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## **PROJECT REFERENCE**

### **EVIDERI**

**Earth Observation as evidence in “Crimes Against Humanity”  
Investigation Process**

ESA Contract No. 4000142176/23/I-DT  
2023-2024



## EVIDERI - EO as evidence in “Crimes Against Humanity” Investigation Process

The last century was already characterized by heinous crimes committed during numerous conflicts that violated international law. As many remained unpunished, the International Criminal Court (ICC), established in 1998, took over the task “to investigate, prosecute and try individuals accused of committing the most serious crimes of concern to the international community as a whole, namely the crime of genocide, crimes against humanity, war crimes and the crime of aggression.”<sup>1</sup>

Any investigation and law to be enforced needs evidence for its application. For this reason, the ICC must be enabled by its mandate to use a broad range of technological tools for its institutional functions to retrieve information or gather elements that could be useful for the collection of evidence in the context of investigations into crimes against humanity.



Picture n.1: Residents try to pick up the pieces in their neighborhood after violences<sup>2</sup>.

EO-derived information may provide in this and similar cases valuable data and support evidence. In this regard, ESA, “an intergovernmental organization dedicated to the exploration and use of space for peaceful purposes”<sup>3</sup>, has launched several relevant initiatives to accelerate the innovative use of Earth Observation in the following contexts:

- ❖ Providing EO derived information to support investigations and response to international and transnational crimes.
- ❖ Promote the increased use of geospatial information as corroborating evidence in court.
- ❖ Investigate and foster the use of geospatial analysis in law enforcement investigations processes.

In this project, implemented by the team of companies sarmap with IABG and Janes, the main objective is to develop and implement services and tools that enable the ICC or authorities with similar mandates to manage and use information obtained from the analysis of imagery collected by Earth Observation satellite systems. By joining and compiling with other information sources such as Open Sources Intelligence (OSINT) and Social Media Intelligence (SOCINT), it is expected that a comprehensive understanding of the temporal and spatial context of criminal events will improve decision-making and law enforcement. This may be particularly relevant as gathering intelligence in war torn countries may be unsafe and challenging to access.

<sup>1</sup> <https://www.icc-cpi.int/sites/default/files/Publications/understanding-the-icc.pdf> (2020)

<sup>2</sup> <https://www.dabangasudan.org/en/all-news/article/west-darfur-catastrophe-retold-by-arab-tribal-leaders>

<sup>3</sup> <https://www.esa.int/>





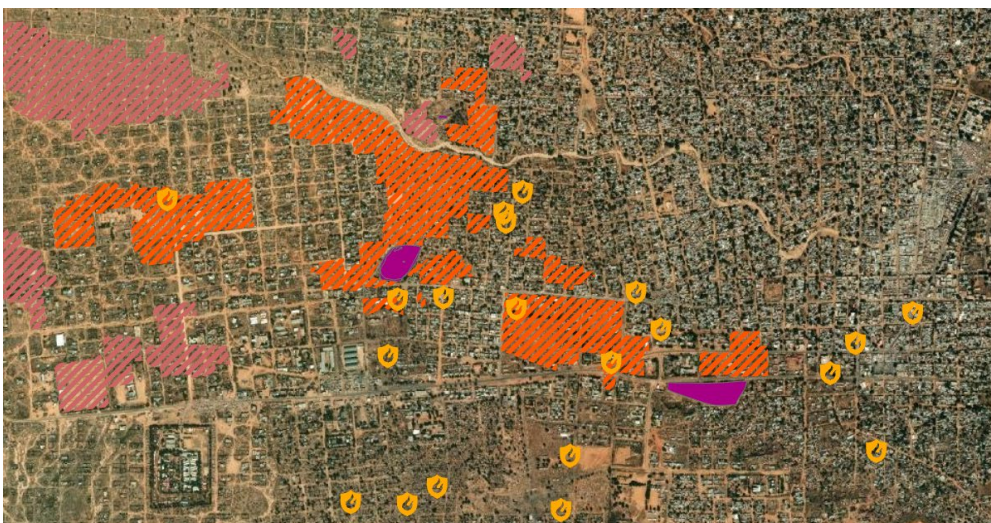
Picture n. 2 (on the left): shows a satellite imagery of a military base, showing ground signs of combat. The image was used to corroborate OSINT analyses.

Picture n.3 (on the right): shows a social media-drawn photo of a relevant bridge of interest. The image was used to verify the presence of radar reflectors reported by other OSINT sources.

As part of the *EVIDERI* project (ESA Contract No. 4000142176/23/I-DT - 2023-2024), user requirements focused on the forensic use of products derived from analyzing satellite imagery combined with information and OSINT data. Based on information requests (RFI) issued by the ICC, exemplary case studies were conducted to develop and define the complex process of creating products that can be used as evidence in war crimes investigations.

A phased approach has been implemented. First, as part of the analysis of earth observation data, the use of optical, Synthetic Aperture Radar (SAR), thermal or hyperspectral data was leveraged and the perspective of including the rapidly growing number of small satellites was considered. In parallel, this analytical process also included information gathering, such as event monitoring, conflict timeline, local media reports, change over time in areas of interests through OSINT and Earth Observation. The *EVIDERI* project team has then proceeded to the analysis, qualification, and validation of all the collected inputs. In a final step, meaningful products were provided to address adequately the RFI core questions.

In order to implement services and tools at authorities such as the ICC, security guidelines and highly standardized and qualified processes must also be considered so that data from different sources can be included and processed on a large scale.



Picture n. 3: Exemplary findings from the EO analysis and OSINT: burnt and destroyed areas, locations, localities, and fire incidents, each with individual time stamps for tracking the violences.

Selected data must be checked for sources, attribution and provenance, credibility, independence, and impartiality as well as quality in order to be used as evidence. These criteria are paramount for the selection of suitable and reliable information, especially in the case of OSINT findings.

- ❖ For EO and geospatial data, criteria such as correct geolocation, spatial and temporal resolution or coverage of the area of interest have been carefully examined and referenced. The availability and the selection of suitable optical and SAR sensors are crucial for the investigation of a RFI. Any manipulation of the input data must be checked and excluded so that the test results can be used as evidence at all.
- ❖ The integration of OSINT and GEOINT data provides another substantial layer of information to enrich the database for further use in the investigation process. Common keys such as date, location and/or names, event descriptions, metadata, and cross-references are critical to link together these different data.



Picture n. 4: The two images on the left are high-resolution SAR imagery acquired on different days. In the first image, various targets can be identified over the river. In the second image, damage to certain parts of the bridge is visible. On the right side there are images retrieved from online newspapers, depicting the presence of floating radar reflectors and the partial collapse of the bridge. This OSINT information were essential for classifying the targets and features visible in the SAR images.

When using extended systems which are able to process and join mass data, the quality of the results must be examined and crosschecked in any case. Depending on confidentiality requirements, the security aspects regarding data protection and storage, data transfer methodology as well as communication rules and paths must also be clarified.

Finally, the above-mentioned findings need to be transferred into highly automated procedures that will be able to transform incoming information into meaningful products for an RFI with the greatest possible care in terms of data selection, processing, credibility, and security aspects.