



Assessment of the Added-Value of Sentinel data for supporting mapping and monitoring of mining areas: The GeoCradle project

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Presentation abstract

The objective of the presentation is to report on successes and failures, weaknesses identification, inhibitors, improvement opportunities and achieved tangible outcomes from the implementation of the specific tasks of the pilot on “Access to Raw Materials” of the GeoCradle project: <http://geocradle.eu/en/regional-capacities/feasibility-studies/>. To achieve this goal, pilot sites (mining or post-mining areas) were chosen as feasibility studies so as to define the roadmap that facilitates the access and exploitation of mineral resources in extensively under-explored areas, thus creating well sustained businesses, in compliance with widely recognized environmental protection principles. A thorough communication with stakeholders and end users in the Region of Interest- RoI of North Africa, Middle East and the Balkans was elaborated in order to identify areas facing problems related to: (1) Development of a mapping and monitoring system of mining sites, and (2) Prospecting. Selected Institutions in the RoI were asked to fulfil a short questionnaire, with the aim to define potential pilot sites. Feasibility studies have been carried out on mining and post mining sites in Greece, Cyprus and Turkey, representing the most interesting areas from the point of view of the applicability of the EO methods. Integrated identification, collection, assessment and use of available multi-temporal Sentinel-1 & 2 data, for the time interval of 2015 to 2018, along with available maps and relevant monitoring information were included during the “the mapping and monitoring of the mines” of pilot project areas. Application of super resolution enhancement techniques of the Sentinel 2 data have been developed and applied.

The elaborated EO methodologies are useful for better management of the mining and post-mining areas and mitigation of their adverse impacts on the surrounding areas. Monitoring of quarrying activities using Sentinel satellite data can be established as a Tool on an operational basis for supporting the Inspectorate of Mines Department of the Ministry of Environment and Energy in Greece. Mapping and Monitoring of areas with lignite / coal mines can be also achieved on an operational basis using Sentinel 1 and 2 data. Synergistic use of the collected information along with the Sentinel-1 & 2 data can be used in the analysis as a base for the planning and rehabilitation of mining areas. Sentinel 2 data can also support mining prospecting activities of polymetallic deposits but integration with mining geologic information needs to be employed for successful interpretations. It is expected that the methodologies elaborated on the selected examples pilot sites will have a universal character and could be applied for other places in the RoI facing the same problems.

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