

RESOURCE EXPLOITATION AND ENVIRONMENTAL SECURITY

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Exploration, development and exploitation are activities of relevance within the nature-man system. They affect a broad set of resources, some of which compete or are mutually exclusive. In finite domains that are typical of operational situations, environmental quality and resource sustainability are the basic targets to ensure supply of resources and the survival of human activities. Therefore, the value of a resource is in its contribution to the setting of a sustainable subsystem. The spatio-temporal characterization of such a subsystem is then fundamental in assessing the practical availability of a resource.

This contribution considers quantitative measures of representation of subsystems with have conflicting resource-environment components. The measures allow either to predict the impacts of resource exploitation on environmental quality, or the environmental benefit of sustainable exploitation. Geoenvironmental deposit models are to contribute to identify sustainable situations in spatial data analysis. Favourability Functions are part of a general mathematical framework for generating spatial predictions of events (or discoveries) that can be characterized by the presence of causal factors distributed in different thematic maps covering a same study area. Strategies of resource management can be easily developed to assist in resolving the apparent conflict between resource exploitation and environmental security. Several recent developments are discussed in this contribution