



Road traffic near Dallah, Douentza cercle (Mali)
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SATELLITE IMAGERY

to support WFP emergency response



CONTEXT

In 2019, the region of Mopti in central Mali faced a dramatic deterioration of its security situation. The presence of armed groups and self-defense militias, increasing criminality and intercommunal tensions triggered a spiral of violence, leading to a loss of livelihoods for displaced populations and difficulties in cultivating fields and accessing markets for those who have remained in their villages.

To overcome access constraints, WFP Mali used high-resolution satellite imagery¹, a homogeneous and objective data source able to scan the whole area of interest every six days. By detecting physical impacts of the conflict, such as cropland abandonment, the analysis provides a comprehensive overview of the 2019 post-harvest situation in Mopti region, allowing to identify vulnerability patterns and hotspots.

PROJECT OBJECTIVES

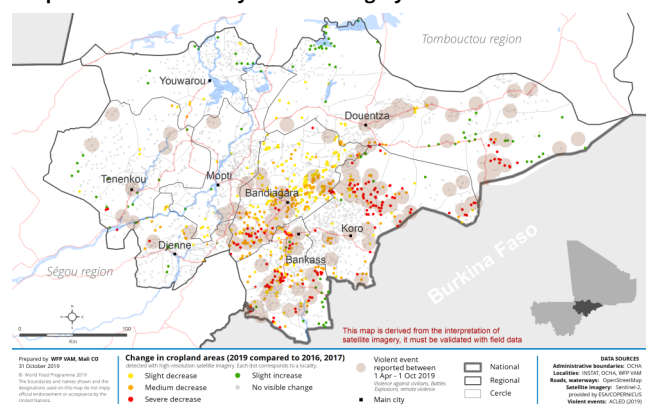
The products resulting of this pilot analysis are an overview map and population estimates in areas affected by agricultural decline. They provide evidence to inform WFP and all partners, contributing for :

- **Food security analysis** - in support of the Cadre Harmonisé of November 2019 and March 2020;
- **Humanitarian response** - as a tool to enhance targeting and decision-making mechanisms;
- **Advocacy** - by bringing to light tangible impacts of the ongoing violence in hard-to-reach areas.

KEY POINTS

- A decrease in cultivated land area was detected for **25%** of Mopti localities in 2019, compared to pre-conflict years.
- Localities affected by **medium** to **severe** cropland loss are situated in the south-eastern part of the region, where an exacerbated intercommunal violence occurs.
- **Violent events**² were reported in most localities where agricultural decline was detected in 2019.

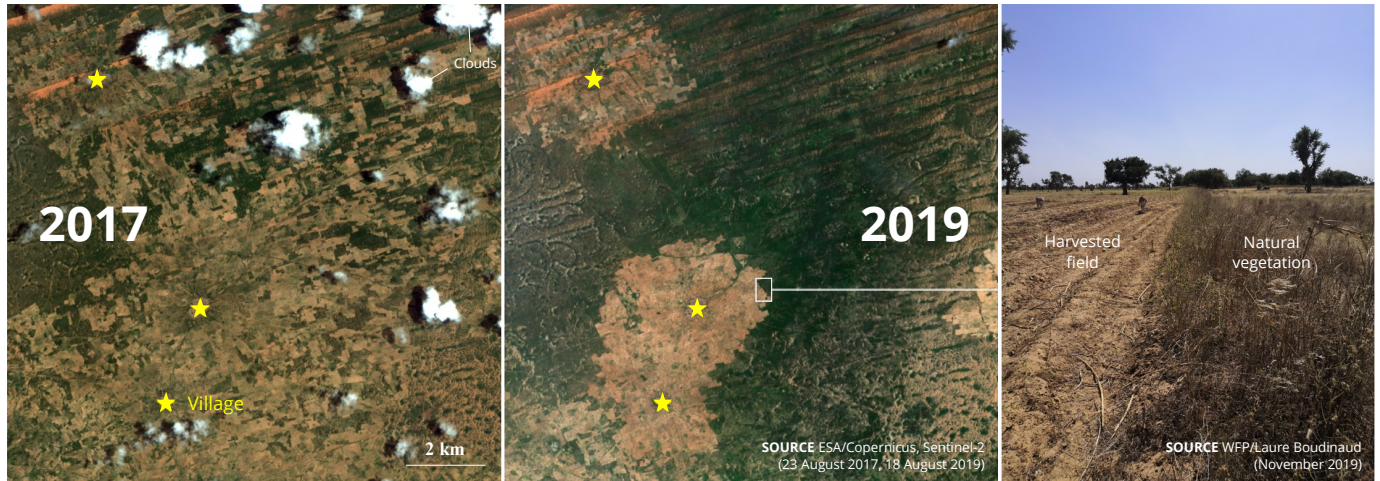
Cropland loss detected by satellite imagery and violent events in 2019



Satellite images acquired during the agricultural season were analysed to assess the degree of cropland change between 2019 and a year prior to the conflict (2016, 2017)

Earth Observation technology has become a mainstay of WFP analytical work since 2010 and is currently used for a number of operational activities throughout the organisation.

In the context of Mali, satellite imagery is useful to overcome access constraints and territory vastness: **by detecting agricultural decline, it helps identifying vulnerable villages.**



Satellite images showing the impact of movement restrictions on cropland patterns around three villages (Koro cercle)

Left The satellite image dated from August 23th 2017 shows natural vegetation in dark green, while cultivated fields appear as many beige rectangles, visibly spread all around the villages (represented with yellow stars).

Centre On the other image, dated from August 18th 2019, only the fields that are close to habitations appear to be cultivated, concentrated within a 2-kilometre buffer around the villages. Beyond this delimitation, natural vegetation covers up fields that farmers used to cultivate before, but were forced to abandon that year following direct threats or acts of violence.

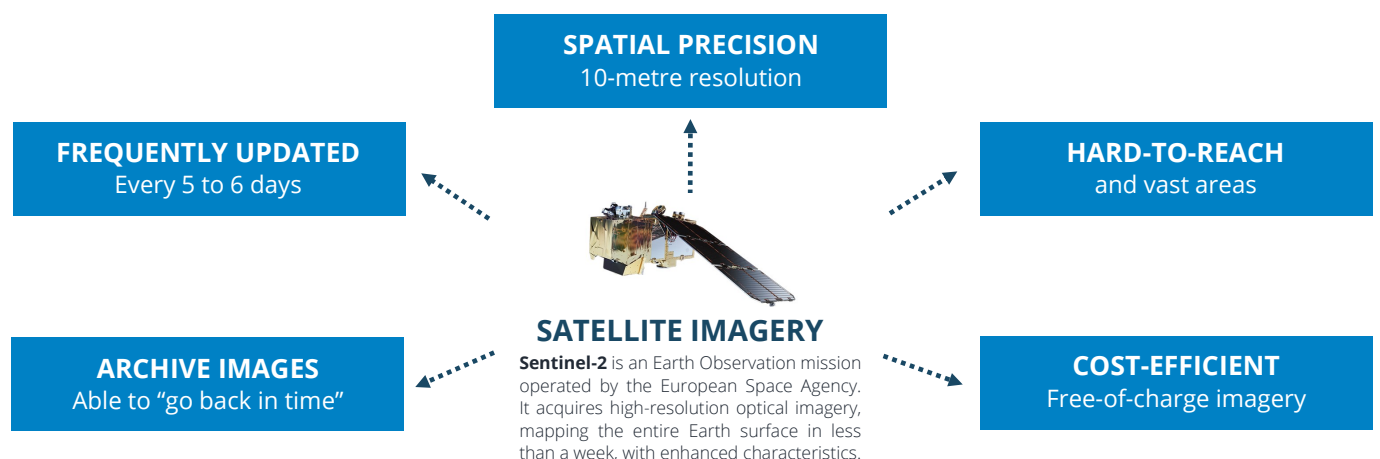
Right A field picture, taken during a validation mission conducted on November 21st 2019, shows the delineation beyond which farmers could not access to cultivate. Interviewees from all visited villages explained that they were unable to cultivate normally in 2019, due to insecurity, and confirmed the significant reductions in cropland areas, as detected from space.

3,166

NUMBER OF LOCALITIES covered by the analysis

655

NUMBER OF SATELLITE IMAGES processed per agricultural year



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