North Africa", "Middle East" (which is selected), and "Other".

The top navigation bar includes "Register" and "Login" links. The main header displays "GEO-CRADLE Networking Platform" and "Database of GEO-CRADLE stakeholders". The main navigation menu includes "HOME", "PROFILES", and "USER MANUAL".

The search results are displayed in a grid format. The results include:

- General Directorate of State Hydraulic Works (DSI in Turkish acronym):** Department of Technology and GIS.
- TC GIDA TARIM VE HAYVANCILIK:** Central Research Institute.
- TC GIDA TARIM VE HAYVANCILIK:** GIS&remote Sensing.
- REPUBLIC OF TURKEY MINISTRY OF FOOD, AGRICULTURE AND LIVESTOCK:** general directorate of agricultural reform.
- JEODIJITAL LTD.STI.**
- The Cyprus Institute:** EEWRG.
- UHUZ:** Climate change, Food security, Other.
- ITU-CSCRS:** Center of Satellite Communication and Research.
- JÜBİTAK:** Food security, Access to raw materials.
- II7AY:** Climate change, Food security.

The GEO-CRADLE Networking Platform: search example

Example Profile:

Centre National de la Cartographie et de la Télédétection

Sections:

Details
Activity Focus
Capacities
National Activities
Engagement in GEO-CRADLE
Location

The screenshot shows the profile page for the Centre National de la Cartographie et de la Télédétection (CNCT) on the GEO-CRADLE Networking Platform. The page features a header with the platform logo and navigation links (HOME, PROFILES, USER MANUAL). The main content area includes a banner image with the CNCT logo and name in French and Arabic, along with a 'Climate change, Food security' tag, a star rating, and social sharing options. Below the banner is a navigation menu with tabs for Details, Activity Focus, Capacities, National Activities, Engagement in GEO-CRADLE, and Location. The 'Details' tab is active, displaying a table of contact information. On the right side, there is a 'Contact Person' section with a profile picture, name, email, and phone number, and a 'Message' button. At the bottom right, it shows '110 views'.

GEO-CRADLE Networking Platform
Database of GEO-CRADLE stakeholders

HOME PROFILES USER MANUAL

Climate change, Food security
Centre National de la Cartographie et de la Télédétection
General Direction
☆☆☆☆

Share Add to favorites Print

Centre National de la Cartographie et de la Télédétection
المركز الوطني لرسم الخرائط والاستشعار عن بعد

Details Activity Focus Capacities National Activities Engagement in GEO-CRADLE Location

Details	
First Name	Adel
Last Name	Jehane
Title	Mr
Position	General Director
Email 1	cnct@defense.tn
Phone 1	71 761 333
Fax	71 760 890
Organisation Name	Centre National de la Cartographie et de la Télédétection

Contact Person
Adel Jehane
✉ cnct@defense.tn
☎ 71 761 333
[Message](#)

👁 110 views

The GEO-CRADLE Capacity Building & Stakeholders Engagement

16 Regional Workshops have taken place so far in the North Africa, Middle East & the Balkans:

- advocating for free & open data policies in support of **GEO & INSPIRE principles**
- supporting **knowledge sharing - capacity building**
- providing participants with a unique **cross-sector networking opportunity** (e.g. an enhanced cooperation between academia and industry)
- identifying the potential **local challenges and needs** that can be addressed by Earth Observation
- enhancing **growth and innovation** in the geo-information sector
- enabling more **informed decision making**

Date	Location
28/04/2016	Cairo, Egypt
14/07/2016	Novi Sad, Serbia
26/09/2016	Tirana, Albania
17-18/10/2016	Rabat, Morocco
19/10/2016	Timimoun, Algeria
16/11/2016	Limassol, Cyprus
03/01/2017	Chişinău, Moldova
02/02/2017	Abu Dhabi, United Arab Emirates
24/03/2017	Sofia, Bulgaria
26/04/2017	Brussels, Belgium (Industrial market)
09/05/2017	Magurele, Romania
25/05/2017	Cairo, Egypt
14/09/2017	Tel Aviv, Israel
07/12/2017	Tunis, Tunisia
15-16/03/2018	Istanbul, Turkey
04-05/06/2018	Thessaloniki, Greece (3 rd South-Eastern Europe GEO Workshop)

The GEO-CRADLE Capacity Building & Stakeholders Engagement



The GEO-CRADLE Regional Data Hub



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Funding Opportunities

Explore the available funding opportunities and the benefit of

The GEO-CRADLE Regional Data Hub <http://datahub.geocradle.eu/>



Geocradle

Home Groups Datasets News

Search

Log in



[About](#)

The Regional Data Hub (RDH) provides access to both region-related datasets, portals and services developed by a regional network of raw data providers, intermediate users/service providers, end-users from Industry, Academic and Public Sector from the Region of Interest, and, also, datasets and services directly fed from the GEOSS-portal. Moreover, being the centralised gateway for regional data providers to contribute easily and timely their products to GEOSS, the Regional Data Hub is designed to become the focal node in the region in the context of GEOSS and Copernicus implementation. The RDH facilitates access to downloadable files of Space-borne data from real-time EO satellite missions acquisitions; data from Airborne campaigns performed in the region; in-situ data; and Models such as Atmospheric and Climate.

[Find](#)



Data



Innovation



Involvement



Growth

Available for the first time in NAMEBA with open access:

- integrated Search and Display mechanism with unified, centralized and user-friendly interface
- full interoperability with GCI and GEO DAB APIs, as well as connection with datasets and services available through the GEO-CRADLE project pilots, as well as through regional data providers
- advanced functionalities by integrating DKAN open-source data web management platform with the GEO DAB APIs

Focal node in the region in the context of GEOSS and Copernicus implementation.

✓ Several **achievements** were accomplished for the RDH to be able to provide its users the functionalities described above:

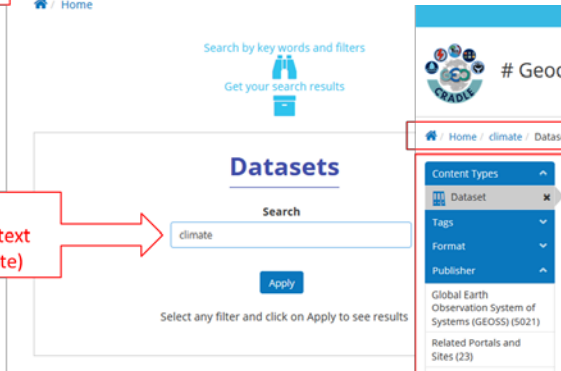
- **Search in multiple sources** (although by default DKAN looks up for datasets and resources in a single local database).
- **Search for datasets in remote resources** (integration of the GEO DAB APIs in the DKAN environment).
- **Display the remote datasets and resources on-the-fly and with high performance** (using a rendering cache mechanism which also implements an Adaptive Time-to-Live consistency mechanism to periodically check the consistency of the cached rendering structures with the original data to assure that users do not receive stale data).
- **Cleaning data mechanism** (cleans identical or duplicate data, discovers missing information for data, discovers URL that have changed or that are not working anymore, discards data with invalid URL schemes, etc.)
- **Preview mechanism** (to preview data of various formats and services, such as CSV files, Web Map Services, Zip files, etc.)

An integrated Search and Display mechanism that offers the users unified, centralized and user-friendly interface.

The GEO-CRADLE Regional Data Hub: search example



(1)
Select the
"Datasets" section

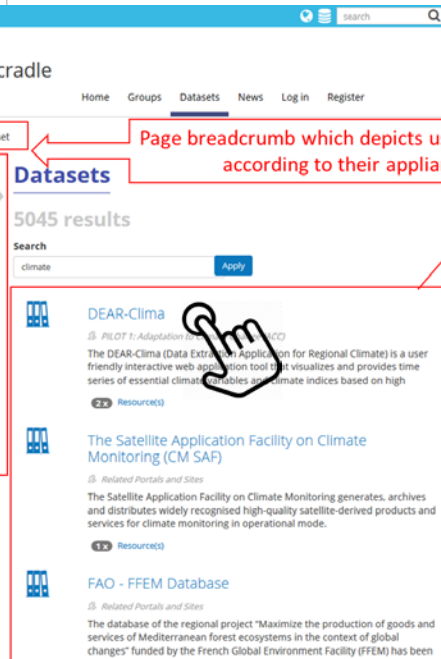


(2)
Apply free text
(e.g. climate)

Page breadcrumb which depicts user's applied filters according to their appliance order

Datasets as search results

Search Facets that allow the users to further filter the search results



The GEO-CRADLE Regional Data Hub: search example



Geocradle

Home Groups Datasets News

Log In Register

Home / Datasets / DEAR-Clima

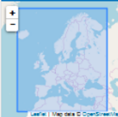
View Revisions



PILOT 1: Adaptation to Climate Change (ACC)

The tool has been recognized by the Intergovernmental Panel on Climate Change as one of the most sensitive and vulnerable to climate change regions on Earth. Climate change is governed to a large...

Data Extent



License

Open Data Commons Open Database License (ODbL)

Other Access

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

JSON RDF

via the ODKS API

Social

Twitter

LinkedIn

Reddit

Google+

Facebook

DEAR-Clima

Dataset's Title

The DEAR-Clima (Data Extraction Application for Regional Climate) is a user friendly interactive web application tool that visualises and provides time series of essential climate variables and climate indices based on high horizontal resolution Regional Climate Model (RCM) simulations from the Coordinated Regional Downscaling Experiments (CORDEX) research program. Reliable and user friendly open access of future climate change data from high resolution RCM projections is essential to support decision makers, stakeholders, intermediary users and end-users for climate change impacts, mitigation and adaptation. The RCM data processed in this web application tool have a high spatial resolution (0.11°) over the European domain and cover a time period from 1950 to 2100. The historical period of each experiment refers to 1950-2004, while the future period is 2006-2100 under the influence of three Representative Concentration Pathways (RCPs) adopted by the IPCC for its fifth Assessment Report (AR5): rcp26, rcp45 and rcp85. The simulation experiments are a product of various RCMs driven by several Global Climate Models (GCMs).

Data and Resources

DEAR-Clima Application Resource

The development of this web application tool was funded by the GEO-CRADLE.

Go to resource

EURO-CORDEX DATA

The CORDEX regional climate model (RCM) simulations for the European domain...

Go to resource

climate change Regional climate RCM CORDEX Future Projections Scenarios Data extraction
Climate Variables Climate Indices Visualization

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	PILOT 1: Adaptation to Climate Change (ACC)
Modified Date	2017-11-23
Release Date	2017-11-23
Frequency	Daily
Identifier	d654b8ed-637f-4158-a8f5-3ed4de9fcd3
Homepage URL	http://meteo.geo.auth.gr/3833/
Spatial / Geographical Coverage Area	POLYGON ([-22 27, 22 72, 45 72, 45 27])
Spatial / Geographical Coverage Location	The domain covers the greater area of Europe including the Mediterranean and a part of N.Africa.
Temporal Coverage	Sunday, January 1, 1950 - 00:00 to Thursday, December 31, 2099 - 00:00
Language	English (United Kingdom)
License	Open Data Commons Open Database License (ODbL)
Author	Athanasios Tsikerdekis, Demiris Akritidis, Prodromos Zanis
Contact Name	Athanasios Tsikerdekis
Contact Email	ClimateProjectionApp@gmail.com
Public Access Level	Public

Related Content:

CORDEX: Coordinated Regional Downscaling Experiment

Full Page View of the Dataset

Dataset's Data Extent

Dataset's License widget

Other Access widget (Provides JSON & RDF view of the Dataset)

Social widget (The user can instantly share the dataset through various social media platforms)

Dataset's Description

Dataset's Links to its Resources

Dataset's tags (Provide links that initiate searches with these tags)

Dataset's Additional Information

The GEO-CRADLE Regional Data Hub: data & data providers

DATA

Regions of Interest

- Balkans
- Middle East
- North Africa

Thematic Areas

- Climate Change
- Food Security & Water
- Extremes
- Raw Materials
- Energy

EO Data Categories

- Space borne
- Ground based
- Modelling



DATA PROVIDERS

GEO-CRADLE Survey

- 10 national portals and sites

**National portals
in total: 42**

Desk Research

- 32 national portals and sites
- 12 continental and global portals and sites

GEOSS Portal

- 25,216,989 datasets

The GEO-CRADLE Regional Data Hub: National sites and portals

	 Adaptation to Climate Change	 Improved Food Security and Water Management	 Better access to Raw Materials	 Better access to Energy	Total Number of Portals per Rol (unique)
 Balkans	16	17	8	3	23
 Middle East	6	8	1	2	18
 North Africa	0	1	0	0	1
Total Number of Portals per Thematic Area	22	26	9	5	Total number of portals and sites: 42

The GEO-CRADLE Regional Data Hub: Prioritized Portals

a/a	Portals	Brokered by GEOSS
1.	Danube Reference Data and Services Infrastructure (DRDSI)	Done
2.	Eusoils	In progress
3.	Albania - GEOportal	Pending
4.	Montenegro - GEOportal	Pending
5.	Croatia - GEOportal	Pending
6.	Moldova - National geospatial data of Moldova	In progress
7.	FYROM – Soil information system	Pending
8.	Bosnia & Herzegovina - GEOportal	Pending
9.	REP of SRPSKA - GEOportal	Pending
10.	Slovenia- Portal and Forest Data Viewer	Done
11.	Cyprus - Geoportal	In progress
12.	Cyprus - Air quality	In progress
13.	United Arab Emirates - Abu Dhabi Geospatial Portal and Map Viewer	Pending
14.	Poland - Central geological Db	Pending



The GEO-CRADLE Regional Data Hub: INSPIRE-compliant example

Geocradle

Home Groups Datasets News Log in

Home / Datasets / Slovenian GeoPortal

View Revisions

Slovenian GeoPortal

Geoport of spatial information is the central portal for access to the infrastructure for spatial information and is intended to permit access to spatial data sets and services related to spatial data and other information and services related to infrastructure for spatial information. Managed geo-spatial information for the national point of contact.

Data and Resources

Surveying and Mapping Authority of the Republic of Slovenia - GeoPortal [Go to resource](#)

Slovenia climate change Food security Orthomaps Cadastre Water

Dataset Info

These fields are compatible with OGC, an RDF vocabulary designed to facilitate interoperability between data catalogs published on the Web.

Field	Value
Publisher	Related Portals and Sites
Modified Date	2017-07-26
Release Date	2017-07-25
Homepage URL	http://www.geo.gov.si/en/
Identifier	43a86863-8276-40c1-a9c7-51e168a858b5
Spatial / Geographical Coverage Area	P0C7YQGN ([15.62255859375 43.775186183521, 15.46875 45.35986513396, 14.622802734375 45.490945692627, 13.309936523438 45.45700041329, 13.60448339375 46.278037211561, 13.802797865623 46.581518466688, 15.457763671875 46.724800374667, 16.408861054688 46.894689285549, 16.622314453125 46.483264729156, 15.908203125 46.111325657298])
Spatial / Geographical Coverage Location	Slovenia
Language	English (United Kingdom) Slovenian (Slovenia)
License	Open Data Commons Open Database License (ODBL)
Contact Name	The Surveying and Mapping Authority of the Republic of Slovenia
Contact Email	pharma.gul@geo.gov.si
Public Access Level	Public

Related Portals and Sites

EO-Related websites and portals. Browse the portals and the sites to find, request or download data manually.

Data Entry

License

Open Data Commons Open Database License (ODBL)

Other Access

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

JSON RDF

via the OGC API

Social

INSPIRE - Infrastructure for Spatial Information in Europe

INSPIRE - Infrastructure for Spatial Information in Europe

REGULATIONS AND MATERIALS Collection List NETWORK SERVICES IMPLEMENTATION OF THE DIRECTIVE NEWS About

slovenian geo-portal

Viewer Spatial Information System

Viewer is a public service, which has to look into spatial data on the state and municipal level and administrators edit in the field of building construction and the restrictions in place.

Map navigation controls: Home, Back, Forward, Full Screen, Print, Layers, Search, etc.

The GEO-CRADLE Funding opportunities



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The GEO-CRADLE Funding opportunities



Roadmap for future Implementation of GEOSS

Guides

the implementation of
GEOSS and the uptake of
Copernicus in the RoI

Assesses

the readiness and maturity
of each country in the RoI

Lays out

the actions for the long-term
response to major regional
challenges in the RoI

Paves

the ground for a potential
regional large initiative

The GEO-CRADLE upgrade: Project->Community Activity->Initiative

GEO Capacity Building in North Africa, Middle East, Balkans, and Black Sea

A **continuation** and **extension** of the work of the **GEO-CRADLE** which will capitalise, sustain and scale-up its results, as well as key outcomes of other relevant EU flagship projects and initiatives (e.g. GEOGLAM, NextGEOSS, ERAPLANET, EuroGEOSS, AfriGEOSS, GEO-VENER, EO4SDG), in support of the **3 GEOSS priorities**, namely **CC**, **DRR** and **SDGs**.

Geographic extension



Black Sea

Thematic extension



Disasters Management &
Water Resources Management

Operational Maturity



Operationalisation of services
to the engaged users

GEO-CRADLE Initiative: Activities

- 1. Promote the coordination of EO activities at regional level**
2. Assess the maturity of EO activities at national level
3. Foster the progressive operationalisation of EO-based services
4. Promote the effective implementation of data sharing principles

Sustained operation of the GEO-CRADLE networking platform



Organisation of more regional workshops

Exploitation of new tools for stakeholder engagement



FPA

Relays

Academies

Interface with key initiatives



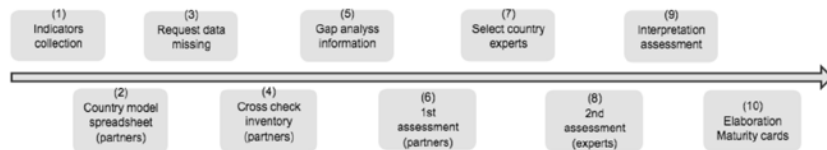
GEO-CRADLE Initiative: Activities

1. Promote the coordination of EO activities at regional level
2. **Assess the maturity of EO activities at national level**
3. Foster the progressive operationalisation of EO-based services
4. Promote the effective implementation of data sharing principles

Further implementation, test and improvement of the “maturity indicators” methodology in the current 11 countries

Geographic extension to new countries with the support of EuroGEOSS and AfriGEOSS

Establishment of a mechanism for periodic update



	Maturity Indicators (level c)	RANGED	ROUNDED
Albania	1,28	h	h
Bulgaria	1,84	h	=
Cyprus	1,47	h	=
Egypt	1,44	h	h
FYROM	1,13	h	h
Greece	3,50	h	h
Israel	3,03	h	h
Romania	2,84	=	h
Serbia	2,03	=	=
Tunisia	1,78	h	=
Turkey	2,84	=	h



GEO-CRADLE Initiative: Activities

1. Promote the coordination of EO activities at regional level
2. Assess the maturity of EO activities at national level
- 3. Foster the progressive operationalisation of EO-based services**
4. Promote the effective implementation of data sharing principles

Exploitation of the results of the 4 GEO-CRADLE pilots

Link to the 3 GEO priorities (CC, DRR and SDGs) and the national needs for achievement of SDGs

Further involvement of the private sector

GEO-CRADLE Thematic Areas in support of the UN SDGs



Pilots applicable & adaptable to all countries



End users & stakeholders engagement

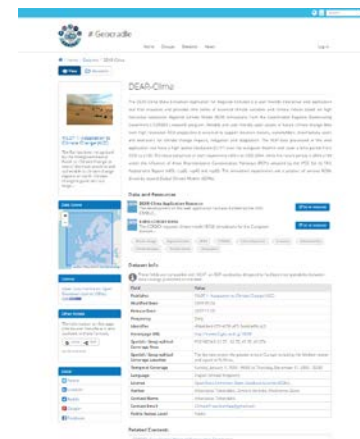
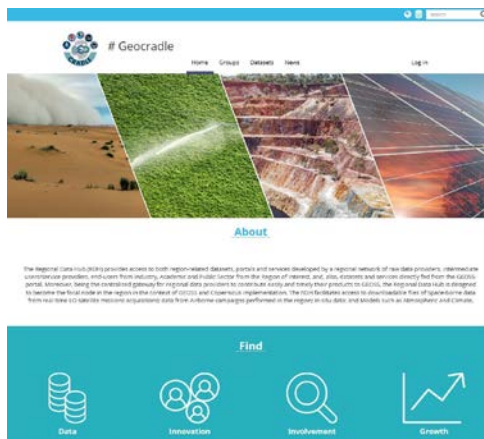
GEO-CRADLE Initiative: Activities

1. Promote the coordination of EO activities at regional level
2. Assess the maturity of EO activities at national level
3. Foster the progressive operationalisation of EO-based services
4. **Promote the effective implementation of data sharing principles**

Sustained operation of the GEO-CRADLE Regional Data Hub

Further registration of key national and regional datasets to the GEOSS Platform

Synergies with other initiatives and projects



GEO-CRADLE Initiative: Expected impacts

SHORT TERM LONG TERM

- ✓ Enhanced participation of the complete EO ecosystem in capacity building, R&D&I collaboration and awareness raising, with focus on continuous engagement of users.
 - ✓ Progressive increase of EO maturity in the region through the assessment of gaps and challenges, the design and implementation of tailored pilot activities and their subsequent operationalization.
 - ✓ Improved “dialogue” between demand and supply side by fostering co-design approaches (maintaining the GEO-CRADLE user requirements registry) and involving private sector to provide operational services.
 - ✓ Increased number of regional datasets linked to GEOSS Platform.
- ✓ Sustained uptake of GEO/GEOSS and Copernicus in the region, and better leveraging of existing and future investments.
 - ✓ Matching top-down (i.e. at programme level whether this is GEO or Copernicus) with the bottom-up (i.e. national and sector-specific) perspectives. This will be further informed by the GEO-CRADLE Roadmap.
 - ✓ Improved uptake of EO-derived benefits (incl. from EuroGEOSS outputs) in a region with strong interest for Europe and solid foundations for cooperation (see PRIMA, EO4SD, IPA, ENI).

GEO-CRADLE Initiative: Resources



thank you!



<http://geocradle.eu>

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