

GEO WEEK 2018

KYOTO, JAPAN

Monday 29 October, 08.30-12.30

Identifying, communicating and delivering
the value of Earth Observations.
A regional approach.

Moving from research to business: The GEO-CRADLE Pilots' experience

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

Side event Organised by GEO-CRADLE Project & EARSC



The GEO-CRADLE Pilots

The GEO-CRADLE Pilots in support of the UN SDGs



Pilots applicable & adaptable to all countries

Adaptation to Climate Change (ACC)



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



Access to Raw Materials (ARM)



Access to Solar Energy (SENSE)



End users & stakeholders engagement

Access to all GEO-CRADLE Pilots results from the Regional Data Hub



Geocradle

Home Groups **Datasets** News

search

Log in

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



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 GEOS5-portal. Moreover, being the centralised gateway for regional data providers to contribute easily and timely their products to GEOS5, the Regional Data Hub is designed to become the focal node in the region in the context of GEOS5 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.

**FREE AND OPEN
ACCESS TO ALL
PILOTS'
DATASETS AND
SERVICES**

Find



Data



Innovation



Involvement

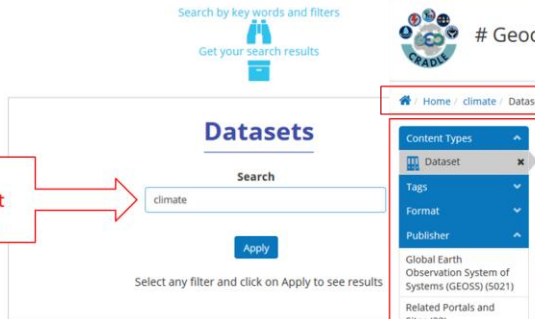


Growth

Access to all GEO-CRADLE Pilots results from the Regional Data Hub



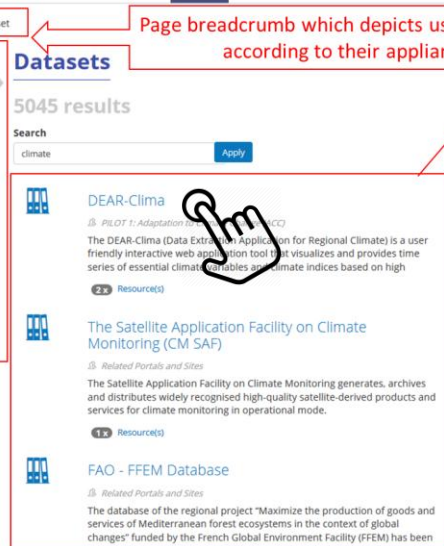
(1)
Select the
"Datasets" section



(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

GEO-CRADLE Pilot 1: Adaptation to Climate Change

DEAR-Clima

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Scenarios

Variables -

Application

About

Contact

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>



Aristotle University
of Thessaloniki

GEO-CRADLE Pilot 1: Adaptation to Climate Change

DEAR-Clima

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Subscribe

Input

Plot

Plot (ΔT)

Graphical Options

1. Temporal & Variable Selection

Temporal Selection ⓘ

Yearly

Variable

Temperature (2m)

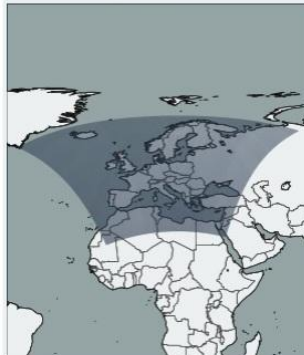
2. Grid Selection

Insert Coordinates

Select on Map

Selected Longitude: 28.5668245366239
Selected Latitude: 48.615259680776

Selection Map



Display Map



3. Initiate Processing

Process

GEO-CRADLE Pilot 1: Adaptation to Climate Change

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

Guidelines

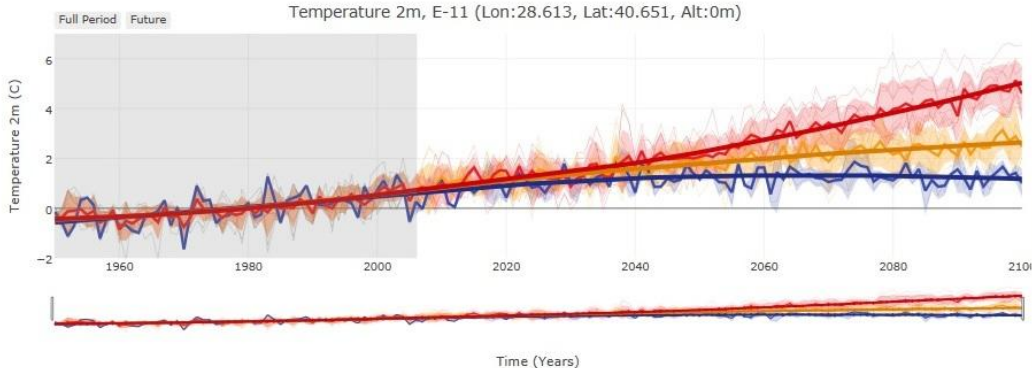
Subscribe

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

Download

[csv \(\$\Delta T\$ \)](#)

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 subtracting the mean value of the historical period 1960-1990 from all the values of the historical, rcp26, rcp45 and rcp85 experiments.



GEO-CRADLE Pilot 1: Adaptation to Climate Change

PRE-TECT

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>

GEO-CRADLE Pilot 1: Adaptation to Climate Change

					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 Radiome	FLEXPART	
HALO	HALO	HALO	HALO	HALO	MSG-Dust	HALO	
Microwave Radiome	Microwave Radiome	Microwave Radiome	Microwave Radiome	Microwave Radiome	PollyXT	Microwave Radiome	
MSG-Dust	MSG-Dust	MSG-Dust	MSG-Dust	MSG-Dust	PollyXT classificator	MSG-Dust	
PollyXT	PollyXT	PollyXT	PollyXT	PollyXT	PREDE POM-01	PollyXT	
PollyXT classificator	PollyXT classificator	PollyXT classificator	PollyXT classificator	PollyXT classificator	PSR observations	PollyXT classificator	
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(...)	

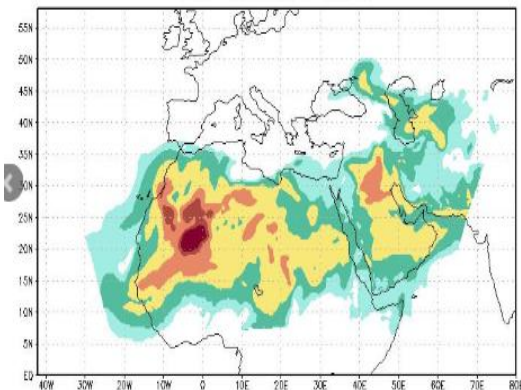
GEO-CRADLE Pilot 1: Adaptation to Climate Change

21

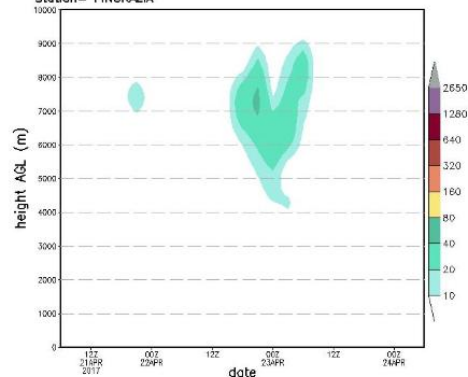
- AERONET
- CAMS cross-section:
- CAMS maps
- CAPS PMssa
- Cloud radar
- DREAM-NMM-ECMWF
- Dust forecast
- Dust forecast (MSG)
- Dust forecast at Skin
- FLEXPART
- HALO
- Microwave Radiomet
- MSG-Dust
- PollyXT
- PollyXT classifier
- PREDE POM-01
- PSR observations
- Pyranometer GHI & I
- Sea salt forecast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



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

GEO-CRADLE Pilot 1: Adaptation to Climate Change

Engagement of end-users and key stakeholders



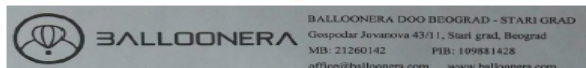
Office National de la Meteorologie - Algeria



Ministry of Electricity and Renewable Energy – Egypt



Institute for scientific research – Kuwait



Balloonera Company – Serbia



GEO-CRADLE SENSE pilot solea company for solar energy



University of Belgrade – Serbia



Department of Meteorology – Cyprus



Vasellios A. Tsibrintzis, Ph.D., P.E., P.H.
Professor of Ecological 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

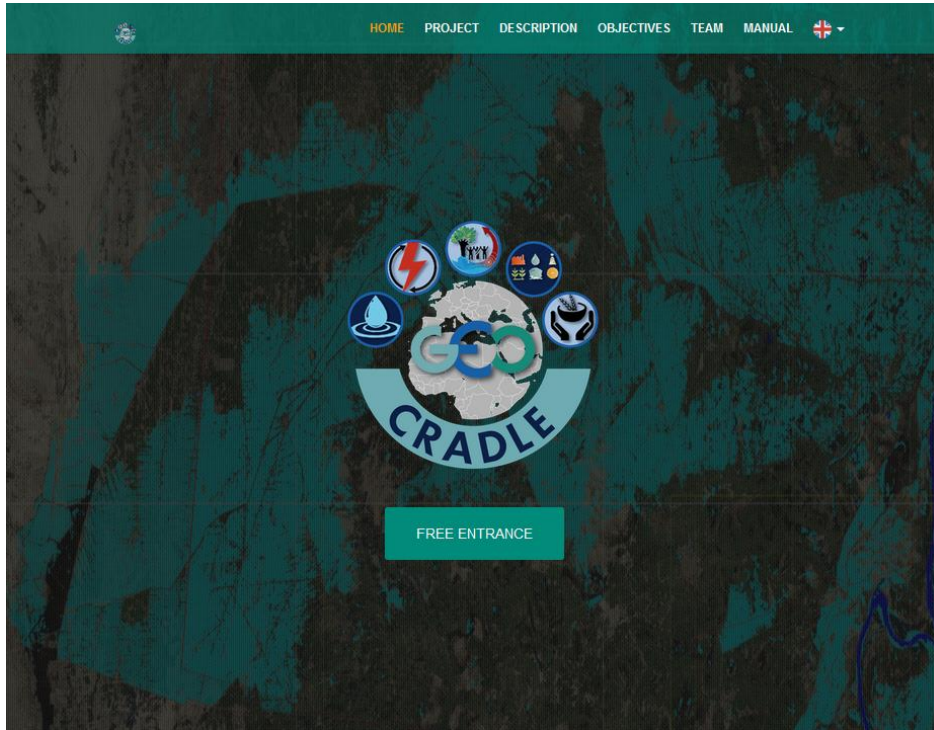
Royaume du Maroc
Agence du Bassin Hydraulique du Sebu



المملكة المغربية
وكالة الحوض المائي لسبو

Agence du Bassin Hydraulique du Sebu – Morocco

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

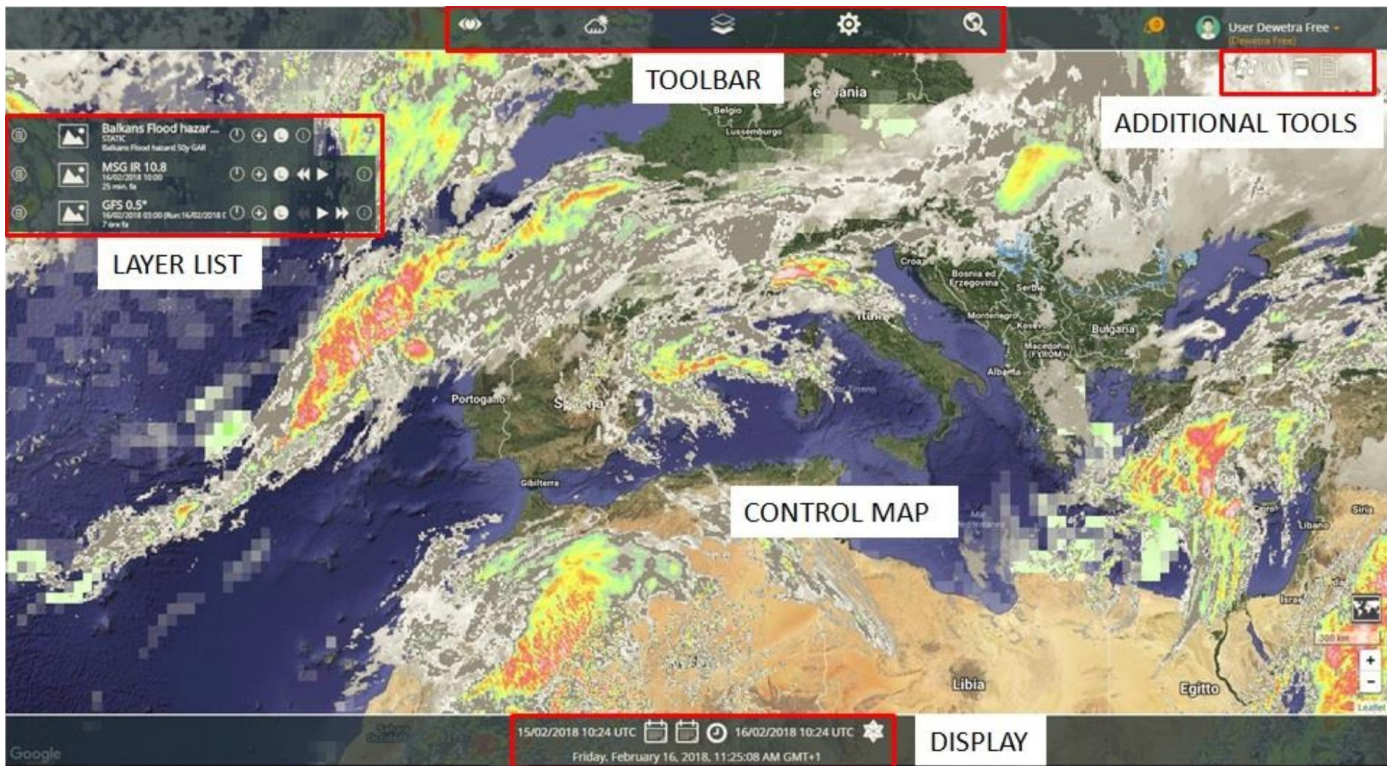


Click on
FREE ENTRANCE
and hit Dewetra
on the left pane to
enter the main platform

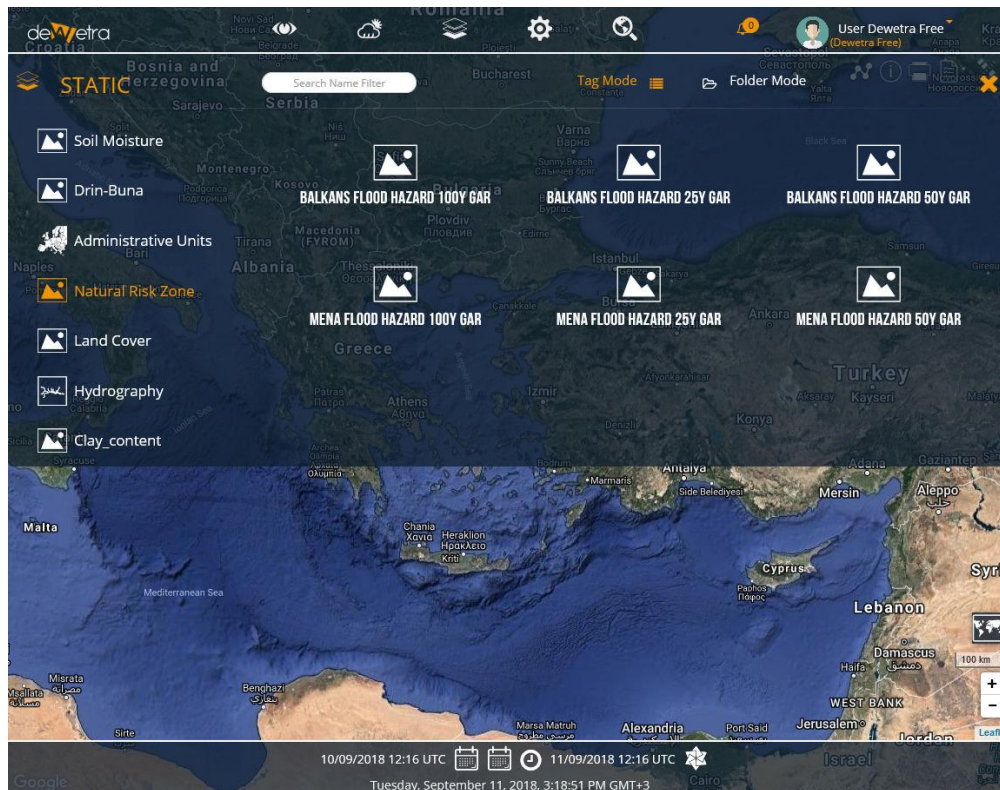


<http://geo-cradle.mydewetra.org>

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

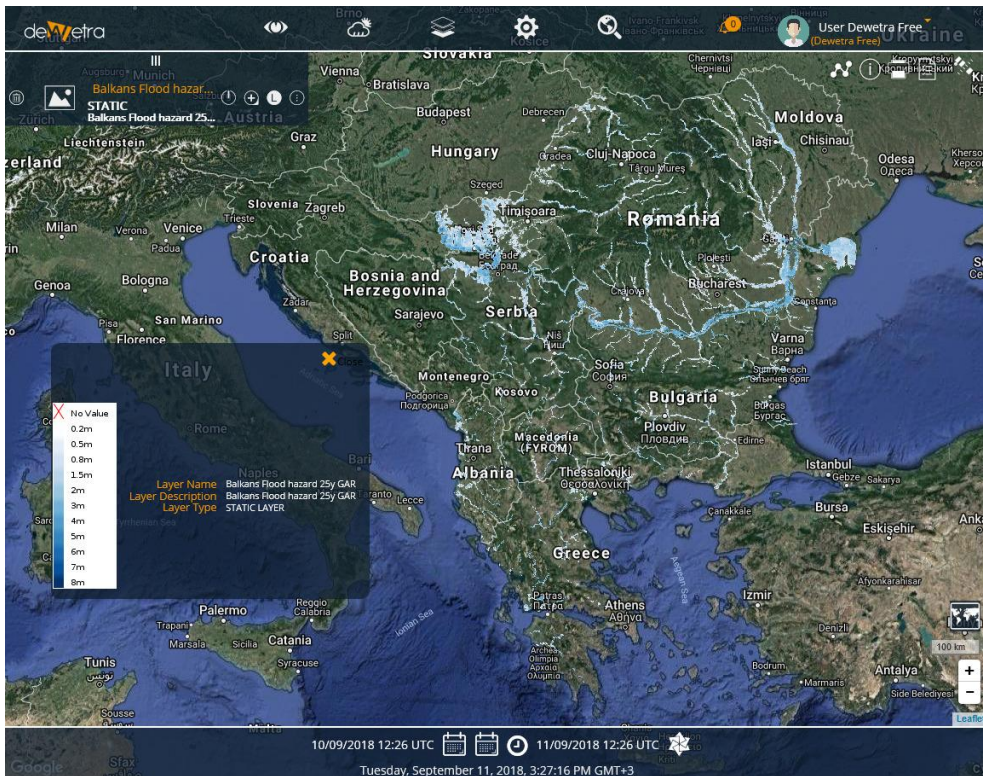


GEO-CRADLE Pilot 2: Improved Food Security-Water Extremes Mgmt



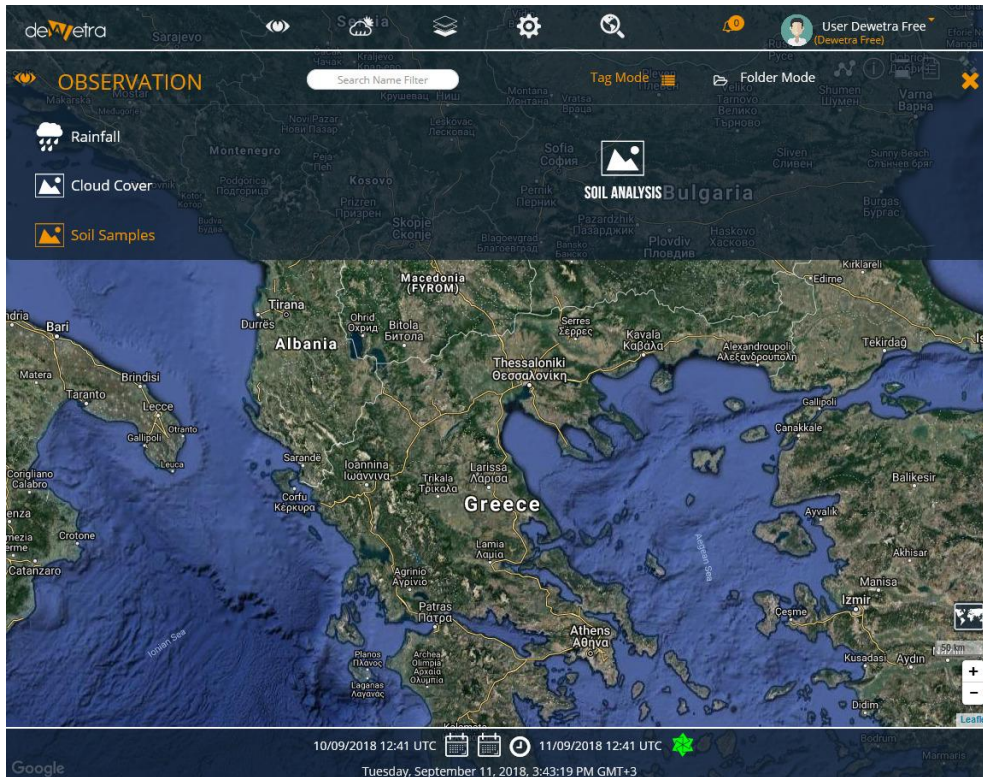
STATIC Layer contains data that does not change frequently, needed to design a comprehensive risk scenario such as the exposures or the hazard maps.

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



Balkans –
25y Flood Hazard –
Press L to get the
legend

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



OBSERVATION Layer

Soil Samples

SOIL ANALYSIS

- Click on soil analysis
- Zoom to a region containing soil samples (e.g. North Eastern Greece)

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



CHEMICAL ANALYSIS

Chemical parameter	Value
OM	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

- Click on a point and visualize the spectrum / chemical results (which can be downloaded)

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

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	CeCO3	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

- 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

GEO-CRADLE Pilot 3: Access to Raw Materials



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

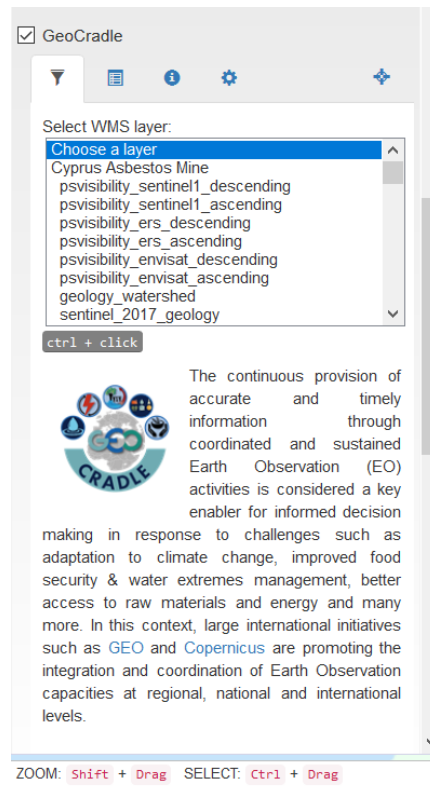
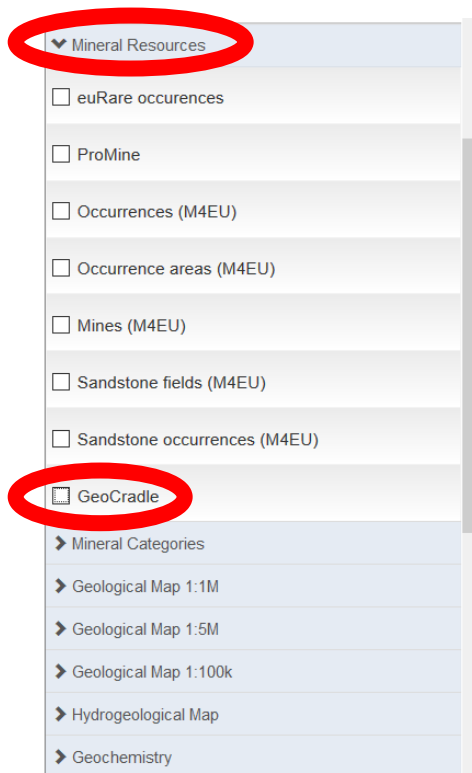
Onshore | Marine | Minerals | Geohazards | Energy | Soil | Groundwater | All Maps | Metadata | About EGDI

A screenshot of the EGDI map viewer web application. The interface includes a search bar at the top with the text 'Go to location...', a home button, and a full-screen button. Below the search bar is a 'Zoom' control and a 'N North' button. The main map area shows a map of Europe with a grid overlay. On the left side, there is a sidebar with the EGDI logo and a list of map categories. The 'Mineral Resources' category is highlighted with a red circle. Below the sidebar, there is a text box stating 'This map shows all available data sets registered in EGDI. Go to The Portal for more details or choose a thematic map here:' followed by a dropdown menu. The map area also features a scale bar for 500 km and coordinate information (EPSG:3034 and EPSG:4326) at the bottom right. The status bar at the very bottom shows 'ZOOM: Shift + Drag' and 'SELECT: Ctrl + Drag'.

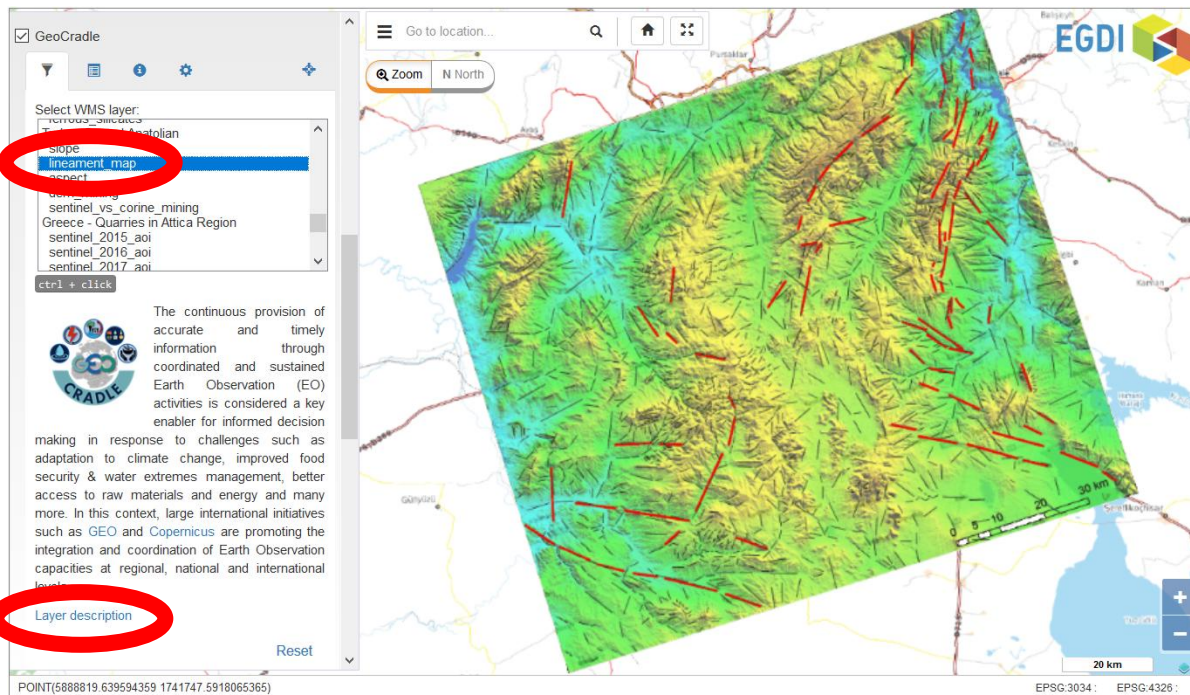
EGDI is
EuroGeoSurveys'
European
Geological
Data
Infrastructure



GEO-CRADLE Pilot 3: Access to Raw Materials



GEO-CRADLE Pilot 3: Access to Raw Materials



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



- 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



- 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



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

- 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”.

GEO-CRADLE Pilot 4: Access to Solar Energy

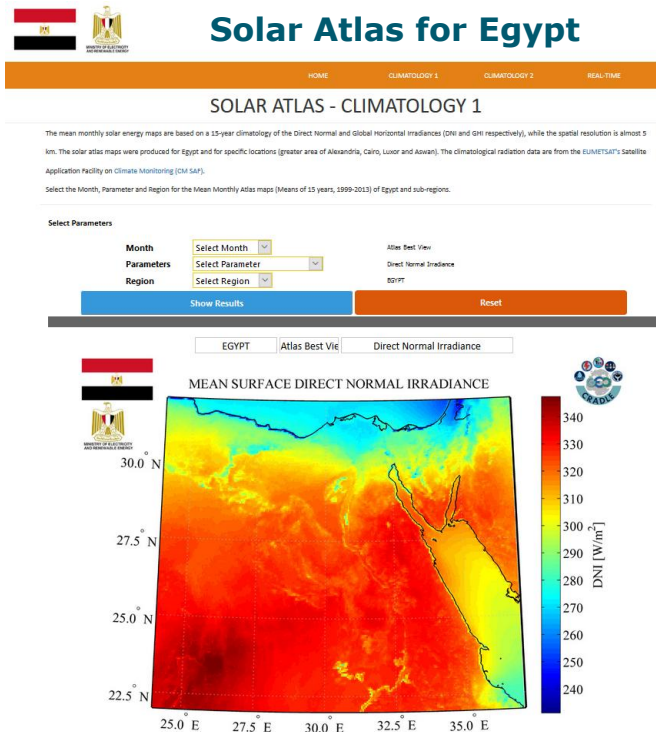
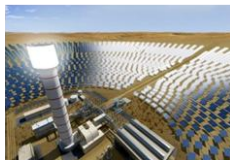
Application developed in support to the Ministry of Electricity & Renewable Energy of Egypt

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



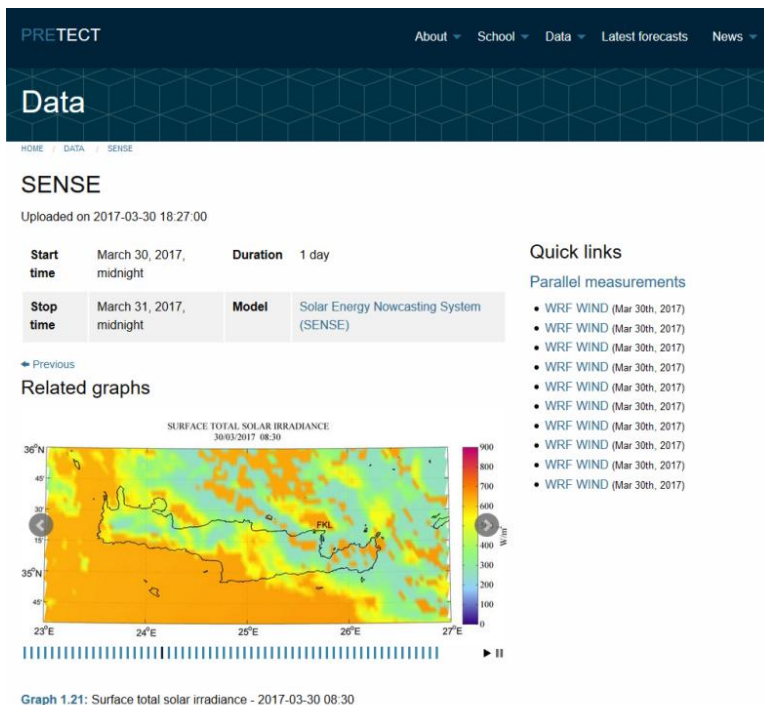
<http://cedarekmp.net/solaratlas/web2>

GEO-CRADLE Pilot 4: Access to Solar Energy

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.gr/instruments/25>

GEO-CRADLE Pilot 4: Access to Solar Energy

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.

PAR Atlas for Greece, Cyprus, Egypt



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

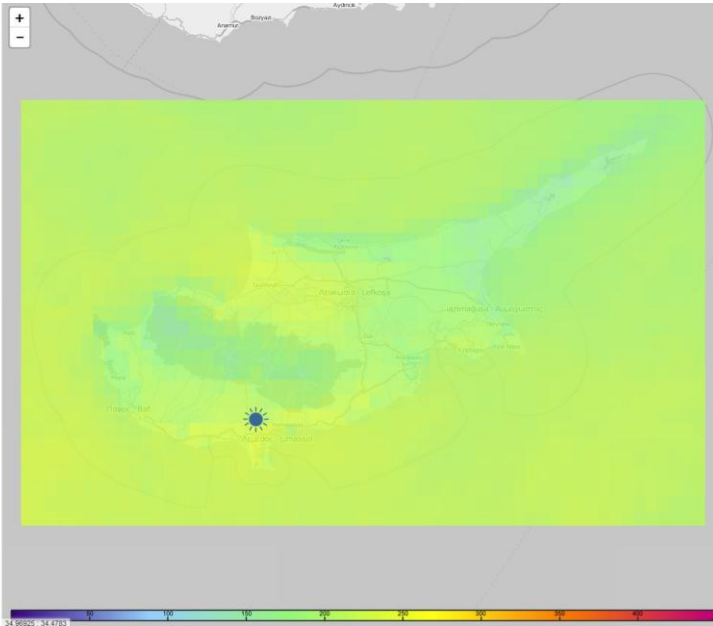
Power: 209 W/m²
Mean Power: 262.08 W/m²
Energy: 150.48 kWh/m²
Annual Energy: 2208.97 kWh/m²

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 EUMETSAT's GSRF. For more information please contact Stelios Kizadopoulos (PI of SENSE from PASCARIRO) and Panagiotis Kosmopoulos (Developer of SENSE from NOAA).



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

Engagement of end-users and key stakeholders



MINISTRY OF ELECTRICITY
AND RENEWABLE ENERGY



MAGDI YACOUB
HEART FOUNDATION
ASWAN HEART CENTRE



ΑΔΜΗΕ
ΑΝΕΞΑΡΤΗΤΟΣ ΔΙΑΧΕΙΡΙΣΤΗΣ
ΜΕΤΑΒΟΛΑΣ ΗΛΕΚΤΡΙΚΗΣ ΕΝΕΡΓΕΙΑΣ



thank you!



<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



FOLLOW OUR ACTIVITIES | Twitter @geocradle | Facebook Geo-Cradle | Website geocradle.eu

Side event Organised by GEO-CRADLE Project & EARSC

