**Geodetic monitoring of hydraulic structures using remote sensing data**

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***ABSTRACT***

Regular monitoring is required to maintain engineering structures. The reliable operation of these structures requires continuous condition monitoring to detect potential damage, deformations and changes that could lead to various accidents or reduced efficiency. To address these issues, Earth Remote Sensing data is an indispensable tool for highly accurate and rapid monitoring of the condition of hydraulic structures. The aim of the research is to investigate the application of Earth Remote Sensing data for geodetic monitoring of hydraulic structures. The study aims to develop and implement methods of using Earth Remote Sensing data to improve the accuracy and efficiency of monitoring the condition of these objects. The research used satellite images from the Landsat and Sentinel series, which provide high resolution space images and unmanned aerial vehicles for highly detailed imagery. Processing and analysis of satellite and drone data was carried out using Agisoft Metashape, QGIS software. Data interpretation methods were used to assess the condition and identify changes in the design of hydraulic structures. The research showed the high accuracy and efficiency of remote sensing data in monitoring hydraulic structures. The developed methods of satellite data processing allow timely detection of deformations, erosion and other critical changes. The effectiveness of the proposed methods was confirmed by examples of using remote sensing data for monitoring the Shulbinsk hydroelectric power station and the Shulbinsk stopper. The results confirm that the use of remote sensing data significantly expands the possibilities of geodetic monitoring and improves the safety and reliability of operation of hydraulic structures.

**Keywords:** hydraulic structures, monitoring, remote sensing