

ABOUT THE KEY FOR THE RESEARCH OF INHOMOGENEITY AND DEFORMATION OF THE PLANET CRUST. Khavroshkin O.B.¹, Tsyplakov V.V.¹, Raskhozhev V.N.² ¹Schmidt Institute of Earth Physics, RAS. E-mail:khavole@ifz.ru, ²The Voronezh State University. E-mail: raskhozhev@phys.vsu.ru.

1. The Earth. The decoding cosmic photographs of geological structures and the catastrophe theory. Seismic wave dynamic and strain field picture in case of inhomogeneous crust are described by the theory of catastrophes. Isoseismic curves and seismic caustic curves are connected with elementary catastrophe of wave fronts. In seismically turbid environment occurrence of caustic curves (or caustic) is inevitable. Concentration of seismic wave energy is come about in forms caustic. Energy can surpass background many times over and to form on a day time caustic surface, as well as in optical systems, original structure. The time day surface of the formed caustic structure will have deformed geological medium. Loss of stability and destruction (transformation) of the geological structure is one of objects of research of the theory of catastrophes. If geological structure with areas of instability influences of an intensive seismic wave train forms in its volume one of figures of catastrophes. So the new defect (foil) reflecting the form seismic caustic appears. According to properties of the seismic environment and waves these caustics can be formed and are classified. Considering a terrestrial surface as the projection of the three-dimensional structures which are cut off by destructed processes, allows reveal caustic pictures for case at various the original of cartographical and photographic materials (cosmic photo). Tested work was carried out on geological and geomorphologic areas of Pamirs, Tan`-Shan`, Pamirs-Altai and other territories. Thus the following was found out. All images are easily decoded not only on space pictures of M 1: 2.5 000.000 and 1: 5 000.000, but also under initial tectonic both topographical circuits and maps. The sizes of figures of elementary catastrophes on district are from first tens up to hundreds kilometers. Decoding of various forms is variably and depends on the geological structure of region. So we know after examination of the cosmic region picture new information about inhomogeneous geological medium and deformation fields.

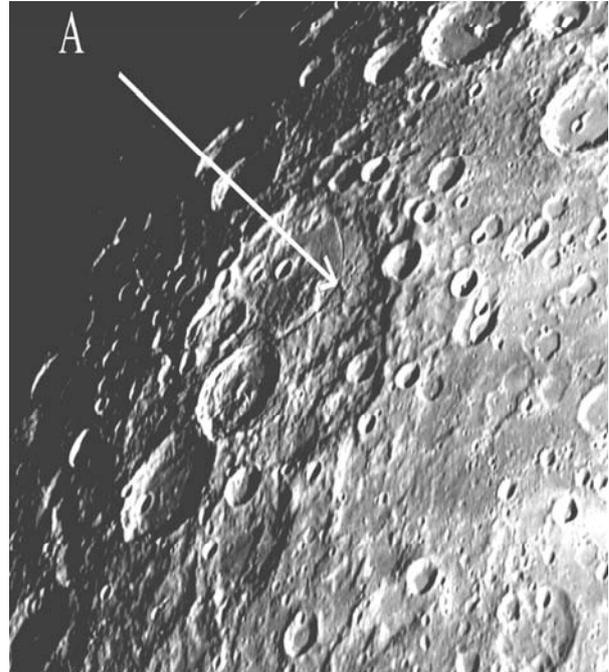


Fig. 1

2. The planets of terrestrial group. If planet is tectonic active the previous case has a place. The Moon is typical tectonic non-active object and the cosmic region pictures have few peculiarities.

3. The Moon. On first look the Moon crust has in general only craters surface because tectonic activity is absent. Therefore only crater appears after new meteoroid impact. These imagine is very simple. Really part of Moon surface is covered by thin layer of regolith and a dust. Seismic waves in the moment of meteoroid impact and after it which emerge from lithosphere on surface form the caustic figures. Seismic wave field from moonquake is existing long time and forms figures likeness acoustic Khladney pictures (fig.1, arrow **A**) on day surface. Unlike acoustic case these pictures will be instable, because next impact will destroy it.