



INTERPRETATION OF KARST LANDFORMS BY ASTER DATA

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The Taurus Belt of Anatolia as the groundwater recourses basin for the southern (Mediterranean Region) and northern (Konya Closed Basin) extends through the Mediterranean coast. Karstic carbonate rocks are dominant in this belt. The karstification is also controlled by the morphic processes as well as the geological structure. The origin of the groundwater resources as polje, doline, ponor etc. which have typical forms could be detected and classified by the by the image processing for the large scale water resources management of the Taurus Mountains.

ASTER (Advanced Spaceborne Thermal Emission and Reflection Radiometer), which is the one of five different imaging instrument systems mounted to TERRA satellite (MODIS, MISR, CERES, MOPITT) moving 705 km. above the Earth surface, started to acquire reliable data after year 2001. Temporal resolution of ASTER is 16 days and swath-width is 60 km by 60 km. Besides, it is also possible to acquire schedule on demand for interested locations. ASTER has 3 visible near infrared (VNIR) bands in 15 m. resolution, 6 shortwave infrared (SWIR) bands in 30 m. resolution, and 5 thermal infrared (TIR) bands in 90 m. resolution components. ASTER data just after downloading to ground stations has been subjected to such processing and radiometric, atmospheric or geographical corrections have been made. Then, those products have been put forward to the end users. Level 3A, the one of semi-standart products of ASTER data, covers orthorectified data with minimized geometric distortion and

DEMxyz data.

After deriving slope image from DEM data included in ASTER L3A product, classified into 0-7 degree for distribution of plain areas. To identify grassland and meadow parts of the area, NDVI (Normalized Vegetation Index) was calculated. To extract iron-oxide anomaly distributions around ASTER scene, common band-ratio technique was used. Iron-oxides have an absorption feature in VNIR region of electromagnetic spectrum. AST B2 / AST B1 ratio can be used to clarify iron-oxide minerals. Spatial distribution of carbonate rocks around the area can be mapped using ASTER SWIR data analysis. Stacked color composite image (RGB - RBD Calcite, BR Dolomite, SI Calcite Index) was used to map carbonate rock units boundaries. Limiting the area of interest using ASTER carbonate analysis is the first step for karst landform decision. Overlaying of those derived data in ArcGIS software, dolin type karst morphology can be introduced by those four criteria.

Keywords: Karst Landforms, Doline, Remote Sensing, ASTER Data, Image Analysis