Application of kriging meteode the example Krupanj municipality, Serbia

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The basic idea of geostatistics is the use of spatial coorelation under the spatial property which is analysed in order to improve its spatial interpolation. There is number of geostatistical methods for the interpolation of the spatial data.

In the paper using of Kriging method, which belongs to the often used geostatistical techniques in cartography is discussed. Kriging as a method contains a number of techniques, such as: simple kriging, ordinary kriging, indicator kriging, universal kriging and disjunctive kriging.
Kriging estimation is based on the use of data from the control points, which are assigned to the corresponding coefficients. Control points actually represent sampling sites with their characteristics. Area was explored us Krupanj, located in the western part of Serbia. Krupanj lies at 44 ° 21 '34 " latitude and 19 ° 21' 26" longitude. The area of 342 km2 was rfesearched where 800 samples of surface soil were taken for further analysis. The data obtained were proceeded to thematic maps (pH in nKCl, K2O, P2O5, and humus).
During data processing we used the ArcGIS program and its extension Geostatistical Analyst. In a given extension the ordinary kriging with irregular arrangement of points was used. The technique of ordinary kriging assumes that the local mean value is not close or equal to the mean value of total nimber of sampling points.
The estimation was made only based on the nearest sampling points.
After the completion of the assessment in the selected grid, the determination of the predicted and actual error estimates, which convirms the reliability estimates and the spatial quality of the selected model was computed using the algotithm. Assessment must be impartial and made so that the variance of the difference between actual and estimated values in selected points of the smallest possible.
The obtained two-dimensional maps created from the data of measuring points may overlap and analyzed with any other layer in a GIS environment, covering the investigated area. Furthermore, in a very simple manner, an existing map can be classified to the optimal number of classes depending on the desired level of separation of individual characteristics.
Kriging is the optimal method of interpolation because it provides the best estimate of the unchanged values of parameter in analysed point, where interpolated values correspond to the values of parameters in the points with the performed measurements. The advantage of kriging method was allowed estimation of variance for each sampling location that is displayed on maps or diagrams with kriging errors reliability estimates.

In pedologic heterogeneous region, kriging analysis can help identify causes of change and planning of optimal sampling schemes for the required degree of reliability of these estimates. Therefore this method can be recommended for assessment and mapping of unsampled regions.