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*Security Event*



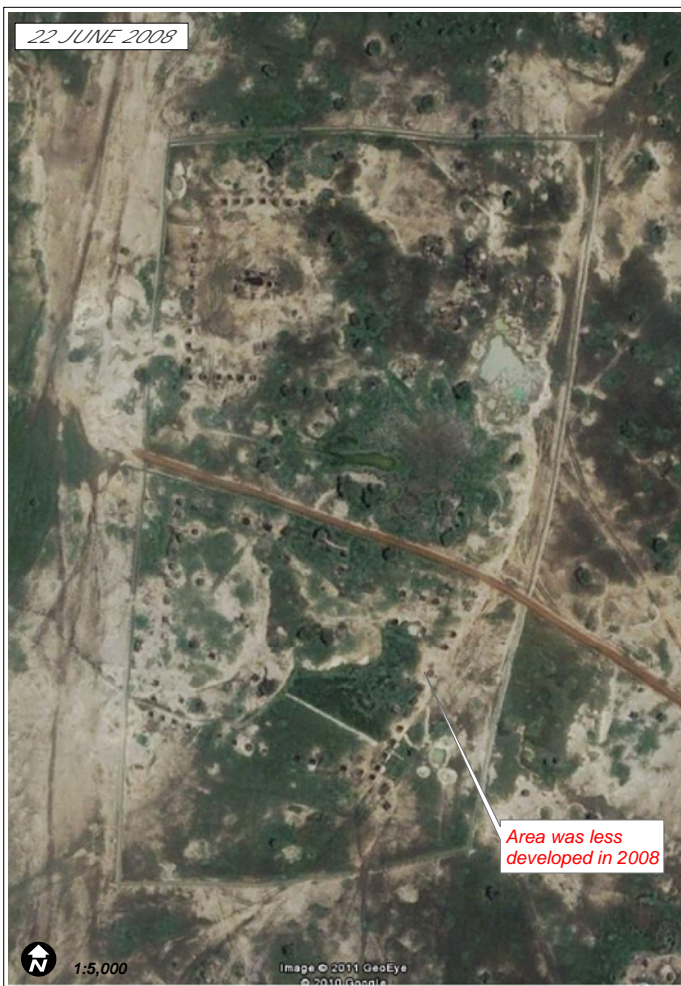
31 January 2011

12:00 UTC - Version 2.0

CE-2010-001201-SDN

## *Abyei - UNOSAT analysis update: Returnee areas and infrastructure development*

**ANALYSIS SUMMARY:** This analysis shows the town of Abyei in South Sudan. The analyzed very high resolution satellite imagery was acquired on the 23<sup>rd</sup> of January 2011 and compared against two earlier images; from the 19<sup>th</sup> of December 2010 and the 22<sup>nd</sup> of June 2008. Returnee areas and infrastructure development can be identified and are marked with annotations. New buildings and road works are the main changes.



Detail of build-up area in Abyei on 22 June 2008



Detail of new development and buildings on 23 January 2011

UNITAR / UNOSAT  
unosat@unitar.org  
Palais des Nations,  
Geneva, Switzerland  
T: +41 22 767 4020  
24/7 hotline: +41 76 487 4998  
www.unitar.org/unosat

Satellite Imagery (left): IKONOS  
Resolution: 1.0m  
Imagery Date: 22 June 2008  
Source: Google Earth  
Copyright: GeoEye 2011  
Report Analysis: UNITAR / UNOSAT

Satellite Imagery (right): WorldView-2  
Resolution: 50cm  
Imagery Date: 23 January 2011  
Source: DigitalGlobe 2011  
Copyright: DigitalGlobe 2011  
Projection: UTM Zone 35N Datum: WGS-84

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## ***Abyei, Sudan: Returnee areas and infrastructure development***

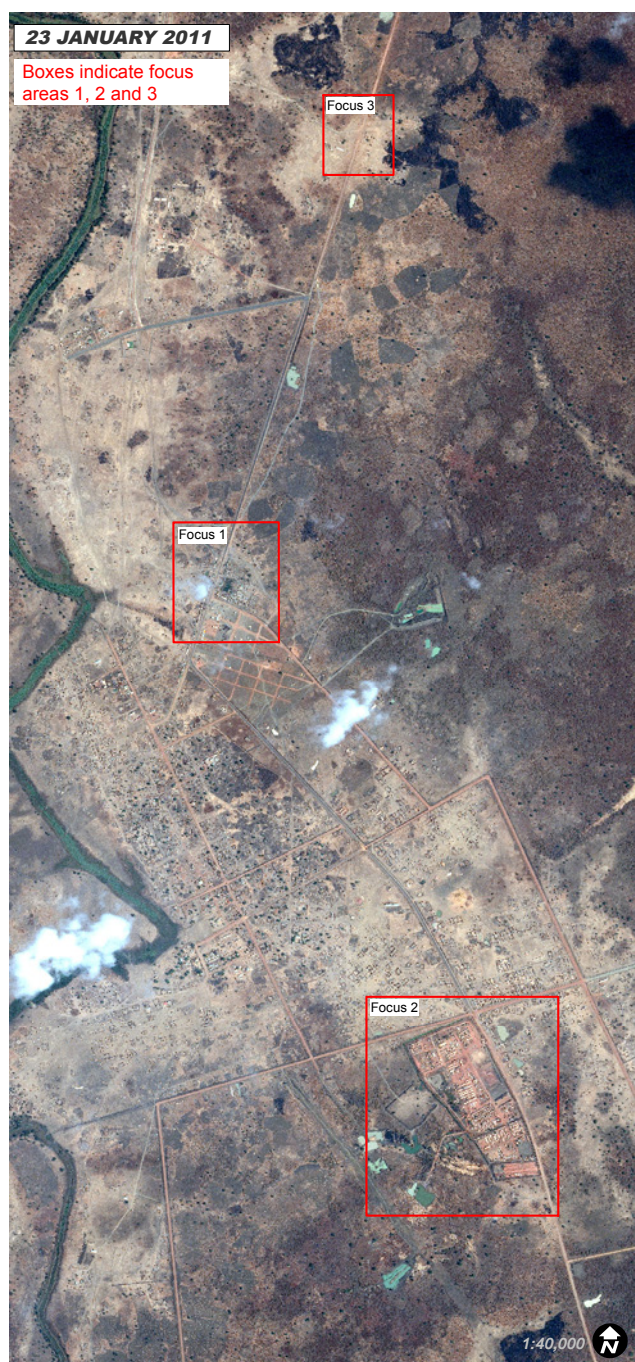
By UNITAR/UNOSAT – 31 January 2011

**ANALYSIS BACKGROUND:** This is a satellite based qualitative analysis map series showing new structures and infrastructure developments in Abyei, Sudan, occurring between 22 June 2008 and 23 January 2011. During this period significant numbers of people returned to the Abyei area from which they were displaced by civil war and its aftermath. According to the UN Office for the Coordination of Humanitarian Affairs 26,270 people had returned to the Abyei area since October 2010. These influxes have resulted in significant development and at the same time have stressed humanitarian relief operations.

Notably, the analysis period follows a brief but intense episode of conflict occurring in May, 2008. At that time, soldiers of the Sudanese Army and the Sudan People's Liberation Movement, and militias allied with both sides, caused significant destruction to the town following intense fighting. Up to 90% of the housing was destroyed at that time and many shops and facilities looted, according to sources quoted by the UN High Commissioner for Refugees. Analysis of Abyei by UNOSAT using a pre-conflict imagery indicates a strong recovery from this violence as well as significant expansion from its pre-conflict size.

### **Infrastructure Changes**

Abyei saw significant development to infrastructure within the time period from 22 June 2008 and 23 January 2011 as the town increased in size, facilities expanded, roads multiplied in number and were often paved, and water availability was enhanced. A rapid UNOSAT mapping exercise documented almost 2 millions square metres of significant development within 21 areas of new buildings and expanded compounds, more than 32 kilometres of new roads including 17 new or significantly expanded unpaved roads as well as 5 newly paved road segments, 15 water reservoirs, and one new water canal.



Overview of Abyei

UNITAR / UNOSAT  
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Geneva, Switzerland  
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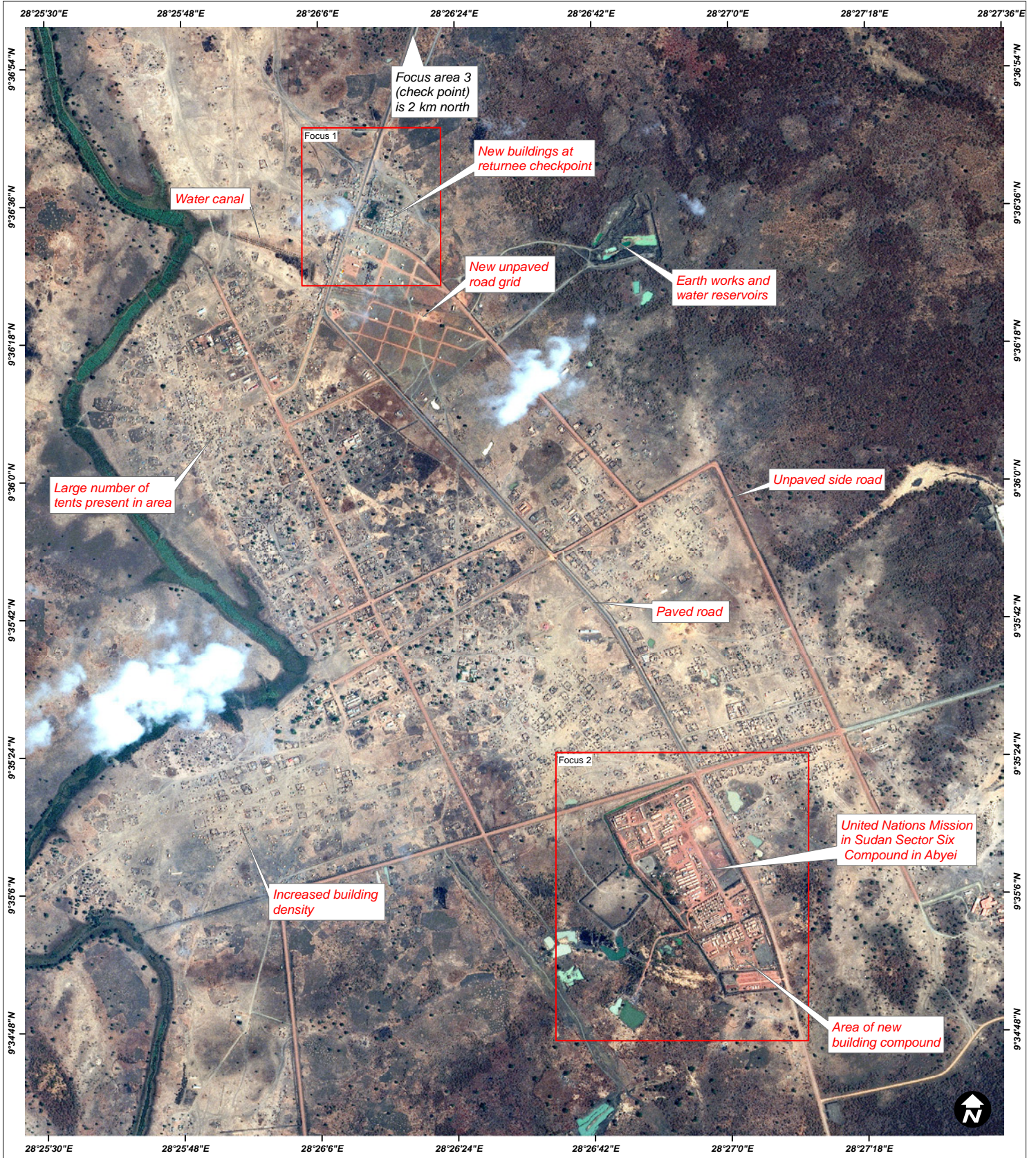
# OVERVIEW OF RETURNEE AREAS AND INFRASTRUCTURE DEVELOPMENT IN ABYEI

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31 January 2011

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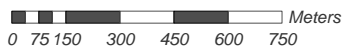
### VISUAL SATELLITE ASSESSMENT:

This map series shows the town of Abyei and its returnee areas and infrastructure development between 2008 and 2011. The displayed Worldview-2 imagery was acquired on the 23rd of January 2011. It was compared against a IKONOS image acquired in June 2008. The most obvious changes are road works and new / extended development up areas.

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Satellite Imagery ..... WorldView-2  
 Resolution ..... 50cm  
 Imagery Date ..... 23 January 2011  
 Source ..... DigitalGlobe  
 Copyright ..... DigitalGlobe 2011  
 Report Analysis ..... UNITAR / UNOSAT  
 Projection ..... UTM Zone 35N WGS-84  
 Produced using ArcGIS  
 Image donated by DigitalGlobe

Map Scale for A4: 1:21,000



UNITAR / UNOSAT  
 unosat@unitar.org  
 Palais des Nations,  
 Geneva, Switzerland  
 T: +41 22 767 4020  
 24/7 hotline: +41 76 487 4998  
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# FOCUS 1: AREA OF RETURNEES AND INFRASTRUCTURE DEVELOPMENT IN ABYEI

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Map has been rotated by 180 degree

Map Scale for A4: 1:3,000



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unosat@unitar.org  
Palais des Nations,  
Geneva, Switzerland  
T: +41 22 767 4020  
24/7 hotline: +41 76 487 4998  
www.unitar.org/unosat

## VISUAL SATELLITE ASSESSMENT:

This map series shows the town of Abyei and its returnee areas along with infrastructure development since 2008. The displayed Worldview-2 imagery was acquired on the 23rd of January 2011. It was compared against imagery from 2008 and December 2010. Most changes appear to be road works and new / extended build up areas. However, there is no significant ongoing development between 19th December 2010 and 23rd January 2011

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Resolution .....50cm  
Imagery Date ..... 23 January 2011  
Source ..... DigitalGlobe  
Copyright ..... DigitalGlobe 2011  
Report Analysis ..... UNITAR / UNOSAT  
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# FOCUS 2: UNITED NATIONS MISSION IN SUDAN, SECTOR SIX COMPOUND IN ABYEI

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Map has been rotated by 180 degree  
Map Scale for A4: 1:5,000



UNITAR / UNOSAT  
unosat@unitar.org  
Palais des Nations,  
Geneva, Switzerland  
T: +41 22 767 4020  
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## VISUAL SATELLITE ASSESSMENT:

This map shows the United Nations Mission in Sudan (UNMIS) compound in the town of Abyei. The displayed Worldview-2 image was acquired on the 23rd of January 2011. Changes in the image compared to a Worldview-2 image taken 19th December 2010 are marked with annotation boxes.

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Satellite Imagery ..... WorldView-2  
Resolution ..... 50cm  
Imagery Date ..... 23 January 2011  
Source ..... DigitalGlobe  
Copyright ..... DigitalGlobe 2011  
Report Analysis ..... UNITAR / UNOSAT  
Projection ..... UTM Zone 35N WGS-84  
Produced using ArcGIS  
Image donated by DigitalGlobe



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# FOCUS 3: POSSIBLE CHECKPOINT ALONG THE MAIN ROAD NORTH OF ABYEI

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UNITAR / UNOSAT  
unosat@unitar.org  
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Geneva, Switzerland  
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### VISUAL SATELLITE ASSESSMENT:

*This focus map shows a road check point along the main road north of Abyei. The facility was detected during the analysis of returnee areas and infrastructure development between 2008 and 2011. The displayed Worldview-2 image was acquired on the 23rd of January 2011. It was compared against another Worldview-2 image acquired on the 19th of December 2010 and no changes are visible.*

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