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HOW AUTOMATIC CHANGE DETECTION BOOSTS HAUTS-DE-FRANCE'S LAND MONITORING

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> The results obtained meet our needs while significantly reducing image acquisition costs
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Housing Estate Construction | This aerial image shows a suburban housing development in progress. Such scenes illustrate the rapid urban expansion that local authorities must track. Without relying solely on costly aerial surveys, solutions like Kermap's Nimbo use Copernicus satellite imagery to automatically detect and monitor these changes at a high temporal frequency. Credits: Miguel Picq on Unsplash

Faced with the need to monitor land use evolution as closely as possible, local authorities can now rely on Kermap's Nimbo solution, which automatically detects changes on their territory at a monthly frequency based on advanced processing of Copernicus imagery.

THE CHALLENGE

To comply with new environmental, economic, and utility regulations, local authorities must update their land use and utility grid cartographic documentation on a more regular basis than before. The issue is that, to date, they have primarily relied on administrative declarations, which are often incomplete, incorrect, and slow to be issued, as well as high-resolution photographs from airborne acquisitions, which are very expensive. Local authorities thus need a solution that is at the same time able to provide information on land evolutions on a more frequent basis, that documents them with sufficient reliability, and that can do so at a contained cost. Either to directly report on changes or to spot the areas where airborne photographic acquisitions must be performed in priority to streamline flight plans.
Kermap's change detection process effectively meets these requirements.

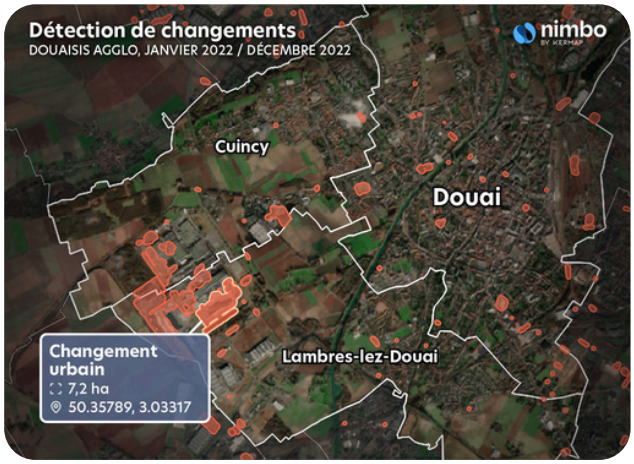
THE SPACE SOLUTIONS

ITo meet the new land use monitoring needs of local authorities, Kermap has developed a change detection process using its Nimbo solution.

Based on proprietary AI processing of Copernicus imagery, Nimbo provides a homogeneous, cloud-free satellite visualization of the entire world, updated monthly. This approach enables Kermap to offer a range of high-resolution land monitoring products at very high frequencies and in an automated way.

The Nimbo solution has been utilized to develop a change detection model applicable to any territory, enabling comparisons between two or more dates. Changes in land cover are automatically identified, with an accuracy of 2.50m per pixel, thanks to the application of super-resolution processes. These enhancements improve object identification, thereby enhancing the original resolution of Copernicus imagery (10m per pixel).

Applying this change detection model to Nimbo's monthly composites yields high-frequency information on the evolution of the territory over a chosen period. Continuous updating of the composites also enables near-real-time monitoring, providing the most recent information on changes in the area of interest.



The satellite change detection solution developed by Kermap helps the Hauts-de-France region closely monitor changes in land occupation such as new housing estate construction. Credits: Kermap

Once detected, the Nimbo detection model automatically interprets changes. This provides localized information on the areas concerned, cross-referenced with the type of change observed, ranging from natural to built-up status or vice versa.

THEMATIC AREA

Territorial Management and Urban Planning

REGION OF APPLICATION

Hauts-de-France

SENTINEL MISSION USED

S1, S2

COPERNICUS SERVICE USED

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THE BENEFITS AND THE BENEFICIARIES

Local authorities from municipal to regional levels are seeking reliable, high-frequency information on land evolution for various purposes :

- -As part of land take regulation compliance in France designed to curb new building in natural or farming areas. Kermap's change detection helps municipalities closely track land use trends through near-real-time monitoring of new construction, automatized and spatialized, producing more recent and tangible insights

- As part of the new regulation on utility grid anti-damage cartographic standards (PCRS) coming into force in 2026. Kermap's change detection enables local authorities or public services responsible for producing up-to-date orthophotography base maps to obtain reliable, extensive information on areas that need to be updated, thereby optimizing flight plans.

- As part of routine land use/land cover cartographic updating, Kermap helps relevant local authorities to ensure these documents are regularly updated, with improved quality and at reduced costs.

First comparisons with ground data have demonstrated that Kermap's process improves change identification by 40%, a crucial data input for beneficiaries at all decision levels.

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	TIER 1 SERVICE PROVIDER	TIER 2 PRIMARY USER	TIER 3 SECONDARY USER	TIER 4 END USER BENEFICIARIES
SERVICES AND BENEFITS	Sentinel-1 Sentinel-2	Information on changes in land use at custom intervals, provided as spatialized and analytic data on change area and type	User-ready data to update cartographic information and better track land evolutions	Information on land changes that is at once more reliable, more frequent, and much less expensvie than with prior methods
BENEFICIARIES	Kermap	Région Hauts-de-France	All public entities and administrations operating at local sub-levels (municipalities or municipality groupings, départements and all related public agencies)	All the region's inhabitants who will utlimately benefit from the development policies implemented on the basis on the produced data

EU POLICY / DIRECTIVE

Climate Action Policy

TYPE OF SERVICE PROVIDER

Commercial Service

TYPE OF FUNDING SOURCE

EU Research Programme
National Space Programmes

USAGE MATURITY LEVEL

4



A FUTURE WITH COPERNICUS

Following up on the robustness of its results, Kermap's change detection has earned very significant commercial traction on the French market in H1 2025. Kermap now plans to roll out its change detection offering globally to meet the increasing demand for urban development monitoring worldwide. This plan will be supported through the global coverage and monthly updates provided by our Nimbo solution, backed by Copernicus's Sentinel imagery. Other prospects for change detection development include forest monitoring to support public and corporate efforts to comply with upcoming EUDR regulations.



DID YOU KNOW?

Nimbo's monthly world views developed by Kermap are available through the Earth Online platform (https://maps.nimbo.earth) for everyone to explore, visualize, compare, and analyze land evolutions worldwide.

Acknowledgements

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