



# Partial Analysis of Flooded Territory Following the Kakhovka Hydroelectric Power Station Explosion: Conclusions and Results.

This report presents the results of the analysis conducted on the flooded territories of the settlements of Korsunka, Kozachi Lageri, Nova Kakhovka, and Rayske following the explosion of the Kakhovska Hydroelectric Power Station. The objective of the study was to determine the number of flooded buildings and the area of the flooded residential sector.

#### Analysis Results:

1. Possibly Flooded: A total of 7,206 buildings were identified as possibly flooded, with an estimated total flooded area of approximately 1173855,8 m<sup>2</sup>.
2. Completely Flooded: A total of 9,573 buildings were identified as completely flooded, with a total flooded area of 1040165,1 m<sup>2</sup>.
3. Partially Flooded: Flooding was observed in 2,189 buildings, with a total flooded area of 318441,2 m<sup>2</sup>.
4. The overall number of analyzed buildings was 18,968, with a total flooded area of 2532462,2 m<sup>2</sup>.

The boundary between the flooded and non-flooded territories was established by marking the extreme flood line. This line indicates the distribution boundary of the flooded buildings.

The data presented in this analysis are based on satellite imagery, open-source data, and other available sources. They serve as an informational resource to understand the extent of the flooding.

The methodology for determining the flood line involves several stages. Starting with the analysis of satellite images from June 7, 2023, published by UNITAR, we utilized news data to refine information about the flooded areas.

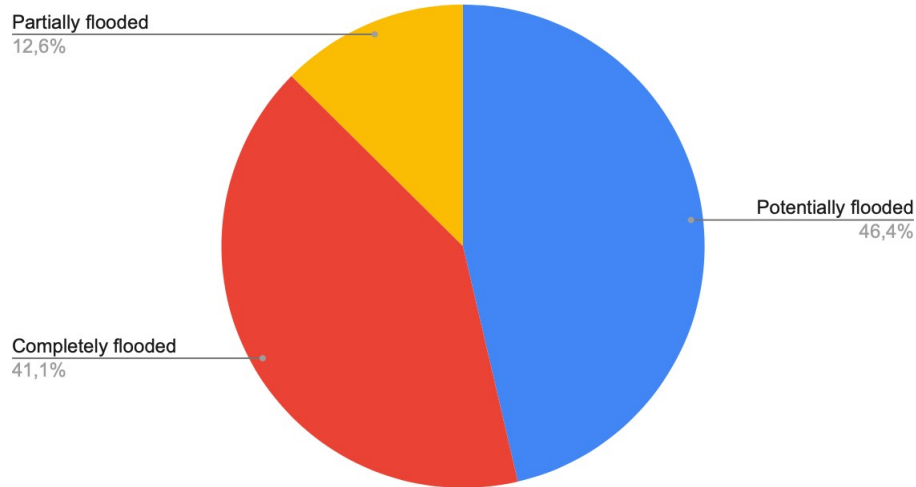
For each building, we calculated its relative inundation level compared to the flood line on the territory. To do this, we used elevation data from NASA DEM, which were available as open data. These data provided us with crucial information to determine the height difference between each building-point pair along the flood line, enabling us to assess the flood depth.

Please note that these findings are part of an ongoing analysis and cover the entire flooded area. Further research and data collection will contribute to a more comprehensive understanding of the situation.

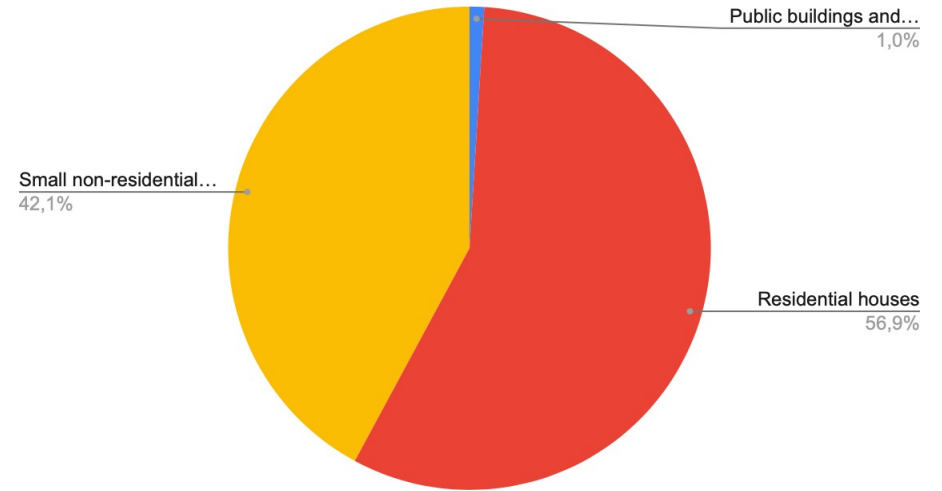
The collected data on elevations and flooding, combined with UNITAR and news data, formed the basis for processing and analysis. This approach allowed us to obtain information on the flood levels and the condition of buildings within the studied area.

The calculated results of the flooding, presented in percentage values, are depicted in the following diagrams:

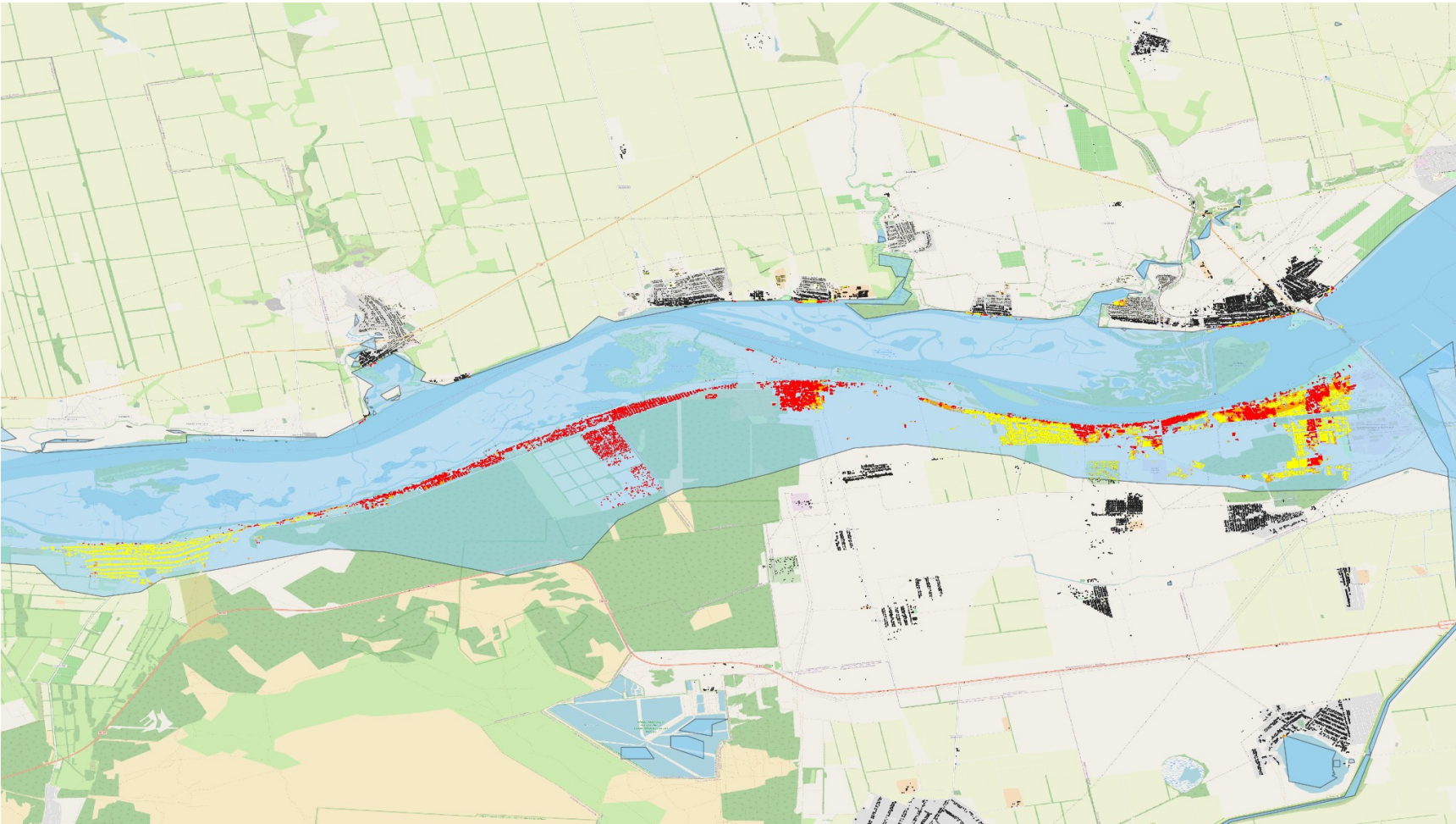
**Distribution of building flooding by different levels.**

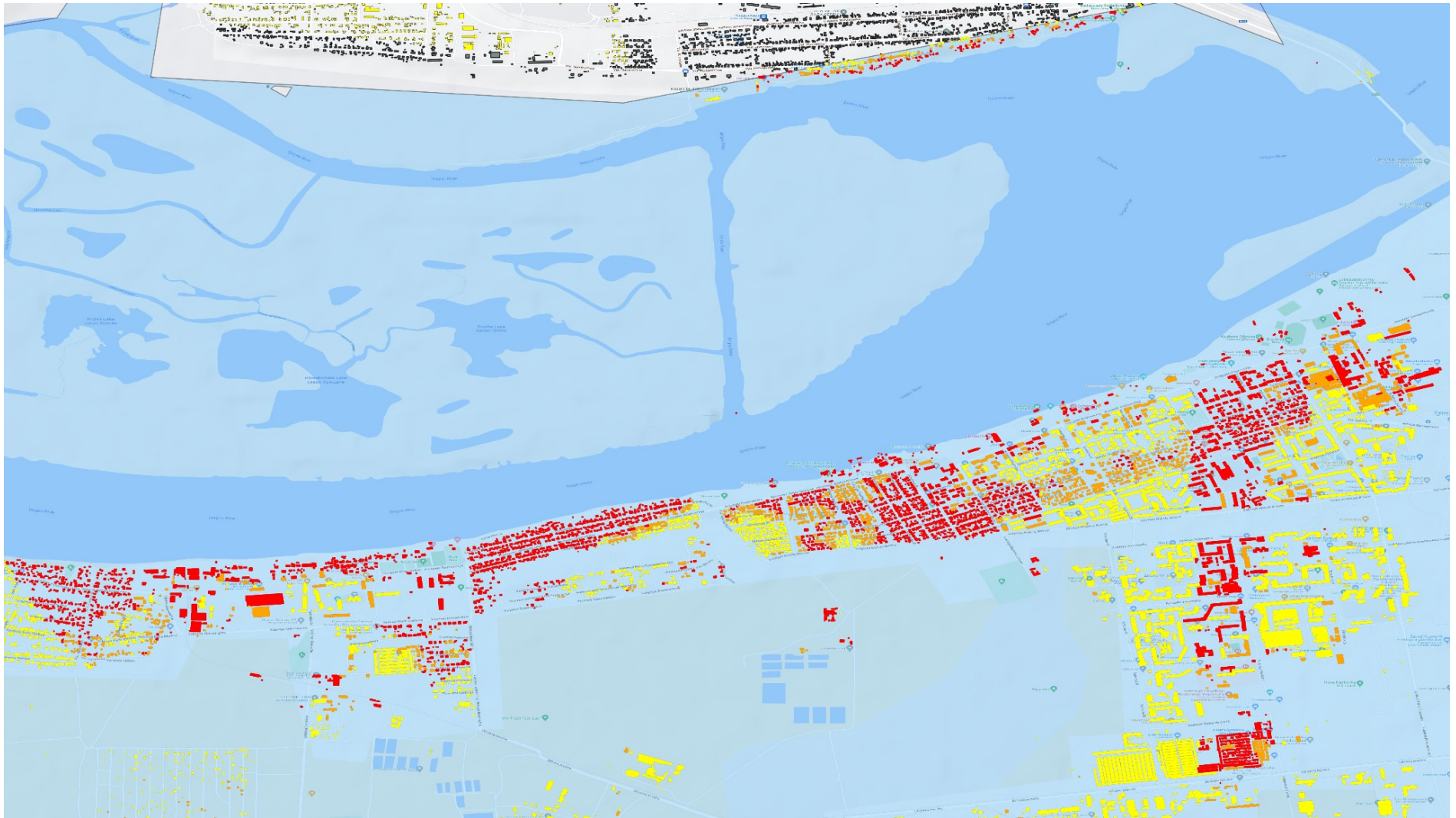


**Types of flooded buildings**

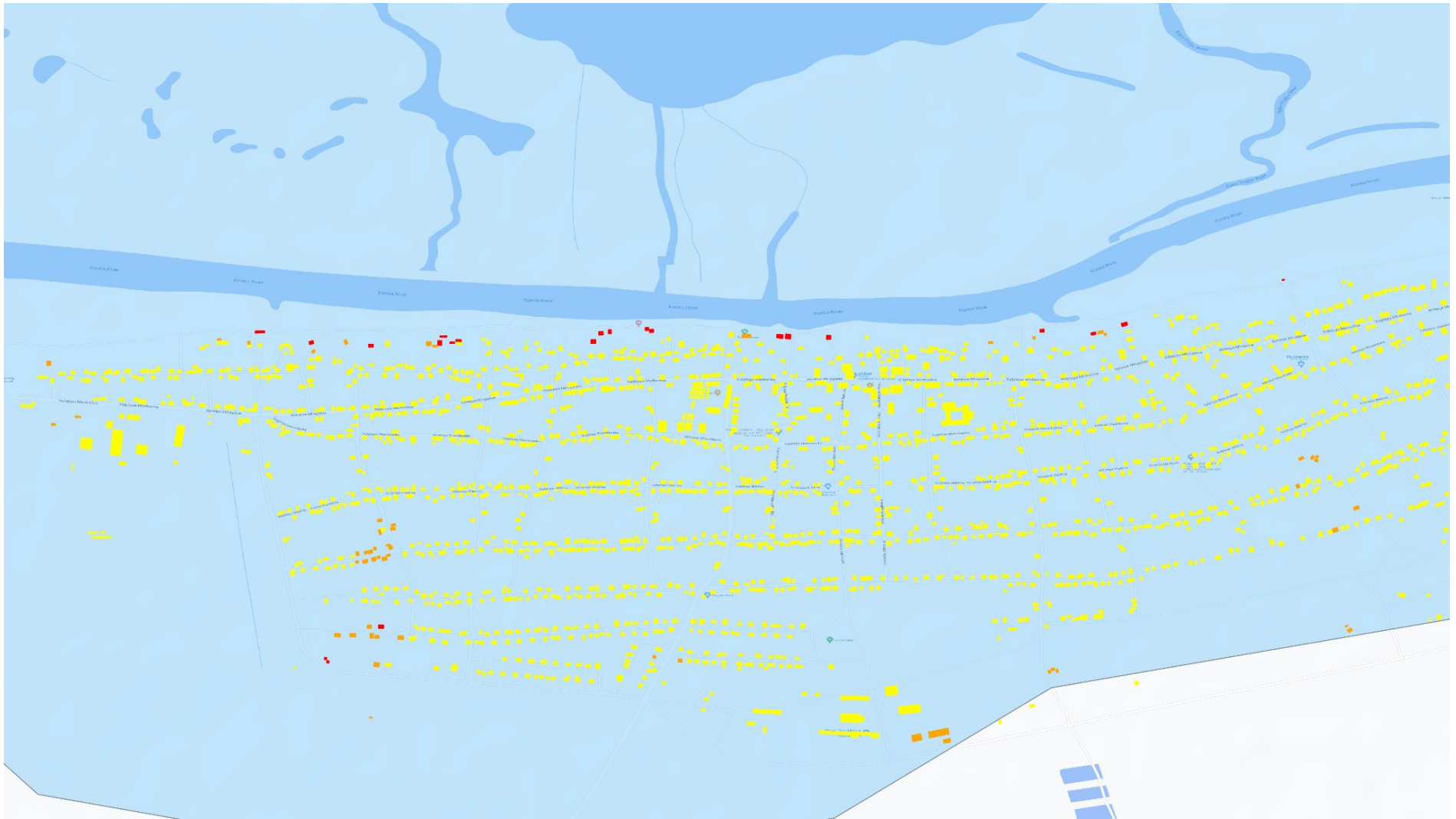


The images below present graphic representations of the analysis results of flooded buildings following the Explosion of the Kakhovska Hydroelectric Power Station. The maps showcase the distribution of flooded buildings and the flood line in the surveyed areas.

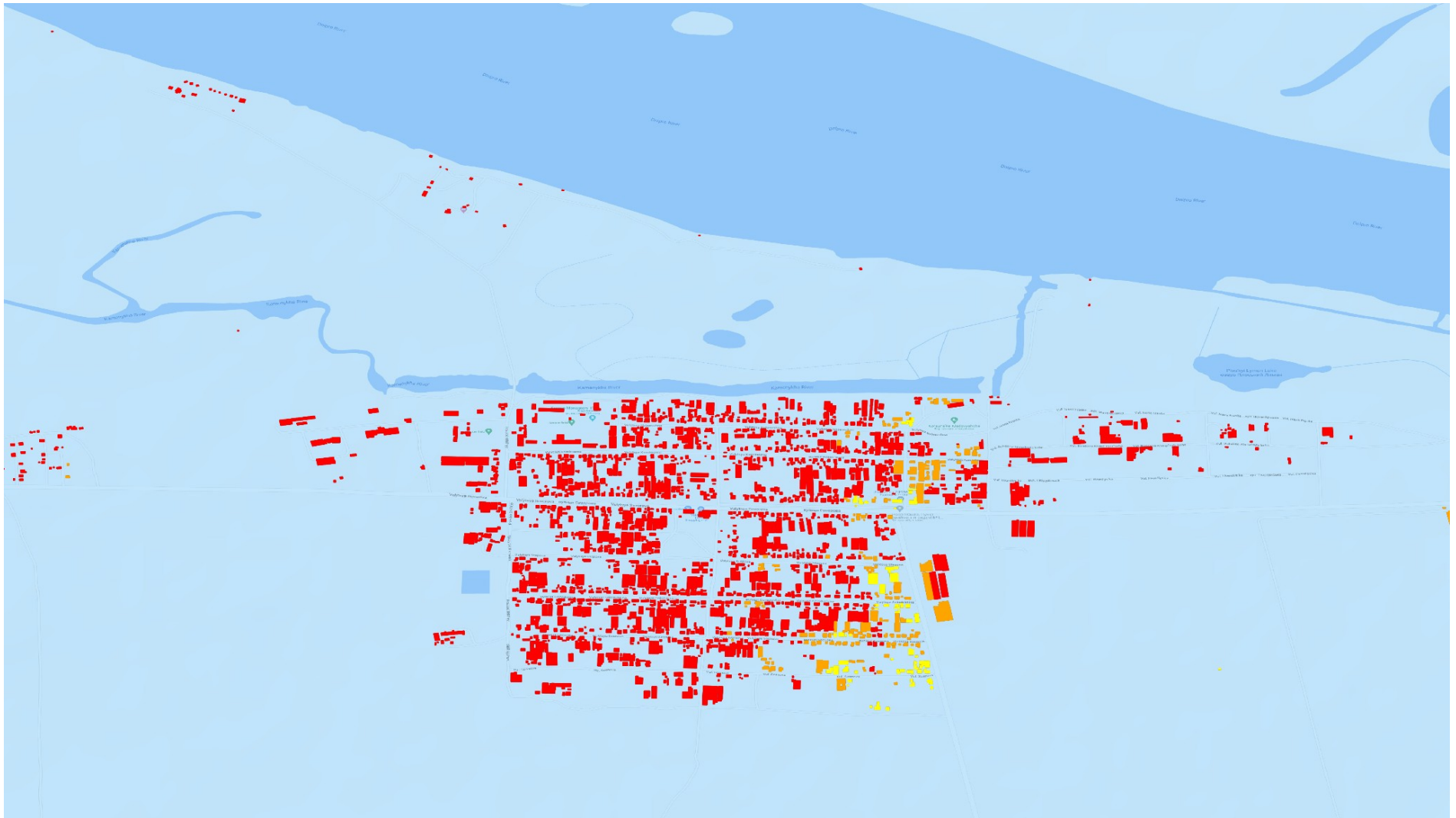




The settlements of Nova Kakhovka and Rayiske after the flooding.



The settlement of Kozachi Lagery after the flooding.



The settlement of Korsunka after the flooding.

The map images provide more detailed information about the flooding of buildings in the settlements of Korsunka, Kozachi Lagery, Nova Kakhovka, and Rayske. The maps display buildings with polygons, each represented by a different color indicating the degree of flooding.

**Completely flooded** buildings are marked in red. These buildings were fully submerged in water or suffered significant damage (flooding exceeding 3 meters).

**Partially flooded** buildings are marked in orange. This means that these buildings were partially flooded, with some parts remaining above the water level (flooding between 1-3 meters).

**Possibly flooded** buildings are marked in yellow. This indicates that there is some uncertainty about the degree of flooding for these buildings, and further investigation and verification are required (flooding up to 1 meter).

**Unflooded buildings** are marked in black. This means that they did not fall within the flooded area boundaries.

These images visualize the flooding of buildings with different levels of damage, helping assess the extent of the flooding and identify areas with the highest number of affected buildings.

These conclusions were obtained during the research process and serve as interim results. The research is ongoing to study the entire flooded area and evaluate the consequences of the Kakhovka Hydroelectric Power Station Explosion.

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