Confirmation of High-Tempo Aerial Bombardment in El-Fasher, 1-6 October 2024

7 October 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 Yale School of Public Health's Humanitarian Research Lab (HRL) confirms a highintensity, large-scale bombardment campaign that includes significant likely Sudan Armed Forces (SAF) bombardment in El-Fasher, North Darfur from 1-6 October 2024. Yale HRL has assessed at least 72 munition impacts damaging at least 82 structures in El-Fasher during this period. These munition impacts are almost exclusively located in the RSF-controlled east, southeast, and south neighborhoods of El-Fasher and include damage to a mosque, consistent with open-source reports.¹ A plurality of these munition impacts is highly consistent with high-tempo aerial bombardment by SAF; others are consistent with rockets. Two exceptions to this are two likely RSF munition impacts in southwest El-Fasher which damaged structures within SAF's assessed area of control, west of SAF's defensive berms.

This assessment is consistent with open source reporting that SAF conducted multiple rounds of airstrikes in the eastern, southeastern, and southern neighborhoods of El-Fasher between 1-5 October.² There are reports that both RSF and SAF have used heavy weapons and drones in El-Fasher.³ This assessment was conducted without satellite imagery of most of the northern half of El-Fasher, including Abu Shouk and Al-Salaam IDP camps, and as a result likely understates the bombardment across El-Fasher.

This bombardment damage is comparable to the airstrikes documented between 3-13 September 2024 when Yale HRL assessed at least 118 munition impacts and 50 instances of structural damage.⁴ A significant number of munition impacts from 1-6 October are further west than those assessed between 3-13 September, including multiple impact points located at or inside SAF's first line of defensive berms.⁵

As clashes between the RSF and Joint Forces reach other areas of North and West Darfur, SAF continues to conduct high-tempo combat operations across Darfur.⁶ There are reports of SAF airstrikes elsewhere in North Darfur, including Mellit, Kuma, Kutum, and Kadarik.⁷ Simultaneously, there are widespread open source reports that significant Joint Forces reinforcements are entering Darfur. A purportedly large contingent is seeking to reinforce SAF and Joint Forces in El-Fasher.⁸

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.

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 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.

The tools and techniques present significant challenges to assess activities such as extrajudicial detention, conflict-related sexual violence (CRSV), and conflict-related casualties, particularly in environments with limited data.

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. This report is limited by available satellite imagery, which does not currently allow for an assessment of the bombardment to the entirety of the El-Fasher including the Abu Shouk and Al-Salaam IDP camps.

news/article/%d9%85%d8%b9%d8%a7%d8%b1%d9%83-%d8%b9%d9%86%d9%8a%d9 %81%d8%a9-%d9%81%d9%8a-%d8%a7%d9%84%d9%81%d8%a7%d8%b4%d8%b1%d8 %8c-%d9%88%d8%a7%d9%84%d9%85%d8%b4%d8%aa%d8%b1%d9%83%d8%a9-%d8 %aa%d8%b3%d9%8a%d8%b7, archived at https://perma.cc/74UL-4D9B

² Almadarnet^{*} الفاشر السود انية تشهد تصعيدًا عسكريًا مجددًا وسط تحليق مكثف لمُسَير ات طرفيَ^{*} October 1, 2024, , archived at <u>https://perma.cc/PM7L-ESAY</u>, Almadarnet الصراع.^{*}, الفاشر السود انية تشهد تصعيدًا عسكريًا مجددًا وسط تحليق مكثف لمُسَير ات طرفيَ الصراع.^{*}, October 1, 2024, , archived at https://perma.cc/PM7L-ESAY,

https://almadarnet.com/%d8%a7%d9%84%d9%81%d8%a7%d8%b4%d8%b1-%d8%a7 %d9%84%d8%b3%d9%88%d8%af%d8%a7%d9%86%d9%8a%d8%a9-%d8%aa%d8%b4 %d9%87%d8%af-%d8%aa%d8%b5%d8%b9%d9%8a%d8%af%d9%8b%d8%a7-%d8%b9 %d8%b3%d9%83%d8%b1%d9%8a%d9%8b/, archived at <u>https://perma.cc/PM7L-ESAY;</u> HRL_MMC_041; HRL_MMC_042; HRL_MMC_043

³ Radio Dabanga, ", تجدد المعارك في الفاشر، وقصف جوي على كتم بشمال دارفور", "September 30, 2024, <u>https://www.dabangasudan.org/ar/all-</u>

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¹@Sudan_tweet (on X, formerly known as Twitter), " بدأ التدوين المدفعي اليوم من قبل مليشيات, " October 1, 2024, <u>https://x.com/Sudan_tweet/status/1841074947138937206</u>, archived at https://perma.cc/YZ4B-S24U; Radio Dabanga, " مزة "بشمال حلى "بثر " October 2, 2024, <u>https://www.dabangasudan.org/ar/all</u>-

⁴ 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.

⁵ 'Berm' refers to disturbed earth in a specific formation. Berms are mounds of earth used to create defensive walls.

⁶ International Organization for Migration, "DTM Sudan Flash Alert: Conflict in Kutum (Birmaza and Disa Villages), North Darfur," October 6, 2024,

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⁷ Radio Dabanga, "El Koma in North Darfur buries 65 victims of Sudan air force attacks" October 6, 2024, https://www.dabangasudan.org/en/all-news/article/el-koma-innorth-darfur-buries-65-victims-of-sudan-air-force-attacks, archived at <u>https://perma.cc/73V5-CMTW</u>; Darfur24, "مقتل 5 أشخاص بينهم 3 أطفال في غارة جوية على 7

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Munition Impacts in East and South El-Fasher



Southeast El-Fasher

Analysis of satellite imagery collected between 01-06 October 2024 shows smoke plumes emanating from recent impacts to likely artillery strike in eastern El-Fasher.

CONFLICT-RELATED DAMAGE OBSERVED BETWEEN 01-06 OCTOBER 2024



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Unidentified Mosque, El-Fasher

CONFLICT-RELATED DAMAGE OBSERVED BETWEEN 01-06 OCTOBER 2024



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Analysis of satellite imagery collected between 01-06 October 2024, shows conflict-related damage from likely aerial bombing to structures at the unidentified Mosque in El-Fasher.



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Timinat Cemetery, El-Fasher

MUNITIONS IMPACT AND CONFLICT-RELATED DAMAGE OBSERVED BETWEEN 01-06 OCTOBER 2024

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Analysis of satellite imagery collected between 01-06 October 2024 shows a munition impact and damage to structures from likely aerial bombardment to the Timinat cemetery in El-Fasher.



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Southwest El-Fasher

CONFLICT-RELATED DAMAGE OBSERVED BETWEEN 01-06 OCTOBER 2024



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Analysis of satellite imagery collected between 01-06 October 2024 shows conflict-related damage to structures from likely artillery shelling in the southwestern neighborhood of El-Fasher. This area is likely under SAF control.

Another building appeared to have solar panels removed during this timeframe.



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