



Mapping Territorial Control, Contestation, and Activity in Syria

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Syria is arguably one of the best-mapped conflicts in modern times. There are daily maps detailing troop and civilian movement, the presence of armed groups, the activities of NGOs, the distribution of public goods and – most commonly – territorial control. This increase of maps has been driven by the explosion of available data as well as the availability of (open-source) mapping software, although the enormous scale of the Syrian conflict and its geopolitical importance has contributed to the proliferation of maps as well.

While the wide-scale availability of conflict maps is welcome for understanding otherwise complicated conflict patterns, there is a drawback: conflict mapping is beset by issues of how to define, measure and communicate concepts, particularly around territorial control. Given the prominence of conflict maps and the political role these maps may play, more clarity about how maps are produced is needed.

Armed Conflict Location & Event Data Project (ACLED), therefore, presents the rationale behind the creation and calculation of its map measuring territorial control in Syria. The exact steps (i.e. methodology) taken by ACLED to assign control to warring parties is presented. Given the use of publicly-accessible data from ACLED, the descriptions presented here allow any user with knowledge of Syria to, in theory, reproduce the map themselves or to alter the calculations to explore different underlying concepts.

1. Conflict maps on Syria: Source, method, and transparency

Mapping territorial control often leads to different representations of control. As such, the following is meant to provide transparency about ACLED's choices as well as to stimulate an open discussion around territorial control. Regardless of the armed group, timing of the conflict, or interest of the reporting organization, an impartial method to define and display territorial control is needed.¹

To illustrate the need for clarity and openness about methodology, four other providers of maps on territorial control in Syria are reviewed here: the Institute of War (ISW), the defence specialist IHS Jane's, the Carter Center Conflict Mapping project, and the social media map of Liveuamap.² The general conflict representation is similar, yet there are

¹ For the need to have the same benchmarks to avoid political usages of maps and an overview of Syria maps see, Dietmar Offenhuber (2018) Maps of Daesh: The Cartographic Warfare Surrounding Insurgent Statehood, *GeoHumanities*, 4:1, 196-219, DOI: [10.1080/2373566X.2017.1402688](https://doi.org/10.1080/2373566X.2017.1402688).

² The Carter Center and Liveuamap are ACLED partners. Maps accessible via:

- The Institute of War: <http://www.understandingwar.org/project/syria-situation-report>
- IHS/Jane's: <https://ihsmarkit.com/products/conflictmonitor.html>
- Carter Center: https://www.cartercenter.org/peace/conflict_resolution/syria-conflict-resolution.html
- Liveuamap: <https://syria.liveuamap.com/>

important differences between their maps. For example, some do not assign ‘no-man’s land’ to the warring factions while others do; some depict control by international actors (Israel, Turkey) while others do not; some do not provide specific contestation lines while others do.

Two key reasons for differences between the maps generated across these organizations are (1) reliance on different information and (2) different depictions of control (see Table 1). IHS Jane’s collects open-source intelligence on conflict events. Liveuamap has a method to harvest, select, and curate social media information. The Carter Center collects as many territorial takeover events as can be found. From where ISW obtains its information is less clear; Syria Direct provides it only a handful of major events, while other information seems to be more eclectically collected. Different sources, unsurprisingly, lead to different representations of control.

Table 1: Comparing maps on Syria

	Data	Definition of Control	Actors
ISW	Various sources and Syria Direct	Not disclosed (likely manual)	Regime, opposition, Kurdish, HTS & IS
IHS Jane’s	Own compilation of quantitative data	Not disclosed	Regime, opposition, Kurdish, IS
Carter Center	Own compilation of territorial takeovers	Control of sub-districts in Syria	Regime, opposition, Kurdish, IS, Israel, various others
Liveuamap	Own compilation of social media conflict data	Algorithm based on geographic proximity (formulas not disclosed)	Regime, opposition, Turkish-backed rebels, Kurdish, IS, Israel

A second reason for different depictions of territorial control are differences in definitions. IHS Jane’s (a commercial organization) remains silent on its definitions yet appears to draw on a mixture of battlefronts in populated areas and infrastructure in unpopulated areas. It is unclear how ISW defines control though both the map itself (e.g. the usage of curved areas and straight lines) as well as ACLED research into these maps suggests there are no clear-cut rules about control. Liveuamap assumes control by drawing a polygon around events and, given the large number of social media events it contains, is able to generate areas of control.³ Finally, the Carter Center relies on small administrative units⁴ and collects information on final takeover of the complete administrative unit.⁵ Apart from Liveuamap, it appears that all control maps do have a manual component, though these processes are generally nowhere publicly described.

³ Based on private correspondence.

⁴ Until March 2018 it relied on ADM5s (neighbourhoods); after March on ADM4s (municipalities).

⁵ Based on private correspondence.

2. Defining territorial control in Syria: Contestation, control, and activity

Territorial control is notoriously hard to define. It is often defined as the ‘monopoly of the usage of force’. However, as such, it could be argued that the regime was never in control of (parts of) Damascus city since 2012, as areas were under intense contestation through suicide and IED bombings. Another illustration of the challenging nature of control is that in 2015, the Islamic State controlled large swathes of Syria, yet there were those who pointed out that that IS was in reality only in control of (dense) road networks while others argued that given the absence of any other fighting force, IS had the monopoly on the usage of force and could impose its will.

ACLED does not rely on geographic features or actual battle lines to depict control but instead relies on *administrative sub-districts*. This choice was made because Syria has never been a purely conventional war (among other reasons, due to porous battle fronts) and because reliance on geographic features leads to arbitrary lines. Using Syria’s 272 sub-districts allows both the avoidance of arbitrary decisions yet is a small-enough analytical unit to display granular changes. ACLED’s map, moreover, moves beyond the notion of territory being controlled; rather, it attempts to highlight how the reality of the Syrian conflict is more varied and includes more statuses. The map proposes three innovations.

First, the map highlights how areas nominally under control by some groups still experience high levels of violence. In some areas under Coalition control, for example, there were still high levels of airstrikes against Islamic State sleeper cells while other areas under their control were relatively quiet. Similar dynamics were observed for all the other armed groups (e.g. regime-, Kurdish-, Turkish-, and opposition-controlled areas), which prompted including an account of the amount of violence within controlled areas.

Second, ACLED relies on actual and observable military behaviour, not the degree to which armed groups have set up administrative structures. This results in groups that are able to move around freely or able to engage in activity without being substantially challenged being in a situation of *de-facto control*. This situation is perhaps best understood in reference to violent gangs in control of areas with very weak police presence: in these instances, armed gangs have the ability to move around freely and manipulate public resources. Hence, the map that ACLED has created better reflects this empirical reality rather than assuming control based on historical takeover.

Finally, ACLED displays areas that are contested. Displaying battle lines has the advantage of showing where the centers of violence are located. Yet the downside is that Syria has never been a purely conventional war with fixed battle lines; areas close to the battle fronts often experience high levels of violence. Hence, ACLED displays sub-districts that are contested.

ACLED, therefore, allows for three statuses: territory can be (1) controlled and active; (2) controlled and inactive; or (3) contested. ACLED defines **Contestation** when no single armed group is in control. **Control** means that an armed group is militarily dominant in a sub-district. This happens in one of the following cases: (1) The armed group has *gained control* over the (vast) majority of populated areas in the sub-district and other groups are not actively challenging their dominance; (2) The group is *dominant* in the sub-district based on its violent activity; (3) The armed group has *historical control* over the sub-district (e.g. the sub-district was conquered very early in the war or never changed hands, like sub-districts in Tartous) and is not actively challenged.

3. Methodology: Data-based and manual assessment

The key challenge for producing a map on Syria is to develop a convincing methodology. ACLED is a data-producing organization and believes in the power of data to help to reduce bias. At the same time, ACLED warns against the uncritical usage of data to determine control, contestation, and activity in Syria (and other conflict contexts). Data-based metrics will lead to ‘false-positives’ by which armed groups are incorrectly assigned control (as described below). Moreover, data-based metrics cannot account for contextual factors and information. Finally, despite the sampling strategy used for Syria data within the ACLED Syria mapping work, a portion of conflict events relevant to control are still missed.⁶ ACLED’s design is therefore based on a two-step approach: a quantitative step with data-based calculations to assign an initial status, and a context-informed systematic assessment by Syria analysts to verify and finalize each sub-district’s status assignment. The two steps are described below alongside various examples.

As of February 2019, ACLED’s Syria data cover 2017-present; hence, statuses for areas controlled prior to 2017 are not assigned here.⁷ ACLED analysts conducted baseline research on the historical control of each sub-district based on existing maps (Carter, ISW, Liveuamap)⁸ and secondary evidence. A senior analyst checked all statuses and reconciled differences.⁸

ACLED data from 2017 onwards are organized in such a way that actor positions do not have meaning.⁹ For example, ACLED data will feature events such as “non-state actor

⁶ Kars De Bruijne and Clionadh Raleigh (2017), Reliable data on the Syrian conflict by design, *ACLED Report*:

https://www.acleddata.com/wp-content/uploads/2018/05/PilotReport_March2018_FINAL.pdf

⁷ ACLED data are available at <https://www.acleddata.com/data>.

⁸ For example, much of the province of Latakia has been under regime control since the start of the conflict. ACLED analysts checked each subdistrict in Latakia to ensure the regime was not challenged in its control.

⁹ For example, see: Clionadh Raleigh et al. (2017) Boko Haram vs. al-Shabab: What do we know about their patterns of violence, *Monkey Cage*: <https://www.washingtonpost.com/news/monkey-cage/wp/2017/10/02/boko-haram-vs-al-shabaab-what-do-we-know-about-their-patterns-of-violence/>



overtakes territory” with HTS coded as actor 1 and FSA coded as actor 2. The fact that HTS is actor 1 does not necessarily mean that they were the group that overtook the territory. Hence, for the map here, each territorial takeover event in the data was reviewed (over 2000 events since 2017) in order to determine which armed groups took over territory.

Step 1: A data-based baseline

ACLED data are used to determine armed groups’ control, contestation, and activity for each sub-district of Syria. Each status is based on a specific calculation and involves the number of events and the event types that occurred in the sub-district during a given month. ACLED ‘event types’ used in this map include: battles between armed groups; explosion/remote violence events; and strategic developments events (e.g. non-violent transfers of territory, establishment of headquarters or bases, and the movement of forces).¹⁰

Measuring territorial control

An armed group is said to be in control of a sub-district in Syria in three alternative ways: (1) it had the most takeover events; (2) it has unchallenged historical control; or (3) it is militarily dominant and has a *de facto* monopoly on violence.

1. **Most territory.** Calculation: the armed group is involved in twice as many territorial takeovers than all other armed groups during one month in a sub-district. Four sub-event types, falling under the event types of ‘Battles’ and ‘Strategic developments’ are used for this calculation: ‘Non-state actor overtakes territory,’ ‘Government regains territory,’ ‘Headquarters or base established’ or ‘Non-violent transfer of territory.’ For example, for the Syrian regime, all relevant ‘Government regains territory,’ ‘Headquarters or base established’ or ‘Non-violent transfer of territory’ events are used. The calculation will occasionally lead to false positives; for example: QSD accomplishes the only territorial takeover in a given month in a sub-district and calculations hence code the sub-district as QSD control while the rest of the sub-district is firmly in control of the Islamic State. Or if the Islamic State takes the same village five times while QSD takes two different villages, calculations would code the sub-district as under Islamic State control while it may be more appropriate to code it as under QSD control. To control for these false positives, a qualitative review is carried out.
2. **Dominance.** Calculation: an armed group is involved in two-thirds of all conflict events during one month in a sub-district. Eleven sub-event types, falling under the event types of ‘Battles,’ ‘Strategic developments’ and ‘Explosions/Remote violence,’ are used for this calculation: ‘Non-state actor overtakes territory,’ ‘Government regains territory,’ ‘Armed clash,’ ‘Headquarters or base established,’ ‘Non-violent transfer of territory,’ ‘Chemical weapon,’ ‘Air/drone strike,’ ‘Suicide bomb,’ ‘Shelling/artillery/missile attack,’ ‘Remote explosive/landmine/IED’ and ‘Grenade.’

¹⁰ See the ACLED codebook for more information on event types.

¹¹ This calculation may also lead to false positives. For example: if there is only one event in a sub-district, the control of that sub-district will be assigned to the armed group involved. Or if the Islamic State detonates 20 IEDs in a city while the QSD attack ten villages across the sub-district, control is assigned to Islamic State when this may not be the case in reality. To control for these false positives, a qualitative review is carried out.

3. **Historical control.** Calculation: the armed group previously satisfied criteria (1) or (2) and the number of events during one month in the sub-district is below the mean number of events minus one standard deviation (they are re-calculated for each month).¹² Eleven event types, falling under the event types of 'Battles,' 'Strategic developments' and 'Explosions/remote violence,' are used for this calculation: 'Non-state actor overtakes territory,' 'Government regains territory,' 'Armed clash,' 'Headquarters or base established,' 'Non-violent transfer of territory,' 'Chemical weapon,' 'Air/drone strike,' 'Suicide bomb,' 'Shelling/artillery/missile attack,' 'Remote explosive/landmine/IED' and 'Grenade.' Hence, the historical control of an armed group in a sub-district is not altered if the number of events occurring in one month (e.g. 3) is equal or lower to the mean minus the standard deviation (e.g. 5 minus 2).

Measuring contestation

A sub-district in Syria is contested when: (1) it is active (see below); and (2) an armed group does not take over twice as much territory *or* when the most active armed group is responsible for less than a third of events *or* when there is no historical control. Calculation: the sub-district is active and not controlled (the inverse of the control definition).

Because contestation is the inverse of the control definitions presented here, there may be false negatives. For example: if the Islamic State overtakes the same village five times while QSD takes two different villages, the calculation used here would assign control of the sub-district to the Islamic State while it may better fit the contested status. Or, if the Islamic State carries out eleven bombings, while the regime and the FSA are fighting three battles, the calculation would assign control of the sub-district to the Islamic State while it may better be considered as contested.

For this reason, the contested status is the most context-dependent status that is encountered in producing the map. As a result, the majority of the qualitative review involves checking whether sub-districts are in reality contested rather than controlled.

¹¹ 'Violence against civilians' events are not used here since they do not involve contestation activity with other groups.

¹² Or were designated as being controlled before 2017.



Measuring activity

Controlled sub-districts can be 'active' or 'inactive' based on the amount of armed activity reported. Calculation: a sub-district is active when it experiences at least 10 conflict events over the previous six months (and is inactive when fewer than 10 events are recorded). Thirteen sub-event types, falling under the event types of 'Battles,' 'Strategic developments' and 'Explosions/Remote violence,' are used for this calculation: 'Non-state actor overtakes territory,' 'Government regains territory,' 'Armed clash,' 'Headquarters or base established,' 'Non-violent transfer of territory,' 'Change to group/activity' (e.g. movement of forces), 'Disrupted weapons use,' 'Chemical weapon,' 'Air/drone strike,' 'Suicide bomb,' 'Shelling/artillery/missile attack,' 'Remote explosive/landmine/IED' and 'Grenade.' No manual review of the activity status is carried out.

Step 2: A manual review of the controlled and contested statuses

The data baseline for the map is subsequently reviewed qualitatively to ensure accuracy and consistency, to correct false positives and negatives from the calculations, and to consider context-specific information. These checks are carried out simultaneously by two ACLED analysts who compare results and reconcile any differences.

Reviewing territorial control

The qualitative review for control explores territorial takeover and historical control while also accounting for the dominance of armed groups.

For the former, factors of timing and the geographic spread of territorial takeover events are in particular reviewed and contextual information is considered. For example, the status of Ehsem might be manually changed based on contextual information in the following situation: *National Liberation Front (JTW) rebels are firmly in control of Ehsem, Idleb, which consist of nearly 20 key towns and a large number of small but strategically insignificant villages. In the month in question, Hayat Tahrir al-Sham (HTS) captures four insignificant villages in an attempt to antagonize JTW fighters in the area.* Here, ACLED calculations would have originally assigned the sub-district to HTS while it is clear that the sub-district is still under JTW control; the qualitative review helps to identify such cases.

For the latter, the geographic distribution of events and the number of events are reviewed while also taking into account contextual information. Based on this, the status of Jarablus would be manually changed in the following situation: *Jarablus, Aleppo has long been under Operation Euphrates Shield (OES) control since it was retaken from Islamic State (IS) in 2016. In the month in question, the only conflict events to occur were the detonation of three landmines previously planted by IS.* ACLED calculations would designate Jarablus as IS-controlled; the analyst would ensure that the final status showed OES as the controlling armed group. Again, the qualitative review helps to identify such cases.

Reviewing contestation

The qualitative review for contestation explores, in addition to contextual information, three common situations: (1) whether fighting is actually ongoing; (2) whether there is a need for a comparison of historical activity in the sub-district; and (3) whether control of a sub-district is *de facto* shared.

The first case involves sub-districts where, even despite cases of apparent control, there is clearly a situation of ongoing intensive conflict between two or more groups to establish control. For example, the status of Izra' would be manually changed in the following situation: *Regime forces began an offensive to retake Izra', Dar'a from opposition rebels where the two sides engaged in taking and re-taking of a number of key locations throughout the month. In this case, rebels eventually lost approximately one-third of all territory as the regime successfully rendered rebel control of the sub-districted contested;* the analyst would hence change the status here to contested.

In the second case, there is a prior history of activity that suggests the area is contested rather than controlled (a false positive), or controlled rather than contested (a false negative). For example, the status of Heish would be manually changed in the following situation: *Regime and Russian forces intensively and continuously shell and carry out airstrikes on all of Heish' 10 major towns. But Heish is controlled by the FSA.* In this case, the calculations would result in coding Heish as regime-dominated; the analyst would change this instead to contested. Similarly, the status of Tamanaah would be manually changed in the following situation: *Rebel-held Tamanaah, Idleb, had previously experienced an average of 90 regime remote violence events per month across all major locations over the past year. In the current month, due to a local ceasefire, only 15 instances occurred on only the main town.* In this case, the more than 83% decrease in shelling would justify a change by the analyst to rebel-controlled.

The third case concerns districts that are split in their territorial control. In those situations, the calculations for control and activity fail. In some cases, there will be territorial takeovers or activity yet the general situation does not alter. In other cases, the sub-district appears inactive yet is actually contested. This usually occurs in areas where historical control has been established by two or more groups, each of which holds significant territory, who have reached an (implicit or explicit) understanding to maintain the current status quo of territorial divide. For example, a contested situation would be assigned to Al Bab in the following situation: *Operation Euphrates Shield (OES) rebels control a majority of Al Bab, Aleppo. However, part of the sub-district has long been under regime control as the area encompasses an old front-line that has seen only a handful of conflict events in the last 6 months.*



4. Conclusion

Syria is arguably one of the best-mapped conflicts in modern times, with maps depicting refugee flows, infrastructural destruction, NGO presence, and territorial control. The way in which control maps are produced remains, however, often unclear because organizations rely on different sources of information and different definitions. This report argues for more clarity about the definitions, information and the methods used.

This report presented in detail how ACLED produces its monthly map. Sub-districts in Syria are categorized in one of three ways: (1) active control; (2) inactive control; and (3) contestation. Rather than only mapping control based on territorial acquisition, ACLED determines status also on *de facto* activity, highlighting how those able to move (relatively) unopposed are in *de facto* control of areas. Moreover, territorial control is varied. In some instances, there still are (minor) challenges to the rule of those in control -- with important security consequences for NGOs, policymakers, and civilians. As such, ACLED's map takes a dynamic view of control.

ACLED relies on a baseline of quantitative data from ACLED, alongside a qualitative review of this baseline. This report describes the specific quantitative calculations employed for each status as well as the specific discussion of common incorrectly-assigned statuses that require correcting through qualitative processes. It is ACLED's contribution to transparent map-making.