Twenty-Six Arson Attacks on Villages in Kutum Locality, North Darfur 12 October – 6 November 2024

7 November 2024

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 | Howarth, Caitlin N., Kaveh Khoshnood, Nathaniel A. Raymond et al. "Twenty-Six Arson Attacks on Villages in Kutum Locality, North Darfur 12 October – 6 November 2024," 7 November 2024. Humanitarian Research Lab at Yale School of Public Health: New Haven. Available at https://medicine.yale.edu/lab/khoshnood/publications/reports/.

I. Key Findings

The Yale School of Public Health's Humanitarian Research Lab (HRL) identifies intentional conflict-related arson attacks in at least 26 rural communities in Kutum locality, North Darfur. Satellite imagery analysis shows that the alleged attacks occurred between 12 October and 06 November 2024. These communities are predominantly Zaghawa.[1] These events are consistent with both ongoing hostilities and an established pattern of systematic ethnic targeting of Zaghawa communities by Rapid Support Forces (RSF) and aligned forces.[2] With these findings, Yale HRL has confirmed that RSF has attacked a total of at least 40 predominantly Zaghawa communities in Kutum locality alone since 1 October 2024.

Yale HRL identified these 26 arson attacks through remote sensing and satellite imagery analysis. 11 of the razed communities are within 10 km of Breidik, four razed communities are within 6.5 km of Jira, and one razed community was within 6.5 km of Anka. These findings are consistent with reporting from the International Organization for Migration (IOM) on attacks on these areas during this time period.[3] These rural communities are typically located near wadis, including Wadi Breidik, Wadi Sirkali, Wadi Beiri, Wadi Jira, Wadi Umm Rai, Wadi Isbania, and Wadi Anka. These communities range from approximately 40 km to 67 kilometers north of Kutum, North Darfur. The specific names of some of the razed communities are currently unknown. Yale HRL will continue to investigate the locations attacked and update these findings.

Yale HRL assesses that arson attacks against Zaghawa communities in Kutum locality are likely ongoing, with visible thermal scarring since 12 October 2024. Yale HRL observed active fires on satellite imagery on 1 November 2024 and Visible Infrared Imaging Radiometer Suite (VIIRS) thermal detections as recent as 6 November 2024. Yale HRL is actively monitoring this region for further attacks.

Local media reported that RSF has attacked as many as 120 small agricultural communities in the Kutum area since 1 October 2024, including over 45 in the past two weeks.[4] In these attacks, RSF reportedly killed at least 15 people allegedly on the basis of their ethnicity and conducted widespread conflict-related sexual violence (CRSV) and arbitrary arrests.[5] RSF also reportedly stole livestock and destroyed civilian infrastructure, including water wells and healthcare facilities.[6]

IOM reported that approximately 1,550 households were displaced from Breidik, Anka, Beiri, and Jir villages in Kutum locality as well as Donki Bashim village in Mellit locality following reported RSF attacks between 31 October and 2 November 2024. IOM reports that these attacks involved looting and arson.[7] Local media outlets reported that more than 20,000 internally displaced persons (IDPs) have been displaced from Kutum, primarily heading to Tina, Ambaru, and Karnoi localities, and the Karnoi Emergency Room launched an appeal for relief to support the displaced people in the area.[8]

Table 1: Arson Attacks to Communities in Kutum Locality, 12 October – 6 November 2024

Name	Coordinates	VIIRS Detection	Visible Thermal Scarring in Satellite Imagery
Community 15[1]	14.5925502, 24.8848362	13 Oct 2024	12 - 17 Oct 2024
Community 16	14.572997, 24.8438615	17 and 18 Oct 24	12 - 22 Oct 2024
Gumeiza	14.5487176, 24.9087997	22 Oct 24	22 - 27 Oct 2024
Community 18	14.55867, 24.89875	26 Oct 2024	27 Oct – 1 Nov 2024
Amara Gedida	14.791346, 24.742913	1 Nov 24	27 Oct – 1 Nov 2024
Community 20	14.705115, 24.746297	30 and 31 Oct 2024	27 Oct – 1 Nov 2024
Community 21	14.705567, 24.728464	29 and 31 Oct 2024	27 Oct – 1 Nov 2024
Breidik	14.723853, 24.732993	29 and 30 Oct 2024	27 Oct – 1 Nov 2024
Community 23	14.676991, 24.754834	30 Oct 2024	27 Oct – 1 Nov 2024
Bir Marra	14.734876, 24.732605	30 Oct 2024	1 - 6 Nov 2024
Community 25	14.651196, 24.746089	31 Oct 2024	1 - 6 Nov 2024
Community 26	14.68342, 24.935141	1 and 2 Nov 2024	1 - 6 Nov 2024
Community 27	14.69052, 24.909111	1 Nov 2024	1 - 6 Nov 2024
Community 28	14.588953, 24.94756	2 Nov 2024	1 - 6 Nov 2024
Shinjali	14.76245, 24.911675	2 Nov 2024	1 - 6 Nov 2024
Community 30	14.718725, 24.793098	1 Nov 2024	1 - 6 Nov 2024
Diyori	14.7138, 24.777595	1 Nov 2024	1 - 6 Nov 2024
Community 32	14.614879, 24.733928	31 Oct 2024	1 - 6 Nov 2024
Suggori	14.62007, 24.71917	31 Oct 2024	1 - 6 Nov 2024
Community 34	14.62929, 24.72308	31 Oct 2024	1 - 6 Nov 2024
Community 35	14.646227, 24.72464	31 Oct 2024	1 - 6 Nov 2024
Gerowit	14.587312, 24.726713	31 Oct 2024	1 - 6 Nov 2024

Yale HRL has reviewed the potential human security threat of release the data above and rated the potential civilian risk as minimal. Specific coordinates have been provided to support the further identification and disambiguation of specific place names and community locations.

Yale HRL assesses that each of the 26 communities were likely intentionally attacked. The thermal pattern in all 26 communities shows selective destruction of structures with unburned areas between the houses – the same pattern identified in previous reporting in this area in Kutum locality and across Darfur.[9] These phenomena, known as "selection,"[10] are forensically consistent with armed actors moving structure-to-structure, burning each structure individually (see Methodology).[11]

The findings in this report build upon the pattern that Yale HRL identified in earlier reports documenting RSF targeting Zaghawa communities in and around El-Fasher between April and June 2024 and in the Kutum locality between 2-12 October 2024.[12]

[1] Possibly Makhriba, Wedja, or Karabu

Yale HRL has thus verified that RSF has attacked more than 80 communities in North Darfur state alone in approximately seven months since 31 March 2024.[13] These attacks do not include the over 35 communities that RSF reportedly attacked in Gezira state between 20 October – 4 November 2024.[14] Since April 2023, Yale HRL has now confirmed that over 110 communities across Darfur have been attacked by arson.[15] These attacks on Zaghawa communities may suggest an ongoing pattern of systematic ethnic targeting.

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. Analysts used remote sensing thermal anomaly data from NASA, Visible Infrared Imaging Radiometer Suite (VIIRS) to identify thermal anomalies that were co-located at settlements to assess possible destruction. Additionally, VIIRS thermal anomaly data was used to narrow down the possible dates that an event may have occurred. Sentinel-2 low resolution satellite imagery was used in conjunction with high resolution imagery for baseline comparison to observe thermal scarring patterns and their effect on communities in the areas of observation. Analysts used Sentinel-2 false color composite, which uses near-infrared data to better assess damage and thermal scarring. Visual indicators of intentional damage include discoloration to the analyzed structures, including indicators of possible burning or charring; observable difference in structural texture compared to pre-event dates. As regional dry season is under way at the start of October, wildfire can be a common observation. Analysts assess burning intent, versus incidental burning or wildfire, using indicators such as unaffected ground between observed burned structures, and lack of thermal scarring on ground outside individual community areas.[16]

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. In some cases, villages may have names similar to other

communities or may be known by multiple names. A community identified in this report may not correspond to an individual, officially designated village; communities were identified and delineated according to visible clustering of structures.

Coordinates have been provided to support the further identification and disambiguation of place names and community locations. Human security concerns were accounted for as part of the decision to release coordinates; potential civilian risk was rated minimal because these communities have already been attacked; although in an active conflict zone, 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. 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] Sudan Tribune, "مناوي يتهم الدعم السريع بحرق قرى في شمال دارفور," October 10, 2024, https://sudantribune.net/article291943/, archived at https://perma.cc/F72A-9P9H; Refugee Documentation Centre, "Sudan – Researched and compiled by the Refugee Documentation Centre of Ireland", January 7, 2013, https://www.ecoi.net/en/file/local/2012356/98885.pdf, archived at https://perma.cc/4PP8-SDBR

[2] Caitlin N. Howarth, Kaveh Khoshnood, Nathaniel A. Raymond et al., "Confirmation of Sudan Armed Forces Bombardment Consistent with Rapid Support Forces Present in El-Fasher." 19 April 2024. Humanitarian Research Lab at Yale School of Public Health: New Haven, https://files-profile.medicine.yale.edu/documents/07e84454-5a4d-4547-8a6c-1e4921df54ea, archived at https://perma.cc/6PP3-CJCY ; | Caitlin N. Howarth, Kaveh Khoshnood, Nathaniel A. Raymond et al. "SPECIAL REPORT El-Fasher: State of Crisis." 5 June 2024. Humanitarian Research Lab at Yale School of Public Health: New Haven, https://files-profile.medicine.yale.edu/documents/207e8922-3c37-4476-97e9-505853311e3e archived at https://perma.cc/4C6Q-VJCP ; ACLED, "Situation Update: May 2024 | Sudan: The RSF sets its eyes on North Darfur", May 17, 2024, https://acleddata.com/2024/05/17/sudan-situation-update-may-2024-the-rsf-sets-its-eyes-on-north-darfur/"https://acleddata.com/2024/05/17/sudan-situation-update-may-2024-the-rsf-sets-its-eyes-on-north-darfur/, archived at https://perma.cc/9ZXC-VTZR; Human Rights Watch, "Darfur Destroyed: Ethnic Cleansing by Government and Militia Forces in Western Sudan", May 6, 2004, https://www.hrw.org/report/2004/05/06/darfur-destroyed/ethnic-cleansing-

government-and-militia-forces-western-sudan, archived at https://perma.cc/QV4T-XW23.

[3] International Organization for Migration, "DTM Sudan Flash Alert: Conflict in Kutum and Melit localities, North Darfur," November 3, 2024, https://mailchi.mp/iom/dtm-sudan-flash-alert-conflict-in-kutum-and-melit-localities-north-darfur-update-003, archived at https://perma.cc/BAE7-BE7H

[4] Sudan Tribune, "قيادي أهلي : الدعم السريع تخطط لاجتياح (3) محليات في شمال دارفور", November 4, 2024, https://sudantribune.net/article292902/, archived at https://perma.cc/64H8-UBRE; Al Jazeera, "مصادر للجزيرة نت: قوات الدعم السريع أحرقت 45 قرية بشمال دارفور" November 1, 2024, https://www.aljazeera.net/politics/2024/11/1/%D9%85%D8%B5%D8%A7%D8%AF%D8%B1-%D9%84%D9%84%D8%AC%D8%B2%D9%8A%D8%B1%D8%A9-%D9%86%D8%AA-%D9%82%D9%88%D8%A7%D8%AA-%D8%A7%D9%84%D8%AF%D8%B9%D9%85-%D8%A7%D9%84%D8%B3%D8%B1%D9%8A%D8%B9, archived at https://perma.cc/9R8V-FQZZ

[5] Al Jazeera, "مصادر للجزيرة نت: قوات الدعم السريع أحرقت 45 قرية بشمال دارفور" November 1, 2024, https://www.aljazeera.net/politics/2024/11/1/%D9%85%D8%B5%D8%A7%D8%AF%D8%B1-%D9%84%D9%84%D8%AC%D8%B2%D9%8A%D8%B1%D8%A9-%D9%86%D8%AA-%D9%82%D9%88%D8%A7%D8%AA-%D8%A7%D9%84%D8%AF%D8%B9%D9%85-%D8%A7%D9%84%D8%B3%D8%B1%D9%8A%D8%B9, archived at https://perma.cc/9R8V-FQZZ; Darfur24, "بعد إحراقها.. نزوح واسع لسكان قرى كتم بشمال دارفور" November 3, 2024, https://www.darfur24.com/2024/11/03/%D8%A8%D8%B9%D8%AF-%D8%A5%D8%AD%D8%B1%D8%A7%D9%82%D9%87%D8%A7-%D9%86%D8%B2%D9%88%D8%AD-%D9%88%D8%A7%D8%B3%D8%B9-%D9%84%D8%B3%D9%83%D8%A7%D9%86-%D9%82%D8%B1%D9%89-%D9%83%D8%AA%D9%85-%D8%A8%D8%B4/, archived at https://perma.cc/GP8M-FURD; @SDN154 on X (formerly known as Twitter) "شبكة أطباء السودان," November 2, 2024, https://x.com/SDN154/status/1852759264315547847, archived at https://perma.cc/ZMN2-A9A2;

Radio Dabanga "الدعم السريع يقصف الفاشر ومناشدة لإغاثة الفارين من قري برديك," November 4, 2024, https://www.dabangasudan.org/ar/all-news/article/%D8%A7%D9%84%D8%AF%D8%B9%D9%85-%D8%A7%D9%84%D8%B3%D8%B1%D9%8A%D8%B9-%D9%8A%D9%82%D8%B5%D9%81-%D8%A7%D9%84%D9%81%D8%A7%D8%B4%D8%B1-%D9%88%D9%85%D9%86%D8%A7%D8%B4%D8%AF%D8%A9-%D9%84%D8%A5%D8%BA%D8%A7, archived at https://perma.cc/LW3W-5RHK

[6] Al Jazeera, "مصادر للجزيرة نت: قوات الدعم السريع أحرقت 45 قرية بشمال دارفور" November 1, 2024, https://www.aljazeera.net/politics/2024/11/1/%D9%85%D8%B5%D8%A7%D8%AF%D8%B1-%D9%84%D9%84%D8%AC%D8%B2%D9%8A%D8%B1%D8%A9-%D9%86%D8%AA-%D9%82%D9%88%D8%A7%D8%AA-%D8%A7%D9%84%D8%AF%D8%B9%D9%85-%D8%A7%D9%84%D8%B3%D8%B1%D9%8A%D8%B9, archived at https://perma.cc/9R8V-FQZZ; HRL_MMC_059

[7] International Organization for Migration, "DTM Sudan Flash Alert: Conflict in Kutum and Melit localities, North Darfur," November 3, 2024, https://mailchi.mp/iom/dtm-sudan-flash-alert-conflict-in-kutum-and-melit-localities-north-darfur-update-003, archived at https://perma.cc/BAE7-BE7H

[8] Sudan Tribune, "مناوي : «الدعم السريع» ارتكبت مجزرة في قرية بشمال دارفور" November 2, 2024, https://sudantribune.net/article292819/, archived at https://perma.cc/R69Q-ENUD; Al Jazeera, "مصادر للجزيرة نت: قوات الدعم السريع أحرقت 45 قرية بشمال دارفور" November 1, 2024, https://www.aljazeera.net/politics/2024/11/1/%D9%85%D8%B5%D8%A7%D8%AF%D8%B1-%D9%84%D9%84%D8%AC%D8%B2%D9%8A%D8%B1%D8%A9-%D9%86%D8%AA-%D9%82%D9%88%D8%A7%D8%AA-%D8%A7%D9%84%D8%AF%D8%B9%D9%85-%

D8%A7%D9%84%D8%B3%D8%B1%D9%8A%D8%B9, archived at https://perma.cc/9R8V-FQZZ; Protection Cluster: Sudan, " Darfur Protection of Civilians Flash Update North Darfur: Armed Attacks on Villages in Kutum and Melit," November 4, 2024, https://reliefweb.int/report/sudan/darfur-protection-civilians-flash-update-north-darfur-armed-attacks-villages-kutum-and-melit, archived at https://perma.cc/3ZAY-J3M7; Radio Dabanga, "" November 4, 2024, https://www.dabangasudan.org/ar/all-news/article/%d8%a7%d9%84%d8%af%d8%b9%d9%85-%d8%a7%d9%84%d8%b3%d8%b1%d9%8a%d8%b9-%d9%8a%d9%82%d8%b5%d9%81-%d8%a7%d9%84%d9%81%d8%a7%d8%b4%d8%b1-%d9%88%d9%85%d9%86%d8%a7%d8%b4%d8%af%d8%a9-%d9%84%d8%a5%d8%ba%d8%a7-2, archived at https://archive.ph/bM04U

[9] Howarth, Caitlin N., Kaveh Khoshnood, Nathaniel A. Raymond et al. "Fourteen Arson Attacks on Villages, North Darfur 02-12 October 2024," 16 October 2024. Humanitarian Research Lab at Yale School of Public Health: New Havenhttps://files-profile.medicine.yale.edu/documents/a1b264c5-985d-4987-a32b-74a8dab0c95b.

[10] "Selection" refers to a pattern of destruction to structures where there is unaffected or unburned ground between burned structures and there is a lack of thermal scarring outside the community. This pattern of damage is highly consistent with an intentional attack rather than a wildfire or other form of unintentional destruction.

[11] Brittany Card, Ziad Al Achkar, Isaac L. Baker, and Nathaniel A. Raymond. 9/2015. Satellite Imagery Interpretation Guide: Intentional Burning of Tukuls, https://hhi.harvard.edu/publications/satellite-imagery-interpretation-guide-intentional-burning, archived at https://perma.cc/87WA-QW4Y

[12] Howarth, Caitlin N., Kaveh Khoshnood, Nathaniel A. Raymond et al. "Fourteen Arson Attacks on Villages, North Darfur 02-12 October 2024," 16 October 2024. Humanitarian Research Lab at Yale School of Public Health: New Havenhttps://files-profile.medicine.yale.edu/documents/a1b264c5-985d-4987-a32b-74a8dab0c95b; Caitlin N. Howarth, Kaveh Khoshnood, Nathaniel A. Raymond et al., "Confirmation of Sudan Armed Forces Bombardment Consistent with Rapid Support Forces Present in El-Fasher." 19 April 2024. Humanitarian Research Lab at Yale School of Public Health: New Haven, https://files-profile.medicine.yale.edu/documents/07e84454-5a4d-4547-8a6c-1e4921df54ea ; Caitlin N. Howarth, Kaveh Khoshnood, Nathaniel A. Raymond et al. "SPECIAL REPORT El-Fasher: State of Crisis." 5 June 2024. Humanitarian Research Lab at Yale School of Public Health: New Haven, https://files-profile.medicine.yale.edu/documents/207e8922-3c37-4476-97e9-505853311e3e

[13] Caitlin N. Howarth, Kaveh Khoshnood, Nathaniel A. Raymond et al. "SPECIAL REPORT El-Fasher: State of Crisis." 5 June 2024. Humanitarian Research Lab at Yale School of Public Health: New Haven, https://files-profile.medicine.yale.edu/documents/207e8922-3c37-4476-97e9-505853311e3e

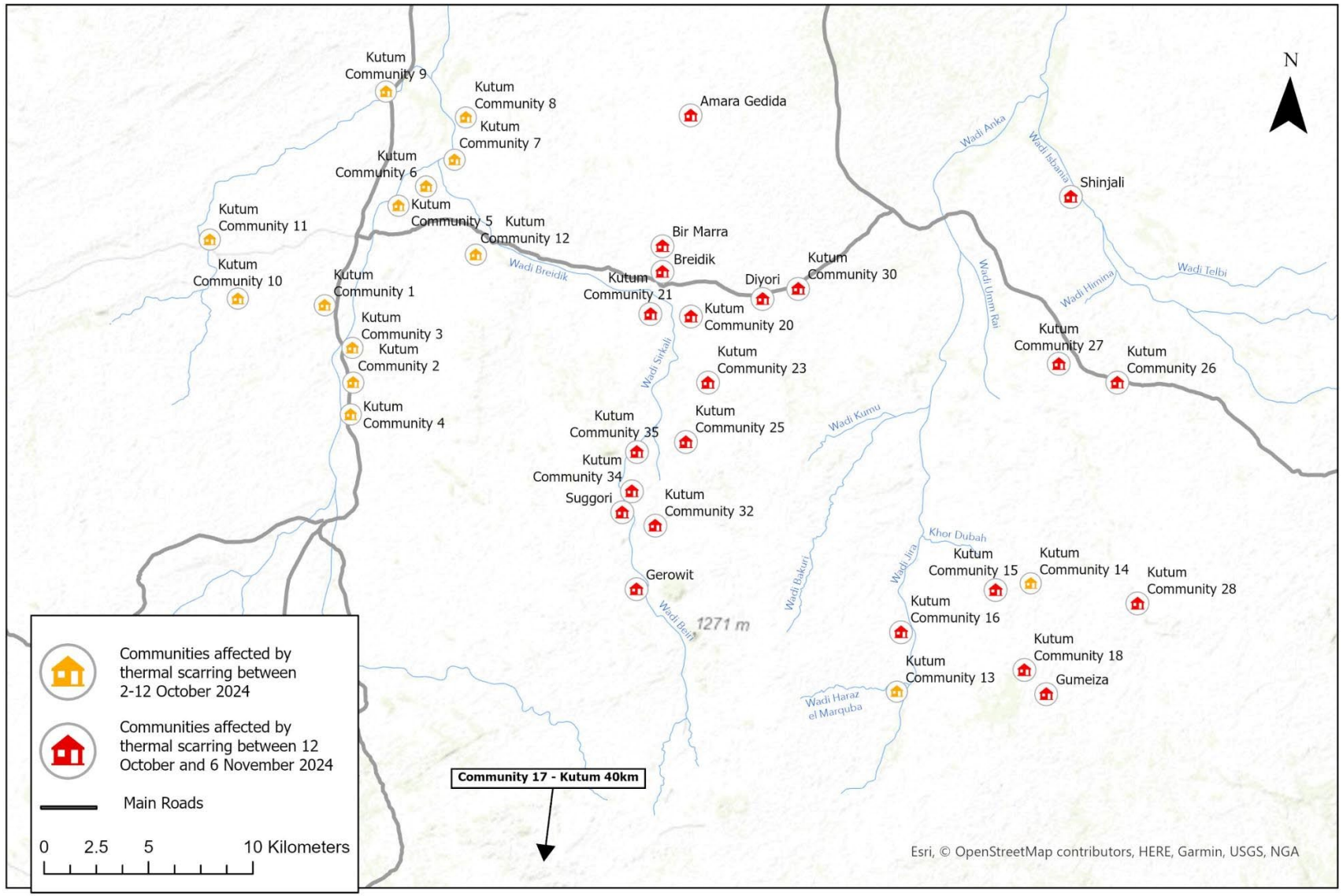
[14] Caitlin N. Howarth, Kaveh Khoshnood, Nathaniel A. Raymond et al. "Special Report: Corroboration of Widespread Body Disposal and Significant Increase in Gravesite Activity from RSF Attacks in El-Gezira" 04 November 2024. Humanitarian Research Lab at Yale School of Public Health: New Haven.

[15] Caitlin N. Howarth, Kaveh Khoshnood, Nathaniel A. Raymond et al. "SPECIAL REPORT El-Fasher: State of Crisis." 5 June 2024. Humanitarian Research Lab at Yale School of Public Health: New Haven, https://files-profile.medicine.yale.edu/documents/207e8922-3c37-4476-97e9-505853311e3e ; Howarth, Caitlin N., Kaveh Khoshnood, Andrew Marx, Nathaniel A. Raymond, et al. "Sirba, West Darfur, 24 July– 30 July, 2023" Report 08. 02 Aug 2023,

Sudan Conflict Observatory: Washington, DC. https://hub.conflictobservatory.org/portal/apps/sites/#/sudan/documents/33bda16ddba444a395627050ffa85119; Howarth, Caitlin N., Kaveh Khoshnood, Nathaniel A. Raymond, et al. "Evidence of Alleged Crimes Against Humanity by Rapid Support Forces in Darfur, 15 April – 10 July 2023", 12 July 2023, Sudan Conflict Observatory: Washington, DC. https://hub.conflictobservatory.org/portal/apps/sites/#/sudan/pages/7cd27a952f1b4a0289adc710524c6ee8.

[16] Brittany Card, Ziad Al Achkar, Isaac L. Baker, and Nathaniel A. Raymond. 9/2015. Satellite Imagery Interpretation Guide: Intentional Burning of Tukuls, https://hhi.harvard.edu/publications/satellite-imagery-interpretation-guide-intentional-burning, archived at https://perma.cc/87WA-QW4Y

Thermal Scarring at Communities in Kutum Locality between 2 October and 6 November 2024

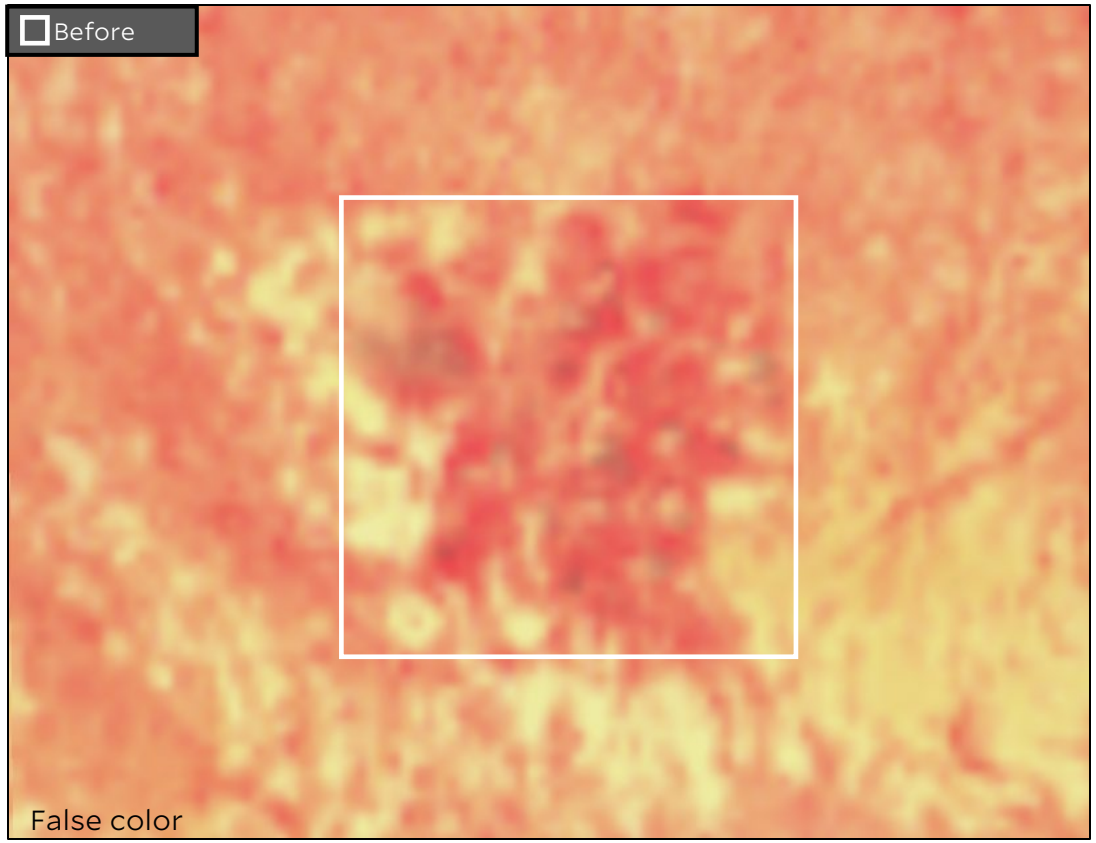


Kutum Community 15

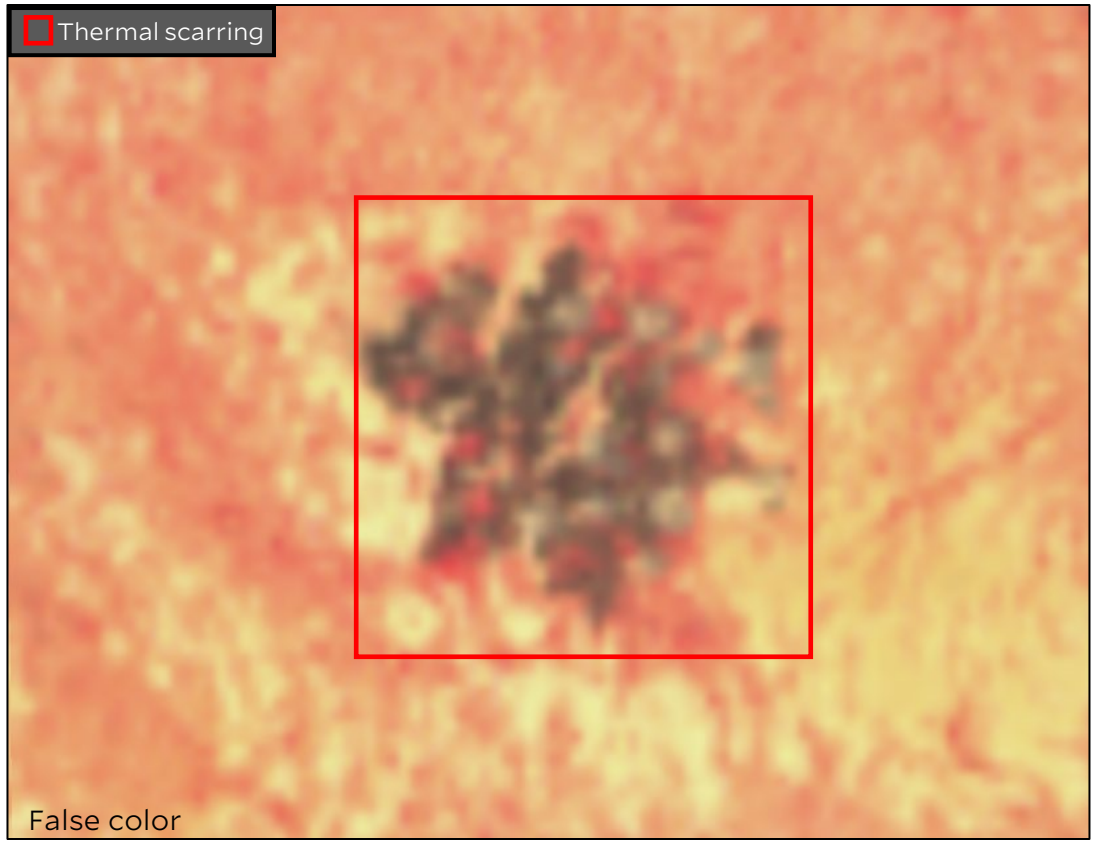
THERMAL SCARRING OBSERVED BETWEEN 12 AND 17 OCTOBER 2024

According to analysis of satellite imagery, thermal scarring was observed at community, referred to here as "Kutum Community 15," between 12 and 17 October 2024. According to analysis, of VIIRS data, a fire event occurred on 13 October 2024.

The unaffected ground between burned structures and lack of thermal scarring on the ground outside individual community areas is highly consistent with intentional attack targeting structures.



22 October 2024 © 2024 Copernicus Sentinel



27 October 2024 © 2024 Copernicus Sentinel

Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

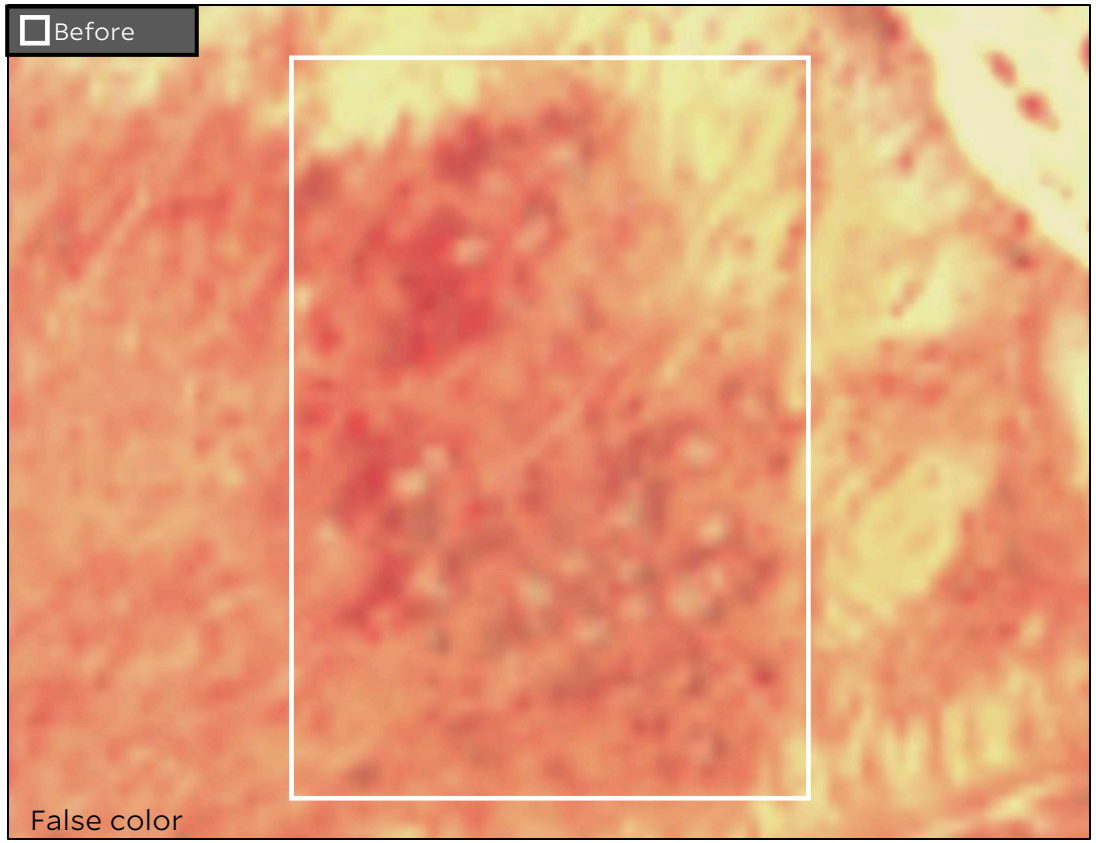
Note: This community may be named Makhriba, Wedja, or Karabu

Kutum Community 16

THERMAL SCARRING OBSERVED BETWEEN 12 AND 22 OCTOBER 2024

According to analysis of satellite imagery, thermal scarring was observed at a location, referred to here as "Kutum Community 16," between 12 and 22 October 2024. According to analysis of VIIRS data, fire events occurred on 17 and 18 October 2024.

The unaffected ground between burned structures and lack of thermal scarring on the ground outside individual community areas is highly consistent with intentional attack targeting structures.



12 October 2024 © 2024 Copernicus Sentinel

22 October 2024 © 2024 Copernicus Sentinel

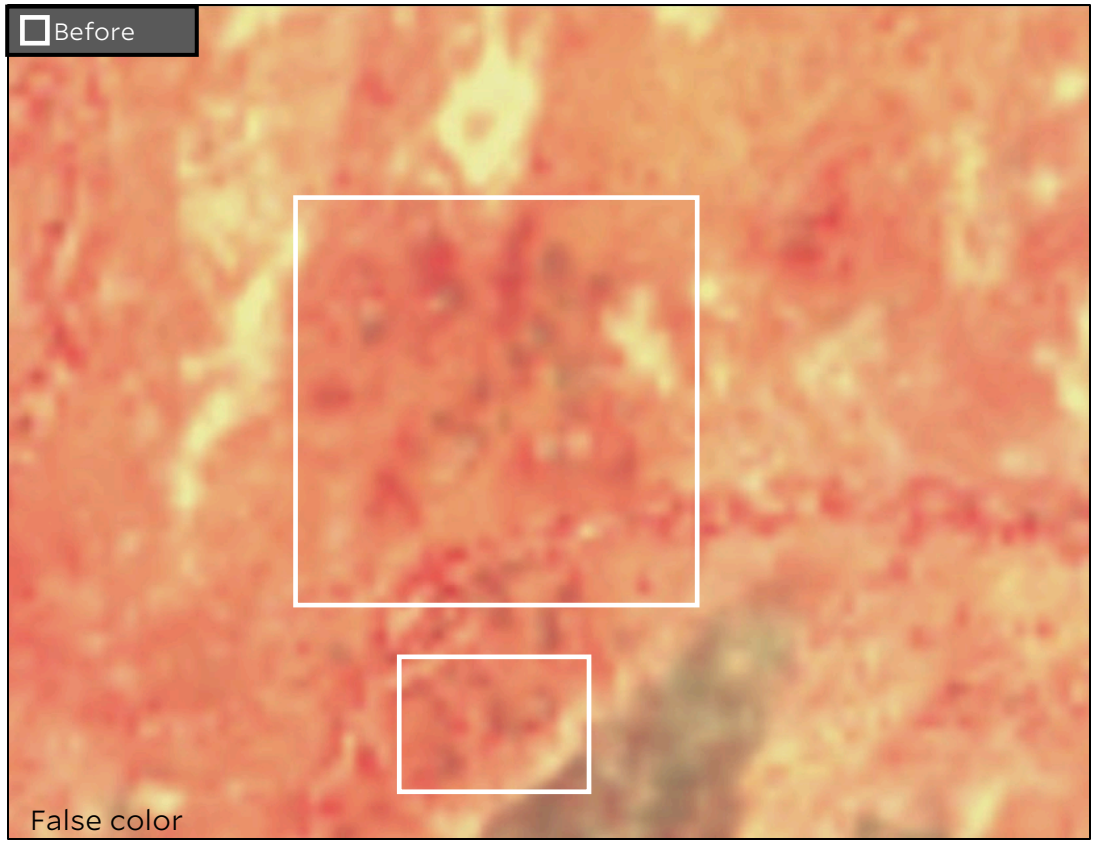
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Gumeiza, Kutum

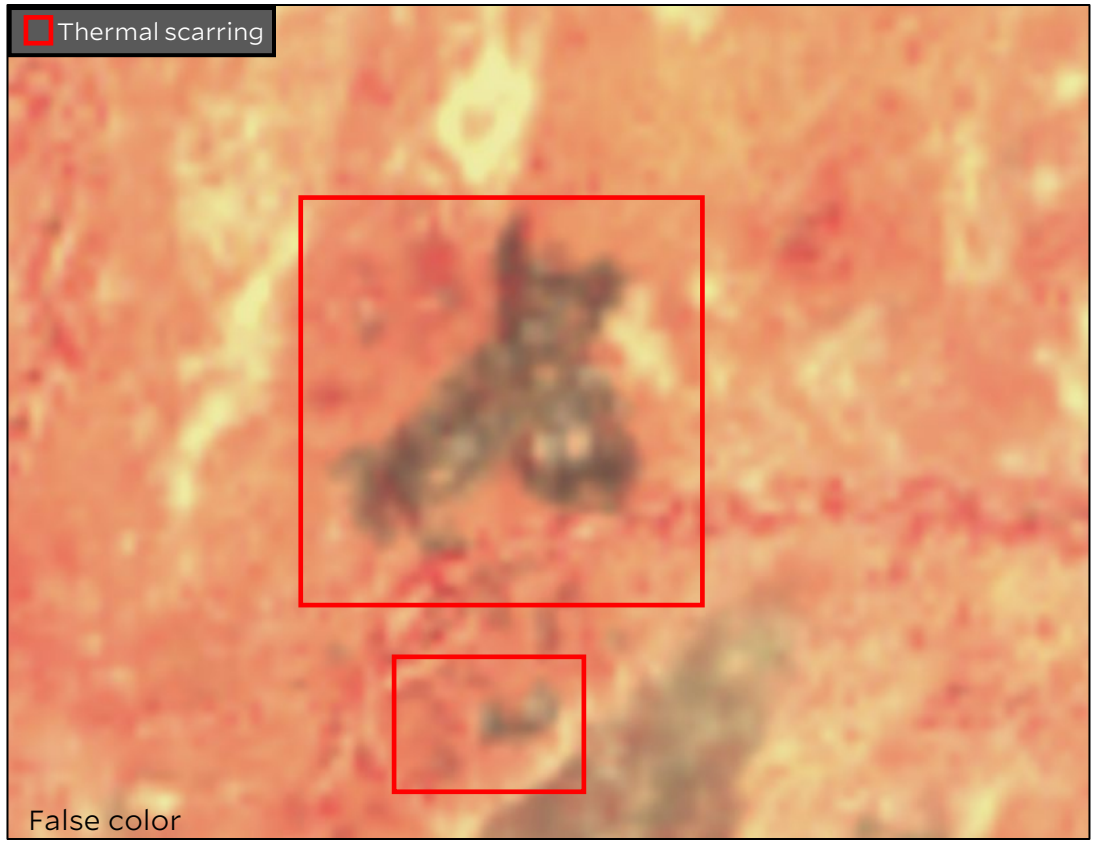
THERMAL SCARRING OBSERVED BETWEEN 22 AND 27 OCTOBER 2024

According to analysis of satellite imagery, thermal scarring was observed between 22 and 27 October 2024 at Gumeiza. According to analysis of VIIRS data, a fire event occurred on 22 October 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



22 October 2024 © 2024 Copernicus Sentinel



27 October 2024 © 2024 Copernicus Sentinel

Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

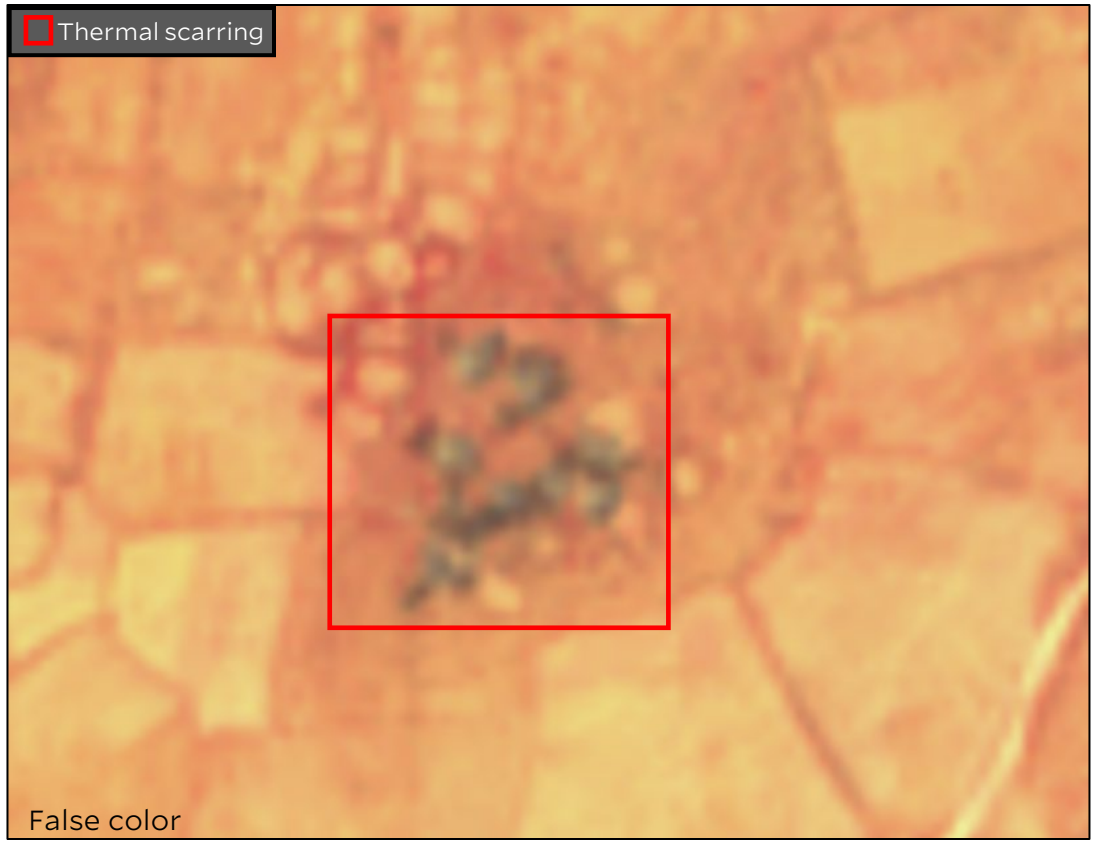
Kutum Community 18

THERMAL SCARRING OBSERVED BETWEEN 27 OCTOBER AND 01 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at "Kutum Community 18" between 27 October and 1 November 2024. According to analysis of VIIRS data, a fire event occurred on 26 October 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.

27 October 2024 © 2024 Copernicus Sentinel



01 November 2024 © 2024 Copernicus Sentinel

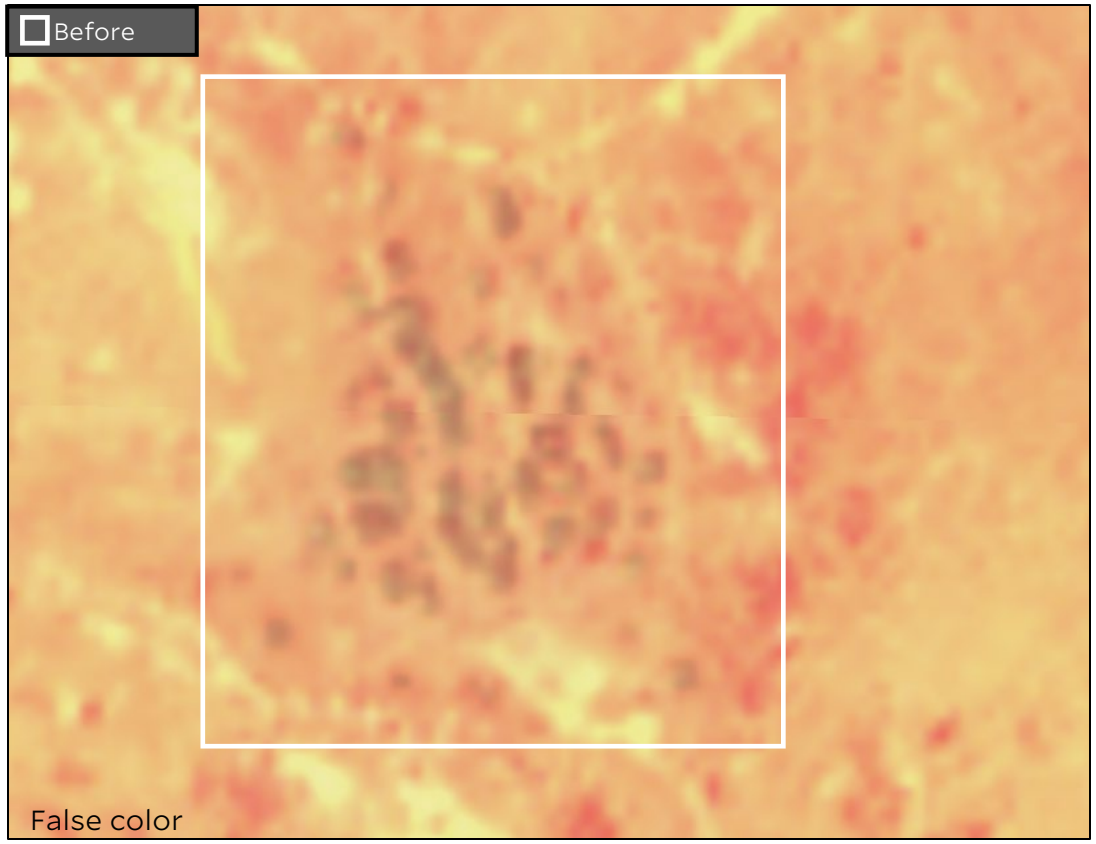
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Amara Gedida, Kutum

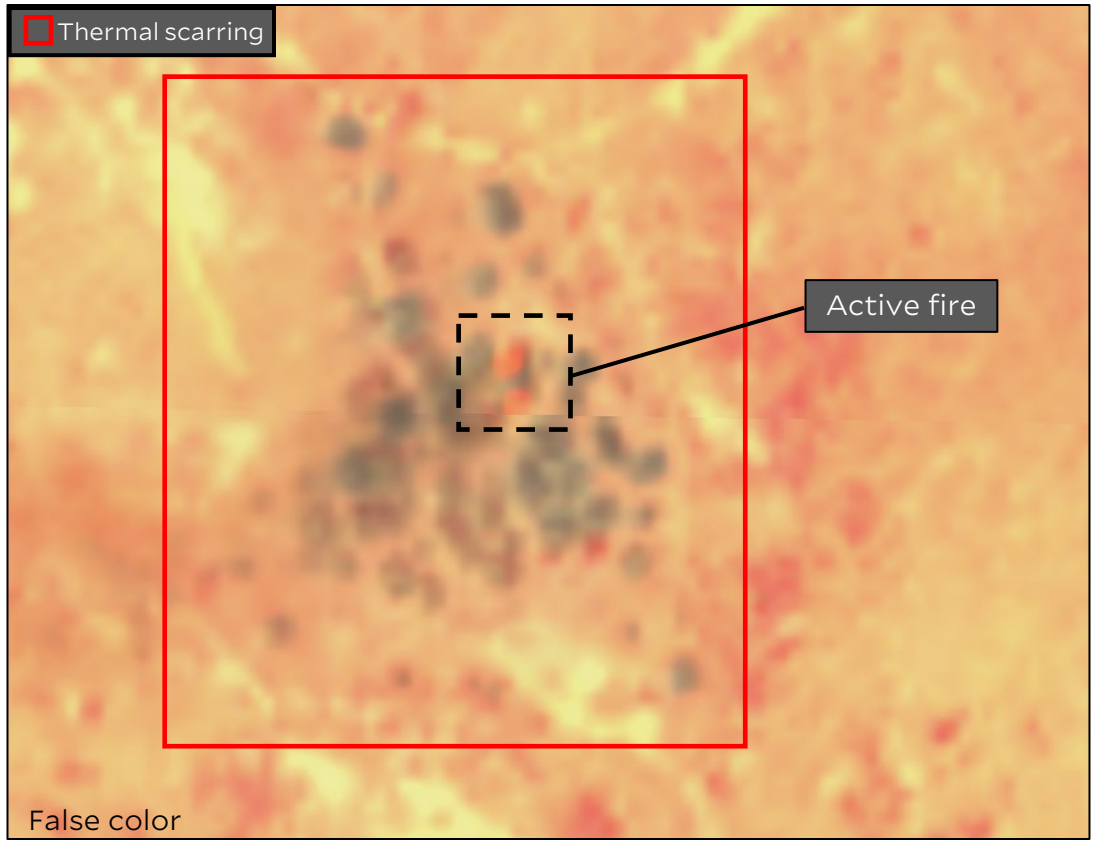
THERMAL SCARRING OBSERVED BETWEEN 27 OCTOBER AND 01 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at Amara Gedida between 27 October and 1 November 2024. According to analysis of VIIRS data, a fire event occurred on 1 November 2024, with active fire visible in satellite imagery.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



27 October 2024 © 2024 Copernicus Sentinel



01 November 2024 © 2024 Copernicus Sentinel

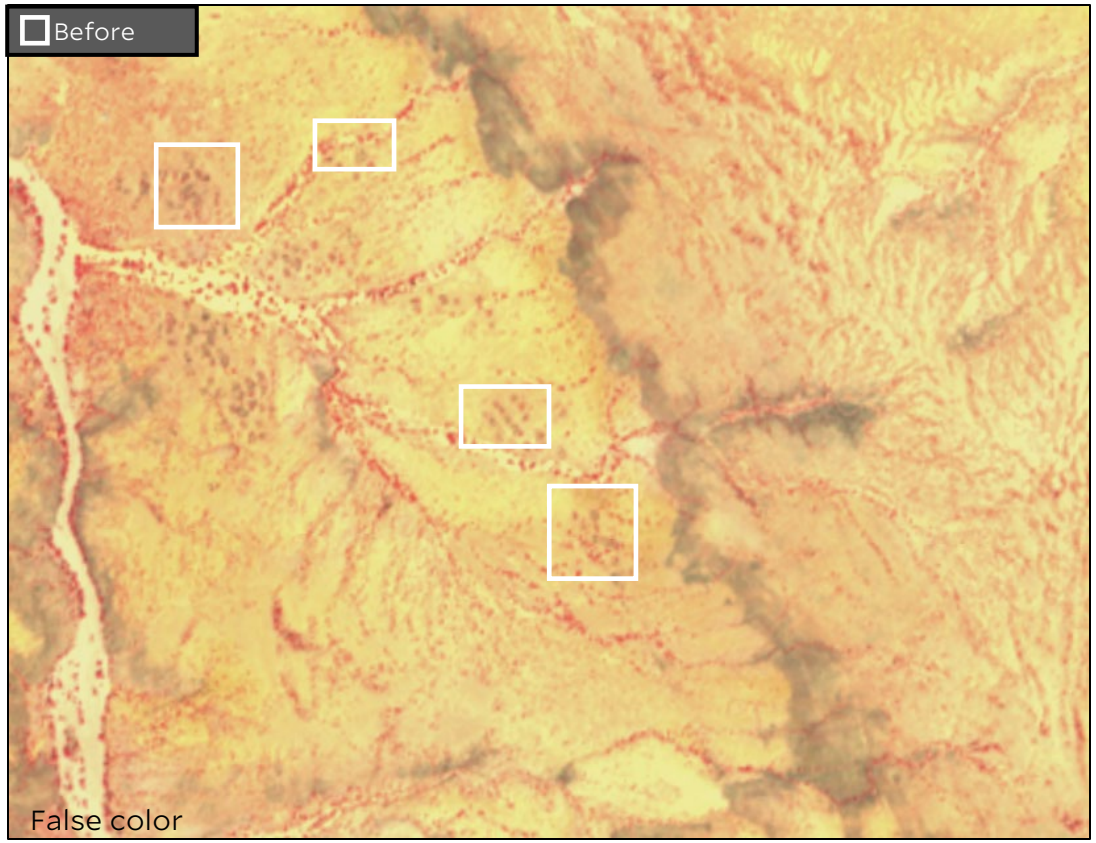
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Kutum Community 20

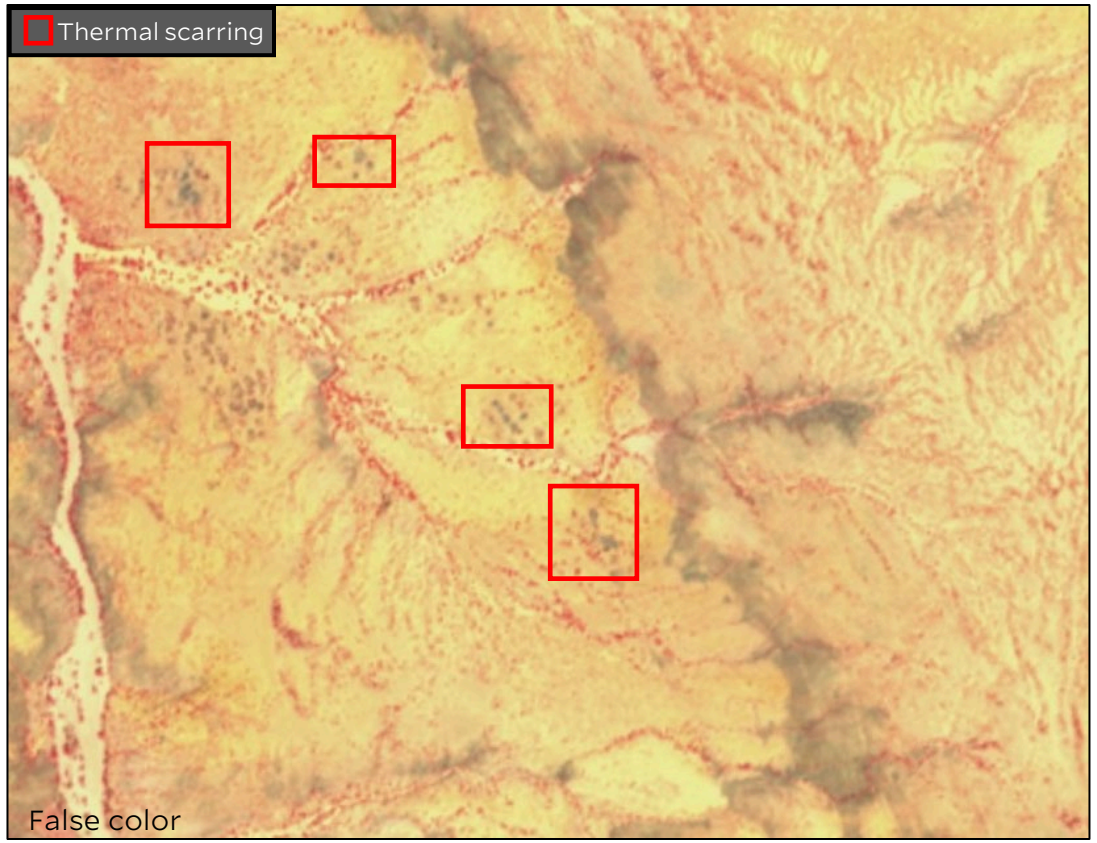
THERMAL SCARRING OBSERVED BETWEEN 27 OCTOBER AND 01 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at a location, referred to here as "Kutum Community 20," between 27 October and 1 November 2024. According to analysis of VIIRS data, fire events occurred on 30 and 31 October 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



27 October 2024 © 2024 Copernicus Sentinel



01 November 2024 © 2024 Copernicus Sentinel

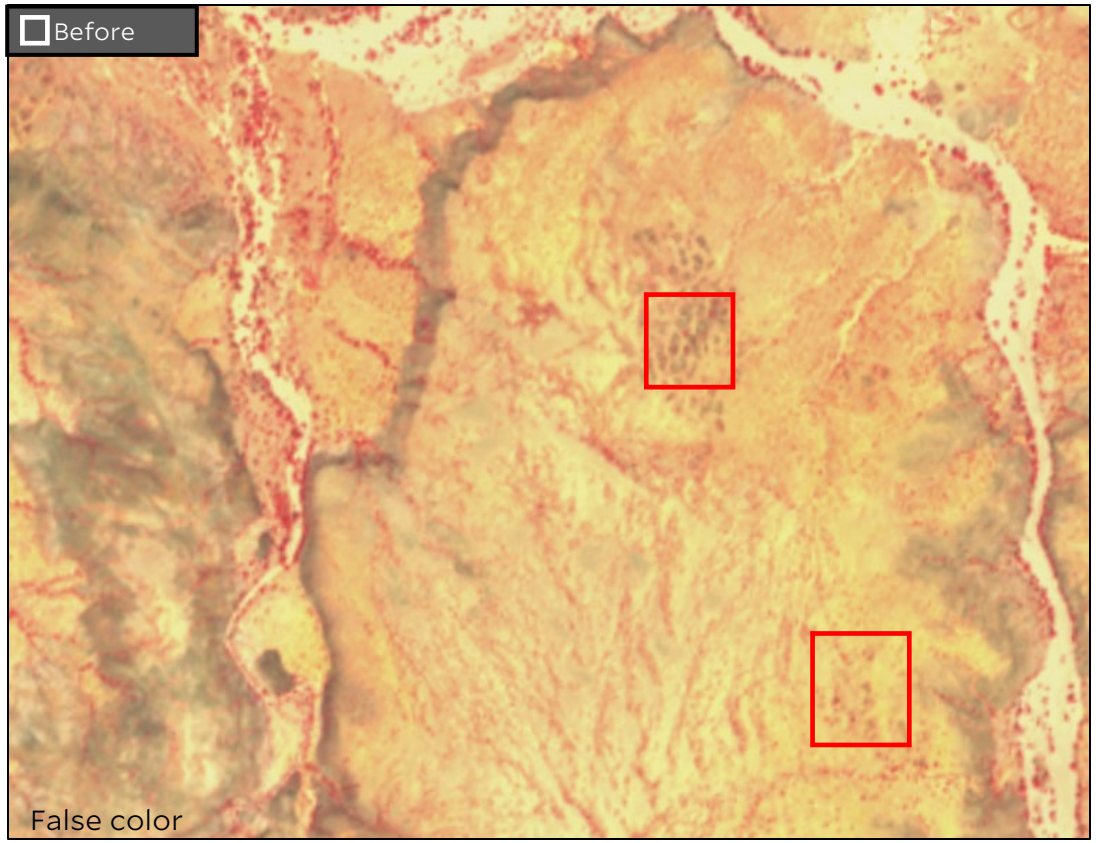
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Kutum Community 21

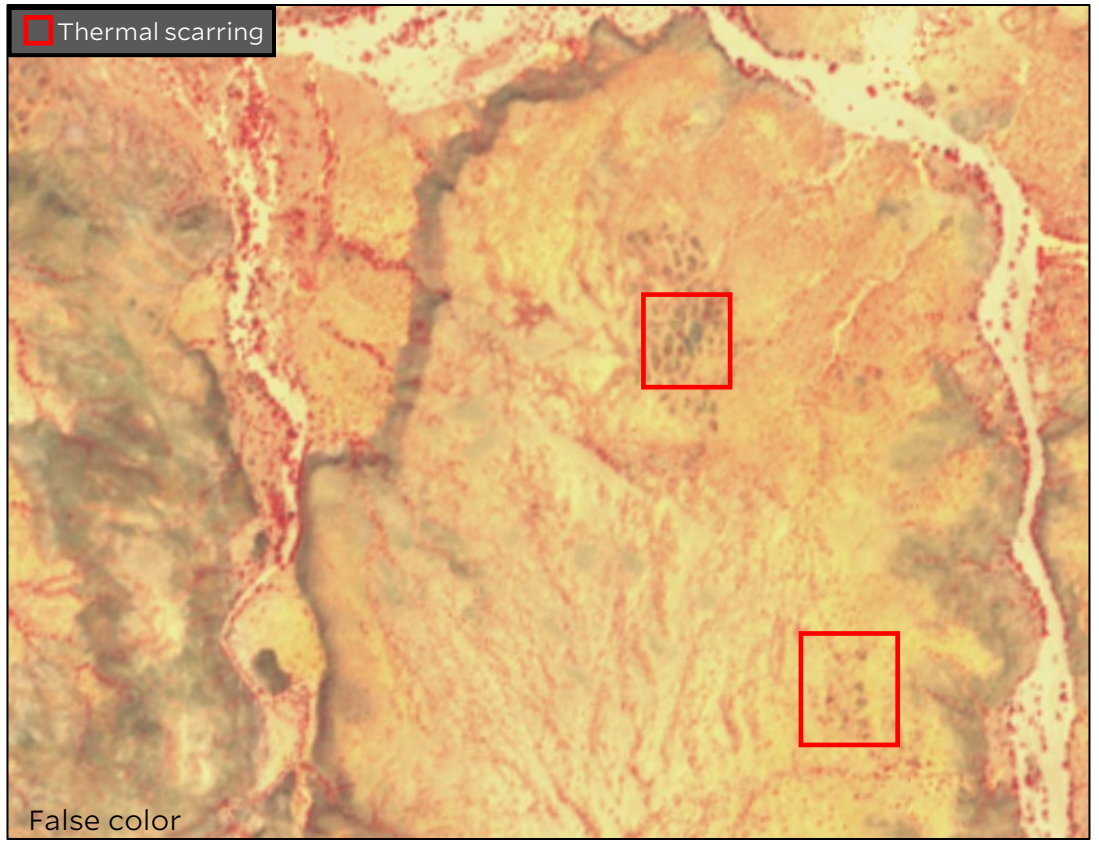
THERMAL SCARRING OBSERVED BETWEEN 27 OCTOBER AND 01 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at a location, referred to here as "Kutum Community 21," between 27 October and 1 November 2024. According to analysis of VIIRS data, fire events occurred on 29 and 31 October 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



27 October 2024 © 2024 Copernicus Sentinel



01 November 2024 © 2024 Copernicus Sentinel

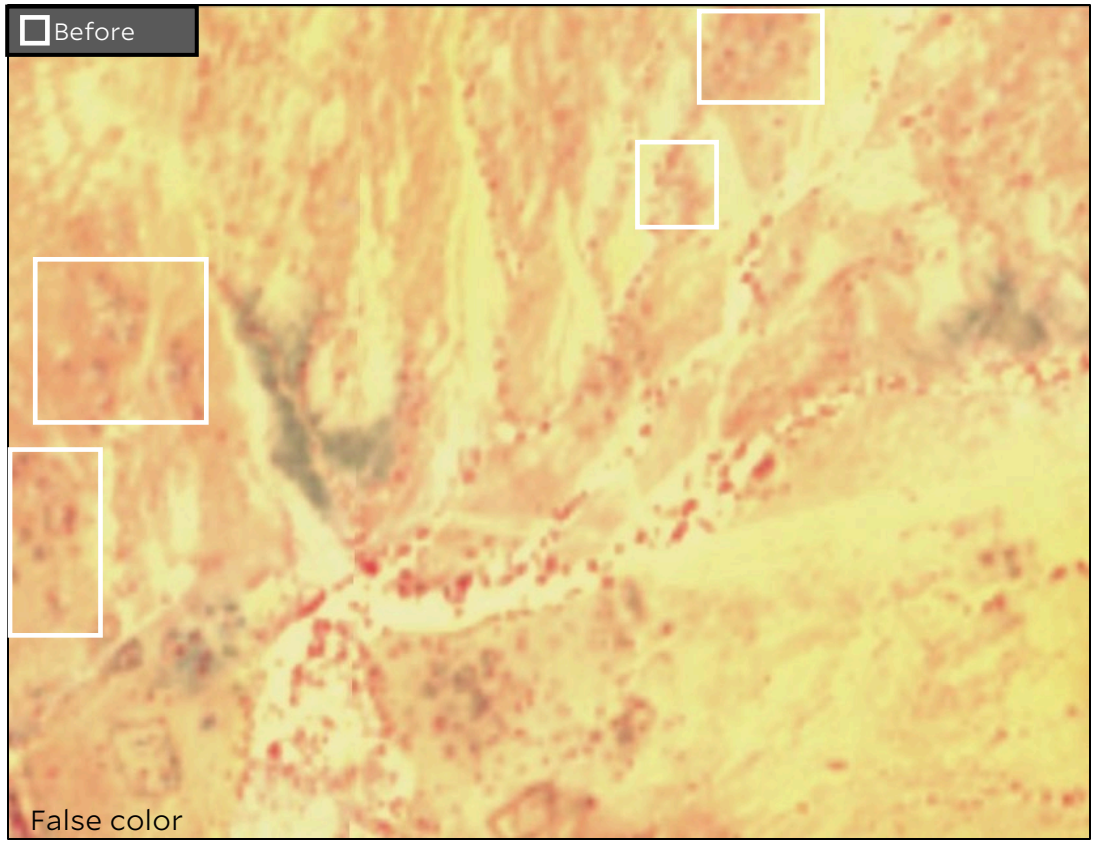
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Breidik, Kutum

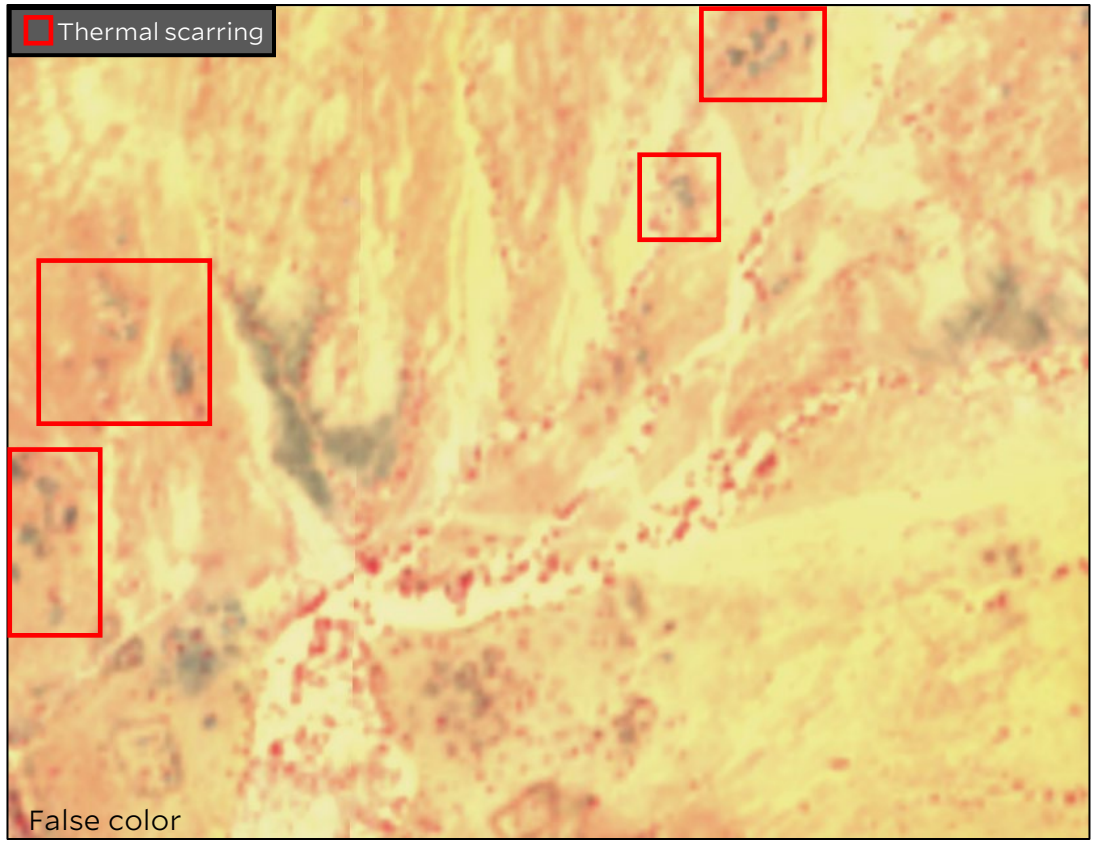
THERMAL SCARRING OBSERVED BETWEEN 27 OCTOBER AND 01 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at Breidik between 27 October and 1 November 2024. According to analysis of VIIRS data, fire events occurred on 29 and 31 October 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



27 October 2024 © 2024 Copernicus Sentinel



01 November 2024 © 2024 Copernicus Sentinel

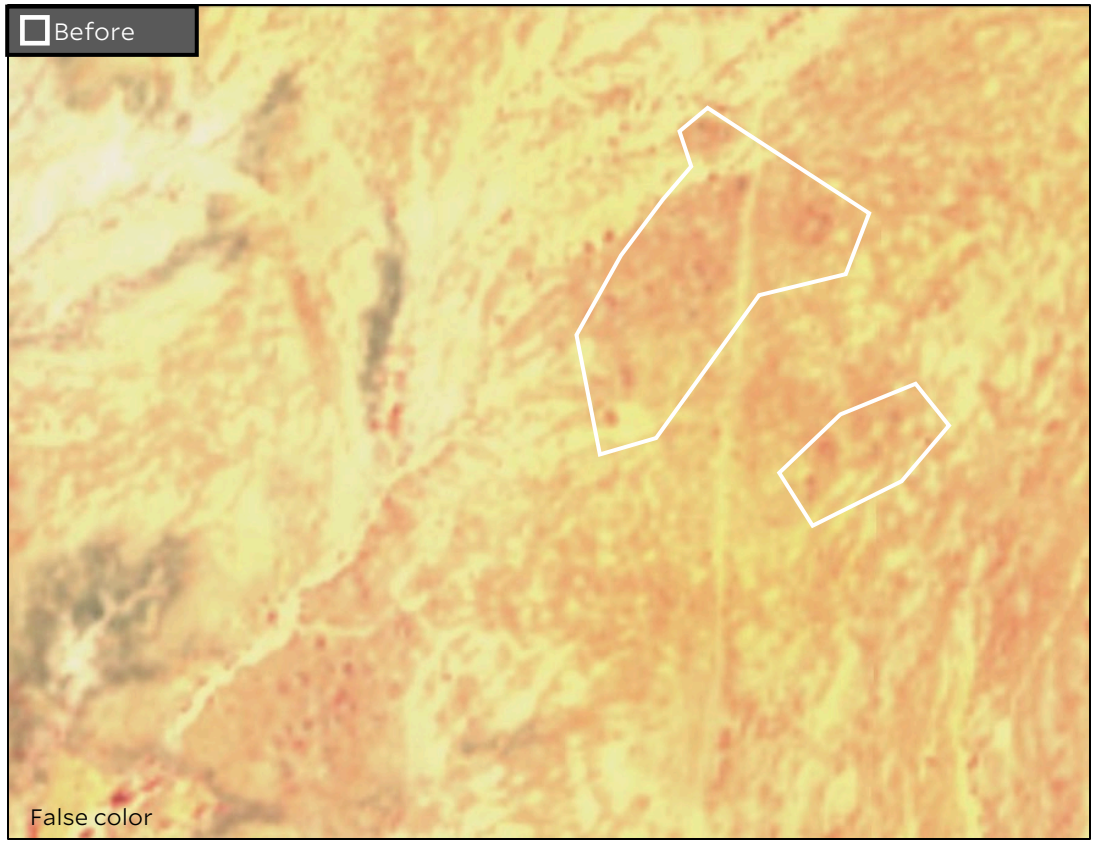
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Bir Marra, Kutum

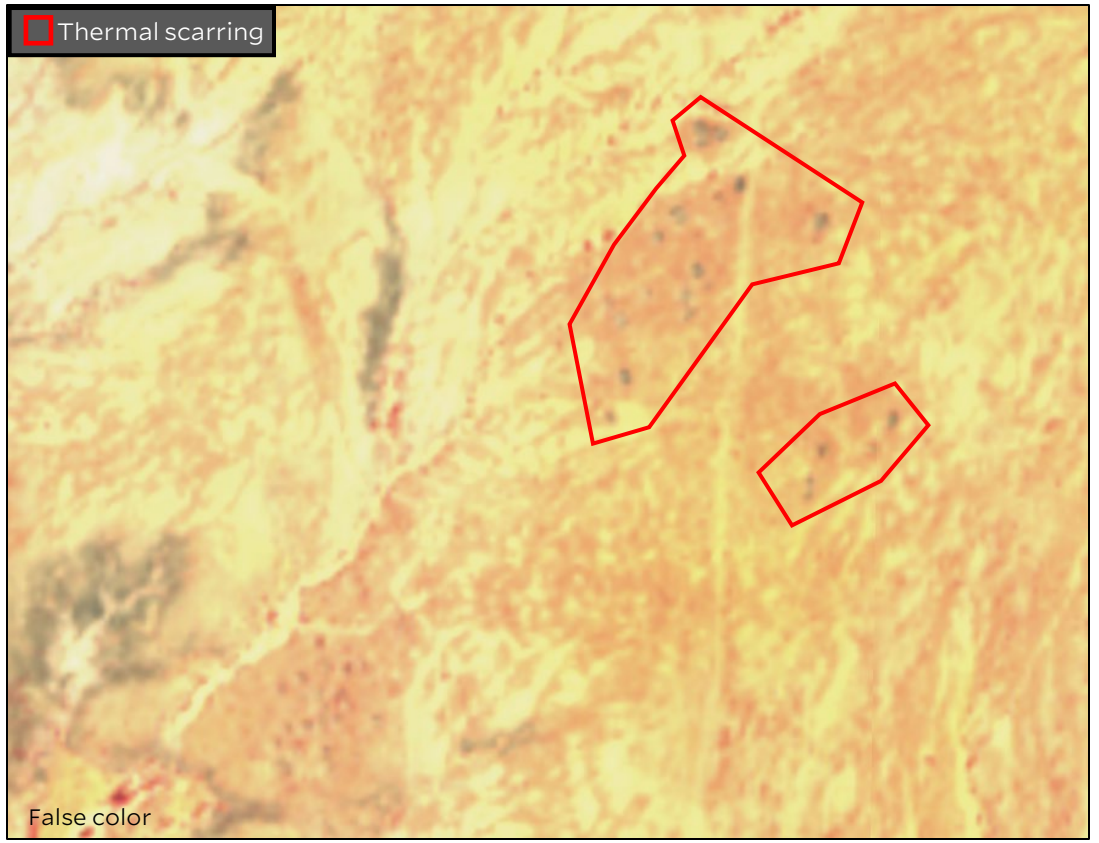
THERMAL SCARRING OBSERVED BETWEEN 27 OCTOBER AND 06 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at Bir Marra between 27 October and 6 November 2024. According to analysis of VIIRS data, a fire event occurred on 30 October 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



27 October 2024 © 2024 Copernicus Sentinel



06 November 2024 © 2024 Copernicus Sentinel

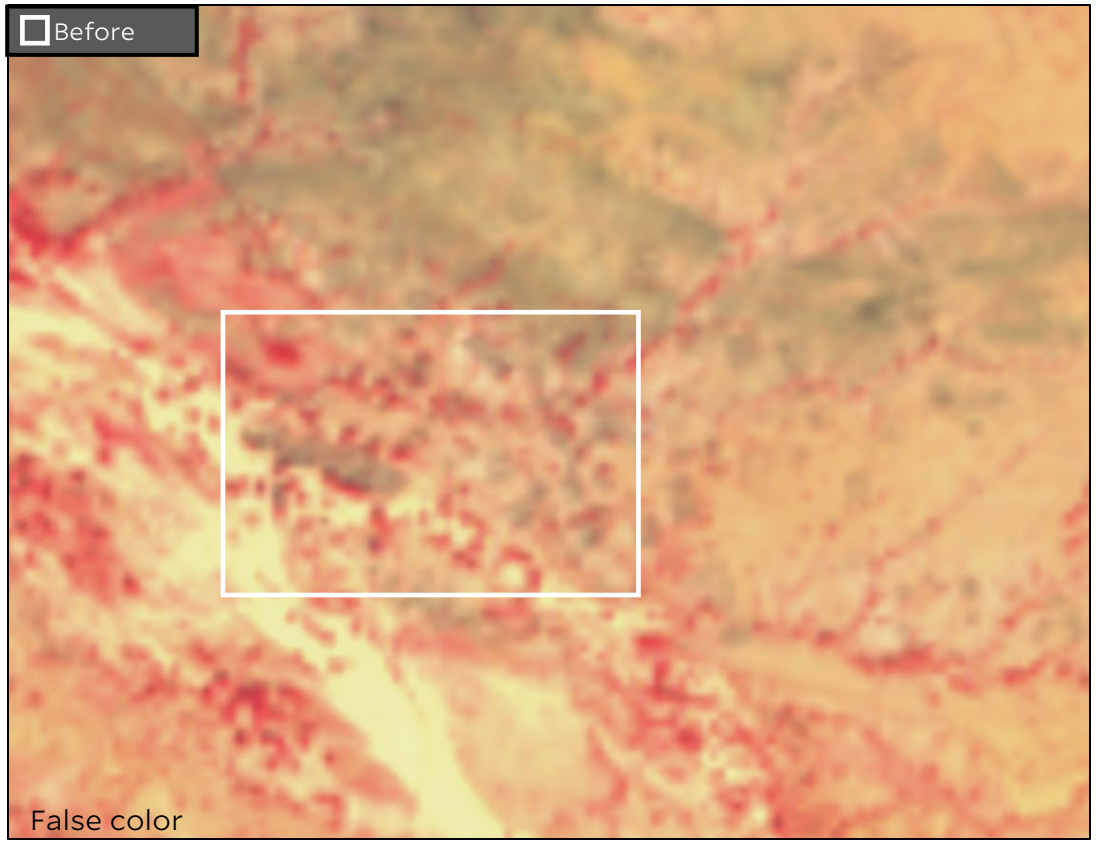
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Kutum Community 23

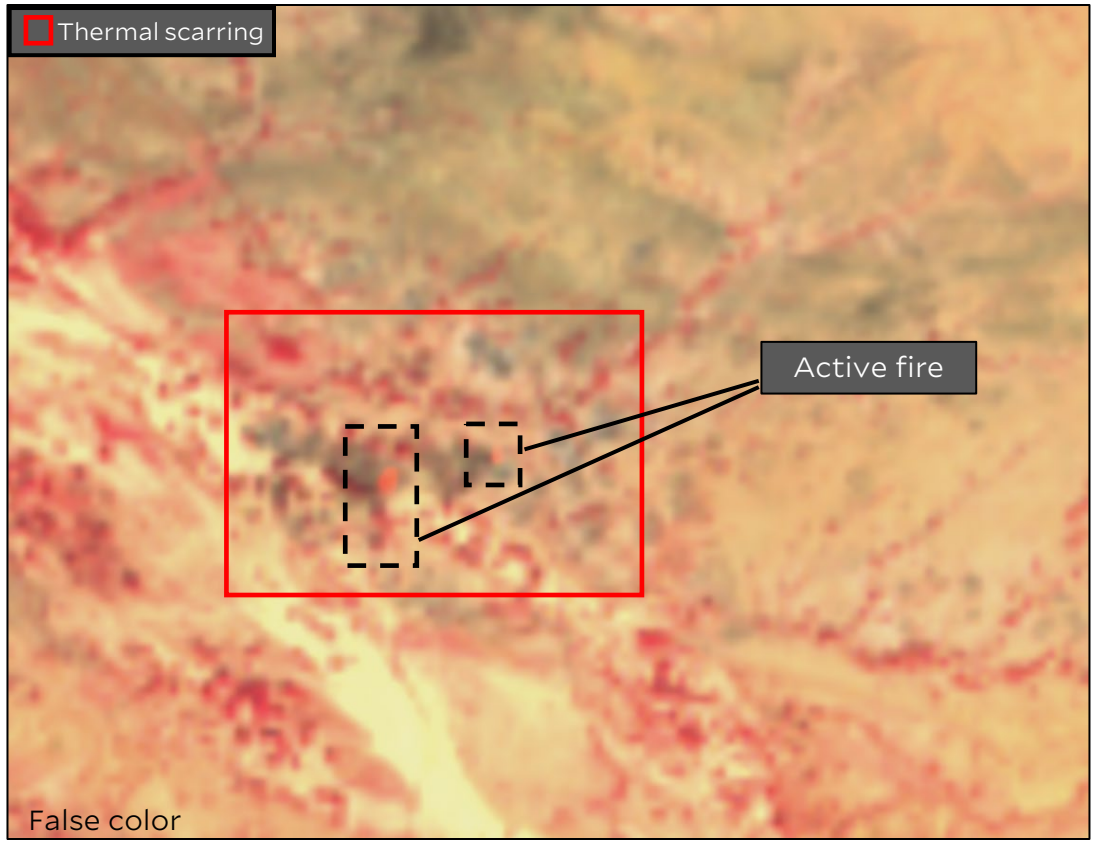
THERMAL SCARRING OBSERVED BETWEEN 27 OCTOBER AND 01 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at a location, referred to here as “Kutum Community 23,” between 27 October and 1 November 2024. According to analysis of VIIRS data, a fire event occurred on 30 October 2024. Active fire is visible on 1 November 2024 in satellite imagery.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



27 October 2024 © 2024 Copernicus Sentinel



01 November 2024 © 2024 Copernicus Sentinel

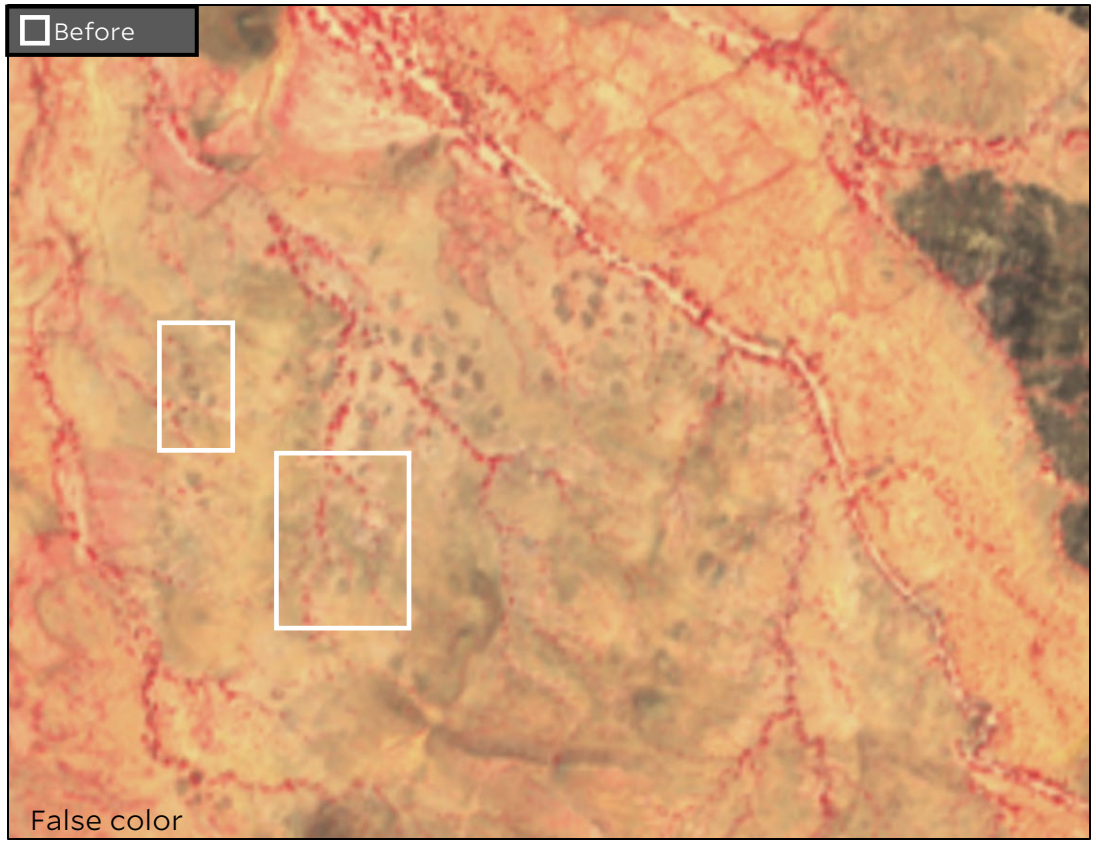
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Kutum Community 25

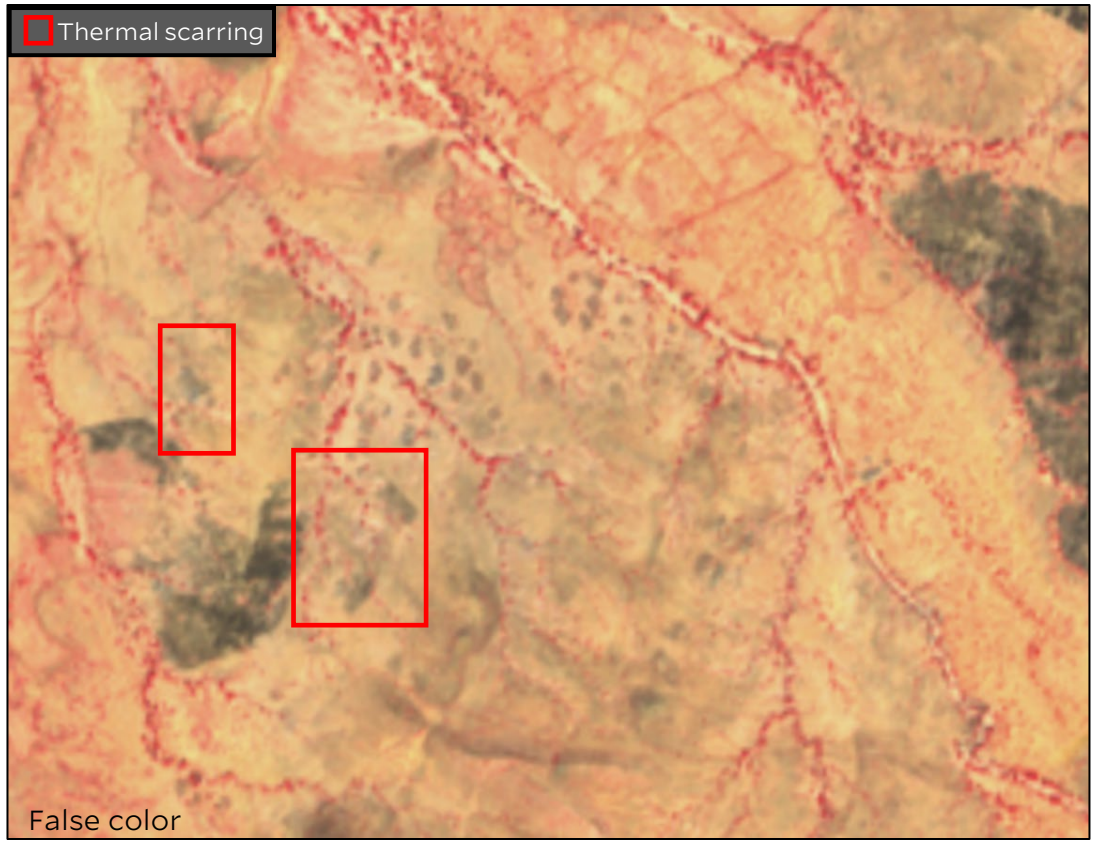
THERMAL SCARRING OBSERVED BETWEEN 01 AND 06 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at a location, referred to here as "Kutum Community 25," between 1 and 6 November 2024. According to analysis of VIIRS data, a fire event occurred on 31 October 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



01 November 2024 © 2024 Copernicus Sentinel



06 November 2024 © 2024 Copernicus Sentinel

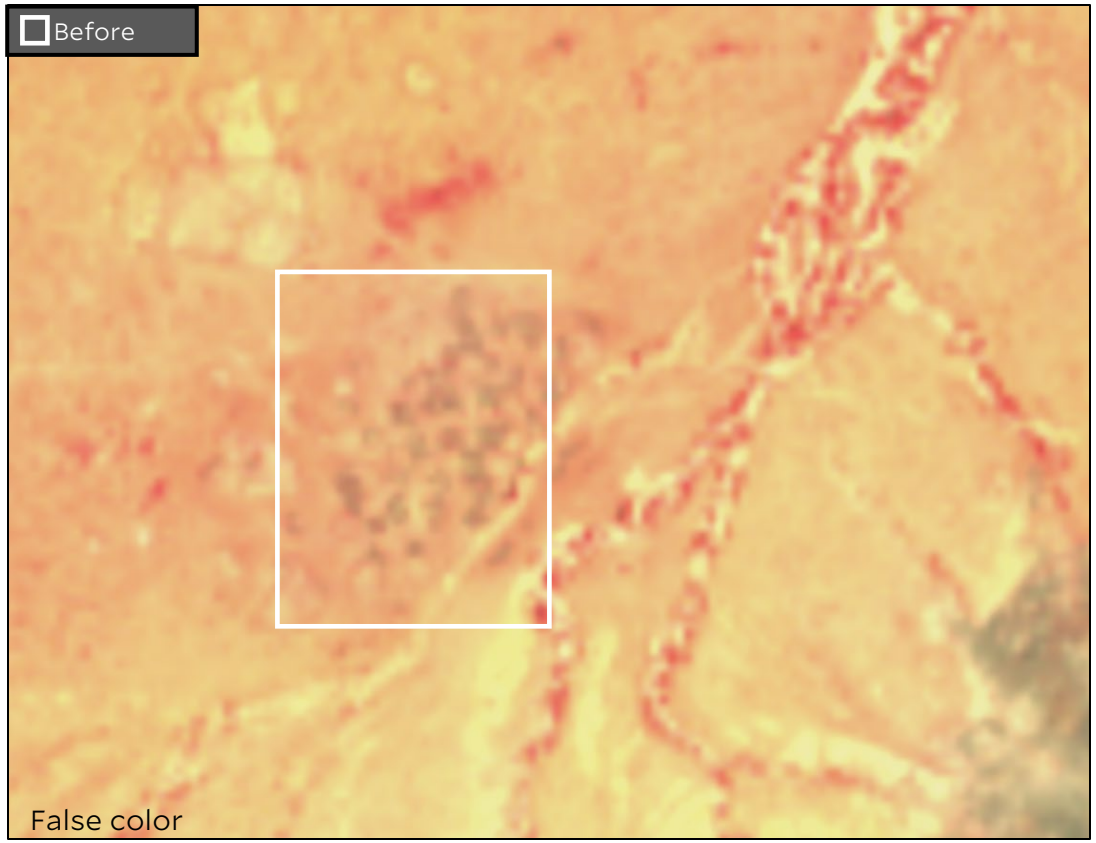
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Kutum Community 26

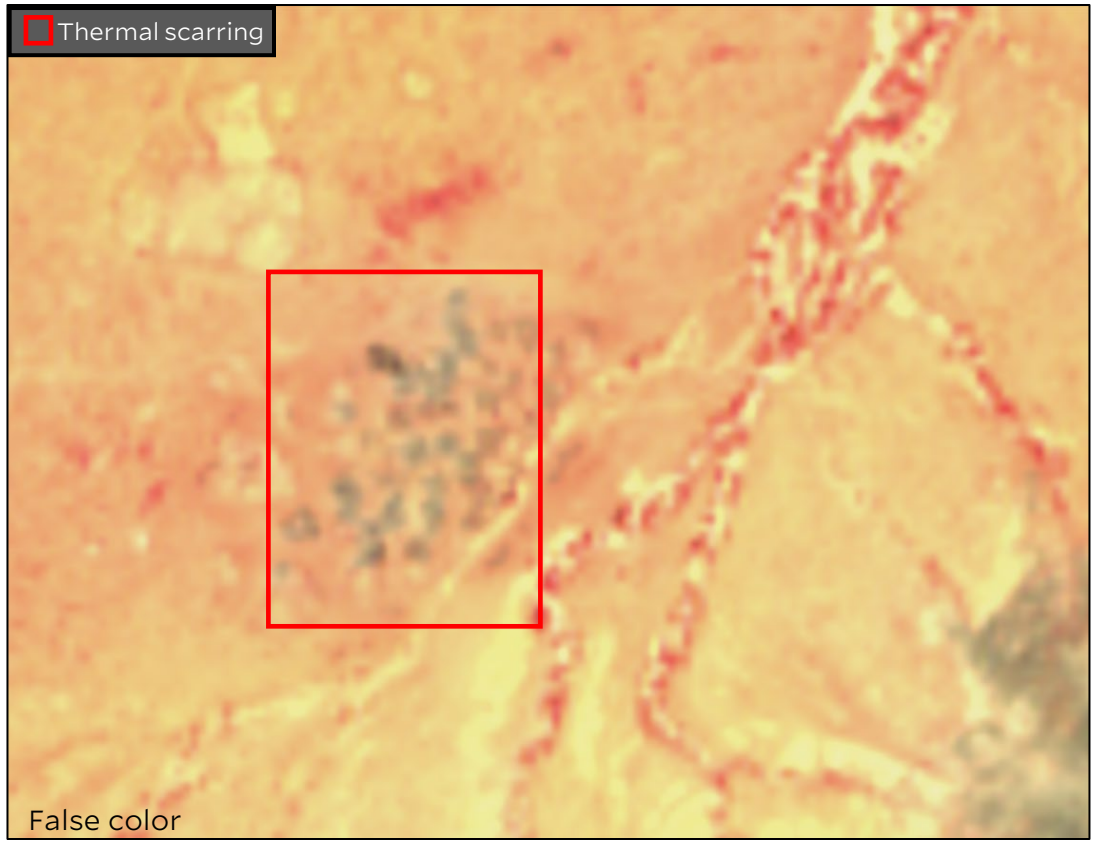
THERMAL SCARRING OBSERVED BETWEEN 01 AND 06 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at a location, referred to here as “Kutum Community 26,” between 1 and 6 November 2024. According to analysis of VIIRS data, fire events occurred on 1 and 2 November 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



01 November 2024 © 2024 Copernicus Sentinel



06 November 2024 © 2024 Copernicus Sentinel

Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

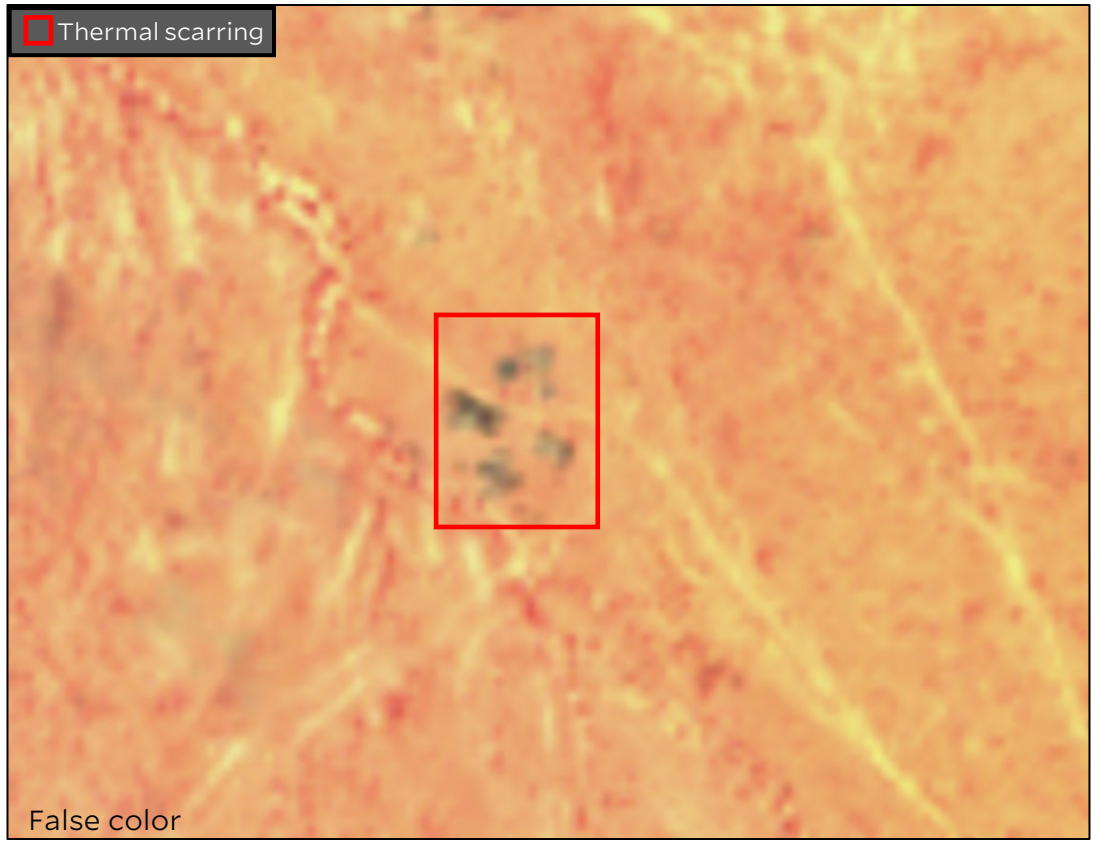
Kutum Community 27

THERMAL SCARRING OBSERVED BETWEEN 01 AND 06 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at a location, referred to here as "Kutum Community 27," between 1 and 6 November 2024. According to analysis of VIIRS data, fire events occurred on 1 November 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.

01 November 2024 © 2024 Copernicus Sentinel



06 November 2024 © 2024 Copernicus Sentinel

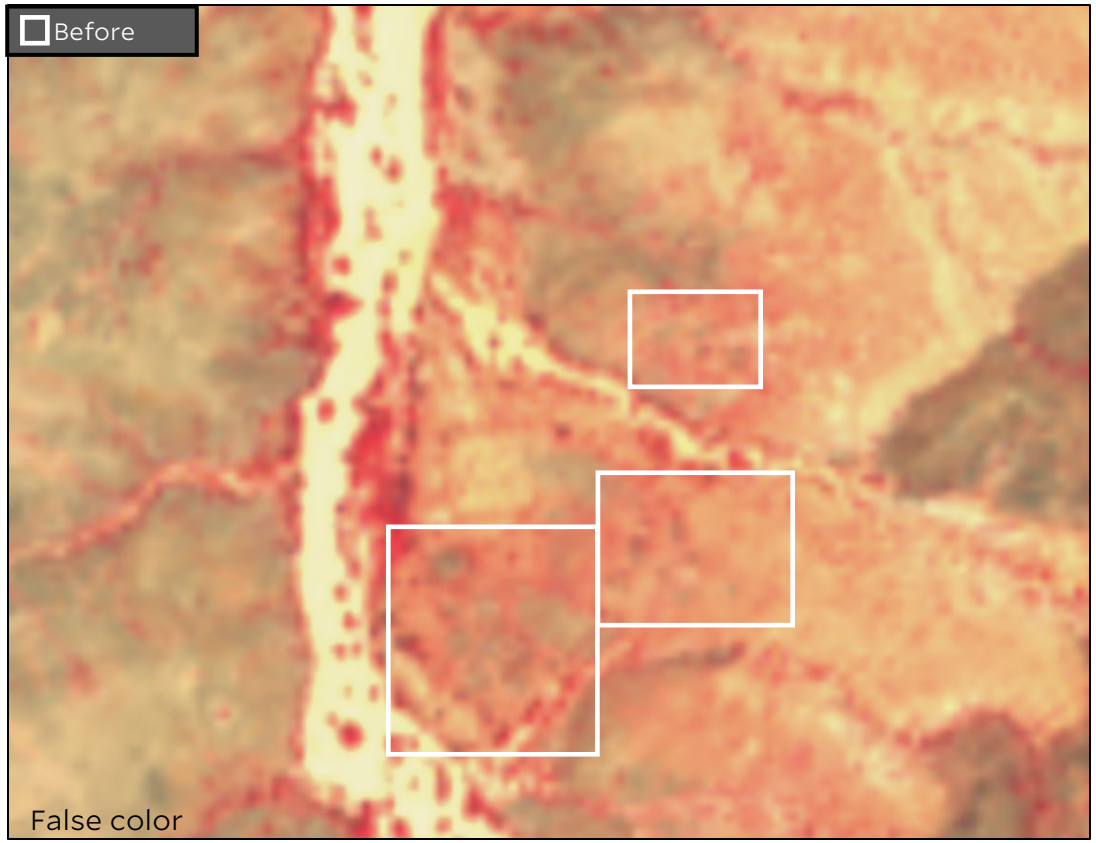
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Kutum Community 28

THERMAL SCARRING OBSERVED BETWEEN 01 AND 06 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at a location, referred to here as "Kutum Community 28," between 1 and 6 November 2024. According to analysis of VIIRS data, a fire event occurred on 2 November 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



01 November 2024 © 2024 Copernicus Sentinel

06 November 2024 © 2024 Copernicus Sentinel

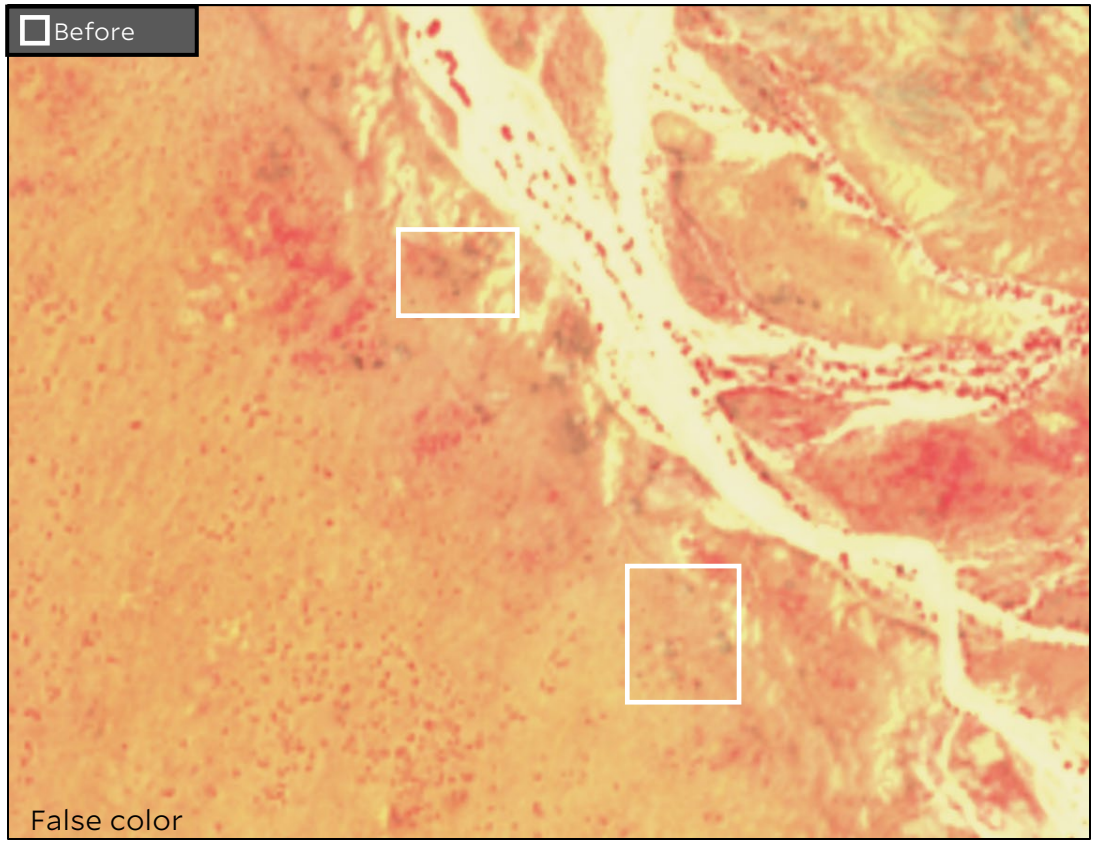
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Shinjali, Kutum

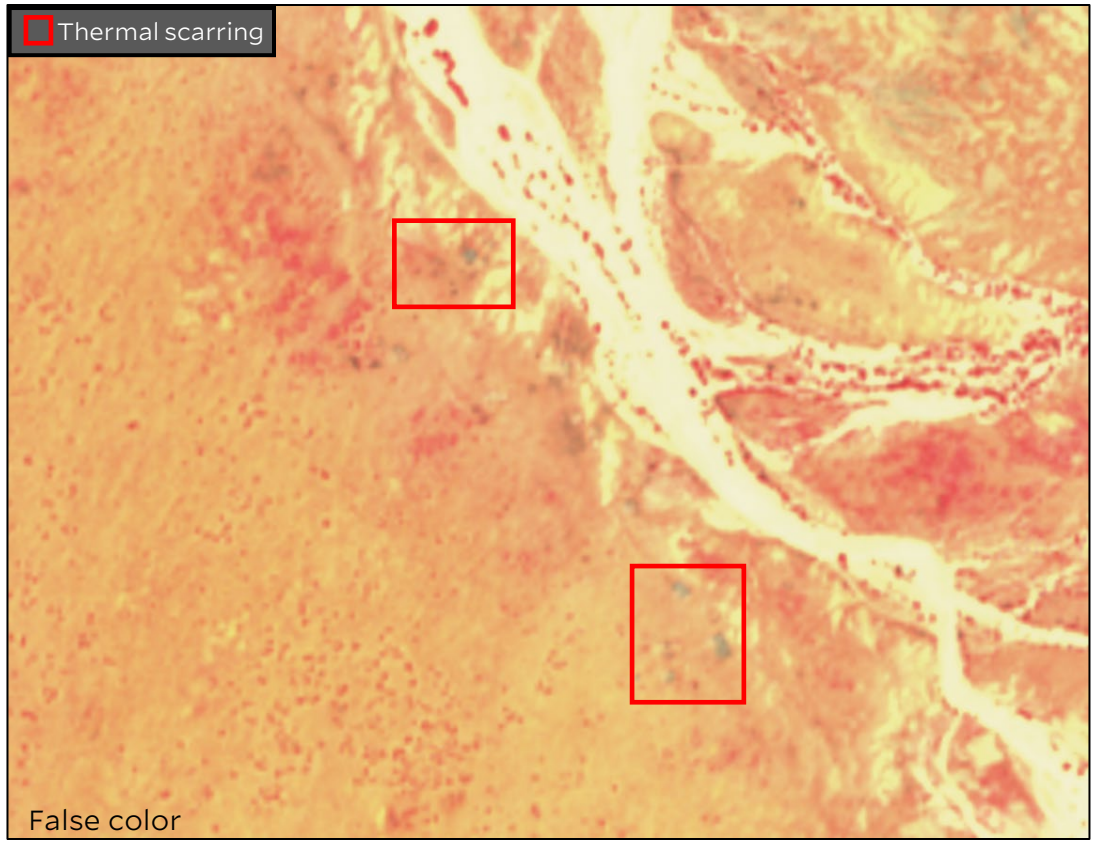
THERMAL SCARRING OBSERVED BETWEEN 01 AND 06 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at Shinjali between 1 and 6 November 2024. According to analysis of VIIRS data, a fire event occurred on 2 November 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



01 November 2024 © 2024 Copernicus Sentinel



06 November 2024 © 2024 Copernicus Sentinel

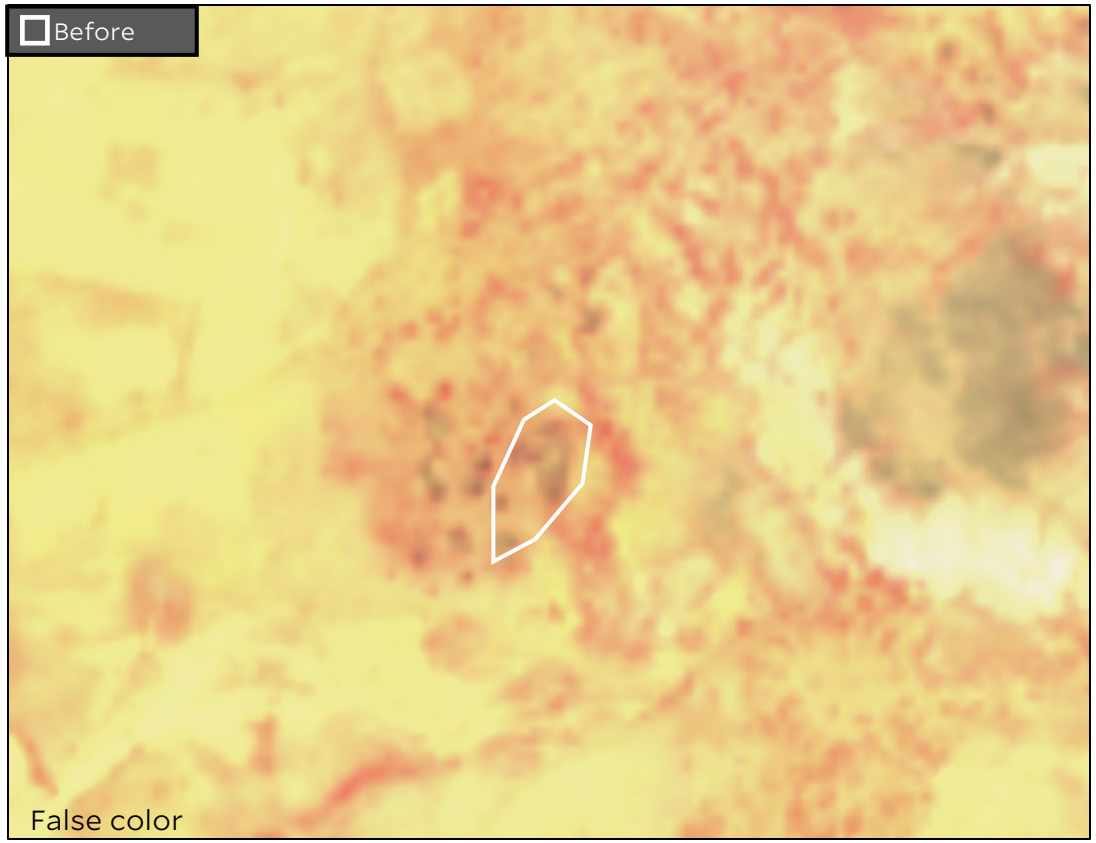
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Kutum Community 30

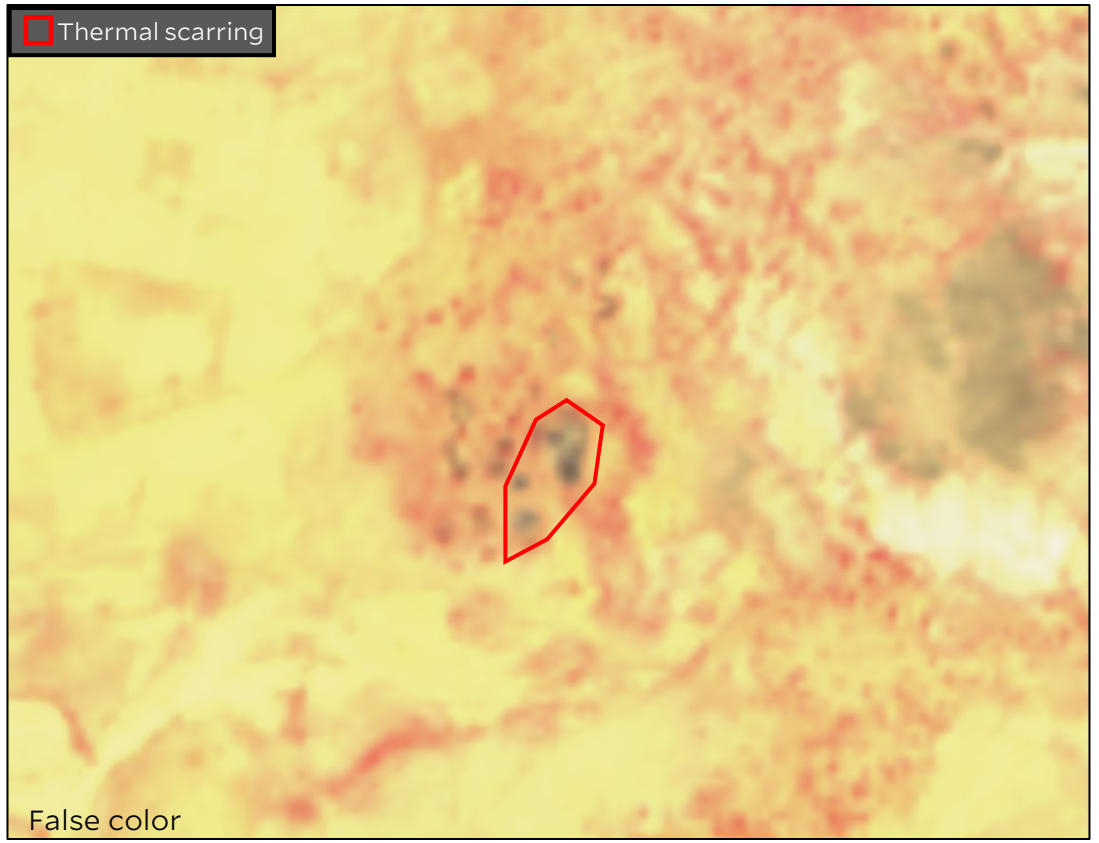
THERMAL SCARRING OBSERVED BETWEEN 01 AND 06 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at a location, referred to here as “Kutum Community 30,” between 1 and 6 November 2024. According to analysis of VIIRS data, a fire event occurred on 1 November 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



01 November 2024 © 2024 Copernicus Sentinel



06 November 2024 © 2024 Copernicus Sentinel

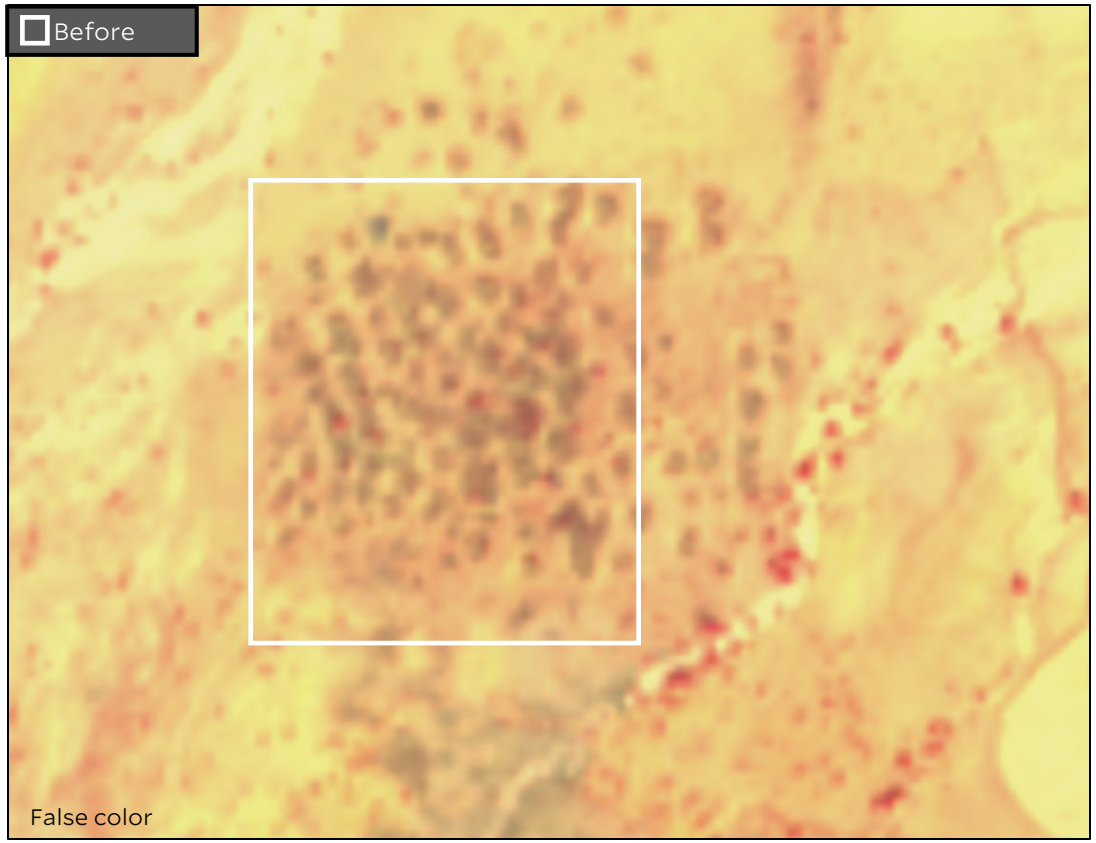
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Diyori

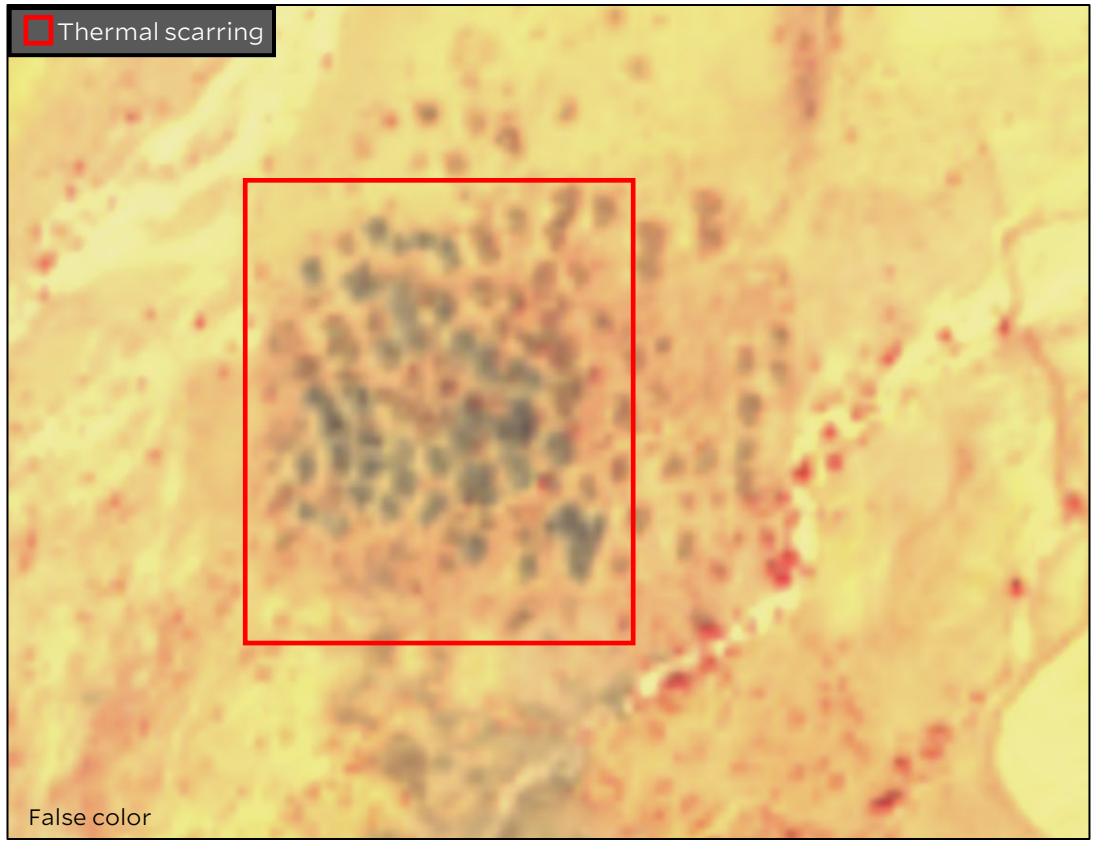
THERMAL SCARRING OBSERVED BETWEEN 01 AND 06 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at Diyori between 1 and 6 November 2024. According to analysis of VIIRS data, a fire event occurred on 1 November 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



01 November 2024 © 2024 Copernicus Sentinel



06 November 2024 © 2024 Copernicus Sentinel

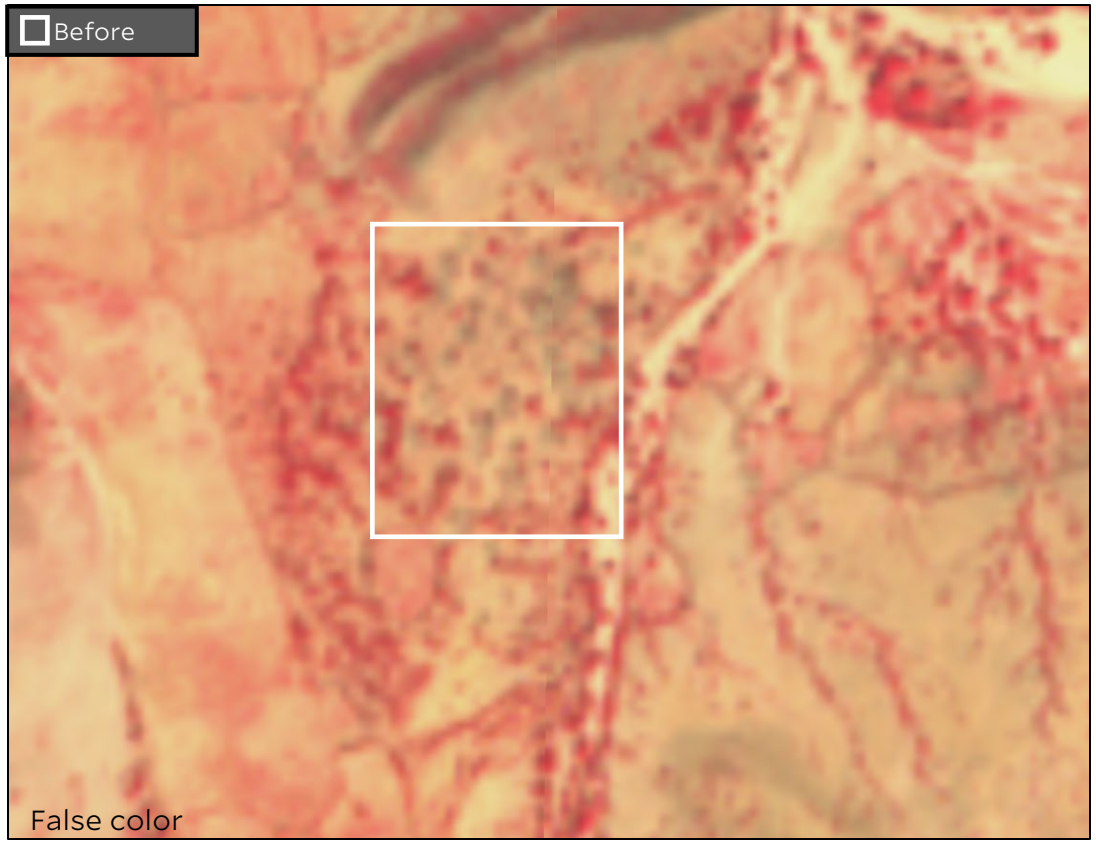
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Kutum Community 32

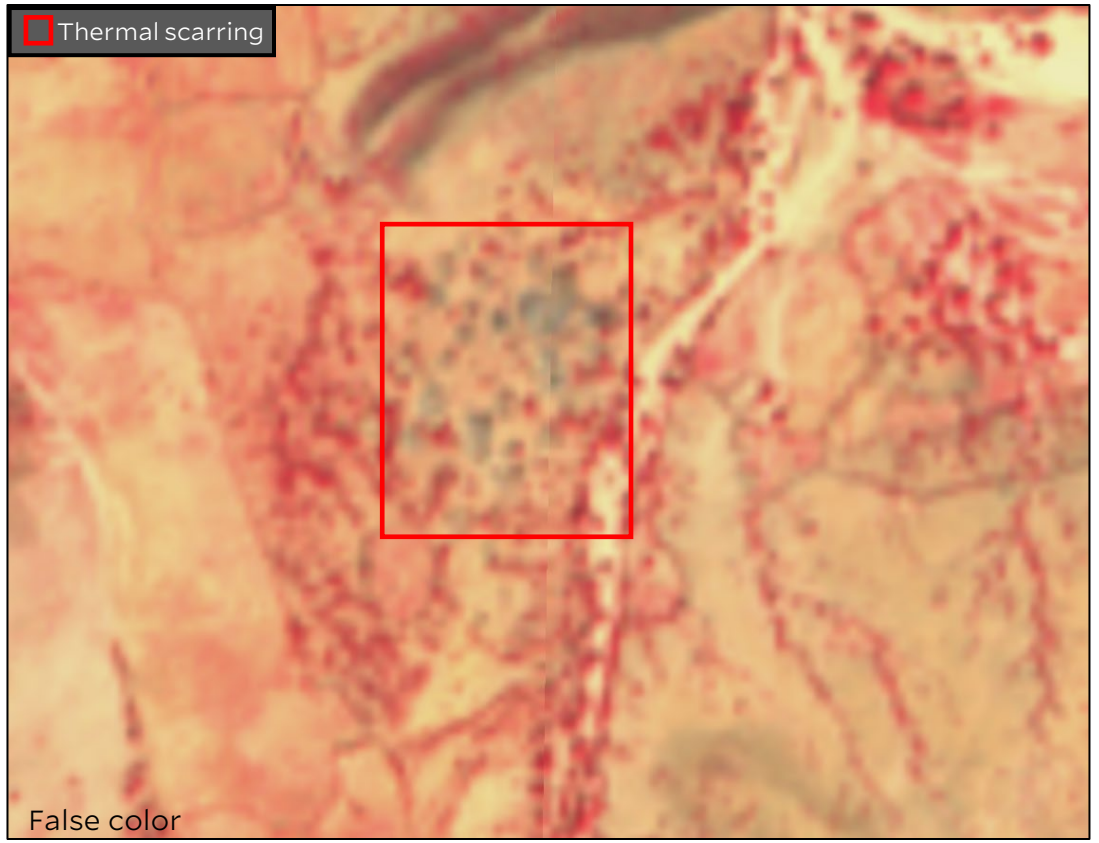
THERMAL SCARRING OBSERVED BETWEEN 01 AND 06 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at a location, referred to here as “Kutum Community 32,” between 1 and 6 November 2024. According to analysis of VIIRS data, fire events occurred on 31 October 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



01 November 2024 © 2024 Copernicus Sentinel



06 November 2024 © 2024 Copernicus Sentinel

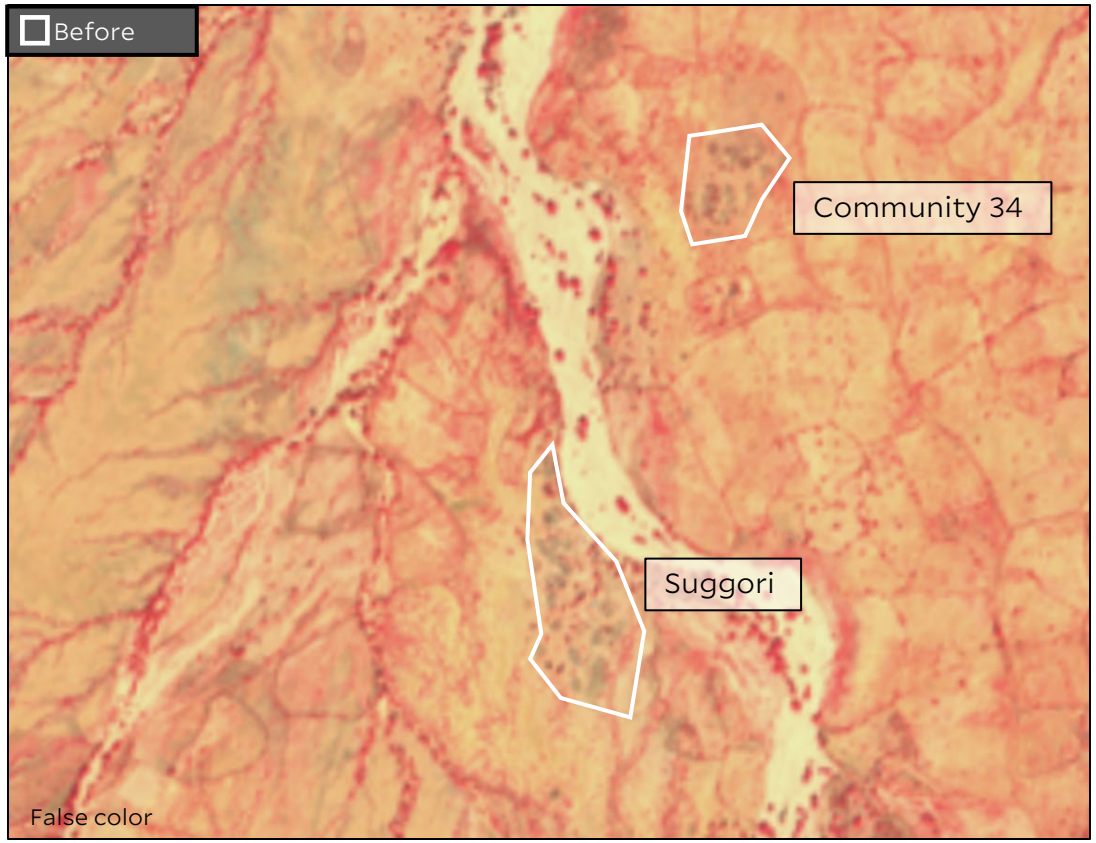
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Suggori & Kutum Community 34

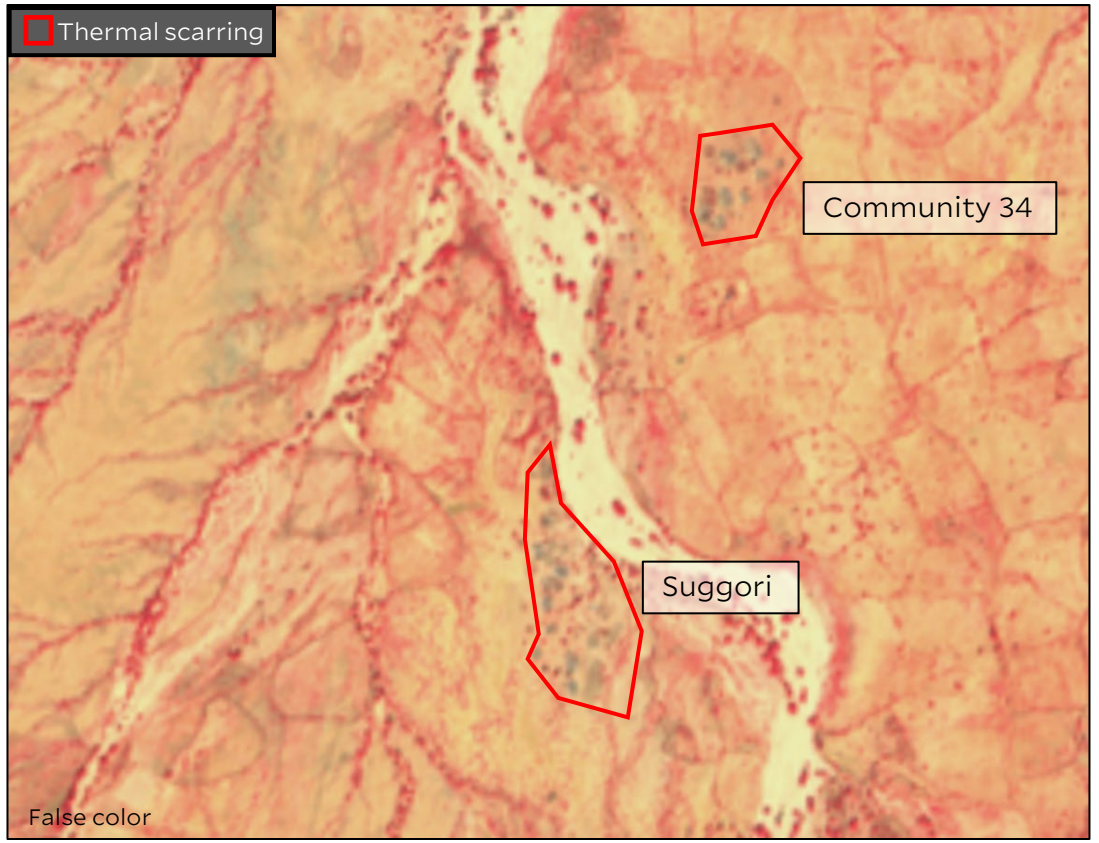
THERMAL SCARRING OBSERVED BETWEEN 01 AND 06 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at Suggori and a community referred to here as "Kutum Community 34" between 1 and 6 November 2024. According to analysis of VIIRS data, a fire event occurred on 31 October 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



01 November 2024 © 2024 Copernicus Sentinel



06 November 2024 © 2024 Copernicus Sentinel

Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

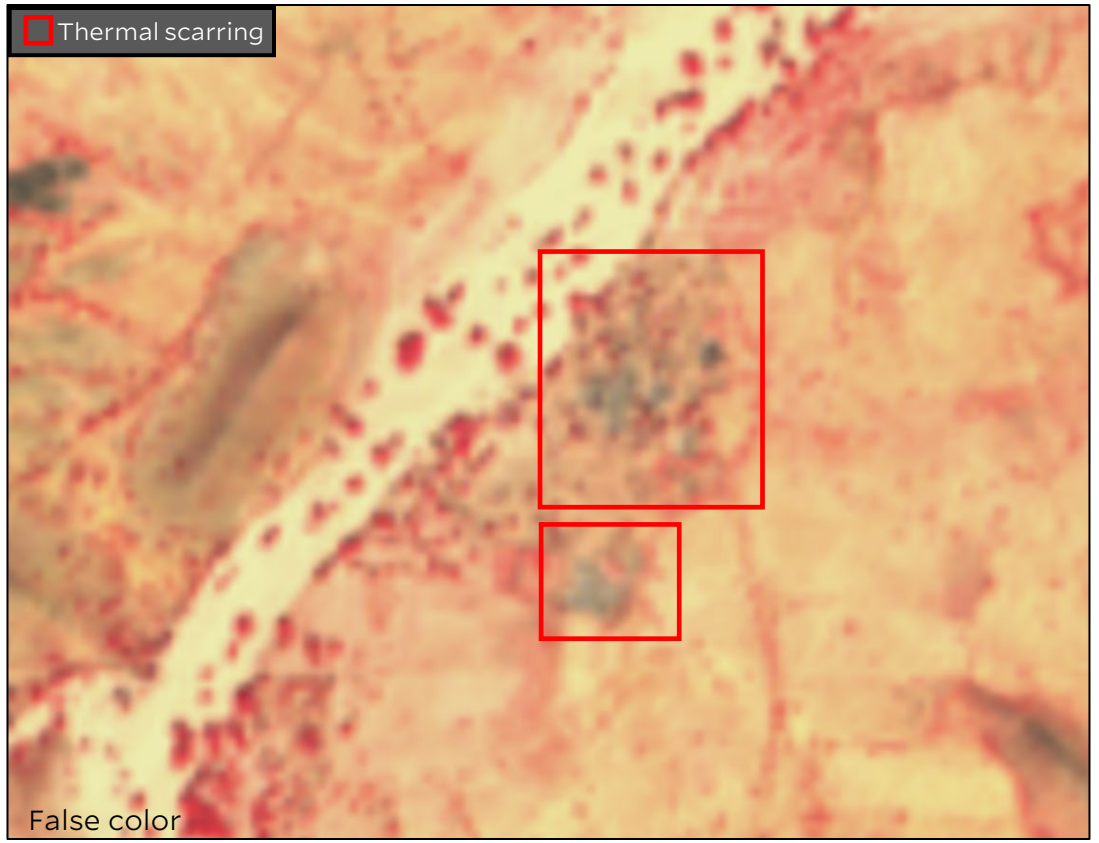
Kutum Community 35

THERMAL SCARRING OBSERVED BETWEEN 01 AND 06 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at a community, referred to here as "Kutum Community 35," between 1 and 6 November 2024. According to analysis of VIIRS data, a fire event occurred on 31 October 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.

01 November 2024 © 2024 Copernicus Sentinel



06 November 2024 © 2024 Copernicus Sentinel

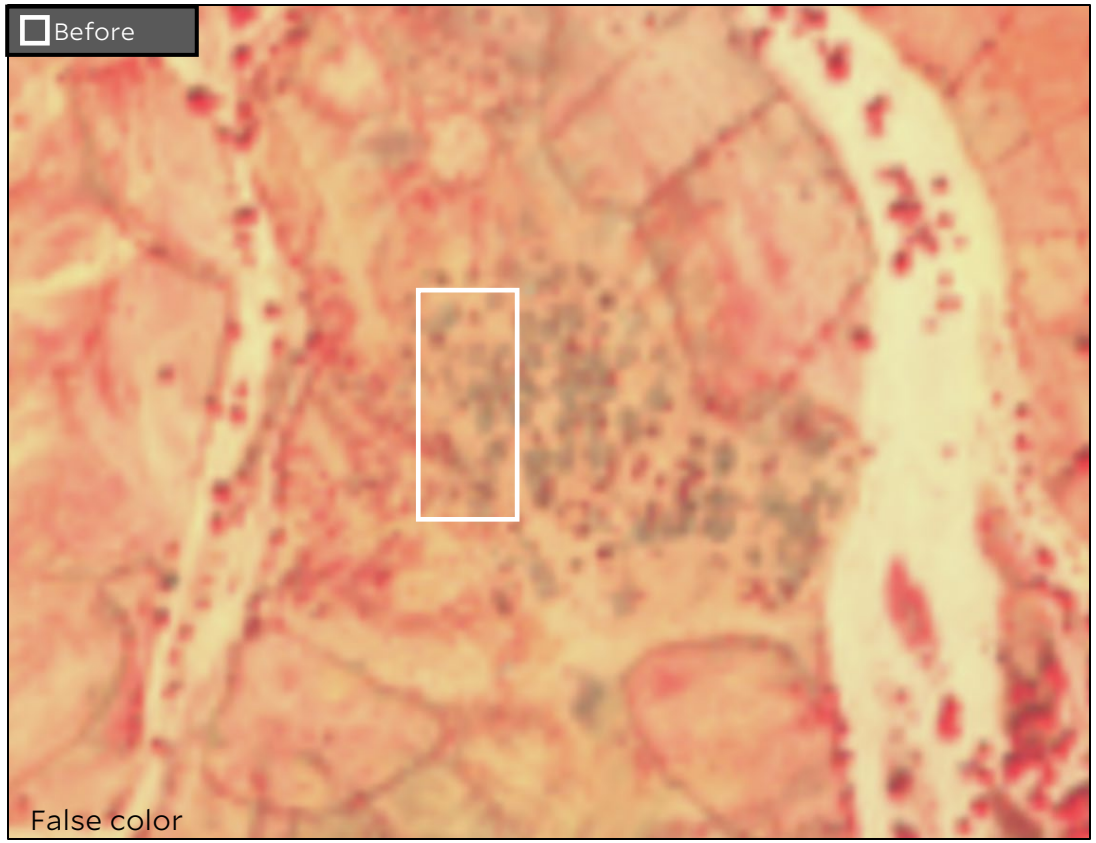
Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Gerowit, Kutum

THERMAL SCARRING OBSERVED BETWEEN 01 AND 06 NOVEMBER 2024

According to analysis of satellite imagery, thermal scarring was observed at Gerowit between 1 and 6 November 2024. According to analysis of VIIRS data, a fire event occurred on 31 October 2024.

The unaffected ground between burned structures and lack of thermal scarring on ground outside individual community areas is highly consistent with intentional attack targeting structures.



01 November 2024 © 2024 Copernicus Sentinel

06 November 2024 © 2024 Copernicus Sentinel

Source: https://browser.dataspace.copernicus.eu; https://firms.modaps.eosdis.nasa.gov

Yale SCHOOL OF PUBLIC HEALTH

Humanitarian Research Lab

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