GEO-CRADLE:

Fostering regional cooperation and roadmap for GEO and Copernicus implementation in N. Africa, Middle East, and the Balkans

Funded under H2020 - Climate action, environment, resource efficiency and raw materials

ACTIVITY: Developing Comprehensive and Sustained Global Environmental Observation and Information Systems

CALL IDENTIFIER: H2020 SC5-18b-2015

Integrating North African, Middle East and Balkan Earth Observation capacities in GEOSS

Project GA number: 690133
Total Budget: 2,910,800.00 €

Haris KONTOES, Research Director, National Observatory of Athens, Project Coordinator
**GEO-CRADLE**

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

It seeks to identify common needs, create synergies, and integrate capacities,

Fosters the regional cooperation and integration of monitoring capabilities and networks, and scientific skills

Proposes/sets up large scale regional initiatives based on the Earth Observation (space based and in-situ) for addressing societal priorities in different thematic aspects such as Adaptation to Climate Change, Access to Raw Materials, better exploitation of the renewable Energy resources, and Food Security

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ACTIVITY: Developing Comprehensive and Sustained Global Environmental Observation and Information Systems
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Integrating North African, Middle East and Balkan Earth Observation capacities in GEOSS
Project GA number: 690133
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1. To create a multi-regional (Balkans, N. Africa and Middle East, namely RoI) coordination network

2. Support the effective integration of Earth Observation capacities in the RoI

3. Facilitate the engagement of the complete ecosystem of EO stakeholders in the RoI

4. Promote the uptake of EO services and data in response to regional needs

5. Enhance the participation in and contribution to the implementation of GEO, GEOSS, and Copernicus in the RoI
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Workshop on Gap Analysis and Prioritization

The Coordinator

NATIONAL OBSERVATORY OF ATHENS (NOA)
Coordinator - GREECE

Member of ESA’s CEOS platform for DRM

UNESCO Chair for Natural Disaster

Owner of Space and in-situ monitoring networks & member of worldwide env networks

Greece’s Focal Point of GEO&GEOSS

Coll GS for accessing Copernicus Missions (Sentinels)

Regional Support Office of UNOOSA UNSPIDER

Space Disaster Monitoring Center for SE Europe, Balkans (BEYOND)

Copernicus program certified EMS service provider
At the consortium level 48 women (39% of personnel) are involved.

31% of the WorkPackages are led by women.
4 main pillars underpin the GEO-CRADLE concept

1. Exploit synergies and cross fertilisation
2. Apply an impact driven methodology
3. Implement a top-down and a bottom-up approach for GEO & Copernicus In the ROI
4. Achieve a lasting and sustainable effect in the ROI
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1. Lessons learned and best practices from past projects and initiatives

2. Alignment with EC & GEO priorities/vision

P1: Exploit synergies and cross fertilisation
P2: Apply an impact driven methodology
P3: Implement a top-down and a bottom-up approach for GEO & Copernicus in the ROI
P4: Achieve a lasting and sustainable effect in the ROI
A six-fold approach

1. Inventory of capacities and user needs (WP2)
2. User need analysis, Skills & computing, In-situ networks, Space-borne
3. Gap Analysis, Indicators and Priorities (WP3)
4. Pilots towards regional challenges (WP4)
5. Regional Contribution to GEOSS and Copernicus (WP5)
6. Impact Analysis (WP7)

Pathway:
- Renewable energy
- Access to raw materials
- Food security and water
- Adaptation to CC

Roadmap for GEOSS & Copernicus
- Regional Data Hub
- GEO-CRADLE Network

Impact Analysis (WP7)
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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
Acts as “one-stop-shop” that offers free access and several discovery options to catalogs of data and metadata specific to the RoI
Abides by the GEOSS Data Sharing Principles

Complies with the navigation logic of the GEOSS portal

Strengthen the GEOSS portal & Alleviate its shortcomings
Methodological aspects for GAP Analysis

1. EO capacities
   Identified through inventorying of key EO actors

2. EO end-user needs
   Identified through in-depth end-user interviews of a representative sample

3. Indicators
   Characterize identified gaps and pinpoint where in the value chain they occur
Methodological aspects for GAP Analysis

Need for high quality end-user interviews & Country partner to drive intensive inventorying
The gap analysis is an ongoing task and is conducted on the basis of three sources of information:

1. Results on gaps from previous projects
2. Results on gaps from the GEO CRADLE inventorying phase
3. Results on gaps from the intensive desk research conducted to complement inventorying
Indicators

• EO capacity is a complex term
• During the 19th GEO Executive Committee Meeting, the need to streamline gap analyses in EO was recognized
• An action team was formed to streamline gap analyses in EO
Indicators

Geographic- Spatial discrepancy in the coverage of the observation capacities in regards to availability of data over the RoI.

Observational- Technologies and system for EO are not available or insufficient to provide the data and quality needed.

Structural- The connectivity and ability of data to flow freely within organizations or networks.

Qualitative/quantitative- EO products are available but not of sufficient timeliness, frequency or quality to be of use.

Capacity for use- EO products are available but there is insufficient technical capacity in regards to infrastructure and personnel to make use of it.
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Indicators

41 Indicators across the value chain

Data availability (real time, upon request, archives)
Data policy (free and open, commercial, restricted, etc.)
Temporal resolution
Number of geoportals used by end-users
Coordination with decision makers
Number of organizations with modelling and processing facilities
Range of satellite coverage
Etc.
Gap Analysis

Start with end-user needs, and successively go through categories of EO capacity

- Geographical: Is there EO capacity to collect data from the area from which it is needed?
- Observational: Is there capacities to measure and model attributes that are needed?
- Structural: Is there a problem with connectivity in the EO value-chain?
- Quantity/Quality: Is the quantity or quality of data satisfactory?
- Capacity: Does the end-user have technical capacity to use the EO product?
Total Responses and User Type

Total Responses: 260

Balkans: 183
North Africa: 59
Middle East: 15
Thematic Area

Most responses in:
- Food Security & Climate Change

Less responses in:
- Access to Raw Materials
- Energy
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Capacities and Position in Value Chain

![Graph showing capacities and position in value chain with countries on the x-axis and different capacities on the y-axis, including Space, In situ, Modelling, Data expl., Data own/prov, Value-adder, GIS/map prov., End-user w/ GIS, and End-user.]
State of the Art

Romania, Bulgaria & Cyprus (EU members)
Have ground receiving stations that are integrated into European level space programs

Western Balkans (not EU members)
Small countries with no space program and no space strategy
State of the Art

Greece, Turkey & Israel as more advanced

Turkey has its own satellite program, Greece part of ESA and integrated with European level space missions
Israel has large degree of maturity

Egypt
Own space program and space strategy

Tunisia
Space strategy defined 50 years ago, participation in EO efforts
Gaps Identified

EO is significantly dominated by the public sector
Private companies provide data products and resell satellite imagery to public sector

Reluctance to share data between organizations
Distrust between organizations – success stories based on a large degree on personal connections
Red tape for formal sharing between organizations
Projects allow for opportunity to cooperate, relationships established live on post-project and encourage data sharing

Lack of educational capacities (Western Balkans)
No life time learning
Education centered on geodesy, little remote-sensing capacity building
Gaps Identified

Large difference between countries and within countries

Advanced capacities developed in emergency response
Meteorological sector is advanced in most countries
UAE has well funded and advanced EO capacities
Several in-situ networks in Albania were offline at time of inventorying due to funding problems

Vulnerability to politics – lack of institutionalization
Organizations tend to be centralized and decision making posts are assigned at the political level
Changes in government and other political occurrences can stall or backtrack progress in an organization
Progress identified

Many individual success stories

- **TUBITAK UZAY** – own space program designed completely in-house, satellite capacity for all of Turkish territory
- **NOA** – Operates: A unique ColGS for Sentinels data distribution in SE Europe. N. Africa, and Middle East- the Center for EO based Monitoring of Natural Disasters in the RoI – offers freely satellite data from its X-/L-band acquisition antenna (EOS, NPP, NOAA/AVHRR, Metop, etc)
- **VojvodinaSume** – public forestry company, use of satellite imagery, UAV remote sensing and own in-situ networks for operations; share data
- **CIMA foundation** – sharing of processing data from DEWETRA model with Albania, Serbia, Lebanon, etc.
- **BioSense Institute** – LivingLab in precision agriculture; cooperation with Serbian government and private sector to provide data products in agriculture and environmental monitoring, large European project portfolio

**EU IPA and structural funds as well as project opportunities (H2020, crossborder, etc.) allow for capacity building in Balkans**

Use of satellite derived data by public institutions on national, regional and local level
thank you!
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