

## **GIS AS A TOOL FOR MINERAL RESOURCES ADMINISTRATION**

CAMPOS, M.S.<sup>1,2</sup>, MACEDO, A.B.<sup>1</sup>, NUNES da SILVA<sup>1</sup>, A.C.<sup>1</sup> Instituto de Geociências - Universidade de São Paulo, <sup>2</sup>Departamento Nacional de Produção Mineral

Techniques of Geographical Information Systems were used and tested to support the decision-making process in Mineral Resources Administration, to guide the concession system and to indicate favorable areas for different mineral commodities, taking environmental constraints into account, in a project with financial support of the Foundation for Support of Research of the State of São Paulo and the National Department of Mineral Production. Map and attribute data of the information planes (Geology, Geochemistry, Geophysics, Topography, Land Use, Environmental Protection, Mineral Titles) of the Iporanga 1:50,000 quadrangle were converted and georeferenced to make the GIS, which was analysed searching for favorable areas for lead and gold mineralization, using a knowledge-driven approach and a simple Boolean map combination method. Vein-type hydrothermal model for lead and exhalative and alluvial models for gold were used for making exploration models. Geologically favorable areas were further limited by eliminating areas subject to environmental preservation (by the Forest Code or by designation as conservation units) and areas already claimed for concessions, licenses or authorizations to mine. The methods and programs used (Idrisi and Intergraph Mapping Office) proved efficient to locate favorable areas, as compared with known mineral occurrences. The process was kept simple enough to be used in routine mineral administration work, at lower costs and more efficient than the manual methods used today.