



# Open-Source Visibility and Security Risks in the Middle East

*Nourah Shuaibi*

## **KEYWORDS**

OSINT, Non-State Actors, Critical infrastructure, Information Governance, Geospatial Intelligence

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**COVER IMAGE:**

This handout satellite image taken by 2026 Planet Labs PBC on March 1, 2026 shows a smoke plume billowing in Dubai after a projectile strike. (Photo by 2026 PLANET LABS PBC / AFP)

With open-source intelligence becoming a permanent feature of the Middle East's conflict landscape, governments must focus on reducing the risks of open-source visibility without undermining transparency or humanitarian accountability.

Open-source satellite imagery has fundamentally altered the security landscape of the Middle East. Platforms such as Google Earth and commercially produced geospatial data have made forms of intelligence once associated with state militaries widely accessible to organizations, researchers, journalists, and non-state actors. This has enabled armed groups to monitor infrastructure, assess battlefield conditions, and shape narratives without traditional intelligence networks.

In a region already characterized by asymmetric conflict and dense critical infrastructure, this shift raises a new policy challenge: not how to prevent access to open-source satellite imagery, but how governments can manage the strategic exposure that such visibility creates.

## OSINT and Changing Intelligence Landscape

Open-source intelligence (OSINT) has long existed as a supplementary component of intelligence analysis, traditionally confined to media monitoring, academic research, and publicly available government documents. In recent years, however, advances in commercial satellite imagery, geospatial platforms, and digital dissemination have transformed OSINT into a strategically significant source of intelligence with direct implications for conflict dynamics.

Once tightly controlled by states, satellite imagery is now commercially available at resolutions sufficient to identify fixed military installations, critical infrastructure, urban morphology, and patterns of destruction. When combined with archival comparison and basic analytical tools, such imagery enables users to detect change over time through comparative satellite imagery analysis, generating structured insights without direct access to the battlefield.<sup>1</sup>

Non-state actors can now derive situational awareness and shape perceptions of conflict dynamics using the same open-source ecosystem as journalists, civil society organizations, and international observers. As a result, the distinction between intelligence producers and intelligence consumers has become increasingly blurred.

In conflict-affected regions such as the Middle East, these dynamics are particularly pronounced. Protracted conflicts, dense urban environments, and high levels of international scrutiny have created conditions in which satellite imagery is continuously produced, circulated, and contested. While OSINT has enhanced transparency, accountability, and civilian harm documentation, it has also increased the visibility of both military and civilian infrastructure and complicated efforts to maintain informational asymmetry in conflict environments<sup>2</sup>.

## How Non-State Groups Use OSINT

Non-state armed groups in the Middle East are increasingly integrating OSINT into their military and political operations. Rather than relying on state intelligence systems, these actors use OSINT selectively to compensate for limited resources, reduce operational risk, and shape perceptions of conflict. Across multiple conflict settings, there are four recurring functions that emerge: reconnaissance and targeting, operational planning and battlefield learning, strategic communication and narrative contestation, and humanitarian and civilian monitoring. These practices illustrate how open-source data enables learning and adaptation in asymmetric warfare.

## Reconnaissance and Targeting

Publicly available satellite imagery enables the remote identification and monitoring of fixed installations such as military bases, border posts, ports, and energy infrastructure without physical presence or reliance on human intelligence networks. This form of observation is persistent, low-cost, and comparatively low risk.

For example, in Syria, publicly available satellite imagery has enabled detailed analysis of urban layouts, transportation routes, infrastructure damage, and proximity between civilian and military objects. Comparative imagery assessments over time can reveal patterns of destruction, reconstruction, and spatial change, generating insights relevant to conflict analysis and operational adaptations<sup>3</sup>. A similar situation was observed in Iraq post 2014, where open-source mapping tools were used to produce detailed spatial analyses of urban destruction and infrastructure impacts. These publicly available methods illustrate the level of geospatial information that non-state actors may exploit for operational efficiency.<sup>4</sup>

Crucially, this form of reconnaissance does not require real-time imagery. Even periodically updated satellite data can provide sufficient intelligence to support targeting decisions, especially in relatively static environments such as fixed infrastructure, ports, energy facilities, or military installations. As a result, intelligence-led activity is no longer confined to actors with access to classified systems.

## Operational Planning and Battlefield Learning

Beyond initial reconnaissance, OSINT supports operational learning in which non-state actors analyze terrain, urban density, and infrastructure over time to inform tactical decision-making.

By comparing imagery and geospatial data across time, non-state actors can identify changes in infrastructure activity, transportation routes, and broader spatial patterns of conflict without direct access to classified intelligence.<sup>5</sup> This interactive use of OSINT can accelerate information assessment and support operational adaptation in dynamic conflict environments.<sup>6</sup>

In Iraq, satellite-based assessments of Mosul enabled detailed analysis of infrastructure damage, urban destruction and conflict related spatial change over time. These assessments illustrate the extent to which open-source geospatial analysis can support conflict monitoring and operational interpretation without reliance on classified intelligence.<sup>7</sup>

## Strategic Communication and Narrative Contestation

Satellite imagery has become a central tool in the strategic communication efforts of non-state armed groups. Visual evidence enhances credibility while avoiding the disclosure of sensitive sources. As a result, OSINT serves not only military but also political and psychological functions.

In Lebanon, open-access satellite imagery has entered the public information environment primarily through international media reporting, shaping public perceptions about conflicts. For example, Reuters used commercial satellite images provided by Planet Labs to document extensive destruction in southern Lebanon following Israeli military operations<sup>8</sup>. In Palestine, satellite imagery has been used to document the scale of destruction in the Gaza Strip, with analyses by agencies such as the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) and the United Nations Satellite Center (UNOSAT) showing extensive destruction, contributing to debates and discussions about civilian harm and the use of disproportionate force by Israel.<sup>9</sup>

These practices highlight a shift in the exercise of narrative power in modern conflict. Strategic communication increasingly depends not on exclusive control of intelligence, but on the ability to navigate, synthesize, and signal within ecosystems shaped by open-source data.

## Dual Use Dilemma: Humanitarian and Civilian Monitoring

One of the most complex dimensions of OSINT use by non-state actors lies in its dual-use application in civilian and humanitarian contexts. Satellite imagery and open-source geospatial tools are increasingly employed to monitor population movement, humanitarian corridors, aid distribution routes, and damage to civilian areas. A good example is the collaboration between the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) and UNOSAT in Gaza to map damage in civilian structures using satellite imagery to assess humanitarian support, displacement estimates, and civilian protection calls.<sup>10</sup> While such monitoring can support documentation and advocacy, it can also be leveraged for military or political objectives.

Non-state actors may analyze civilian density patterns, damage assessments following airstrikes, or humanitarian access routes to infer logistical flows and security conditions. This information shapes tactical decisions regarding the timing or location of operations.

Restricting access to satellite imagery risks undermining transparency and independent verification, while unrestricted access can inadvertently expose vulnerable civilian infrastructure or humanitarian operations. The blurring of lines between humanitarian documentation and military utility underscores the need for content-sensitive governance rather than blanket restrictions.

Taken together, these patterns demonstrate how OSINT functions as a force multiplier for non-state armed groups by enabling learning, adaptation, and narrative contestation over time. The strategic significance of OSINT lies less in immediate targeting advantages than in its capacity to reduce uncertainty, accelerate adaptation, and reshape information asymmetries in prolonged conflicts.

## Why Current Frameworks Fall Short

The strategic use of OSINT by non-state actors has expanded faster than the policy frameworks designed to manage security risks worldwide, and in the Middle East, in particular. Existing governance gaps are not abstract; they are visible in how states, regional bodies, and commercial providers currently handle open-access satellite imagery during active conflicts.

At the national level, defense and counterterrorism institutions remain oriented toward managing classified intelligence and covert collection. Open-source satellite imagery, which is legally accessible and commercially produced, falls largely outside these frameworks. As a result, risks associated with infrastructure visibility and adversarial learning are often treated as secondary. Repeated public damage assessments of fixed sites in Syria, Iraq, and Gaza illustrate how patterns of destruction and reconstruction can be observed and compared over time from open imagery, highlighting a level of exposure that is not always systematically integrated into national assessment of non-state actor adaptation.<sup>11</sup>

Regionally, the absence of coordinated approaches further amplifies exposure. Critical infrastructure such as energy facilities, ports and transport corridors often serves multiple states or regional markets, yet there are no publicly shared regional mechanisms to assess OSINT-related vulnerabilities or manage crisis-time information sensitivity. For example, after the 2019 attack on Saudi Aramco's Abqaiq facility, commercial satellite imagery was rapidly circulated to assess damage and operational impact, demonstrating how open geospatial visibility can shape crisis understanding in real time even as regional protocols for information sensitivity remain ad hoc.<sup>12</sup>



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## Conclusion

OSINT is now a permanent feature of the Middle East's conflict environment, reshaping how non-state actors learn, adapt, and communicate over time. The policy choice is no longer between openness and control, but between unmanaged exposure and strategic adaptation. Treating OSINT as a marginal or media-driven issue leaves states vulnerable. By integrating OSINT exposure into infrastructure planning, subjecting security practices to persistent open observation, and engaging commercial imagery providers through existing regulatory and diplomatic channels, governments can reduce the risks of open-source visibility without undermining transparency or humanitarian accountability.

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## ABOUT THE AUTHOR

Nourah Shuaibi

Nourah Shuaibi is a nonresident fellow at the Middle East Council on Global Affairs and head of Women's Research Unit and an assistant professor of political science at Kuwait University (KU). Shuaibi is also the appointed representative to the GCC-Scandinavian Mediation Project for KU's Center for the Gulf and Arabian Peninsula Studies, in cooperation with the Center for International Policy Research in Doha, Qatar. Previously, Shuaibi served as the president of Global Outreach Leaders, a federal non-governmental organization based in Missouri, USA.

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