GEO-CRADLE Project Meeting

Refining the scope of the pilots towards regional challenges (WP4) in light of WP3 outcomes

17 November 2016
Limassol, Cyprus

Hosted by:

Coordinator:

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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

MINUTES

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

Objective & Outline:

GEO-CRADLE has proactively engaged and keeps engaging with the relevant regional stakeholders (data/service providers, decision makers, and SMEs) in a series of consultation activities including surveys, interviews, workshops and bilateral exchanges, in order to identify the regional needs. After a first in-depth analysis of their feedback which was presented in the GEO-CRADLE meeting in Novisad, Serbia, GEO-CRADLE is now going to make a concrete first step through the 4 pilot/feasibility studies towards addressing the identified gaps and needs in relation to common regional challenges by creating the appropriate ecosystem, building the necessary toolbox, and providing a first tangible outcome.

The objective of the pilot activities is not to develop new science, but to build on the integration of existing capacities (infrastructure, datasets, models, etc.) and skills within the relevant group of project partners that are involved towards the provision of improved EO Services in the Region of Interest (RoI). The pilots will span a period of 15 months, and the final results will be presented to relevant stakeholders (especially decision makers) in a dedicated workshop.

The GEO-CRADLE pilot activities are the following:

1) Adaptation to Climate Change (T4.1, Leader: NOA)
2) Improved Food Security – Water Extremes Management (T4.2, Leader: IBEC)
3) Access to Raw Material (T4.3, Leader: EGS)
4) Access to Energy (T4.4, Leader: PMOD/WRC)

The objective of the GEO-CRADLE Project Meeting which took place on 17 November 2016 in Limassol, Cyprus, was to discuss in detail and take the final decisions on the proposed refined scope of the pilot activities (WP4), including a concrete roadmap and a specific action plan, on the basis of the gap analysis (WP3) and other inputs from partners, taking also into consideration the conclusions from the dedicated thematic Workshops which were organised for each pilot, and took place on 17 October 2016 in Rabat, Morocco and on 16 November 2016 in Limassol, Cyprus.

PROJECT PROGRESS MEETING (09:30-10:20)

Project progress, setting out the goals of the day and the expected outcome from the meeting

Speakers: **Haris Kontoes & Lefteris Mamais & Eleni Christia**, NOA

Project Coordinator Dr Kontoes presented the GEO-CRADLE progress so far, with the 1/3 of the project's duration concluded, and summarized what worked well, what could be improved and the key next steps from now on. He noted that the final versions of WP3 deliverables are under way and the refined pilots are due at the end of month. Regarding the milestones, the Gap Analysis is completed and the Priorities Action Plan / Launch of Pilots will be concluded in the end of the month. The next milestone is the Mid-Term Review. Dr Kontoes underlined that stakeholders' engagement is key to the project's success, as well as the participation in important events providing momentum. The engagement at country level is intensified but not adequately reported (or its impact). As for the communication activities, Dr Kontoes noted that the portal is on and functional, the newsletter is also launched, and the social media active, both facebook and twitter, and he encouraged partners to be even more active. Concerning the

cooperation, Dr Kontoes said that there is good cooperation on WP level, and the good example of WP3 should be baseline for other WPs too. On task level there is not adequate contribution by all partners, and on regional level the cooperation is still not in full swing, yet improving.

Technical & Quality Assurance Manager Mr Mamais confirmed that all deliverables have been submitted on time or with small delay, and that there is a marked improvement on their quality but there is still way to go. He suggested to the partners to follow the best practices, work together with other task leaders and keep check of the schedule. Concerning the stakeholders' engagement Mr Mamais referred to the meetings organized or attended by the GEO-CRADLE partners, and gave un update of the consultation process: 233 valid replies in the database of the survey, 70 valid end-users interviews (T2.4), but still under-representation in some countries, thematic areas, actor types. He underlined the need to build GEO-CRADLE network, providing value to stakeholders via the portal and other activities, to have strong contribution of Regional Coordinators, and leaders & partners of Tasks 6.3 & 6.2, and to elaborate a proposal on regional workshops and meetings.

Exploitation Manager Ms Christia presented the proposal of the Project Coordination Team for the next GEO-CRADLE meetings, including the organization of dissemination activities at regional or national level. She also reminded partners to fill in the monthly report on their dissemination & communication activities, and send their regular input on events, news, and opportunities, to be published on the portal, on the newsletter, and on the social media. Ms Christia stressed that the aim is for the GEO-CRADLE portal to become the go-to option of being informed about EO activities in the three regions, and everyone needs to support this.

Project Coordinator Dr Kontoes highlighted the need for better "syncing" and more "ownership" for the implementation of project activities at country level, and urged all partners to contribute to activities in their own country (building local ecosystem, survey responses, interviews), and use the opportunities for even better collaboration and integration of teams. He concluded with the need to build a common vision going forward, by focusing on the real impact of GEO-CRADLE activities (capacity building in line with project objectives), and thinking of GEO-CRADLE legacy (portal & hub, network, pilots, roadmap for GEO & Copernicus implementation, maturity indicators).

OUTCOMES & RESULTS OF WP3 (10:20-12:00)

Gap Analysis (T3.1)

Speaker: **Igor Milosavljevic**, INS

Mr Milosavljevic presented the position of the Gap Analysis in the project, the methodology (input, framework, indicators), the results (5 typologies identified) and the correlation with the maturity indicators. The input from the survey was 260 responses, with most responses in the Food Security & Climate Change, and less responses in the Access to Raw Materials & Energy. The Gap Analysis framework was geographical, observational, structural, qualitative/quantitative, and capacity-related, starting with end-user needs, and successively going through categories of EO capacity, using 41 indicators across the value chain. Five typologies were identified: 1. Non-EU Balkan states (Albania, FYROM, Serbia), 2. EU Balkan states (Bulgaria, Romania, Cyprus, Greece), 3. Low influence of EU in EO development (Tunisia, Egypt, Turkey), 4. Advanced EO Ecosystem (Israel), 5. Rapid up-starters (UAE and Saudi Arabia). The correlation between Gaps and Maturity shows that EO maturity leads to systemic changes in capacities and needs, from general to specific needs, that EU membership has a positive effect on EO capacities (in terms of finance, connectivity, coordinated effort, legal frameworks), and that the public sector is vulnerable to economic/political instability.

Maturity Indicators (T3.2)

Speaker: **Monica Miguel-Lago**, EARSC

Ms Miguel-Lago presented the maturity indicators in terms of methodology (objectives & timeline, methodology plan, benefits & constraints, definition maturity indicators), draft assessment (maturity card, maturity level, indicator ranges), and final assessment (examples, validation & future). The methodology includes integration of project tasks, desk research by country partners, comparative assessment, semi-structured interviews with country partners & organizations, validation of findings by experts, and finally action on incomplete data or N/A. The maturity indicators were defined in groups by capacities (including national or regional capacities), cooperation (including international cooperation),

and uptake (including national uptake and awareness). For each indicator a table was produced, containing description, parameters, constrains, gap analysis, and comments. A maturity card was filled-in by country, and the following levels occurred during the draft assessment: Level 0: initial (Albania, FYROM), Level 1: basic (Bulgaria), Level 2: intermediate (Morocco, Cyprus, Egypt, Tunisia, Serbia), Level 3: advanced (Greece, Romania, Turkey), and Level 4: optimized (Israel). For the final assessment validation is needed. The maturity cards should be compared with each country partner, and hold teleconferences to discuss the results. Country partners should propose a group of experts for a new validation. It is necessary to gather new information and collect data or gaps both from GEO-CRADLE tasks and bibliography from regional projects. Country assessments should be repeated and refined in 6 months, taking into consideration that a single set of indicators is not and cannot be used to uniquely decide the maturity of a country.

LAUNCHING OF WP4 (13:15-15:30)

Roadmap for the 4 thematic pilots:

Adaptation to Climate Change (T4.1)

Speaker: **Vassilis Amiridis**, NOA

Dr Amiridis first presented the link with WP2 and WP3. The needs identification of the RoI is based on the user needs identified for the 4 sub-regions: 1) FYROM and Albania; 2) Serbia, Romania, Bulgaria; 3) Greece, Cyprus and Turkey; 4) Morocco, Tunisia, Egypt, Israel. From all the reported needs, the ones directly and indirectly related to climate information are grouped in 4 sub-sectors: a) air quality; b) meteorology; and c) natural risks. Dr Amiridis then analyzed the refined content and objectives of the ACC pilot. ACC will provide 3 services on respective thematic pillars, as these were concluded by the GEO-CRADLE consortium and the feedback from WP2 & WP3: 1) accurate desert dust forecasting;

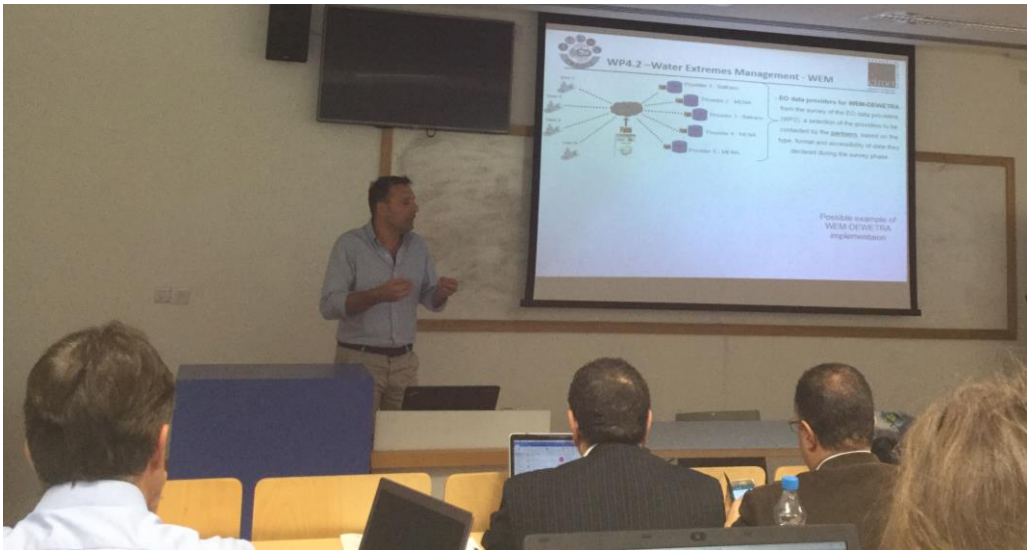
2) regional climate change services; and 3) air quality services. Special effort will be given in optimizing the services (which are not as timely and accurate as required by the users), and tailoring the services to the user needs (through continuous interaction with end-users from targeted ACC-representative sectors and respective end-users). The end-user engagement includes tourism sector (TEMES and Costa Navarino for dust forecasting), meteorological agencies (Cyprus for dust forecasting), aviation (EgyptAir for dust forecasting), insurance companies (AXA for climate change services), agriculture sector (Ministry in Serbia for climate change services), and local authorities for services related to air quality services (CAMS). As for the input data (space/airborne/in-situ), Dr Amiridis noted that available models will be used along with the instruments and data that will be gathered from 3 European Research Infrastructures (ICOS, EUFAR, ACTRIS). Regarding the specific pilot sites, the Eastern Mediterranean was considered as representative RoI area for developing the services according to the user needs and optimizing their accuracy through synergistic data use and evaluation against ground/air truth data.

Improved Food Security - Water Extremes Management (T4.2)

Speakers: **Nikos Tziolas & Eyal Ben Dor & Giorgio Boni**, i-BEC & TAU & CIMA

The speakers started their presentation relating this pilot with the 2nd UN Sustainable Development Goal (SDG): End hunger, achieve food security and improved nutrition, and promote sustainable agriculture. The overarching objective of the pilot is the development of datasets, data analytics, and indicators that will enable the integration for the Nexus approach to benefit the food SDGs as well as other SDGs that are sensitive to those targets. In this direction soil spectral libraries and satellite imagery can contribute to the low input sustainable agriculture and progressive improvement of soil quality, reliable EO data adhering to the same standards as the Open Geospatial Consortium can be offered, and information and data facilitating in decision making can be provided. The speakers underlined that it is imperative to monitor and automatically map natural, physical and chemical properties of the soil, use the maps of soil attributes to combat soil degradation, and spatially detect soil contamination and water capacity. Soil spectroscopy will be used to provide Standard and Protocols, Soil Spectral Library building capacity, from Laboratory to Field domains, from Field to Air Space-borne domains, as well as Data Mining and learning machinery. Then the speakers presented the plan of action which includes 3 common major attributes for all partners, 2 unique region specific attributes picked by and for each partner, and 100+ samples

sent by each partner, in addition to the samples of the LUCAS spectral library, which Dr Montanarella said that can be available following agreement. Contemporary knowledge and know-how regarding soil spectroscopy will be disseminated to the partners, who will be educated in soil spectroscopy through 2 webinars (on soil sampling, acquisition of soil spectra, creating a SSL with its assorted metadata, building of models, applying to EO data). A final questionnaire will be distributed where partners will assess how easy and feasible it is to use the knowledge gained from the pilot. In parallel, the myDEWETRA platform implementation will allow the collection and systematization of various kinds of data and model outputs, automatically or manually recorded, previously stored in the data-hub or in the myDEWETRA GEO server, allowing their combination and display on the same web based interface producing added value.



Access to Raw Materials (T4.3)

Speakers: **Marek Graniczny & Maria Przyłucka**, PGI/EGS

The speakers referred to the relevant output of WP2 & WP3, and explained that the aim of this feasibility study is to establish a roadmap for better long-term monitoring, mapping, and management of mineral deposits in a severely under-explored ROI, using elaborated EO methodologies to reduce the impact on the surrounding areas. In this direction the existing regional capacities and skills will be used for: i) the development of a protocol to evaluate the level of impact for the selected pilot test sites, ii) mapping of waste materials in abandoned mines, and iii) monitoring of ground deformation during/after mining. The pilot will include identification, collection, assessment and use of EO based and in-situ data; and it will enrich the information content of the Regional Data Hub. The speakers presented the proposed pilot test sites and scopes. The first pilot is the Monitoring of Illegal Quarrying in Greece, with the objective to use EO data & techniques to select suitable sites for quarrying, monitor reforestation, support land use planning, monitor land cover and illegal quarrying, assess “waste” and possible instabilities, and finally support restoration actions. The second pilot is the Environmental Monitoring of Ayios Filippos Abandoned Public Mine of Mixed Sulphide Ores in Kirki Village (North Greece) and the objective is the creation of a database to include satellite data and other thematic, physical, environmental, geomorphic, geologic, socio-economic information pertaining to factors that affect post-mining restoration activities.

The third pilot is in Cyprus, three mines located on the Troodos Ophiolite: 1) Abestos mine (abandoned - under restoration), 2) Skourriotissa (operating - massive sulfides), 3) Kokkinopezoula (abandoned - massive sulfides). The objectives are: i) mapping of waste materials and low grade ores left over in abandoned mines that could potentially re-open by exploiting both primary and secondary mineral resources with parallel environmental restoration, ii) long-term monitoring of ground deformation / stability during or after mining activities in order to handle environmental pollution and possible subsidence / landslides, iii) evaluation of the environmental impact, together with feasibility assessment for the potential of the extractive or mining waste to become exploitable as secondary resources, iv) mitigation measures to handle environmental pollution in abandoned mines in order to fulfil certain obligations derived from the EU Water Framework Directive 2000/60/EC.

Access to Energy (T4.4)

Speaker: **Stelios Kazadzis**, PMOD/WRC

Dr Kazadzis first presented the link with WP2 and WP3 and explained that this pilot is about the solar energy now-casting system SENSE with EO inputs (satellite data, Copernicus Atmospheric Monitoring Service, radiative transfer models and neural networks). The purpose is the provision of (tailored to end-user) now-casting of solar radiation and solar energy, long-term solar energy atlases for various areas with high temporal and spatial detail, as well as solar radiation-related products (real-time and forecasts) related with health (UV index / melanoma, DNA damage, cataract, Vitamin D efficiency), agriculture (photosynthesis), and science. Three pilots will be implemented: 1) Solar Energy now-casting, forecasting & Solar Atlas in Greece (user: Independent Power Transmission Operator), 2) Nowcasting & Solar Atlas in Egypt (user: Ministry of Electricity and Renewable Energy), and 3) Solar UV Index in the Aegean and Adriatic seas (user: Superfast ferries). Dr Kazadzis noted that long term funding in this domain of science towards applications could be found from private sector (direct, indirect), public sector (energy operators, EPAs, public information sectors e.g. weather and meteorology related bodies), government-based initiatives, EU projects (GEOS related, user oriented products, case studies), bilateral calls, as well as Copernicus-related calls. The pilot will seek to demonstrate ways to maximize value and benefits at the RoI and create synergies with public and private sector (solar plants, energy distributors, solar energy related end-users). Dr Kazadzis underlined that the SENSE can be implemented anywhere in the RoI with tailored products and it is also a spin-off opportunity, which can be promoted through GEO-CRADLE, new projects, conferences etc.

Action plan and session wrap-up

Speaker: **Haris Kontoes**, NOA

Project Coordinator Dr Kontoes concluded the session reminding the action plan according to the project's deliverables and deadlines: WP4 running from M09 until M24 under the leadership of IBEC and the support of the Project Coordination Team (PCT), with the first set of deliverables (refined pilots' scope) scheduled on M10, and the second set of deliverables (pilots' activity report) on M24.

Dr Kontoes also summarized the needs from other WPs: 1) Support from the GEO-CRADLE Regional Data Hub on publishing the services and archiving the collected data; 2) Help on disseminating the services and the GEO-CRADLE events to a broader audience and end-user/sector pool; and 3) Interaction on a higher level of GEO-CRADLE with the European RIs and Copernicus/GEO/ESA to support this unique effort to coordinate existing capacities for the provision of timely and accurate services over the RoI.

In addition, Dr Kontoes called partners to make efforts to be linked to the EU priorities and initiatives, as well as the available future funding schemes. Given that GEO-CRADLE consortium, through the pilots, will draft the roadmaps for the respective thematic areas, providing the specifications to the EC, it's crucial to be linked to the EC priorities. It is therefore important that partners consider what they can provide of added value to the EC, not based only on their research needs and personal interests.

Moreover, Dr Kontoes urged partners to continue the stakeholders' engagement, the promotion of the GEO-CRADLE survey and network, the participation in and the organization of the proposed and even additional workshops in the different countries, also taking the opportunity in several cases to link to other events in the RoI (e.g. already scheduled meetings and conferences). The Project Coordinator (NOA), the Dissemination Leader (EURISY), and the two Regional Coordinators (IBEC & CEDARE) are strongly involved and in cooperation with local stakeholders to support the organization of such events and intensify the dissemination activity. A relevant dissemination package with all the necessary information material will be provided to the partners by the PCT, including a brief presentation of the project, its outcomes so far and information on the various funding opportunities in order to link the activities accordingly.

Last but not least, Dr Kontoes reminded partners that on M15 (end of April 2017) the first financial report needs to be submitted, therefore it is necessary to cooperate and send the required documents in due time. Any delay or inconsistency will have impact on the entire consortium and the project, so big attention is required and strict compliance with the guidelines (as explained also in the relevant webinar by the EC Officer on Financial Management).