

GEO-INFORMATICS TECHNOLOGY FOR ECOSYSTEM ASSESSMENT A CASE STUDY, EL-MAGHARA, NORTH SINAI, EGYPT

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In drylands, limitation of water causes some potential constraints on nutrient cycling and system productivity. Moisture deficiency is also playing a major role in dryland system sensitivity to human use. Water deficiency along with impacts resulted from human activities can influence the quality and abundance of goods and services that the system provides. Because of the vulnerability of such system, sustainable development of drylands is highly dependent on providing decision makers with ample information about the potentiality embedded in the system, and the impacts some drivers of ecosystem change can inflict.

The present study was conducted in El Maghara area, one of the driest parts of Egypt, and is based on processed satellite data and field validation as well as laboratory analyses. A geo-environmental geographic database of the studied area was constructed. Remote sensing and GIS technology were applied to identify goods and services of the system and to monitor changes in land use and land cover. Integration of remotely sensed data and the spatial maps served as useful guide for terrain classification and to assess the suitability of surface data for specific activities such as agriculture or mining. Base maps, and thematic layers are prepared as potential GIS layers, and categorized to nine factor groups. Groups include geology, terrain analysis, climate, soil evaluation, water resources, biodiversity, socio-economic, environmental impacts, and remote sensing. Uncertainties of some remotely sensed data taken in different seasons and the danger that differences between time periods might have resulted from difference in data collection rather than from actual changes taking place on the ground was also discussed.