

Abstract

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GIS-based datasets of mineral deposits and man-made resources as valuable exploration tools for discovering potential ore deposits in Greece.

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Abstract

The development of a GIS based data management and visualization system for mineral and man-made resources and the realization of a predictive resource assessment is part of the ProMine project. In order to achieve this objective three types of databases are being created:

- Assessment of primary and secondary/anthropogenic mineral resources (including critical raw materials such as Ge, Gr, Mg, Re, Sb, W, PGE and REE);
- Prognostic prospect evaluation to define areas of high exploration potential.

Using existing and new data a multi-layer information system, based on GIS and covering the whole territory of Greece, was created. The system includes databases on mineral deposits, and anthropogenic / mining and metallurgical residues along with relevant geological, structural, geochemical, geophysical layers and other information from a diverse range of sources.

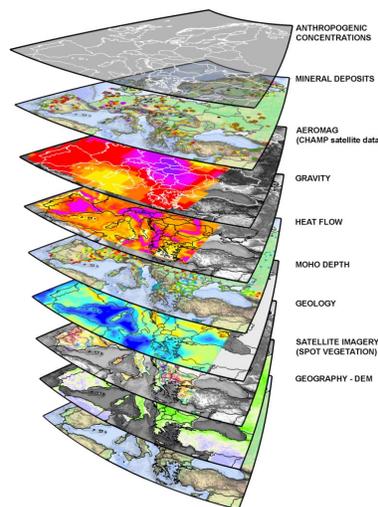


Figure 1: The GIS multi-layer information system.

The Mineral Deposit (MD) database is connected with the Anthropogenic Concentration (AC) database (Fig.2), which through integrated analysis and incorporation geological, structural, geophysical and geochemical data indicated prospective areas. These areas were characterized by the main commodity, the genetic type and the mineral association. The two new GIS-based map versions on Greek metallic and critical minerals, in conjunction with a new metallogenetic approach (initial approach of the mining districts database) delineated high potential targets for mineral exploration and discoveries at a range of spatial scales, geological environments and commodities (Fig.3). The entire information is contributing to the re-assessment of the economic value and growth opportunities of abandoned, ceased and / or unexploited state mine concessions in Greece.

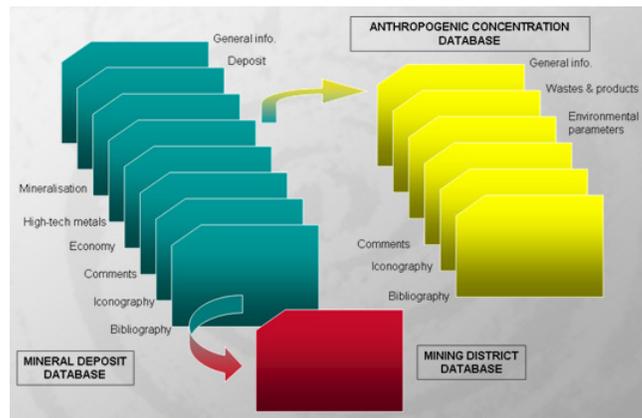


Figure 2: Interconnecting evaluation of MD and AC databases leads to mining district database.

Data interpretation of these datasets is especially important in the subsurface exploration of mature mining fields and regions, and in remote or previously un-explored areas.

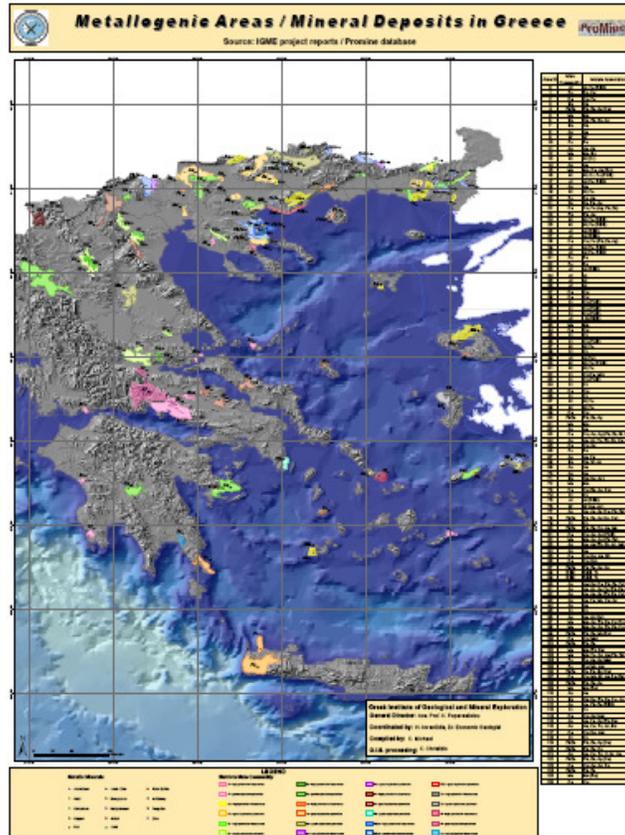


Figure 3: Metallogenic approach based on main Mineral deposits areas in Greece.

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