SPATIAL VARIABILITY OF SOME SOIL PHYSICAL AND CHEMICAL PROPERTIES FOR ALLUVIAL SOILS BETWEEN EUPHRATES AND TIGRIS USING TIME SERIES ANALYSIS.

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ABSTRACT

Spatial variability of some soil physical and chemical properties were studied for 31 km transect between Euphrates and Tigris the central concept of every unit map was detected. The pedons are morphologically described and soil sample were collected from the horizons and prepared for laboratory analysis. Particle size distribution, bulk density, soil salinity, exchangeable sodium Percentage, total carbonate and cation exchange capacity were measured. Ten time series models were postulated to identify the suitable model by AIC and to determine the model parameters and calculates the coefficient of variance.

The results showed that the coefficient of variance ranged between 5.95-120.04% , 4.89-8.37% , 104.1-109.9 % for percentage of sand , silt and clay respectively . The time series analysis showed that there are suitable model MA(1) for sand variation and AR(1) for silt and clay , while the suitable models for chemical properties were AR(1) for soil salinity variation with coefficient of variation 23.9-42% , ARMA (1,1) for ESP variation for Ap and C_2 horizon while AR(1) , MA(1) and MA(2) for CEC and total carbonates.

The results of autocorrelation were low 0.188-0.488 for all studied properties, the autocorrelation were high at 250m for percentage of sand, EC, total carbonate and ESP, while the highest value was 10000 m for bulk density.

Key words: spatial variability, time series, coefficient of variance.