

Citizens enhanced remote sensing data to manage cultural heritage threats in conflict areas

by Bente Lilja Bye, BLB



EUROPEANA 2022
**MAKING DIGITAL
CULTURE COUNT**

28 -30 SEPTEMBER | HYBRID

Content

We already know that space-based or remote sensed data and information are useful in various forms of crisis, be it natural disasters like flooding, wildfires etc, or areas hard to reach on ground being remote or having demanding topography or as in the case in Ukraine, areas of conflicts.

What is less known is **how citizens can help improve access to information** by gathering data on the ground (in-situ) in various forms. The **combination** of remote sensing and ground-truth or in-situ data and information are the topics of this presentation.



Team members



Bente Lilja Bye
Earth observations expert



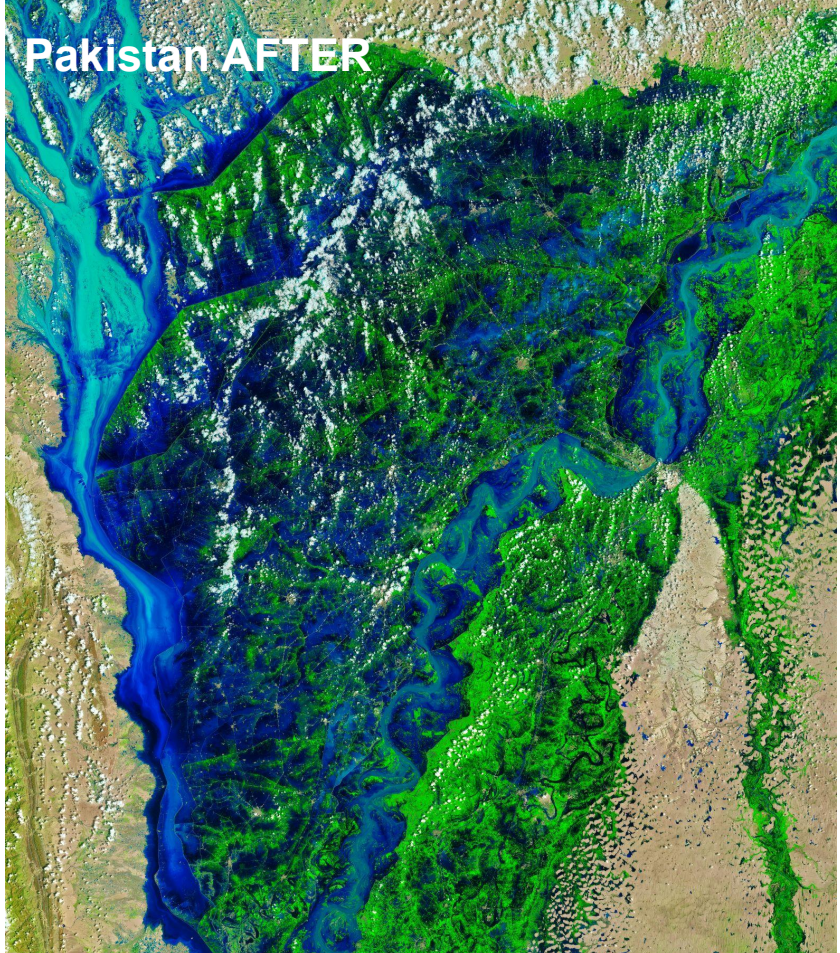
Stefania Oikonomou
Outreach expert



Katerina Zourou
Digital cultural heritage
Team leader



Jovanka Gulicoska
Full-stack developer



BLB

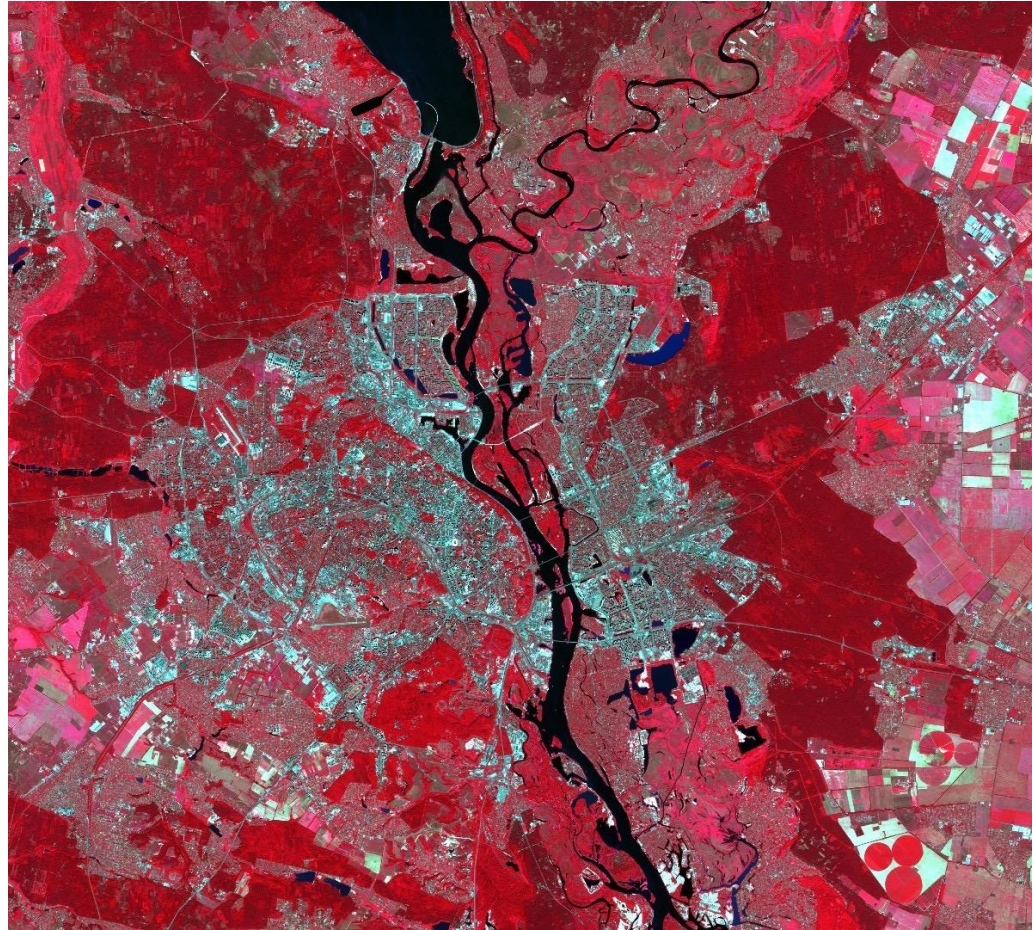
S
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VIEW

The false-color images were acquired by the Operational Land Imagers aboard the [Landsat 8](#) and [Landsat 9](#) satellites on August 4 and 28, respectively. The images combine shortwave infrared, near infrared, and red light (bands 6-5-4) to better distinguish flood waters (deep blue) beyond their natural channels.

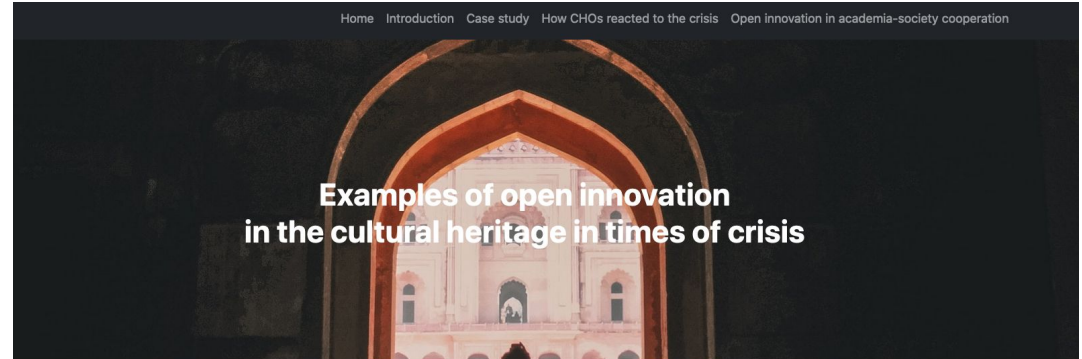
Web2Learn
Open. social learning

In touch with organisations
in Ukraine and abroad
engaged in on-site and
remote action for
preservation of Ukrainian
cultural heritage



What can citizen do?

An ongoing collection of open innovation initiatives for Ukrainian cultural heritage



Driven by our strong belief that cultural heritage protection and preservation should be at the forefront of collective efforts, especially during conflicts, in this case the Ukrainian war, we felt the need to act by identifying initiatives highlighting the way open innovation can maximise the impact and effectiveness of such efforts to communities involved.

Stefania Oikonomou, Katerina Zourou

[Introduction](#)

[Case study](#)

[How cultural heritage organisations reacted to the crisis](#)

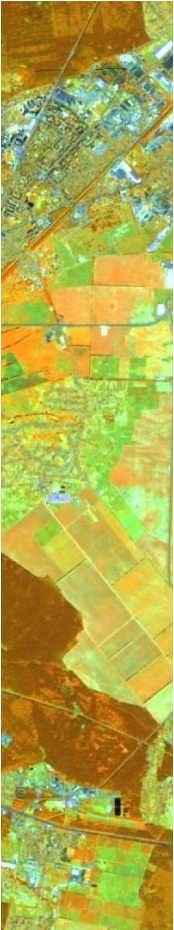
[Open innovation in academia-society cooperation](#)





=> Earth observations to monitor threats/damages and engage citizens in [participatory digital action](#)

Citizens observations in Ukraine



SaveEcoBot
The first environmental chatbot in Ukraine
Air quality, background radiation, environmental data + map & independent air quality sensors network.

Inform the Operational Headquarters of the Ministry of Environment
ENVIRONMENTAL CRIMES

Strike on the oil depot in the village of Kryachky near Vasyliv
February 27, 2022

Our mission is to improve air quality in the developing world through raising environmental awareness of the citizens by providing them with free and easy access to air quality index and other public environmental data.

Made with love in Ukraine by SaveDnipro team

True Love with SaveEcoBot for those who care about air quality and the health of loved ones.

Partners



Different scenarios

Legend



Cultural heritage



Impact



Building/factory



Pollution



Different scenarios

1. Direct impact

Legend



Cultural heritage



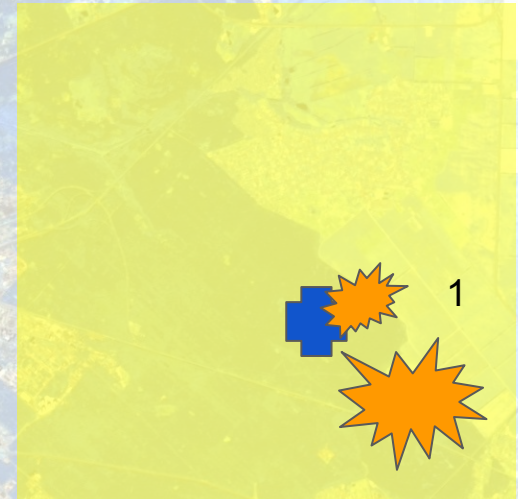
Impact



Building/factory



Pollution

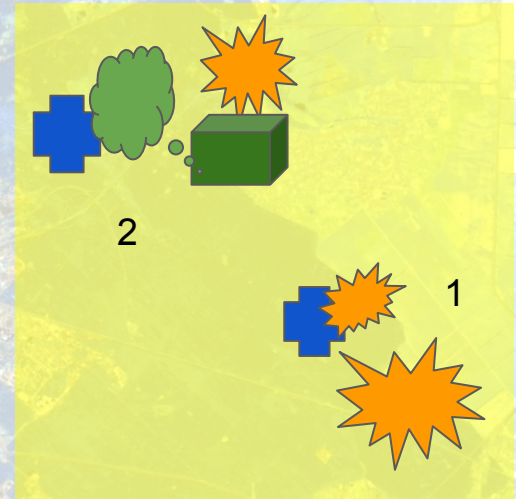


Different scenarios

1. Direct impact
2. Indirect (other target)

Legend

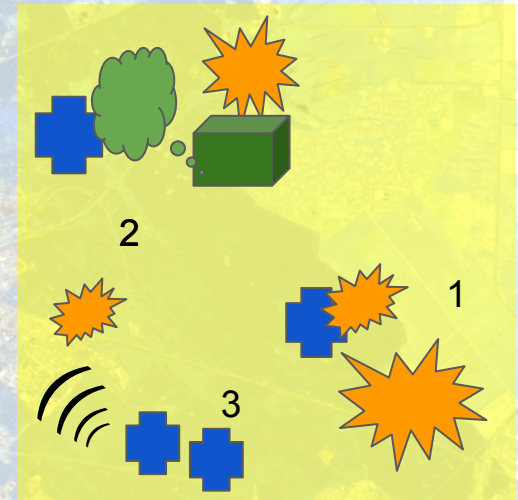
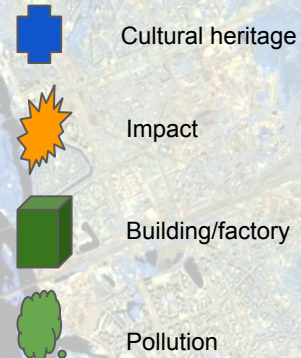
-  Cultural heritage
-  Impact
-  Building/factory
-  Pollution

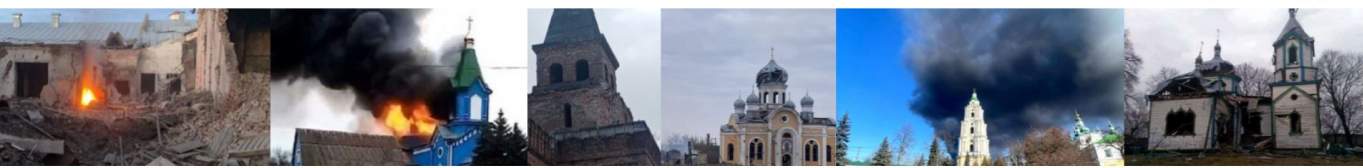


Different scenarios

1. Direct impact
2. Indirect (other target)
3. Indirect (ground motion)

Legend





Recorded war crimes

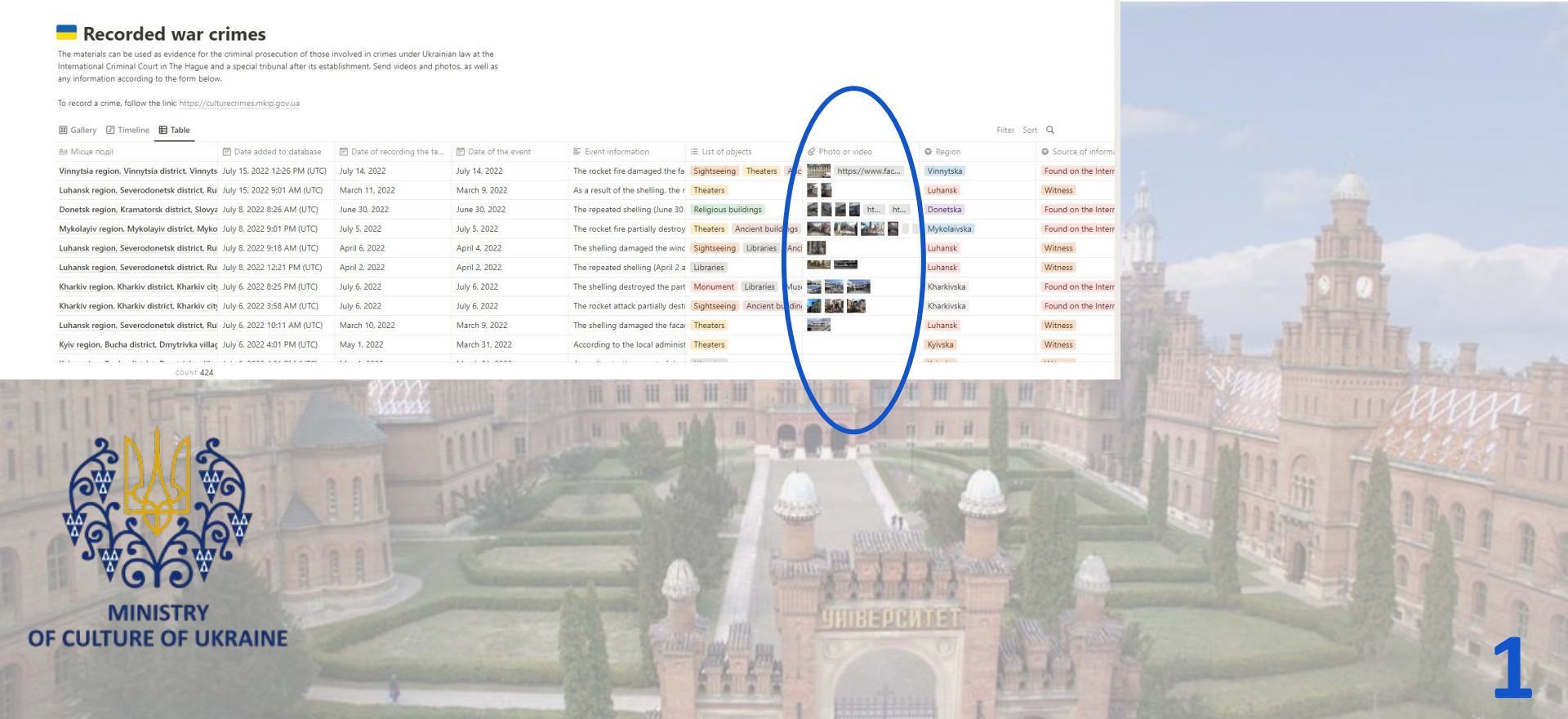
The materials can be used as evidence for the criminal prosecution of those involved in crimes under Ukrainian law at the International Criminal Court in The Hague and a special tribunal after its establishment. Send videos and photos, as well as any information according to the form below.

To record a crime, follow the link: <https://culturecrimes.mkip.gov.ua>

Gallery Timeline Table Filter Sort Q

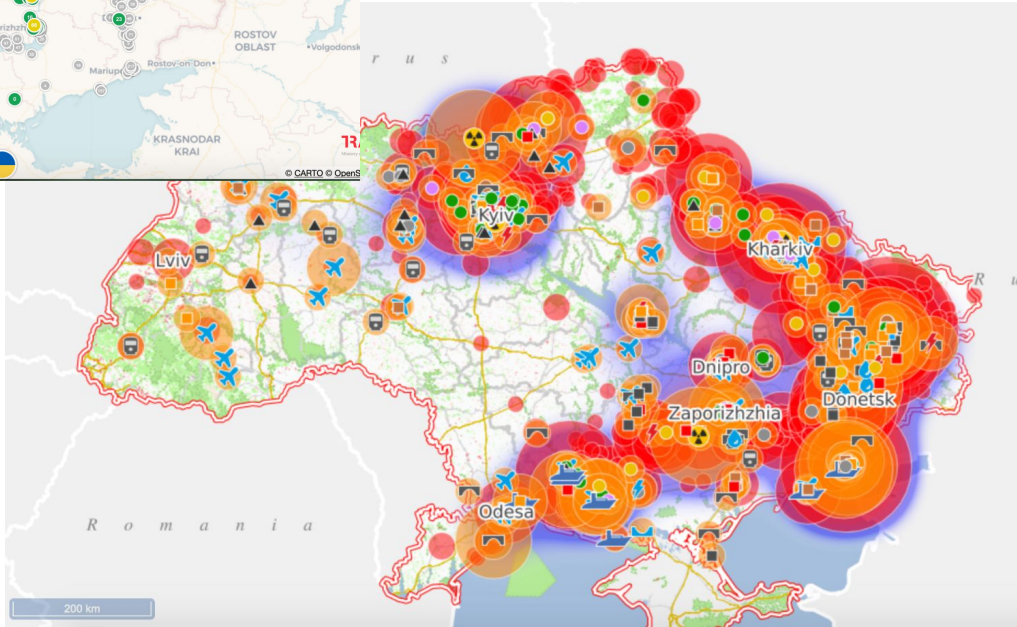
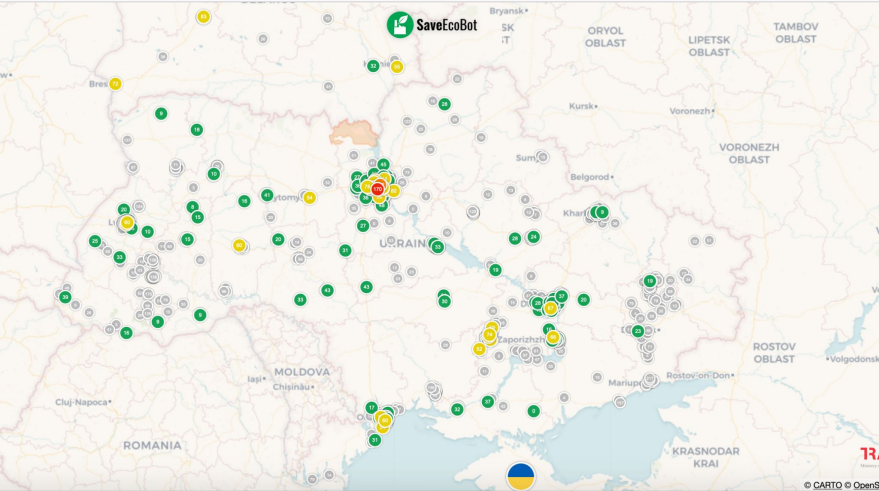
Micue nozil	Date added to database	Date of recording the te...	Date of the event	Event information	List of objects	Photo or video	Region	Source of inform.
Vinnitsia region, Vinnitsia district, Vinnitsy	July 15, 2022 12:26 PM (UTC)	July 14, 2022	July 14, 2022	The rocket fire damaged the fa	Sightseeing Theaters Arc	https://www.fac...	Vinnitska	Found on the Intern
Luhansk region, Severodonetsk district, Ru	July 15, 2022 9:01 AM (UTC)	March 11, 2022	March 9, 2022	As a result of the shelling, the r	Theaters		Luhansk	Witness
Donetsk region, Kramatorsk district, Slovsy	July 8, 2022 8:26 AM (UTC)	June 30, 2022	June 30, 2022	The repeated shelling (June 30	Religious buildings	ht... ht...	Donetska	Found on the Intern
Mykolaiiv region, Mykolaiiv district, Myko	July 8, 2022 9:01 PM (UTC)	July 5, 2022	July 5, 2022	The rocket fire partially destroy	Theaters Ancient buildigs		Mykolaivska	Found on the Intern
Luhansk region, Severodonetsk district, Ru	July 8, 2022 9:18 AM (UTC)	April 6, 2022	April 4, 2022	The shelling damaged the winc	Sightseeing Libraries And		Luhansk	Witness
Luhansk region, Severodonetsk district, Ru	July 8, 2022 12:21 PM (UTC)	April 2, 2022	April 2, 2022	The repeated shelling (April 2 a	Libraries		Luhansk	Witness
Kharkiv region, Kharkiv district, Kharkiv city	July 6, 2022 8:25 PM (UTC)	July 6, 2022	July 6, 2022	The shelling destroyed the part	Monument Libraries Mus		Kharkivska	Found on the Intern
Kharkiv region, Kharkiv district, Kharkiv city	July 6, 2022 3:58 AM (UTC)	July 6, 2022	July 6, 2022	The rocket attack partially desti	Sightseeing Ancient buildin		Kharkivska	Found on the Intern
Luhansk region, Severodonetsk district, Ru	July 6, 2022 10:11 AM (UTC)	March 10, 2022	March 9, 2022	The shelling damaged the faca	Theaters		Luhansk	Witness
Kyiv region, Bucha district, Dmytrivka villaç	July 6, 2022 4:01 PM (UTC)	May 1, 2022	March 31, 2022	According to the local administ	Theaters		Kyivska	Witness

COUNT 424



EcoBot & Ecodozor sensor-based data

Air quality



УКРАЇНЬСЬКА

Ecodozor

War in Ukraine:
environmental impacts and risks

- Critical infrastructure facilities +
- Damage or disruptions to industries +
- Damage or disruptions to settlements +
- Fires +
- Environmental risks +
- Base layers -
- Terrain ○
- Satellite ●

Symbols

The system is under development, data are regularly added and updated. System development is supported by [Zoi Environment Network](#) (Switzerland) and [OSCE Project Co-ordinator in Ukraine](#) with the participation of the [UN Environment Programme](#)

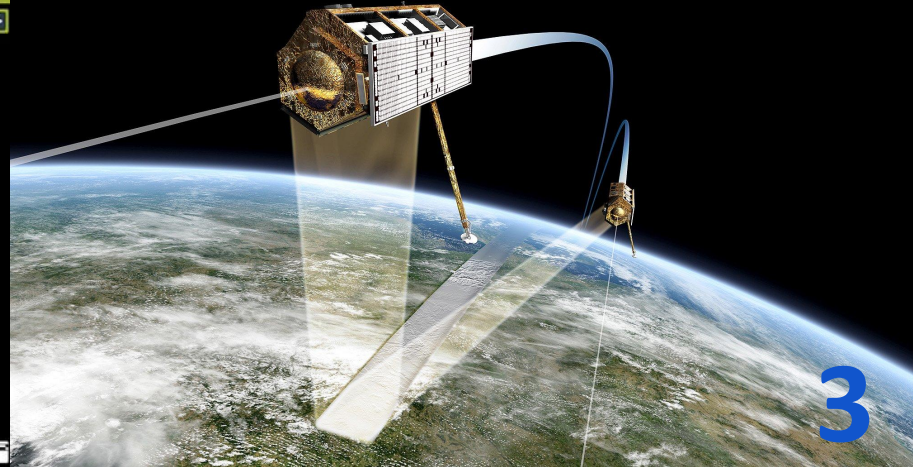
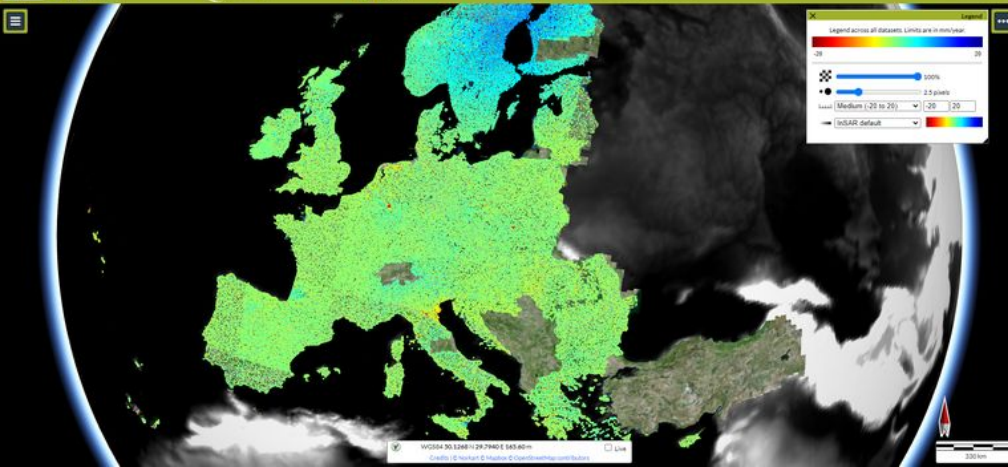
Developers and partners strive to ensure quality and the completeness of the information with no responsibility for the accuracy of the data posted in the system



Ground Motion



EGNOS





#EUSpace4Ukraine HACKATHON

Taking place on:
29.06. - 01.07.2022



esa

Microsoft

ESPOO

BUSINESS

FINLAND

CGI

ULTRAHACK

BLB

Cultural heritage under threat

Web2Learn
Open. social learning

Bente Lilja Bye, Jovanka Gulicoska, Stefania Oikonomou, Katerina Zourou

An aerial satellite view of a city, likely in the Pacific Northwest, showing a large river winding through the urban area. The city is densely packed with buildings and streets, interspersed with green fields and some larger industrial or commercial structures. The surrounding landscape is a mix of urban development and natural terrain.

Preparing the data, harvesters and workers

Harmonization - Interoperability

CKAN

For demonstration of what we want to accomplish, we used [CKAN \(https://ckan.org/\)](https://ckan.org/) (an open source DMS - data management system platform). We have used workers and harvesters in the backend collecting data from various sites, show the state of the cultural heritage site and ability to create a new version of the dataset in order to create timeline events.

1. List of cultural heritage sites

Dataset Groups Activity Stream New Version Manage

Church of St. Elijah

(building of the end of XI - beginning of XII century)

Data and Resources

 Ecodozor	Explore
 Ecobot	Explore
 Ministry of Culture and Information Policy	Explore
 copernicus	Explore

Damaged

Additional Info

9/4/22, 4:40 PM

Cultural_heritage_under_attack



Home About Content Analytics Copernicus Data Stories

Datasets

Organizations

org

Groups

There are no Groups that match this search

Tags

Damaged

Formats

JPEG

Add Dataset

Search datasets...



4 datasets found

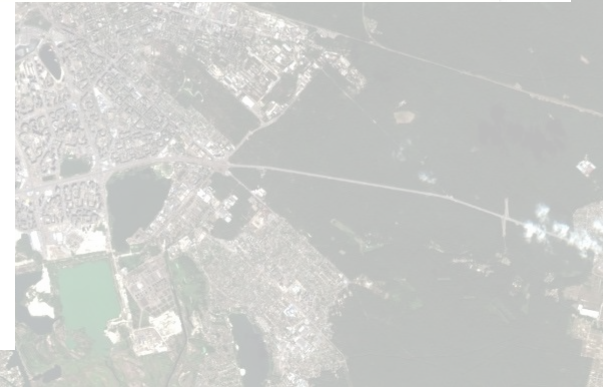
Order by: Relevance

Church of St. Elijah

Org

(building of the end of XI - beginning of XII century)

1. Collect data from the Recorded War Crimes from the The Ministry of Culture and Information Policy of Ukraine



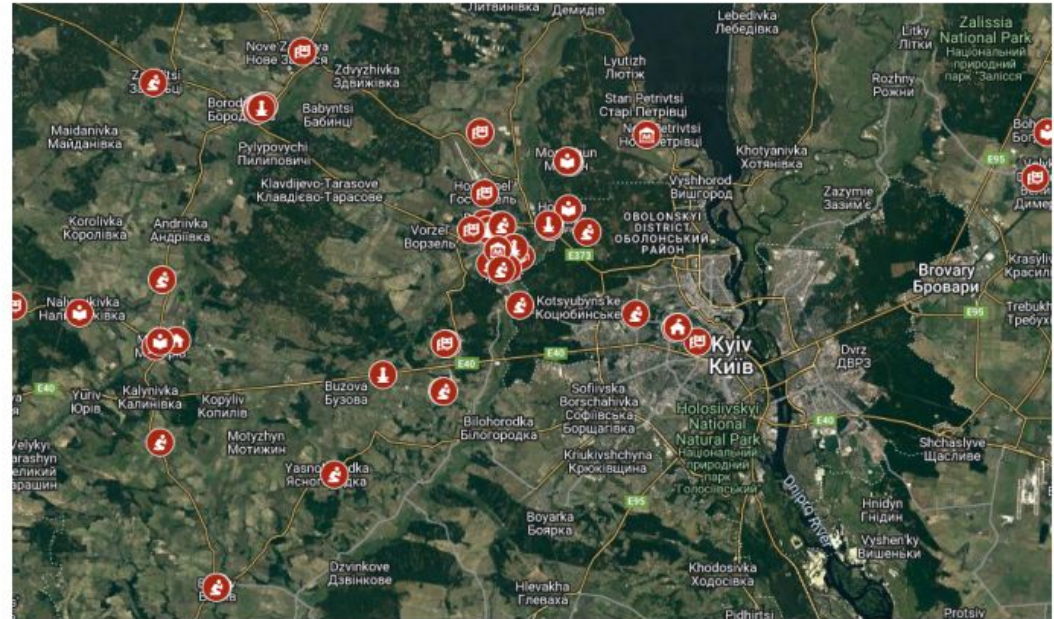
What next?

Presenting data and information

- Cultural heritage managers
- Security
- Citizens
- ...

9/4/22, 4:40 PM

Cultural_heritage_under_attack



Interested to connect?

Get in touch!

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