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United Nations Institute for Training and Research

UNOSAT

Civil Conflict



Production Date: 23/03/2011

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GLIDE: OT-2011-000025-LBY

UNOSAT Activation: CE20110220LBY

Conflict Analysis: Zawiyah, Libya (as of 08 March 2011)

ANALYSIS: A review of the city of Zawiyah was conducted using a satellite image acquired 8 March 2011 to document impacts of fighting between Libyan Government and armed opposition forces. This fighting took place between 24 February and 10 March, when Libyan Government forces declared control of the city. Satellite imagery analysis

sought to identify evidence of fighting and damage in the area. Armoured vehicles, road blocks consisting of sand and other materials, excavated areas, and possible scorch marks are visible in the satellite image. In addition, significant numbers of light trucks are apparent in groups and convoys throughout much of the city.



Overview Map 1:1,200
scale for A4:

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the United Nations Institute for Training and Research (UNITAR), providing satellite imagery and related geographic information, research and analysis to UN humanitarian & development agencies & their implementing partners.

Satellite Data (1): GeoEye-01
Imagery Date: 08 March 2011
Resolution : 50 cm
Copyright: GeoEye 2011
Source: GeoEye EyeQ
Road Data : Google MapMaker (2011)

Conflict data: UNITAR/UNOSAT
Administrative Data: UNCS & UNITAR/UNOSAT
Other Data: USGS, NGA
Analysis : UNITAR / UNOSAT
Production: UNITAR / UNOSAT

Coordinate System: UTM Zone 33N
Datum: WGS 1984
Analysis conducted with ArcGIS v10



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22 March 2011 - 14:00 UTC - Version 1.0

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Zawiyah Conflict Analysis

By UNITAR/UNOSAT – 22 March 2011

ANALYSIS BACKGROUND: This is a satellite based analysis of events in the city of Zawiyah, Libya, on the morning of 8 March 2011. Zawiyah, lying about 40 kilometers west of Tripoli, was the site of significant fighting between Libyan Government forces and armed opposition elements. Combat began on 24 February and occurred almost daily until 10 March, when Libyan Government forces declared control of Zawiyah. Armour, artillery (including multiple rocket launcher systems), mortars, and regular and irregular infantry were used in the fighting according to media and other reporting^{1,2,3,4}. March 8 saw the largest assault on the city, with reports indicating as many as 50 tanks and 120 light trucks attacking in three different areas of Zawiyah⁵. Fighting in Zawiyah resulted in significant damage to the city witnessed by the UN Humanitarian Coordinator⁶ on 14 March.

ANALYSIS RESULTS: UNOSAT analyzed an image collected at about 11:00am local time on 8 March by the GeoEye-1 satellite. Military hardware and other discrete features visible in the imagery are summarized in Table 1. In addition to these discrete features 88 concentrations of light trucks were visible in the city. These concentrations generally included three or more vehicles grouped together, often around intersections or on roadsides. In addition, at least three convoys of such vehicles on the roads are visible as well. A variety of damage to the city was also documented at 24 locations including debris and scorch marks.

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Regional Overview Map for Zawiyah



Features Identified	Number
Tanks	12
Self-propelled artillery	1
Armored personnel carriers (possible)	4
Infantry fighting vehicles (possible)	2
Heavy equipment transports	5
Road blocks and/or barriers	41

Table 1: Discrete Features

¹ BBC: <http://www.bbc.co.uk/news/world-africa-12673956>

² The Guardian: <http://www.guardian.co.uk/world/2011/mar/04/libya-rebels-civil-war-gaddafi>

³ Al Jazeera: <http://english.aljazeera.net/news/africa/2011/02/2011227135040734394.html>;
<http://english.aljazeera.net/news/middleeast/2011/03/20113723758787883.html>

⁴ Human Rights Watch: <http://www.hrw.org/en/news/2011/02/26/libya-security-forces-fire-protesters-western-city>;

⁵ BBC: <http://www.bbc.co.uk/news/world-africa-12673956>

⁶ UN OCHA: <http://www.unocha.org/top-stories/all-stories/libya-humanitarian-coordinator-observes-bleakness-amid-civilians-struggling->



UNOSAT *Analysis Overview of Zawiyah, Libya: 08 March 2011*

Vehicle and Conflict Zone Assessment

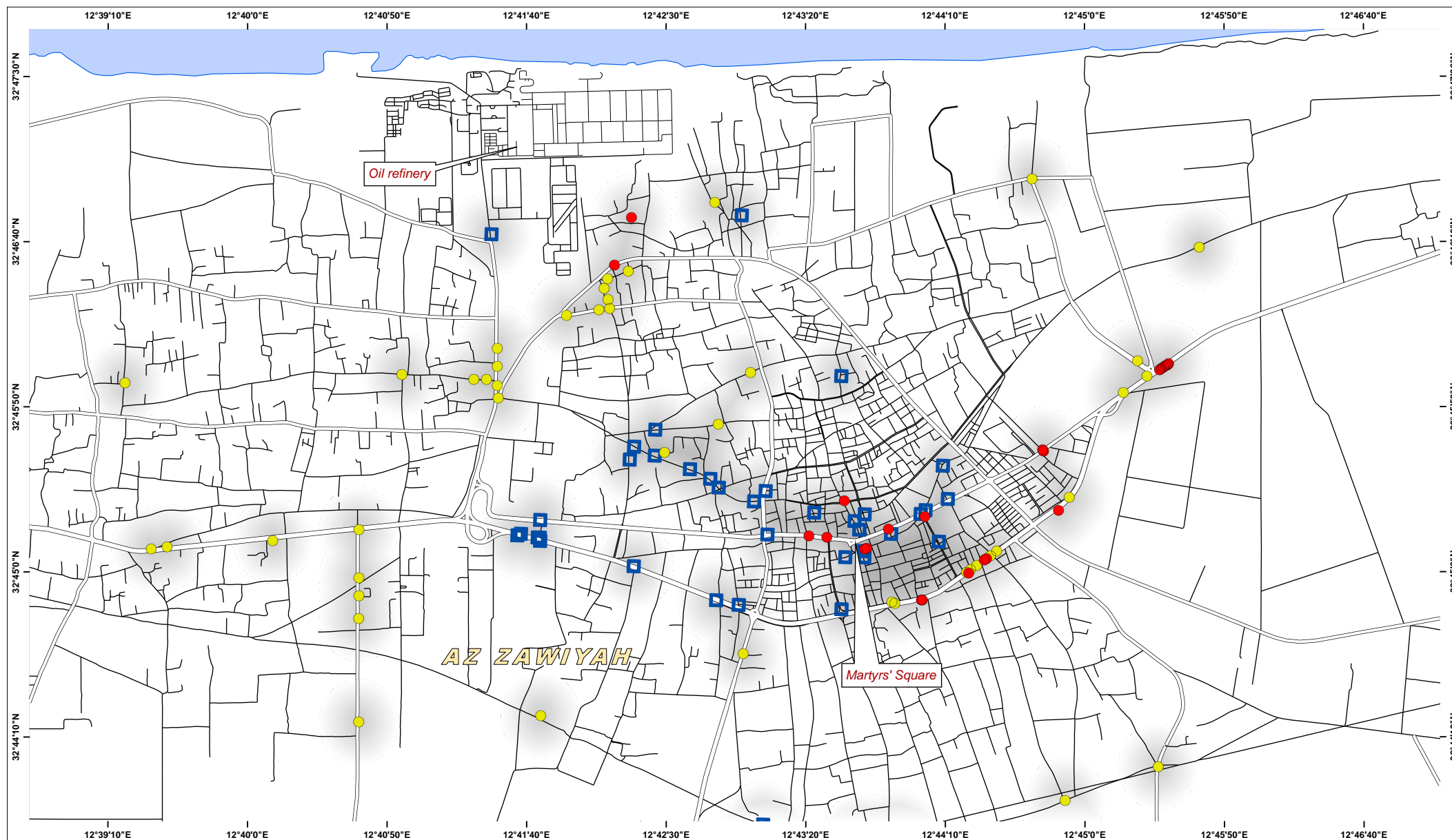
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Map Scale for A4: 1:48,700



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Conflict analysis by Type:

- Armoured Vehicle
- Vehicle Concentration
- Road Block

Functional Road Class

- Highway
- Local/Urban



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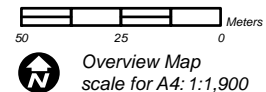
Conflict Anyalysis Focus 1: Zawiyah (as of 08 March 2011)



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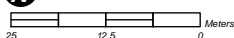
Satellite Data: GeoEye-01
Imagery Date: 08 March 2011
Resolution: 50 cm
Copyright: GeoEye 2011
Source: GeoEye EyeQ
Conflict data: UNITAR/UNOSAT
Administrative Data: UNCS &

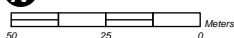
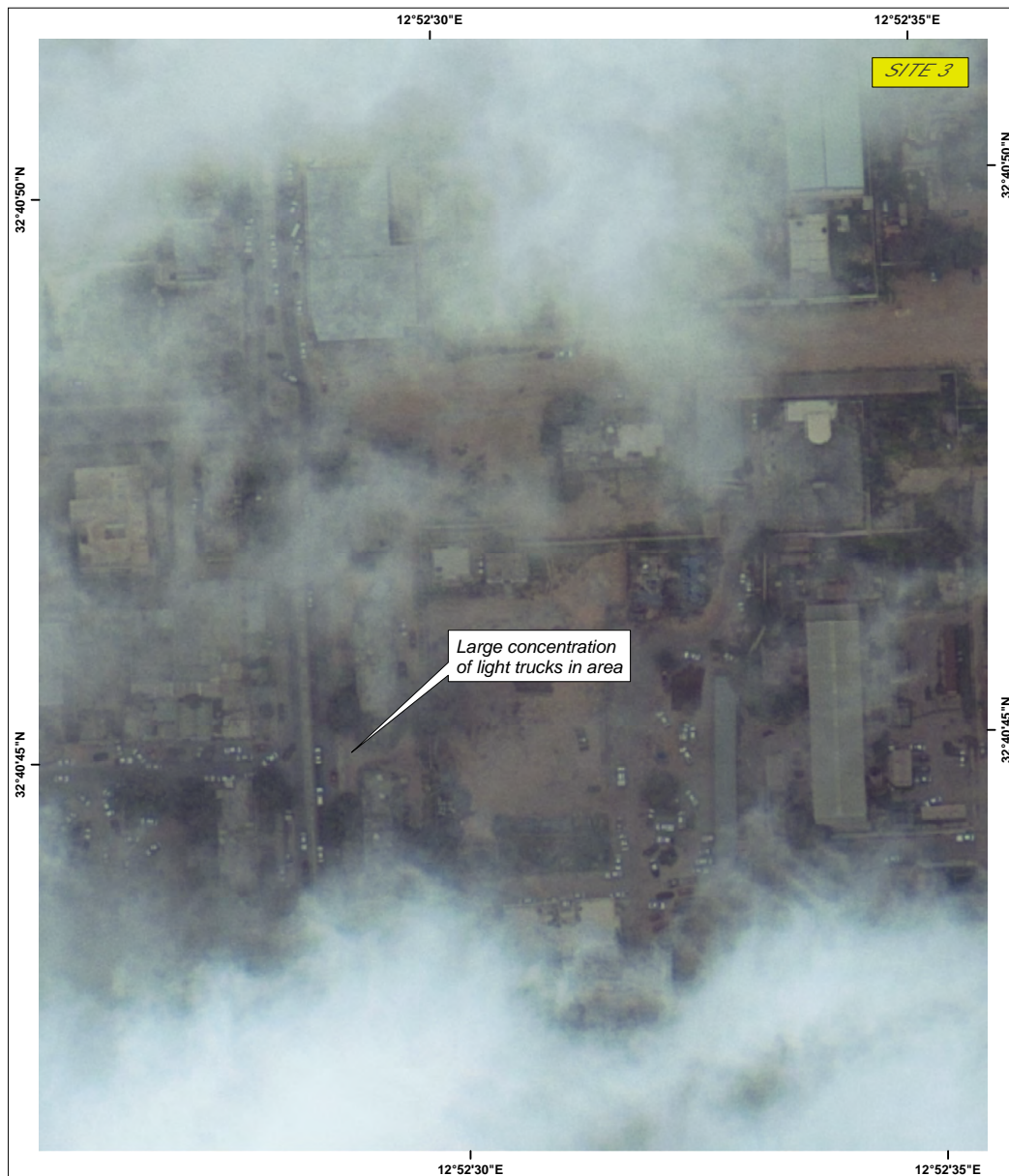
UNITAR/UNOSAT
Analysis: UNITAR / UNOSAT
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Overview Map
scale for A4: 1:1,900

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Knowledge to lead

UNITAR/UNOSAT satellite solutions

The UNITAR advantage

Since its establishment in 1965, UNITAR has built a unique set of expertise, experience, knowledge and capacities to design and implement a variety of research and training activities. In keeping with its mandate to “enhance the effectiveness of the United Nations in achieving the major objectives of the Organization” the Institute contributes with concrete actions to developing the capacities of Member States in the fields of economic and social development, diplomacy, and peace and security

Reaching out to beneficiaries

UNITAR programmes provide training to approximately 80,000 professionals every year in some 200 different types of training activities, applying both face-to-face and distance-learning methodologies. Technology and satellite applications are gaining an important place in these activities as a growing number of UN and national entities adopt satellite derived geographic information methodologies in which UNOSAT, the Operational Satellite Applications Programme of UNITAR, excels since 2001

A challenging mission

UNITAR mission is to deliver innovative training and conduct research on knowledge systems to develop the capacity of beneficiaries. Building on our experience, we optimize expertise, information and knowledge-sharing to achieve this mission. The specific mission of UNOSAT is to develop applied solutions and use training to make the UN system and member states benefit from space technology in the areas of human security and humanitarian relief, disaster prevention and territorial planning, and all other relevant areas

UNOSAT: setting a new paradigm in satellite applications

Since 2001, UNOSAT has delivered satellite solutions to relief and development organisations within and outside the UN system and member states to help make a difference in the life of communities exposed to poverty, hazards, and conflict or affected by humanitarian and other crises. Our skills are focused on satellite derived geographic information and data analysis. Our work record includes over 1000 analyses since 2001, and 150 activations during humanitarian crises since 2003. UNOSAT is also a specialised training force with capacity to train national experts in situ or at headquarters in Geneva.

For information and contacts: Unosat@unitar.org or www.unitar.org/research

