MAPPING AND CLASSIFICATION ON COMPUTER OF LANDSCAPE HYDROLOGICAL COMPLEXES

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ABSTRACT

The investigation of the hydrological processes and phenomena with taking into account the landscape pecularities of watercollectors of river is of the greater scientific-practical inportance as in working out of the hydrological forecasting in conducting of hydromeliorative measures and mainly in making the engin•ering-hydrological calculations of course the most important tusk is the analysis of the landscape conditions of the investigated territory. Landscape-hydrological researches are among interdissiplined directions of the geographical investigations. The initators of the development of this direction was V.G. Glishkov (1930-1961) and then this direction found its further development in works of R.I.Horton (1948),B.G.Polyakov (1947), I,X.Davidov (1947), M.I.Lvovich (1963-1974), Ai I.Subbotin and L.M.Coritniy (1981),A.Antipov (1988) etc.

INTRODUCTION

The programming and informational providing of landscape hydrological researches (mapping and classification).

According to the opinion of G.I.Shvebs the landscape-hydrological investigations in the methodological baek-grounds are based on the systemic conception. In its turn the systemis modelling in the landscape-hydrological researches could not be considered without the modern computers. With this aim the complex of applicational program "LAND. RIVER" has been worked out by us which consists of the following subprograms: "EVCLID","L1NORMA","L2NORMA","SUPREM","MAXALNOB","DGERMATU" and the series of systemic procedure.

The complex of program is composed on the algorythmic language "FORTRAN ST" and is realized at CS of Baku State University on the US 1035 type computers in the operational system OS US of 6.1 version. While working out of the program the dialogical system of collective use "PRIMUS" 2.5" and the system "ARGUS" for programming had been applied. The program was loaded by the complex of the program "PRICLAND" which is the one of the components of the package of applied program "GEOLAN".

In the programs the different function of distance (Euclidian distance,L1-norm,Lp-norm,Supremum-norm,the distance of Makhalanobis,the measure Dgefis-Matuoits) which turn to subprograms of the package of programs "GEOLAN" by means of the operator CALL for mathematical-statistical,infor

Within the aim of the finding out the landscape-hydrological complexes of the investigated territory the clusteral analysis by means of the function of the distance of Euclide which is expressed in the from of:

$$d(X_i,X_j)=(SUM(X_{ik}-X_{jk})^2)^{0.5}$$

where $d(X_i,X_j)$ -is the Euclide distance, X_{ik}-the amount of "k" changeable on the "i" objekt.
B.Duren and P.Odell (1977) pointed out that in its just $d(X_i,X_j)$ is the distance between the two objekts of cluster(grdup), which must not exceed some wedge meaning "R" define maximally allowed diameter of subset,forming the cluster.
For the defining the value of $d(X_i,X_j)$ we used the program "EVCLID" from the package of applicational program "GEOLAN" worked out by A.A. Nabiyev in the operational system of OS US on the algorythmic language of "FORTRAN ST".

In the first stage of analysis all the final data are written in the from of two matrix. In the lines of both matrix the number of the names of the water collectors of rivers according the above-mentioned order are indicated and along columns the data of flow of rivers are shown on the first matrix and landscape data of their water collections on the left one. Then these data are perforated and were checked up with originals of final data.
On the second stage of the analysis these two files(groups) of final data put on perfocart were given to the computer 1035 type in scientific research centre of calculations being under the obey of Baku State University. After receiving the results the amounts of $d(X_i,X_j)$ and dendrograms of the process of clusterization had been got.
On the third stage the "Optimal Level Clusterization"(OLC) of both dendrograms was chozen in such condition that each cluster chould have two oojects as minimum. So chosen by us OLC had an amount of 150 (70 %) for the landscape indications and 90 (70%) for hydrological indications. The amount of 70% of data of objekts are similar to each other but numbers 150 and 90 are the values of $d(X_i,X_j)$ on the

chosen OLC in accordance for the landscape and hydrological data:

the 1st group: r.Gandjachai-s.Zurnabad,r.Kurakchai-s.Dozular,r.Carcarchai-s.Asceran,

the 2nd group: r.Goranchai-s.Ukari Agdjakend,r.Khachinchai-s.Vanklu,r.Condalanchai-s. Kirmizi Bazar ,r.Curuchai-s.Tug, r: Atakurt-s.Tug

the 3rd group: r.Hakarichai-s.Abdalyar,r.Tartarchai-s.Tattar(Madagiz)

On the basis of this grouping the map-scheme entitled as landscape-hydrological complexes of Caucasis Minor had been composed by us the method of cartogramming.Landscape-hydrological map printed on computer IBM PC AT