

OVERVIEW OF VILLAGE DAMAGE ATLAS: KEKHVI
TO TSKHINVALI, SOUTH OSSETIA, GEORGIA

Damage Assessment with WorldView-1 & Formosat-2 Satellite Imagery Recorded on 19 August 2008

Hyperlinked
Map Sheets

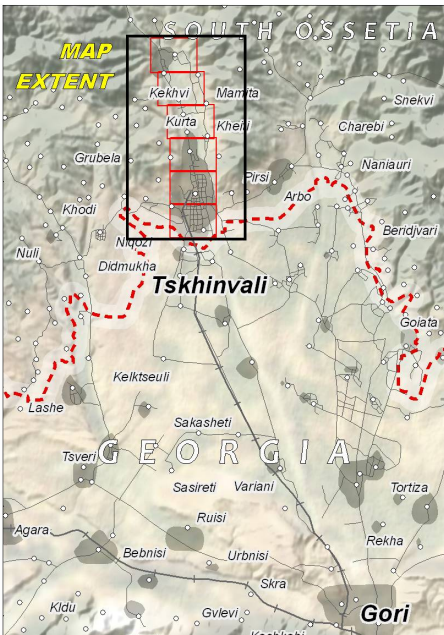
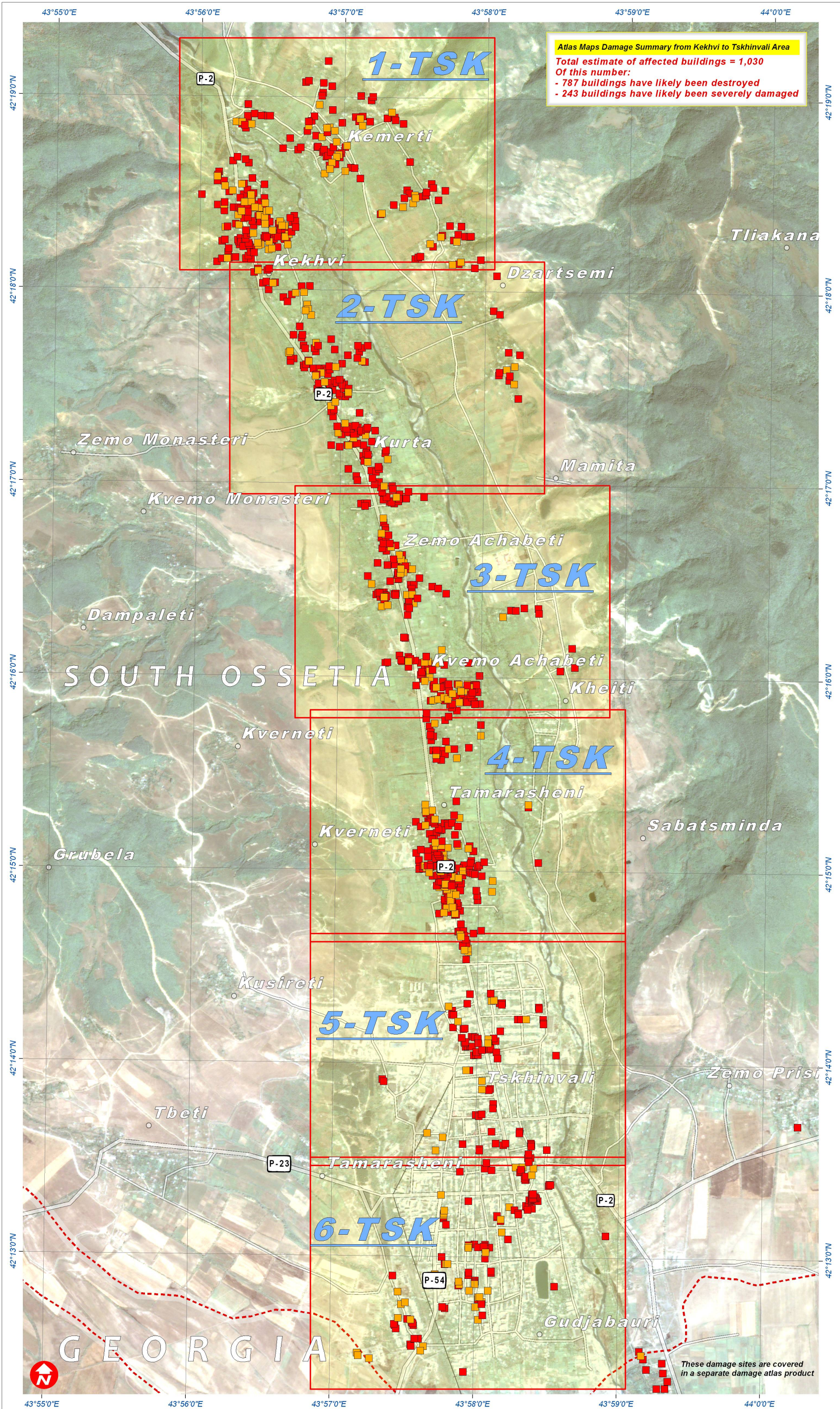
(Move PDF cursor over
the desired atlas map sheet)

Fire & Armed Conflict 26 August 2008



Version 1.0

UNOSAT-2008-000147



Analysis Description

This atlas overview presents a satellite-based damage assessment for the affected area between Kekhvi and Tskhinvali, South Ossetia, Georgia following the armed conflict between Georgian and Russian military forces, August 2008. Damaged buildings have been identified with WorldView-1 & Formosat-2 satellite imagery acquired on 19 August 2008. Affected buildings have been classified either as destroyed or severely damaged by image interpretation methods. Destroyed buildings were defined either by the total collapse of the structure or where it was standing but with less than 50% of the roof still intact. Severely damaged buildings were defined as having visible structural damage to a limited portion of one wall, or where a portion of the roof was damaged but with more than 50% of the roof still intact.

The estimated number of affected buildings within the mapped extent of each atlas sheet is described in a damage summary box. The estimated total number of affected buildings for the whole of the atlas series is 1,030. Of this total 787 buildings have likely been destroyed and 243 buildings have likely been severely damaged. Also marked within the atlas are buildings which were visibly burning while the satellite image was recorded on 19 August 2008.

An important preliminary finding of this satellite damage analysis is the observed heavy concentration of damages within clearly defined residential areas.

Each atlas map sheet shown in this overview is hyperlinked either to the individual maps on-line or within the PDF document. Atlas map sheets have been produced at a scale of 1:9,250 for A3 printing. Please note, this is an initial damage assessment and has not yet been independently validated on the ground. Please send any additions or corrections to UNOSAT at info@unosat.org or call the 24/7 Hotline: +41 76 487 4998.

Map Legend

- Transport Pts** **Transport Lines**
- Airport
 - Port
 - Main Road
 - Secondary Road
 - Railroad
- Administrative**
- International Border
 - Approximate South Ossetia Boundary

SATELLITE DAMAGE ASSESSMENT

- Building: Likely Destroyed
- Building: Likely Severely Damaged

Map Scale for A3: 1:36,000



Satellite Data WorldView-1
Resolution 50 cm
Imagery Date 19 August 2008
Copyright Digital Globe (2008)
Source U.S. Department of State - HIU
Access Rules NextView "EULA" - 2008
Additional Imagery Formosat-2 (2m pansharpened)
Imagery Copyright NSPO 2008
Imagery Date 19 August 2008
Fire Data MODIS Aqua - Terra (NASA)
Fire Processing U. of Maryland, NASA
Fire Dates 7 - 20 August 2008
GIS Data USGS, UNEP, UNOSAT
Damage Analysis UNOSAT
Projection Pulkovo 1995 GK Zone 8N
Datum Pulkovo 1995

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VILLAGE DAMAGE ATLAS: FROM KEKHVI TO TSKHINVALI, SOUTH OSSETIA, GEORGIA

Damage Assessment with WorldView-1 & Formosat-2 Satellite Imagery Recorded on 19 August 2008

This atlas map presents a satellite-based damage assessment for the affected areas between Kekhvi and Tskhinvali, South Ossetia, Georgia following the armed conflict between Georgian and Russian military forces in August 2008. Damaged buildings have been identified with WorldView-1 and Formosat-2 satellite imagery acquired on 19 August 2008. The estimated number of affected buildings within the mapped extent of this atlas sheet is described in the damage summary box below. Affected buildings have been classified either as destroyed or severely damaged. An important preliminary finding of this satellite damage analysis is the observed heavy concentration of damages within clearly defined residential areas. Please note, this is an initial damage assessment and has not yet been independently validated on the ground. Please send additions/corrections to UNOSAT.

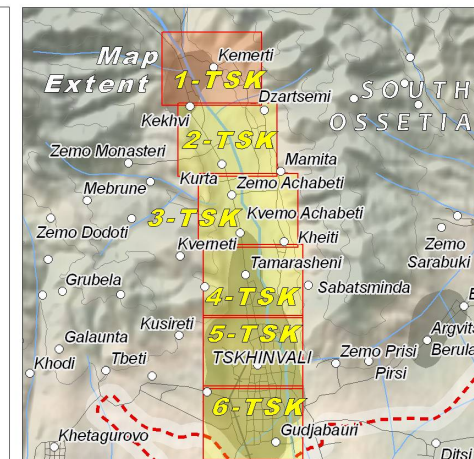
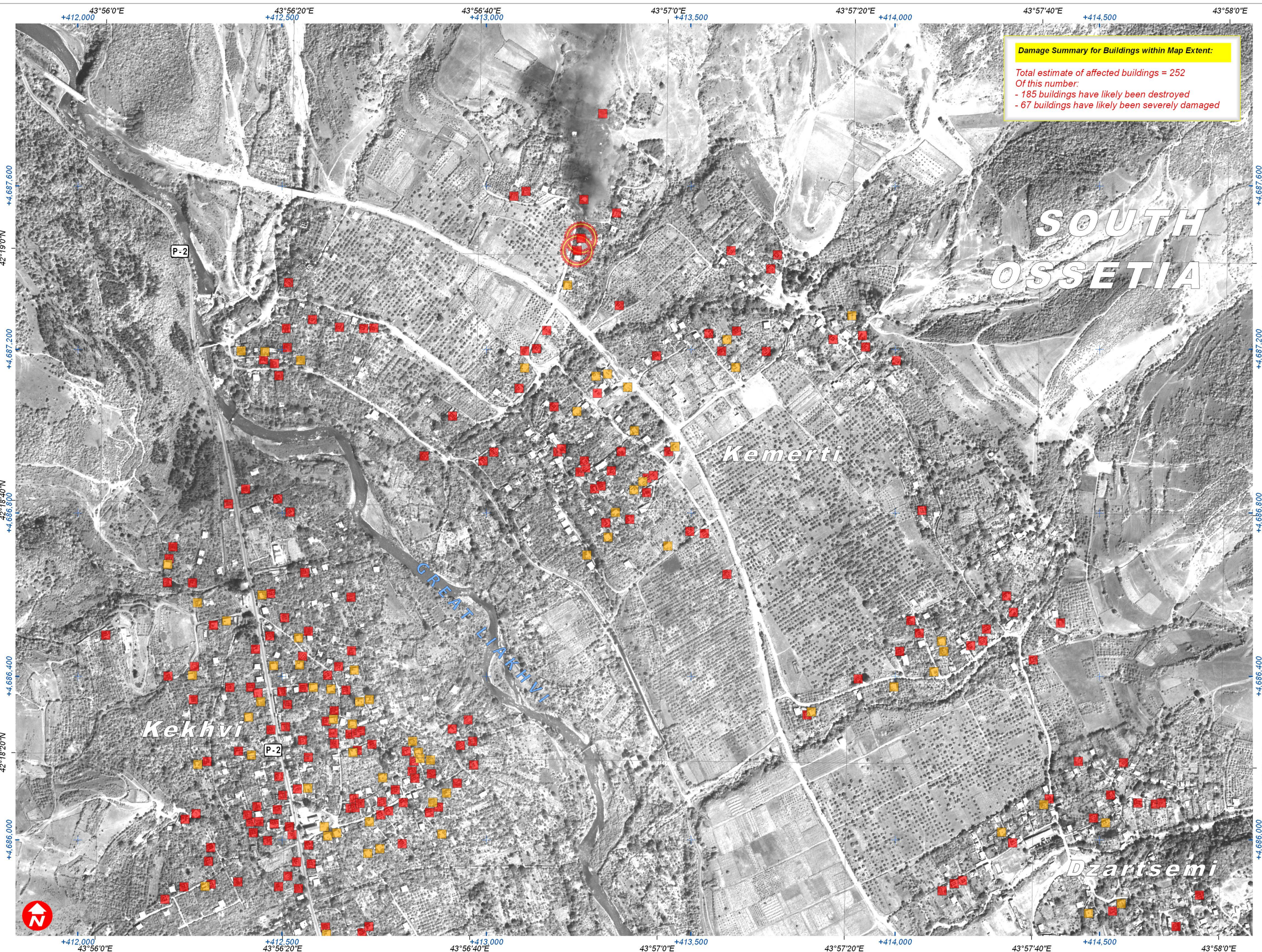


Fire & Armed Conflict 26 August 2008

Conflict



ATLAS
SHEET:
1-TSK



Map Legend

..... Approximate South Ossetia Boundary

SATELLITE DAMAGE ASSESSMENT

Building:
..... Likely Destroyed
..... Building on fire during sat. image acquisition
..... Building: Likely Severely Damaged

SATELLITE IMAGE REFERENCE



Damaged Buildings & Active Fire Industrial Building Area



River & Functional Bridge Minor Road & Cultivated Area

Map Scale for A3: 1:9,250

0 37.5 75 150 225 300 375 450 Meters

Satellite Data WorldView-1
Resolution 50 cm
Imagery Date 19 August 2008
Copyright Digital Globe (2008)
Source U.S. Department of State - HIU
Access Rules NextView "EULA" - 2008
Additional Imagery Formosat-2 (2m pansharpened)
Imagery Copyright NSPO 2008
Imagery Date 19 August 2008
GIS Data USGS, UNEP, UNOSAT
Damage Analysis UNOSAT
Projection Pulkovo 1995 GK Zone 8N
Datum Pulkovo 1995

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Damage Assessment with WorldView-1 & Formosat-2 Satellite Imagery Recorded on 19 August 2008

This atlas map presents a satellite-based damage assessment for the affected areas between Kekhvi and Tskhinvali, South Ossetia, Georgia following the armed conflict between Georgian and Russian military forces in August 2008. Damaged buildings have been identified with WorldView-1 and Formosat-2 satellite imagery acquired on 19 August 2008. The estimated number of affected buildings within the mapped extent of this atlas sheet is described in the damage summary box below. Affected buildings have been classified either as destroyed or severely damaged. An important preliminary finding of this satellite damage analysis is the observed heavy concentration of damages within clearly defined residential areas. Please note, this is an initial damage assessment and has not yet been independently validated on the ground. Please send additions/corrections to UNOSAT.

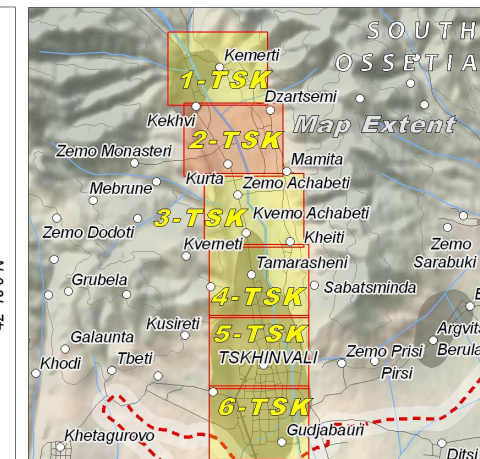
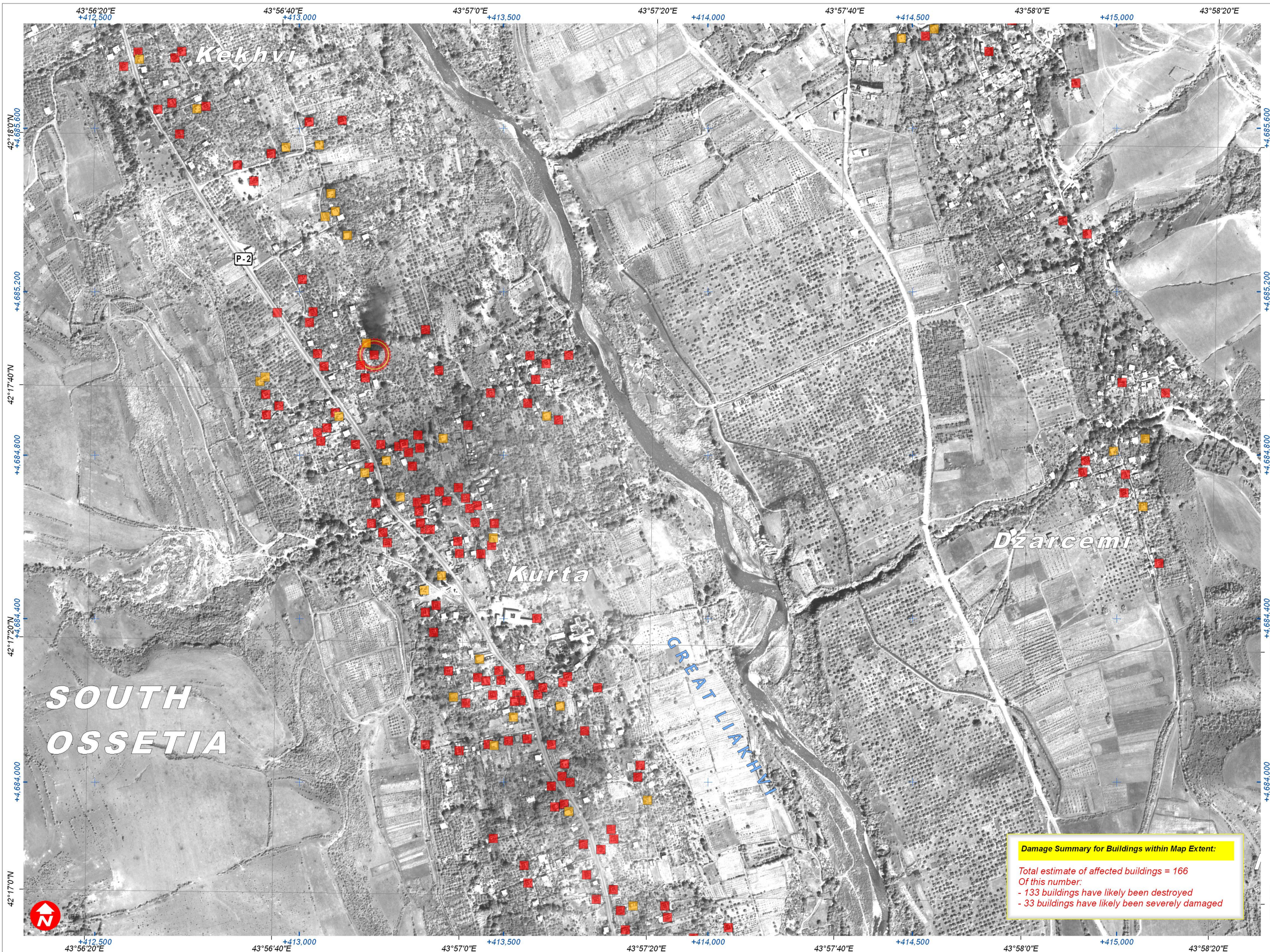


Fire & Armed Conflict 26 August 2008

Conflict



ATLAS SHEET: 2-TSK



Map Legend

..... Approximate South Ossetia Boundary

SATELLITE DAMAGE ASSESSMENT

Building:
..... Likely Destroyed
..... Building on fire during sat. image acquisition
..... Building: Likely Severely Damaged

SATELLITE IMAGE REFERENCE



Damaged Buildings & Active Fire Industrial Building Area



River & Functional Bridge Minor Road & Cultivated Area

Map Scale for A3: 1:9,250

0 37.5 75 150 225 300 375 450 Meters

Satellite Data WorldView-1
Resolution 50 cm
Imagery Date 19 August 2008
Copyright Digital Globe (2008)
Source U.S. Department of State - HIU
Access Rules NextView "EULA" - 2008
Additional Imagery Formosat-2 (2m pansharpened)
Imagery Copyright NSPO 2008
Imagery Date 19 August 2008
GIS Data USGS, UNEP, UNOSAT
Damage Analysis UNOSAT
Projection Pulkovo 1995 GK Zone 8N
Datum Pulkovo 1995

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Damage Summary for Buildings within Map Extent:

Total estimate of affected buildings = 166
Of this number:
- 133 buildings have likely been destroyed
- 33 buildings have likely been severely damaged

VILLAGE DAMAGE ATLAS: FROM KEKHVI TO TSKHINVALI, SOUTH OSSETIA, GEORGIA

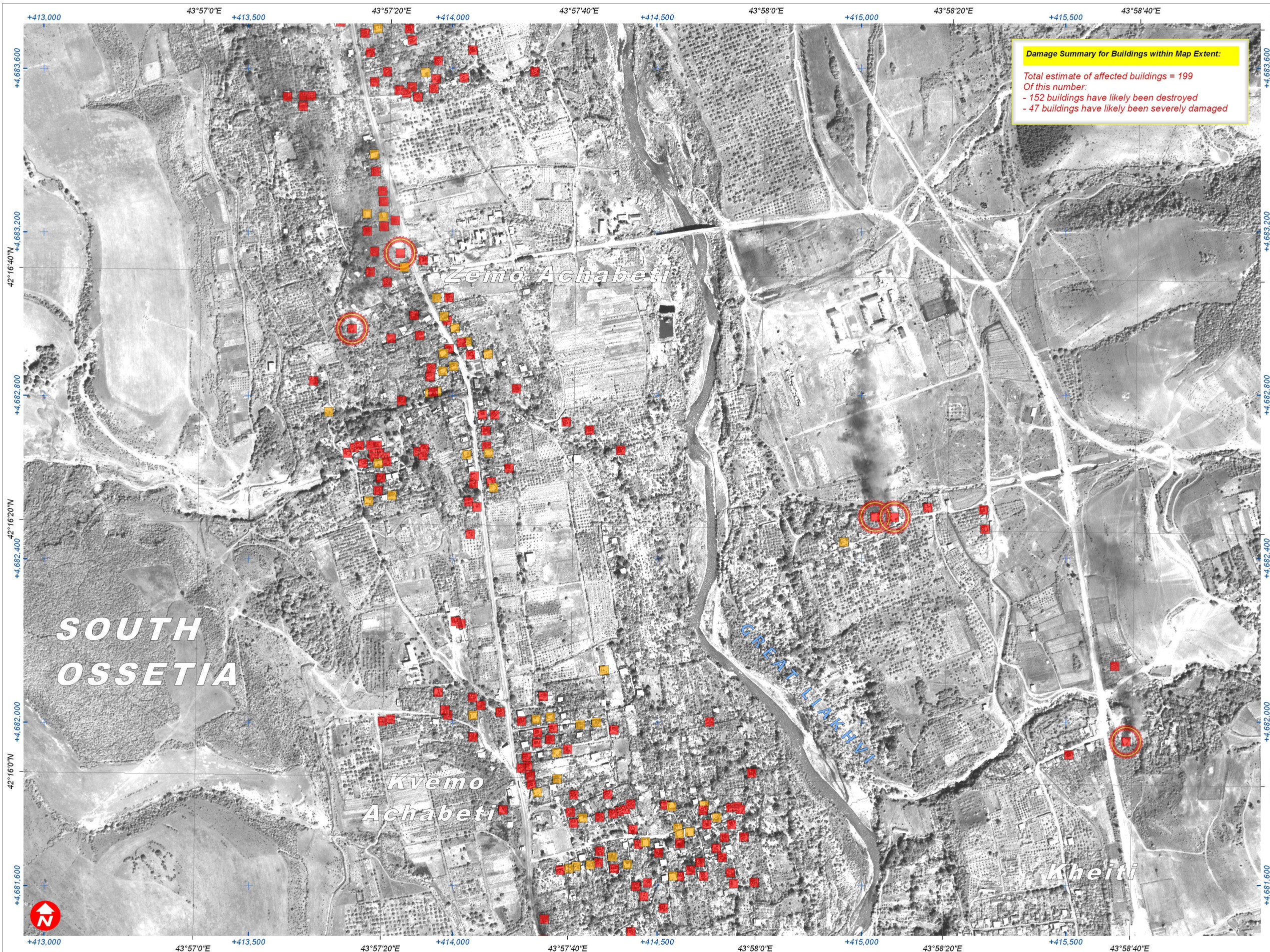
Damage Assessment with WorldView-1 & Formosat-2 Satellite Imagery Recorded on 19 August 2008

This atlas map presents a satellite-based damage assessment for the affected areas between Kekhvi and Tskhinvali, South Ossetia, Georgia following the armed conflict between Georgian and Russian military forces in August 2008. Damaged buildings have been identified with WorldView-1 and Formosat-2 satellite imagery acquired on 19 August 2008. The estimated number of affected buildings within the mapped extent of this atlas sheet is described in the damage summary box below. Affected buildings have been classified either as destroyed or severely damaged. An important preliminary finding of this satellite damage analysis is the observed heavy concentration of damages within clearly defined residential areas. Please note, this is an initial damage assessment and has not yet been independently validated on the ground. Please send additions/corrections to UNOSAT.



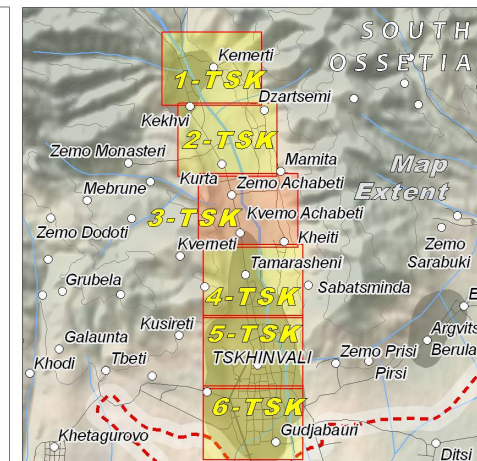
Fire & Armed Conflict 26 August 2008

ATLAS SHEET: 3-TSK



Damage Summary for Buildings within Map Extent:

Total estimate of affected buildings = 199
Of this number:
- 152 buildings have likely been destroyed
- 47 buildings have likely been severely damaged



Map Legend

..... Approximate South Ossetia Boundary

SATELLITE DAMAGE ASSESSMENT

Building:
 ■ Likely Destroyed
 ■ Building Likely Severely Damaged
 ○ Building on fire during sat. image acquisition

SATELLITE IMAGE REFERENCE

Damaged Buildings & Active Fire Industrial Building Area

River & Functional Bridge Minor Road & Cultivated Area

Map Scale for A3: 1:9,250

0 37.5 75 150 225 300 375 450 Meters

Satellite Data WorldView-1
 Resolution 50 cm
 Imagery Date 19 August 2008
 Copyright Digital Globe (2008)
 Source U.S. Department of State - HIU
 Access Rules NextView "EULA" - 2008
 Additional Imagery Formosat-2 (2m pansharpened)
 Imagery Copyright NSPO 2008
 Imagery Date 19 August 2008
 GIS Data USGS, UNEP, UNOSAT
 Damage Analysis UNOSAT
 Projection Pulkovo 1995 GK Zone 8N
 Datum Pulkovo 1995

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VILLAGE DAMAGE ATLAS: FROM KEKHVI TO TSKHINVALI, SOUTH OSSETIA, GEORGIA

Damage Assessment with WorldView-1 & Formosat-2 Satellite Imagery Recorded on 19 August 2008

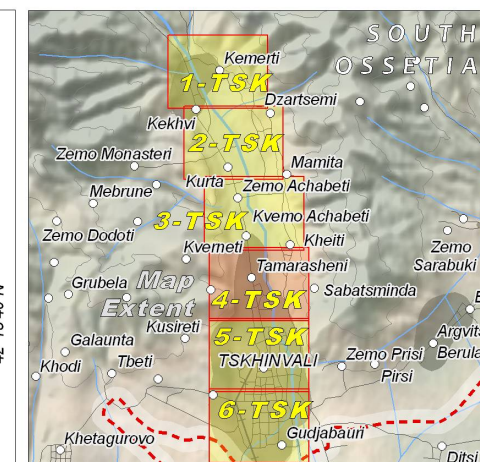
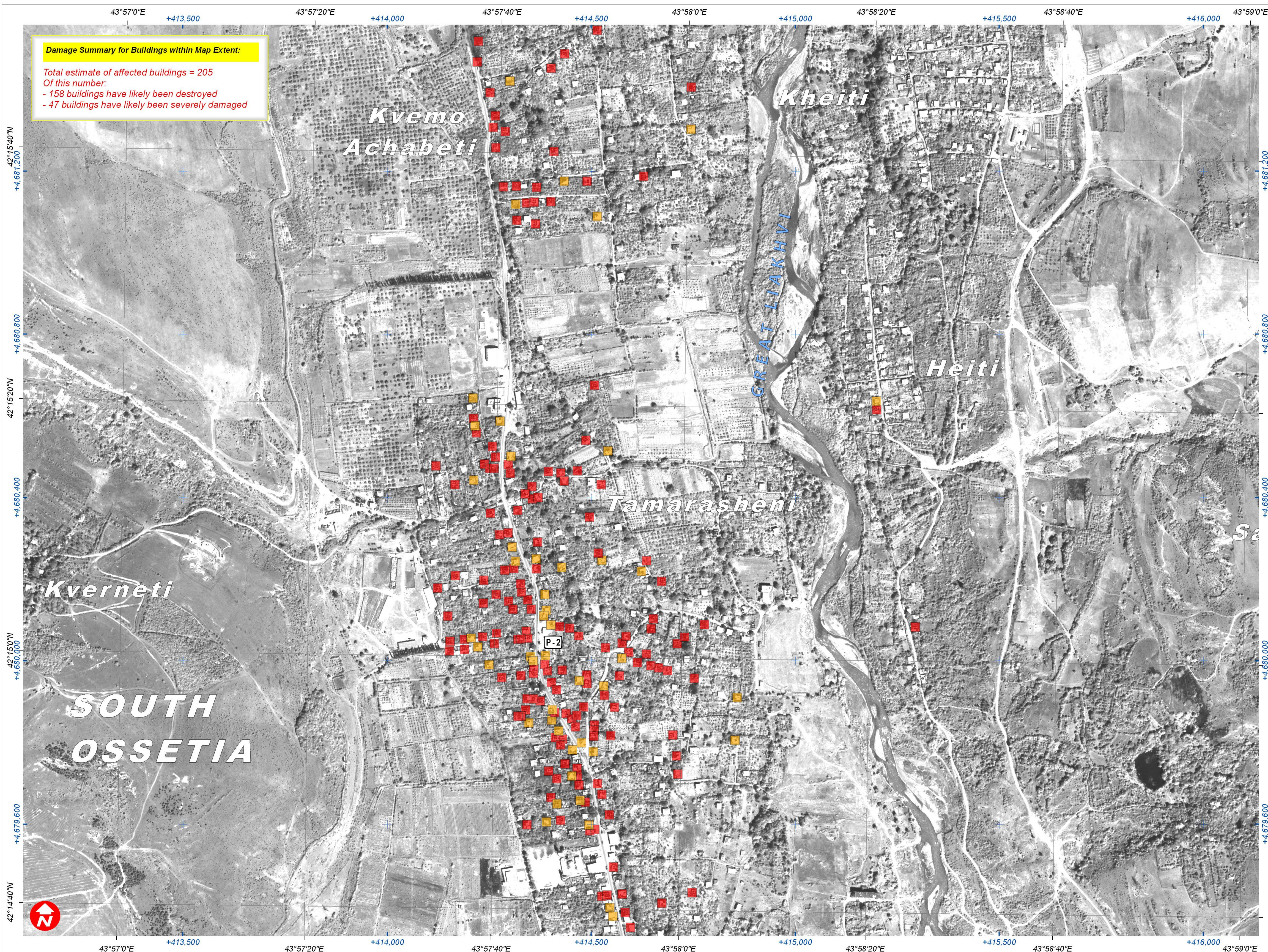
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Fire & Armed Conflict 26 August 2008



ATLAS SHEET: 4-TSK



Map Legend

----- Approximate South Ossetia Boundary

SATELLITE DAMAGE ASSESSMENT

Building:
■ Likely Destroyed
■ Building: Likely Severely Damaged
○ Building on fire during sat. image acquisition

SATELLITE IMAGE REFERENCE



Damaged Buildings & Active Fire Industrial Building Area



River & Functional Bridge Minor Road & Cultivated Area

Map Scale for A3: 1:9,250

0 37.5 75 150 225 300 375 450 Meters

Satellite Data WorldView-1
Resolution 50 cm
Imagery Date 19 August 2008
Copyright Digital Globe (2008)
Source U.S. Department of State - HIU
Access Rules NextView "EULA" - 2008
Additional Imagery Formosat-2 (2m pansharpened)
Imagery Copyright NSPO 2008
Imagery Date 19 August 2008
GIS Data USGS, UNEP, UNOSAT
Damage Analysis UNOSAT
Projection Pulkovo 1995 GK Zone 8N
Datum Pulkovo 1995

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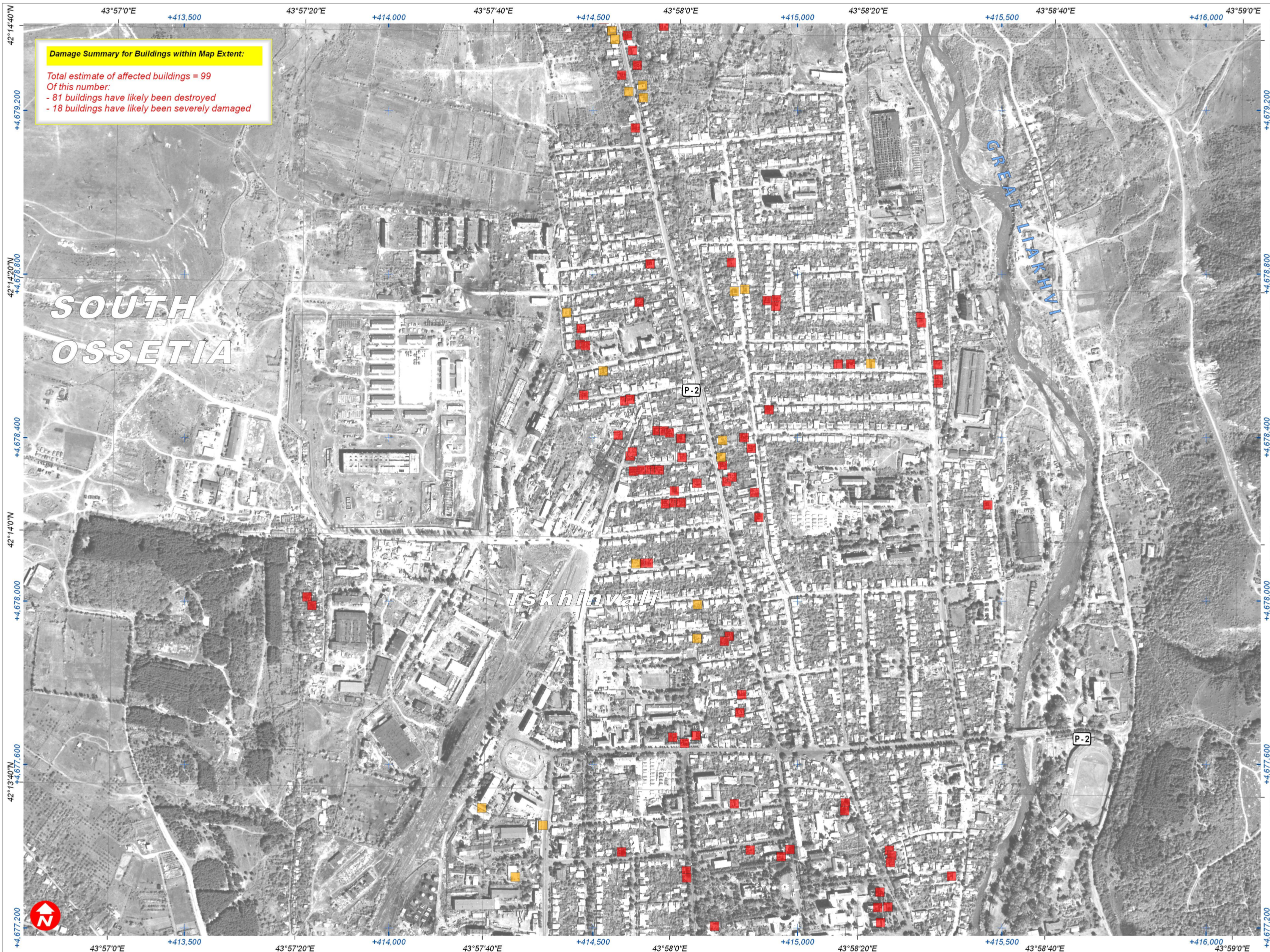
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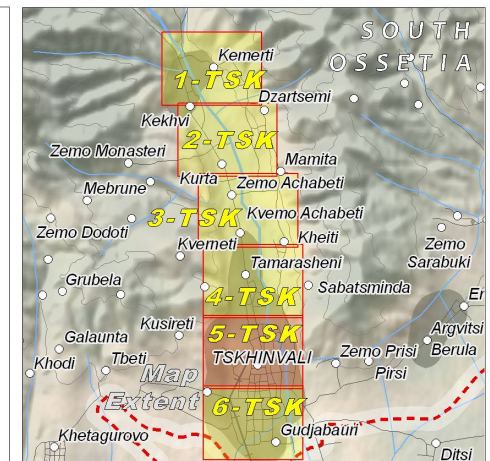


Fire & Armed Conflict 26 August 2008
ATLAS SHEET: 5-TSK



Damage Summary for Buildings within Map Extent:

Total estimate of affected buildings = 99
Of this number:
- 81 buildings have likely been destroyed
- 18 buildings have likely been severely damaged



Map Legend

..... Approximate South Ossetia Boundary

SATELLITE DAMAGE ASSESSMENT

Building:
..... Likely Destroyed
..... Building on fire during sat. image acquisition
..... Building: Likely Severely Damaged

SATELLITE IMAGE REFERENCE



Damaged Buildings & Active Fire Industrial Building Area



River & Functional Bridge Minor Road & Cultivated Area

Map Scale for A3: 1:9,250

0 37.5 75 150 225 300 375 450 Meters

Satellite Data WorldView-1
Resolution 50 cm
Imagery Date 19 August 2008
Copyright Digital Globe (2008)
Source U.S. Department of State - HIU
Access Rules NextView "EULA" - 2008
Additional Imagery Formosat-2 (2m pansharpened)
Imagery Copyright NSPO 2008
Imagery Date 19 August 2008
GIS Data USGS, UNEP, UNOSAT
Damage Analysis UNOSAT
Projection Pulkovo 1995 GK Zone 8N
Datum Pulkovo 1995

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VILLAGE DAMAGE ATLAS: FROM KEKHVI TO TSKHINVALI, SOUTH OSSETIA, GEORGIA

Damage Assessment with WorldView-1 & Formosat-2 Satellite Imagery Recorded on 19 August 2008

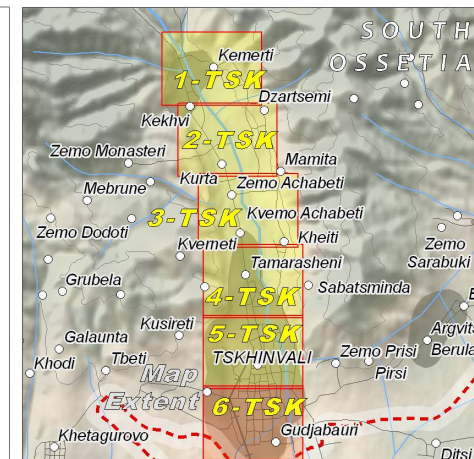
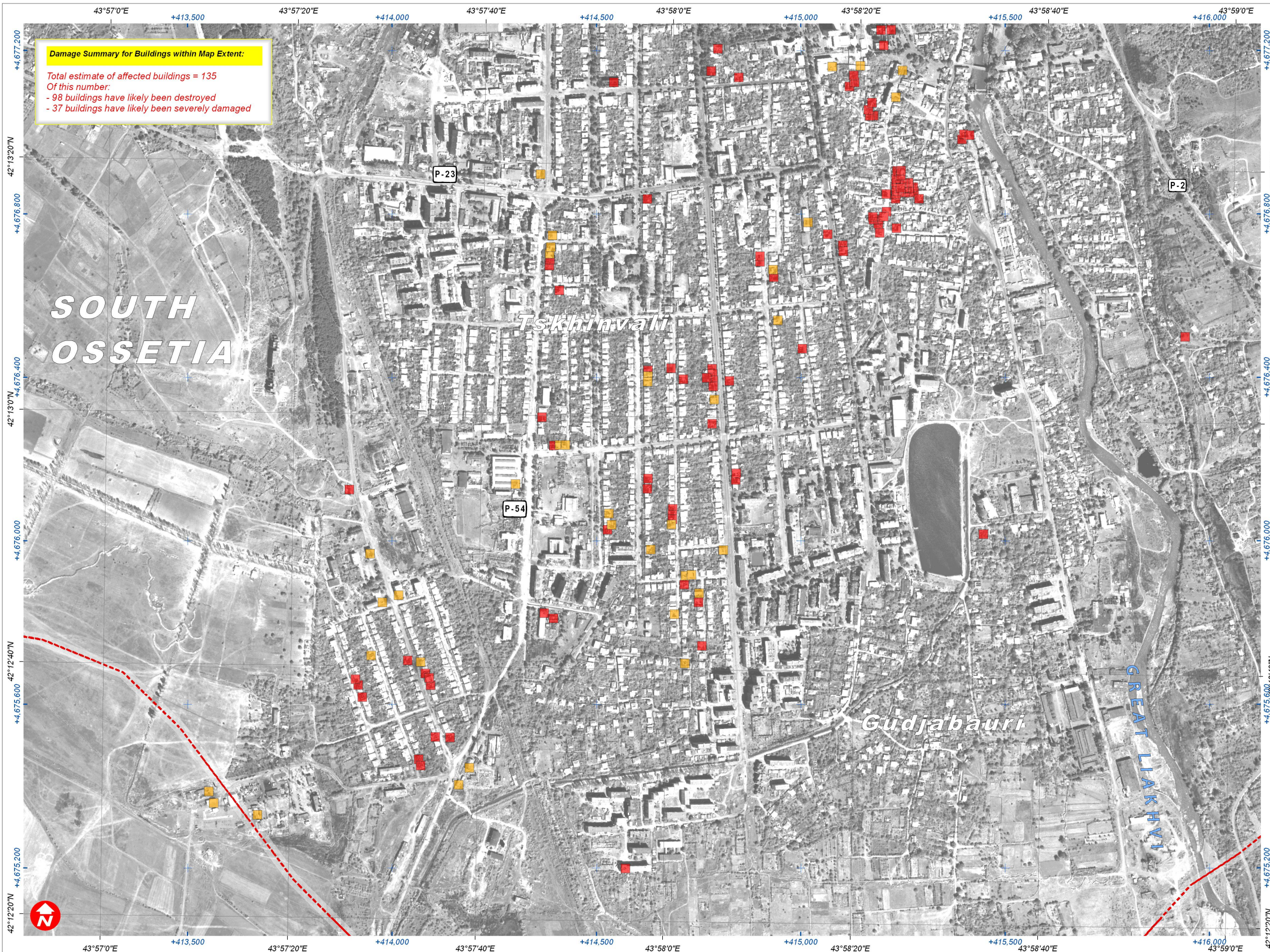
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Fire & Armed Conflict 26 August 2008



ATLAS SHEET: 6-TSK



Map Legend

..... Approximate South Ossetia Boundary

SATELLITE DAMAGE ASSESSMENT

Building:
..... Likely Destroyed
..... Building on fire during sat. image acquisition
..... Building: Likely Severely Damaged

SATELLITE IMAGE REFERENCE



Map Scale for A3: 1:9,250

0 37.5 75 150 225 300 375 450 Meters

Satellite Data WorldView-1
Resolution 50 cm
Imagery Date 19 August 2008
Copyright Digital Globe (2008)
Source U.S. Department of State - HIU
Access Rules NextView "EULA" - 2008
Additional Imagery Formosat-2 (2m pansharpened)
Imagery Copyright NSPO 2008
Imagery Date 19 August 2008
GIS Data USGS, UNEP, UNOSAT
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Projection Pulkovo 1995 GK Zone 8N
Datum Pulkovo 1995

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