

May 2022



A VILLAGE STRICKEN BY TERRAIN MOVEMENTS

>>> A few years later

Over the past few years, the displacement monitoring tool was engaged in a couple of specific cases subject to land displacement. These use cases have demonstrated that Persistent Scatterer Interferometry (PSI) techniques applied to Sentinel data constitute a direct operational applicative tool. Such solution can be also proposed for the monitoring of surface instabilities within at-risk areas.

Nadine Tholey | ICube-SERTIT



| | | | | |
|---------------|---------------------------------|--|---|---|
| BENEFICIARIES | ICube-SERTIT | French Ministry of Ecological and Solidarity Transition; Grand Est region; Lochwiller village and Kircheim village authorities | National and regional public authorities (decision makers); Risk assessment technical staff in public agencies; Insurance companies | Citizens and Society |
| | TIER 1: SERVICE PROVIDER | TIER 2 PRIMARY USER | TIER 3 SECONDARY USER | TIER 4 END USER BENEFICIARIES |
| SERVICES | Sentinel-1 | Displacement information and maps based on base on Persistent Scatter Interferometry (PSI) technique | Timely monitoring of vast territories (indicators previously inaccessible by ground-based observation means); Thematic maps depicting the subsidence or swelling phenomenon in affected areas | Contribution to the risk assessment conducted by public authorities, including risk prevention and mitigation. Aid in setting up a request for potential compensation |

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

The space-based solution

This Copernicus-based solution was produced jointly by a commercial company and a scientific entity for a public administration. In terms of technical advancements, additional information is now generated.

The Usage Maturity Level

The solution has consolidated at UML=4. The main reason for this is found in the increased recognition about the effectiveness of the solution at decision-making level based on the achieved results and return-of-experience.

Thematic Area



TRANSPORTS, CIVIL INFRASTRUCTURE AND SAFETY

Region of Application



BAS-RHIN

Sentinel mission used



S1

Copernicus Service used



-

Usage Maturity Level



4

Overall benefits

ECONOMIC



The replicability of the solution was achieved

ENVIRONMENTAL



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

REGULATORY



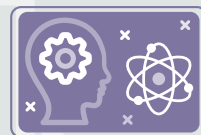
The solution has facilitated or improved the compilation of institutional reports by the PA

INNOVATION



- The solution has helped to introduce some innovation in the functioning of the public administration
- There were positive market externalities

SCIENCE



- The solution has helped to improve understanding about a specific topic of interest traditionally not related to Earth Observation (EO)
- There was an increase in technical/scientific expertise related to Copernicus/EO within the PA

SOCIETAL



- Improved coordination and governance has been registered
- Civil security has improved
- Strategic added value was registered for the involved actors

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

Interesting facts...

Additional information is now generated by the service: parameters refinement for a filtered selection of ground displacement measures have been implemented.

The service was extended to another Alsatian village, Kircheim, which was subject to soil lifting (swelling phenomena). The results highlighted anomalies within the village areas which were not previously known or recorded as affected by this threat. Subsequently, a monitoring of these surface instabilities has also been performed.

Outlook to the future

These practical cases are presently used for Copernicus user uptake activities and downstream sector expansion at local and regional level. They have also been used, within the user community, for the promotion of the new European Ground Motion Service (EGMS), part of the Copernicus Land Monitoring Service (CLMS).

Acknowledgements

The setting up of the first service use case in France received funding from the EU research and innovation programmes

Contacts

Nadine Tholey | n.tholeystamp1@unistra.fr

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
 or Download the full publication
www.nereus-regions.eu/copernicus4regions/publication

www.copernicus.eu
<https://sentinels.copernicus.eu>