

**New Phase: RSF and SAF Clash in  
El-Fasher, Civilians Flee and Casualties Mount**

20 September 2024

**Yale** SCHOOL OF PUBLIC HEALTH  
*Humanitarian Research Lab*

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The Faculty Director of the Humanitarian Research Lab (HRL) at the Yale School of Public Health is Dr. Kaveh Khoshnood. The analysis and production of this report was overseen by HRL Executive Director Nathaniel Raymond and Caitlin Howarth. Analysis and report production was conducted by the Humanitarian Research Lab's Conflict Analytics team.

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## I. Key Findings

The Rapid Support Forces (RSF) continue to advance in El-Fasher, North Darfur, despite Sudanese Armed Forces (SAF) and Joint Forces claiming to repel individual waves of attacks. The Yale School of Public Health's Humanitarian Research Lab (HRL) corroborates open source videos that RSF have moved past SAF's first layer of defensive berms on 19 September 2024.<sup>1</sup> As the battle for El-Fasher continues to escalate, civilians appear to be fleeing from El-Fasher to Zamzam on foot. The situation in El-Fasher continues to deteriorate through 20 September 2024. Large groups of individuals appear on the road between El-Fasher and Zamzam as of 8 September; these previously unseen groups remain visible as recently as 19 September 2024.

**RSF Breaches SAF First Berm:** On 19 September 2024, RSF and SAF fought in close quarters past at least one of SAF's three lines of defensive berms that bisect the city, separating areas of control from RSF in the east and SAF areas of control in the west.<sup>2</sup> Yale HRL geolocated and corroborated open source reports of close-quarter battle between RSF and SAF and Joint Forces on 19 September 2024 inside SAF's first berm.<sup>3</sup>

Open sources report that RSF started firing artillery targeting SAF military bases, including the General Command and El-Fasher Airport.<sup>4</sup> RSF artillery also reportedly targeted northern and western neighborhoods in El-Fasher on 19 September.<sup>5</sup>

**Civilians on Foot Fleeing El-Fasher to Zamzam:** Yale HRL observed likely individuals traveling *en masse* by foot on the road from El-Fasher to Zamzam, consistent with civilian activity. Yale HRL first saw foot traffic on 8 September 2024 and continues to monitor this activity in satellite imagery, last visible on 19 September.

**SAF Force Swell to Defend B-26 Road to Zamzam:** SAF appears to be committing forces to defend the B-26 road to Zamzam within El-Fasher and a potential egress to the 6<sup>th</sup> infantry division base, according to imagery analysis from 19 and 20 September. This suggests that SAF assesses a risk to their exit route out of the city and to the security of their main installation.

**Expansion of Likely SAF and Joint Forces Graves in Recent Days:** Yale HRL observes earth disturbances consistent with graves near SAF and Joint Forces military installations. This may indicate a significant number of deaths among SAF, Joint Forces, and others. The disturbed earth has grown significantly between 23 August – 13 September 2024 and 13 – 19 September 2024; likely excavation activities appear ongoing as of 20 September 2024.

**Joint Forces Facility Struck by Munitions near Abu Shouk:** A Joint Forces facility was hit by a munition between 2-20 September 2024. This facility is located west of Abu Shouk; it was formerly a UNAMID compound. Yale HRL assesses that SAF currently holds Abu Shouk IDP camp. Its defensive capabilities on the northern axis, defending Abu Shouk, appear significantly limited.

**SAF Airstrikes on 20 September:** Yale HRL corroborates open source reports of airstrikes on 20 September 2024 in eastern neighborhoods of El-Fasher based on satellite imagery captured on 20 September 2024.<sup>6</sup> On 13 September 2024, Yale HRL

assessed that El-Fasher is a “free fire zone” with at least 50 buildings damaged and at least 118 munitions impacts across primarily the southern and eastern neighborhoods over a ten-day period.<sup>7</sup>

## Methodology

Yale HRL utilizes data fusion methodologies of open source and public and commercially available remote sensing data. Yale HRL produced this report through the cross-corroboration of open source and remote sensing data, including satellite imagery and thermal sensor data.

Place names were identified using UN P-codes obtained via the United Nations Humanitarian Data Exchange (HDX) and International Organization for Migration (IOM)’s Displacement Tracking Matrix (DTM) Sudan. This baseline source of information was then verified and informed through open source analysis by Yale HRL’s analysts with relevant cultural and linguistic skills. In some cases, communities may have names similar to other communities or may be known by multiple names.

Specific coordinates have been provided to support the further identification and disambiguation of specific place names and community locations. Human security concerns were accounted for as part of the decision to release specific coordinates; potential civilian risk was rated minimal because these communities have already been visibly attacked, and in the case of combat activity and coordinates are released, it is assessed that the combatants are aware of this situation.

## Limitations

There are significant limitations to the data fusion methodology. The information environment in Sudan does not have the breadth of data available in other locations and there is likely a significant reporting bias for those who provide open source reporting.

Satellite imagery analysis is limited by available imagery over time and space. Available nadir angles of satellite imagery can produce challenges to assess structural damage, until multiple angles and ground-level photographic and video materials emerge to help inform the analysis.

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<sup>1</sup> ‘Berm’ refers to disturbed earth in a specific formation. Berms are mounds of earth used to create defensive walls.

<sup>2</sup> Radio Dabanga “معارك ضارية وتدوين مدفعي وطيران حول الفاشر” September 20, 2024,

<https://www.dabangasudan.org/ar/all-news/article/%d9%85%d8%b9%d8%a7%d8%b1%d9%83-%d8%b6%d8%a7%d8%b1%d9%8a%d8%a9-%d9%88%d8%aa%d8%af%d9%88%d9%8a%d9%86-%d9%85%d8%af%d9%81%d8%b9%d9%8a-%d9%88%d8%b7%d9%8a%d8%b1%d8%a7%d9%86-%d8%ad%d9%88%d9%84-%d8%a7%d9%84>, archived at <https://perma.cc/DV3U-C724> ; Sudan Tribune,

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“، الجيش والقوة المشتركة يصدان هجوماً ضارياً للدعم السريع على الفاشر”، September 19, 2024,

<https://sudantribune.net/article291094/>, archived at <https://perma.cc/7T8V-8SMC>

<sup>3</sup> HRL\_MMC\_039 ; Radio Dabanga “معارك ضارية وتدوين مدفعي وطيران حول الفاشر” September 20, 2024,

[https://www.dabangasudan.org/ar/all-](https://www.dabangasudan.org/ar/all-news/article/%d9%85%d8%b9%d8%a7%d8%b1%d9%83-%d8%b6%d8%a7%d8%b1%d9%8a%d8%a9-%d9%88%d8%aa%d8%af%d9%88%d9%8a%d9%86-%d9%85%d8%af%d9%81%d8%b9%d9%8a-%d9%88%d8%b7%d9%8a%d8%b1%d8%a7%d9%86-%d8%ad%d9%88%d9%84-%d8%a7%d9%84)

[news/article/%d9%85%d8%b9%d8%a7%d8%b1%d9%83-%d8%b6%d8%a7%d8%b1%d9%8a%d8%a9-%d9%88%d8%aa%d8%af%d9%88%d9%8a%d9%86-%d9%85%d8%af%d9%81%d8%b9%d9%8a-%d9%88%d8%b7%d9%8a%d8%b1%d8%a7%d9%86-%d8%ad%d9%88%d9%84-%d8%a7%d9%84](https://www.dabangasudan.org/ar/all-news/article/%d9%85%d8%b9%d8%a7%d8%b1%d9%83-%d8%b6%d8%a7%d8%b1%d9%8a%d8%a9-%d9%88%d8%aa%d8%af%d9%88%d9%8a%d9%86-%d9%85%d8%af%d9%81%d8%b9%d9%8a-%d9%88%d8%b7%d9%8a%d8%b1%d8%a7%d9%86-%d8%ad%d9%88%d9%84-%d8%a7%d9%84), archived at <https://perma.cc/DV3U-C724> ; Sudan Tribune,

“الجيش والقوة المشتركة يصدان هجوماً ضارياً للدعم السريع على الفاشر”، September 19, 2024,

<https://sudantribune.net/article291094/>, archived at <https://perma.cc/7T8V-8SMC>

<sup>4</sup> Sudan Tribune, “، الجيش والقوة المشتركة يصدان هجوماً ضارياً للدعم السريع على الفاشر”، September 19, 2024,

<https://sudantribune.net/article291094/>, archived at <https://perma.cc/7T8V-8SMC> ;

Radio Dabanga “معارك ضارية وتدوين مدفعي وطيران حول الفاشر” September 20, 2024,

[https://www.dabangasudan.org/ar/all-](https://www.dabangasudan.org/ar/all-news/article/%d9%85%d8%b9%d8%a7%d8%b1%d9%83-%d8%b6%d8%a7%d8%b1%d9%8a%d8%a9-%d9%88%d8%aa%d8%af%d9%88%d9%8a%d9%86-%d9%85%d8%af%d9%81%d8%b9%d9%8a-%d9%88%d8%b7%d9%8a%d8%b1%d8%a7%d9%86-%d8%ad%d9%88%d9%84-%d8%a7%d9%84)

[news/article/%d9%85%d8%b9%d8%a7%d8%b1%d9%83-%d8%b6%d8%a7%d8%b1%d9%8a%d8%a9-%d9%88%d8%aa%d8%af%d9%88%d9%8a%d9%86-%d9%85%d8%af%d9%81%d8%b9%d9%8a-%d9%88%d8%b7%d9%8a%d8%b1%d8%a7%d9%86-%d8%ad%d9%88%d9%84-%d8%a7%d9%84](https://www.dabangasudan.org/ar/all-news/article/%d9%85%d8%b9%d8%a7%d8%b1%d9%83-%d8%b6%d8%a7%d8%b1%d9%8a%d8%a9-%d9%88%d8%aa%d8%af%d9%88%d9%8a%d9%86-%d9%85%d8%af%d9%81%d8%b9%d9%8a-%d9%88%d8%b7%d9%8a%d8%b1%d8%a7%d9%86-%d8%ad%d9%88%d9%84-%d8%a7%d9%84), archived at <https://perma.cc/DV3U-C724>

<sup>5</sup> Sudan Tribune, “، الجيش والقوة المشتركة يصدان هجوماً ضارياً للدعم السريع على الفاشر”، September 19, 2024,

<https://sudantribune.net/article291094/>, archived at <https://perma.cc/7T8V-8SMC> ;

Radio Dabanga “معارك ضارية وتدوين مدفعي وطيران حول الفاشر” September 20, 2024,

[https://www.dabangasudan.org/ar/all-](https://www.dabangasudan.org/ar/all-news/article/%d9%85%d8%b9%d8%a7%d8%b1%d9%83-%d8%b6%d8%a7%d8%b1%d9%8a%d8%a9-%d9%88%d8%aa%d8%af%d9%88%d9%8a%d9%86-%d9%85%d8%af%d9%81%d8%b9%d9%8a-%d9%88%d8%b7%d9%8a%d8%b1%d8%a7%d9%86-%d8%ad%d9%88%d9%84-%d8%a7%d9%84)

[news/article/%d9%85%d8%b9%d8%a7%d8%b1%d9%83-%d8%b6%d8%a7%d8%b1%d9%8a%d8%a9-%d9%88%d8%aa%d8%af%d9%88%d9%8a%d9%86-%d9%85%d8%af%d9%81%d8%b9%d9%8a-%d9%88%d8%b7%d9%8a%d8%b1%d8%a7%d9%86-%d8%ad%d9%88%d9%84-%d8%a7%d9%84](https://www.dabangasudan.org/ar/all-news/article/%d9%85%d8%b9%d8%a7%d8%b1%d9%83-%d8%b6%d8%a7%d8%b1%d9%8a%d8%a9-%d9%88%d8%aa%d8%af%d9%88%d9%8a%d9%86-%d9%85%d8%af%d9%81%d8%b9%d9%8a-%d9%88%d8%b7%d9%8a%d8%b1%d8%a7%d9%86-%d8%ad%d9%88%d9%84-%d8%a7%d9%84), archived at <https://perma.cc/DV3U-C724>

<sup>6</sup> HRL\_MMC\_040

<sup>7</sup> Caitlin N. Howarth, Kaveh Khoshnood, Nathaniel A. Raymond et al. “Free-Fire Zone: Widespread Aerial and Artillery Bombardment across El-Fasher.” 13 September 2024. Humanitarian Research Lab at Yale School of Public Health: New Haven.

[https://medicine.yale.edu/lab/khoshnood/publications/sep-13-2024-hrl-report\\_484830\\_26865\\_v2.pdf](https://medicine.yale.edu/lab/khoshnood/publications/sep-13-2024-hrl-report_484830_26865_v2.pdf)

# Halima's House, El-Fasher

## RSF GEOLOCATED AT SAF DEFENSIVE BERM IN EL-FASHER



13 September 2024 © 2024 Maxar, UGS-Plus

Analysis of satellite imagery collected between 13 and 20 September 2024, imagery analysts geolocated multimedia content of likely RSF forces along B-26 route in the center of El-Fasher.

The RSF vehicles in this video are present at SAF's easternmost defensive berms in the open source video.



20 September 2024 © 2024 Maxar, UGS-Plus

Source: HRL\_MMC\_039. Source is redacted for human security purposes.

# Al-Jil Neighborhood, El-Fasher

**DAMAGE OBSERVED BETWEEN  
19-20 SEPTEMBER 2024**

Analysis of satellite imagery collected between 19 and 20 September 2024 shows damage to structures in the Al-Jil Neighborhood in El-Fasher.



19 September 2024 © 2024 Planet



20 September 2024 © 2024 Maxar, USG-Plus

# B-26 Road between El-Fasher and Zamzam

PEOPLE OBSERVED ON ROAD BETWEEN 11:06-14:10 GMT+2 ON 19 SEPTEMBER 2024

Analysis of two satellite images collected on 19 September 2024 shows a crowd of people present on the B26 road, approximately 2 km north of the main entry checkpoint to Zamzam IDP camp.

This activity consistent with people on foot was first visible on 8 September 2024.



19 September 2024, 11:06 GMT+2 © 2024 Maxar, USG-Plus



19 September 2024, 14:10 GMT+2 © 2024 Maxar, USG-Plus



# Western El-Fasher

## GRAVE ACTIVITY OBSERVED 19-20 SEPTEMBER 2024

Analysis of satellite imagery of 20 September shows an increase in earth disturbance since 19 September and excavation activity at a likely gravesite in western El-Fasher.

This highly likely grave activity is near Joint Forces facilities in El-Fasher and it is consistent with burial practices of aligned forces.



19 September © 2024 Maxar, USG-Plus



20 September © 2024 Maxar, USG-Plus

# SAF 6<sup>th</sup> Division Airbase, El-Fasher

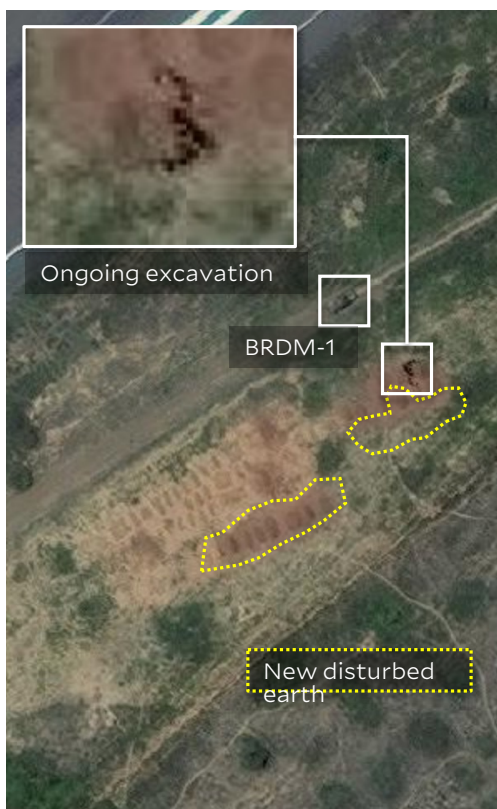
## GRAVESITE ACTIVITY OBSERVED 23 AUGUST-20 SEPTEMBER 2024

Imagery collected over a previously identified gravesite at the airstrip of SAF 6<sup>th</sup> Division shows a significant increase in disturbed earth first between 23 August and 13 September 2024. Imagery on 13 September shows an excavation underway and a vehicle consistent with a BRDM-1 armored scout car present.

Imagery collected on 19 September shows another significant increase in disturbed earth and by 20 September further excavation activity and the presence of a gun-mounted light technical vehicle are observed.



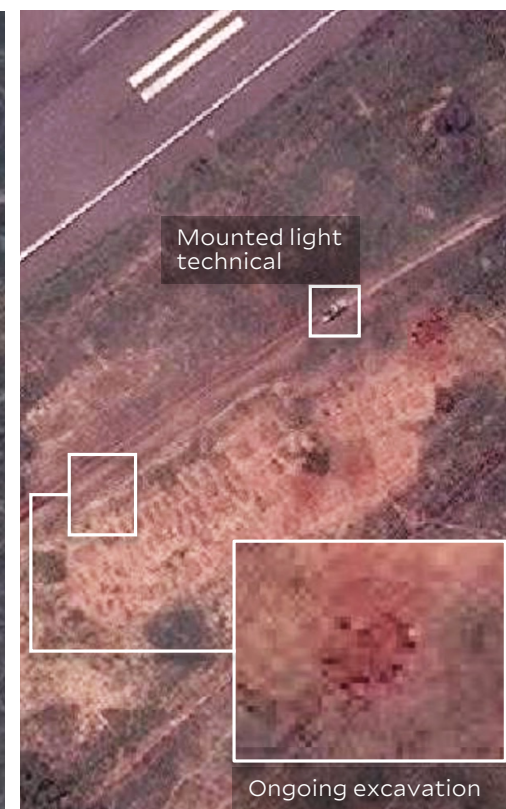
23 August 2024 © 2024 Maxar, USG Plus



13 September © 2024 Maxar, USG Plus



19 September 2024 © 2024 Maxar, USG Plus



20 September 2024 © 2024 Maxar, USG Plus

# Former UNAMID Compound, El-Fasher

**DAMAGE OBSERVED BETWEEN  
17-20 SEPTEMBER 2024**



17 September 2024 © 2024 Planet

Analysis of satellite imagery collected between 17 and 20 September 2024 shows damage to a building in the Joint Forces facility in the former UNAMID compound in western El-Fasher.

This location is located to the west of Abu Shouk IDP camp.



20 September 2024 © 2024 Maxar, USG-Plus