

**GEOGRAPHICAL INFORMATION SYSTEMS AS A DECISION SUPPORT
SYSTEM IN INTEGRATED BASIN MANAGEMENT**

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EXPERTISE THESIS ABSTRACT

Water is one of the indispensable needs for human life on earth. Water, soil and other natural resources have an interaction with each other. Damaging one resource affects whole. Therefore, water resources management has to be planned as integrated. Integrated water resources management has been internationally accepted for equal, sustainable and effective water resources management. Geographical Information System (GIS) with its capability of integration and analysis of spatial, nonspatial multilayered information obtained in a wide variety of formats both from remote sensing and other sources has proved to be an effective decision support tool in planning for Integrated Water Resources Management (IWRM). In this study, basic and useful mathematical models were constructed with the help of satellite images for showing benefits of GIS as an spatial decision support tool in Akarçay Basin which was selected as study area. With the help of GIS and remote sensing techniques morphological characteristics of the basin was defined and hydrological model was created. The flow for the one of the sub basin of the Akarçay basin was calculated. Kriging method as a geostatistical analysis was used to interpolate depth of the wells, to map the ground water surface. Infiltration rate and empirical formulas were calculated for the relationship for between rainfall and ground water. Precipitation based water table model was constructed by using well data in the catchment area. This model helps defining sensitive areas by comparing watertable levels of low and high precipitation seasons. Main aim of this study is showing applicability of GIS, which is an effective tool for decision support systems around the world, as a basin management tool in Turkey. Using GIS tool for investment decisions will provide saving time and money thanks to high accuracy rate.

Keywords: Geographical Information System, Integrated Water Resources Management, Akarçay Basin, Decision Support Tool, Kriging, Watershed Management, Spatial Decision Support Tool.