

May 2022



## CHANGE DETECTION ANALYSIS ON WALLOON BROWNFIELD SITES

### >>> A few years later

In the last few years, the prototyped application received strong amendments. The change detection processing chain now integrates Sentinel-1 data on top of Sentinel-2. The workflow exploits the capabilities offered by the Terrascope platform for the automatic processing of Copernicus data. It will be provided as a new service for the Administrative for the continuous monitoring of Walloon brownfields.

*Eric Hallot, Institut Scientifique de Service Public (ISSeP) - Remote Sensing and Geodata Unit*



	TIER 1: SERVICE PROVIDER	TIER 2 PRIMARY USER	TIER 3 SECONDARY USER	TIER 4 END USER BENEFICIARIES
BENEFICIARIES	Institut Scientifique de Service Public (ISSeP)	Wallonia Region, Operational Development Directorate; Expert operators for brownfield detection	Wallonia Region; Local decision-making administration	Citizens and society
SERVICES	Sentinel-1 Sentinel-2	Decision-making tool for a more efficient updating of the brownfields' inventory (NDVI and BI spectral indices, further correlated with ground-truth data)	Facilitated rehabilitation of brownfields	Limitation of urban sprawl; Job creation; Development of residential, industrial or recreational areas;

Value chain definition following SeBS Methodology - <https://earsc.org/sebs>

### The space-based solution

This Copernicus-based solution was produced by a scientific entity for a Public Administration. In the past few years, there were significant performance and automation improvements of the solution.

### The Usage Maturity Level

The solution has transitioned to a higher level of UML. The main reason to help this transition is identified as an increased recognition about the effectiveness of the solution at decision-making level, based on the achieved results and return-of-experience.

Thematic Area



TERRITORIAL MANAGEMENT AND URBAN PLANNING

Region of Application



WALLONIA

Sentinel mission used



S1, S2

Copernicus Service used



-

Usage Maturity Level



4

## Overall benefits

### ECONOMIC



- Cost savings of operating expenditure have been registered
- Efficiency gains have been registered

### ENVIRONMENTAL



- Reduced depletion of natural resources

### REGULATORY



- There were improvements in the policy monitoring capabilities of the PA in charge

### INNOVATION



- The solution has helped to introduce some innovation in the functioning of the public administration

### SCIENCE



- The solution has enabled some technological advancement
- There was an increase in technical/scientific expertise related to Copernicus/EO within the PA
- There was an increase in technical/scientific expertise related to Copernicus/EO at the service provider
- There was an increase in the research budget share of the institutions involved in the solution

### SOCIETAL



No noticeable additional modification/impact on the functioning of the public administration nor on the lives of the citizens since 2018.

Benefits classification following SeBS Methodology - <https://earsc.org/sebs>

## Interesting facts...

In terms of technical improvement, this solution now integrates Sentinel-1, in addition to the Sentinel-2 data. An automated processing chain for change detection has been implemented in the environment offered by the Terrascope platform. Additionally, further development of the application was funded by The Belgian Science Policy Office. The research was carried out by ISSeP in collaboration with the Royal Military Academy for the Service Public de Wallonie. The solution is now being implemented and will soon be integrated within the workflow of Department of Operational Planning.

## Outlook to the future

For the future, a full implementation of the service is planned and further developments will be carried out on the complimentary use of Copernicus and local very-high-resolution aerial coverages. A scientific watch will be carried out in parallel to these new developments in order to identify new relevant sources of Earth observation data.

## Acknowledgements

This project is funded by a grant from the Operational Development Directorate (DGO4 – SPW, Wallonia).

## Contacts

**Eric Hallot** | [e.hallot@issep.be](mailto:e.hallot@issep.be)

## ABOUT COPERNICUS4REGIONS

The views expressed in the Copernicus User Stories are those of the Authors and can in no way be taken to reflect the official opinion of the European Space Agency or of the European Commission. Funded by the European Union, in collaboration with NEREUS. Paging, printing and distribution funded by the European Space Agency. IPR Provisions apply. Copernicus4Regions material may be used exclusively for non commercial purposes and provided that suitable acknowledgment is given.

Find the original story at  
[www.nereus-regions.eu/copernicus4regions/user-stories-sheets](http://www.nereus-regions.eu/copernicus4regions/user-stories-sheets)  
 or Download the full publication  
[www.nereus-regions.eu/copernicus4regions/publication](http://www.nereus-regions.eu/copernicus4regions/publication)

[www.copernicus.eu](http://www.copernicus.eu)  
<https://sentinels.copernicus.eu>