Arson Attack & Airstrikes at Community Near Zamzam IDP Camp

14 February 2025

Yale SCHOOL OF PUBLIC HEALTH
Humanitarian Research Lab

This report was independently produced by the Yale School of Public Health's Humanitarian Research Lab with the support of the Avaaz Foundation. Learn more at https://medicine.yale.edu/lab/khoshnood/ and https://avaaz.org.

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.

Citation | Caitlin N. Howarth, Kaveh Khoshnood, Nathaniel A. Raymond et al. "Arson Attack & Airstrikes at Community Near Zamzam IDP Camp." 14 February 2025. Humanitarian Research Lab at Yale School of Public Health: New Haven.

I. Key Findings

The Yale School of Public Health's Humanitarian Research Lab (HRL) identifies likely airstrikes and an arson attack at a community 2.5 km north of Zamzam Internally Displaced Persons (IDP) Camp between 13 and 14 February 2025. Temporary structures consistent with IDP shelters are visible in this community, and one of the likely airstrikes is at a potential water point or distribution location where civilians regularly gather, most recently in satellite imagery on 13 Feb 2025. This activity was previously unreported.

Likely Airstrikes: At least three large aerial munition impacts are visible in the community. One of the large munition impacts destroyed an area which may serve as a water point, distribution site, or other civilian gathering area. Analysis of archival satellite imagery shows consistent clustering of people around this location. The size and dark coloration of the sprays from the munition impacts in this community are consistent with aerial strikes.

Thermal scarring: The pattern of thermal scarring at a cluster of structures indicates that the damage was likely due to an intentional ground-based attack consistent with previous attacks by Rapid Support Forces (RSF) in the area.[1]

This community likely serves as a satellite community to Zamzam IDP Camp for internally displaced persons fleeing to or from the camp. Temporary structures consistent with IDP shelters are visible in this community and have increased in recent weeks. This community may have been an intake area for people entering Zamzam camp at one point. Sudan Armed Forces (SAF) and RSF have both deliberately targeted water points and other critical civilian infrastructure. SAF has a demonstrated pattern of using airstrikes to hit known water distribution points.[2]

A potential hypothesis about this pattern of damage is that RSF-aligned forces assaulted or were conducting an arson attack on this IDP community either before or after SAF airstrikes hit this location. It is unknown when this airstrike activity occurred. Yale HRL cannot corroborate the chain of effects to high confidence. This incident raises significant human security concerns because it may indicate SAF attempts to attack RSF forces while they are inside the community. This will likely increase the risk of civilian casualties, destruction of critical civilian infrastructure, and further displacement.

II. Methodology

Yale HRL utilizes data fusion methodologies of open source and remote sensing data analysis. Yale HRL produced this report through the cross-corroboration of open source data, including social media, local news reporting, multimedia, and other reports, and remote sensing data, including satellite imagery and thermal sensor data. Researchers analyzed open source data across social media, news reports, and other publicly available sources to identify, chrono- and geolocate, and verify incidents. Analysts assess the credibility and reliability of open source data based on a source's

level of detail, past credibility, and the corroboration of other independent sources. Remote sensing and satellite imagery analysis relies on multi-temporal change detection, which involves the comparison of two or more satellite images of the same area captured at different times to detect differences in coloration, visual properties, and presence, absence, or positional change of objects across the images.

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 was then verified and informed through open source analysis by Yale HRL's analysts with relevant cultural and linguistic skills.

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. 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. Image resolution level can also limit the analyst's ability to perceive the full extent of damage present.

---

[1] Caitlin N. Howarth, Kaveh Khoshnood, Nathaniel A. Raymond et al. "Kill Box: RSF Attacks IDP Camps and Razes Dozens of Communities around El-Fasher." 5 February 2025. Humanitarian Research Lab at Yale School of Public Health: New Haven.

[2] Human Rights Watch, "Darfur in Flames: Atrocities in Western Sudan," A1605, 2 April 2004, https://www.hrw.org/reports/2004/sudan0404/sudan0404.pdf, archived at https://perma.cc/V5BY-7M68; Ayin network, "Two Towns in North Darfur - Permanent Targets for Sudan's Airstrikes," November 25, 2024, https://3ayin.com/en/airstrikes-2/, archived at https://perma.cc/TF34-4WUG.

Community North of Zamzam IDP Camp

MUNITION IMPACT, THERMAL SCARRING, AND DAMAGE TO STRUCTURES OBSERVED BETWEEN 13-14 FEBRUARY 2025

Analysis of satellite imagery collected between 13 and 14 February 2025 of a community 2.5 km north of Zamzam shows the new presence of a munition impact, thermal scarring, and damage to structures.

13 February 2025 © 2025 Maxar Technologies
Image enhanced with MGP Pro HD image enhancement

14 February 2025 © 2025 Maxar Technologies
Image enhanced with MGP Pro HD image enhancement

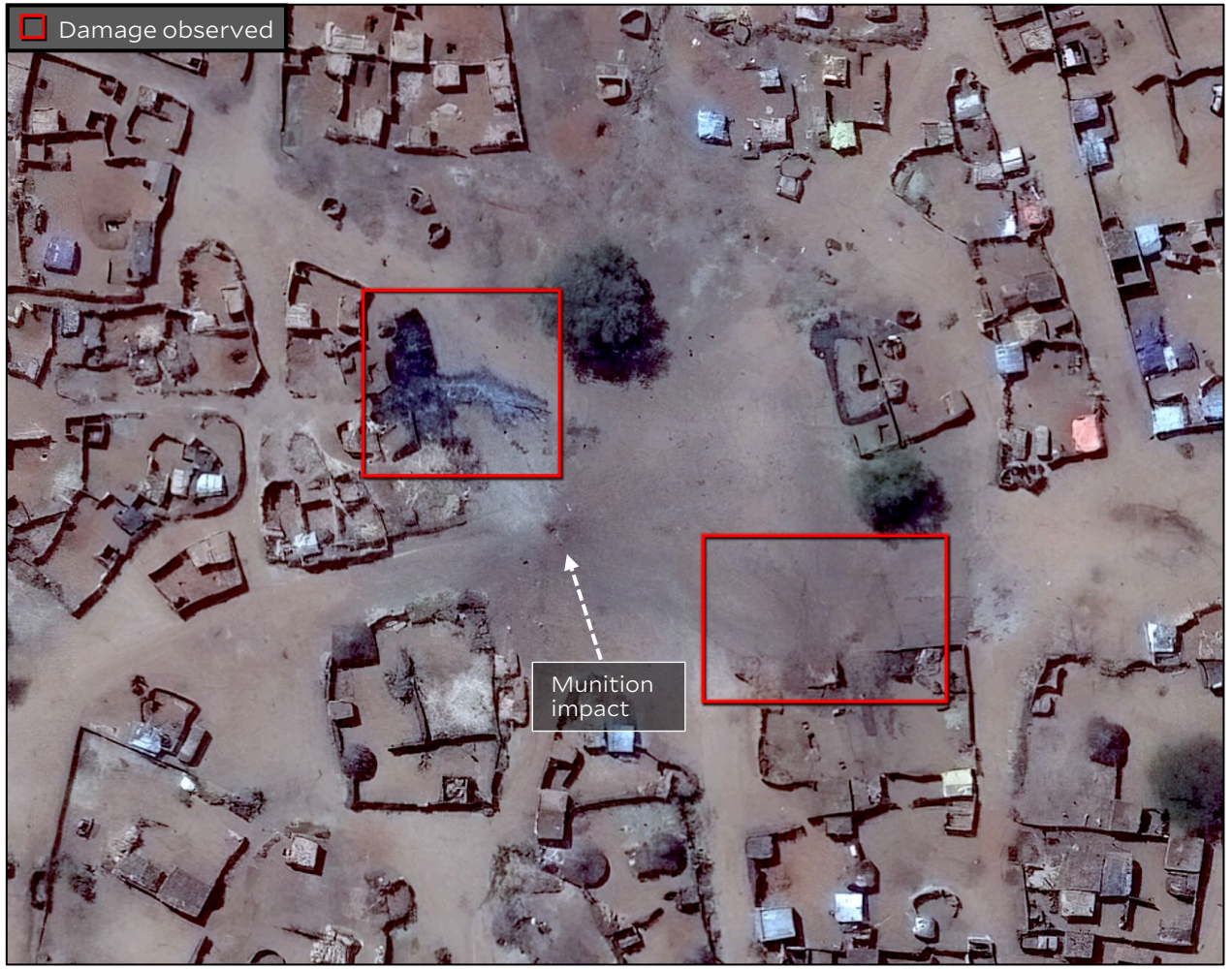
Community North of Zamzam IDP Camp

MUNITION IMPACTS AND DAMAGE TO STRUCTURES OBSERVED BETWEEN 13-14 FEBRUARY 2025

Analysis of satellite imagery collected between 13 and 14 February 2025 of a community 2.5 km north of Zamzam shows the new presence of a munition impact and damage to structures.

Analysis of archival imagery shows the presence of people regularly gathering in this location. This location may serve as a water point, distribution site, or other civilian gathering area.

13 February 2025 © 2025 Maxar Technologies
Image enhanced with MGP Pro HD image enhancement



14 February 2025 © 2025 Maxar Technologies
Image enhanced with MGP Pro HD image enhancement

Community North of Zamzam IDP Camp

MUNITION IMPACT OBSERVED BETWEEN 13-14 FEBRUARY 2025

Analysis of satellite imagery collected between 13 and 14 February 2025 of a community 2.5 km north of Zamzam shows the new presence of a munition impact on the southern side of the community.

13 February 2025 © 2025 Maxar Technologies
Image enhanced with MGP Pro HD image enhancement

14 February 2025 © 2025 Maxar Technologies
Image enhanced with MGP Pro HD image enhancement

Community North of Zamzam IDP Camp

MUNITION IMPACT OBSERVED BETWEEN 13-14 FEBRUARY 2025

Analysis of satellite imagery collected between 13 and 14 February 2025 of a community 2.5 km north of Zamzam shows the new presence of a munition impact on the eastern side of the community.

13 February 2025 © 2025 Maxar Technologies
Image enhanced with MGP Pro HD image enhancement

14 February 2025 © 2025 Maxar Technologies
Image enhanced with MGP Pro HD image enhancement

Yale SCHOOL OF PUBLIC HEALTH

Humanitarian Research Lab

https://medicine.yale.edu/lab/khoshnood/