LANDSCAPE AND GEOMORPHIC SURVEY OF ZHAMANSHIN AREA, NORTHERN KAZAKHSTAN: PRELIMINARY REPORT ON 1992 FIELD TRIP DATA

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ABSTRACT. June 1992 geographical expedition to Zhamanshin crater area made a landscape and geomorphic survey of this impact structure. 42 observational points in the area of 300 sq. km give new data on the geographical processes in the impact crater. The data obtained could be applied to search for unknown impact structures anywhere through the traces of such features in landscapes.

INTRODUCTION. Studies of the terrestrial impact strucures were connected mainly with geologic (in broad sense) methods. We have undertook an attempt to study the natural complexes of the impact structure with the usual geographic methods - landscape and geomorphic survey. Such approach could help to recognise unknown now impact structures through their traces survived in landscape - geographical complex most sensitible to the changes of environment.

CHOISE OF THE OBJECT AND GENERAL DATA. High degree of knowledge and prominence in modern topography define Zhamanshin crater as suitable example to begin geographic investigations of the natural complexes of terrestrial impact craters.

Zhamanshin stow is located in semidesert plain of the Northern Kazakhstan (48°20'N, 60°58'E) with topographic levels of 150-300 m. It looks as planimetricaly isometric depression of 100-150 m deep and have 13-km diameter between the rim crests. It is relict of impact crater aged around 0.75 m.y. [1].

In June 1992 the authors, undergraduate students, have undertook geographical investigations of Zhamanshin area. During the expedition data were obtained on geomorphic exogenic processes (VAM) and on landscapes (GGB).

THE GOALS OF THE EXPEDITION. The following tasks were planned before the field trip.

(1) To define modern natural complexes of Zhamanshin area through the geologic-geomorphic and soil-vegetation differences, the main directions of material movement with exogenic processes, gravitational, aeolian, and insolation conditions and patterns of hydrologic net.

(2) To estimate if crater's landscapes or their structure/patterns are unique if compare with landscapes of the surrounding region.

(3) To estimate the role of catastrophic impact origin for the following evolution of the cratrer's natural complexes.

(4) Is there any correlation between modern landscape patterns and the original geologic structure of the crater?

THE FIELD OBSERVATIONS. During the field trips landscape and geomorphic cross-sections were constructed. They cross the crater N to S and E to W and are 13-16 km long. Trips along crater rim and the areas outside the crater took place. After that areas within the crater were investigated in accordance with pre-field mapping with the satellite image. During the field trips an area of about 300 sq. km was surveyed.

LANDSCAPE/GEOMORPHIC SURVEY OF ZHAMANSHIN CRATER

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Observations took place at 42 points located at the bottom and rim of the crater and outside of crater. Each point was described in details with geologic-geomorphic data, surface soil, deep section of soil, hydrologic patterns, botanical square. Rocks and vegetation were sampled for collection. Detailed studies of the field data are in progress. The preliminary landscape map of Zhamanshin crater area is given at fig.1. The map shows different landscape areals which will be described elsewere.

REFERENCE: 1. P.V.Florensky, A.I.Dabizha. Zhamanshin meteoritic crater. Moscow: Nauka, 1982 [in Russian].

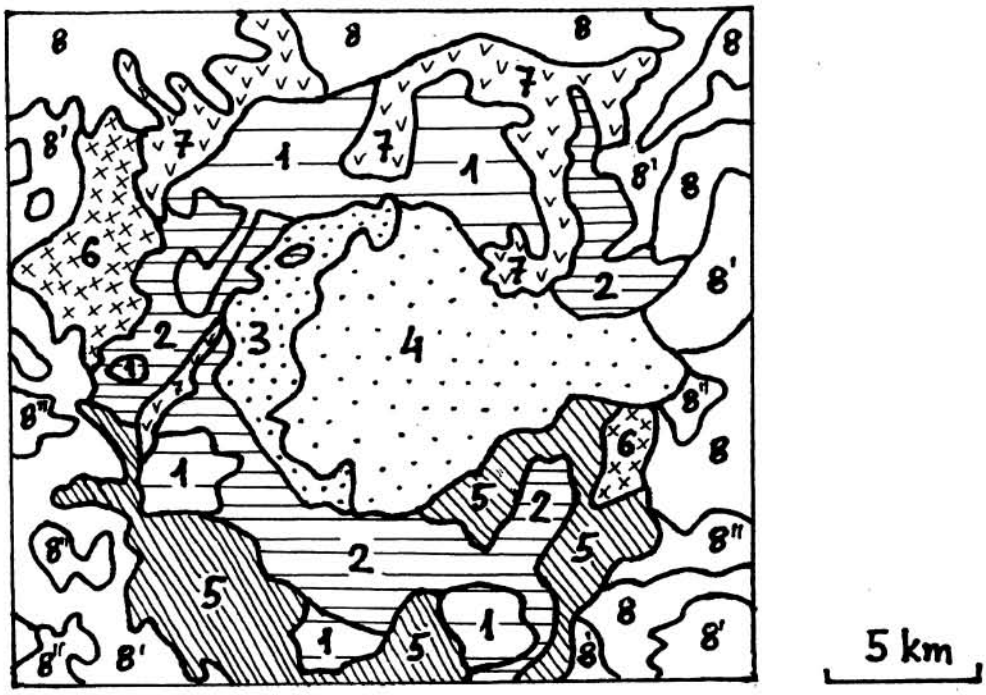

Fig.1. Preliminary landscape map of Zhamanshin crater area

Different landscape types are labeled 1 through 8. Types 1 and 2 are connected with highlands; types 3,4, and 8 - with lowlands; types 5,6, and 7 - with slopes from high to low areas. Types were established after analyses of geomorphic position, soils, vegetation, hydrologic patterns and are to be described elswere.