STUDENT HANDOUT

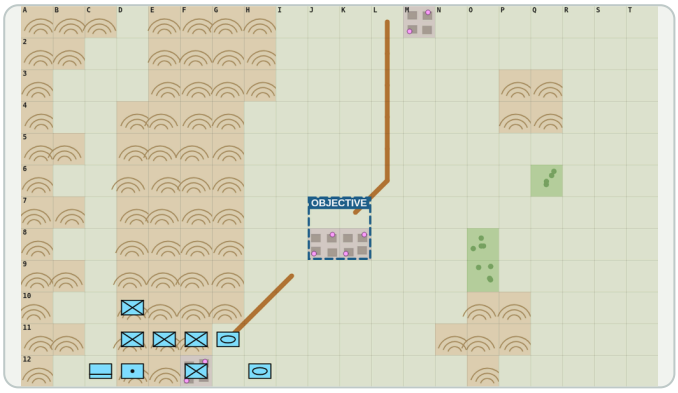
Drones over the A2

Shewa Robit and Debre Sina, A2 highway, Amhara Region, Ethiopia · 26 November to 4 December 2021

Information as of September 2026



Scenario illustration · AI generated



Student map · own side only · Simulation situation map · reconstructed terrain and estimated deployments; not verified historical positions.

Learning objectives

- Compare the drones and road observations available in this authored scenario with PAX and Oryx's attributed equipment identifications; keep platform identification separate from proof of a strike's effect or operator.
- Compare runs with and without your drones using the take-zone result, losses, time and surviving modeled supply trucks; explain why this counterfactual does not establish the historical cause of Shewa Robit's recapture.
- Compare Declan Walsh’s reported supply-convoy strikes with Zecharias Zelalem’s analysis of drone contributions and limitations. Distinguish their source-based accounts from the effects recorded in this run; neither gives a measured share of the result attributable to drones.

Run time and a good result

Default run clock: 2 minutes 40 seconds at 1×, excluding pauses, briefing and discussion. Time controls change elapsed play time.

Objective: Retake Shewa Robit and reopen the A2 highway north of Debre Sina. Your drones can reach the trucks and heavy weapons strung out along the road from Kemise, but your infantry must still take the town.

Drones over the A2: Retake Shewa Robit and reopen the A2 highway north of Debre Sina. Your drones can reach the trucks and heavy weapons strung out along the road from Kemise, but your infantry must still take the town. Occupy the marked zone with at least one combat unit and no opposing combat unit for 8 continuous simulation seconds. The authored limit is 160 simulation seconds across 1 stage. Compare objective progress, time, losses, drone expenditure and recorded civilian harm with a second run. A strong classroom result also explains the source evidence and reconstruction estimates; it does not verify a historical casualty count.

Atrocity notice

The joint EHRC–OHCHR investigation found reasonable grounds that all parties committed violations, some potentially war crimes or crimes against humanity. It covered November 2020–June 2021; this is earlier conflict context, not an investigation of the modeled late-2021 drone battle.

These reports describe the wider conflict. They do not establish that every crime occurred in this modeled battle.

Studying or commanding a side does not endorse its conduct. Drone Front never lets players target civilians, hospitals, schools or places of worship. Civilian harm from simulated strikes is counted and shown in the debrief, including nonzero harm. Civilian massacres are never playable operations. Designated terrorist forces and Wagner remain computer controlled; Gaza war events remain excluded from play.

▼ Dated reports and findings

- 2021-11-03 · EHRC–OHCHR: joint investigation into Tigray conflict violations

Learn more: the laws of war

- ICRC: Geneva Conventions and commentaries
- ICRC: Customary IHL database
- UN: Genocide Convention (9 December 1948)
- UN: Rome Statute (17 July 1998), articles 6–8

Historical source notes

Davison's account connects the Tigrayan advance's stretched A2 supply line with subsequent drone attacks and ground pressure. Walsh's interview and de Waal's reporting provide attributed accounts, not independently verified drone totals. This historical assessment does not validate the simulation's exact drone numbers or deployments.

Drones were one factor among several in the 2021 reversal: Davison also identified flank attacks and mobilisation. Zecharias Zelalem's 2025 ECFR retrospective distinguishes the defence of Addis Ababa from costly later government offensives and continuing insurgencies in Tigray, Oromia and Amhara. Its broader assessment is not a finding solely about December 2021.

Reports of civilian harm require independent scrutiny of both the incident and the platform identification. Use the separately attributed Chefa Robit and Dedebit findings below; identifying a munition does not uniquely identify its delivery aircraft or operator.

Civilian harm

Insecurity Insight, using its own and ACLED data, recorded that at least 38 people were killed and over 40 injured in a drone strike on a market in Chefa Robit town. It said available information suggests a Chinese made LJ-7 (Blue Arrow) laser guided missile designed for the Wing Loong II was used, and it lists this as the first known drone strike causing civilian harm in its records for the war.

ACLED's Ethiopia Peace Observatory recorded reports of killings, rapes and property destruction attributed to TPLF forces during their retreat from areas retaken by government forces that week.

Africanews reported that drone and air strikes killed at least 28 people; the head of security for Alamata, Ekubay Gebremedhin, said drones attacked the market and killed more than 38 people and injured more than 80. Insecurity Insight recorded that a hospital serving more than 500,000 people, a market, a church and a hotel in Alamata were destroyed in air and drone strikes.

The UN High Commissioner for Human Rights said her office documented 304 people killed and 373 injured by aerial attacks in Tigray in this period, as reported by Human Rights Watch.

Human Rights Watch reported at least 57 civilians killed and more than 42 wounded. It identified MAM-L remnants, a weapon usable by TB2 drones and other light aircraft, found no military target evidence and called the attack an apparent war crime. These findings do not uniquely establish the delivery aircraft. The Washington Post separately reported at least 59 deaths.

The UN human rights office said at least 108 civilians were reportedly killed and 75 injured in air strikes allegedly carried out by the Ethiopian air force, including 17 killed and 21 injured when a strike reportedly carried out by a drone hit a flour mill on 10 January.

Evidence for learning objectives

Crisis Group's William Davison said TDF supply lines relied heavily on the A2 and “started getting hit, primarily by drones”.

Crisis Group's Davison also named attacks on the TDF flanks and a large mobilisation. Zecharias Zelalem found drones did not let the military dislodge rebels from strongholds (ECFR).

Insecurity Insight recorded at least 38 killed by a drone strike on a Chefa Robit market. ACLED recorded reports of killings and rapes attributed to TPLF forces as they withdrew.

Timings

For 60 minutes, brief for 10, run it once with the three pauses for 25 and review for 25; for 90 minutes, add a run without drones and compare how many TDF supply trucks reached Shewa Robit; for 180 minutes, have half the syndicates command the TDF, add a run with strict rules of engagement, and close with a reading of the Crisis Group podcast and the Human Rights Watch report on Dedebit. These are classroom session budgets including pauses and discussion; the unpaused authored run is 160 seconds. No drones removes the selected player side's drones, not every enemy drone.

Session	Plan
45 minutes	Brief: 10 min; Run: 15 min; Collect: 5 min; Review: 15 min
60 minutes	Before questions: 5 min; Brief: 10 min; Run: 20 min; Collect: 5 min; Debrief and after questions: 15 min; Discussion: 5 min
90 minutes	Before questions: 5 min; Brief: 10 min; Run 1: with drones: 20 min; Run 2: without drones: 15 min; Collect: 5 min; Compare and discuss: 25 min; After questions: 10 min
180 minutes	Before questions: 10 min; Brief and staff roles: 15 min; Run 1: with drones: 25 min; Run 2: without drones: 20 min; Break: 10 min; Run 3: syndicates: 30 min; Collect: 10 min; Seminar replay and debrief: 40 min; After questions: 10 min; Close: 10 min

Staff roles

commander
Set the pre-run posture and standing orders, choose drone observation or strike areas, and report the automatic infantry and armour advance toward Shewa Robit. You cannot order individual ground units into the town.

intelligence
Track the TDF supply trucks moving south from Kemise and any air defence that has fired, and report which stretches of the A2 no drone has watched.

fires
Observe the artillery's automatic engagements on contacts revealed around Shewa Robit, recommend the available artillery and rules-of-engagement standing orders, and flag civilian risk. Individual gun-target assignments are unavailable.

droneOps
Report each authored Wing Loong, TB2 and Mohajer-6 launch, loss and return, including the cause recorded in the review. Compare modeled losses without treating generic air-defence probabilities as verified flight ceilings or aircraft-specific vulnerability.

Opposing staff objective

Hold Shewa Robit and the A2 highway until time runs out, and keep supply trucks moving south from Kemise to the front.

Decision points

- Before the first launch: your drones can reach the TDF supply trucks on the A2 from Kemise and the defenders in Shewa Robit, so which do they look for first?
- When a TDF air defence unit first fires on your drones: do you strike it at once, or keep your drones on the trucks and accept the risk of further losses?
- At the halfway pause, observe the automatic advance toward the populated take zone. Compare standard and strict rules of engagement and record blocked strikes and civilian harm; neither setting certifies lawful conduct.

Before and after questions

1. **What logistical exposure did Declan Walsh report during the late-2021 Tigrayan advance?**
   A. Most supplies crossed Afar away from the principal highway
   B. Walsh reported drone attacks on supply convoys advancing along an exposed major highway
   C. Air deliveries into Dessie sustained the advancing ground formations
   D. OLA operations severed the southern road near Kemise town

2. **How does ECFR qualify the drone contribution to the Ethiopian government's 2021 reversal?**

   A. Drone success accounts for the reversal without further causal analysis
   B. Published aircraft losses explain the reversal better than political negotiations
   C. The reversal establishes lasting government control over later rebel strongholds
   D. Drones contributed without removing the need for negotiations

3. **What did Insecurity Insight record about the November 2021 drone strike at Chefa Robit?**

   A. A market strike reportedly killed at least 38
   B. A depot strike reportedly caused no civilian deaths
   C. An air-defence strike reportedly destroyed a TDF system
   D. A convoy strike reportedly involved a TDF drone

4. **Which aircraft origins are represented by the armed-drone types identified in PAX's Ethiopian imagery investigation?**

   A. Aircraft recovered locally established the origins of the attacking force
   B. Prewar procurement records established origins without checking the observed aircraft
   C. Aircraft types identified from Iran, China and Turkey
   D. Domestic assembly established origins regardless of the underlying aircraft designs

5. **What did Tsadkan Gebretensae report about drones during the late-2021 advance, in his interview with Declan Walsh?**

   A. Flights principally at night while supplies moved
   B. Several armed drones reportedly airborne at once
   C. Flights principally supporting radio interference over convoys
   D. Small numbers reportedly intercepted soon after deployment

Discussion

- Walsh reported attacks on supply convoys and interviewed Tsadkan about drones overhead. Zelalem's later analysis distinguishes defensive success from offensive losses and negotiations. What does each source establish, and what evidence would be needed to quantify the drones' contribution?
- Read the separately attributed Chefa Robit and Dedebit civilian findings. Chefa Robit is north of this teaching map and its reported strike preceded this episode; Dedebit is also outside the map and occurred later. Keep weapon identification separate from proof of aircraft or operator. What do distinction, proportionality and precaution require when civilians and fighters use the same road?
- PAX identified a TB2 in imagery dated 9 December 2021 at Harar Meda and separately described footage whose date and location it could not verify. Which claims concern aircraft presence, which concern operators, and which would require evidence tied to a particular strike?

- Zelalem's 2025 analysis distinguishes drone contributions to defending the capital from offensive losses and difficulty dislodging rebels. Compare that assessment with the run's drone effects and automatic infantry movement; do not treat a simulated result as verification of the analysis.

Debrief rubric

Strong
Meets the objective or explains why it was not met; uses the published sources and run evidence, separates known facts from assumptions, compares both sides' losses and cost exchange, and evaluates precautions against civilian harm.

Adequate
Describes the objective and main decisions, identifies at least one source and model limitation, reports losses and harm, and gives a reasoned change for a second run.

Weak
Reports only victory or points, treats teaching settings as real performance, gives unsupported historical claims, or omits uncertainty and civilian harm.

Published readings

1. Al Jazeera: Tigrayan forces claim to capture new town of Kombolcha (31 October 2021)
2. Al Jazeera: UAE air bridge provides military support to Ethiopia government (25 November 2021)
3. Al Jazeera: Ethiopian government says it retook string of towns from Tigray forces (1 December 2021)

Complete source list

Wikipedia: ENDF National Unity Offensive
Wikipedia: TDF OLA joint offensive
Wikipedia: Tigray war
Wikipedia: Timeline of the Tigray war (July 2021–November 2022)
Wikipedia: Tigray Defense Forces
Wikipedia: Tigray People's Liberation Front
Al Jazeera: Tigrayan forces claim to capture new town of Kombolcha (31 October 2021)
Al Jazeera: UAE air bridge provides military support to Ethiopia government (25 November 2021)
Al Jazeera: Ethiopian government says it retook string of towns from Tigray forces (1 December 2021)
Al Jazeera: Ethiopian forces recapture two key towns from Tigrayan forces (6 December 2021)
Al Jazeera: How armed drones may have helped turn the tide in Ethiopia's war (Alex Gatopoulos, 10 December 2021)
International Crisis Group: Tigrayan Forces Retreat in Ethiopia (podcast with William Davison, 16 December 2021)
The Irish Times, republishing the New York Times: Foreign drones tip the balance in Ethiopia's civil war (Declan Walsh, 21 December 2021)
Responsible Statecraft: How foreign drone intervention and more turned tide for Abiy in Ethiopia (Alex de Waal, 23 December 2021)
Martin Plaut, republishing James Jeffrey in Quillette: The key role of drones in the Tigray war (15 January 2022)
PBS NewsHour: Tigrayan forces announce retreat, but Ethiopia rejects peace overture (22 December 2021)
PAX: Ethiopia now confirmed to fly Chinese armed drones (November 2021)
PAX: Turkish drones join Ethiopia's war, satellite imagery confirms (January 2022)

Oryx: Iranian Mohajer-6 drones spotted in Ethiopia (Stijn Mitzer and Joost Oliemans, 11 August 2021)
Oryx: The Tigray Defence Forces, documenting its heavy weaponry (September 2021)
Amnesty International Citizen Evidence Lab: Identifying the drone launched munitions used in Ethiopian air strikes (Brian Castner, 14 February 2022)
defenceWeb, reporting Reuters: Turkey expands armed drone sales to Ethiopia and Morocco, sources (15 October 2021)
Insecurity Insight: The use of air delivered munitions in the context of humanitarian action in Ethiopia, with a focus on drones (December 2022)
ACLED Ethiopia Peace Observatory: EPO Weekly, 20 to 26 November 2021
ACLED Ethiopia Peace Observatory: EPO Weekly, 27 November to 3 December 2021
Africanews: Air strikes kill at least 28 people in Ethiopia's Tigray region (21 December 2021)
Human Rights Watch: Ethiopia, airstrike on camp for displaced likely war crime (24 March 2022)
Washington Post: Ethiopian airstrike on Dedebit camp in Tigray killed dozens with Turkish made drone (2022)
OHCHR: Press briefing notes on Ethiopia (14 January 2022)
European Council on Foreign Relations: Deadly skies, drone warfare in Ethiopia and the future of conflict in Africa (Zecharias Zelalem, 28 February 2025)
Political Geography Now: Ethiopia war map, Tigray rebel advance on capital and control today (25 January 2022)
Wikipedia: Shewa Robit
Wikipedia: Kemise
Wikipedia: Mehal Meda
Wikipedia: 2021 Ataye clashes (gives the location of Ataye)
Wikipedia: Baykar Bayraktar TB2
Wikipedia: CAIG Wing Loong
Wikipedia: Qods Mohajer-6
Nordic Africa Institute: Local history of Ethiopia, Cheames Kebet to Chezad Ogora (gazetteer entry for Chefe Robit)
US Department of State: Foreign Terrorist Organizations
UK Home Office: Proscribed terrorist groups or organisations
ACLED Ethiopia Peace Observatory: EPO Weekly, 23 to 29 October 2021