

PROGRAM SUPPLY FOR THE COMPOSING OF THE
STRUCTURAL-ANALITICAL MAPS OF NATURAL-
TERRITORIAL COMPLEXES ON THE BASE OF US
OF COMPUTERS AND IBM PC

Nabiyev Alpasha Alibek &

370145, Baku, Azerbaijan,
Z. Halilov Street, 23
Baku State University
Geographical Faculty

On the modern stage of the development of the science, technique and human society the problems of the natural surround raised to its critical point and received the global character the settling of which demands all-round analysis of natural factors in a space and in time according to separate regions.

Taking into account that the solution of the ecological problems needs systematic analysis of components and factors of natural surround, the program supply for the mathematical map-composing modelling the structural peculiarity of components of geographical landscape and as a whole has been worked out by us.

The development of the complex of program is fulfilled at CS of Baku State University on the computer US-1035 and on the personal computer of IBM PC AT.

Taking into account demands of the computer cartography the science which is developing on the joint of informations and geography while developing the program of supply the algorithmic language of programming "FORTRAN-ST" (for US computer) and dialogical language BASICA (for IBM PC AT) where machine graphics is developed had been used by us.

Fortran-programs are composed in the operational systems OS US of 6.1 version by means of the systems of collective use "PRIMUS" and the system of collective use "FOCUS". Worked out complex of forttran program "LANPRIOT" consists of two parts: 1. Systemic procedure "SYSLAN", which is characterised according to the followings. "SYSLAN" -is designed for fulfilling various systemic procedures as for example copying out information from one magnetic disco to the other of from the magnetic ribbon to the magnetic disco; the ad-

dition and taking away the package of geo-information and program organized by the direct, orderal and indexal-orderal methodic of contact. "LAN.PROG" - is aimed for the modelling of the river grid (classification and finding out of the structural of the interrelations with the other components of the landscape by the method of the clasteral, factorial and regressive analysis) modelling of the soil cover (investigation of the space structure of the soil areals and the classification of them by the degree of the chemical pollution, contrast, complexness, nongomogen and others) by the methods of the clasteral, informational, mathematical-statistical analysis and so on); modelling of the plant cover (investigation of the variety of species and gens of the plant societies, classification and finding out inter-relation of the plant cover with the other covers of the landscape composing of the structural-analitical maps on biological productivity and on the degree of the spoiling of the natural state and others by methods of clasteral, factorial, regressional analysis and others); modelling of form and types of the relief (approximation of the separate forms of the relief, investigation of the investigation of types of the relief with the types of soil-plant cover, investigation of the interrelations with other elements of the landscape by the methods of the mathematical-statistical, clasteral, factorial analysis with the use of the methods of the theory of accidental functions); modelling of the lithological cover (finding out the structural interrelations of the covers of the quantitative decomposition with the other covers of the landscape formation of the place by methods of mathematical-statistical modelling and others); modelling of the hydro-climatical elements of the landscapes (investigation of the correlational interactions of the hydro-climatical elements of the landscapes with its other elements); modelling of the space structure of the landscapes (finding out complexness, contrary, nongomogens, splittedness of the landscape structure of the region, classifi-

cation and the factorial analysis of the structural accordance between elements of the landscape by the method of the lateral, correlational, regressional, factorial informational-statistical analysis and others).

Basic-program is composed in the operational system of MS DOS 3.3 version which is designed for composing the colour structural-analytical maps (complex of Basic-program is called "GEOGRAPHICAL EDITOR" (GEOEDIT) of the landscape structure of the place.

By means of this program of supply physico-geographical regionating of the Eastern part of the Caucasus-Minor on the basis of the structural peculiarities of the components of the geographical landscape is conducted by us. While doing it the large-scaled geological, geomorphological, soil, geobotanic, landscapian, hydrological, topographic maps and others had been used by us.

At first in the grid of squares with side size of 5 sm. equal to 100 km². square had been put into all maps and then all the territory of the investigated region was divided into 273 square 100 of which were full ones. Then for each square above-mentioned characteristics of the space structure of the landscape and its components were found out and other thorough analysis of the mathematical-geographic models the physico-geographical areas of the investigated region was distributed by us. In the last space structural-analytical maps were composed on the printer of personal computers IBM PC AT.

EXAMPLE PROGRAM SUPPLY AND RESULT.

1. Classification of "Landscape-Hydrological complexes"

The function of the distance of Euclid:

$$d(X_i, X_j) = \left\{ \sum_{k=1}^N (X_{ik} - X_{jk})^2 \right\}^{\frac{1}{2}}$$

where $d(X_i, X_j)$ - is the Euclidean distance, X_{ik} - the amount of "k" changeable on the "i" object, X_{jk} the value of "k" changeable on the "j" object.

2. Program Supply.

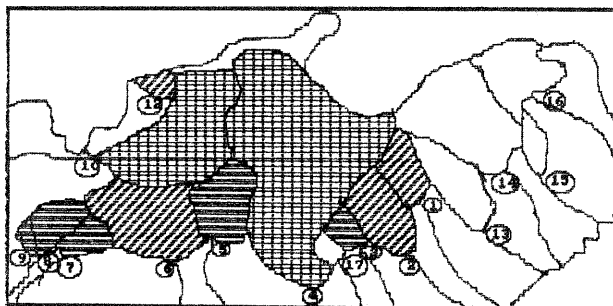
Programming language-"FORTRAN-ST".

```
Operational system OS US 6.1 version.
//CLUSTER JOB MSGLEVEL*(1,1),MSGCLASS=P
//KAVKAZ EXEC FORTGCLG,PARM.FORT=SOURCE
//FORT.SYSPRINT DD SYSOUT =P
//FORT.SYSIN DD *
C NABIYEV ALIPASHA ALIBEK
    DIMENSION X(200,200),S(200,200)
    READ(5,4)N,M
    PRINT 4,N,M
    4 FORMAT(2I3)
    DO 5 I=1,N
    READ(5,6)(X(I,J),J=1,M)
    WRITE(6,6)(X(I,J),J=1,M)
    6 FORMAT(10F8.2)
    5 CONTINUE
    AN=N
    DO 100 I=1,M
    DO 100 J=1,M
    RASTO=0.
    DO 50 K=1,N
    RASTO=RASTO+(X(K,I)-X(K,J))**2
    50 CONTINUE
    S(I,J)=SQRT(RASTO/AN)
    WRITE(6,6)((S(I,J),J=1,N)
    100 CONTINUE
    STOP
    END
```

```
/*
//LKED.SYSPRINT DD SYSOUT=P
//GO.FT06FOO1 DD SYSOUT=P
//GO.SYSIN DD *
*****Landscape - Hydrological data*****
//
```

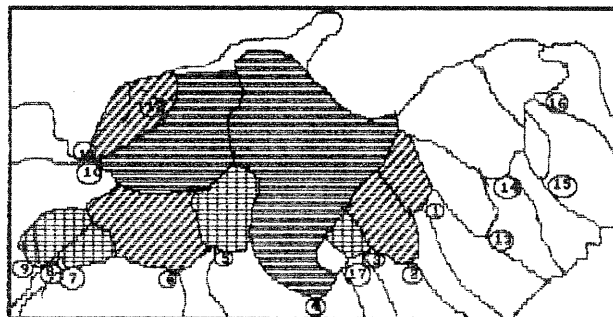
RESULT

The Classificational map of the River Systems according to the similarity of the Hydrological data -Rivers Caucas Minor



The measure Euclidean Distance: $d(X_i, X_j) = (\sum (X_{ik} - X_{jk})^2)^{1/2}$
 Classification Level similarity $d(X_i, X_j) = 90(70\%)$
 Name River Systems: 1. Janjaohai-v. Zurnabad, 2. Gurakohai-v. Dozular, 3. Jpranohai-v. Jukhari-Agjakend, 4. Tartar-v. Madagiz, 5. Khaachinohai-v. Vanolu, 6. Caracohai-v. Askeran, 7. Gudaracohai-v. Red-Basar, 8. Cusuchai-v. Tug, 9. Atagut-v. Tug, 10. Hekasihai-v. Abdallar, 11. Zabukohai-v. Zabukh and others.

The Classificational map of the River systems according to the similarity of the landscapes complexes data -Rivers Caucas Minor



The measure Euclidean distance: $d(X_i, X_j) = (\sum (X_{ik} - X_{jk})^2)^{1/2}$
 Classification level similarity $d(X_i, X_j) = 150(70\%)$
 Name River systems: 1. Janjaohai -v. Zurnabad, 2. Gurakohai-v. Dozular, 3. Jpranohai-v. Jukhari-Agjakend, 4. Tartar-v. Madagiz, 5. Khaachinohai-v. Vanolu, 6. Caracohai-v. Askeran