GEO-CRADLE
Regional Workshop

TEL AVIV | 14-9-2017

WP4 Pilot towards regional challenges

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WP4 Overview – Pilot Actions

Thematic Areas vs UN SDGs




Adaptation to Climate Change (ACC)	Improved Food Security – Water Extremes Management (IFS)	Access to Raw Materials (ARM)	Access to Energy (SENSE)
13 CLIMATE ACTION 3 GOOD HEALTH AND WELL-BEING 11 SUSTAINABLE CITIES AND COMMUNITIES 15 LIFE ON LAND	2 ZERO HUNGER 12 RESPONSIBLE CONSUMPTION AND PRODUCTION	1 NO POVERTY 2 ZERO HUNGER	7 AFFORDABLE AND CLEAN ENERGY 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

17 PARTNERSHIPS FOR THE GOALS

5 GENDER EQUALITY

T4.1 objectives & inter-dependencies with other WPs

ACC Partners: NOA, CEDARE, CUT, INOE, IPB, AOA

Objectives

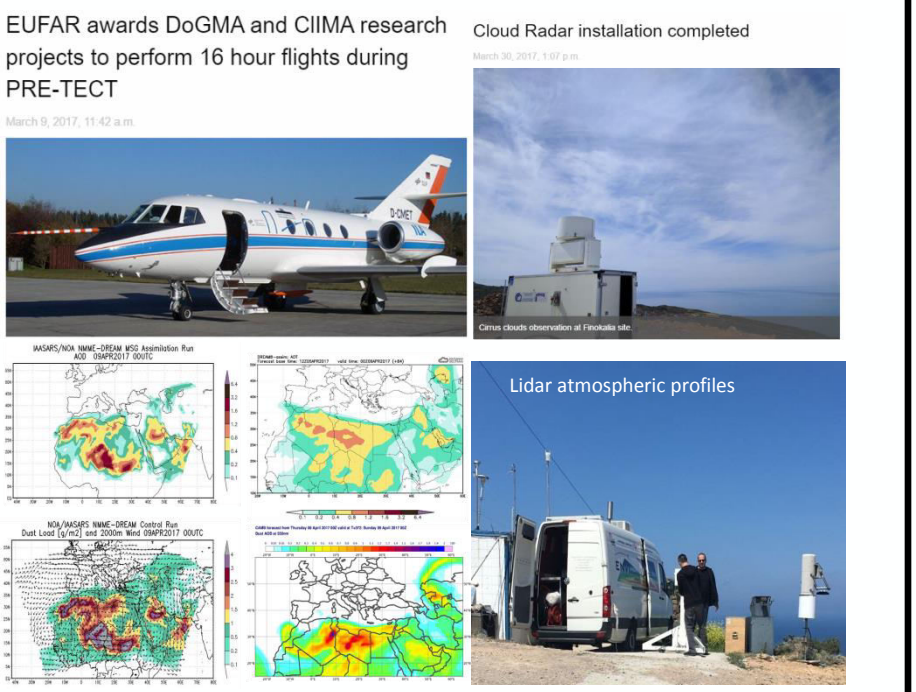
- Collect, homogenize, & integrate ground-, air-, & space-based EO data w.r.t. atmosphere, weather, & climate
- Utilize the data to provide accurate services for atmospheric hazard forecasting and climate projections
- Assess the regional climate change impacts based on region-optimized projections and establish a climate data hub supporting decision makers on mitigation and adaptation policies

Inter-dependencies

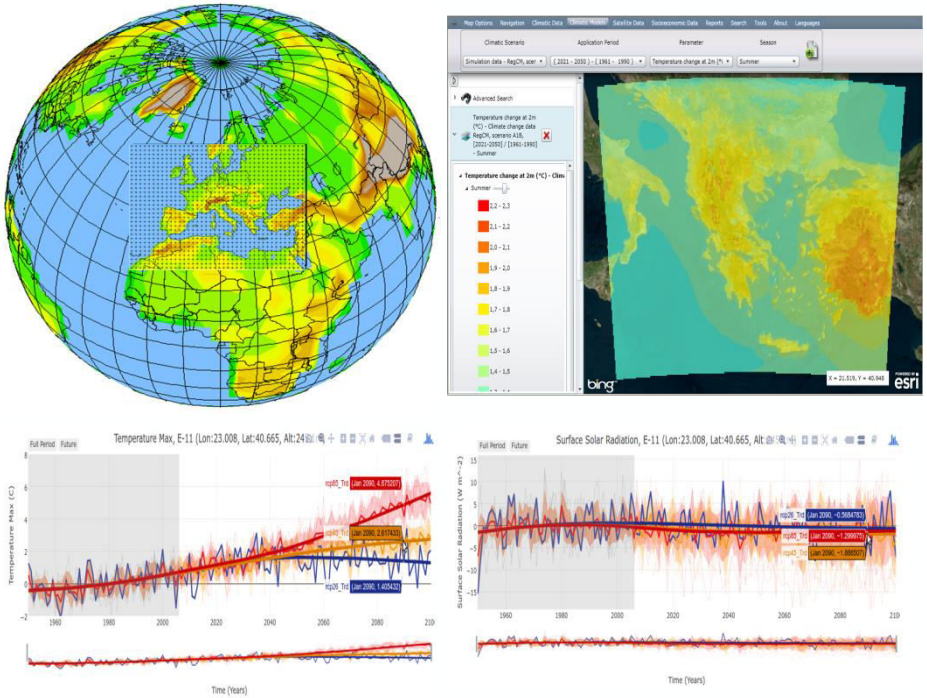
- WP2 & WP3 whose output was used to refine the ACC pilot w.r.t. the “Inventory of capacities and user needs” and the “Gap analysis, Indicators and Priorities”
- WP4 SENSE pilot on dust / radiation interactions

T4.1 existing state-of-the art, progress, achievements

Overall, the analysis of the interviews regarding the end-user needs, the maturity status of the countries and partners in the RoI and the potential stakeholders' synergies, resulted in three ACC services namely: **i) desert dust services, ii) regional climate change services and iii) air quality services**



PRE-TECT Campaign (dust and air quality services)



GEOCLIMA and Climate-Projection web tools

T4.1 difficulties, critical issues, possible deviations & solutions

- For optimal response to the end user requirements for ACC, corresponding data have been provided to potential users in order to receive feedback for the further development of the ACC services
- E.g. the “Climate-Projection” web application (v0.2) was refined, to be more user-friendly and accurately provide past-present-future climate information using Essential Climate Variables (ECVs) and Climate Indices (CI).
- These open-access information are especially important for the following sectors:

Energy
Potential solar and power production, as well as estimated energy requirements of households.

Agriculture
Droughts, intense rainfall, frost, evaporation or even growing season periods for plants.

Tourism
Favorable summer and winter conditions for tourists by combining various Essential Climate Variables.

Natural Hazards
Extreme rainfall, intense wind velocity and fires.

T4.1 impact of the work so far according to the GA (including KPIs)

During the 1st Periodic Reporting period the ACC pilot established collaboration with the following end-users:

- The Ministry of Agriculture Rural Development and Environment of Cyprus.
- The University Of Belgrade Institute Of Meteorology in Serbia.
- Balloonera, which is a private company in Belgrade developing a radiosounding platform.
- The Regional hydrology and water resources Sebou Basin Agency (ABHS) of Morocco.
- The department of Infrastructure and Rural Development of the School of Rural and Surveying Engineering of the National Technical University of Athens (NTUA).
- The Centre for the Assessment of Natural Hazards and Proactive Planning (CANaH) of the National Technical University of Athens (NTUA).
- TEMES S.A., a premier destination developer & operator in the high end tourism and real estate sector.

Experimental campaigns from which data will be integrated	**3**
Spin-off and R&D projects built on this GEO-CRADLE pilot	**2 (CLAIRE, Invictus)**

T4.1 further suggestions & conclusions

The GEO-CRADLE Internal Progress Meeting for the ACC Pilot (Crete, April 10th 2017) highlighted the significant progress in ACC pilot services (Dust Module, Climate Module, Air Quality Module) and the focus is now given to:

- **Disseminate** the ACC achievements in meetings, conferences, publications towards future collaborations
- **Engage** more authorities and end-users especially from the North Africa and Middle East regions
- **Interact** on a higher level of GEO-CRADLE with the European RIs and Copernicus/GEO/ESA to support the use of existing capacities for the provision of timely and accurate services on ACC over the RoI.

T4.2 objectives & inter-dependencies with other WPs

IFS Partners: IBEC, NOA, CEDARE, TAU, CUT, UZAY, SRTI, USCM, INCA, IPB, CIMA

Objectives

- Establish a common, integrated observational and modelling service capacity for the benefit of the food security sector (w.r.t the needs of farmers, agronomists and relevant stakeholders)
- Map representative agricultural attributes using Copernicus data
- Establish a Flood and Drought Observatory using aforementioned maps

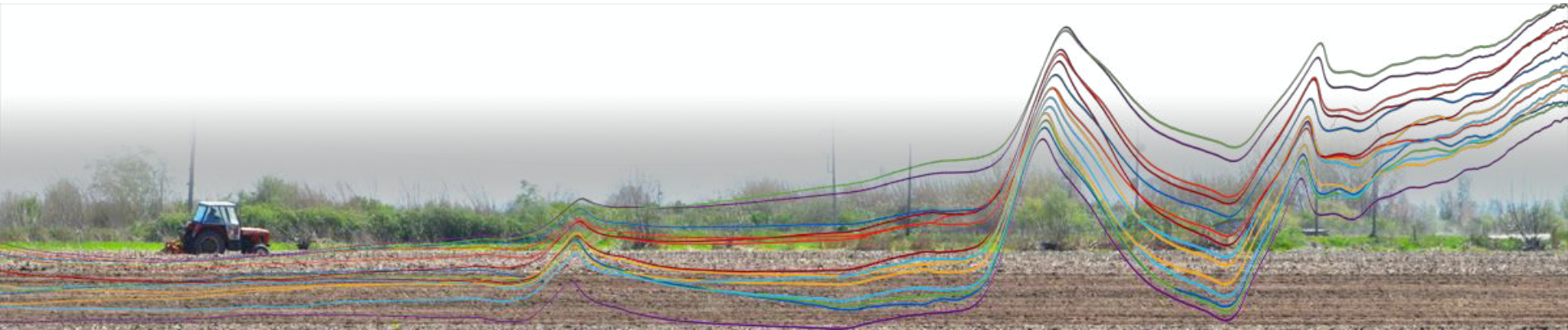
Inter-dependencies

- WP2 & WP3 whose output was used to refine the IFS pilot w.r.t. the “Inventory of capacities and user needs” and the “Gap analysis, Indicators and Priorities”
- WP5 concerning the regional data hub

T4.2 existing state-of-the art, progress, achievements (I)

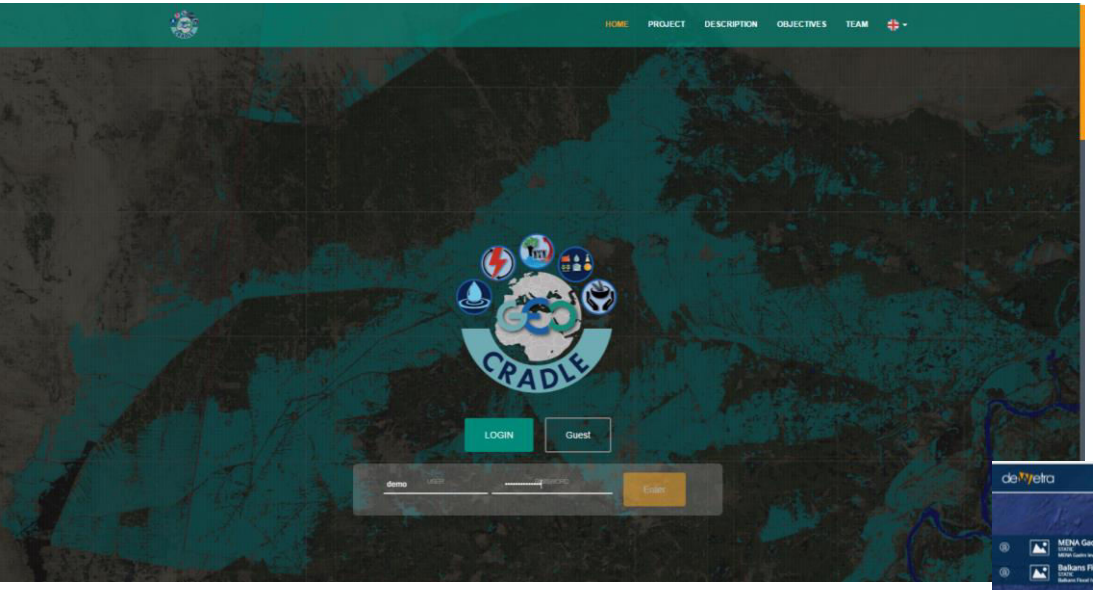
- ✓ More than 2,000 soil samples collected
- ✓ Regional SSLs built for Greece, FYROM, Israel, Serbia, Cyprus
- ✓ 2 training days hosted
- ✓ 2 webinars hosted
- ✓ Initial maps for the Drin River basin
- ✓ Base of myDEWETRA platform complete

The publicly available soil spectral data of the RoI will increase by 400% when the project is finished



T4.2 existing state-of-the art, progress, achievements (II)

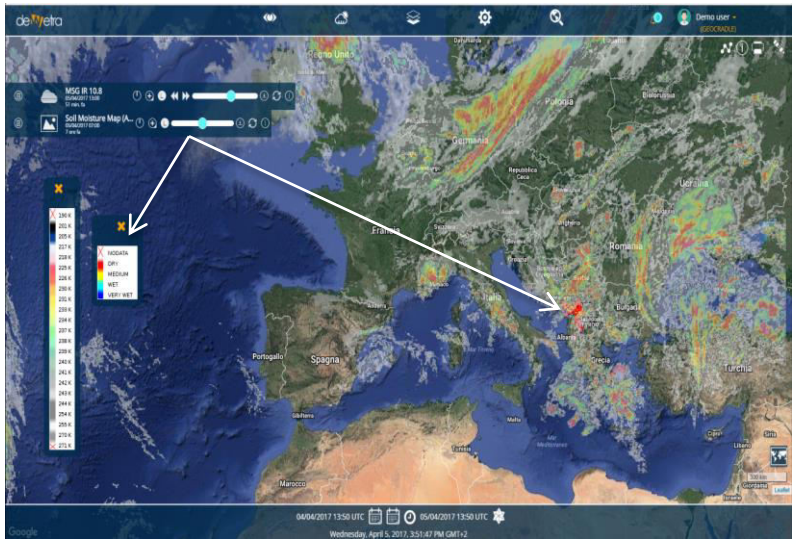
myDewetra implementation at Regional scale

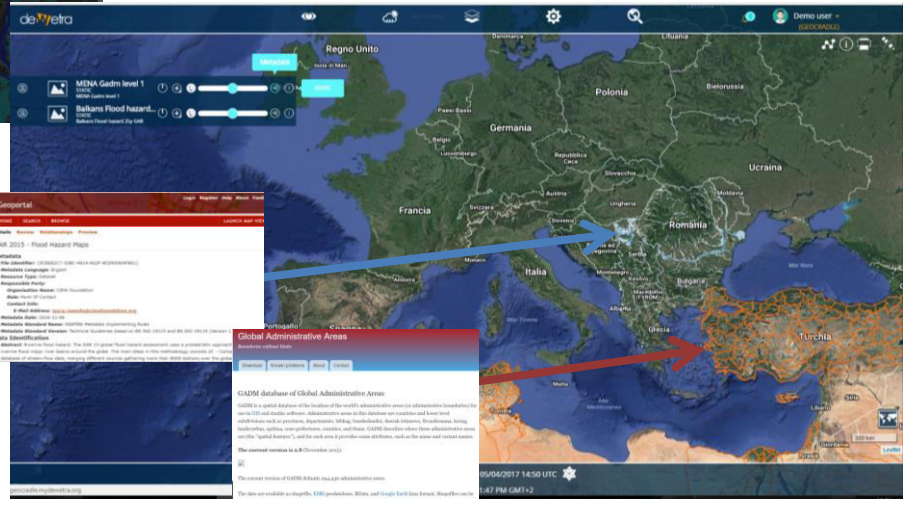


http://geocradle.mydewetra.org

User: demo

Pass: demo4geocradle





T4.2 difficulties, critical issues, possible deviations & solutions

Difficulty / Issue	Solution / Deviation
Severe winter in the Balkans	Soil sampling campaigns postponed for a couple of months
Lack of funds for the chemical analyses in the Albanian SSL, and for more extensive SSLs in other countries	i-BEC (regional coordinator) undertook the cost using self funds
Difficulties shipping Egyptian soil samples	Soil samples were partially transferred in meetings
Lack of common background	Introductory material and documents sent to partners, 2 training days and 2 webinars hosted

T4.2 impact of the work so far according to the GA (including KPIs)

End-users and key stakeholders engaged:

- Ministry of Economic Development, Tourism, Trade & Entrepreneurship (Albania)
- Ministry of Environment (Albania) regarding the development of the hydrological model using the EO data
- GEO's secretariat director Barbara Ryan regarding the task's activities – she particularly exhibited interest in the regional countries of Albania, FYROM, and Cyprus which are not represented in GEO.
- The agriculture cooperative of NESTOS in Northern Greece
- The Golan Heights Winery

Experimental campaigns from which data will be integrated	**9**
Spin-off and R&D projects built on this GEO-CRADLE pilot	**3 (Invictus , InnoSup, EOPEN)**

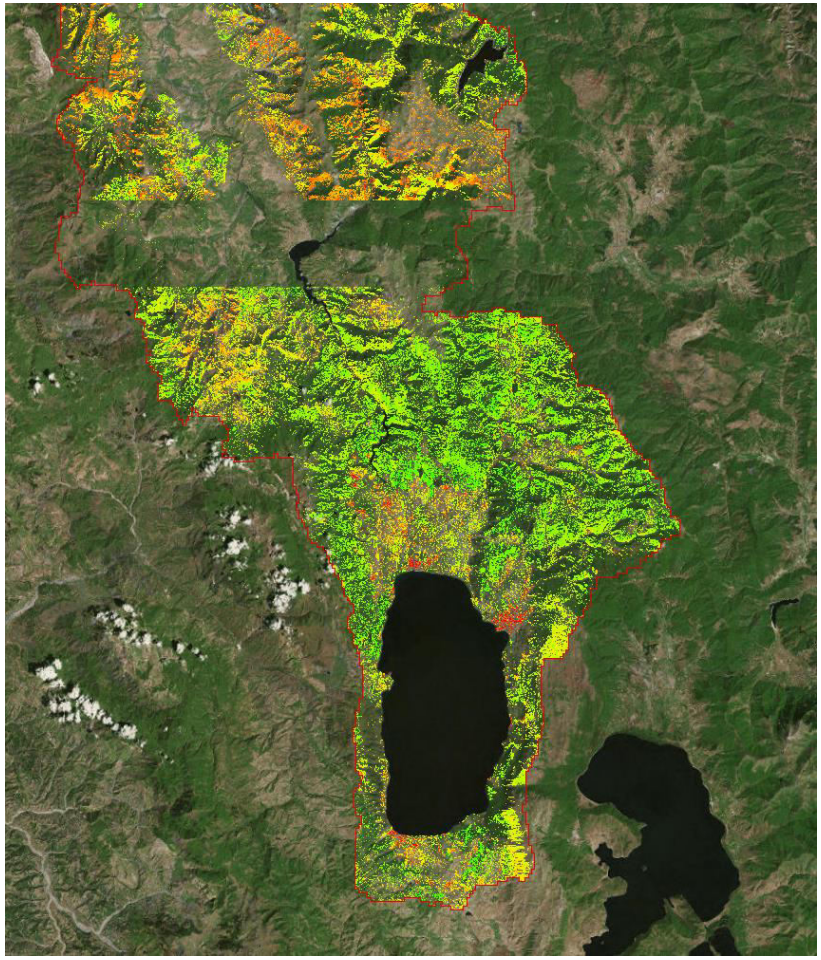
T4.2 further suggestions & conclusions

Enrich and keep the databases updated through enhanced:

- Dissemination
- Stakeholder involvement
- Interfaces

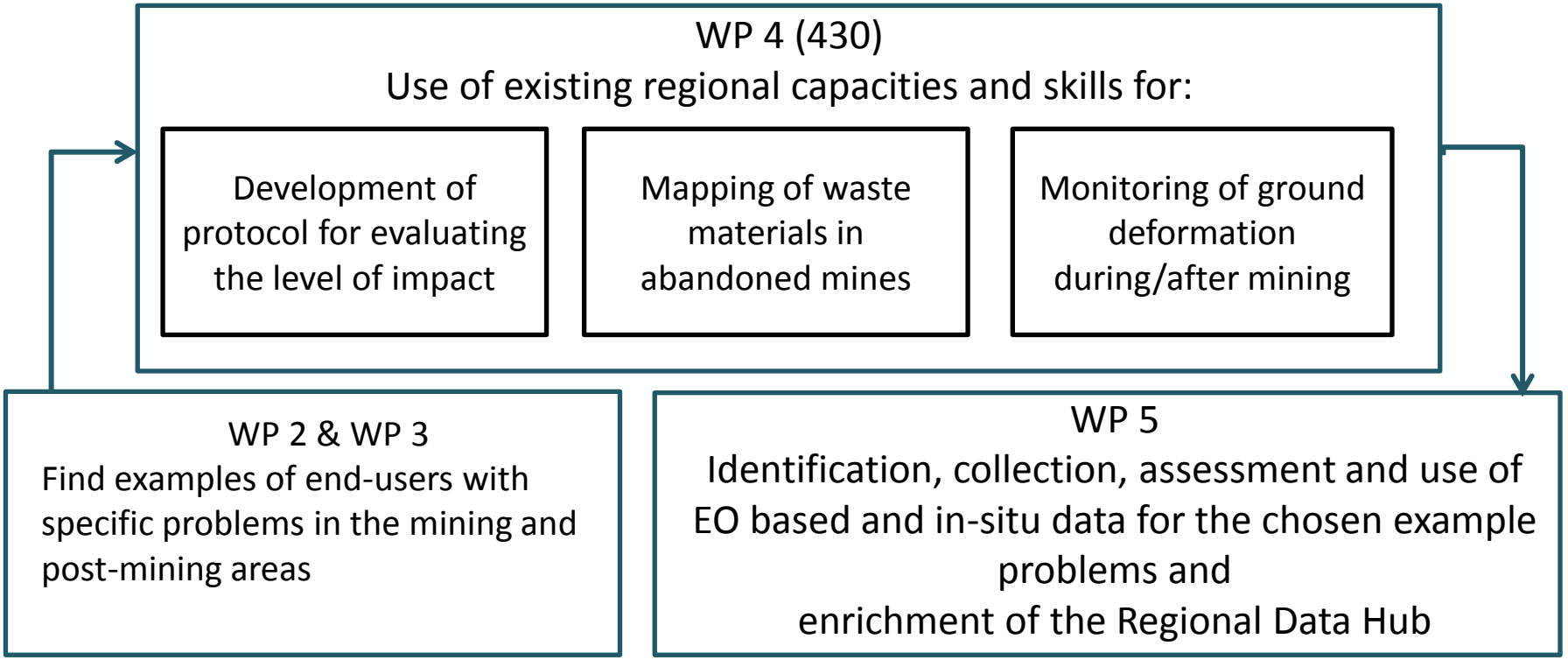
The more data exist in the database, the better the provision of EO services in the RoI for agriculture and water extremes management

Explore the possibility to engage with the PRIMA initiative



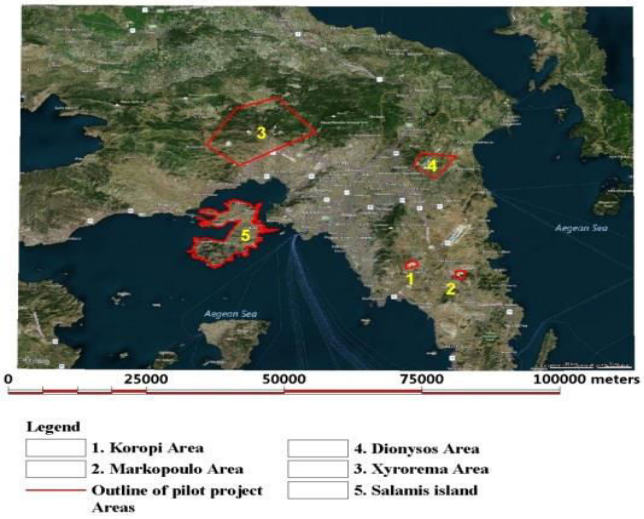
T4.3 objectives & inter-dependencies with other WPs

- **Objective:** Establishing a roadmap for long-term monitoring, mapping, and management of mineral deposits in a severely under-explored ROI.



T4.3 existing state-of-the art, progress, achievements

- Within WP3: Five proposals on raw materials pilot projects: Greece (2) and Cyprus (3). The following two were chosen for pilot test sites:



Monitoring of Illegal Quarrying **Greece**

Abandoned Asbestos mine under restoration, **Cyprus**.

- A third pilot site is going to be established in Turkey
- The scoop of the road map is written
- On-going test processing for the chosen test site
- Morocco (ongoing negotiations)

T4.3 difficulties, critical issues, possible deviations & solutions

- The third test site was initially planned in North Africa (Morocco and/or Algeria). Despite intensive negotiations for several months, no end-users for a mining/post mining area were found.

  Latest intel shows interest from Morocco with resumed negotiations

- Joint efforts of TUBITAK UZAY Space Technologies RI and EGS: 2 contributions from Turkey:

  i) **Long-term environmental monitoring** of mining activities and advanced exploration studies using optical and radar satellite data in Çelebi Iron-oxide mineralization district, Kırıkkale.
  ii) **Determining of orientation of coal outcrops** in a selected volcano-sedimentary basin in Central Anatolian Lignite Basin.

T4.3 impact of the work so far according to the GA (including KPIs)

ARM pilot established closer collaboration with the following end-users:

- Greece Ministry of Environment and Energy: a close collaboration has started in order to implement the pilot project on mitigate illegal quarrying.
- 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.

Experimental campaigns from which data will be integrated	**2**

T4.3 Stakeholder Engagement

ROYAUME DU MAROC

MINISTERE DE L'ENERGIE, 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".

T4.3 Stakeholder Engagement

- Algeria stakeholders

19-23 October 2016 Timimoun, Algeria. 2nd EGS Networking event "Aimed at in-situ network operators and Geological Surveys – especially in MENA" was organised back to back with the Algerian 5th National Stratigraphy Workshop. The event in Algeria was attended by over 200 participants representing the whole Algerian geoscientific community. The workshop resulted in signing memorandum of understanding between EuroGeoSurveys and Geological Survey of Algeria.

Both events gathered together local and regional in-situ network operators and Geological Surveys representatives.

T4.3 further suggestions & conclusions

- Further work on chosen feasibility studies
- Dissemination of the written road maps for mining/post mining areas
- Extension of the collaboration with the end-users – possible implementation of the pilot projects after the end of GEO-CRADLE

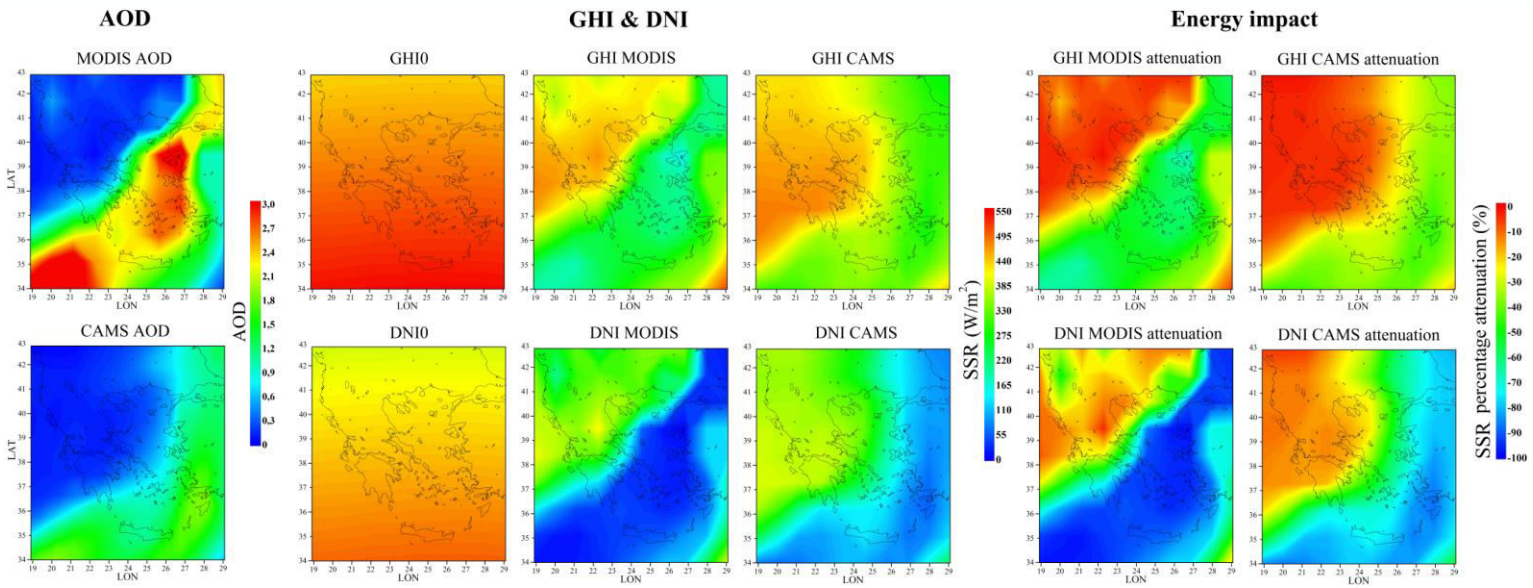
T4.4 objectives & inter-dependencies with other WPs

- Identify Solar Energy related needs of the RoI, through engagement with relevant stakeholders
- Develop feasibility studies towards addressing gaps related with Solar Energy operators
- Build scientific toolbox for solar products (Energy for various applications, UV Index, Vitamin D)
- Exploit WP3 results towards improved EO services at the RoI

Interdependencies

Refinement of SENSE based on WP2 and mainly WP3 outputs

Scientific interdependence with WP4 Climate change pilot (aerosol-dust impact on solar radiation (publication).



T4.4 existing state-of-the art, progress, achievements

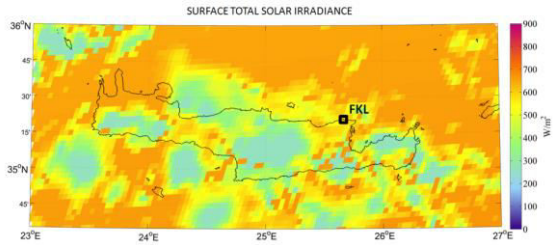
Coordination of regional EO capacities & research activities (incl. Copernicus Space & Service Segment initiatives) for an **operational, satellite-driven, real-time system for solar energy now-cast.**

Assimilation of cloud, aerosol & solar radiation data for real-time surface solar irradiance spectral outputs through a synergy of radiative transfer simulations and neural network models. (Completed)

Address the needs of SENSE system in the extended area including capabilities for retrieving real-time satellite data, transforming initial parameters into model inputs and calculating the solar energy received at the surface in real time. (done)

Archive a full year of solar energy calculations having high spatial (0.05°×0.05°) and temporal (15 min) resolution for use in forecast models (+seasonal & monthly climatologies) [In progress]

Participation in international experimental campaigns validating/using SENSE pilot results (PRE-TECT)



T4.4 difficulties, critical issues, possible deviations & solutions

Increased demand in online products lead to the need of upgrading the hardware of the SENSE system.

No deviations.

T4.4 impact of the work so far according to the GA (including KPIs)

Collaboration and extensive cooperation with the following end-users:

- **Egyptian Ministry of Electricity and Renewable Energy**: a common website was developed in which the real-time and climatological solar energy products of SENSE are disseminated. An analytical Egyptian solar atlas was presented in the regional workshop in Cairo (May 2017).

- **Greek Independent Power Transmission Operator**: a close collaboration in order to update their nowcasting and forecasting power systems with the SENSE's state-of-the-art methods. They exploit the real-time solar energy maps and data (60K pixels/integrated energy values every 15-minutes) by comparing them with real solar farms and controlling the local energy demands.

- **Pre-tect international campaign**: the solar energy maps of Crete were provided in real-time for the purposes of the campaign (April 2017) and spectral comparisons with a high precision solar spectroradiometer (PSR) will be made to further validate the SENSE under high-aerosol loads.

- **Attica group with Bluestar and superfast ferries**: for the pilot period they are going to attract relevant ads in order to efficiently advertise the real-time UV-index service from SENSE through the monitors of their ships with routes to the Aegean and the Adriatic seas.

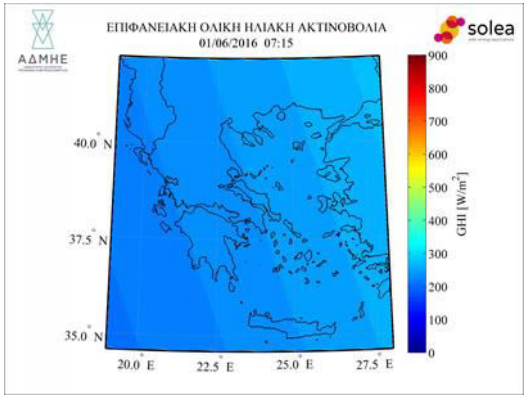
Experimental campaigns from which data will be integrated	**2**
Spin-off and R&D projects built on this GEO-CRADLE pilot	**2 (EOENABLER, Solea)**

T4.4 impact of the work so far according to the GA (including KPIs)

SENSE applications

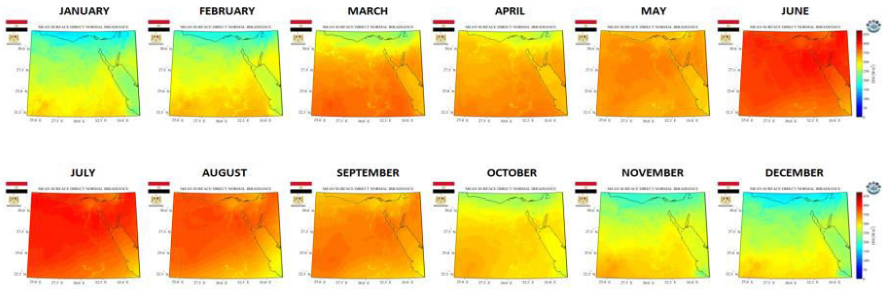
Nowcasting and forecasting

Greek
Transmission operator
Online system

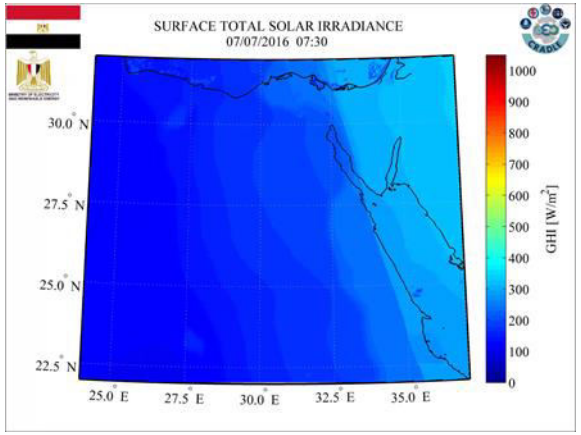


Solar maps and variability assessment

Solar Map of Egypt

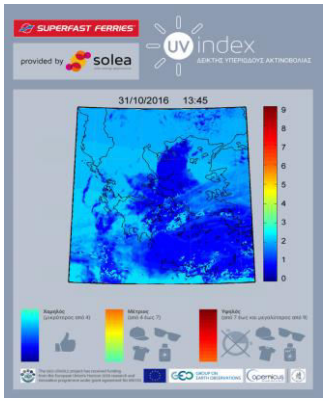


Egypt system

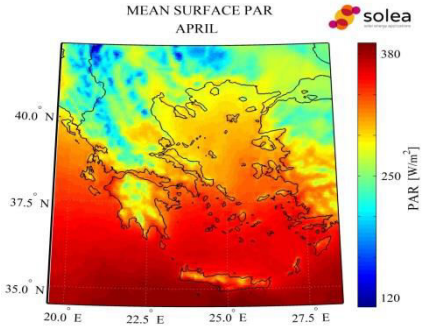


Other

UV Index, Aegean and Adriatic sea



Agriculture



T4.4 further suggestions & conclusions

- Participate in meetings, conferences, publications, presenting pilot results
- Dissemination of SENSE achievements towards future collaborations.
- Refine roles of PIs – regional collaborators – pilot leaders towards better coordination and result exploitation

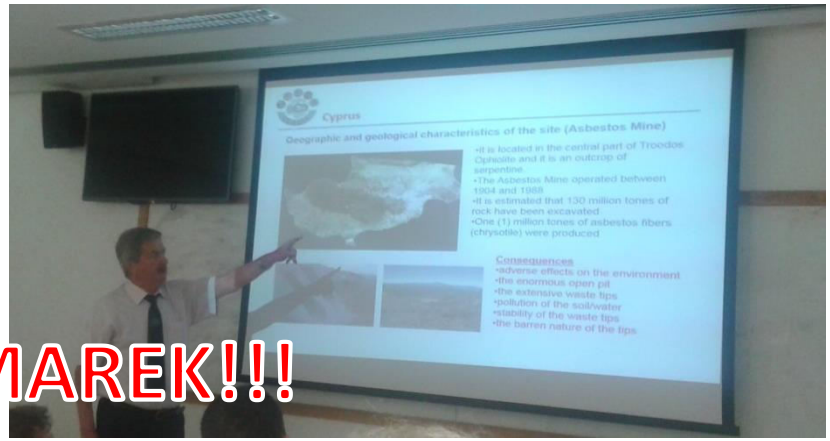
In loving memory …

April 24th 2017, Sudden loss of Marek Graniczny, WP430 leader

Visit in Hellenic Copper Mines Ltd in Skourriotissa Village, Cyprus, 16th November 2016.

THANK YOU MAREK!!!

Participation in 2nd EGS Networking event "Aimed at in-situ network operators and Geological Surveys – especially in MENA, 19-23 October 2016 in Rabat (Morocco) and Timimoun (Algeria)



Participation in Project consortium working session, 17th November 2016, Limassol, Cyprus.


תודה
Dankie
Gracias
Спасибо
شكرًا
Merci
Takk
Köszönjük
Terima kasih
Grazie
Dziękujemy
Dėkojame
Ďakujeme
Vielen Dank
Paldies
Kiitos
Täname teid
谢谢
Thank You
Tak
感謝您
Obrigado
Teşekkür Ederiz
감사합니다
Σας ευχαριστούμε
ขอบคุณ
Bedankt
Děkujeme vám
ありがとうございます
Tack
CRADLE

thank you!