

**Project Title: Evaluation of Spatial and Temporal Variation of the Water Table in Menemen Left Bank Irrigation Area Using Geostatistical Methods**

<b>Research Area</b>	Soil and Water Resources
<b>Research Program</b>	Soil and Land Information Systems
<b>Executive Institute</b>	International Agricultural Research and Training Center, İzmir
<b>Supporting Institute/s</b>	Ege University Faculty of Agriculture Department of Agricultural Structures and Irrigation, DSI II. Regional Directorate, Menemen Left Bank Irrigation Association, Menemen Chamber of Agriculture
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<b>Research Period</b>	2010-2013
<p><b>Project Summary:</b> In this study, the temporal and spatial variation of the groundwater's depth and quality, where is at Menemen Left Coast Irrigation area, is located at Gediz Basin in the West of Turkey, was evaluated by geostatistical methods. The research was conducted in two areas, one of these areas was selected at the beginning of the irrigation system, called 'Menemen', and the other one was selected at the end of the irrigation system, called 'Tuzcullu'. 132 groundwater observation wells were drilled in this study area. The groundwater depths were measured and groundwater samples were taken during the research period 2011 and 2012, in the rainy period (January-April), before the irrigation period (June), in the irrigation period (August) and after the irrigation period (October). It was determined, that the groundwater depth of Menemen and Tuzcullu rises in the rainy and the irrigation period and this situation becomes problem. The groundwater of Menemen location content high saline, allowable levels of sodium, sodium absorption ratio (SAR) terms 'perfect', 0,5-2 ppm of boron and 5-30 ppm NO<sub>3</sub>-N. The groundwater of Tuzcullu location contains excessive levels of saline, high level of sodium, SAR terms 'permissible', 1-3 ppm of boron and 0-10 ppm of NO<sub>3</sub>-N. When the temporal and spatial changes of the groundwater's depth considered, Spherical Semivariogram model may be used in the sampling interval 9100 m in Menemen and 1000 m in Tuzcullu. It was determined, when the groundwater's depth and quality parameters, such as percent sodium, sodium adsorption ratio, electrical conductivity, boron and nitrate nitrogen, the sampling interval may be 620 m in Menemen and 1000 m in Tuzcullu. According to the quality parameters, it was determined that Spherical or Exponential semivariogram models may be used in Menemen, Spherical semivariogram model may be used in Tuzcullu.</p> <p><b>Key words:</b> the depth of groundwater, the quality of groundwater, geostatistic, spatial and temporal variation, Gediz Basin</p>	