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**29th International Scientific
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„Surveying, Civil Engineering
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Sustainable Development”**

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**June 22-24, 2022
Wrocław (hybrid), Poland**

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ANALYSIS OF RESEARCH ON THE CURRENT GEODYNAMIC STATE OF THE CARPATHIAN REGION

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In recent decades, environmental disasters have become more frequent in the Carpathian region. Territories with observed deformations of the earth's surface (geotectonic movements, landslides) are found in relatively densely populated areas, in industrial, agricultural, and urban recreation areas, as well as in landscapes with different levels of nature protection (Kalynych et al., 2013). Any surface movement through dangerous processes can destroy structures of various types on the earth's surface, threaten human life and property, and seriously affect the environment. The main destructive force of these processes is groundwater. In particular, the level of groundwater in the Transcarpathian lowland from the late 60s of the last century to the early 90s decreased by about 2 m, and since the mid-80s there has been a tendency to increase the average annual air temperature and increase the amount of total precipitation. to some extent, a consequence of climate change.

According to the State Geological Service, more than 26.0 thousand surface and underground karst manifestations have been recorded within the territory of Ukraine. In the areas of mining operations and intense technogenic load, the development of technogenic karst continues, sometimes with catastrophic manifestations of the process (Information Yearbook, 2020).

This process has received particular development in the areas of extraction of salt minerals (Solotvynske, Kalushske, Novo-Karfagenske, etc.) within the limits of the Transcarpathian, Ivano-Frankivsk and Lviv regions.

This article is devoted to elucidating the spatiotemporal evolution of deformation (landslides, subsidence, karst) of the earth's surface in the Tisza River basin within the Transcarpathian region with an analysis of geodetic observations obtained over the past decade.

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As a result of the geodetic studies carried out in landslide areas and in karst areas, the following results were obtained:

- Using the method of radar differential interferometry SAR, landslide and karst processes were identified in the Tysza River basin in the Transcarpathian region.
- The analysis of cartographic materials and digital aerial photography materials in the period 1995-2018 was carried out to establish the geodynamic processes of mines №7,8, located in the village. Solotvyno.
- Aerial surveys was performed using UAVs, modern digital orthophotomaps and digital topographic plans at a scale of 1:500 with a relief section of 25 cm were obtained.

The presented data testify to the current critical and catastrophic state of the geological environment within the Solotvyno rock salt deposit, which is primarily due to the intensive development of salt karst in recent years.

The publication was made within the framework of the international grant HUSKROUA/1702/8.1/0065 - Expansion of the operating system "Space emergency system" in the direction of monitoring hazardous natural and man-made geoprocesses in the border region HU-SK-RO-UA

Keywords: digital aerial photogrammetry, digital surface models, deformations monitoring, unmanned aerial vehicle

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