

METHOD OF CREATING AN INTERACTIVE LAND USE MAP IN THE SENTINEL-2 LAND COVER EXPLORER WEB APPLICATION

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Timely satellite monitoring data and the ability to analyze their changes are fundamental for identifying information from land use maps [4]. Satellite images obtained by the artificial satellite Sentinel-2 Land Cover Explorer [3], are available in the ArcGIS application Living Atlas [1] from Esri. The resulting land use maps are a tool for decision-making at local, regional or national levels. Appropriate maps allow to quantify and better understand the impact of earth processes and human activities on the environment in order to make effective land management decisions that will ensure the sustainable development of land use.

The Sentinel-2 Land web application Cover Explorer [3] is presented for the time series during 2017-2022 according to the classification of nine types of vegetation. When researching, the function of analyzing changes in the area of trees, crops, forests or build areas is available. Sentinel-2 Land Cover Explorer provides a dynamic and intuitive interface to detect, display and analyze these changes [2]. In the Swipe mode in fig. 1 shows a visual analysis of changes on the interactive land use map of the Lviv region in comparison with 2017 and 2022.

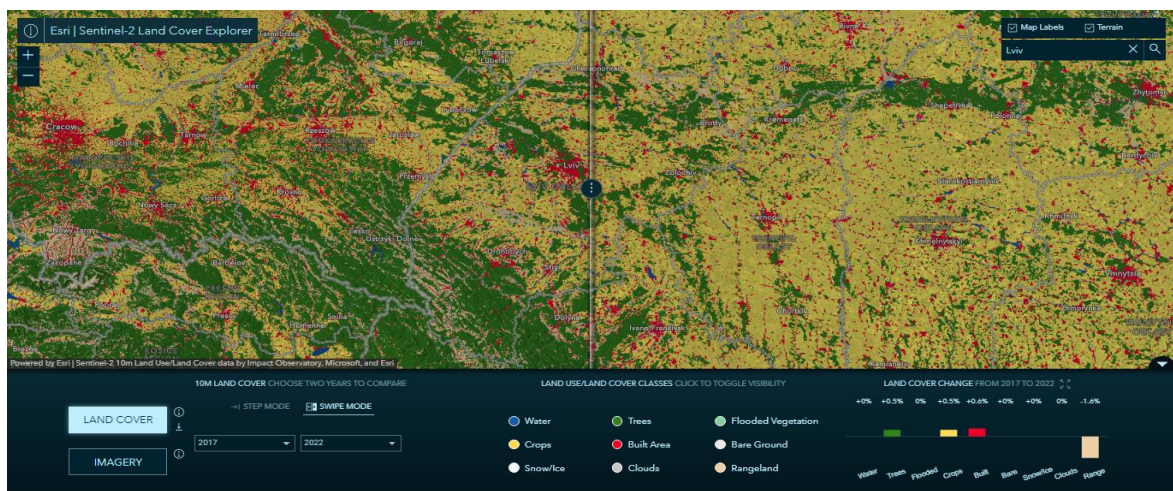


Figure 1. Analysis of changes on the interactive land use map of the Lviv region in comparison with 2017 and 2022 in the Sentinel-2 Land web application Cover Explorer.

In order to visualize one of the nine classes of vegetation, you need to select its name and filter the corresponding display on the map. Along with the analysis of changes for each class, the construction of statistical diagrams is provided. Sentinel-2 Land Cover Explorer allows you to dynamically display the coverage of each class as a percentage of the current map scale. In fig. 2 presents such a diagram for the Lviv region during 2017-2022, from which it can be seen that compared to 2017, vegetation and the area of agricultural crops grew by 2%, and the area of pastures, on the contrary, decreased by 5%.

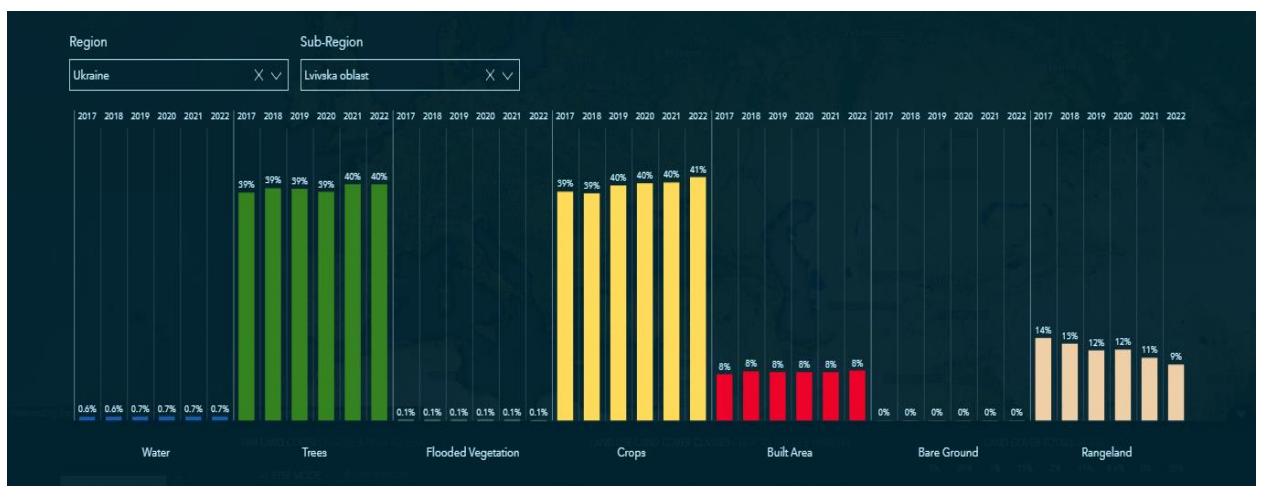


Figure 2. Statistical chart by land use classes for the Lviv region during 2017-2022 in the Sentinel-2 Land web application Cover Explorer

Geoinformation system ArcGIS enables users to quickly create and freely share maps. These opportunities are presented Sentinel-2 Land Cover Explorer is a web-based mapping application based on the company's ArcGIS Esri, displaying an interactive land use map based on Sentinel-2 satellite data.

References.

1. ArcGIS Living Atlas of the World. URL: <https://livingatlas.arcgis.com/en/home/>.

2. Global Land Cover Revealed. URL: <https://www.esri.com/arcgis-blog/products/arcgis-living-atlas/imagery/global-land-cover-revealed/>.

3. Sentinel-2 Land Cover Explorer. URL: <https://livingatlas.arcgis.com/landcoverexplorer/#mapCenter=31.203%2C29.941%2C11&mode=step&timeExtent=2017%2C2022&year=2022>.

4. Stupen R., Ryzhok Z., Stupen N., Stupen O. The method of creating agricultural thematic maps in geoinformation systems using the method of automatic unsupervised classification. 17th International Conference on Computer Science and Information Technologies (CSIT). (Lviv, November 10-12, 2022). Lviv, 2022. P. 301-304. DOI: 10.1109/CSIT56902.2022.10000510.