

# ***Derivation of Geomorphologic Information from Radar Data Using Geographical Information System (GIS) Mosul City – Case Study***

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## ***ABSTRACT***

*Radar data Hgt is one of the important sources used in many of geographical information system GIS. Such data are more accurate and efficient than spatial data. In addition, various geomorphologic, geologic and geographic data that could be dealt with in various geographical information could be derived due to the availability of attached spatial and digital information illustrated by tables showing geographical scene under study. Radar data are also characterized by the possibility of exporting data with various modes including DEM, DXF, XYZ, Arc Ascii, Geo Tiff etc. DEM that could be derived from radar data is the base for most of geomorphologic and geographical studies and features, such as geomorphologic analysis of area, geomorphologic imitation like calculating slope, terrains concavity and convexity, deriving information pertaining to hydrologic surface like atomic development, water division line and form coefficient. DEM could also be used in vision determination, roads planning and floods prediction.*

*This study aims at using digital elevation model(DEM) derived from radar data as part of Mosul to derive information related to Mosul geomorphology. This include the calculation of inclination coefficient, slope, direction and range of concavity and convexity.*

*Radar statements of the American shuttle N36Hgt are used as source for data to derive DEM using Global Mapping and Arc GIS softwares with their 3D analysis in addition to WMS software exported to Arc GIS to calculate inclination, slope and shadow analysis after transforming DEM from vector to raster.*

*Final practical outputs are in GIS software and they explain the quantity of data and information derived from DEM in the form of maps showing the geomorphologic features like contour, inclination, slope and shadows analysis.*

*The study sums up with the following:*

- 1. The accuracy of outputs derived by GIS to calculate inclination, slope, direction and shadow maps.*
- 2. The possibility of GIS to conduct mathematical operations on maps and analyze results in the form of maps to calculate inclination coefficient and analyzing results with maps.*
- 3. Results of map outputs show the position of inclination, slope and direction.*
- 4. The possibility of maximum use of radar data given the shuttle in various scientific fields, like geology, geomorphology, hydrology, geography, engineering and agriculture.*