

**Escalating Conflict-Related Damage in Eastern
and Southeastern Neighborhoods of El-Fasher,
10-14 May 2024**

15 May 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 significant conflict-related damage in the eastern and southeastern neighborhoods of El-Fasher city between 10 – 14 May 2024, consistent with reports of major fighting in El-Fasher, North Darfur during that period. Yale HRL confirms damage to the Al-Kharaba (near the power station), Stock Exchange, Al-Takamul, Ashishat, Masnaa, Al-Wahda, Almahad, and Safa neighborhoods and near the Jil neighborhood in El-Fasher between 9 – 14 May 2024. Yale HRL also confirms conflict-related damage north of the B26 road in the rural northeastern section of El-Fasher in imagery analysis between 9 – 14 May 2024. Yale HRL confirms additional conflict-related damage observed in the extension of the Tijaniya, Al-Kharaba, Dim Silk, and Al-Wefaq neighborhoods of El-Fasher in imagery analysis between 1 – 9 May 2024.

Yale HRL finds that the total area damaged between 9 – 14 May 2024 is approximately 0.803 square kilometers in the eastern and southeastern section of El-Fasher. This area is equivalent to 61 football pitches.ⁱ The total area damaged between 1 – 9 May 2024 was approximately 0.045 square kilometers, equivalent to 3.46 football pitches. The total area of El-Fasher that has sustained conflict related damage since 21 March 2024 confirmed through satellite imagery analysis is 0.926 km, approximately 87% of which occurred between 9 –14 May 2024.ⁱⁱ

These findings are consistent with credible open source reports indicating that the Rapid Support Forces (RSF) and Sudan Armed Forces (SAF) and their respective aligned forces have engaged in expanded and repeated ground fighting and bombardment in and around the eastern and southeastern neighborhoods in El-Fasher through at least 10 – 14 May 2024.ⁱⁱⁱ The structural damage and thermal scarring visible in imagery is consistent with open source reports of bombardment of an indiscriminate nature in the eastern neighborhoods of El-Fasher.^{iv} Open sources reported that Al-Manhal, Al-Borsa, Al Kharaba, Safa, Jil, Al-Salam, Al-Hijra, Awlad, Mikarka and Al-Inqaz neighborhoods have also experienced artillery bombardments around 10 – 14 May 2024.^v This represents a significant sustained increase in reported combat within the city proper, including conflict-related damage as close to the center of the city as the Manat neighborhood. The location of the identified damage corroborates open source reports that RSF is approaching the city center.

Yale HRL has identified military vehicle activity in satellite imagery and open source reporting indicating that both RSF and SAF claim control over the Mahata Kharaba El-Fasher (El-Fasher Power Station) in the southeast of El-Fasher between 9 and 14 May 2024, including RSF commanders Major Al-Nour Ahmed Al-Qubba and Major Gido Hamdan Ibshouk.^{vi} It is not currently clear whether RSF or SAF and aligned forces occupy the power station at this time.

There is evidence of market closure in satellite imagery consistent with open source reporting.^{vii} A significant number of likely civilian vehicles near the souk (market) in El-Fasher are no longer present in satellite imagery between 9 May and 14 May 2024.

Yale HRL confirms that two communities, Kerkeria, 26 kilometers north of El-Fasher, and another community referred to as “Unidentified Community 15” near Faki Khalil, 36 kilometers northwest of El-Fasher, have sustained widespread burn damage consistent with razing, potentially by RSF, between 30 April – 9 May 2024. As of 9 May 2024, Yale HRL has confirmed that a total of 25 communities in North Darfur have been damaged in a manner consistent with the intentional targeting and systematic razing of civilian structures since 31 March 2024.^{viii} The population of these communities and the number of people killed, injured, or displaced is not known.

II. Human Security Analysis

The direct, sustained ground fighting and attacks on civilian neighborhoods and critical infrastructure on 10-14 May represent a new stage in the battle for El-Fasher with increased civilian casualties and displacement. On 15 May, Médecins Sans Frontières (MSF) reported that they had received 454 casualties and that 56 people had died in El-Fasher since 10 May 2024, including 31 women and 19 children.^{ix} This is likely an underestimate of both people injured and killed from fighting.

Both RSF and SAF and aligned forces including the Joint Forces have released official statements accusing the other side of initiating the fighting.^x Local media have suggested that SAF and aligned Joint Forces initiated the fighting on 10 May to preempt RSF troop buildup in the north and break the siege of the city, though Yale HRL has not confirmed this claim.^{xi} RSF also released a video on 15 May 2024 alleging that that senior RSF commander Ali Yaqoub was in El-Fasher.^{xii} While Yale HRL has not been able to geolocate or chronolocate his presence at this time, this message signals RSF’s prioritization of the battle for El-Fasher. On 15 May 2024, the United States Department of the Treasury’s Office of Foreign Assets Control (OFAC) sanctioned Yaqoub for his leadership of RSF’s operations in Darfur, including recent RSF offensives in North Darfur and command of RSF troops around El-Fasher.^{xiii}

Conflict and conflict-related damage has also likely displaced civilians in the damaged eastern and southeastern neighborhoods of El-Fasher. On 11 May, the International Organization for Migration (IOM) reported that the 10 May fighting in eastern and northern El-Fasher displaced approximately 170 households across El-Fasher in addition to the 200 households that were displaced within the city during the previous week.^{xiv}

MSF reported that conflict-related damage to Babiker Nahar Pediatric Hospital killed two children and at least one caregiver and that the hospital is no longer in operation.^{xv} Hospitals are special protected civilian objects under international humanitarian law.^{xvi} The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) and local news sources state that as of 12 May El-Fasher Southern Hospital has surpassed its maximum 100-bed capacity and lacks sufficient medical equipment, blood bank reserves, medicines, surgical supplies, and an ambulance to transport the injured.^{xvii}

On 3 May 2024, the Famine Early Warning Systems (FEWS NET) announced that El-Fasher is experiencing severe food insecurity that is quickly approaching famine

levels.^{xviii} Yale HRL continues to assess that the present lack of food, water, medicine, and other basic services, even without further escalation of fighting, threatens the lives of hundreds of thousands of civilians, particularly the most vulnerable communities, such as children, the elderly, and persons with disabilities.

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. Open source data, including photo, video, and audio data published by news outlets and on social media, is assessed using multisource cross corroboration.

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 as minimal because these communities have already been visibly attacked. When releasing coordinates related to combat activity, Yale HRL assesses that the combatants are already aware of the situation.

Building damage was quantified by individually assessing structures for damage and documenting thermal scarring in satellite imagery.

ⁱ The definition of football pitches aligns with the FIFA standard football pitches.

ⁱⁱ 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, <https://perma.cc/ZSV9-HBSH>, https://medicine.yale.edu/lab/khoshnood/publications/assessment-conflict-damaged-civilian-dwellings-el-fasher-revised_477956_284_26865_v2.pdf.

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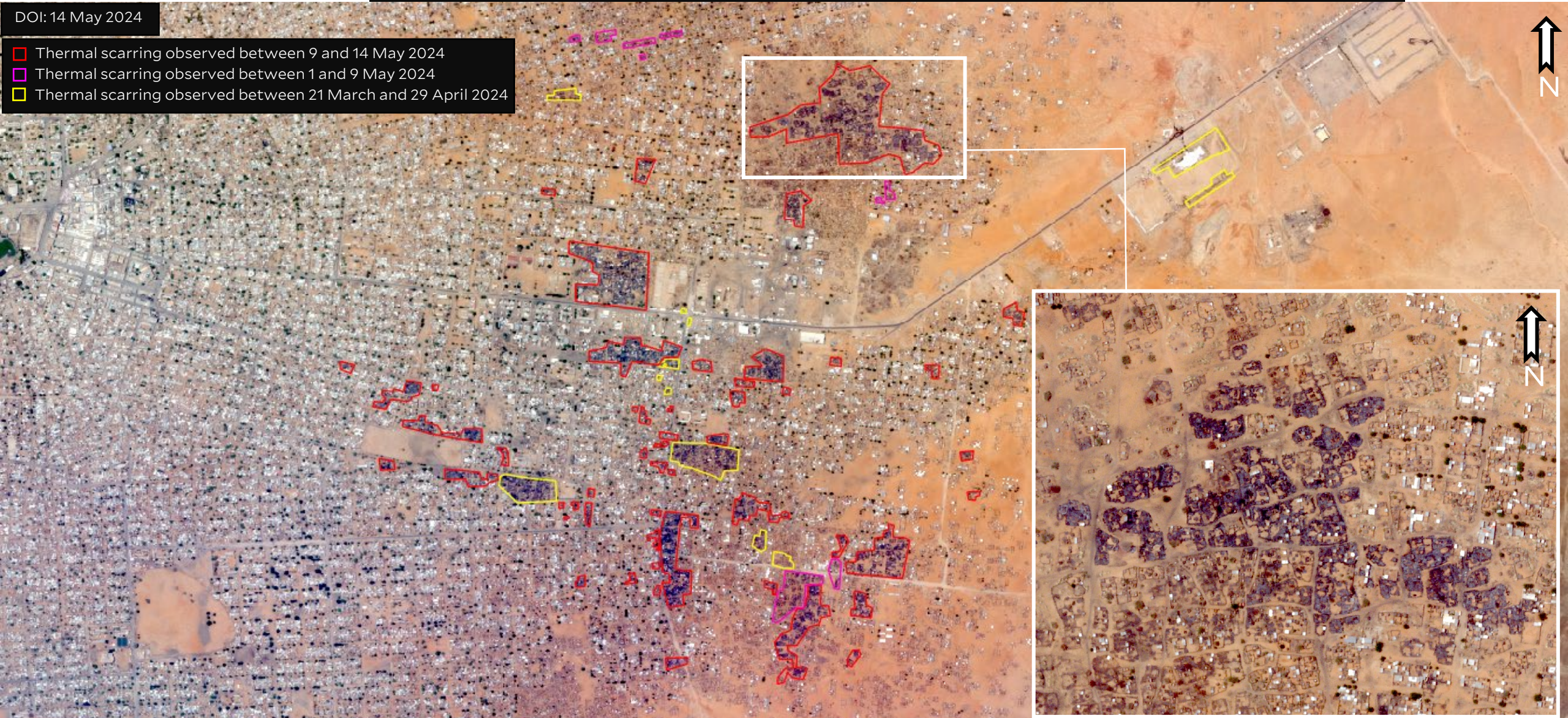
Thermal Ground Scarring Observed Between 21 March and 14 May 2024.

According to analysis of satellite imagery collected between 21 March and 14 May 2024, thermal ground scarring was observed at multiple locations situated along the eastern edges of El-Fasher. According to open source reporting, clashes between SAF and RSF have recently occurred on the eastern side of El Fasher throughout 10-14 May 2024.



DOI: 14 May 2024

- Thermal scarring observed between 9 and 14 May 2024
- Thermal scarring observed between 1 and 9 May 2024
- Thermal scarring observed between 21 March and 29 April 2024



Close-up of Thermal Ground Scarring Observed Between 9 and 14 May 2024.

According to analysis of satellite imagery collected between 21 March and 14 May 2024, thermal ground scarring was observed at multiple locations situated along the eastern edges of El-Fasher. According to open source reporting, clashes between SAF and RSF have recently and repeatedly occurred on the eastern side of El-Fasher throughout 10-14 May 2024.



DOI: 14 May 2024

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09 May 2024 Imagery © 2024 Maxar, USG-Plus

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A. Thermal scarring

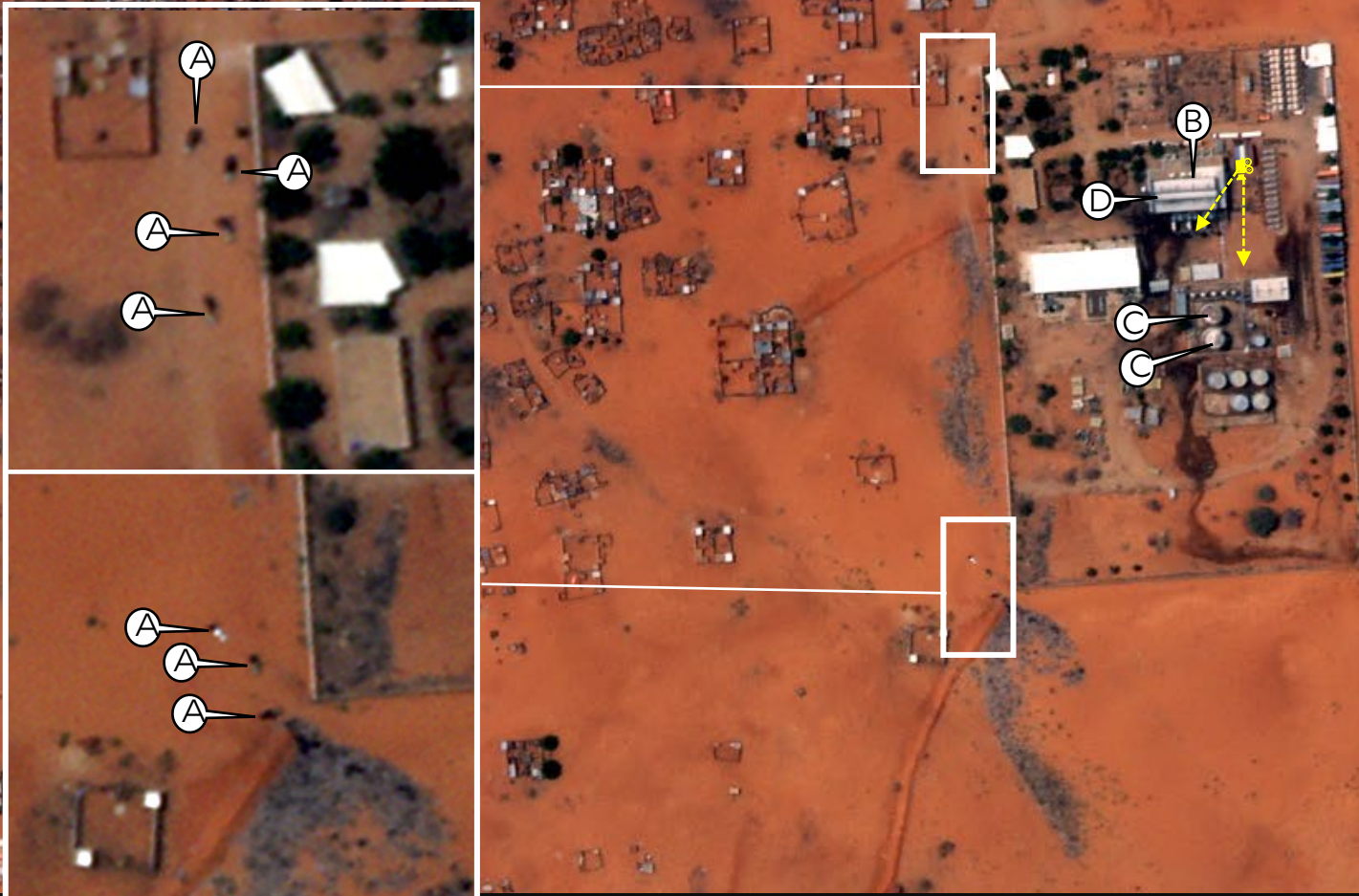
Probable RSF Elements Observed at Mahata Kharaba El-Fasher (El-Fasher Power Station)

Control of the power plant appears contested at the time of publication. According to analysis of satellite imagery collected between 9 and 14 May 2024, at least seven vehicles arrived at the power station situated at the southeastern side of El Fasher. As of 15 May, both RSF and SAF have released videos claiming to control power plant and both videos are able to be geolocated to or outside the power plant, however the date and time of capture is not able to be assessed.



DOI: 14 May 2024

- A. Newly arrived vehicle
 - B. Building
 - C. POL tank
 - D. Roof feature
- 📹 Camera viewpoint

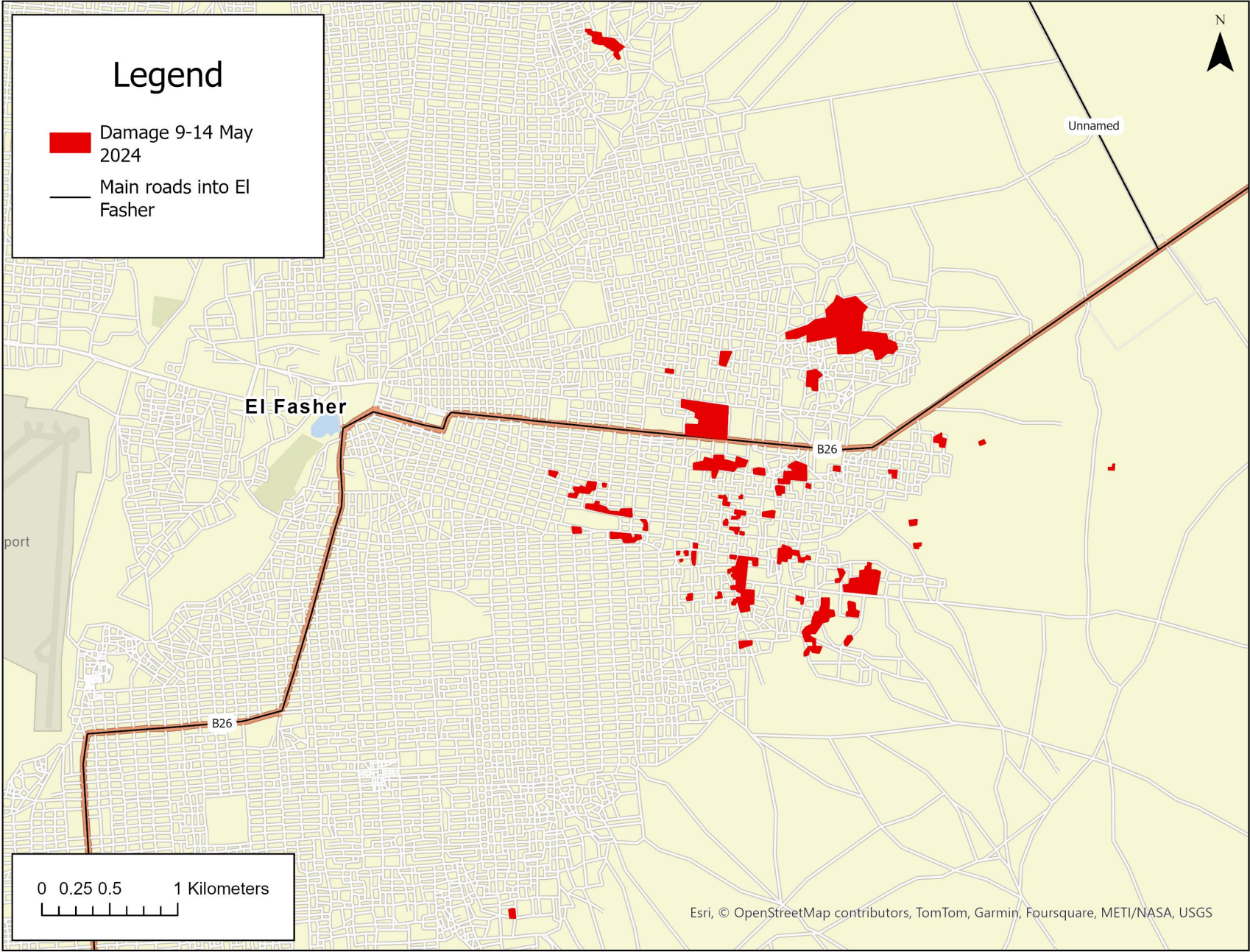


Source: <https://twitter.com/RSFSudan/status/1790794093297107243>, archive at <https://perma.cc/X9NB-5X5C>;
<https://www.facebook.com/watch/?v=756885409947924> archived at <https://perma.cc/5PU2-RFDF>

Damage observed at El Fasher between 9-14 May 2024

Yale HRL has identified a total of 0.803 square kilometers of El-Fasher which sustained conflict-related damage in satellite imagery between 9-14 May 2024 mostly in the southern and eastern neighborhoods of El-Fasher.

The affected neighborhoods include: Al-Kharaba (near the power station), Stock Exchange, Al-Takamul, Ashishat, Masnaa, Al-Wahda, Almahad, Safa, and near Jil neighborhoods in El-Fasher.



Esri, © OpenStreetMap contributors, TomTom, Garmin, Foursquare, METI/NASA, USGS

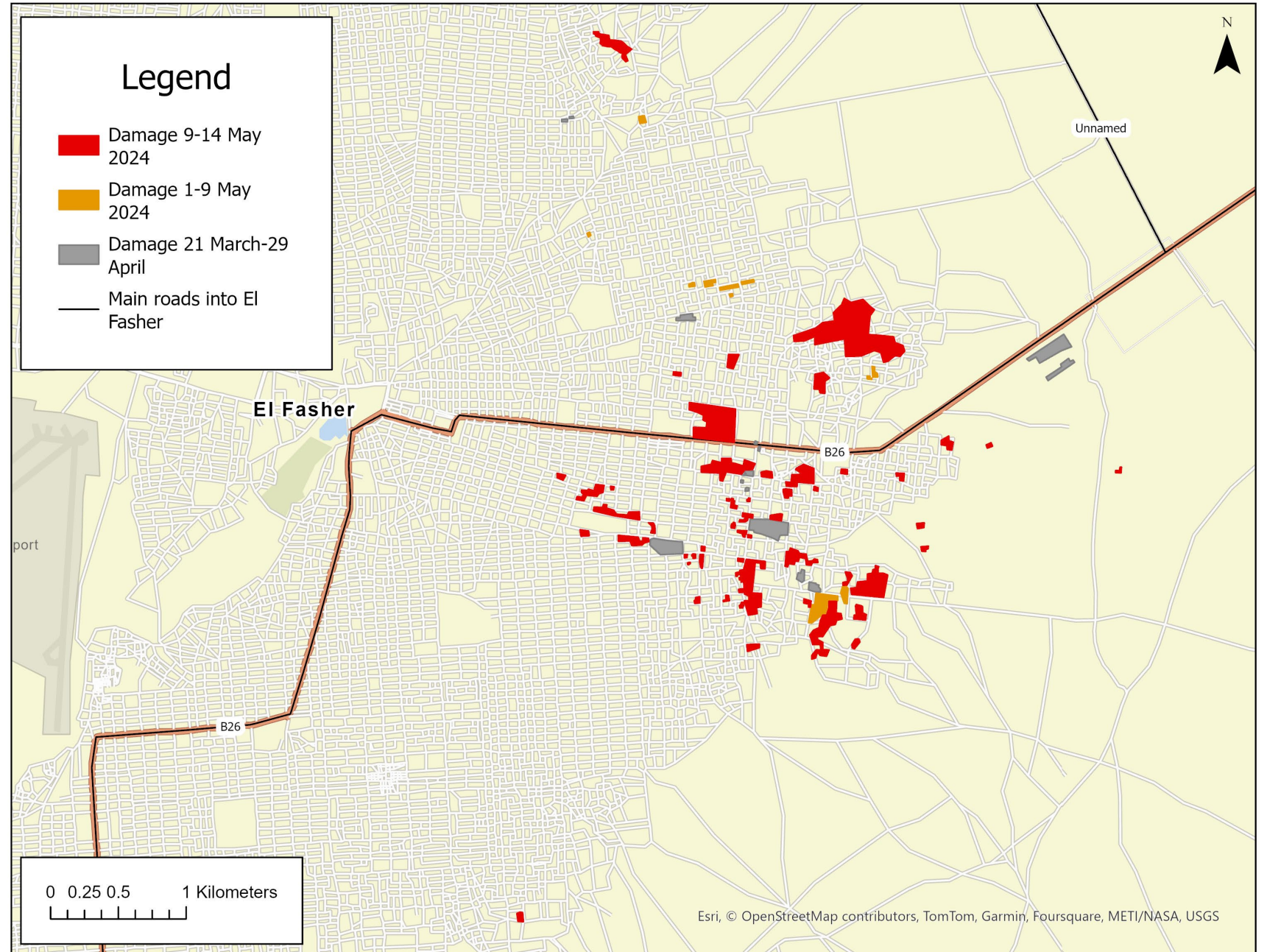
Damage observed at El Fasher between 21 March and 14 May 2024

Yale HRL assesses a total of 0.926 square kilometers of conflict-related damage in El-Fasher between 21 March – 14 May 2024. Approximately 87% of this damage, 0.803 square kilometers, occurred between 9-14 May 2024.

Damage between 9-14 May 2024: 0.803 square kilometers

Damage between 1-9 May 2024: 0.045 square kilometers

Damage between 21 March-29 April 2024: 0.078 square kilometers



Esri, © OpenStreetMap contributors, TomTom, Garmin, Foursquare, METI/NASA, USGS

Departure of Vehicles Observed within El-Fasher City Center

According to analysis of satellite imagery, between 9 and 14 May 2024, vehicles departed the El-Fasher city center. This vehicle activity is consistent with potential civilian market closure. This change in pattern of life demonstrates that conflict is affecting civilians.



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Kerkera, North Darfur

THERMAL SCARRING OBSERVED BETWEEN 28 APRIL AND 9 MAY 2024

According to analysis of satellite imagery, thermal scarring was observed between 28 April and 9 May 2024, within the village of Kerkera 27 km directly north of El-Fasher. According to analysis of VIIRS data, the time of thermal scarring can be narrowed down to 4 May 2024.



25.3463741°E 13.8611792°N 28 April 2024 © 2024 Maxar, USG-Plus



25.3463741°E 13.8611792°N 9 May 2024 © 2024 Maxar, USG-Plus

Unidentified Community 15, North Darfur

THERMAL SCARRING OBSERVED BETWEEN 3 AND 9 MAY 2024

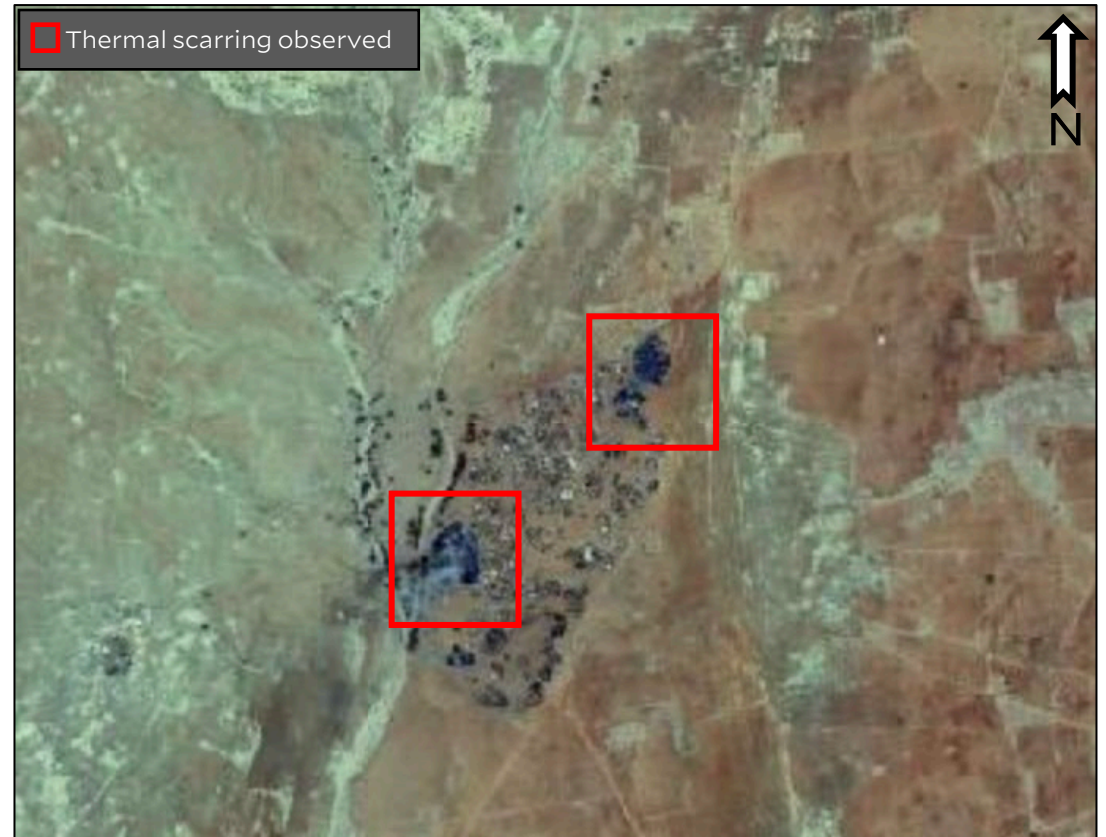
According to analysis of satellite imagery, thermal scarring was observed between 3 and 9 May 2024, in a village 36 km northwest of El-Fasher. According to analysis of VIIRS data, the time of thermal scarring can be narrowed down to 8 May 2024.

This community is located near Faki Khalil, North Darfur.



25.1055830°E 13.8370364°N

3 May 2024 © 2024 Maxar, USG-Plus



25.1055830°E 13.8370364°N

9 May 2024 © 2024 Maxar, USG-Plus

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