

CREATION AND VERIFICATION OF DIGITAL ELEVATION MODEL (DEM) APPLIED TO SINAI PENINSULA

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ABSTRACT:

The concept of creating digital models of the terrain has been one of the continuous growths over the last 30 years as a result of spectacular advances in computer graphics and imaging technology, and parallel developments in the used software. At the same time, due to the development of data sources and techniques of **DEM** creation.

The main objectives of the current research are to create a **DEM** for Sinai with investigating the terrain classification and analyzing different interpolation techniques at different terrain types. The data were obtained from manual digitizing for 36-topographic maps, scale 1:100000 (Military Surveying), with contour interval 20 m, after reviewing, filtering and checking data investigations of the terrain classification were done. Then, the different methods of interpolation techniques are tested with different grid size for the three-terrain type (flat – rolling – mountainous).

The obtained data is about 940,624 points (34,263 from spots and 906,378 from contours) its elevations varied from zero to 2639 m with mean elevation 435 m, the average intensity is 15.54 pt./ Km² .

A grid- based **DEM** for Sinai were developed using Surfer7 software beside some auxiliary computer programs were designed by researchers. Furthermore, some applications of **DEM** such as relief maps and 3D viewing. Based on the obtained results, valuable and important conclusions were obtained.