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Comparison of conventional and GIS/SRS based geological mapping of asbestos bearing areas in Northern Pakistan

Noor Jehan[1] and Irshad Ahmad[2]
[1]Department of Environmental Sciences, University of Peshawar, Peshawar
[2]National Centre of Excellence in Geology, University of Peshawar, Peshawar

Geographic Information System (GIS) and Satellite Remote Sensing (SRS) technologies have recently emerged to collect, store, analyze and manipulate diverse geological information related to mineral exploration and exploitation in Pakistan. However, very limited attempts have been made so far in Pakistan for effective applications of GIS and SRS techniques to produce digital geological maps. The present study attempts to evaluate and upgrade the conventional geological map of the asbestos-bearing areas located in Mohmand and Malakand Agencies and District Charssada. During this study GPS was used to mark the precise geographic locations of asbestos-bearing deposits and mines in the study area. Various GIS and SRS techniques including Geo-referencing, False Color Composite, Principal Component Analysis and Normal Vegetation Index were applied to LANDSAT TM image of the area to compare and edit the errors identified in the existing conventional geological map of the study area. Overall this study demonstrates that GPS, GIS and SRS are the best tools to improve and upgrade the existing manual geological maps used for mineral exploration and exploitation activities in Pakistan.