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ABSTRACT

Land Cover Change & Environmental Analysis of Hebron District Using GIS & Remote Sensing

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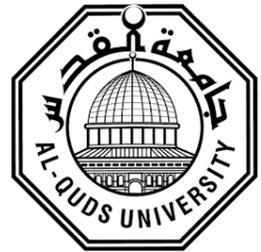
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Hebron district is selected in this project in order to assess several environmental issues using remote sensing and GIS techniques, Hebron district is the largest governorate in the west bank it contains many religious, historical and archeological sites.

The main objective of this project is to create an inclusive study for analyzing land-cover changes, and the environmental effect in Hebron district and certain areas within the district, this study expands from the year 1985 till 2019 using satellites imagery (Land Sat 7 ETM+, Landsat 5 TM, Landsat 8 OLI_TIRS, Sentinel). The study includes Land cover mapping, land surface temperature, particulate matter management, and certain indices calculated using Arc GIS and ENVI software to assess the environmental impact on the study area.

Data is collected from satellite imagery for the years (1985, 1995, 2000, 2005, 2010, 2019) using Landsat satellite, the evaluation of the Land Surface Temperature (LST), image classification and several indices including Normalized Difference Vegetation Index (NDVI), Bare Soil Index (BSI), and Normalized Difference Moisture Index (NDMI), and the particulate matter measurement through models and equations applied in Arc GIS software.

Land cover results from 1985 till 2019 show that the built-up area has increased from 54 Km² to 246 Km², also the rock area decreased from 134 Km² to 107 Km², the area of agricultural land



decreased from 79 Km² to 17 Km², also the area of barren land decreased from 775 Km² to 671 Km². Whereas the indices show that Hebron District has a low percentage of vegetation, and a large percentage of bare soil, and high-stress water. Also, there have been a few changes in the land surface temperature spatially and temporally where the maximum temperature was in the year 2000 at 54°C and the minimum was in 1995 at 16°C.

From an environmental perspective, Hebron is negatively affected by the increase of the built-up area and the decrease in agricultural land and bare land areas, so that it affects air quality, soil quality, plant growth, and flora and fauna diversity.