Human Security Emergency: Ongoing RSF Arson Attacks and Force Swell in Zamzam IDP Camp

16 April 2025

Yale SCHOOL OF PUBLIC HEALTH
Humanitarian Research Lab

Maps utilize data sources from: Esri, HERE, NASA, NGA, USGS, Esri, © OpenStreetMap contributors, TomTom, Garmin, Foursquare, METI/NASA, USGS

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I. Key Findings

The Yale School of Public Health's Humanitarian Research Lab (HRL) assesses that Rapid Support Forces (RSF) continue to raze Zamzam Internally Displaced Persons (IDP) Camp through intentional arson attacks. Through analysis of satellite imagery from 16 April 2025, Yale HRL identifies multiple active fires widespread across Zamzam IDP camp and Ammar Gedid, a community immediately northwest of Zamzam. On 16 April 2025, active fires are newly present between satellite images taken at 09:08 UTC and 12:08 UTC, indicating that arson attacks are underway in Zamzam throughout the day. Analysis of satellite imagery from 14-16 April 2025 shows thermal scarring to 0.536 square kilometers of Zamzam, in addition to the approximately 1.183 square kilometers previously assessed as destroyed between 11-14 April 2025.[1] Between 11-16 April 2025, a total of 1.719 square kilometers of Zamzam has been destroyed, equivalent to 24.21 standard FIFA football pitches.[2] According to analysis of Visible Infrared Imaging Radiometer Suite (VIIRS) data, active fires have been present every day in the IDP camp since RSF's assault — which resulted in the capture of Zamzam — began on 11 April 2025.

Yale HRL also assesses the presence of RSF troops equivalent in number to a regular infantry-sized large brigade to a small division force in and around Zamzam. This includes approximately 350 vehicles in the eastern region and at least 50 vehicles in other areas of the camp. RSF force strength, based solely on a count of vehicles visible in satellite imagery, has at least doubled between 11 and 16 April 2025. The majority of vehicles visible in satellite imagery appear to have mounted weapons. An armed RSF force of this size and proximity poses a significant threat to El-Fasher, which has been under RSF attack and siege since at least May 2024.[3]

Activity consistent with civilian displacement from Zamzam through analysis of satellite imagery from 16 April 2025, corroborating reports reviewed by Yale HRL.[4] Vehicles are positioned around Zamzam's perimeter, including all four major access points to the camp, likely limiting civilian freedom of movement for those attempting to escape. UN OCHA reported on 15 April 2025 that RSF are "preventing those who remain inside, especially young people, from leaving."[5]

While an ongoing communication blackout has limited information from Zamzam, Yale HRL assesses that mass atrocities, including mass killing, torture, and conflict-related sexual violence (CRSV), are likely ongoing in Zamzam.

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. OCHA reports that as of 15 April, "Zamzam camp remains inaccessible, and a communication blackout continues to hinder efforts to verify the situation on the ground."[6] The information environment in Sudan lacks 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.

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[1] Caitlin N. Howarth, Kaveh Khoshnood, Nathaniel A. Raymond et al. "Human Security Emergency: RSF Forces Capture and Destroy Zamzam IDP Camp," 14 April 2025. Humanitarian Research Lab at Yale School of Public Health: New Haven

[2] The definition of football pitches aligns with the FIFA standard football pitches. FIFA recommends a dimension of 105 meters x 68 meters, an area equivalent to 0.071 kilometers squared. FIFA, "5.3: Pitch Dimensions and Surrounding Areas," 2021, https://publications.fifa.com/de/football-stadiums-guidelines/technical-guideline/stadium-guidelines/p

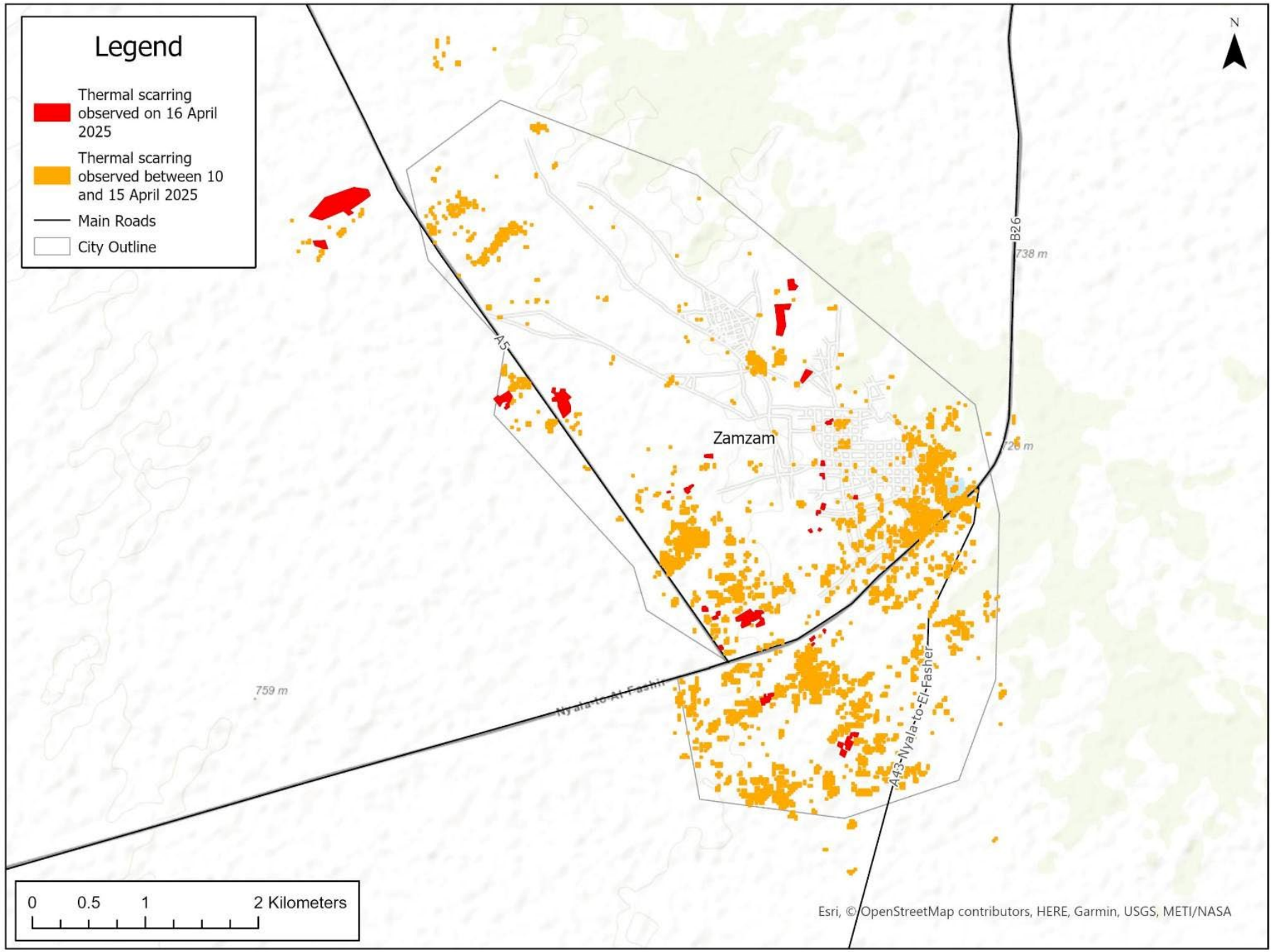
[3] Caitlin N. Howarth, Kaveh Khoshnood, Nathaniel A. Raymond et al. "Assessment of Conflict-Damaged Civilian Dwellings in El-Fasher" 2 May 2024. Humanitarian Research Lab at Yale School of Public Health: New Haven.

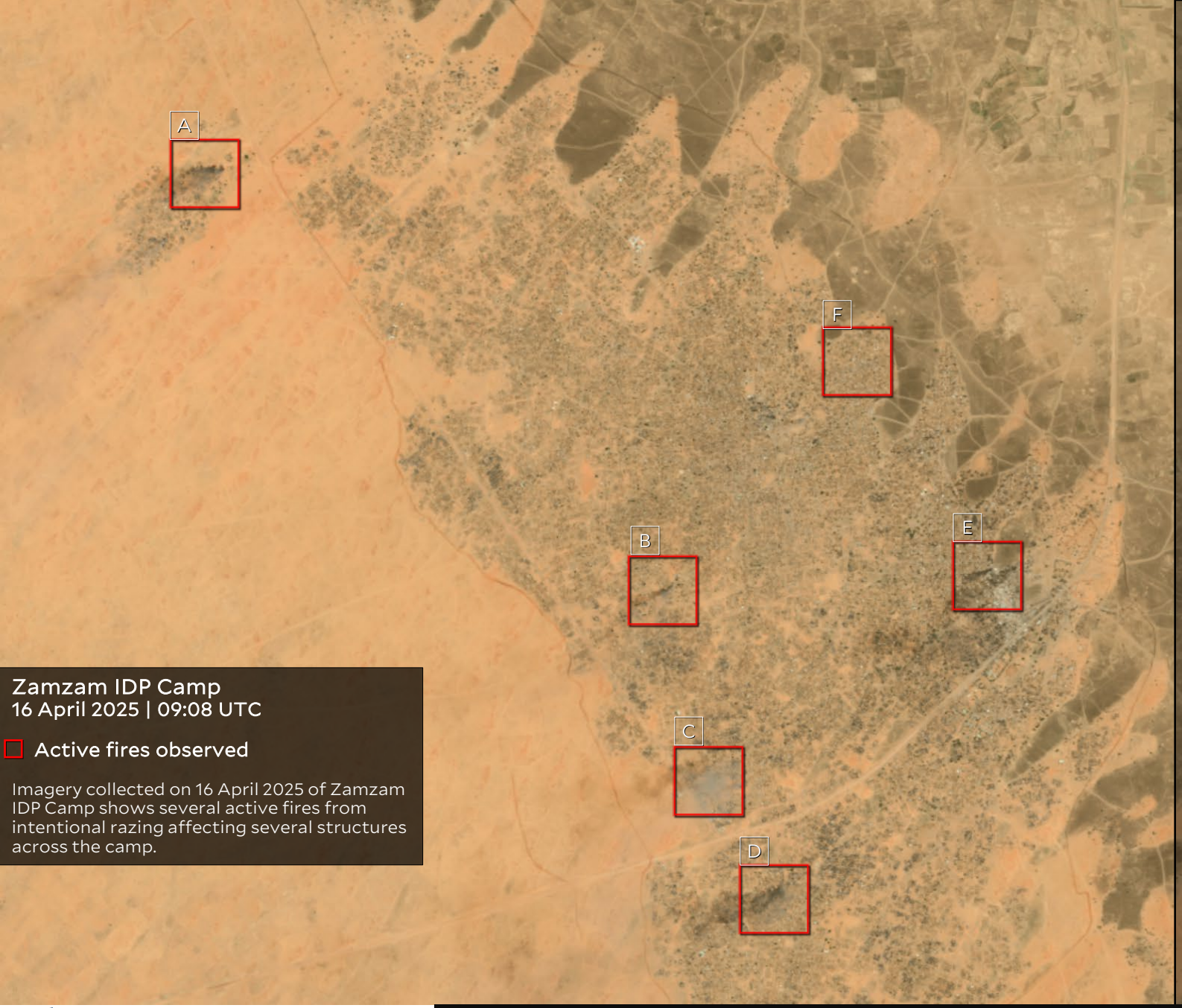
[4] International Organization for Migration, "DTM Sudan Flash Alert: Al Fasher (Zamzam IDP camp), North Darfur," Update 77, April 14, 2025, https://mailchi.mp/iom/dtm-sudan-flash-alert-al-fasher-zamzam-idp-camp-northdarfur-update-077, archived at https://perma.cc/VB4F-K69Y

[5] UN OCHA, Sudan: Displacement from Zamzam camp, North Darfur State – Flash Update No. 01 (As of 15 April 2025)." 15 April 2025. Available at https://reliefweb.int/report/sudan/sudan-displacement-zamzam-camp-north-darfur-state-flash-update-no-01-15-april-2025, archived at https://perma.cc/T2ZG-DPLD.

[6] Ibid UN OCHA.

Damage Area Observed in Zamzam between 10 and 16 April 2025

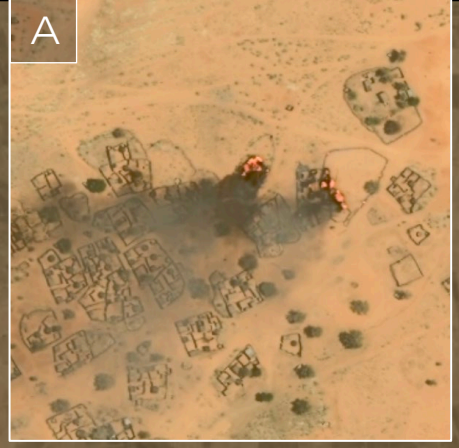


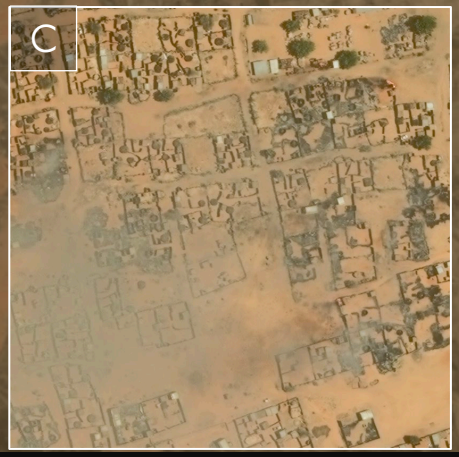


Zamzam IDP Camp
16 April 2025 | 09:08 UTC

Active fires observed

Imagery collected on 16 April 2025 of Zamzam IDP Camp shows several active fires from intentional razing affecting several structures across the camp.





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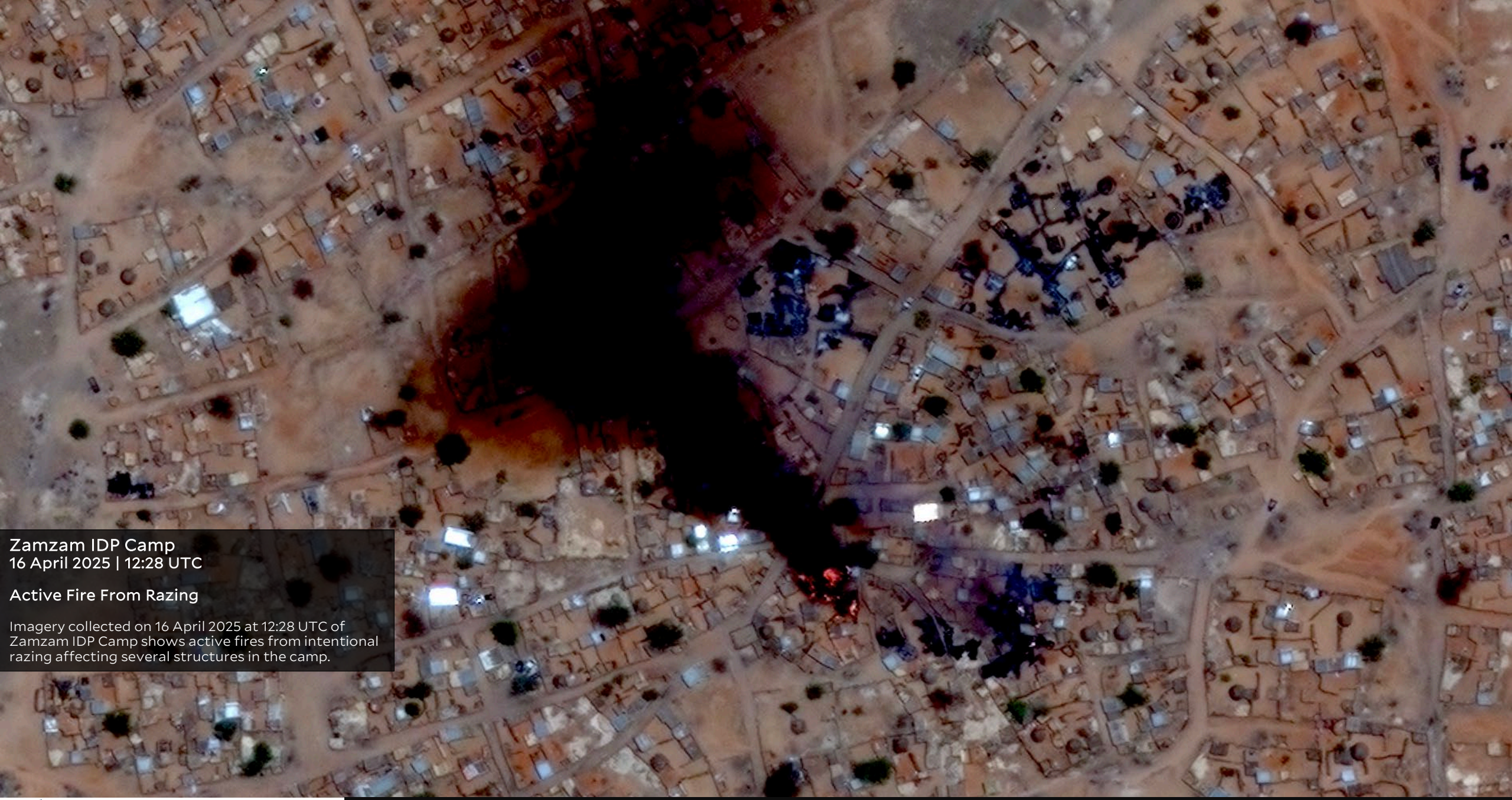

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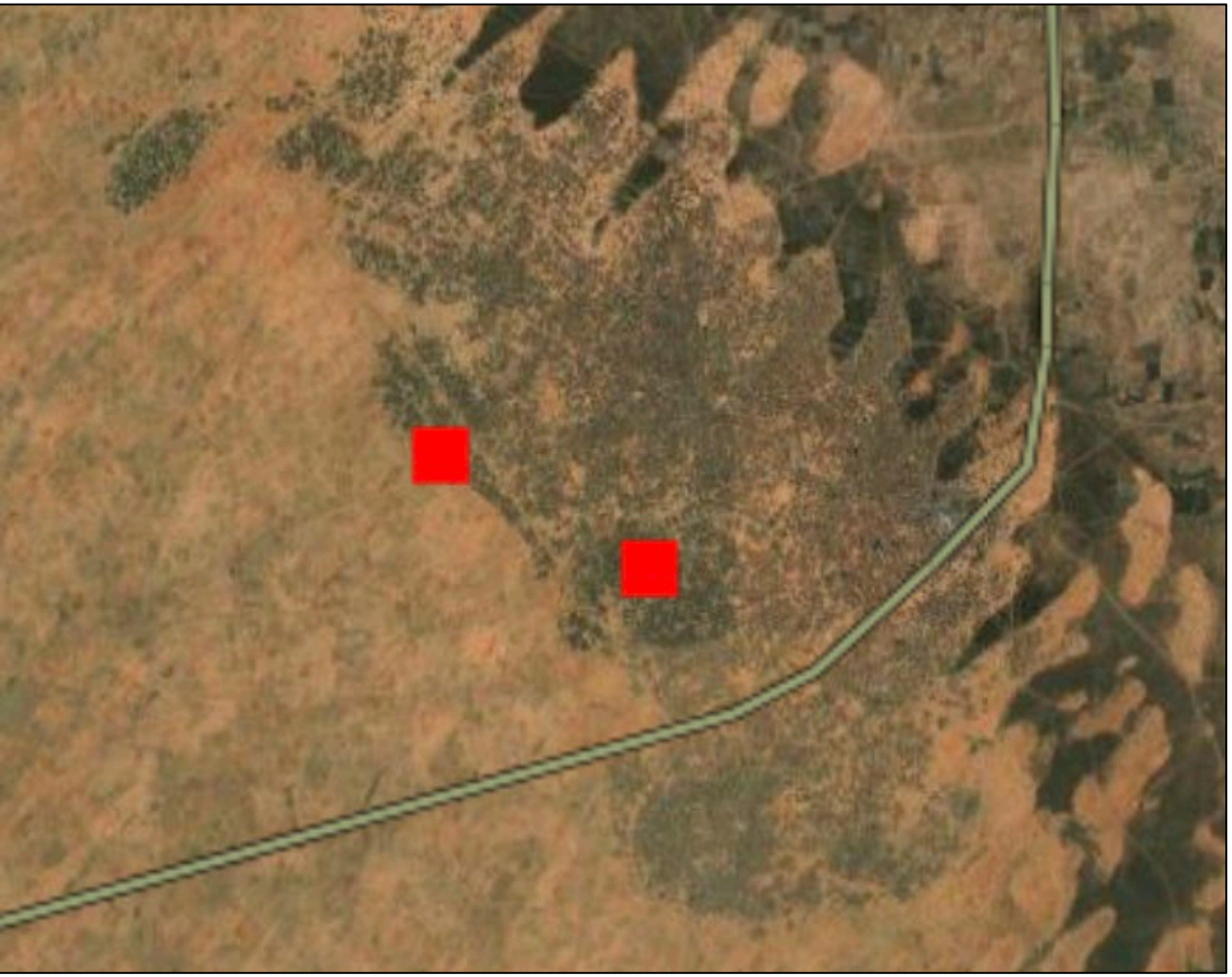
Zamzam, El-Fasher

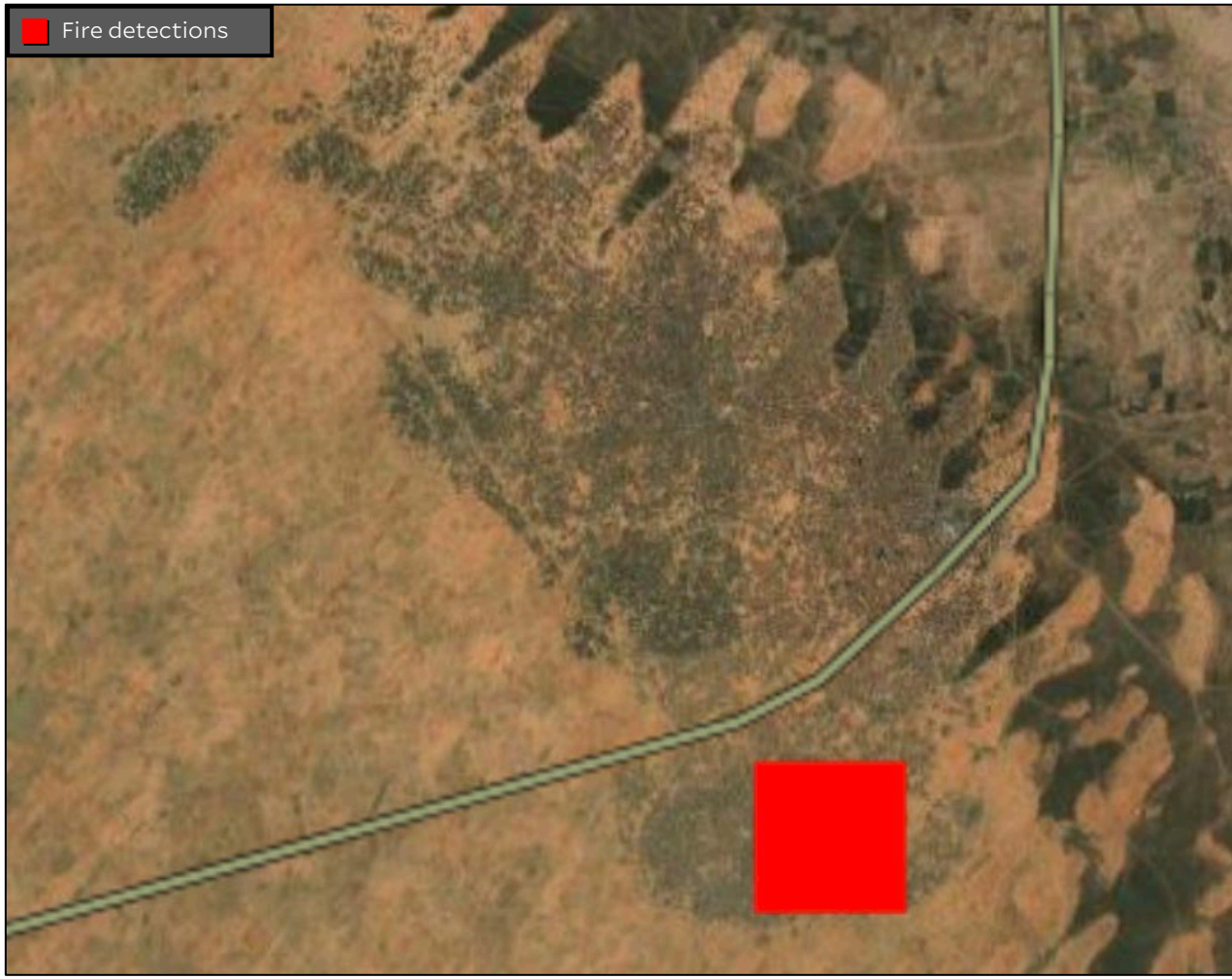
FIRE DETECTIONS OBSERVED ON 15 AND 16 APRIL 2025

Analysis of VIIRS (Visible Infrared Imaging Radiometer Suite) Fire layer shows active fire events at Zamzam on the 15 and 16 April 2025.

Please note: There may be delays in depiction of ongoing fires on 16 April 2025 due to processing. This image should therefore not be read as 'real time'.

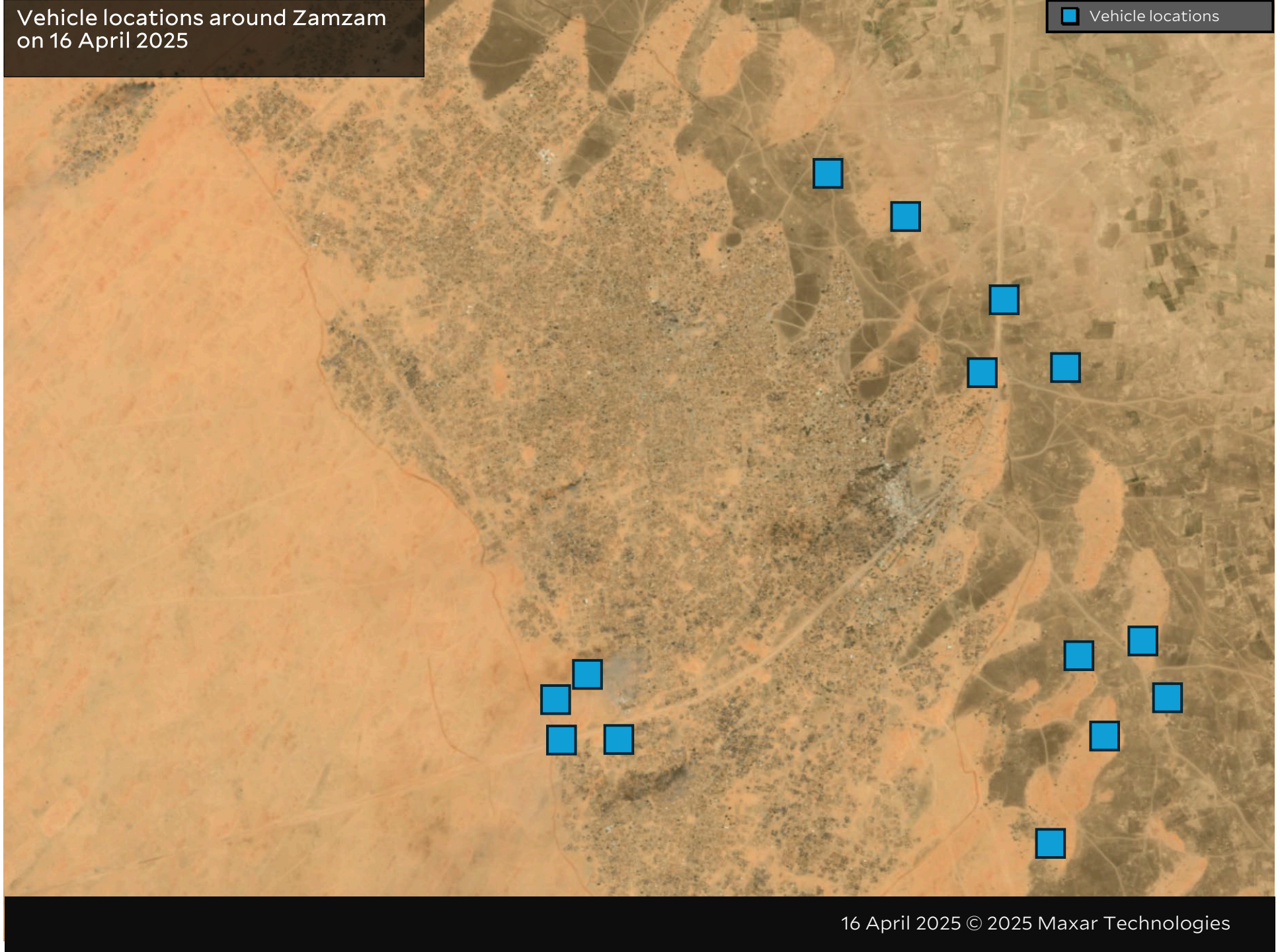


15 April 2025



16 April 2025

Source: https://firms.modaps.eosdis.nasa.gov


Vehicle locations around Zamzam on 16 April 2025
Vehicle locations
16 April 2025 © 2025 Maxar Technologies

Zamzam IDP Camp
16 April 2025 | 09:08 UTC

Weaponized Light Technical Vehicle Presence

Imagery collected on 16 April 2025 at 09:08 UTC shows a convoy of at least 30 light technical vehicles, the majority of which appear to be mounted with weapons on their backs, entering a compound located 350 meters from the eastern border of the camp.

Weapon-mounted light technical vehicles entering compound

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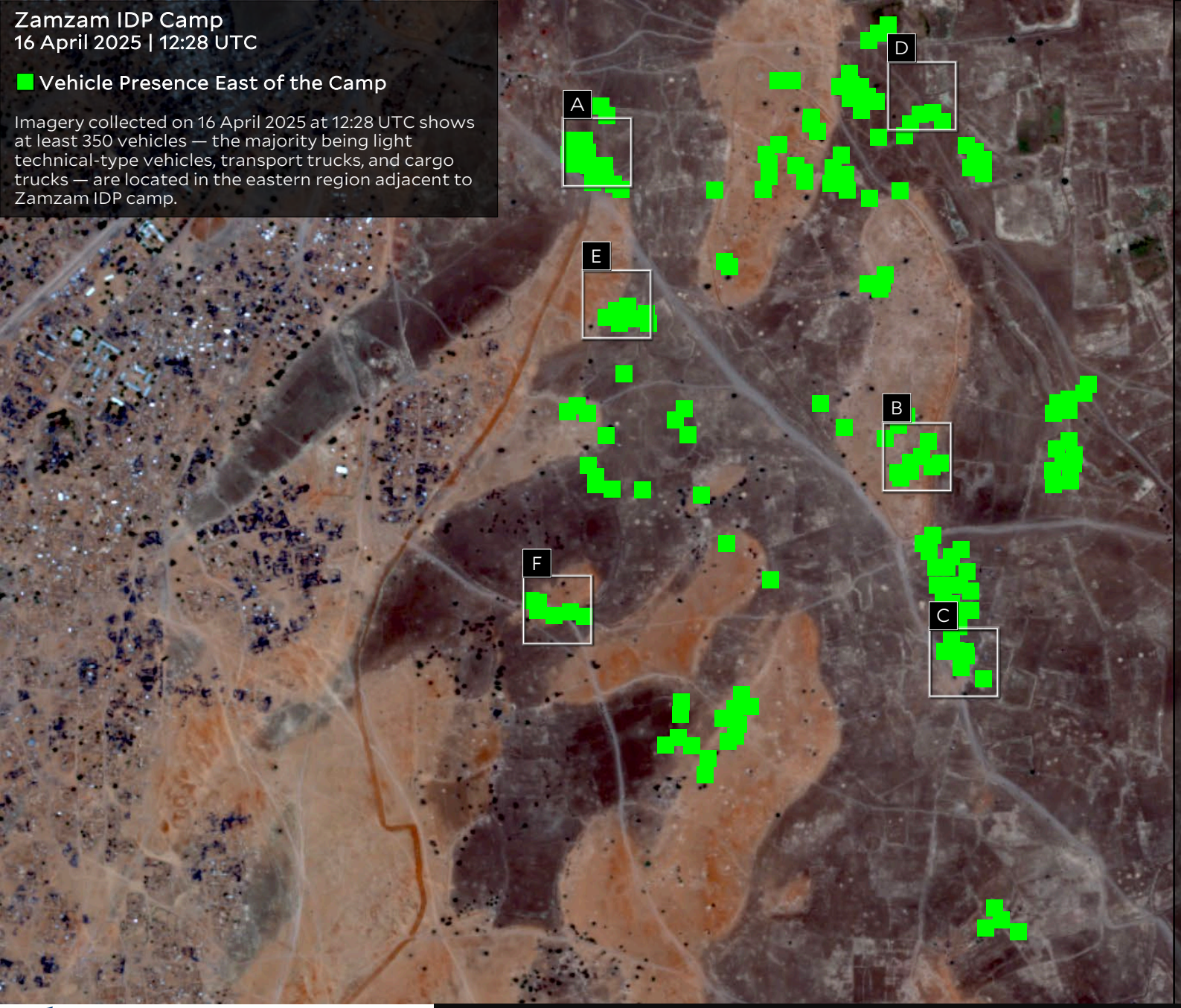
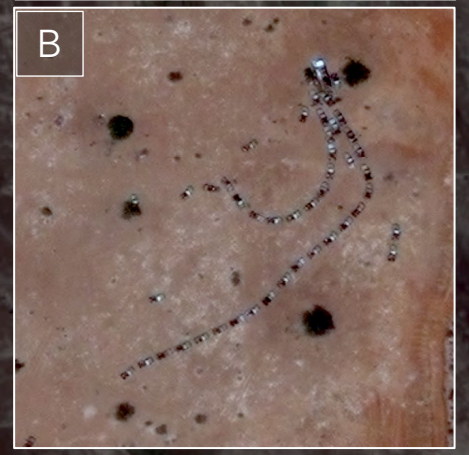
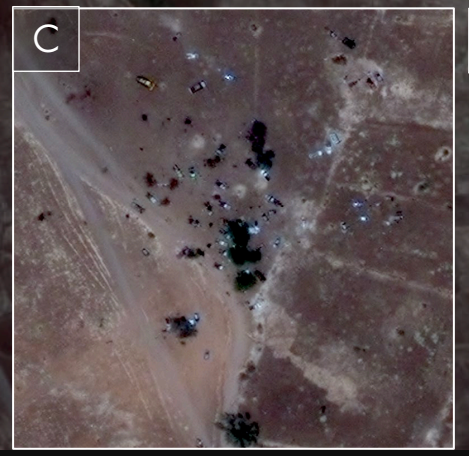
Zamzam IDP Camp
16 April 2025 | 12:28 UTC

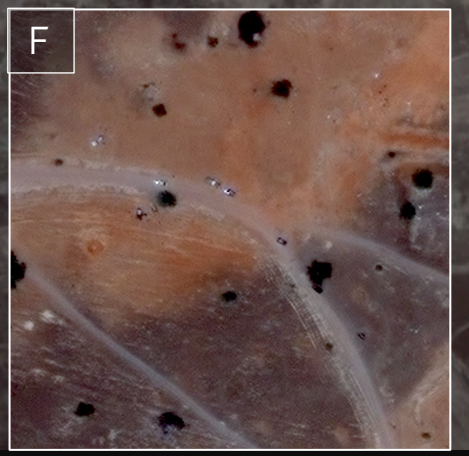
Vehicle Presence East of the Camp

Imagery collected on 16 April 2025 at 12:28 UTC shows at least 350 vehicles — the majority being light technical-type vehicles, transport trucks, and cargo trucks — are located in the eastern region adjacent to Zamzam IDP camp.









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Zamzam IDP Camp
16 April 2025 |12:28 UTC

Civilian Evacuation Outside of Zamzam

Imagery collected on 16 April 2025 at 12:28 UTC shows several carts hitched to pack animals and apparent people on foot on a road outside of Zamzam.

People with animal-drawn carts

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