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ECOLOGICAL RATING OF GEOCHEMICAL ANOMALIES (RESEARCH, CRITERION OF A RATING, ECOLOGICALLY-GEOLOGICAL MAPPING)

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The region of researches is dated for the maiden patch of the Crimean Mountains (Eastern Crimea). Pursuant to the biogeochemical geographical demarcation the given terrain falls into to the Crimea-Caucasian mountain zone [3].

The detail researches are made in a field season of 2003 year in limits of Sudak synclinorium (Eastern Crimea). The structure of Sudak´s synclinorium is derivated potent (not less than 3500—4000 m), strata Bathonian, Callovian, Oxfordian, Kimmeridgian and Titonian structural stages (more ancient deposits not eroded). A composition of deposits participating in a constitution of synclinorium, basically terrigene-clay (often these deposits have nature of flysch). In a constitution of a western part of synclinorium the relevant role belongs to to reef massive limestones of oxford, and in Toklucs range and on a peninsula of Meganomas — of Titonian´s conglomerates. Fissile neotectonical raising predetermine vigorous erosion, geologic youth of landscapes [1, 6].

Characteristic of the given terrain is the underdeveloped edaphic profile, prevail soils of rock debris referred. Specifity of mountain terrains is the high power engineering of a relief conditioned its strong ruggedness, large difference of altitudes, that slows down intensity of pedogenic processes [2].

The vegetation is scanty, herbage prevails with mean density of projective cover less than 50 %. Arbors and the bushes have focal distribution. On declines of mountains grows more often stunted shiblyak. The repeated attempts of simulated landings of pines on declines of mountains have failed. The researches of scientists, conducted on the initiative Sudak´s silvics have shown, absence of the depredators, both in an assemblage of rootlets of arbors, and in stock part of plantations.

In this connection by the purpose of researches was the analysis of a spectrum ecologically-geochemical of the factors conditioning depressing of phytocenosises as a whole and the arboreal forms of plants personally.

For achievement of an object in view a number of problems is resolved:

1) In a field season of 2003 year in limits of Sudak´s synclinorium are made complex test of a system: "rocks - soil-vegetation";

2) In cameral season is carried out quantifying a humus in soils (on a Tyurin´s method);

3) The contents of carbonates in soils, degree them salinity is determined, is studied грансостав (on standard methods);

4) In rocks, soils, green on the basis of semiquantitative spectral analysis the contents of a number biophil elements and elements of 1-3 classes of rick is estimated.

As a whole migration is characteristic gentle for the nature of Crimea at outwash of soils. Elements of accumulation in a landscape are Cs, Cr, Co, Ag, Sr. To category of technogenic elements collecting in landscapes, concern Be, Ni and Cr.

The chemical barriers in the data landscapes are expressed is gentle, the major value among them has a biogeochemical barrier - accumulation of trace substances in humic horizon. The smaller role is played sorbate by a barrier.

The biological reactions, reference for the given region are miscellaneous and are determined by mutable concentration and ratio of many chemical elements, lack of iodine (95%) and sometimes by lack of a cobalt (31%), copper (28%), zinc (24%), excess in some cases of molybdenum, cobalt, copper, lead, zinc, strontium and other chemical elements [3]. The excess entails any of a chemical member in biogeocenose of a different kind morphological and physiological deviations in development of alive organisms including for plants.

Within the limits of an studied standard site in field routes changes for arbors repeatedly were fixed. For pages of an ouk were watched spots of chloroz, the needle of pines had yellow tint.

The key sites are dated for regions of development of rocks of a different structure and age. 40 key sites in general were gobed up, from which one 144 samples on lithogeochemical and biogeochemical researches [4, 5, 7] are selected.

The analysis of a degree of security of soils by a humus has shown, that within the limits of a mining part the majority of the

studied edaphic differences are characterized under the contents of a humus as not sufficial provided, the exception is made by soils of apron plains and girders, it is conventional - used for an agricultural production.

The degree of soils salinity is in direct relation to remoteness from the sea. To a category very much hardly - salt (8.7 %) are referred soils the peninsulas, selected from coast of Meganomas (50 m from a water boundary).

The analysis of distribution of trace substances in rocks, soils and green has shown their close intercoupling, that visually it is visible on fig. 1.1.-1.3.

The confrontation of the obtained data on a microelement structure of soils with a clarke of rock sphere, has shown, that the oxford limestones contain in a condition of dissipation, i.e. the clarke of concentration is lower 1.

In concentrations near the clark the members in Callovian and Kimmeridgian sandstones and titon conglomerates (fig.2.2) are contained, exception make lead, chromium, vanadium having spacecrafts > 1.

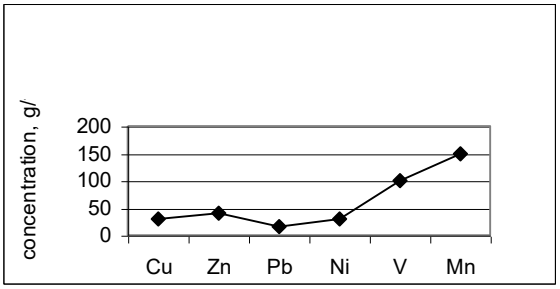

Figure 1.1. Content of microelements in Callovian sandstones, point 6.

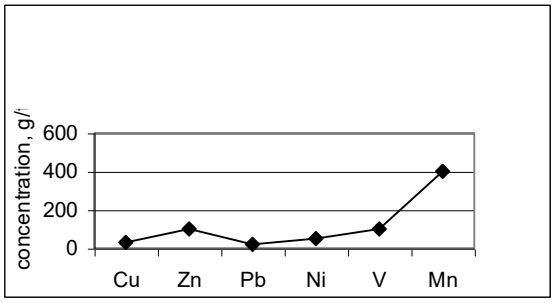

Figure 1.2. Content of microelements in soil, point 6

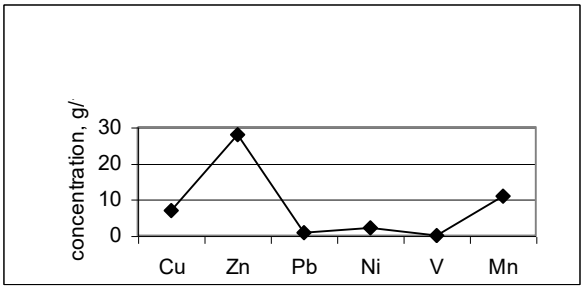

Figure 1.3. Content of microelements in foliage of oak, point 6

The maximum values of clarkes of concentrations of the spacecraft > 1 have titon sandstones, Kimmeridgian and Barremian-Aptian clays for copper, zinc, lead, nickel, cobalt, chromium, vanadium and molybdenum.

As it is visible from the data presented on figures 1.2, 2.2. in soils of general tendencies are inherited from a structure of pedogenic rocks, that is conditioned by low power of an edaphic cover, gentle intensity of processes of pedogenesis, low contents of a humus.

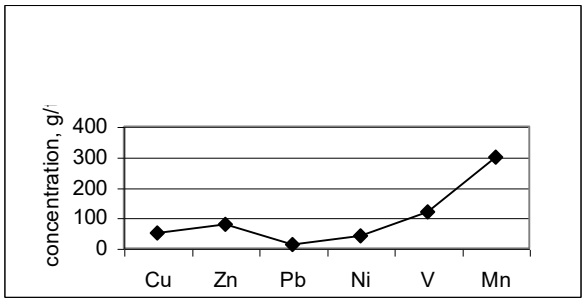

Figure 2.1. Content of microelements in Titonian conglomerates, point 11

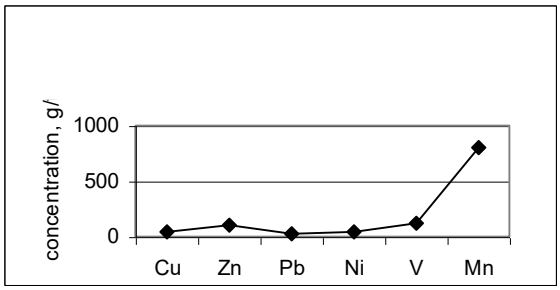

Figure 2.2. Content of microelements in soil, point 11

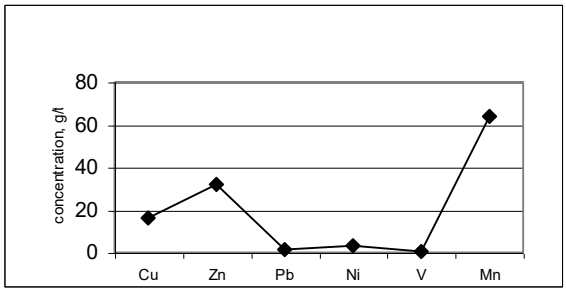

Figure 2.3. Content of microelements in foliage of oak, point 11

In a collocation of information of a microelement structure of soils with values of maximum allowable concentrations (MAC), the factors of concentrations on MAC (Kmac) were counted. The estimation of a category of pollution of soils was executed with allowance for of class of danger of a chemical element.
The general tendency of the heightened contents in soils of association from three members is detected: a nickel, cobalt, chromium.

In soils developed above Titonian sandstones and conglomerates, and Kimmeridgian sandstones and clays paddingly capture heightened concentrations of cuprum and

zinc. On set of the obtained data the majority studied is model from key sites 1-3 classes of danger are referred to a category moderately dangerously - contaminated by elements.

On technogenic landscapes in a structure of bottom sediments the intensive accumulation - zinc and nickel is captured.

As it is visible from the presented data (fig.1.3; 2.3) in pages of arbors of general regularity of distribution of members detected in lithogenic substratum, are inherited and in a structure of green. That in a complex with the low contents of a humus, heightened contents toxicants in soils and pedogenic rocks, alongside with the detected tendencies to a salification of soils and in a complex instigates depressing the arboreal forms.

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