

unitar

United Nations Institute for Training and Research

1st Joint Project Team Meeting for Sentinel Asia STEP 3

Olivier van Damme
Programme Officer
UNOSAT

Bangkok, 27 November 2013

What is UNITAR?

- The mission of the United Nations Institute for Training and Research is to deliver **innovative training** and conduct research on **knowledge systems** to develop the capacity of the UN and its Member States
- Since its inception in 1965: world wide network of partnerships; unique expertise, knowledge, and experience; **40,000** professionals trained each year in the field of governance, local development, environmental preservation, diplomacy, ...

knowledge, international, participatory approach, r
diversity, innovation, knowledge sharing, research
bin. transfer, expertise, new technology
learning by doing, network
-hip, skills building
-ing, ext

UNOSAT

- UNOSAT is the Operational Satellite Applications Programme of UNITAR – entirely dedicated to researching and applying solutions in geospatial information and integrated systems (GIS, navigation, geopositioning)
- Launched in 2000 as a project, evolved into a mature UN service with global outreach supported by a network of partners worldwide
- UNOSAT means over 1000 maps/analyses since 2000, tasking in over 200 emergencies & conflicts; training of about 1,500 professionals over last 10 years with 140 in 2012, and 200 in 2013.



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diversity, innovation, knowledge sharing, research
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-hip, skills building
-ing, ext



MAPPING

Analysis, Applications,
Research, & in-field support



PROJECTS & CAPACITY DEVELOPMENT

Technical Support, Training,
Capacity Development
(technical and institutional
levels)

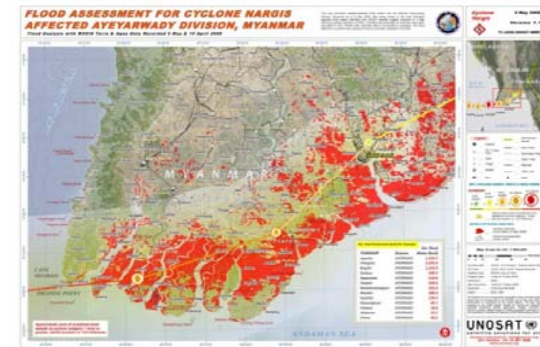


knowledge, innovation, knowledge, research, diversity, innovation, knowledge, transfer, expertise, new technology, learning by doing, network, ship, skills building, training, exch

SYSTEM AREAS

Humanitarian Aid and Relief Coordination

- Crisis & Situational Mapping
- Damage assessment



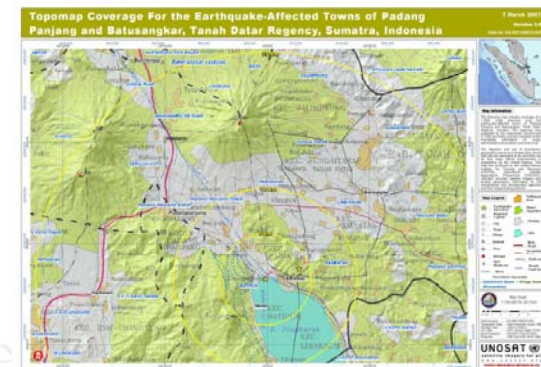
Human Security

- Monitoring
- Human Rights
- Safety and Security



Territorial Planning and Monitoring

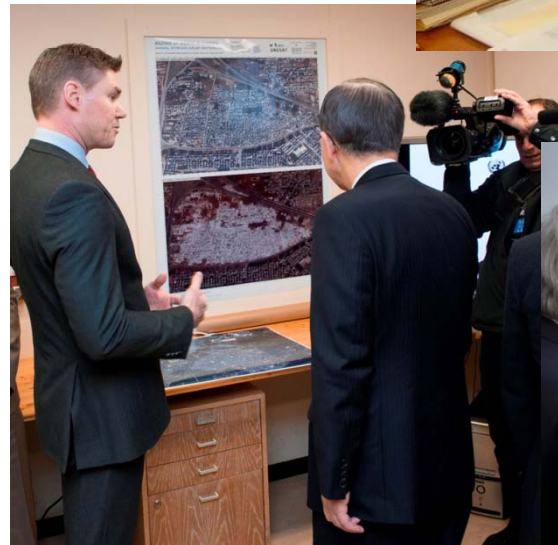
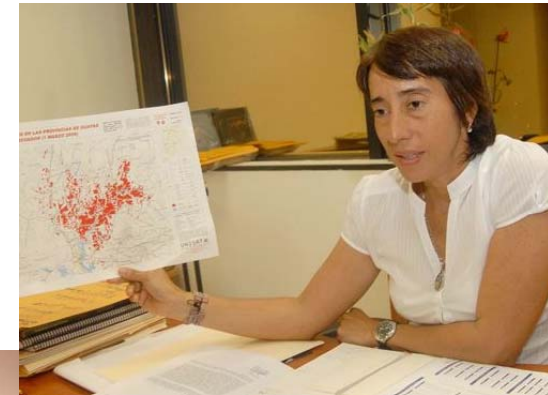
- Capacity Development & Technical Assistance
- Training and Knowledge Transfer



knowledge, innovation, diversity, inclusion, transfer, learning by doing, research, technology, network, skills building, leadership, training, exchange

Wide range of users - examples

- In-field early responders
- Government ministers and decision makers
- Top UN management



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network
building
building, ext...

How does UNOSAT Support Humanitarian Operations?:

1. UNOSAT Receives request from UN Agency for Support

2. Satellites collect data over disaster area



3. UNOSAT Staff analyze satellite data

4. UNOSAT Staff Produce maps, reports & databases for field workers



Caprivi, Namibia



Port-Au-Prince, Haiti



Bihar, India



Mogadishu, Somalia

Sources of satellite imagery

- International Charter Space and Major Disasters
- Free data
- Commercial providers
- Bilateral agreements with Member States

UNOSAT and the International Charter Space and Major Disasters



- Free satellite imagery during major natural and technological disasters
- UNOSAT is UN User Intermediary
- UNOSAT's Rapid Mapping service provides satellite maps and disaster GIS data to humanitarian community at no cost

Sources of satellite imagery

- International Charter Space and Major Disasters
- Free data
- Commercial providers
- Bilateral agreements with Member States

Firefox UNOSAT LIVE map

https://unosatgis.cern.ch/webmap/UNOSAT_LIVE/Operative/?config=config_UNDAC.xml

Most Visited Getting Started Suggested Sites UNITAR-UNOSAT Web Slice Gallery Wikipedia UNITAR Project Monit... HootSuite UNITAR Virtual Learni... GDACS | Satellite Map... UNOSAT LIVE map

unitar **UNDAC Mission Map**
UNOSAT LIVE Map (version 3.4)

Basemaps AOI UN-ASIGN

Tabango Consuegra Villaba Capocoran Tunga Barugo San Miguel Tacloban Alangalang Palompon Ormoc Merida Isab... Palompon Ormoc Merida Burauen Julita Dulag

UNOSAT UN

Layer Control

Layer Visibility

- UNDAC assign (popup)
- World Transportation
- World Reference Overlay
- World Boundaries and Places
- Haiyan storm track (JTWC)
- USG Damage Assessment 09I
- USG Damage Assessment 10I
- OSM roads

Legend

- Flood extent - 09NOV13 e1100 (USG)
- Cloud Cover - 09NOV13 e1800 (USG)
- Catastrophic Damage - 09NOV13 e1800 (L)
- Extensive Damage - 09NOV13 e1800 (USG)
- Moderate Damage - 09NOV13 e1800 (USG)

10 km 5 mi

Latitude: 11.5113 Longitude: 124.9434 Northing: 1267435 m Easting: 13908637 m

POWERED BY esri

EN 23:54 11/11/2013

knowledge, international, participatory approach, diversity, innovation, knowledge sharing, research, transfer, expertise, new technology, learning by doing, network, ship, skills building, etc

Firefox UNOSAT LIVE map

https://unosatgis.cern.ch/webmap/UNOSAT_LIVE/Operative/?config=config_UNDAC.xml

Most Visited Getting Started Suggested Sites UNITAR-UNOSAT Web Slice Gallery Wikipedia UNITAR Project Monit... HootSuite UNITAR Virtual Learn... GDACS | Satellite Map... UNOSAT LIVE map

unitar UNDAC Mission Map UNOSAT LIVE Map (version 3.4)

Basemaps AOI UN-ASIGN

Philippine Sea

UNOSAT UN

Layer Control

Layer Visibility

- World Transportation
- World Reference Overlay
- World Boundaries and Places
- Haiyan storm track (JTWC)
- USG Damage Assessment 09I
- USG Damage Assessment 10I

Zoom to Transparency

Move up Move down Expand All Layers Collapse All Layers Description

Legend

- Damage - 10I
- CATA
- EXTENSIVE
- LIMITED
- MODERATE
- CloudCover - 10NOV13_e1900 (USG)

0% 50% 100%

1 km 1 mi

Latitude: 11.2078 Longitude: 125.0506 Northing: 1255683 m Easting: 13920579 m

POWERED BY esri

EN 07:42 12/11/2013

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 bin. transfer, expertise, new technology
 learning by doing, network
 ship, skills building, ext



GDACS

Satellite Mapping Coordination System | SMCS



Global Disaster Alert and Coordination System

[Logout/User Settings](#) [About](#)

- HOME
- EVENT
- UPLOAD FOOTPRINT

▼ TC20131108PHL

Coordinator: UNOSAT

Requestor: UN-OCHA

Type: TC

Country: PHL

Date: 2013-11-08

UNOSAT was requested by UN OCHA to activate the Space Charter for Typhoon Haiyan

Comment:

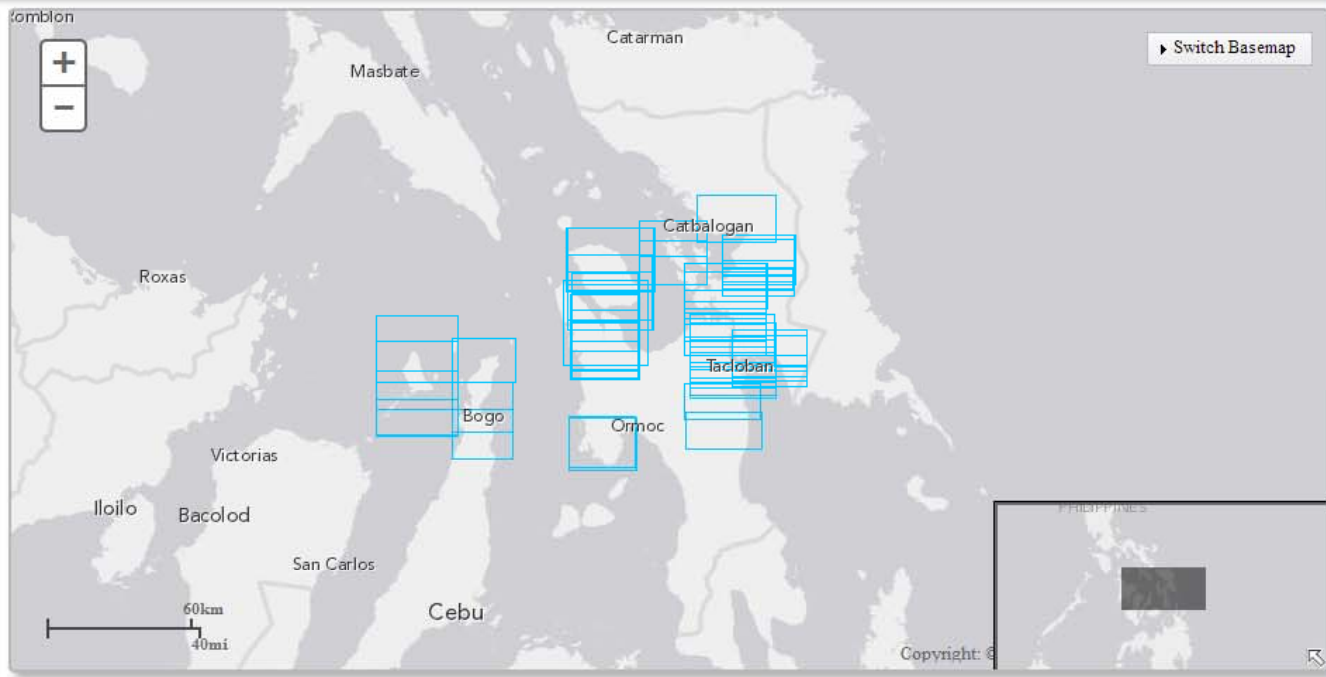
SpaceCharter:

Status: Active Event

Glide Number: TC20131108PHL

Activate Number: TC20131108PHL

▶ CW20131105ATA



Windows taskbar showing various application icons (Internet Explorer, Firefox, Word, etc.) and system tray information: EN, 23:23, 11/11/2013.

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HOME EVENT UPLOAD FOOTPRINT

Footprint KML File Upload

Choose File: No file chosen

Comment:

Switch Basemap

- Imagery
- Imagery with Labels
- Streets
- Topographic
- Terrain with Labels
- Light Gray Canvas

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Emergency
Response

Situational
Awareness

Damage
Assessment

OVERVIEW OF AL-EHSA IDP CAMP, SA'ADAH, YEMEN

ANALYSIS SERIES OF ENVIRONMENTAL SATELLITE IMAGERY ACQUIRED ON 3 OCTOBER 2009



Satellite Imagery Date: 3 October 2009 Digital File Path: \\...
 Satellite Data: WorldView-2 Report Date: 30 October 2009
 Resolution: 3.1 - 6.1 meters Report Date: 30 October 2009 Report Date: 30 October 2009
 Source: US Dept of State (DOD) Resolution: 1024 x 1024 - 1024 bit

Map scale for A4: 1:1,100 Data from source: 140 digital meters
 0 12.5 25 30 Meters

The creation and use of this satellite imagery series and related data series have been authorized by the United States Government for use by the United States Government and its contractors. UNOSAT is a project of the United Nations Institute for Training and Research (UNITAR), providing satellite imagery & related geographic information, research and analysis to UN member states, UN development agencies & their implementing partners.

unitar **UNOSAT**
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Floods

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-ing, ext



Thailand floods 2011, Copyright DigitalGlobe FirstLook

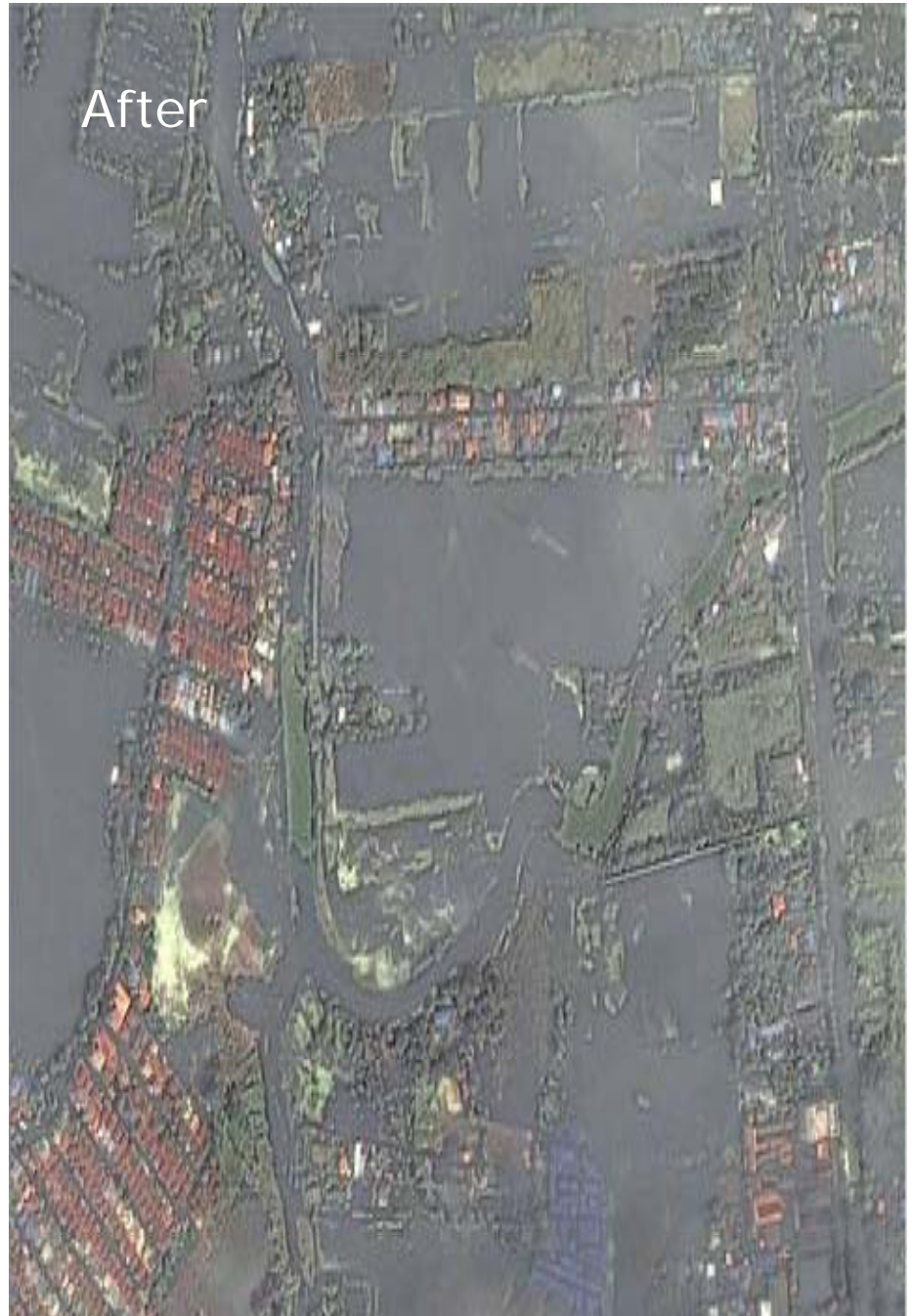


Thailand floods 2011, Copyright DigitalGlobe FirstLook

Before



After



Thailand floods 2011, Copyright DigitalGlobe FirstLook

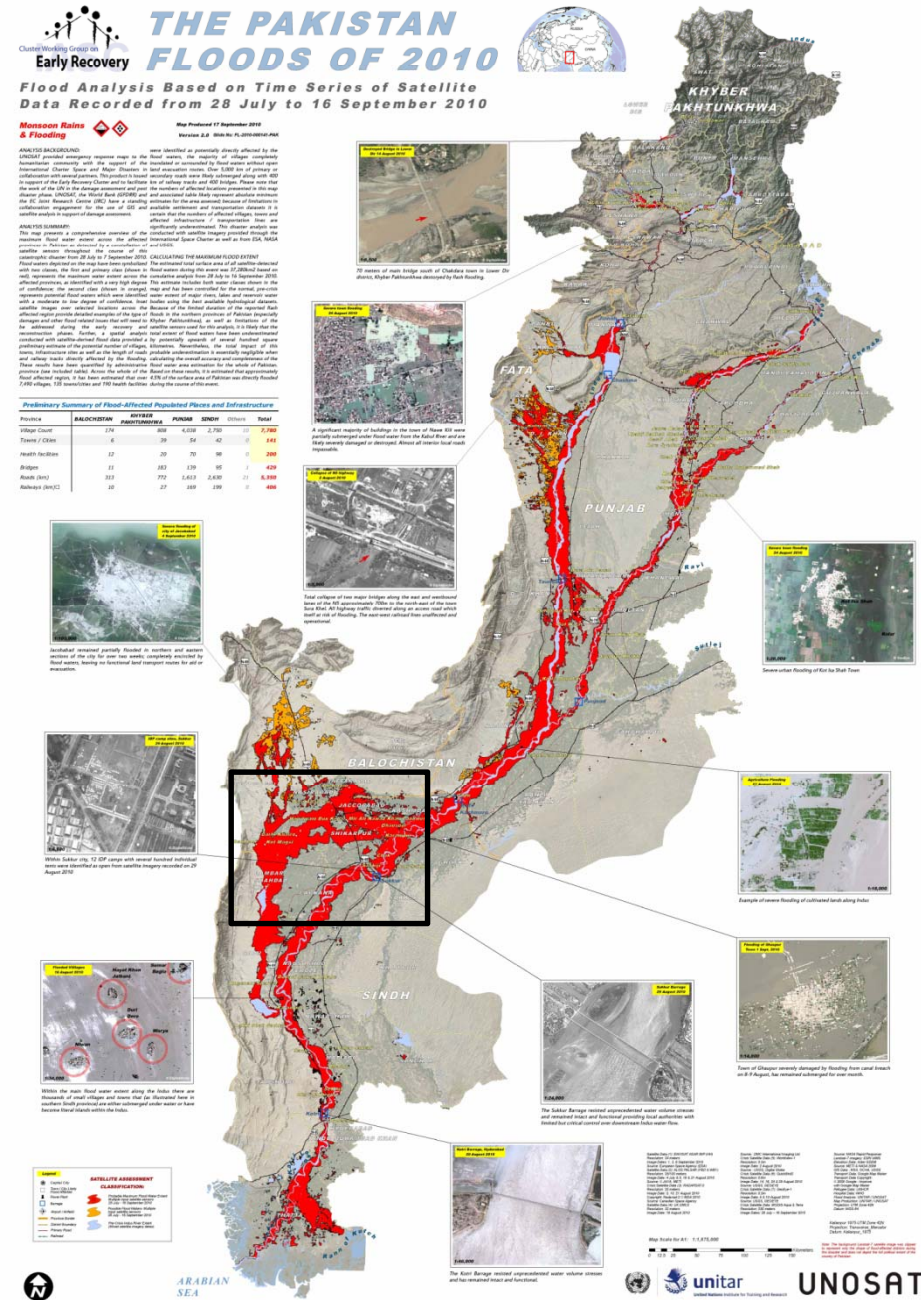
Pakistan flooding 2010

Natural aspects

- Event start: End of July
- Heavy rainfall in northern Pakistan (Monsoon)
- Flood extents from Swath valley to the Arabic Sea
- More than 37.000 Km² of inundated land
- Precipitated Water > Carrying capacity of Indus River

Operational aspects

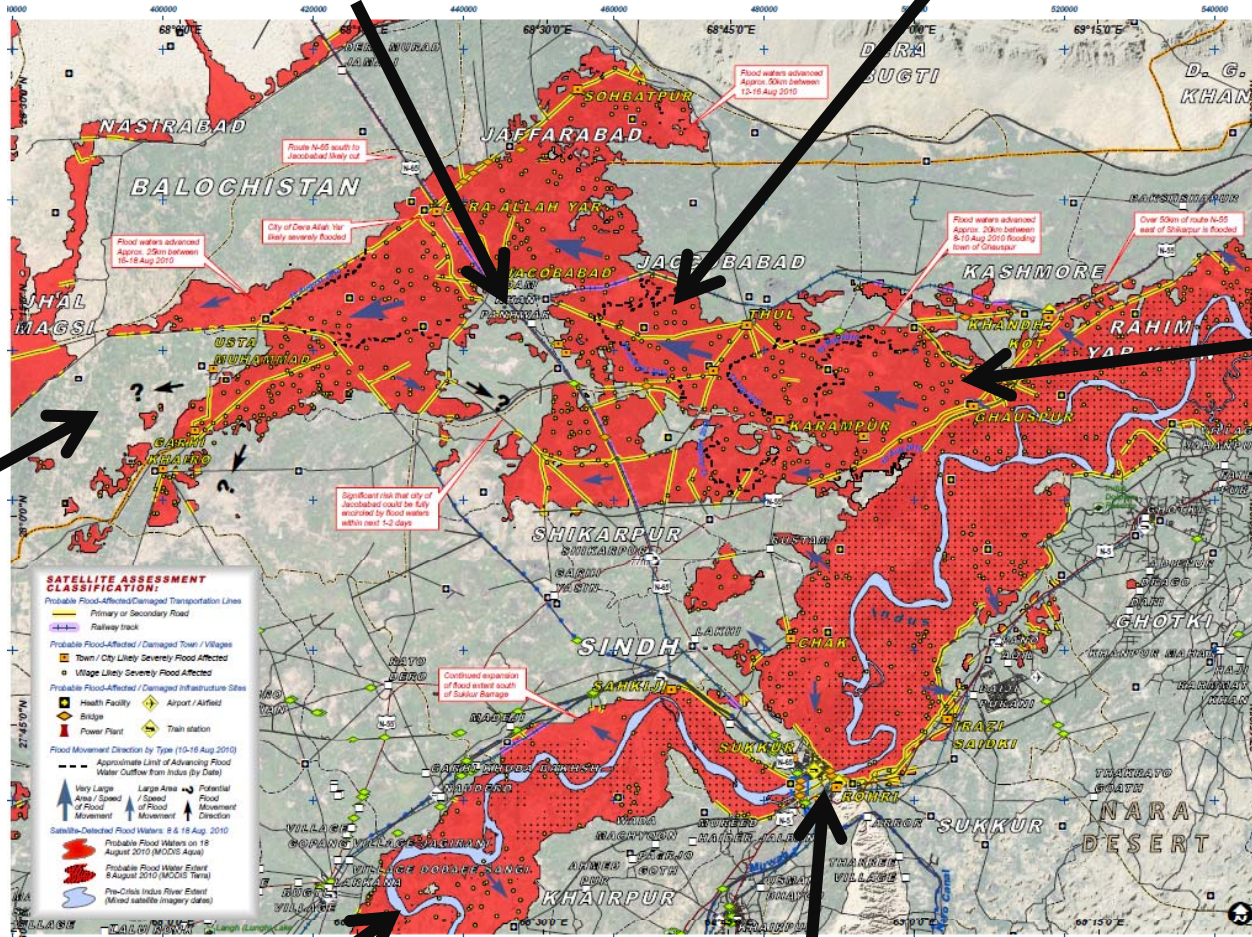
- Multiscale analysis
 - MODIS, Radar, Optical
- Different scale products delivered to end users



Pakistan flooding 2010 – Human impact (18th August)

Progress within 10 days
120 – 150km

Large Cities like Jacobabad are affected

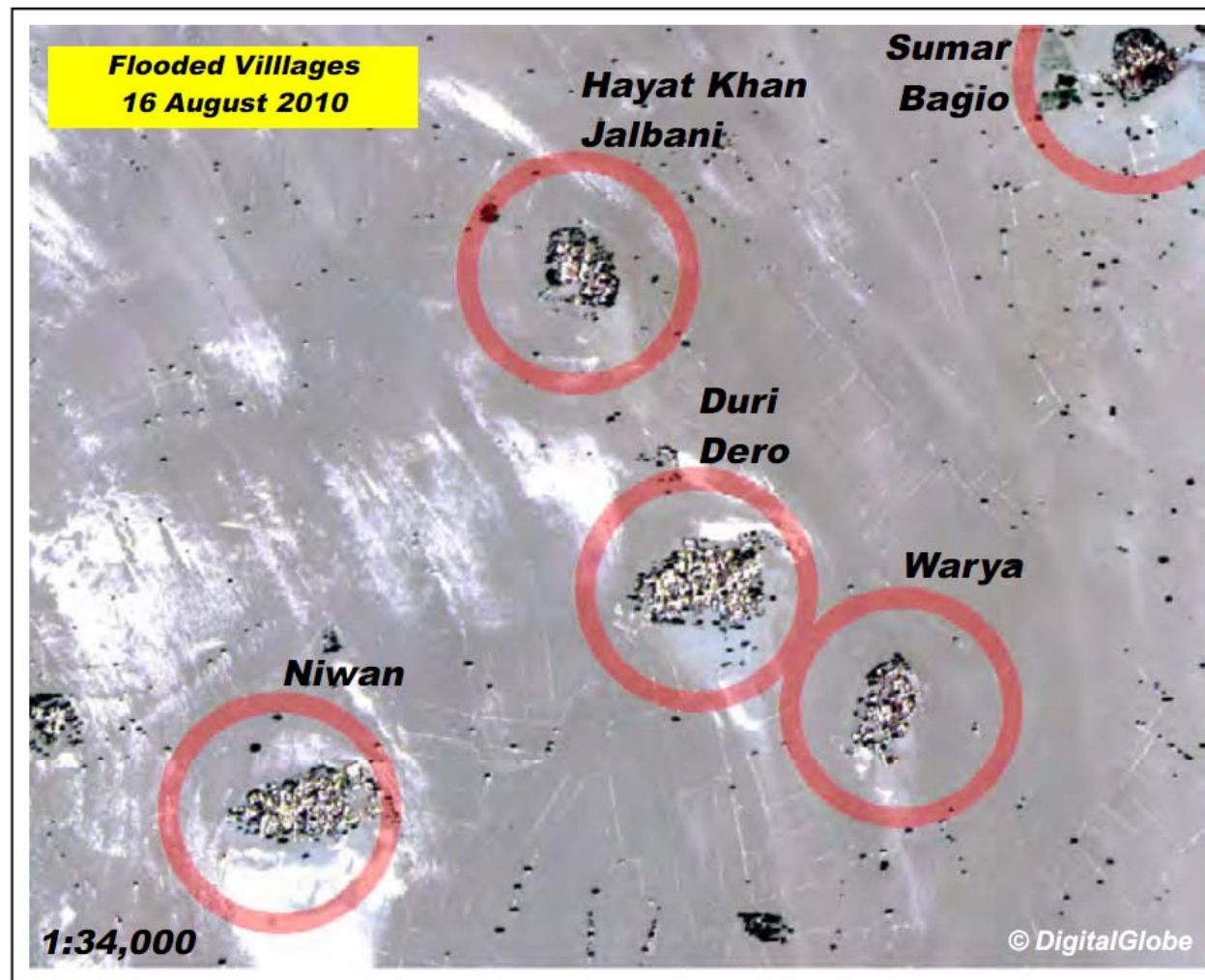


Flood prognosis for the next day

Start of Water Overflow

Flooding further downstream

Sukkur Barrage causes retaining water further upstream



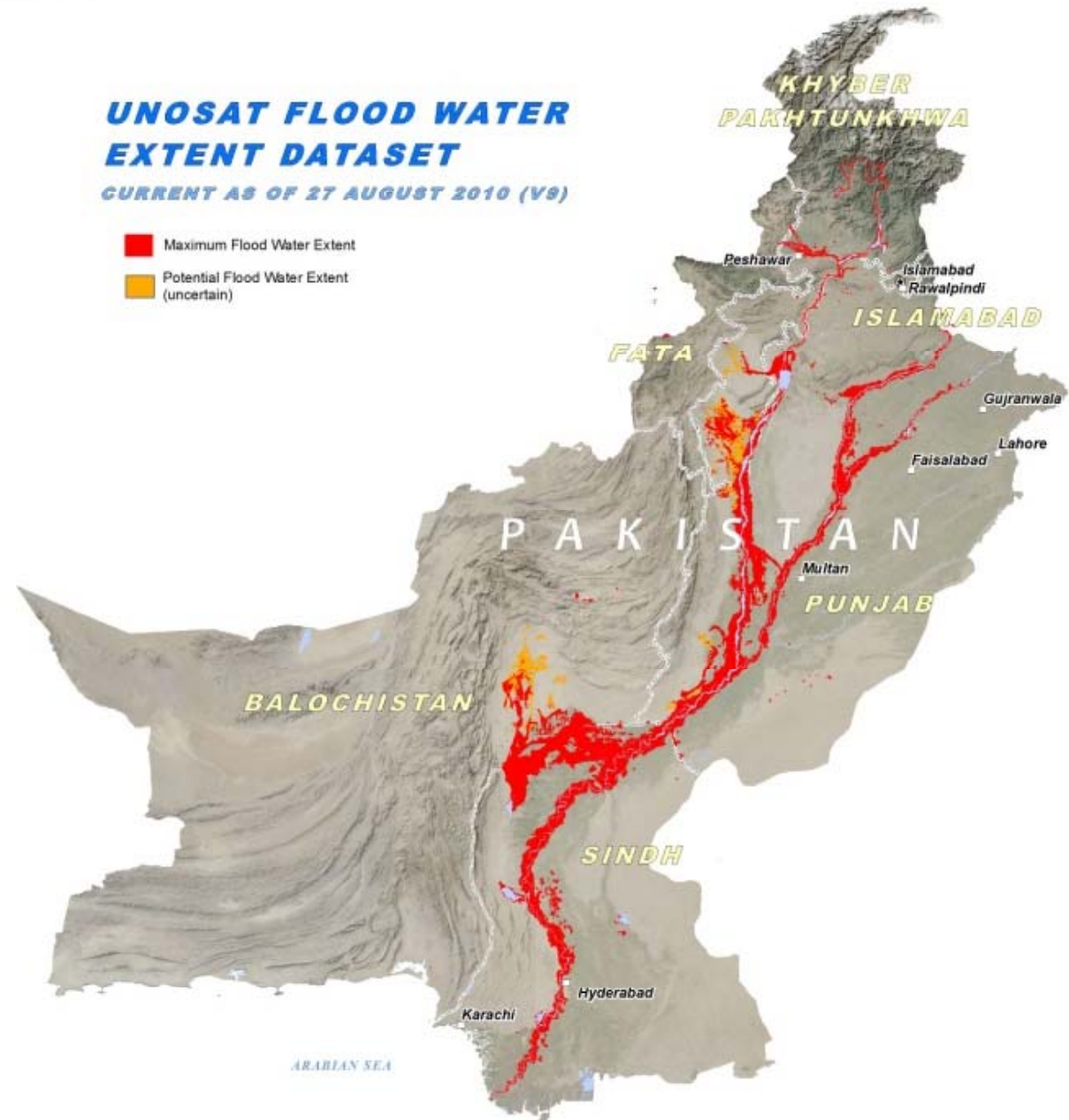
Within the main flood water extent along the Indus there are thousands of small villages and towns that (as illustrated here in southern Sindh province) are either submerged under water or have become literal islands within the Indus.

■ Cumulative Maximum Flood Water Extent

- Combined all flood water extents from multiple dates and locations into a single dataset, and continuously updated as flood waters moved further south inundating new areas over one month after start of disaster event

- UNOSAT Satellite-derived maximum flood water extent (July –October 2010) = 37,500km² (controlled for normal pre-flood water extent of rivers, reservoirs, lakes, etc.)

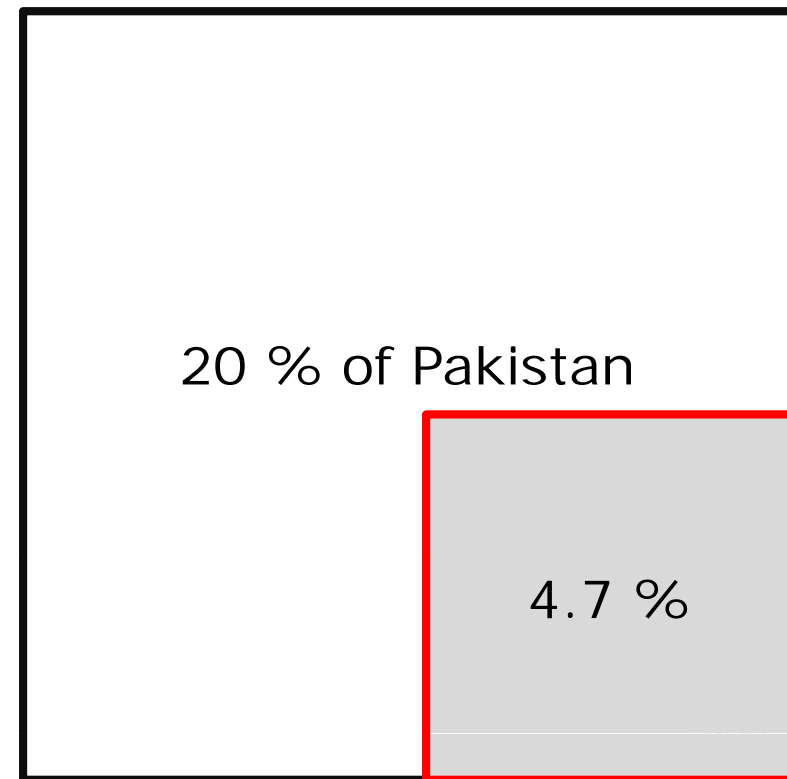
- Total area of Pakistan = 796,662km²



Conflict between Media, Government and Satellite-Based Estimates of the Pakistan Flooding Extent:

- "20% or 1/5th of Pakistan"
- "As large as England"
- "approximately 130.000 Km²"

Total flood inundated area, within 5 weeks, is according to UNOSAT analysis **4.7%** of the country.



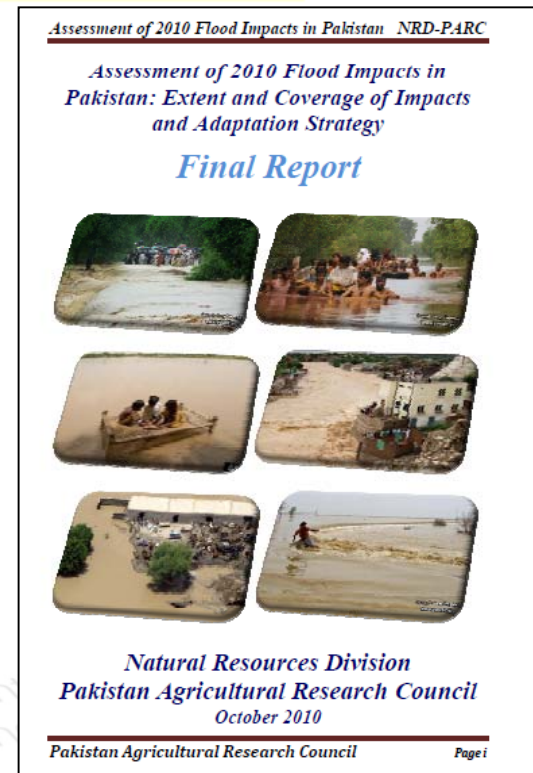
Relative comparison of inundated area

This is Dr. Bashir Ahmad from Pakistan Agriculture Research Council (PARC), Islamabad.

Thanks for providing the UNOSAT maps , its flood extent and all GIS files.

Flood Damage Assessment Cell of Pakistan Agriculture Research Council (PARC), Islamabad has Prepared "Flood Damage Assessment Report " which also covers flood impacts in Pakistan: Extent and Coverage of Impacts and Adaptation Strategy". In stead of developing new flood extent maps, flood extent of UNOSAT has been used which was found quite comprehensive, accurate, updated and was covering the whole flooded area. UNOSAT work is highly valuable, reliable and dependable and its sharing is highly appreciated. We have verified many of its parts in the field and find it accurate.

Dr. Bashir Ahmad
Director (Environment)
Natural Resources Division
Pakistan Agricultural Research Council
G-5/1, Islamabad, Pakistan



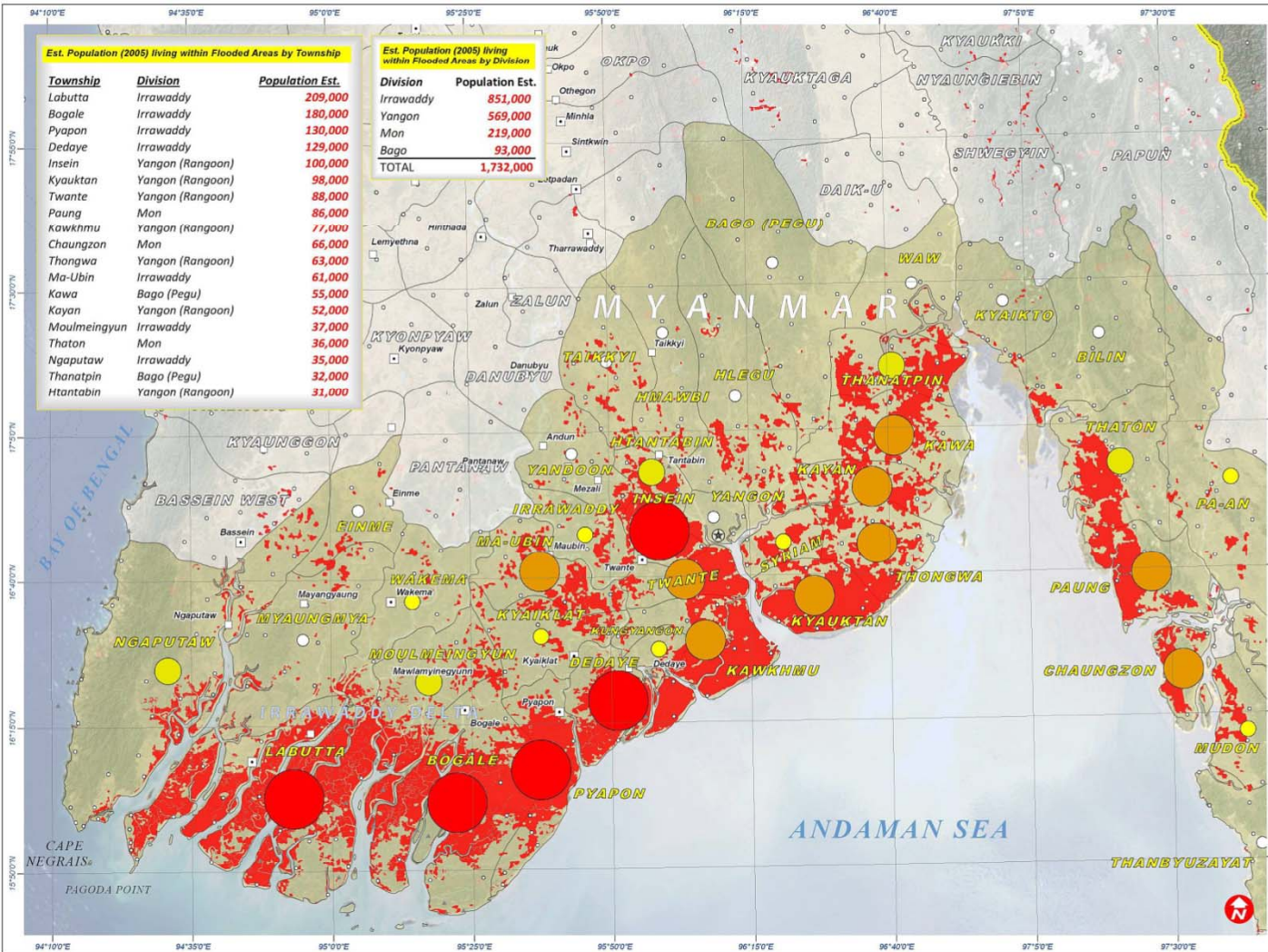
ESTIMATED TOTAL POPULATION LIVING WITHIN FLOOD-AFFECTED AREAS, MYANMAR

Flood Analysis with MODIS Terra & Aqua Data Recorded 5 May & 15 April 2008; and LandScan 2005

This map provides an estimate of those potentially-affected people living directly within flooded areas of southern Myanmar. Red areas shown in the map represent standing flood waters identified from MODIS satellite imagery acquired on 5 May 2008 at a spatial resolution of 250m. Population estimates have been aggregated by township using the LandScan 2005 database. This flood detection is a preliminary analysis & has not yet been validated in the field.



Cyclone Nargis 6 May 2008
Version 1.2
TC-2008-000057-MMR



Township	Division	Population Est.
Labutta	Irrawaddy	209,000
Bogale	Irrawaddy	180,000
Pyapon	Irrawaddy	130,000
Dedaye	Irrawaddy	129,000
Insein	Yangon (Rangoon)	100,000
Kyauktan	Yangon (Rangoon)	98,000
Twante	Yangon (Rangoon)	88,000
Paung	Mon	86,000
kawkhmu	yangon (kangoon)	77,000
Chaungzon	Mon	66,000
Thongwa	Yangon (Rangoon)	63,000
Ma-Ubin	Irrawaddy	61,000
Kawa	Bago (Pegu)	55,000
Kayan	Yangon (Rangoon)	52,000
Moulmeingyun	Irrawaddy	37,000
Thaton	Mon	36,000
Ngaputaw	Irrawaddy	35,000
Thanatpin	Bago (Pegu)	32,000
Htantabin	Yangon (Rangoon)	31,000

Division	Population Est.
Irrawaddy	851,000
Yangon	569,000
Mon	219,000
Bago	93,000
TOTAL	1,732,000



Legend

- International Border
- Capital
- City / Large Town
- Town
- Village

SATELLITE FLOOD ANALYSIS

- Satellite-Detected Flood Waters (5 May 2008)

EST. POPULATION IN FLOODED AREAS

Townships with significant flood waters are listed in yellow

- 100,001 - 208,998
- 25,001 - 100,000
- 10,001 - 25,000
- 200 - 10,000

EST. CYCLONE NARGIS TRACK & WIND SPEED

CATEGORY	64-82 kts/hr	83-85 kts/hr	83-113 kts/hr	114-135 kts/hr
1	1	2	3	4

Map Scale for A3: 1:1,200,000

0 5 10 20 30 40 50 Kilometers

Cyclone Data NOAA, Un of Hawaii, Tropical Storm Risk
GIS Data USGS, NGA, ESRI, ResponderKeyobts
Population Data LandScan 2005
Satellite Data MODIS-Aqua & Terra
Imagery Date 5 May & 15 April 2008
Resolution 250m
Flood Analysis UNOSAT (5 May 2008)
Map Production UNOSAT (6 May 2008)
Projection UTM Zone 48 North
Datum WGS 1984

The depiction and use of boundaries, geographic names and related data shown here are not warranted to be error-free nor do they imply official endorsement or acceptance by the United Nations. This map was produced by the United Nations Institute for Training and Research (UNITAR) Operational Satellite Applications Programme (UNOSAT). UNOSAT provides satellite imagery & related geographic information to UN humanitarian & development agencies & their implementing partners.

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DAMAGE ASSESSMENT

EARLY RECOVERY



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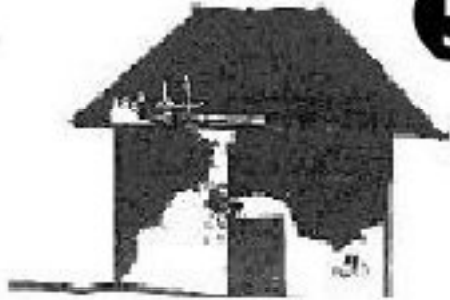


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Earthquake

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5

- Destroyed
- Needs reconstruction
- ***Cannot be repaired***



Damage visible in post-EQ image is assessed to be of level 5.

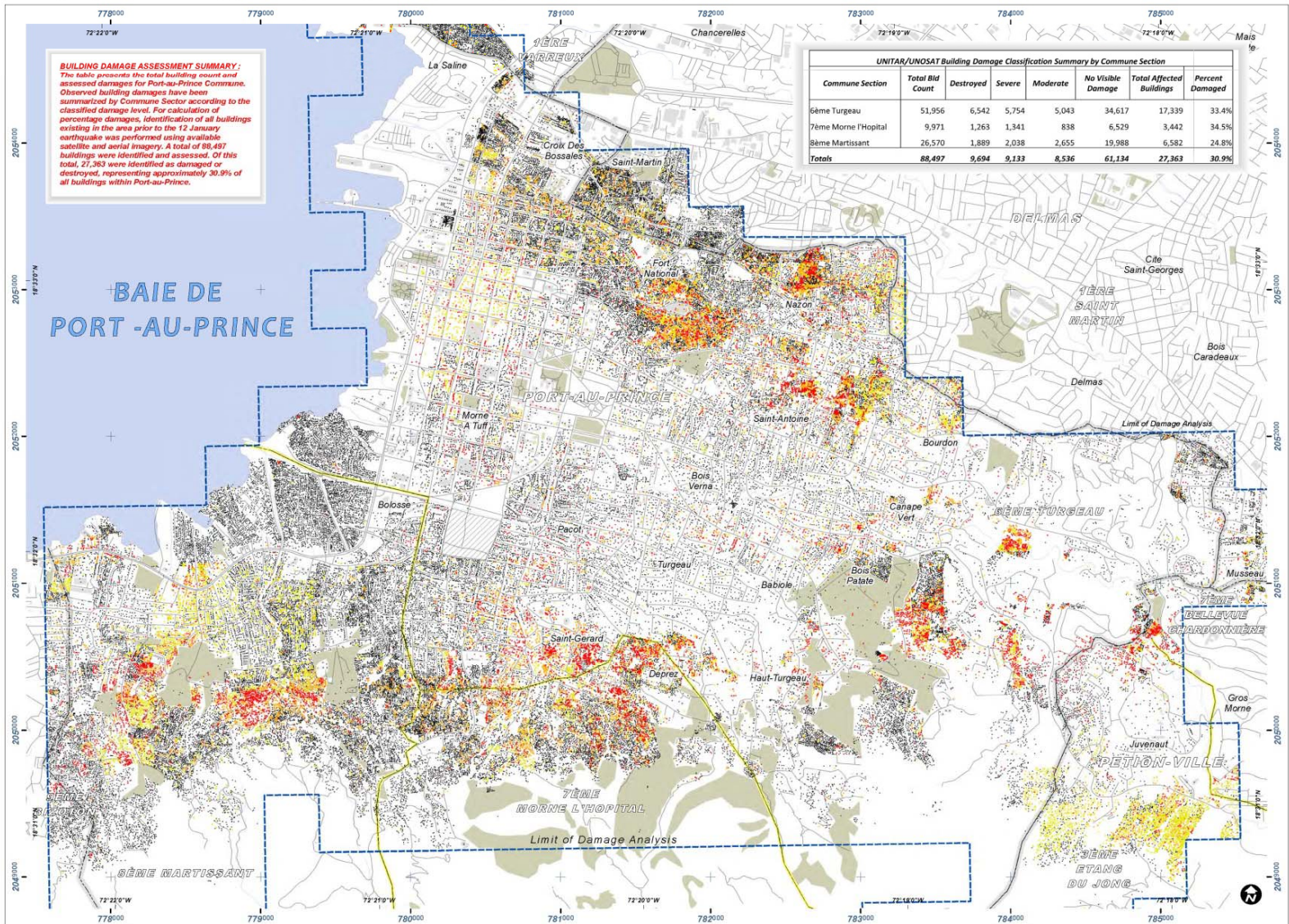
COMPREHENSIVE BUILDING DAMAGE ASSESSMENT FOR PORT-AU-PRINCE COMMUNE, HAITI

Damage analysis of individual buildings based on post-earthquake aerial photos and pre-earthquake satellite imagery

This map presents a total building count and (RSL) at the University of Zurich provided extensive damages as assessed from both satellite and aerial pre-crisis building data in direct technical support of survey imagery covering the Commune of Port-au-Prince. This UN damage analysis. Initial reference data were Prince. Damaged buildings were classified according received from collaborative centers (European to visually-assessed damage levels and summarized Commission JRC with the support of the Stability in a table by Commune Sector. This work is done at Instrument; Sert/Space Charter) and other the request of UNDP and in support of the UN-led supporting entities (ITHACA, DLK, OSM). This efforts in the aftermath of the Haiti earthquake. analysis will be validated in the field during PDNA and Swisstopo and the Remote Sensing Laboratories recovery activities.

BUILDING DAMAGE ASSESSMENT SUMMARY:
The table presents the total building count and assessed damages for Port-au-Prince Commune. Observed building damages have been summarized by Commune Sector according to the classified damage level. For calculation of percentage damages, identification of all buildings existing in the area prior to the 12 January earthquake was performed using available satellite and aerial imagery. A total of 88,497 buildings were identified and assessed. Of this total, 27,383 were identified as damaged or destroyed, representing approximately 30.9% of all buildings within Port-au-Prince.

Commune Section	Total Bld Count	Destroyed	Severe	Moderate	No Visible Damage	Total Affected Buildings	Percent Damaged
6ème Turgeau	51,956	6,542	5,754	5,043	34,617	17,339	33.4%
7ème Morne l'Hopital	9,971	1,263	1,341	838	6,529	3,442	34.5%
8ème Martissant	26,570	1,889	2,038	2,655	19,988	6,582	24.8%
Totals	88,497	9,694	9,133	8,536	61,134	27,363	30.9%



Earthquake 7.0M
3 February 2010 (20:30:00 UTC)
Version 1.0
 Glide No: EQ-2010-00009-HTI

Damage legend key:

DESTROYED: All or most of building structure collapsed

SEVERE DAMAGE: Part of building structure collapsed, such as part of roof or one or more false walls

MODERATE DAMAGE: Limited damage observed to building, or no damage observed but immediately adjacent to destroyed building

NO VISIBLE DAMAGE: Assessed building does not appear to be damaged

The four damage Levels: Destroyed, Severe Damage, Moderate Damage and No Visible Damage. This damage assessment was made with standard image interpretation methods. Detected damages are likely to represent minimum estimates; actual building damages may be larger due to limits in spatial and spectral resolution of available satellite and aerial imagery.

Building Point Classification

- Destroyed
- Severe Damage
- Moderate Damage
- No Visible Damage

Map Symbols:

- Main Building Complex
- Park / Forest
- Commune Boundary
- Section Boundary
- Water Body
- Cemetery
- Primary / Secondary Rd
- Analysis Extent

Map Scale for A3: 1:25,000
 UTM grid coordinates given in 1km intervals

Item	Value
Satellite Data	WorldView-2
Imagery Dates	19 Dec 2009 / 7-15 Jan 2010
Resolution	50cm
Copyright	DigitalGlobe
Aerial Photos	NOAA / Google
Imagery Date	18 Jan / 21 Jan 2010
Copyright	NOAA / Google
Source	USGS / ERDAS APOLLO WMS
Building Data	Swisstopo/RSL-Zurich/UNOSAT
Road & Urban Data	Open Street Map
Place Names	OCHA, Google Map Maker
Other Data	MNUS/IA (USGS) / INGA
Elevation Data	ASTER GDEM
Source	METI & NASA 2009
Damage Analysis	UNITAR / UNOSAT
Map Production	UNITAR / UNOSAT
Projection	UTM Zone 18 North Datum
Datum	NAD-83

The depiction and use of boundaries, geographic names and related data shown here are not warranted to be error-free nor do they imply official endorsement or acceptance by the United Nations. UNOSAT is a program of 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.

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- Total buildings assessed: 240,707
- Total Atlas map sheets published: 1,051

Atlas of building damage assessment

Haiti earthquake 12 January 2010

In support to
Post Disaster Needs Assessment and Recovery Framework
(PDNA)

Produced by
United Nations Institute for Training and Research (UNITAR)
Operational Satellite Applications Programme (UNOSAT)

and
European Commission (EC)
Joint Research Centre (JRC)
and
The World Bank

Version 1.0 as of 22 February 2010



Leogane

Atlas of building damage assessment in support to Post Disaster Needs Assessment and Recovery Framework (PDNA) following 12 January 2010 earthquake

Jacmel

Atlas of building damage assessment in support to Post Disaster Needs Assessment and Recovery Framework (PDNA) following 12 January 2010 earthquake

Carrefour

Atlas of building damage assessment in support to Post Disaster Needs Assessment and Recovery Framework (PDNA) following 12 January 2010 earthquake

Port-au-Prince

Atlas of building damage assessment in support to Post Disaster Needs Assessment and Recovery Framework (PDNA) following 12 January 2010 earthquake

Joint analysis:

Supported by:

UNOSAT

International, participatory approach, innovation, knowledge sharing, research transfer, expertise, new technology learning by doing, network building, skills building, etc.



IDPs, Refugees

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-ship, skills building
-ing, ext



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Civil Conflict



Production Date: 03/03/2011

Version 1.0

GLIDE: OT-2011-000025-LBY

UNOSAT Activation: CE20110220LBY

Current Situation at Ra's Ajdir, Libya-Tunisia Border Crossing Facility at 11:26 am Local Time This Morning (3 March 2011)

ANALYSIS SUMMARY: Based on a rapid assessment of satellite imagery recorded this morning (3 March 2011 - 11:26 am local time) there are several thousand people located primarily within the Ra's Ajdir border crossing facility along the Libyan-Tunisian border. There are multiple concentrations of people within different waiting and processing sites, as well as long lines of people and small vehicles waiting to move beyond the border into Tunisia. Although there are many permanent buildings in the area, there are no indications of emergency tent shelters available within the facility grounds for the thousands of people currently waiting. This report is part of an on-going satellite monitoring program of UNITAR/UNOSAT of the Libyan crisis and will be updated based on new satellite imagery tasking. Please send feedback to contact information below.



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Mogadishio, 12 September 2011



New settlements, 18 October 2011

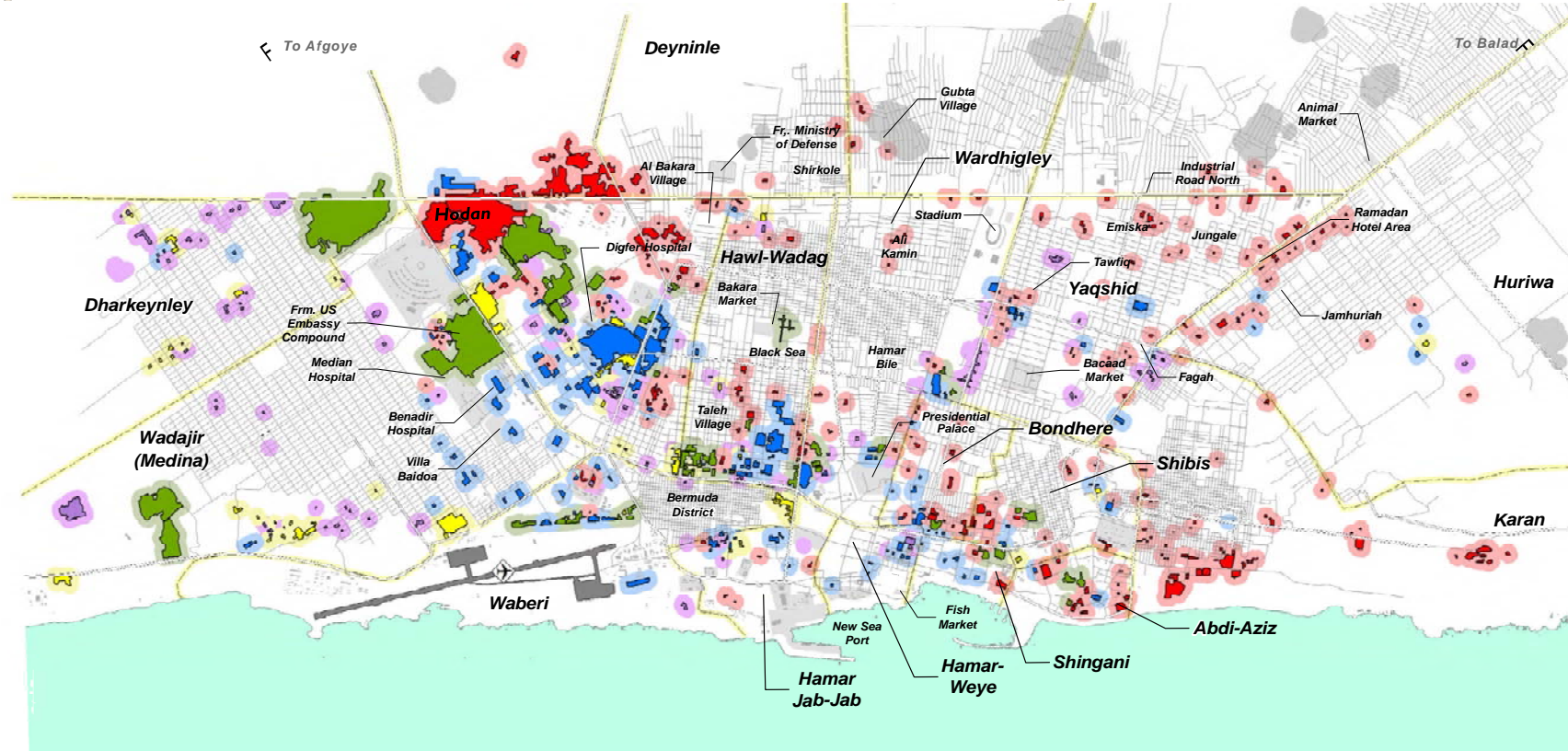
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IDP SHELTER CHANGES IN MOGADISHU, SOMALIA (BETWEEN 18 OCTOBER 2011 - 2 MAY 2012)

Drought



Production Date:
22/05/2012
Version 1.0
UNOSAT Activation:
DR20110714HOA



Data Frame rotated 27 degrees from North

Map Scale for A4: 1:60,000



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IDP Camp Status: (18 Oct 2011 - 2 May 2012)

- Open - New
- Open - Expanded
- Open - Contracted
- Closed - (Absorbed/Relocated/Aggregated)
- Open - No Change
- Cloud Area (not analyzed)

Satellite Data: QB / WV01 / WV02 / GE01
Dates: 30/03/11, 15/4/11, 28/07/11, 21-22/08/11,
4/12/09/11, 7, 15, 18/10/11, 02/05/12
Resolution: 0.6 m/0.5 m
Copyright: DigitalGlobe 2012; GeoEye 2012

Sources: FirstLook, HIU-NextView, EUSI
IDP Camp Data: UNITAR / UNOSAT
Landcover: UNITAR / UNOSAT
Road Data: Google Map Maker
Admin Boundaries: OCHA

- Mogadishu Int. Airport
- Mogadishu District Boundary
- Primary Road
- Local / Urban Road

Other Data: USGS, NGA, SWALIM
Analysis: UNITAR / UNOSAT
Coordinate System: UTM Zone 38N
Datum: WGS 1984
Analysis conducted with ArcGIS v10



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Table 1 – Changes in IDP shelters between 18 October 2011 and 2 May 2012 by district

Mogadishu Districts:	18-Oct-11	05-May-12			18-Oct-11	05-May-12		
	# of distinct IDP shelter sites	# of distinct IDP shelter sites	CHANGE in Total Number	CHANGE (%)	Total area of IDP Shelter sites (m2)	Total area of IDP Shelter sites (m2)	CHANGE in Total Area (m2)	CHANGE (%)
Abdi-Aziz	5	18	13	260%	17,540	58,530	40,990	234%
Bondhere	13	28	15	115%	25,270	55,520	30,250	45%
Deyninle	2	11	9	450%	30,846	274,702	243,856	791%
Dharkeynley	31	13	-18	-58%	429,161	413,895	-15,266	-4%
Gupta	0	4	4	-	0	14,056	14,056	-
Hamar Jab-Jab	18	21	3	17%	23,390	24,544	1,154	5%
Hamar-Weye	11	8	-3	-27%	18,463	9,147	-9,316	-50%
Hawl-Wadag	41	54	13	32%	170,108	227,069	56,961	33%
Hodan	82	91	9	11%	784,449	1,336,739	552,290	70%
Huriwa	9	31	22	244%	55,100	77,619	22,518	41%
Karan	9	57	48	533%	242,183	405,672	163,489	68%
Mahad Allah	0	4	4	-	0	5,566	5,566	-
Shibis	9	26	17	189%	27,615	63,735	36,120	131%
Shingani	8	9	1	13%	9,482	30,347	20,865	220%
Waberi	21	22	1	5%	96,631	106,868	10,237	11%
Wadajir (Medina)	54	37	-17	-31%	658,632	643,297	-15,335	-2%
Wardhigley	18	29	11	61%	77,345	104,180	26,835	35%
Yaqshid	22	50	28	127%	39,981	67,229	27,248	68%
TOTALS	353	513	160	45%	2,706,197	3,918,715	1,212,518	45%

DAMAGE ASSESSMENT FOR IDP CAMP NYONGERA, KIWANJA TOWN, NORTH KIVU PROVINCE, DRC

Damage Assessment with WorldView-1 & QuickBird Satellite Imagery Recorded 4 November 2008 & 18 October 2008

This map presents a satellite-based damage assessment for the affected IDP Camp of Nyongera, in Kwanja Town, North Kivu Province, DRC. Damaged buildings have been identified with WorldView-1 satellite imagery acquired on 4 November 2008 at a spatial resolution of 50cm. Pre-conflict QuickBird imagery from 18 October 2008 provided by AAAS was also used. Estimates of destroyed / severely damaged IDP camp buildings and tent structures are provided in a map table. This is an initial damage assessment & has not yet been validated in the field.

Security Event 15 November 2008



Version 1.0

UNOSAT-2008-000211-DRC

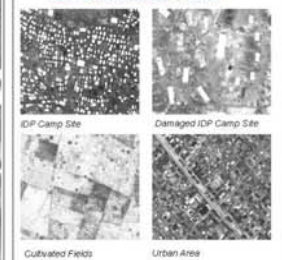


Legend

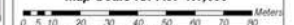
SATELLITE DAMAGE ASSESSMENT

- Building: Likely Destroyed
- Building: Likely Severely Damaged
- Building: No Visible Damage
- IDP Camp Site Boundary

SATELLITE IMAGE REFERENCE



Map Scale for A3: 1:1,600



Satellite Data	WorldView-1
Resolution	50 cm
Imagery Dates	4 November 2008
Source	Euraspace/Digital Globe (2008)
Additional Imagery	QuickBird 18 October 2008
Source	AAAS
Copyright	Digital Globe (2008)
GIS Data	Keyhole, UNHCR, OCHA, MONUC
Damage Analysis	UNOSAT
Map Production	UNOSAT
Projection	UTM Zone 35 South
Datum	WGS 1984

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UNOSAT

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knowledge, diversity, innovation, transfer, expertise, learning by doing, ship, skills building, etc.

EVOLUTION OF AL ZAATARI REFUGEE CAMP, MAFRAQ GOVERNORATE, JORDAN

Analysis with Satellite Data Acquired 13 November 2012, 7 January 2013, 3 February 2013, and 20 February 2013

The map displays administrative zones and other buildings of the Al Zaatari refugee camp in Mafraq Governorate, Jordan. As of 13 November 2012 a total of 1,161 shelters were identified as well as 1,201 administrative and support buildings within the 07.22 hectare of the camp. An 800 analysis of the camp by UNOSAT using imagery from 13 November 2012 finds 4,100 shelters. This indicates that

between 14 November 2012 and 13 February 2013 shelters in the camp increased by 275%. In addition, total area of the camp increased from 170 hectares to 371 hectares of the camp and a 107% increase. Areas of expansion are also visible in the images of 7 January 2013, including construction and activity in administrative compound numbers of refugees in the new phase.



Refugee Camp

Production Date: 14/02/2013
Version: 1.0
Acquisition Number: 02-2011-0704-009

Scale: 1:100,000
Scale bar: 0 to 400 meters

Source Data (13 November 2012)
Imagery: GeoEye
Resolution: 0.50m
Processing: DigitalGlobe
Source: European Space Agency
Source Data (07 January 2013)
Imagery: GeoEye
Resolution: 0.50m
Processing: DigitalGlobe
Source: European Space Agency
Source Data (03 February 2013)
Imagery: GeoEye
Resolution: 0.50m
Processing: DigitalGlobe
Source: European Space Agency
Source Data (20 February 2013)
Imagery: GeoEye
Resolution: 0.50m
Processing: DigitalGlobe
Source: European Space Agency
Analysis: UNOSAT / UNOSAT
Software: UNOSAT / UNOSAT
Analysis conducted with UNOSAT v10.7
Coordinates: (Datum: WGS 1984, Zone: 37N)
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter

The acquisition and use of imagery, processing and related data shall not be warranted to be provided for UNOSAT UNOSAT UNOSAT in connection to the United Nations, nor is a product of the United Nations Institute for Training and Research (UNITAR), providing satellite imagery and related geographic information, research and analysis to UNOSAT and development agencies and for implementing parties.

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United Nations Institute for Training and Research
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each, in
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UPDATE: AL ZAATARI REFUGEE CAMP MAFRAQ GOVERNORATE, JORDAN

Analysis with WorldView-1 Data Acquired 31 March 2013 and WorldView-2 Data Acquired 14 March 2013

This map illustrates satellite-detected shelters and other buildings at the Al Zaatari refugee camp in Mafraq Governorate, Jordan. As of 31 March 2013 a total of 25,316 shelters were detected as well as 1,548 infrastructure and support buildings within the 631.21 hectares of the camp. The number of shelters has thus decreased by about 926 since the previous UNITAR/UNOSAT assessment of the camp which used a satellite image from 14 March 2013. This indicates a 3.6%

decrease in the number of shelters between 14 March and 31 March 2013. In addition areas of expansion are also visible in the image as of 31 March 2013, indicating preparations are underway to accommodate increased numbers of refugees in the near future. This is a preliminary analysis and has not yet been validated in the field. Please send ground feedback to UNITAR/UNOSAT.

Refugee Camp



Production Date:
04/04/2013

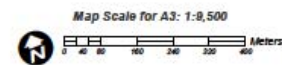
Version 1.0

Activation Number:
CE-2011-0704-SYR



LEGEND

- Shelter tents (31 March 2013)
- Shelter tents (14 March 2013)
- Camp infrastructure tents / buildings
- Total Camp Extent



Satellite Data (1): WorldView-1
Imagery Dates: 31 March 2013
Resolution: 50 cm
Copyright: DigitalGlobe
Source: European Space Imaging
Satellite Data (2): WorldView-2
Imagery Dates: 14 March 2013
Resolution: 50 cm
Copyright: DigitalGlobe
Source: European Space Imaging
Analysis: UNITAR / UNOSAT
Production: UNITAR / UNOSAT
Analysis conducted with ArcGIS v10.1

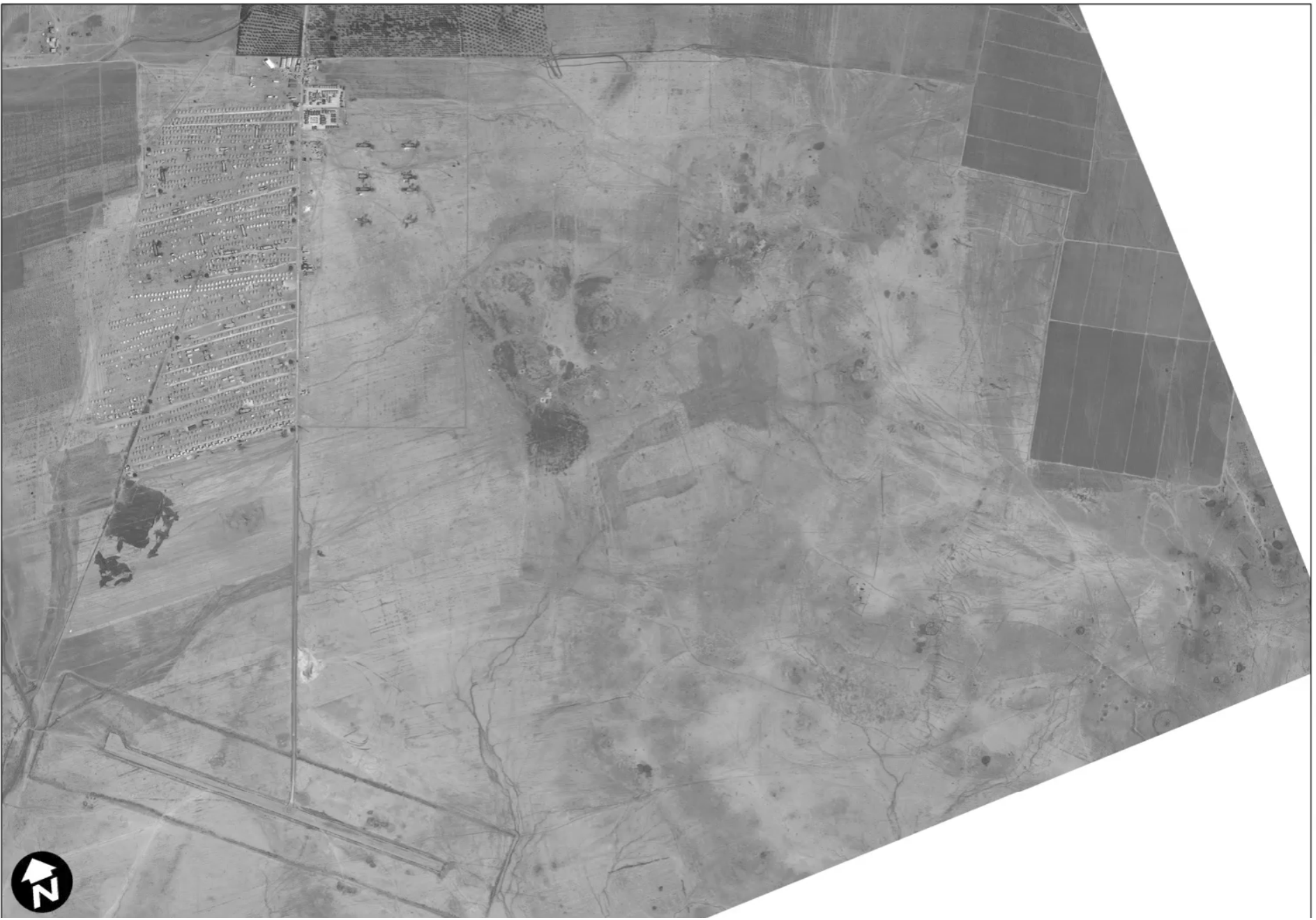
Coordinate System: WGS 1984 UTM Zone 37N
Projection: Transverse Mercator
Datum: WGS 1984
Units: Meter

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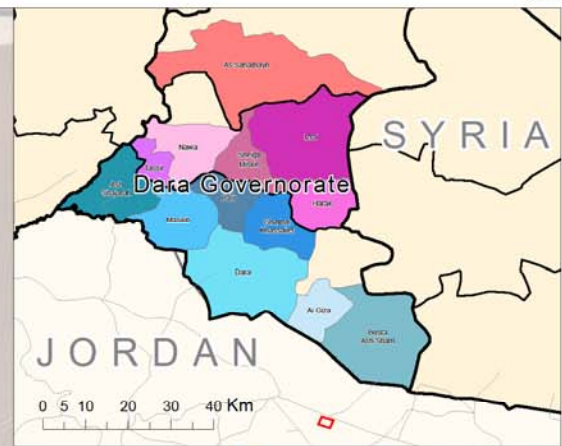
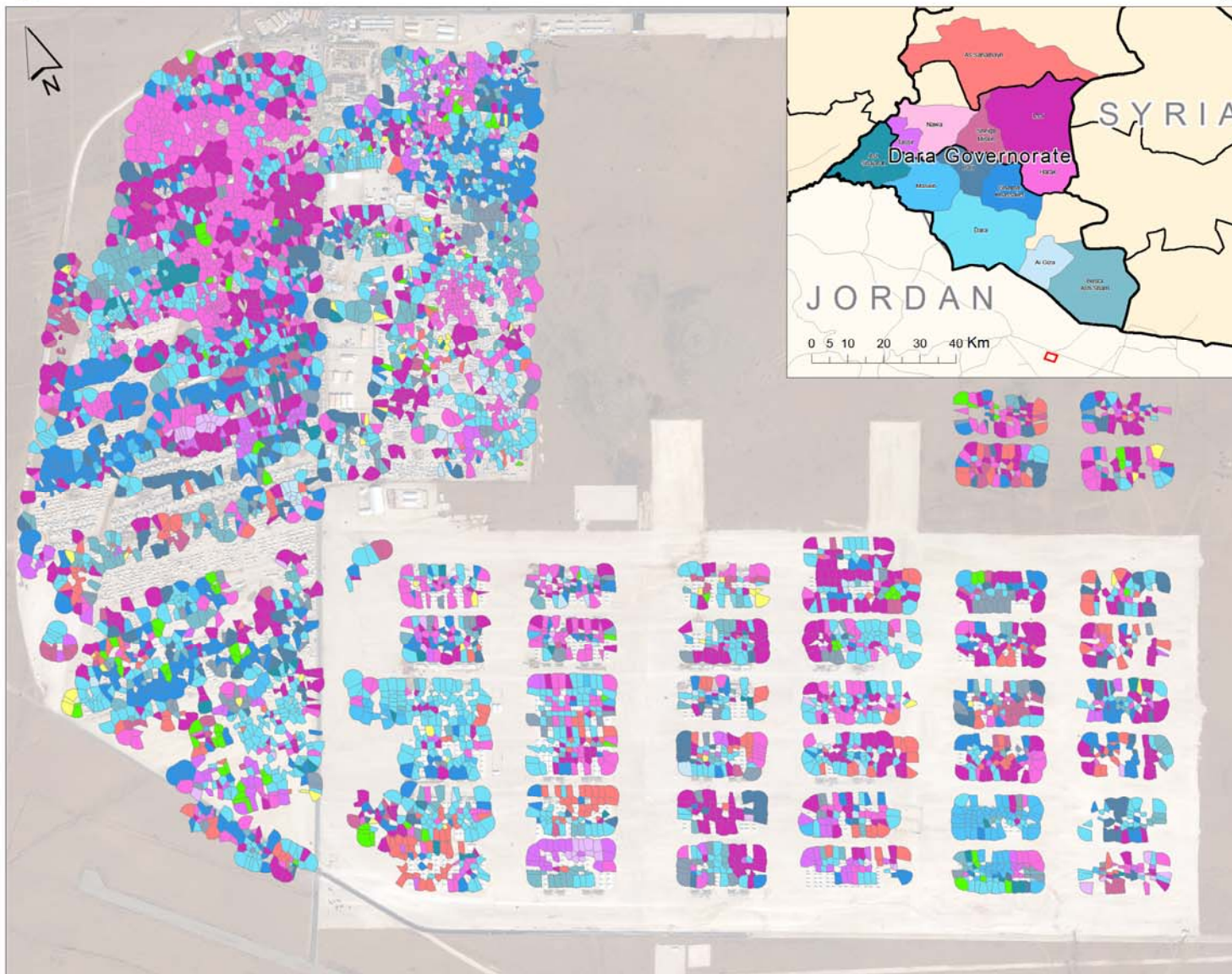
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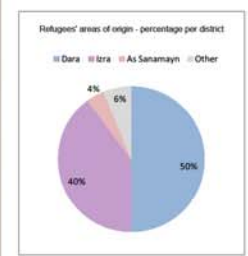


Al Zaatari Refugee Camp - Areas of Origin of Syrian refugees - January 2013

Production Date: 23rd January 2013
Draft/work in progress
For Humanitarian Relief Purposes Only



- Legend**
- Area of origin by subdistrict**
- Dara Governorate - Dara district**
- Buwa Ash Sham
 - Gharbet Khassalet
 - Ash Shajara
 - Dar's
 - Masarb
 - Ai Dara
 - Masrafa
 - Dara
- Dara Governorate - Izza district**
- Harak
 - Nama
 - Shegh Mshan
 - Tawal
 - Izza
- Dara Governorate - As-Sanamayn district**
- As-Sanamayn
- Other areas**
- Damascus city
 - Homs city



The map shows areas of origin of Syrian refugees living in Zaatari camp in Jordan. Each polygon corresponds to one household. Only areas from which at least 10 families originate are shown.

0 100 200 300 m

Coordinate System: WGS 1984 UTM Zone 37N

Areas of Origin data: REACH field teams 12/2012-01/2013

Satellite imagery: DigitalGlobe 13/12/2012

Contact: reach.mapping@impact-initiatives.org

Note: Data, designations and boundaries contained on this map are not warranted to error free and do not imply acceptance by the REACH partners, associations, or donors mentioned on the map.

A product of

REACH Informing more effective humanitarian action


In partnership with

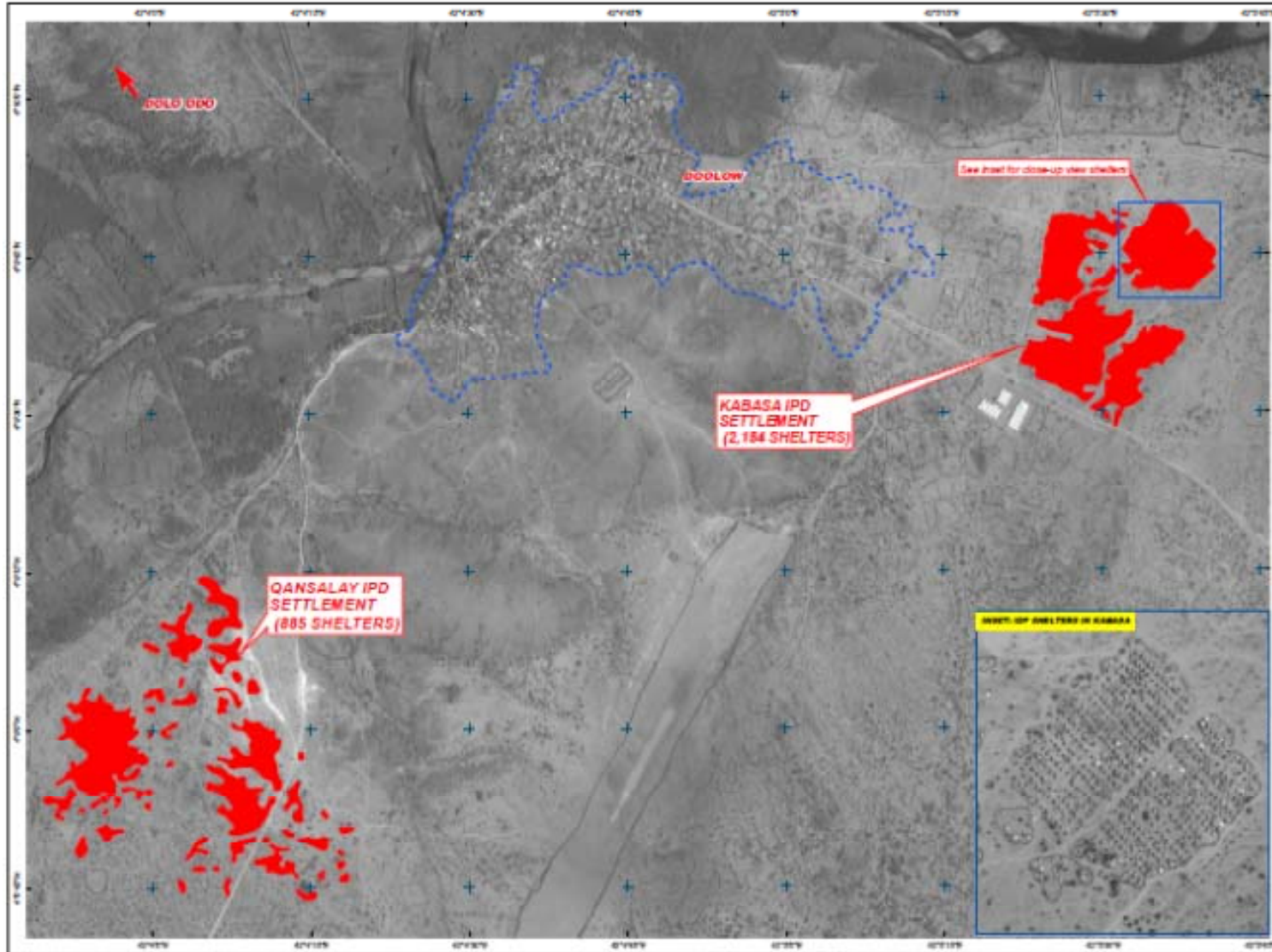
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UNOSAT IMPACT

INFORMAL IDP SHELTERS IN BORDER TOWN OF DOOLOW, SOMALIA

Analysis with WorldView-1 Data Acquired 3 March 2013 and WorldView-2 Data Acquired 12 July 2012

This map illustrates IDP shelter changes near Doolow, Somalia as visible in satellite imagery acquired 3 March 2013. As of 3 March 2013 shelters within Doolow IDP settlement south west of Doolow decreased by 8 when compared to an image from 31 July 2012. Shelters within Kabasa settlement east of Doolow have increased by 401, representing an increase of 33.5% since 31 July 2012. This is a preliminary analysis and has not yet been validated in the field. Please send ground feedback to UNHCR / UNOSAT.

Drought

 Production Date: 15/04/2013
 Version: 1.0
 Activation Number: DRD11071410A



Legend

- Doolow Town Extent
- IDP Camp Extent

Map Scale for A3: 1:11,000

Satellite Data (1): WorldView-1
 Imagery Date: 3 March 2013
 Resolution: 30 m
 Copyright: DigitalGlobe
 Source: US Department of State - Humanitarian Information Unit, North Star License
 Satellite Data (2): WorldView-2
 Imagery Date: 12 July 2012
 Copyright: DigitalGlobe
 Source: US Department of State - Humanitarian Information Unit, North Star License
 Road Data: Google Map Maker / OSM / ESRI
 Other Data: UNICEF, UNHCR, WFP, USAID, WFP
 Analysis: UNHCR / UNOSAT
 Production: UNHCR / UNOSAT
 Analysis conducted with ArcGIS v10.1

Coordinate System: WGS 1984 UTM Zone 37N
 Projection: Transverse Mercator
 Datum: WGS 1984
 Units: Meter

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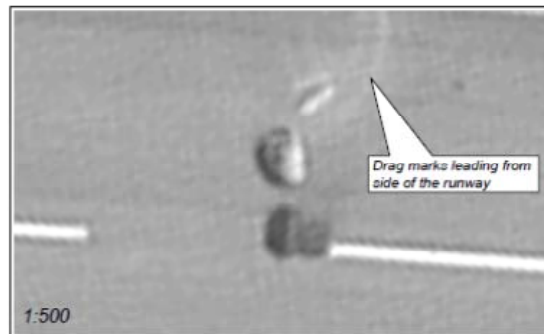


Logistic

knowledge, international, participatory approach, r
diversity, innovation, knowledge sharing, research
bin. transfer, expertise, new technology
learning by doing, network
-ship, skills building
-ing, ext

Operational Status of Benghazi Airport (as of 23 March 2011)

This poster-sized map provides an overview of the operational status of Benghazi airport in Libya as based on an analysis of satellite imagery collected on 01 and 23 March 2011. Although there are no visible damages to airport building facilities, flight traffic is currently closed on one runway because of multiple obstructions along the runway between 01 and 23 March. A total of six runway obstructions were identified, all along Runway 33-R. There are two jets present on the runway north of the obstructions. These obstructions appear to be composed of unidentified boxes and boulders which appear to have been dragged onto the runway (see focus). Please note that a small cloud obscures a portion of runway 33-L. All identified obstruction sites are marked on the map and two focus insets are provided to illustrate the range of obstructions observed. This was produced by UNITAR/UNOSAT in support of international humanitarian assistance to the people of Libya. The map is created to respond to the needs of UN agencies and their partners. It is intended to provide objective geographic information and has been designed for easy printing and readability for A0



Possible boulder



Unidentified box

Operational Status of Tripoli Military Airport (as of 28 March 2011)

ANALYSIS: The operational status of the military airport in Tripoli, Libya was assessed from an analysis of satellite imagery collected on 26 February and 28 March 2011. Although there are no visible damages to airport building facilities, flight traffic is currently blocked by multiple unidentified obstructions placed deliberately along the runway and nearby taxi lane between 26 February and 28 March. A total of seven runway obstructions were identified, five along the runway and two along the taxi lane. All identified obstruction sites are marked on the map and two focus insets are provided to illustrate the

range of obstruction types used. This was produced by UNITAR/UNOSAT in support of international humanitarian assistance to the people of Libya. The map is created to respond to the needs of UN agencies and their partners. It is intended to provide objective geographic information and has been designed for easy printing and readability for A4 and A3 prints. This is an initial assessment and has not yet been independently verified on the ground. Please send feedback to UNITAR / UNOSAT.



1:500
Unidentified obstruction

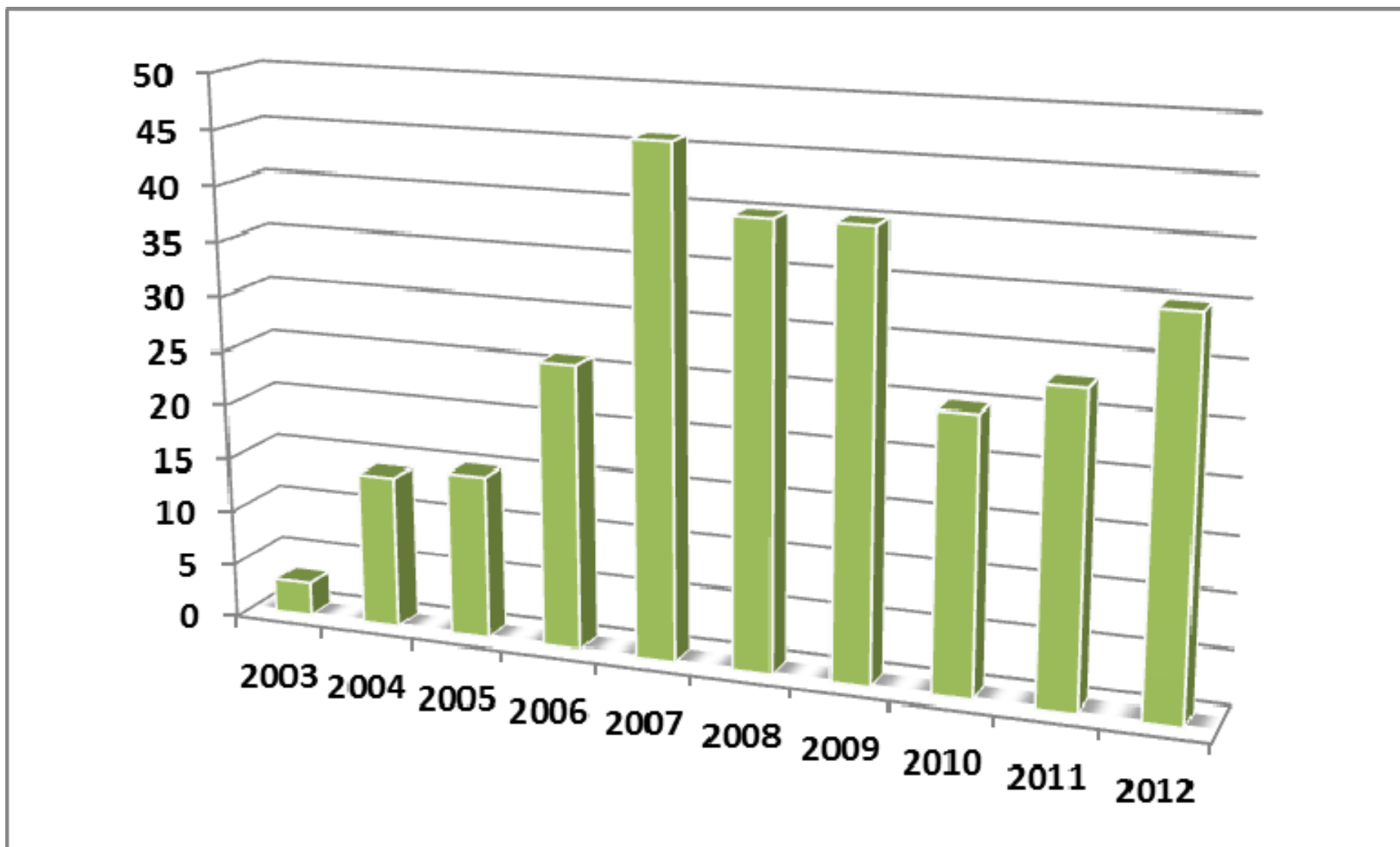


1:500
Unidentified obstruction

○ Runway Obstacle

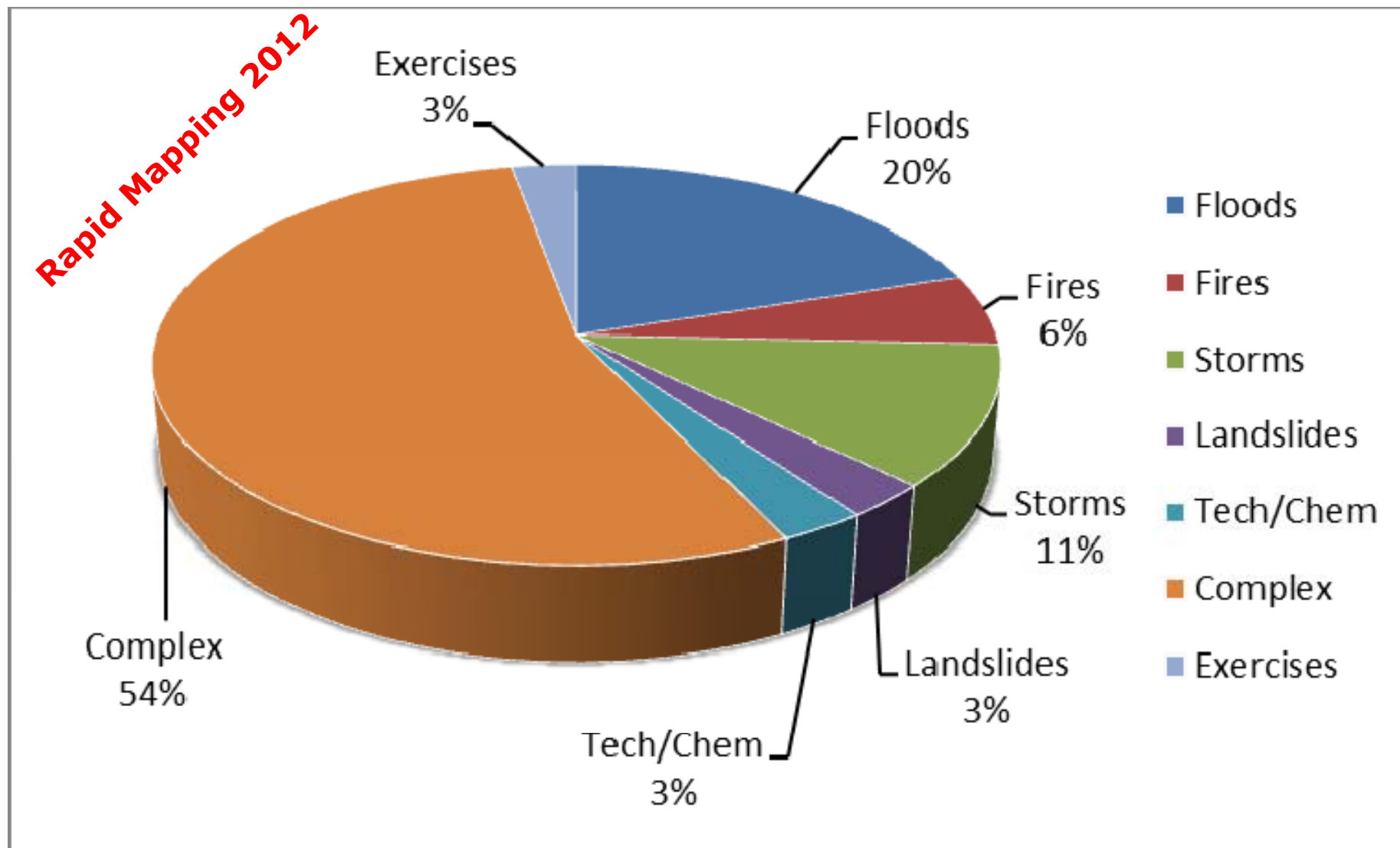
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UNOSAT Rapid Mapping 2012



knowledge, international, partnership, diversity, innovation, knowledge sharing, transfer, expertise, new technologies, learning by doing, network building, skills building, etc.

Average 35 events/year



DATA SHARING

- PDF maps and analysis freely available
- Share vectors in various formats
- Flood Geo-Portal
- Live web map

Crowd-sourcing

&

Integrated solutions

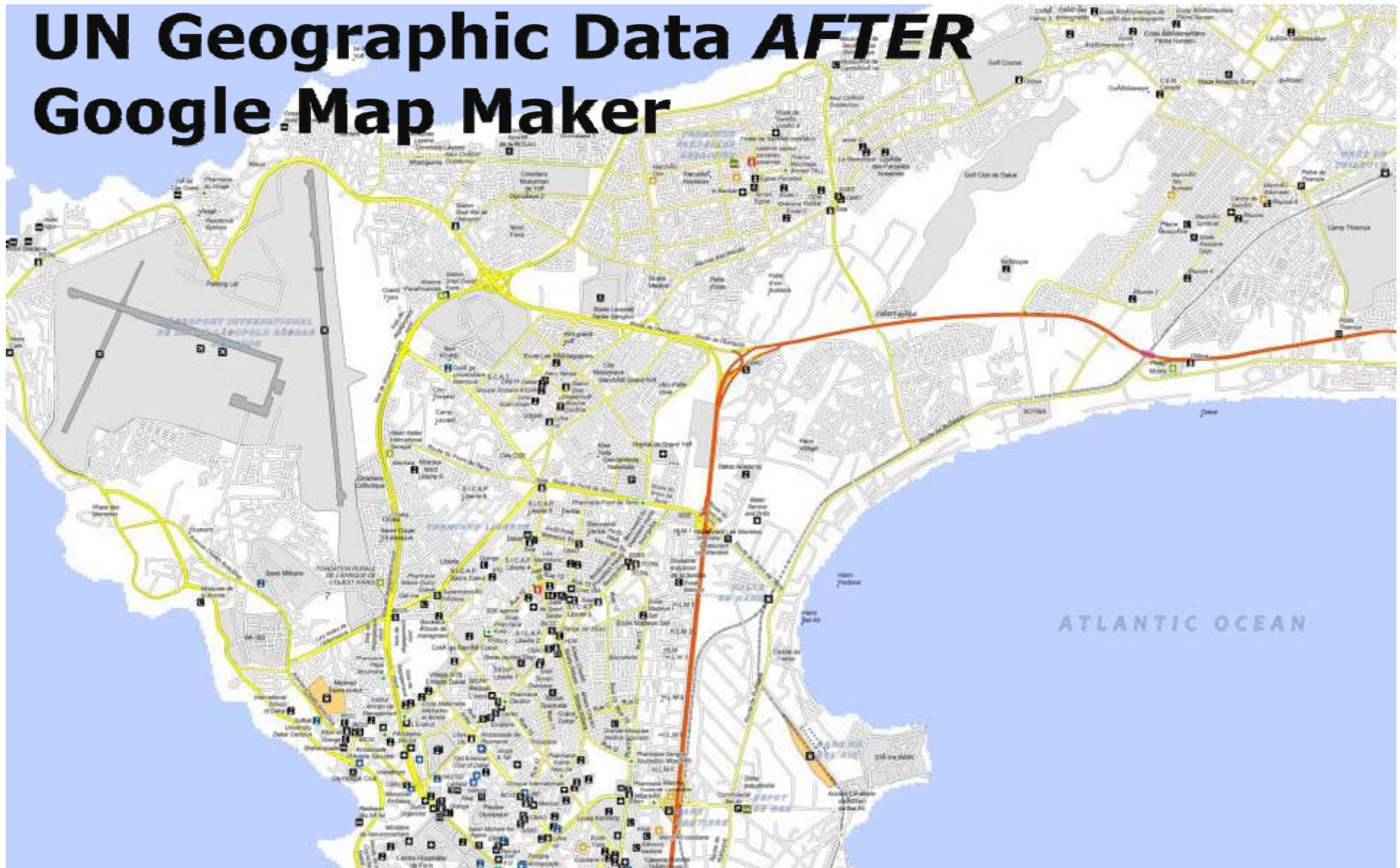
positioning, mapping and telecommunications

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UN Geographic Data *BEFORE* Google Map Maker

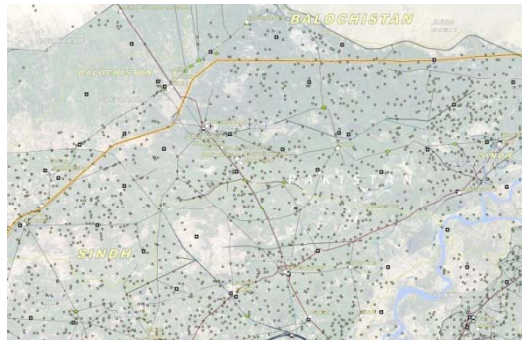


UN Geographic Data *AFTER* Google Map Maker



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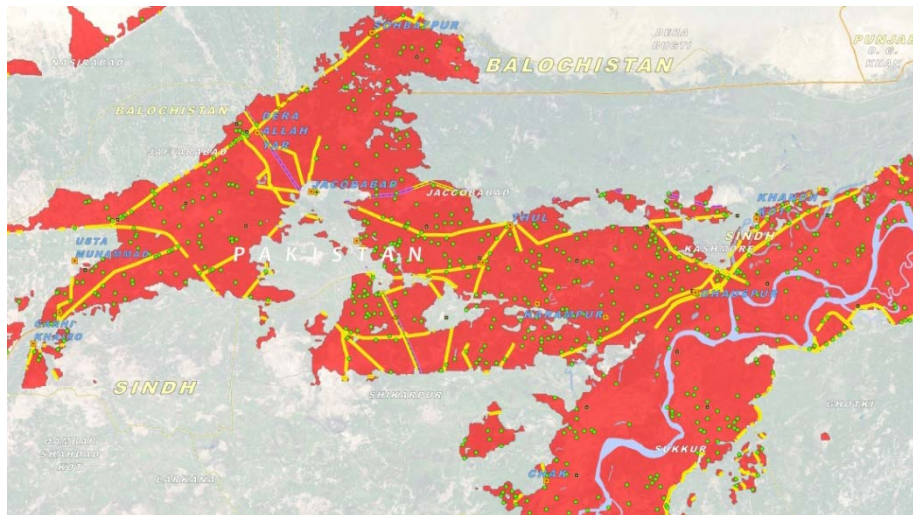
How did UNOSAT use Google Map Maker data for flood damage analysis in Pakistan?



Google Map Maker Data for Pakistan

+

UNOSAT Flood Water Analysis

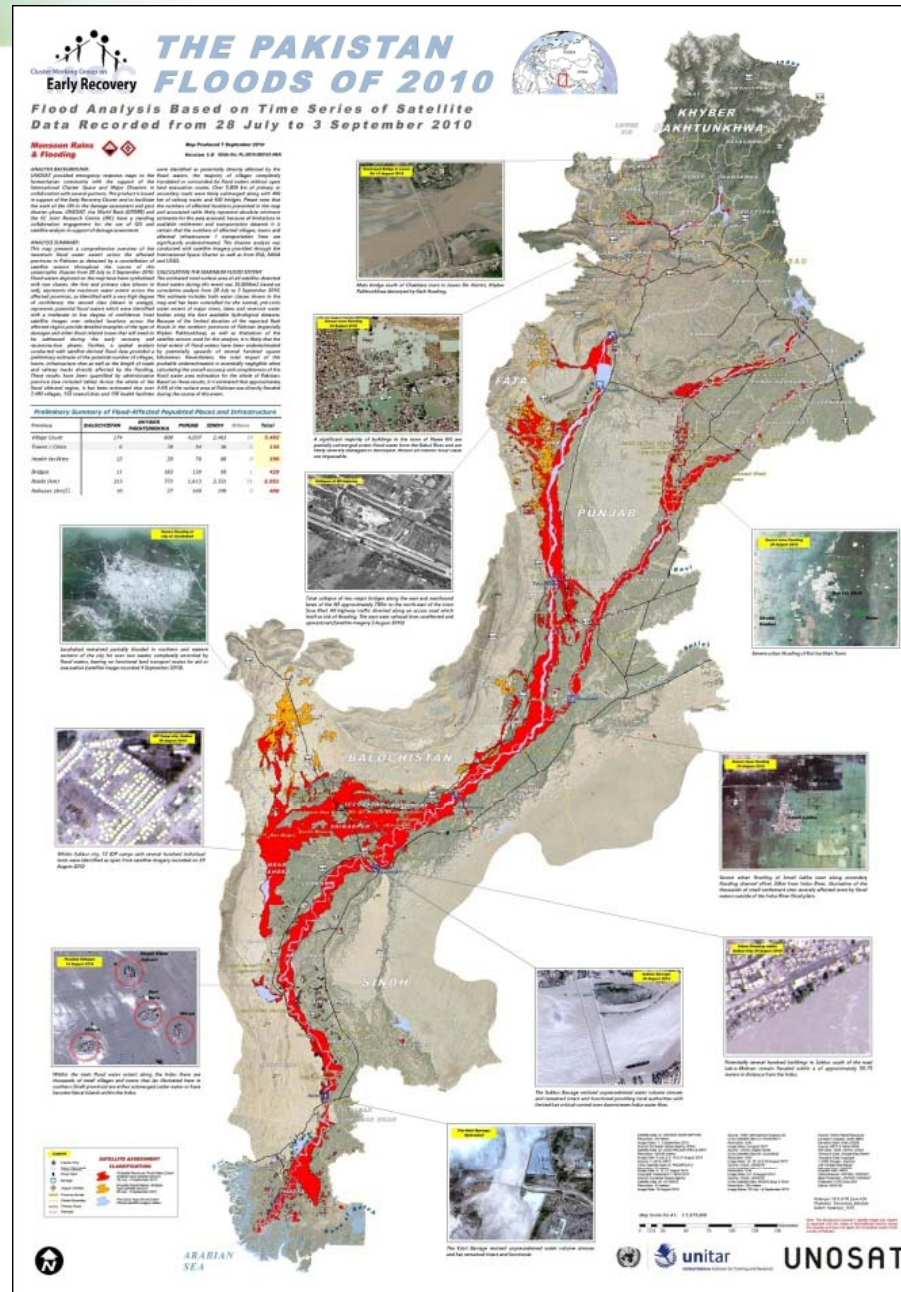


Combination of data allows for detailed and comprehensive preliminary damage analysis for country of Pakistan

Summary of Flood-Affected Populated Places and Infrastructure

Province	BALUCHISTAN	KHYBER PAKHTUNKHWA	PUNJAB	SINDH	Others	Total
Village Count	174	808	4,037	2,463	10	7,492
Towns / Cities	6	39	54	36	0	135
Health facilities	12	20	70	88	0	190
Bridges	11	183	139	95	1	429
Roads (km)	313	772	1,613	2,331	21	5,051
Railways (km)	10	27	169	199	0	406

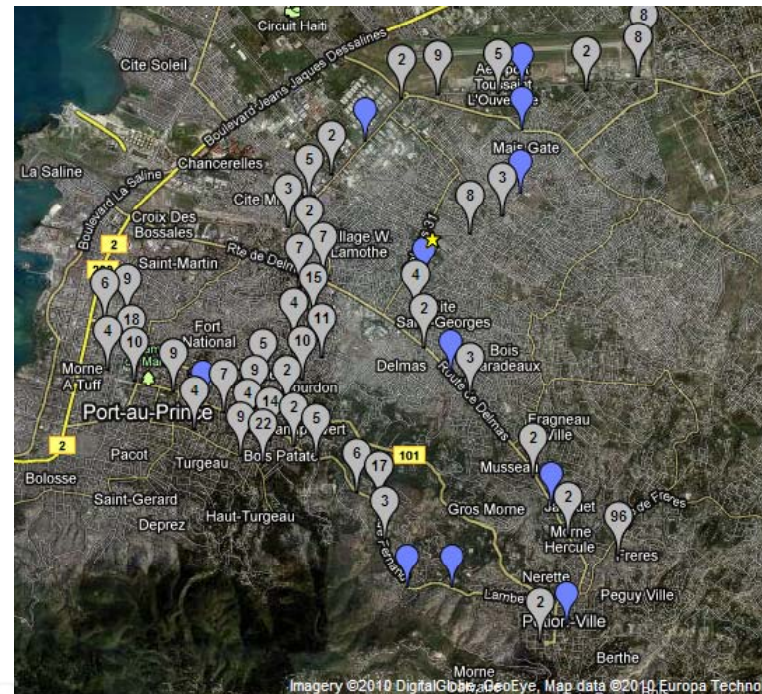
Satellite imagery monitoring of Pakistan floods 2010 – a key information source for up-to-date situational information/awareness, damage assessment and recovery planning



... participatory approach, r
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 ... expertise, new technology
 ... learning by doing, network
 ... ship, skills building, ext



- Automatic geo-positioning and mapping of photos, videos, text, voice (Android+)
- Cost-efficient solutions (smart compression)
- Tested in exercises, used in Haiti, Nigeria, Pakistan
- **Perfect match: VHR imagery and field photos**



UN-ASIGN: Free crowd-source app to support emergency response and disaster risk reduction



knowledge, diversity, innovation, transfer, expertise, new technology, learning by doing, network, ship, skills building, ing, ext

UN-ASIGN: A tool for taking and sharing geo-tagged photos designed to work over low bandwidth



knowledge, diversity, innovation, transfer, expertise, new technology, learning by doing, network, ship, skills building, ing, ext

UN-ASIGN: Photos are automatically mapped, and individual contributors can see their own photos on Google Maps, as well as on GEO-PICTURES web-solution



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Scan QR code to install app



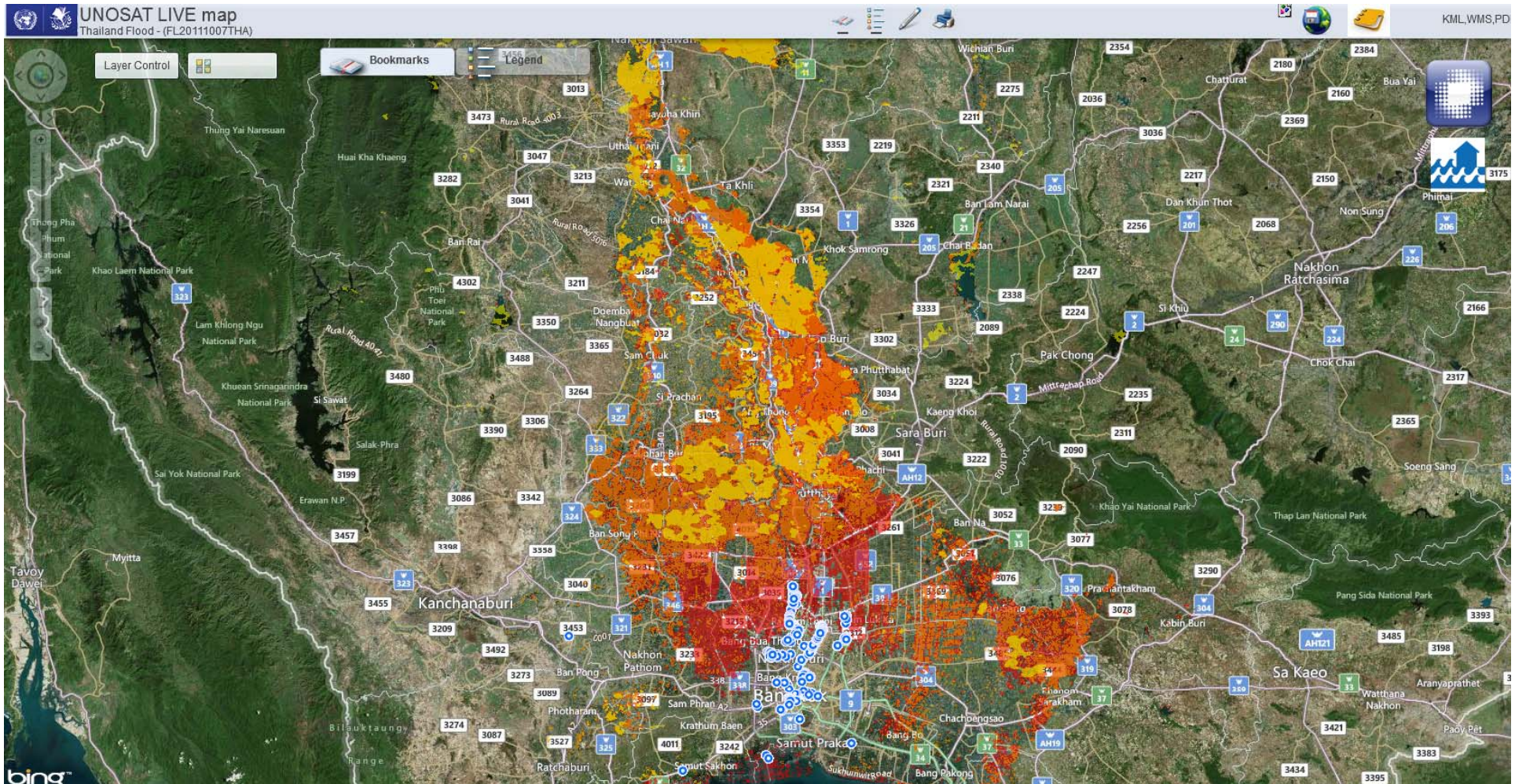
Android



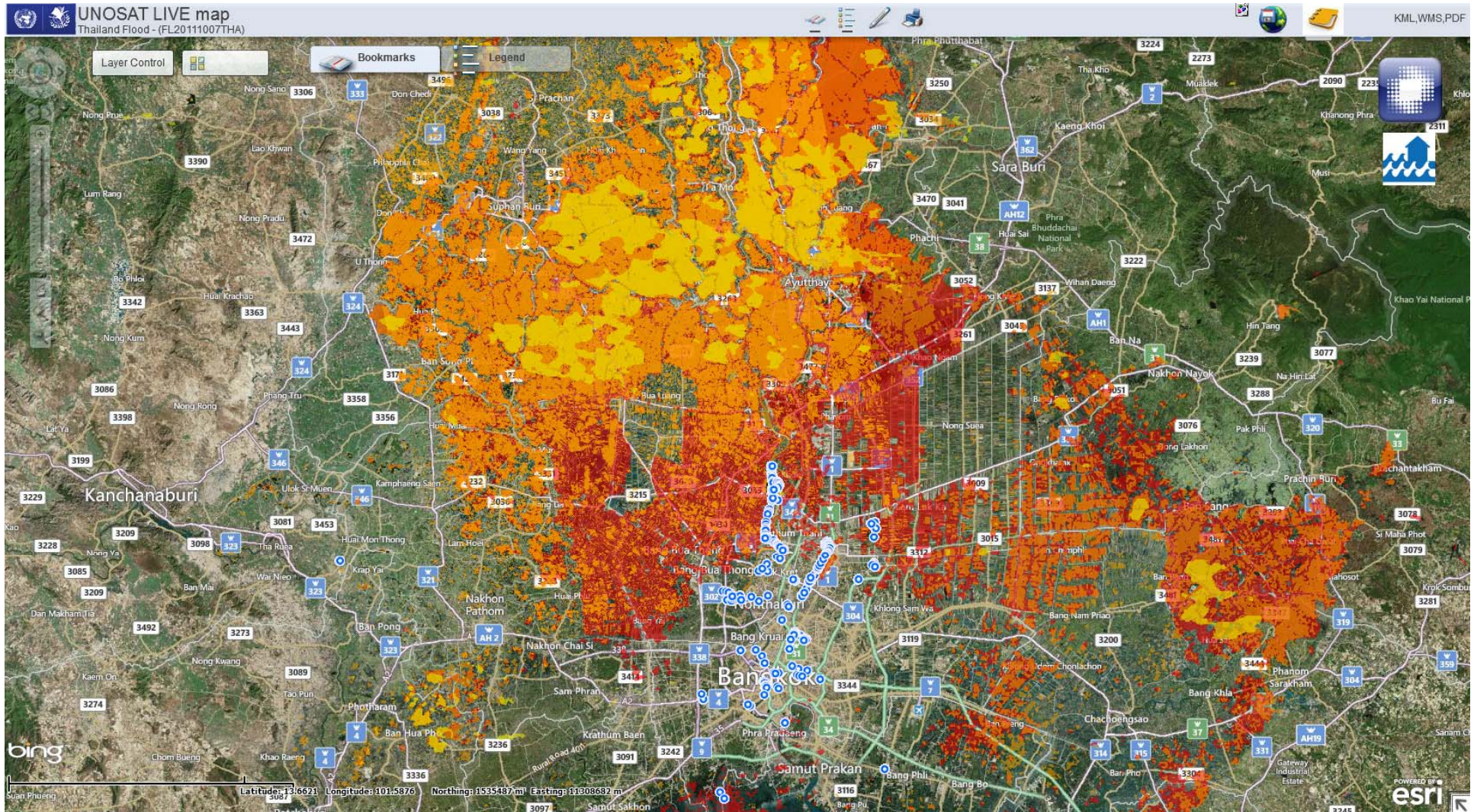
iPhone

GEO-PICTURES: Integrating UN-ASIGN photos and satellite imagery derived information in one common web-platform

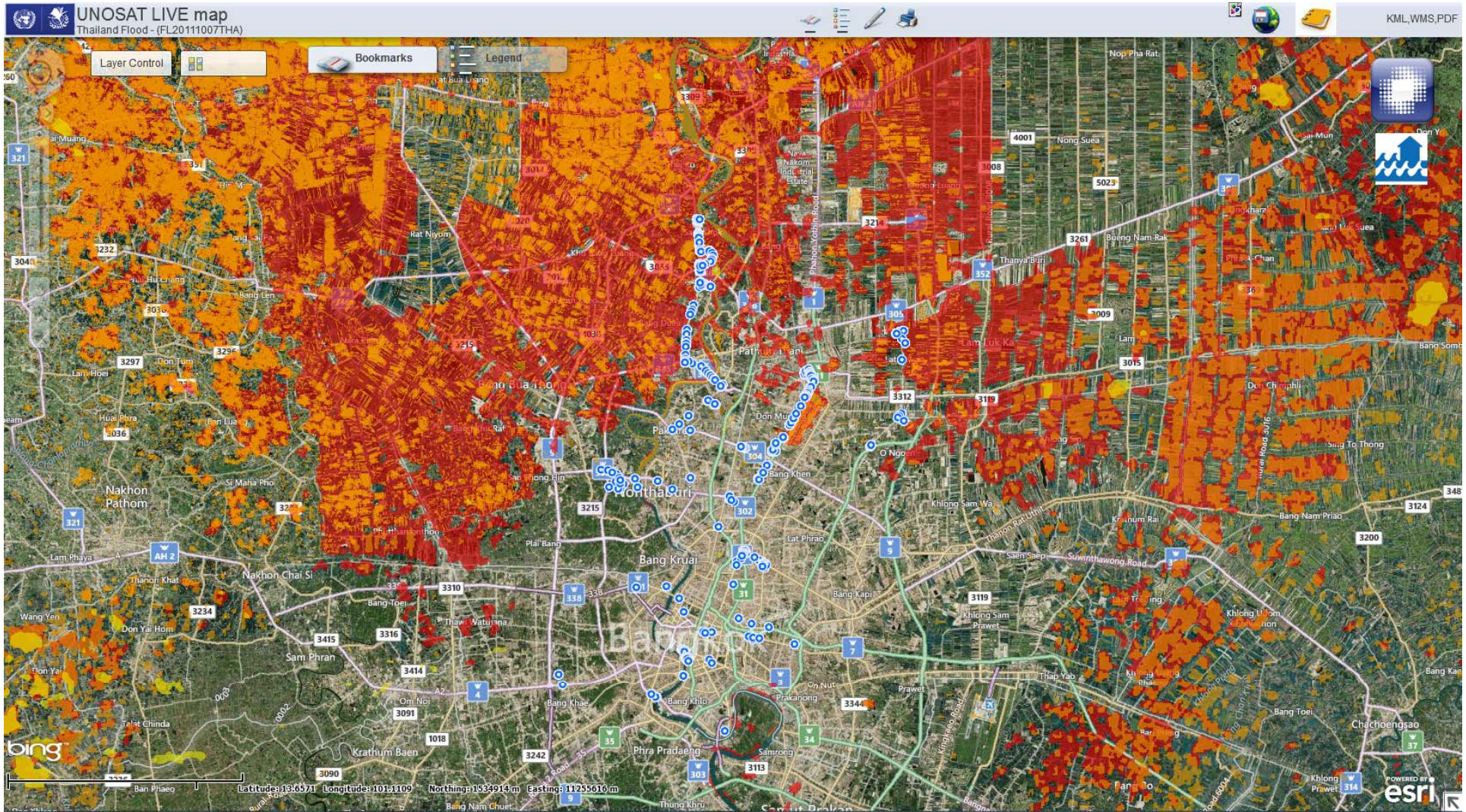
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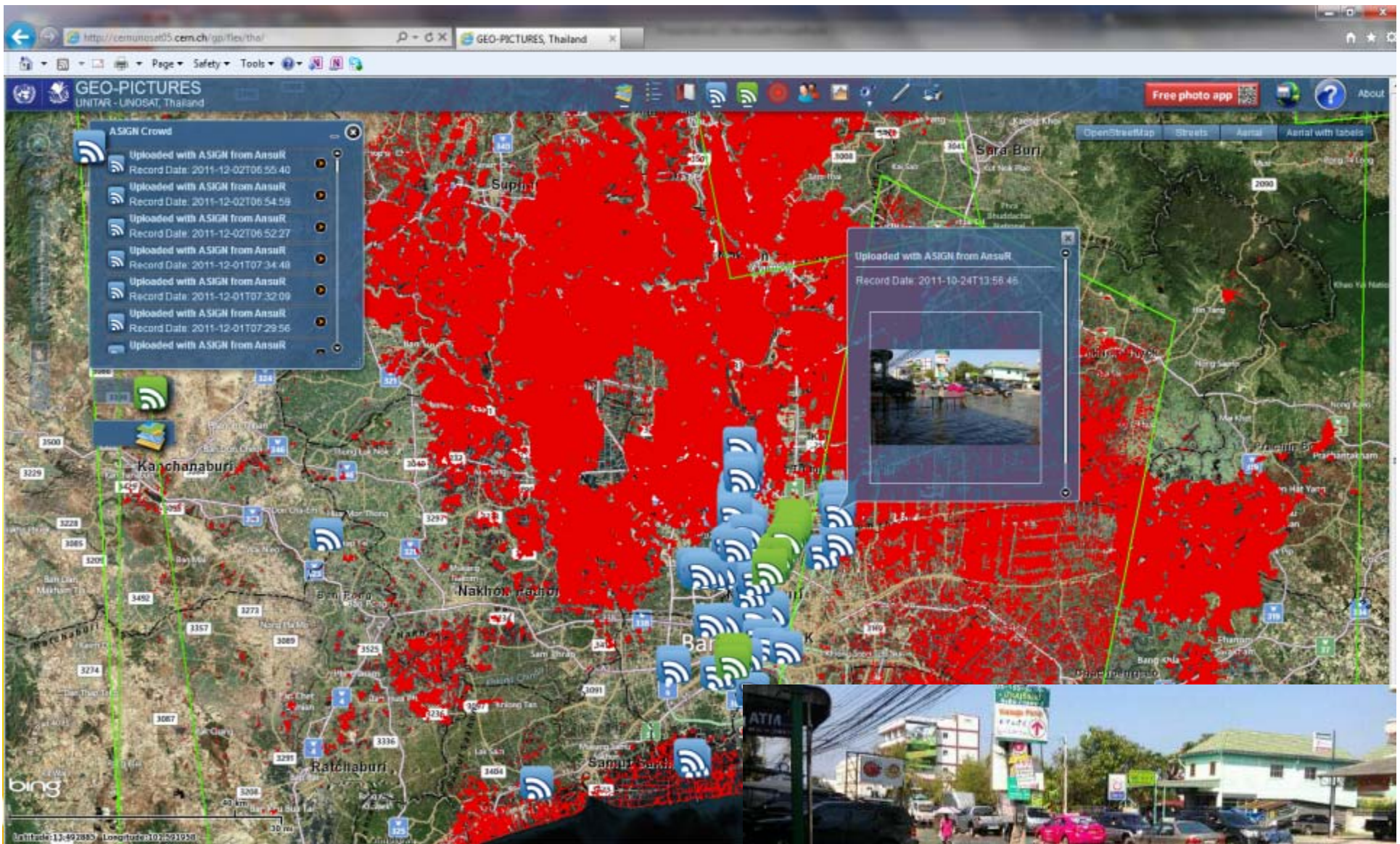


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Residential area

Industrial area





Thailand floods 2011:
 Crowd sourced (blue) live feeds
 Professional assessment live feeds (green)
 Satellite image detected flood: Red



The screenshot displays the GEO-PICTURES web application interface. At the top left, the logo for GEO-PICTURES (UNITAR - UNOSAT, Thailand) is visible. The main map area shows an aerial view of Nakhon Phanom, Thailand, with a large red-shaded area indicating a flood. A sidebar on the left lists several photo records, with 'My home town flood effect' (Record Date: 2011-11-07T12:01:27) highlighted. A central photo viewer overlay displays the selected photo, titled 'My home town flood effect' (Record Date: 2011-11-07T12:01:27), showing a flooded street with a person on a boat. A 'TOC' (Table of Contents) panel at the bottom left shows layer visibility options for 'ASIGN photo', 'Flood Analyses', 'Places', and 'Post-event image'. The interface also includes a 'Free photo app' button, map navigation controls, and a scale bar at the bottom left.

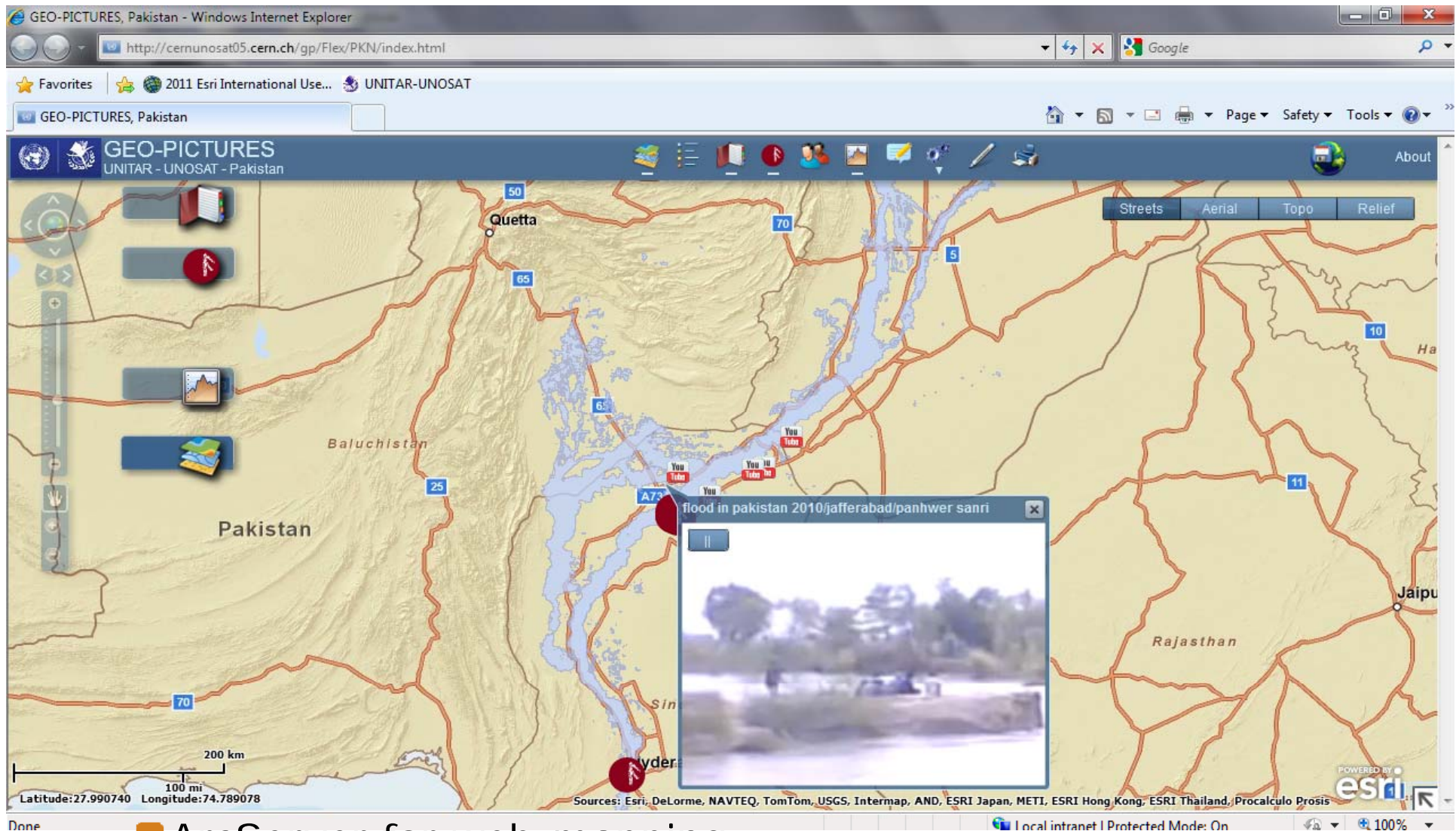
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learning by doing, network
ship, skills building, ext



E:100 30' 47.70"
N:015 44' 14.495"



E: 100° 30' 45.13"
N: 013° 44' 17.90"



- ArcServer for web-mapping
- Satellite image derived flood vectors shared (WMS, KML)
- Social media integration, improved understanding, validation



Thailand floods, 2011

Free crowd-source app for geo-tagged photos using Android phone:
Scan above QR code or download from
our website

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Map your school project with UNICEF

- . Allow to obtain exact location of schools and meta data for preparedness measures
- . Raise awereness of school children on:
 - disaster risk
 - ICT & mapping



The background features a vibrant, multi-colored swirl pattern transitioning from yellow and orange on the left to blue and green on the right. Overlaid on this is a faint, semi-transparent grid of text containing various terms related to capacity development and training.

Capacity Development and Training

Training Courses on the use of geo-information technology

- As 2013, more than 60 training courses reaching 40 beneficiaries countries and approx 1500 professionals.
- From intensive week-long workshops to monthly courses.
- Application-oriented training in GIS and satellite solutions based on UNOSAT's operational experience.
- Active learning by self-doing, through computer-assisted exercises based on real case scenarios (i.e past disaster/conflict events), theoretical lectures, round tables and field visits.
- Small groups (5 to 20 people).



knowledge, innovation, diversity, inclusion, transfer, learning by doing, partnership, skills building, etc.

Training and capacity building portfolio of activities

- Master level courses on the use of satellite imagery for emergency response mapping (3 Weeks – 6 ECTS).
- Basic and advanced Courses on the use of satellite imagery for human security, emergency response mapping and risk assessment (3 Days – 1 Week).
- In-country capacity building programmes to strengthen local capacities in the use of satellite imagery for disaster risk management and territorial planning (2 weeks/1 month/advance training modules and refresher).
- UNOSAT/UNITAR e-learning training in the area of geospatial information technology for decision makers.



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 In the Autumn semester 2011 Master of Disaster Management will offer the course Shelter and Settlements in Disasters in association with the International Federation of Red Cross and Red Crescent Societies.
 The two month long course will start 10 October 2011, and is planned to include two weeks of training in Copenhagen as well as six weeks of distance learning.
 • [More information and application form](#)

Combining studies with your job


FLEXIBILITY
 The degree can be taken either as a one year full-time programme, or part-time over 2-3 years, allowing you to study and work at the same time.
 • [See how it works](#)

Collaboration with UNITAR



GEO INFORMATION COURSE
 Master of Disaster Management is offering an intensive course in Geo Information in Disaster Situations in close collaboration with UNITAR - United Nations Institute for Training and Research.
 The course is organised by UNOSAT (UNITAR's Operational Satellite Applications Programme) and is only open to a limited number of applicants.
 • [More information on the course](#)


Ask a student



STUDENT AMBASSADORS
 If you want to know what former or current students think about the programme, then you can contact your local MDMA Ambassador directly.
 • [Find your Ambassador](#)

FACEBOOK
 You can also join the Master of Disaster Management Facebook page to get in touch with both current and former students. This way you can also keep updated with news and events related to the programme.
 • [MDMA on Facebook](#)

Graduation 2011



Congratulations to the new graduates of the Master of Disaster Management class of 2011.

MDMA Newsletter
 Subscribe to the newsletter from Master of Disaster Management.
 Insert e-mail
 Subscribe Unsubscribe

Join our new Facebook page

Master of Disaster Management
 288

How to apply

APPLICATION DEADLINES

- Master's programme: We have continuous enrolment. The final deadline for the academic year 2012-2013 is 1 April 2012.
- Intensive courses: Application deadlines can be found in the top of each course description.

APPLICATION FORM

- Start your online application here!

Intensive Courses

If you do not have enough time to study the entire degree programme, then maybe our selection of intensive courses has something for you.

- More information on Intensive courses

UPCOMING COURSES

Shelter and Settlements in Disasters
 10 October - 2 December 2011
 This course is partly e-learning

Research Design
 9 January - 20 January 2012

Risk Assessment Methods
 30 January - 23 February 2012

Risk Reduction and Preparedness
 28 February - 23 March 2012

Geo Information in Disaster Situations
 9 March - 23 March 2012

Disaster Response Management
 11 April - 9 May 2012

Health in Emergencies and Refugee Health
 11 April - 9 May 2012

Water Supply & Sanitation in Emergencies
 14 May - 13 June 2012

Sustainable Recovery
 14 May - 13 June 2012

We recommend

INTERNSHIPS WITH OCHA IN GENEVA
 International Search and Rescue Advisory Group (INSARAG)
 UN Disaster Assessment & Coordination (UNDAC)

GIS4DRM-7

The 7th International Training Course on GIS for Disaster Risk Management

17-28 October 2011, Bangkok, Thailand



The Asian Disaster Preparedness Center (ADPC)

Established in 1986, ADPC is a leading regional resource center dedicated to disaster risk reduction. ADPC works with governments, NGOs and communities of the Asia and Pacific regions to strengthen their capacities in disaster preparedness, mitigation and response through professional training, technical assistance, regional program management, country project demonstration, information sharing and research. (www.adpc.net)



The Asian Institute of Technology (AIT)

The Geoinformatics Center of the Asian Institute of Technology (AIT) in Thailand is a non-profit center for training and capacity building in Remote Sensing, GIS and GPS technologies established at AIT in 1995. The Center has under-taken a number of disaster and environment related projects in South and Southeast Asia, drawing participants from more than 25 countries within the Asia-Pacific region and to date more than 1,000 persons have been trained. (www.geoinfo.ait.ac.th)



The International Institute for Geo-Information Science and Earth Observation, University of Twente (ITC)

Founded in 1950 as a part of the University of Twente in the Netherlands, ITC provides international postgraduate education, research and project services in the field of geo-information science and earth observation using remote sensing and GIS. Since 2005, ITC is an associated institution of the United Nations University (UNU). The main focus of UNU-ITC is to support networks of Universities and training institutes from developing countries that are involved in training and research in the use of geo-information science and earth observation for disaster risk management. (www.itc.nl)



UNITAR'S OPERATIONAL SATELLITE APPLICATIONS PROGRAMME (UNITAR-UNOSAT)

UNOSAT is a technology-intensive program delivering imagery analysis and satellite solutions to relief and development organizations within and outside the UN system to help make a difference in critical areas such as humanitarian relief, human security, strategic territorial and development planning. UNOSAT develops applied research solutions keeping in sight the needs of the beneficiaries at the end of the process. UNOSAT's goal is to make satellite solutions and geographic information easily accessible to the UN family and to experts worldwide who work at reducing the impact of crises and disasters and help nations plan for sustainable development. (www.unitar.org/unosat)

For more information, please visit www.adpc.net/?GIS4DRM-7

CONTACT INFORMATION FOR INQUIRIES AND APPLICATION:

Training Services Unit (TSU)

Asian Disaster Preparedness Center

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**For example
GIS4DRM course**
held in Bangkok in October
2013 in partnership with
ADPC, ITC and AIT

- . Theory (lectures)
- . Hands-on (lab exercise,
field visit)



Targeted training programs on applied Geo-information solutions



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UNOSAT

knowledge, innovation, diversity, innovation, expertise, transfer, learning by doing, leadership, skills building, etc.

Satellite technology and GIS are useful in every stage of crisis management



know...
diversity, innov...
bin. transfer, exp...
learning by doing, network...
ship, skills building...
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Thank you for your kind attention!

Any questions?

www.unitar.org/unosat

unosat@unitar.org

24/7 hotline: +41 76 487 4998

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GEODRR) and You tube**



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