The mechanism of formation of magmatogenic centrosymmetrical structures (ring-structures) in the Ukrainian Transcarpathians

Reconstruction by methods of mathematic simul ations

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In this paper under Transcarpathian we mean the area of ininterior Carpathians containing Pieniny Klippen Belt, Transcarpathian neogenic intradeep and a zone of its articulation with Pannonian basin. To northwest the intradeep transfers in an East-Slovak trough and in a southeast - in Ĕaramuresh trough. The Transcarpathian is parted by submeridional flexure-like ridge of Vihorlat-Guta on western (Chop depression) a trough and east (Solotvyno depression). In southwest part Chop depression is located Chop chain of the buried volcanoes. It begins in Slovakia and extends to southeast at length of 120 kms at breadth from 5 up to 15 kms. The volcanic structures of Berehovo hills are referred to Chop chain of the buried volcanoes and were by object of examinations.

The Berehovo hills is coincidental with Berehovo tectonomagmatic uplift tian acidic volcanicity and good safety of the formed at this time structures. Magmatogene of structure Berehovo hills are located in places faulted. This one is characterized by intensive manifestation of Tortonian-Sarmatian acidic volcanicity and good safety of the formed at this time structures. Magmatogenic structure of Berehovo hills are located in places of faulted stress of blocks of Preneogenical basement and in zones of increased permeability (faulted zones). These structures at a different periods of magmatic and postmagmatic differ among themselves on a degree and shape of a manifestation. The collapse calderas are referred to large structures. The blister cones are referred to structures of the second order. They are located as in boundaries collapse calderas, as apart. In modern relief they are represented as separate uplifts.

All these structures are referred to magmatogene ring-ones of a central type (MSCT). Their main properties are: long-lived centre; round-like contours; cylindrical, cone-like or centrosymmetrical shape; magmatic genesis.

The fissure paragenesyses of different ranks are widely advanced in boundaries of the MSCT Berehovo hills. These paragenesyses are parted on two basic types with the help paleovolcanic reconstruction. The types of fracturing in boundaries MSCT depend on the structure-forming factors. First of them is the factor of realization of regional strengths. The disruptions and fractures-creating are caused by these strengts.They have been distinquished by deformation analysis. Together with activity of regional stress fields, the network of radially-ring fissure paragenesyses is formed. In the most cases the active magmatic cores of MSCT are the cause of rising paragenesyses of radially-ring faults. Their activity is the second factor. The correlations of gravitational forces, thermoelasticity, autonomic regional sign-variable movings of magmatogen structures cores and regional forces of compressions - tension were explored by methods of mathematical simulations. Calculations, were carried out for MSCT Berehovo hills. They illustrate the dependanse properties of the total tension fields on shape of magmatic cores of central-type structures, degree of an anisotropism of host rocks and on character of their burial.

The critical values of the stresses have generated a typical radially-ring network of the faults around of cores MSCT. These values are amounted by active behaviour of the cores. The conical and cylindrical cracks-in-tension, differently oriented systems of shear cracks and shtockwork-like zones fissures are arised during sign-variable vertical displacements of the SCT magmatic of cores. The fields of stresses are characterized by the stable subhorisontal-subvertical orientation of axes of main normal stresses in boundaries of magmatic cores. These local fields of stresses and regional ones distinctly differ on spatial orientation. The forming of shtockwork-like fissures is possible at activity of cores of magmatogene structures. At uplifting of hard cores around of themselves these conjugated fractures are formed, and at downfalling such fractures are formed in interior zones of cores.

Realizated deformation analysis and applying of methods of mathematic simulation of the MSCT development enable us to make further reconstructions of mechanisms of MSCT forming and arising fissure paragenesyses in their boundaries.