University of Technology
Computer Engineering Department

2014

Thesis Title	**Interpolation Techniques of Spatial Data Using Geostatistical Analyst in GIS**
Research Field	Geographic Information System
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Abstract

Global environment change has become a worldwide concern in recent years. Rainfall is an important climatological parameter, which is useful for researchers working in many disciplines. In this thesis, spatial interpolation techniques were implemented in a Geographic Information System (GIS) to study the spatial variability of monthly rainfall in Iraq. Ten years (2003-2013) of climate data (average monthly rainfall) from 24 weather stations distributed throughout Iraq obtained from Iraqi Meteorological Organization and Seismology were used in the analyses. To obtain optimal maps of rainfall the Tropical Rainfall Measuring Mission (TRMM) data products were used too. TRMM is NASA's first mission dedicated to observing and understanding tropical rainfall and how it affects the global climate.

Geostatistical Analyst in GIS is used for the production of digital maps and checking the data and results of the available methods within the software. The optimization of these methods based on globally recognized standards such as cross-validation criteria has been chosen and make them interactive and available on the client side using ArcGIS Server and Google Earth using KML (Keyhole Markup Language). Maps alone are compiled by the client using the web site browser. The interpolation techniques by Geostatistical Analyst in GIS have been used in this thesis and proved the very good representation of the distribution of rain in Iraq as a preliminary step to build a center concerned with the establishment of a national climate maps to take the necessary measures to avoid disasters.

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