



unitar

United Nations Institute for Training and Research

Brainstorming Session on Meteorological Services for Improved Humanitarian Emergency Contingency Planning and Response

UNITAR Operational Satellite Applications
Programme (UNOSAT)

Einar Bjorgo

17 April 2009

What is UNITAR?

- United Nations Institute for Training and Research
- Mission: To deliver innovative training and conduct research on knowledge systems to develop the capacity of beneficiaries
- Since its inception in 1965, UNITAR has built sustainable partnerships acquiring unique expertise and accumulating experience and knowledge to fulfil its mandate. These accomplishments have enabled UNITAR to respond to the growing demand from UN Member States for training for capacity development in the fields of **Environment; Peace, Security and Diplomacy; and Governance**
- Offices: Geneva (HQ), New York, Hiroshima, (Brazil)

What is UNOSAT?

- The United Nations Institute for Training and Research (UNITAR) Operational Satellite Applications Programme - a unique UN programme entirely dedicated to providing satellite based solutions to the UN, local governments, international organizations and NGOs
- Has evolved into a mature UN service with global outreach and supported by a network of partners world wide
- ~~Diversifying the offer of satellite & IT based services and adapt it to specific user~~
IT based services and adapt it to specific user needs of the international community
unity
rectly or indirectly involved in operations and validated by relevant UN coordination
ndirectly involved in operations and validated by relevant UN coordination
mechanisms
6 in recognition of team productivity and contribution to a more efficient and modern



Three main pillars

- Humanitarian Emergencies and Human Rights - UNOSAT Rapid Mapping
- Training on satellite solutions and GIS - customized, from user-perspective
- Capacity development – longer term projects providing benefits of satellite solutions to local governments



UNITAR/UNOSAT – WMO:
Memorandum of Understanding (MoU)

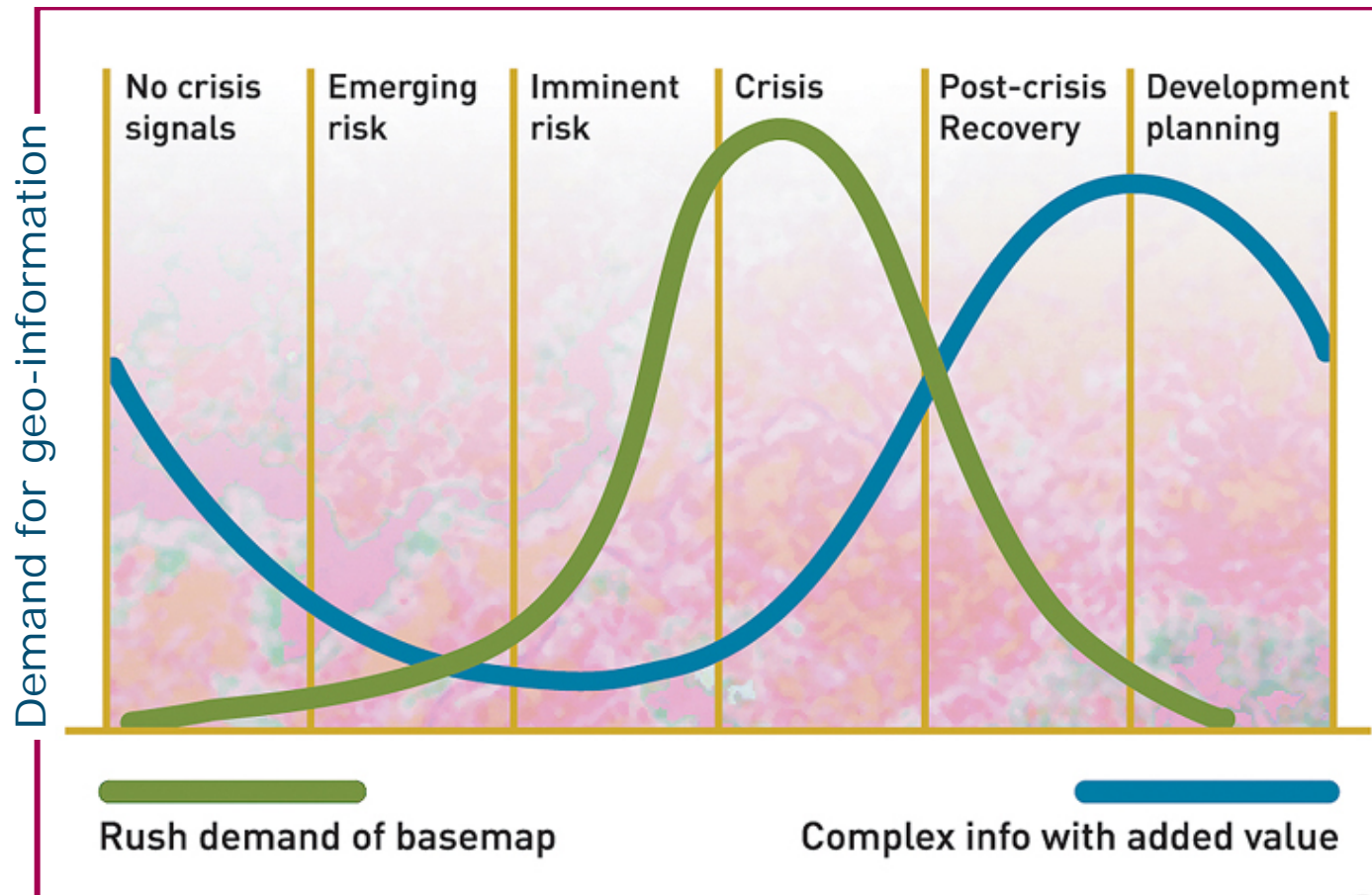
knowledge, international, participatory approach, m
diversity, innovation, knowledge sharing, research
ship, transfer, expertise, new technology
learning by doing, network
ship, skills building
ing, ext

Disaster management cycle



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

UNOSAT integrated response model for humanitarian emergencies, contingency planning and development



Operational procedures

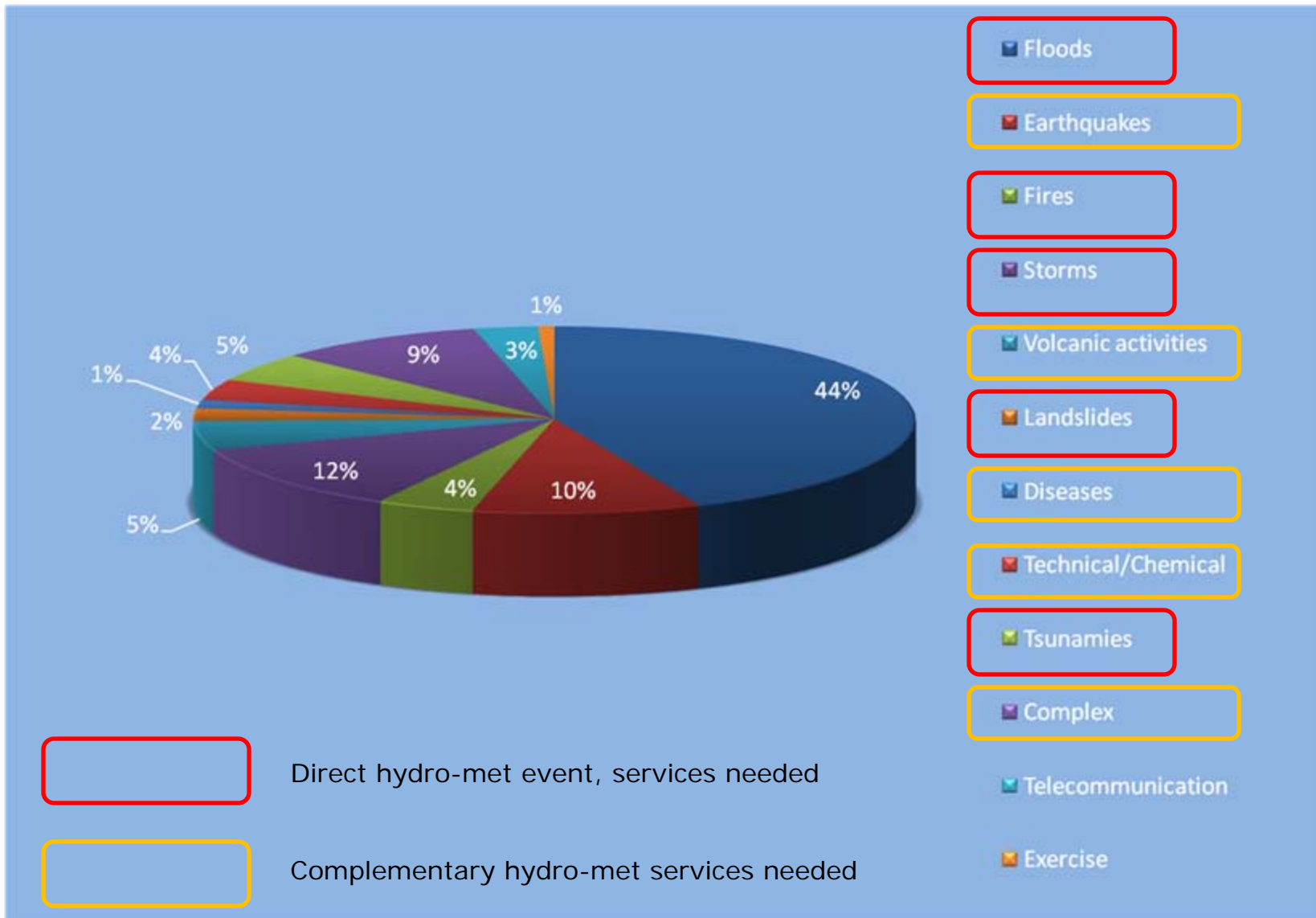
- GDACS alerts
- Additional information collection on event
- Liaise with UN sister agencies
- Trigger UNOSAT Rapid Mapping (2/3 public, commercial, bilaterally provided data, 1/3 International Charter Space and Major Disasters – UNOSAT can trigger Space Charter directly for OCHA and other UN)
- Produce first map/analysis asap (1-2 days). In parallel collect complementary information, including hydro-meteorological
- Produce disaster specific maps/analyses (1-7 days, depending on imagery availability)
- Feedback, review



Current sources and mechanisms to access hydro-met information

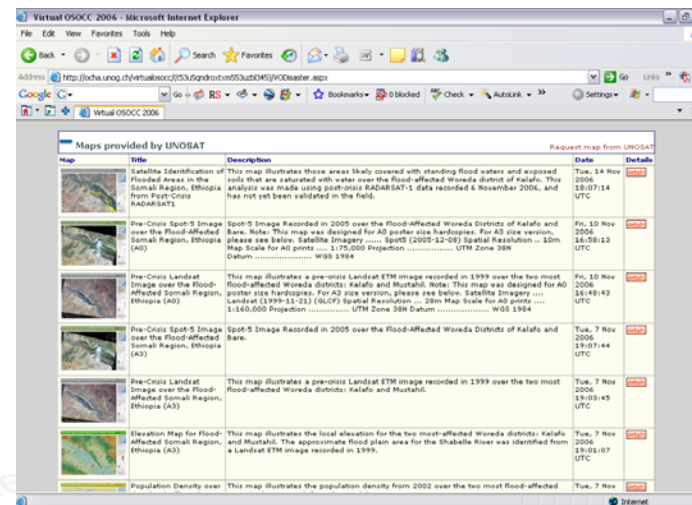
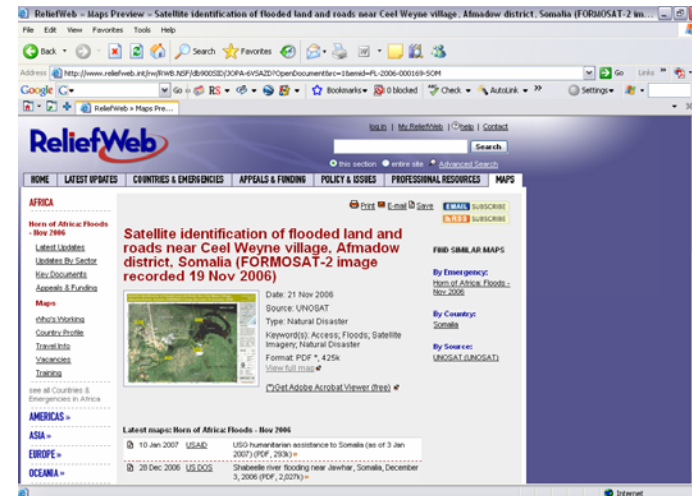
- Rainfall data: NASA, TRMM
- Forecasts: ECMWF through WMO, media
- Digital Elevation Models (hydro networks): SRTM, ASTER 30 m
- UNEP Climate Data

Statistics: UNOSAT Humanitarian Rapid Mapping, 2003-2009 (150+ events)



Distribution of results

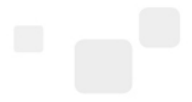
- Satellite imagery derived information as GIS-ready information layers, final maps and analyses to wide range of users in the field, regional offices, HQ (geographically distributed)
- Results distributed to wide range of types of users (UN, IFRC, ICRC, NGOs, Governments etc.) with different mandates (thematically distributed)
- Means of distribution: VirtualOSOCC/GDACS, HICs, GeoNetwork, ReliefWeb, GeoRSS feeds, UNOSAT website, AlertNet, e-mail alerts, other - Online mapping once operational





Examples

Ownership, innovation, knowledge, transfer, expertise, action, learning by doing, responsiveness, leadership, approach, methodology, research on knowledge systems, new technologies, capacity building, learning by doing, networking, leadership, skills building, methodology, training, research on knowledge systems, new technologies, learning by doing, skills building



Floods

knowledge, international, participatory approach, research, diversity, innovation, knowledge sharing, research, ship, transfer, expertise, new technologies, learning by doing, networks, ship, skills building, etc.



ANGEL AGUIRRE



INICIO

ABOUT US ▾

PRODUTOS ▾

QLOOKS ▾

BD IMAGENS

BD SUPERFÍCIES ▾

BD USO DA TERRA ▾

BD TOPONÍMIA ▾

WEBMAP ▾

CIDADES ▾

ARTIGOS ▾

CD Rom(s) ▾

DOWNLOADS ▾

MAPA USERS ▾

FEEDBACK ▾

INFOS ▾

SONDAGENS ▾

WEBMAIL ▾

Dezembro.

O CENACARTA é um serviço público moçambicano especializado no tratamento de **informação geográfica**. Está sediado em Maputo, Moçambique, e actua em todo o **território moçambicano**.

O CENACARTA é composto por uma equipe permanente de alto nível, beneficiando de experiências internacionais importantes no domínio da teledeteção e da geomática.

O CENACARTA actua na cadeia completa de produção desde a aquisição de dados (fotografia aérea, tratamento de imagens satélite, GPS) até às análises cartográficas complexas e desenvolvimento de aplicações.

Compete ao CENACARTA a direcção, coordenação e execução das actividades geo-cartográficas e de teledeteção, a nível nacional, a disseminação das técnicas de teledeteção no País, a aquisição, tratamento, processamento e distribuição de imagens e dados geo-cartográficos obtidos via satélite.



Provocar vítimas

Turismo em Moçambique: necessário acelerar

Livro de Visitas

Guest Book
Cenacarta 2008

BTS 250000

Base Topográfica
Cenacarta 2008

Meteosat

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NOAA

Meteo

Click para previsão

Ciclones

SISMO COM MAGNITUDE 5.0 no dia 03/Fev/08 Hora UTC: 11:12:12

Magnitude: 5.0
Data: 03/Fev/08 (Domingo)
Hora UTC: 11:12:12
Hora de Moçambique: 13:12:12
Profundidade: 10 Km
Província: Manica
Distrito: Machaze
Posto: Save
Latitude: -21.30S
Longitude: 33.08E
Fonte: USGS NEIC (WDCS-D)

MAPA DE LOCALIZAÇÃO: [Clique aqui para vêr](#)**INUNDAÇÕES EM MOÇAMBIQUE****INUNDAÇÕES: 11/12/07 - 29/01/08**

Rios Zambeze, Buzi, Pungue e Save

Clique na imagem para aceder aos mapas DFOFonte: Dartmouth Flood Observatory
DFO 2007-235/FL-2008-000004-MOZ**24 MAPAS PRODUZIDOS PELA UNOSAT (INUNDAÇÕES E OUTROS)**

Última actualização: 05/Fev/2008

Clique na imagem para aceder aos mapas UNOSAT

Fonte: UNOSAT - Nações Unidas

**Sismos**Past 1 day
Earthquakes
usgs.gov RSSM 2.9, Southern
AlaskaM 3.6, Puerto Rico
regionM 2.7, Alaska
PeninsulaM 3.1, San Francisco
Bay area, California

M 2.7, Mozambique

Sismos em MZ

UPDATE 2: FLOOD WATERS OVER THE AFFECTED CAPRIVI REGION, NAMIBIA

Flood Analysis with DMC Imagery from 29 March 2009 & ENVISAT-ASAR (WSM) from 20 March 2009

This map illustrates satellite-detected flood waters as of 29 March 2009 over the affected region of Caprivi, Namibia, which have significantly increased in extent over a 9 day period. Flooded areas have been sorted into 3 classes: Red areas represent standing flood waters identified on 29 March; Orange areas represent standing flood waters identified on 20 March; and Blue areas represent pre-flood waters from multiple sources. Flood analysis was made using DMC imagery & ENVISAT-ASAR data (WSM). This flood detection is a preliminary analysis & has not yet been validated in the field.

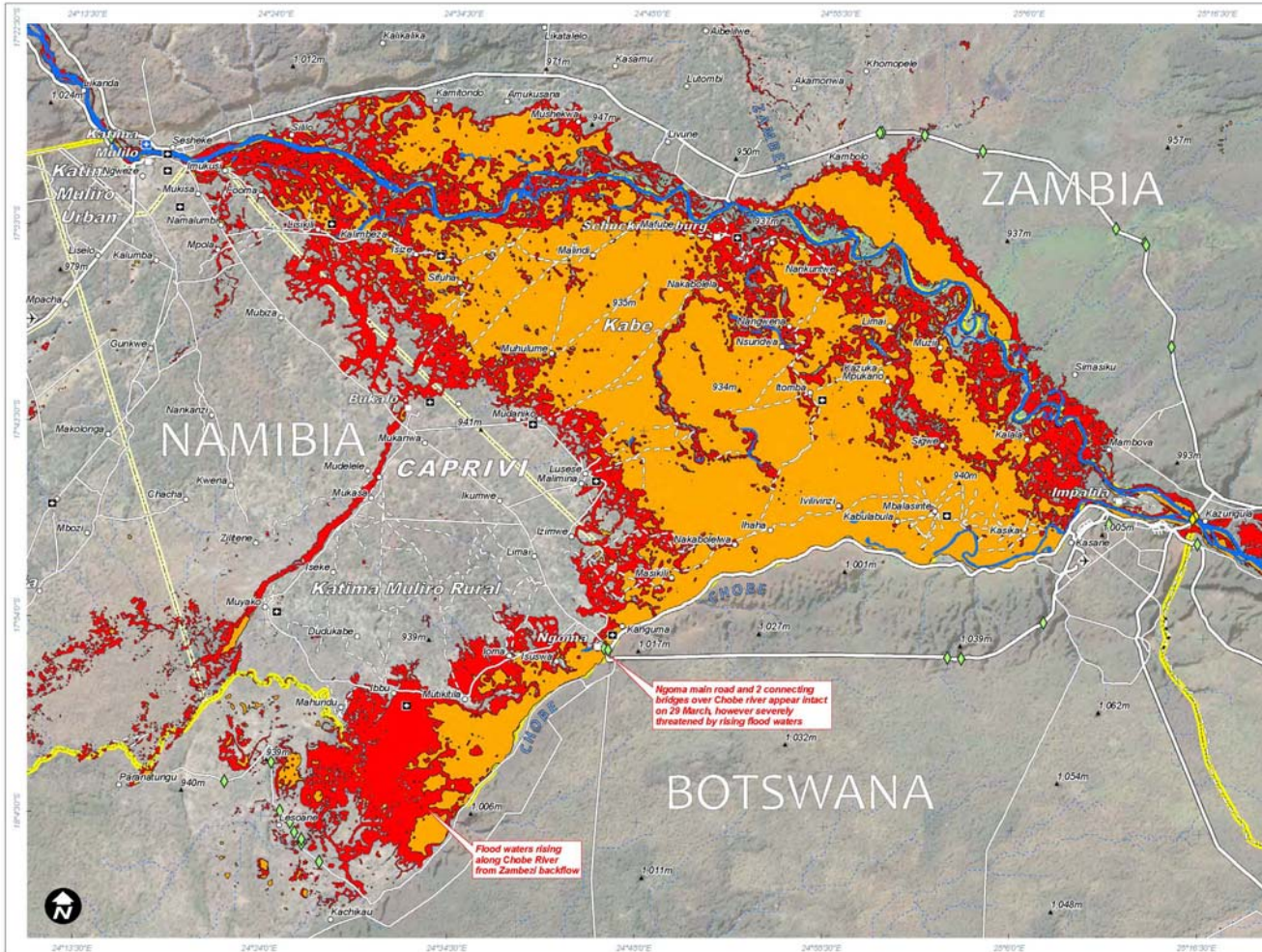
Disaster coverage by the International Charter "Space and Major Disasters". For more information on the Charter, which is about assisting the disaster relief organizations with multi-satellite data and information, visit www.disasterscharter.org

Heavy Rainfall & Flooding 31 March 2009



Version 1.2

Glide No: FL-2009-00062-NAM



- Legend**
- Airstrip
 - Town
 - Village
 - Hospital
 - Health Center
 - Clinic
 - Spot Height (m)
 - Brewery
 - Culvert
 - Ferry Crossing
 - International Border
 - Region Border
 - Consistency Border
 - Road
 - Minor Road
 - Track/Trail
 - Drainage Line

- FLOOD WATER EXPANSION ANALYSIS**
- Relative Increase in Flood Water Extent
- Extent of Flood Water increase (29 March 2009)
 - Extent of Flood Water 20 March 2009
 - Pre-Flood Water
 - Global water database

Map Scale for A3: 1:375,000

Satellite Imagery	DMC (EO)
Imagery Date	29 March 2009
Resolution	32m
Source	DMC International Imaging L&I
Radar Date	ENVISAT ASAR (WSM)
Radar Resolution	100 m
Radar Date	17-20 March 2009
Copyright	ESA 2009
Source	ESA-CSI (Response Project)
Road & Town Data	Wambuga Directorate Survey & Mapping
Flood Analysis	UNOSAT, SALB
GIS Data	USGS, NGA, UNOSAT, SALB
Spot Heights	SRTM
Pre-Flood Water	Global data (ESRI 2007)
Map Production	UNOSAT (21 March 2009)
Projection	UTM Zone 34 South
Datum	WGS 1984

The depiction and use of boundaries, geographic names and related data shown here are not warranted to be exact 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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United Nations Institute for Training and Research

UNOSAT
satellite solutions for all

Contact Information: info@unosat.org
24/7 Hotline: +41 76 487 4998
www.unosat.org

Ngoma main road and 2 connecting bridges over Chobe river appear intact on 29 March, however severely threatened by rising flood waters

Flood waters rising along Chobe River from Zambia's backflow

FLOOD WATERS OF SOUTH ASIA 2008

Flood Detection with MODIS Terra & Aqua Satellite Imagery Recorded for the Periods of 2-22 August 2007 and 1-8 September 2008



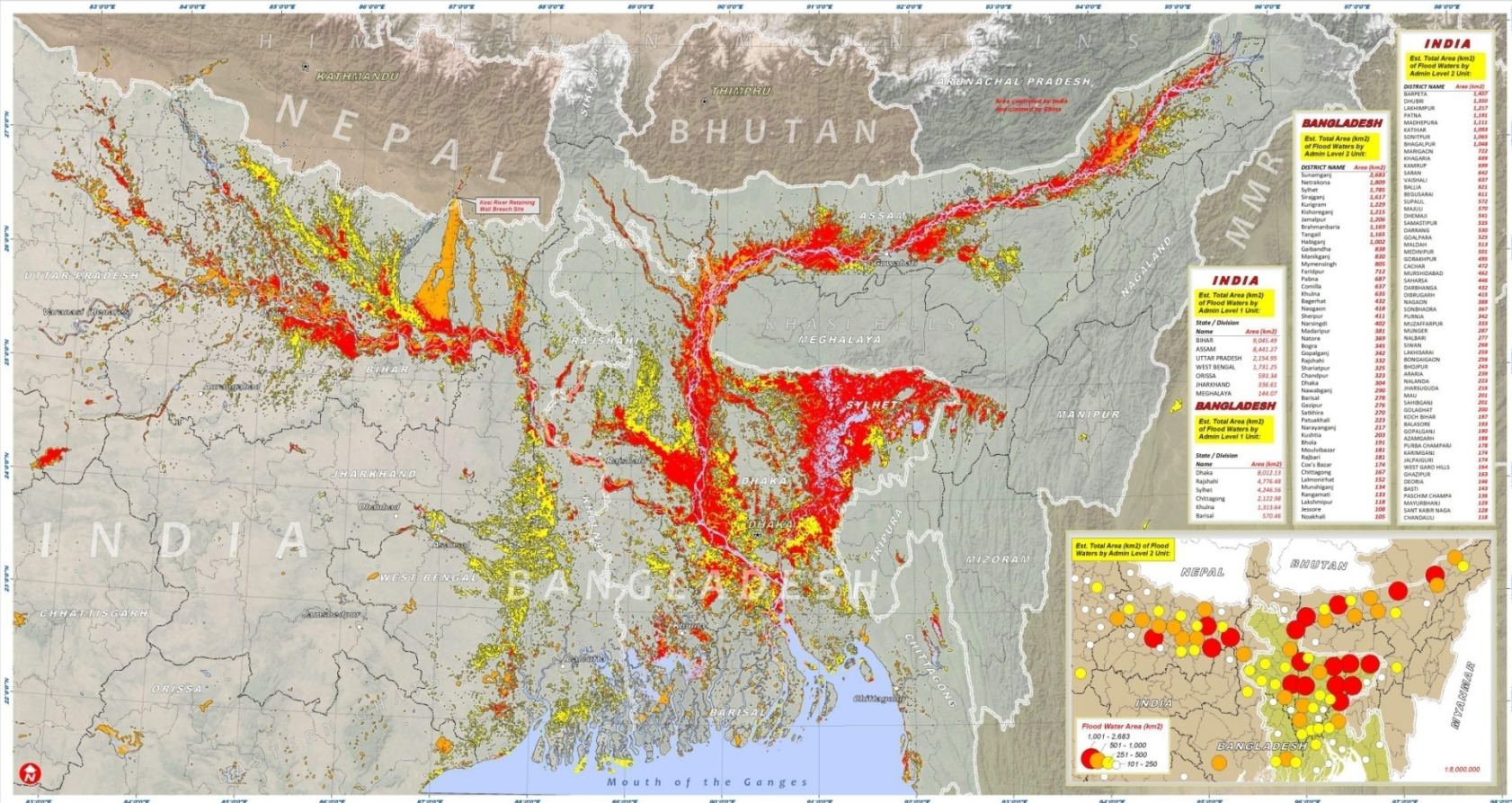
Disaster coverage by the International Charter 'Space and Major Disasters'. For more information on the Charter, which is about assisting the disaster relief organizations with multi-satellite data and information, visit www.disastercharter.org

Heavy Rainfall & Flooding (2008)

11 September 2008

Version 1.0

Glide No: FL-2008-000145-IND



INDIA

Est. Total Area (km²) of Flood Waters by Admin Level 2 Unit:

DISTRICT NAME	Area (km ²)
SIAPATA	1,007
SHIBSA	1,000
LAKHIMPUR	1,181
MADHUPURA	1,111
KATHUA	2,088
SUNTPUR	1,088
BANGALUR	1,088
MARGONJ	722
...	...

BANGLADESH

Est. Total Area (km²) of Flood Waters by Admin Level 2 Unit:

DISTRICT NAME	Area (km ²)
Sonargaon	2,683
Netrokona	2,809
Sylhet	1,785
Sirajganj	2,817
Singur	2,139
Kishoreganj	2,218
Barisal	2,286
Brahmanbaria	1,169
Comilla	2,166
Hulgaing	2,002
Manikganj	2,000
Narayanganj	830
Feni	805
Chandernagore	712
Patna	687
Comilla	685
Khulna	635
Bagerhat	612
Narayan	418
Sherpur	411
Narail	402
Madhupur	381
Natore	369
...	...

INDIA

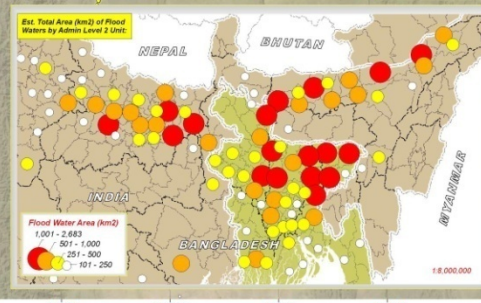
Est. Total Area (km²) of Flood Waters by Admin Level 1 Unit:

State / Division	Area (km ²)
BHAR	5,041.47
ASSAM	8,442.27
UTTAR PRADESH	2,254.95
WEST BENGAL	3,791.25
ORISSA	263.34
JHARKHAND	336.61
...	...

BANGLADESH

Est. Total Area (km²) of Flood Waters by Admin Level 1 Unit:

State / Division	Area (km ²)
Dhaka	8,012.13
Rajshahi	4,776.48
Sylhet	4,246.56
Chittagong	2,122.98
Barisal	1,333.64
Barisal	570.46
...	...



Map Information

This map illustrates satellite detected flood water over administrative units (levels 1 & 2) and are presented in the affected region of South Asia, covering the eastern fabular lists. Note only units with flooded area values within States of Bihar and Assam, as well as the whole over 100km² have been included. This is a preliminary of Bangladesh. Those areas with likely standing flood analysis and has not yet been validated in the field, water have been identified from MODIS Aqua and Terra satellite imagery collected from 1 to 8 September 2008. The depiction and use of boundaries, geographic at a spatial resolution of 250m. The flood water extent names and related data shown here are not warranted from August 2007 is also presented for a time to be accurate nor do they imply official endorsement comparison. Pre-flood water levels were measured for or acceptance by the United Nations Institute for Training and Research (UNITAR) Operational Satellite Applications Programme (UNOSAT). UNOSAT breach in southern Nepal on 18 August 2008 provides satellite imagery and related geographic Estimates of flood water area (km²) have been information to UN humanitarian and development calculated for the affected Indian and Bangladesh agencies and their implementing partners.

Symbol Legend

Capital	Flood Waters Detected in both 2007 & 2008	INDIA	Country
Large City or Town	Flood Waters Detected only in 2008	BHAR	State
Village / Town	Flood Waters Detected only in 2007	DHAKA	Capital
International Border	Pre-Flood Waters (1-10 May 2007)	Shillong	Large Town or City
Division / State Boundary		Ganges	River / Lake
District / Admin Level 1			
District Boundary Admin Level 2			



Map Scale for A2: 1:2,750,000
 Map Scale Representation: 1 cm = 27.5 km

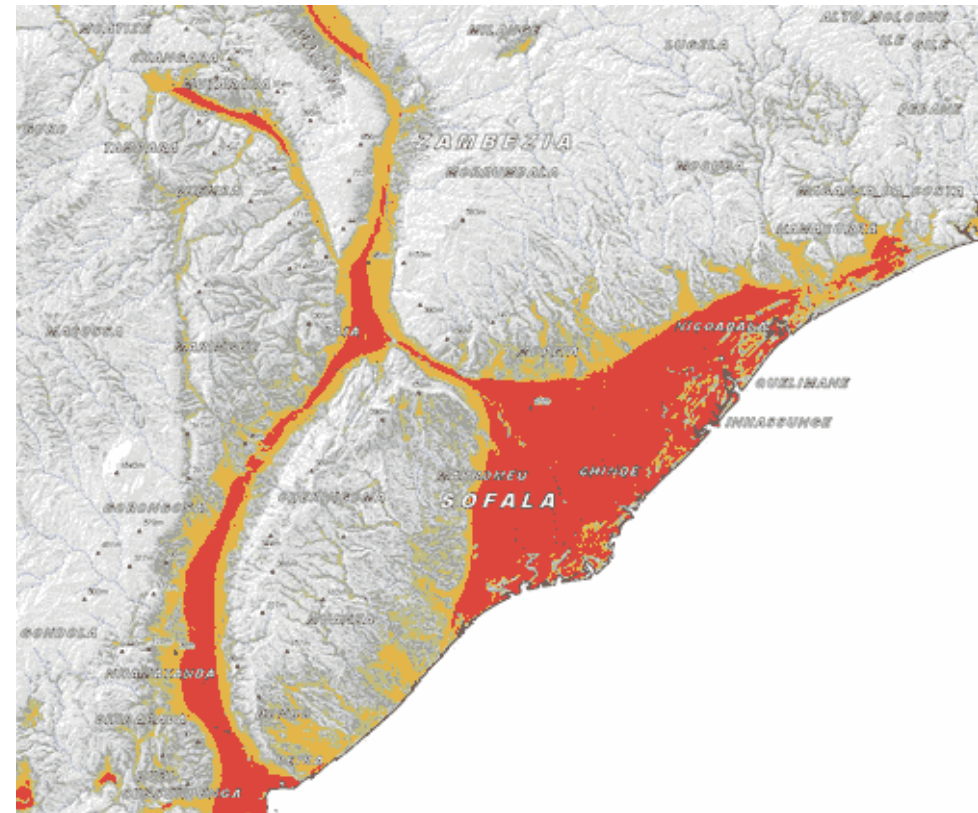
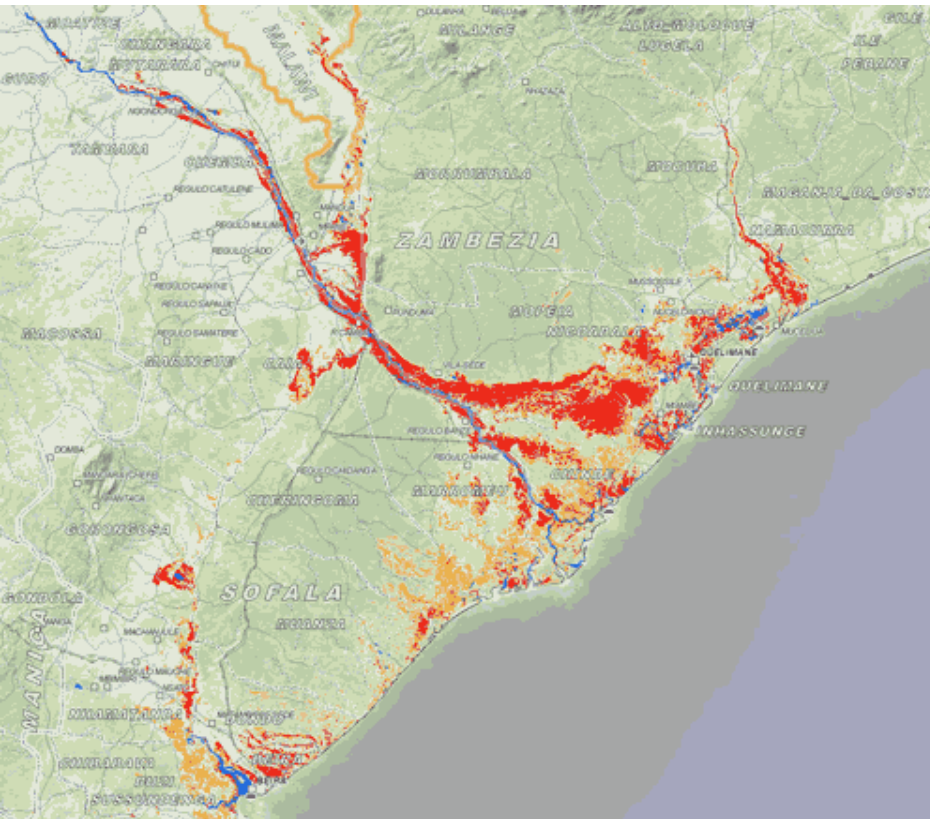
0 25 50 100 150 200 Kilometers

0 12.5 25 50 75 100 125 150 Miles

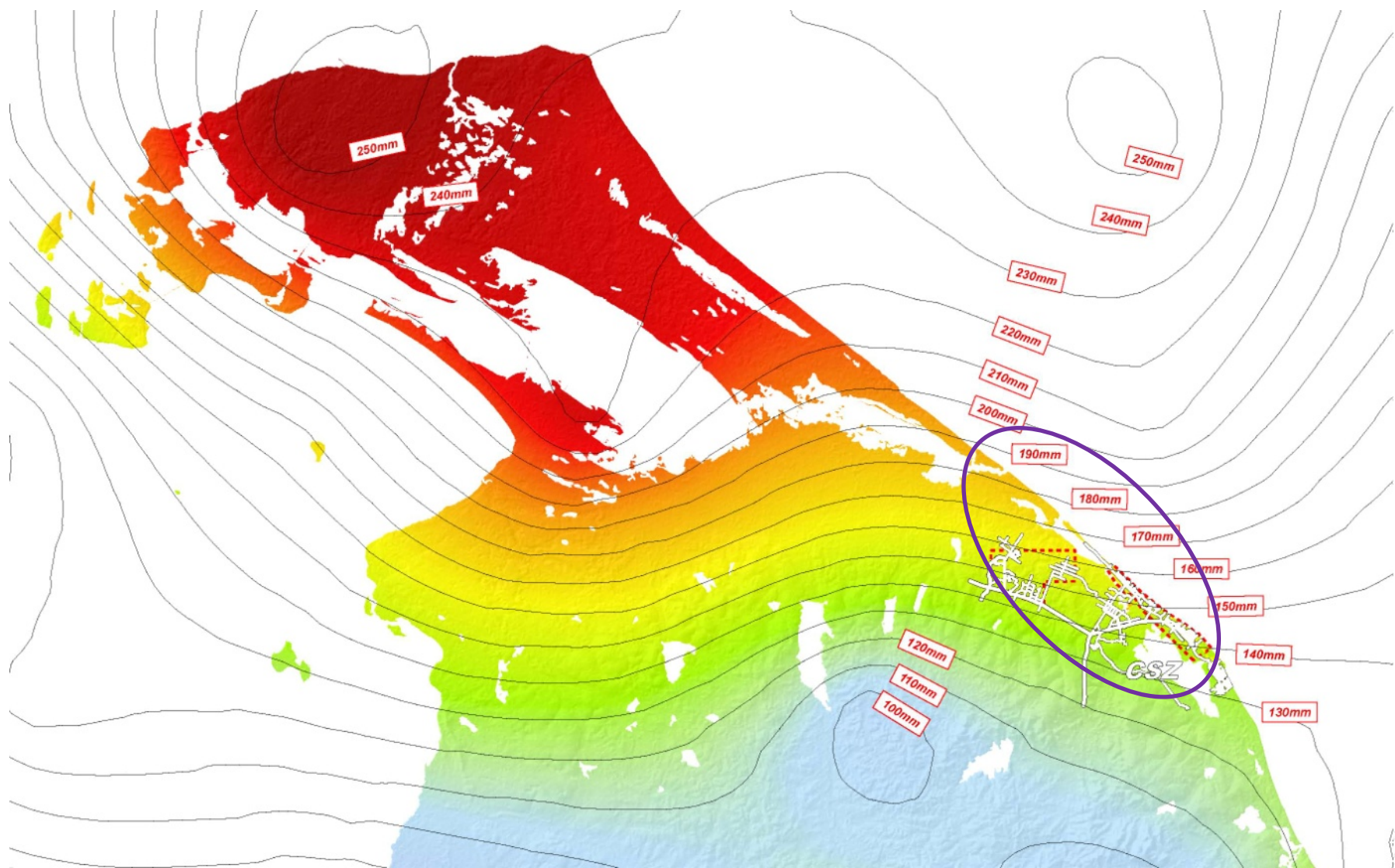
Contact Information: info@unosat.org
 24/7 Hotline: +41 76 487 4998

Satellite Data: MODIS Terra & Aqua (NASA)
 Image Resolution: 250 Meters
 2008 Dates: 1-8 September 2008
 2007 Dates: 1-10 May 2007, 2-22 August 2007
 SRTM Data: USGS, NASA, USGS
 Elevation Data: SRTM (30m) - NASA
 Flood Analysis: UNOSAT
 Map Projection: UNOSAT (11 September 2008)
 Projector: Albers Equal Area Conic (WGS 1984)

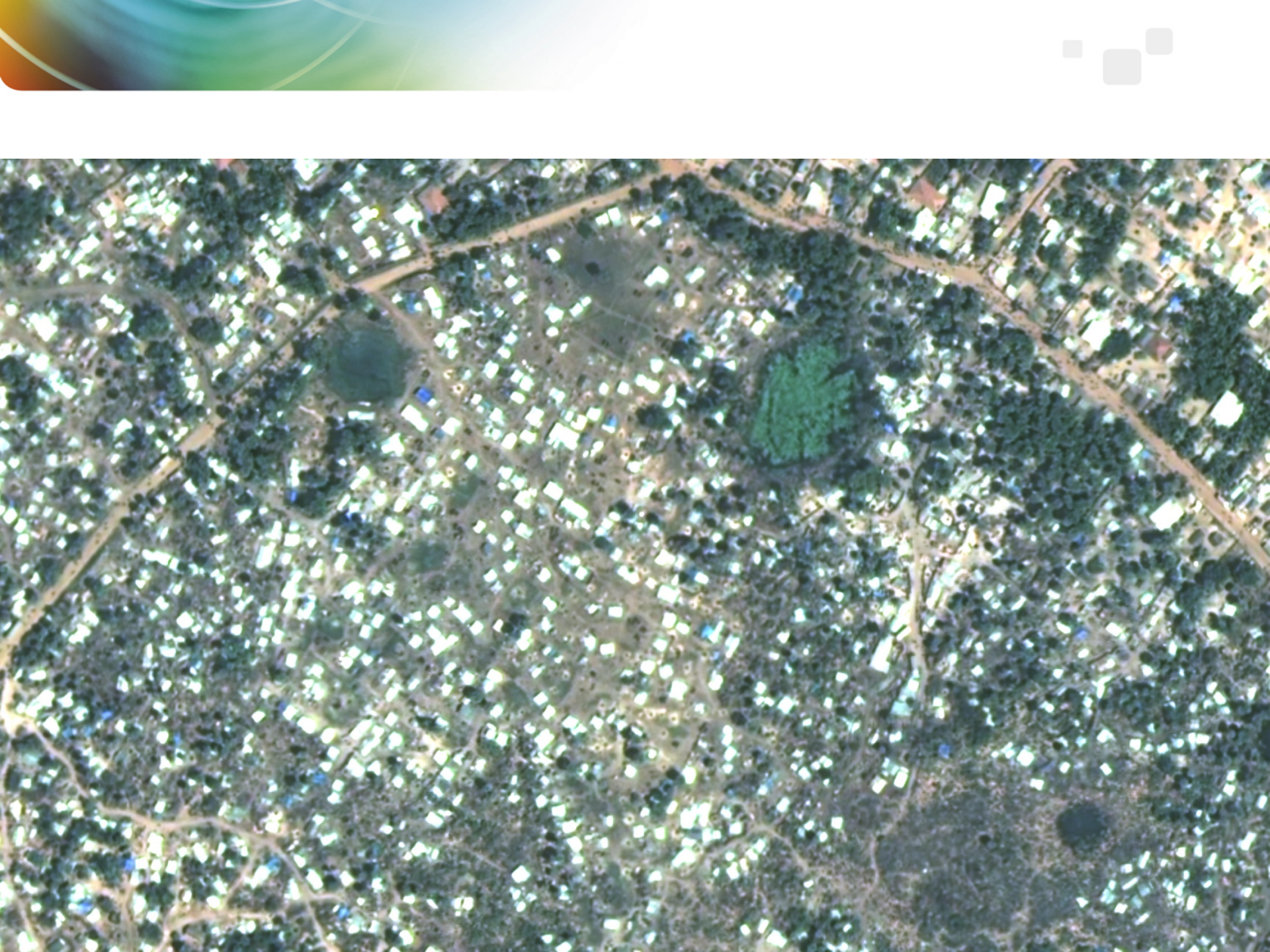
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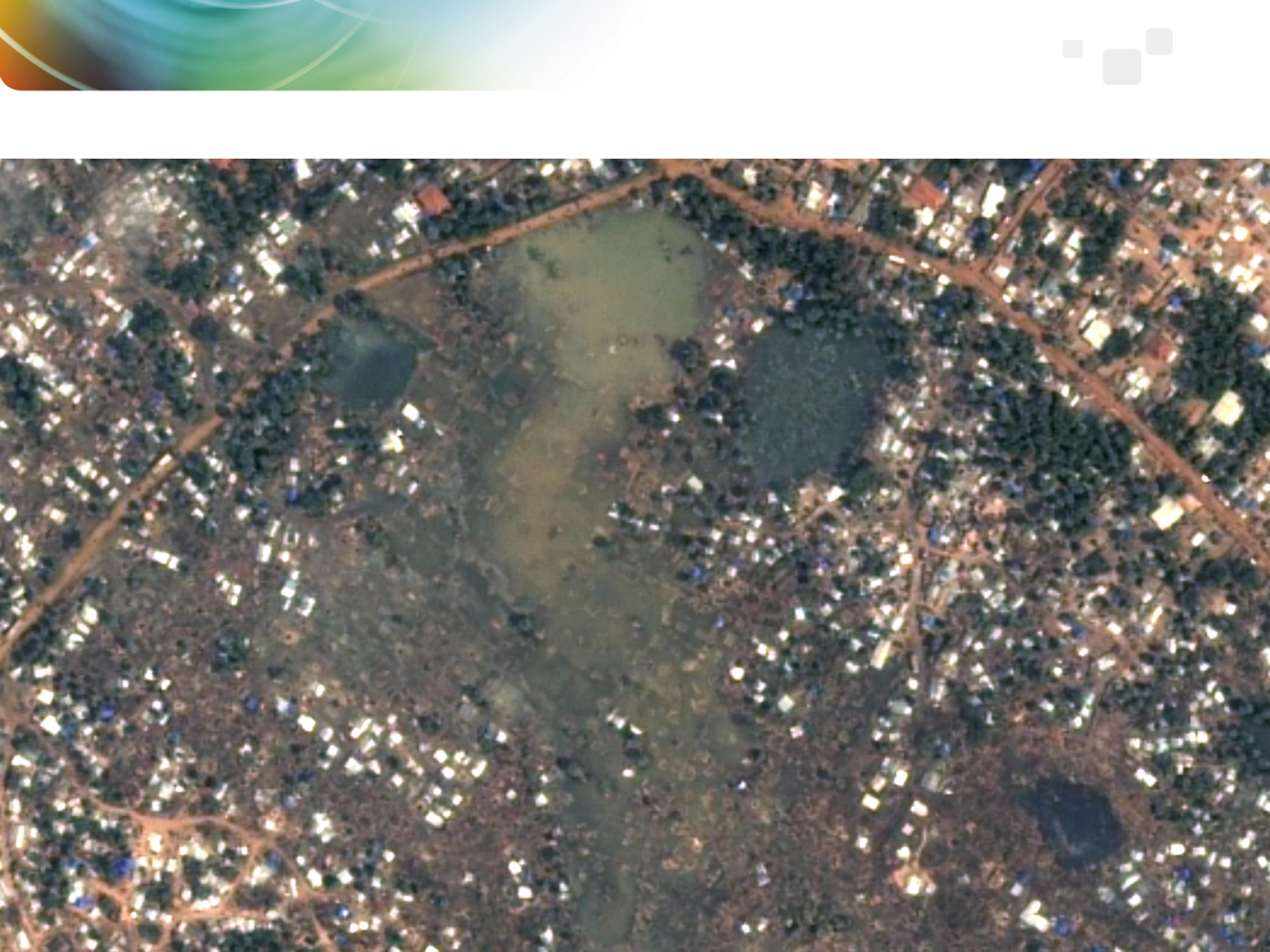


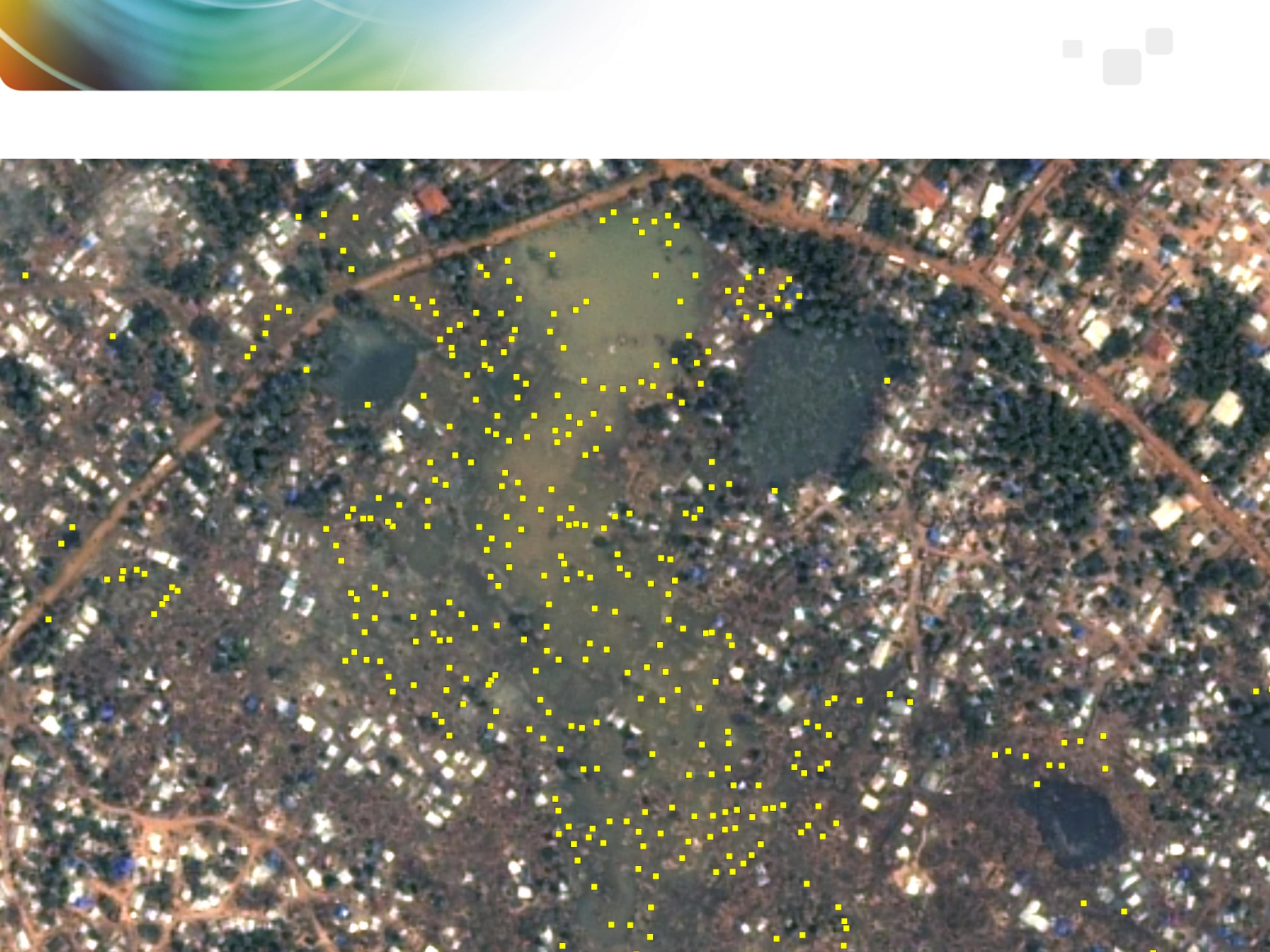
Mozambique:
Observed flooding from satellite vs. modeled flood exposed areas

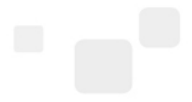


TRMM rainfall data







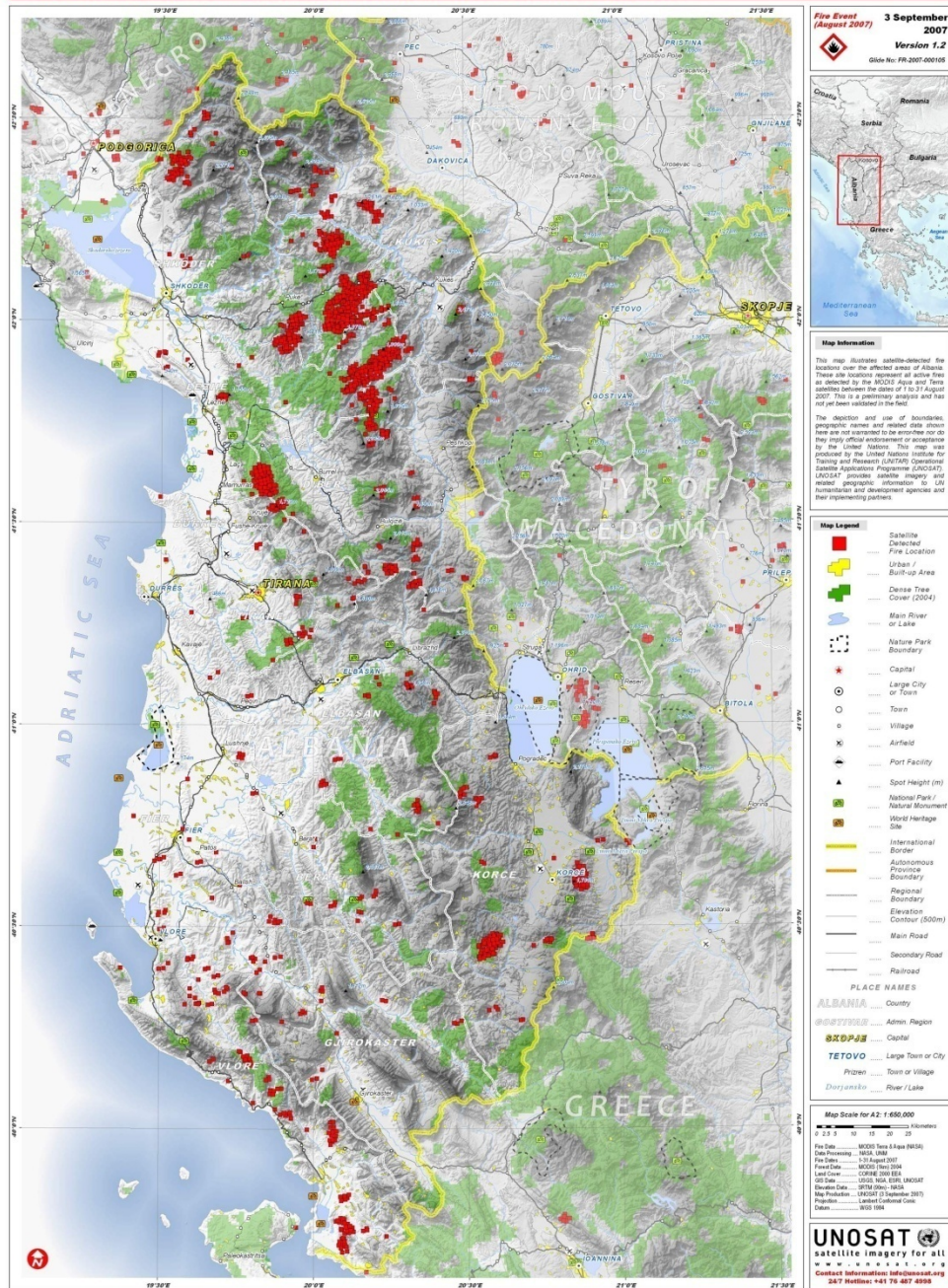


Fires

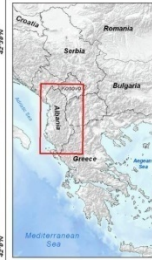
knowledge, international, participatory approach, research, diversity, innovation, knowledge sharing, research, ship, transfer, expertise, new technologies, learning by doing, networks, ship, skills building, etc.

Update 1: Overview of Fires in Albania for August 2007

Fire Detection with MODIS Terra & Aqua Imagery Recorded from 1-31 August 2007



Fire Event (August 2007)
3 September 2007
Version 1.2
 GDS No: FR-2007-000105



Map Information

This map illustrates satellite-detected fire locations over the affected area of Albania. These fire locations represent all active fires as detected by the MODIS Terra and Aqua satellites between the dates of 1 to 31 August 2007. This is a preliminary analysis and has not yet been validated in the field.

The depiction and use of boundaries, geographic names, and related data shown here do not constitute an endorsement or acceptance by the United Nations. This map was produced by the United Nations Institute for Training and Research (UNITAR) Geospatial Satellite Applications Programme (UNISAT). UNISAT provides satellite imagery and related geographic information to UN humanitarian and development agencies and their implementing partners.

- Map Legend**
- Satellite Detected Fire Location
 - Urban / Built-up Area
 - Decid. Tree Cover (2004)
 - Main River or Lake
 - Nature Park Boundary
 - Capital
 - Large City or Town
 - Town
 - Village
 - Airfield
 - Port Facility
 - Spot Height (m)
 - National Park / Natural Monument
 - World Heritage Site
 - International Border
 - Autonomous Province Boundary
 - Regional Boundary
 - Elevation Contour (500m)
 - Main Road
 - Secondary Road
 - Railroad
- PLACE NAMES**
- ALBANIA** Country
- GOSTIVOLE** Adm. Region
- SKOPJE** Capital
- TETOVO** Large Town or City
- Prizren Town or Village
- Dorjansko River / Lake

Map Scale for A2: 1:650,000

0 2.5 5 10 15 20 25 Kilometers

File Date: MODIS Terra & Aqua (M314)
 Data Processing: UNISAT, UNISAT
 File Date: 03 August 2007
 File Path: MODIS Terra 2007
 Grid Date: UNISAT, NOAA, ESRI, UNISAT
 Grid Path: UNISAT, NOAA, ESRI, UNISAT
 Map Production: UNISAT (3 September 2007)
 Project: UNISAT
 Date: 03 August 2007





Earthquakes

knowledge, international, participatory approach, research, diversity, innovation, knowledge sharing, research, ship, transfer, expertise, new technologies, learning by doing, networks, ship, skills building, etc.



Snow Cover Over Northern Pakistan and India

South Asian Earthquake 2005

7 January 2006

1:700,000



The map illustrates the extent of snow cover over the region of Pakistan and India, as affected by the Indian 2005 earthquake. The satellite imagery was acquired by the Aigis satellite (EOS) on 29 December 2005 at approximately 12:31 UTC local time (IST - 5:30 hours).

The satellite data was processed by the Space and Air Force Research Institute (SAFARI) in India. The satellite data was processed by the Space and Air Force Research Institute (SAFARI) in India. The satellite data was processed by the Space and Air Force Research Institute (SAFARI) in India.

Map Legend

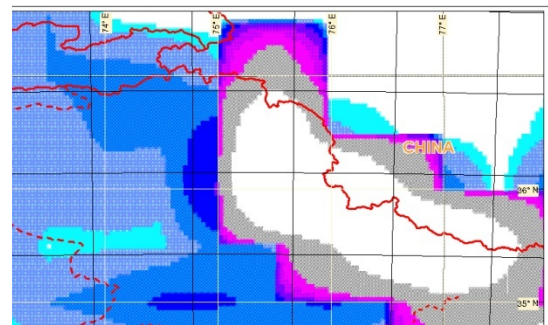
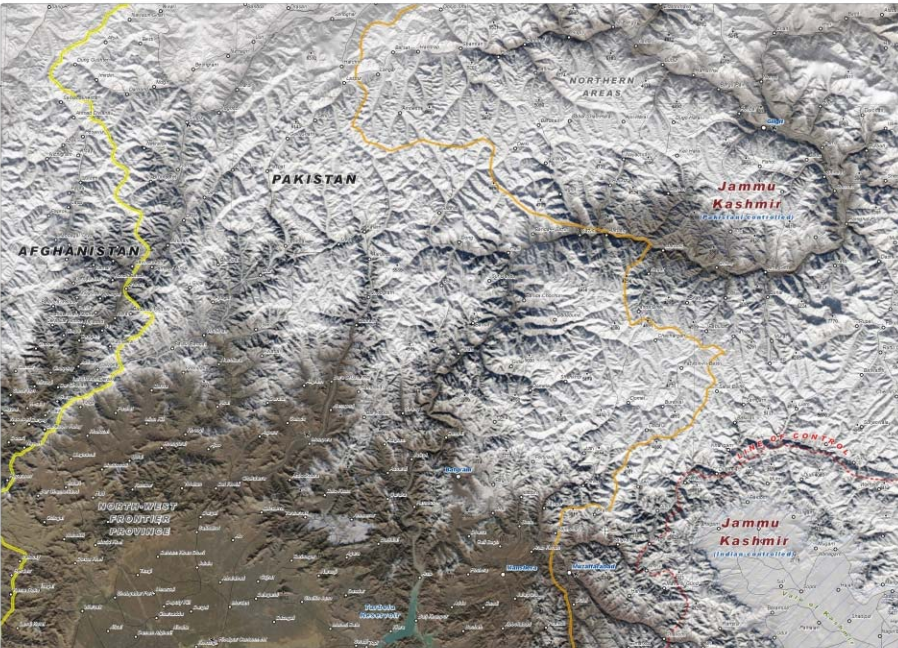
- Earthquake Epicentre
- Village
- Spot Height (m)
- Airport
- Road
- International Border
- Province Border
- Line of Control
- Coastal Cover
- Snow Cover
- Bare Ground
- Water

Scale: 1:700,000

Projection: UTM Zone 43 North

Units: Meters

UNOSAT satellite imagery for all



Daily snowcover and snow depth: 29 December 2005

South Asia Earthquake

Most affected area



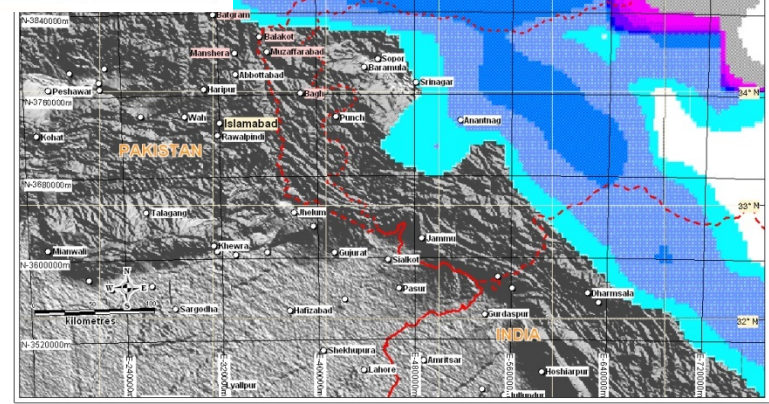
Disaster type: Earthquake (7.6M)
 Epicentre: 34.4 deg. N, 73.5 deg. E
 Disaster date: October 8, 2005 at 06:23:11 (UTC)
 Slide Number: EQ 2005 000174 PAK

Resolution: 1000 m
 Data source: ECMWF through MoU UNOSAT-WMO
 GIS Data: GEOnet Names NASA, Europa Technologies Ltd.
 Elevation Model: SRTM
 Image post-processing: UNOSAT

Datum: WGS84
 Projection: UTM Zone 43 North
 Map created: 29 December 2005

Interpretation key

1-2	20-50	1000-10000
2-5	50-100	Elevation model
5-10	100-200	
10-20	200-1000	



This map was produced by the UNOSAT service headed by UNSTAR and executed by UNOSAT. UNOSAT provides satellite imagery and related geographic information to UN humanitarian and development agencies and their implementing partners.

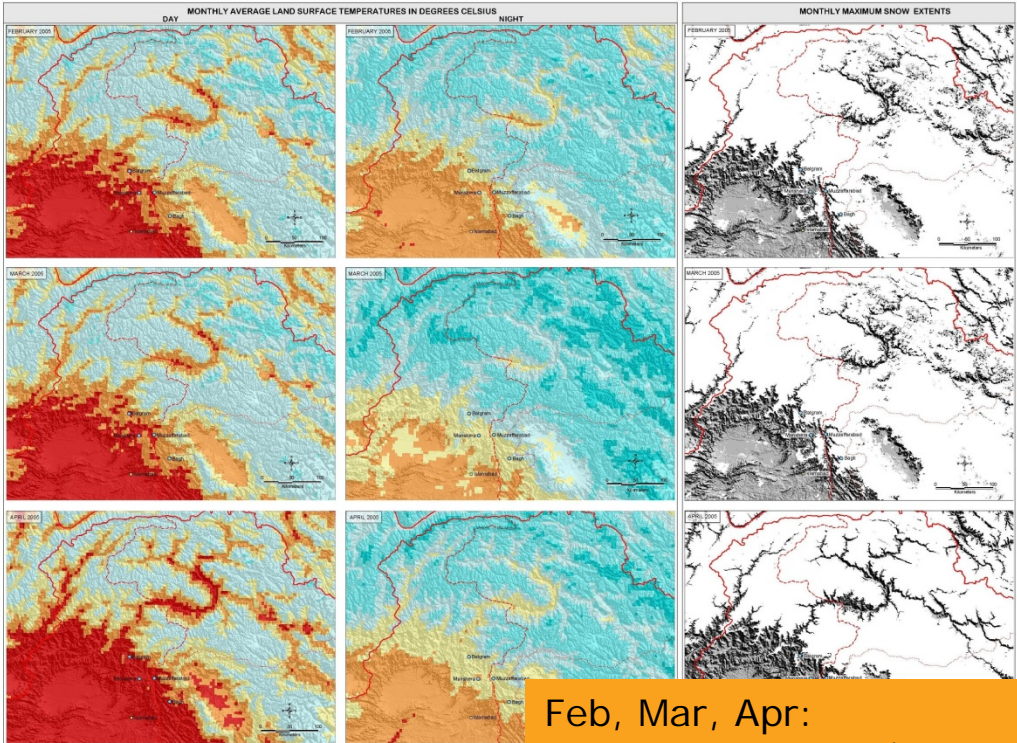
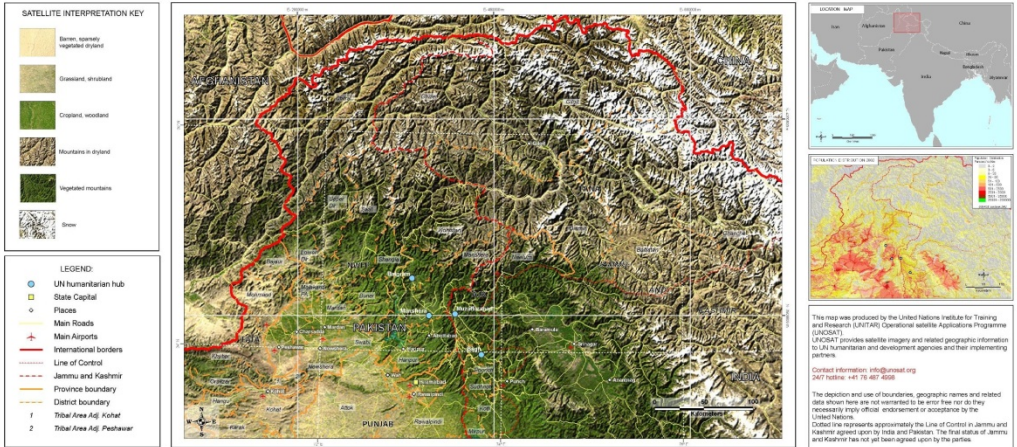
Contact information: info@unosat.org
 24/7 hotline: +41 76 487 4958

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

Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

SOUTH ASIA EARTHQUAKE OPERATIONS PLANNING MAP FEBRUARY - MARCH - APRIL 2006

Map created on February 9th, 2006



Land Surface Temperature (LST) legend in degrees Celsius

	< 5°
	11° to 20°
	0.01° to 10°
	4° to 0°
	-19° to -10°
	-29° to 30°
	40° to 30°

DATA SOURCES:

All maps: Data: MODIS
Projection: UTM zone 43 North
Color: orange
Image: MODIS mosaic
Temperature: NOAA SSTv3 data
Land Cover: UNO "Ten Land Cover" Hansen et al. (2000)
Source: NASA

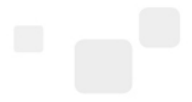
Land Surface Temperature maps:
1. 3° x 3° data: MODIS Terra Monthly Land Surface Temperature
Background image: SRTM 30 meters (NASA)
Processing: 10 degree Celsius interval visualization
Date: February, March, April 2006

Snow extent maps:
Snow data: MODIS Terra "Eight day snow cover"
Background image: SRTM 30 meters (NASA)
Processing: monthly maximum snow cover
Date: February, March and April 2006

Vector data:
UN Cartographic Section
UN Office for the Coordination of Humanitarian Affairs (UN OCHA) Humanitarian Information Centre (HIC), Islamabad and UN Humanitarian Support Section
Map data provided by UNOSAT Support Section
Information please contact: maps@un.org

Feb, Mar, Apr:
Max temperature (daytime)
Min temperature (nighttime)
Max snow cover

...al, participatory approach, research, knowledge sharing, new technology, expertise, doing, networks, learning by doing, skills building, ship, skills building, training, ext



Storms

knowledge, international, participatory approach, research
diversity, innovation, knowledge sharing, research
ship, transfer, expertise, new technologies
learning by doing, networks
ship, skills building
ing, ext

FLOOD ASSESSMENT FOR CYCLONE NARGIS AFFECTED AYEYARWADY DIVISION, MYANMAR

Flood Analysis with MODIS Terra & Aqua Data Recorded 5 May & 15 April 2008

This map illustrates satellite-detected flood waters over the affected Ayeyarwady Division, Myanmar as of 5 May 2008. Flood 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. Flooded area estimates by township have been calculated in km². Please note, township data is incomplete in coverage. This flood detection is a preliminary analysis & has not yet been validated in the field.

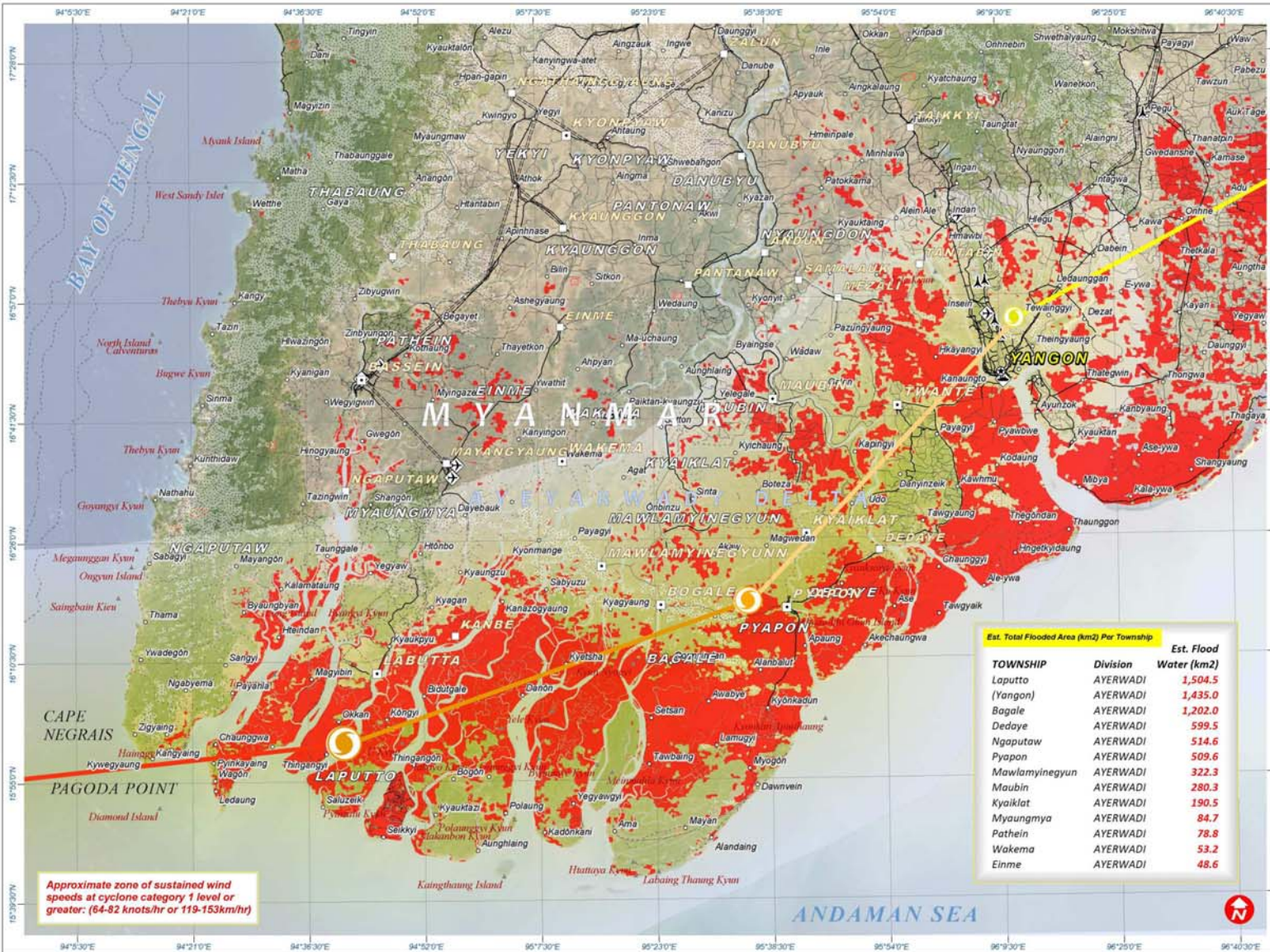


Cyclone Nargis

5 May 2008

Version 1.1

TC-2008-000057-MMR



Legend

- Capital
- City / Large Town
- Town
- Village
- Airfield
- Port
- International Border
- Main Road
- Secondary Road
- Track / Trail
- Railroad
- Utility Line
- Tower

EST. CYCLONE NARGIS TRACK & WIND SPEED:

CATEGORY

34-43 knots/hr	64-82 knots/hr	83-95 knots/hr	93-113 knots/hr	114-139 knots/hr
1	2	3	4	5

Approximate zone of sustained wind speeds at cyclone category 1 level (64-82 knots/hr or 119-153km/hr)

SATELLITE FLOOD ANALYSIS

- Satellite-Detected Flood Waters (5 May 2008)
- Clouds (not assessed) (5 May 2008)

Map Scale for A3: 1:900,000

0 5 10 20 30 40 Kilometers

Cyclone Data: NOAA, Univ of Hawaii, Tropical Storm Risk
 GIS Data: USGS, NGA, ESRI, RespondKeybase
 Satellite Data: MODIS-Aqua & Terra
 Imagery Date: 5 May & 15 April 2008
 Resolution: 250m
 Map Production: UNOSAT (5 May 2008)
 Projection: UTM Zone 46 North
 Datum: WGS 1984

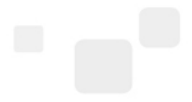
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Est. Total Flooded Area (km²) Per Township

TOWNSHIP	Division	Est. Flood Water (km ²)
Laputto	AYERWADI	1,504.5
(Yongon)	AYERWADI	1,435.0
Bagale	AYERWADI	1,202.0
Dedoye	AYERWADI	599.5
Ngaputaw	AYERWADI	514.6
Pyapon	AYERWADI	509.6
Mawlamyinegyun	AYERWADI	322.3
Maubin	AYERWADI	280.3
Kyaiklat	AYERWADI	190.5
Myaungmya	AYERWADI	84.7
Patheingyi	AYERWADI	78.8
Wakema	AYERWADI	53.2
Einme	AYERWADI	48.6

Approximate zone of sustained wind speeds at cyclone category 1 level or greater: (64-82 knots/hr or 119-153km/hr)

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Landslides

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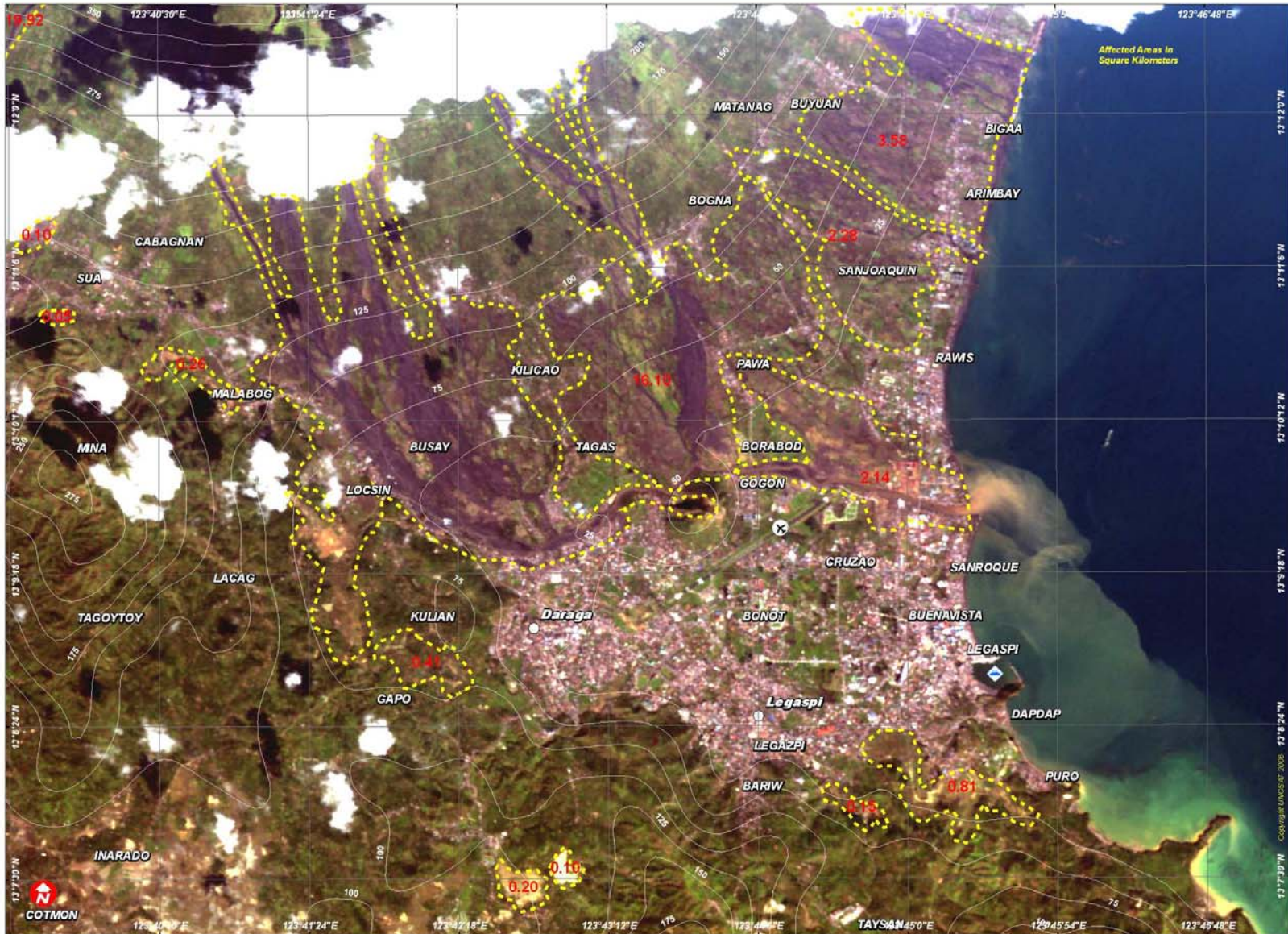
Flooding & Mudslide Damage over Town of Daraga, Albay Province, Philippines

5 December 2006

Version 1.0

Satellite Identified Damage from Typhoon Dorian Using ALOS Imagery Recorded on 3 December 2006

Glide No: TC-2006-000175-PHL



Map Information

This map illustrates the approximate areas of flooding and mudslide damage resulting from Typhoon Dorian (Feringa) across the affected province of Albay and Camarines Sur. Damage identification has been done using ALOS satellite imagery recorded on 3 December 2006 and Landsat imagery from 2002, and has not yet been validated in the field. The affected areas in square kilometers are labeled in red. 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. The map was produced by the United Nations Institute for Training and Research (UNITAR) Operational Satellite Applications Programme (UNOSAT). UNOSAT provides satellite imagery and related geographic information to UN humanitarian and development agencies and their implementing partners.

Map Legend

- Capital
- Town
- Province Boundary
- Flooding & Mudslide Areas
- Mt. Mayon Volcano
- Airfield
- Port
- Contour (2.5m)
- Typhoon Track
- Urban Area
- Mudslide/Flood Path
- Vegetation Cover
- Standing Flood Water

Map Scale for A3
Prints 1:40,000

0 150 300 450 600 900 1200 1500 meters

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Oil spills

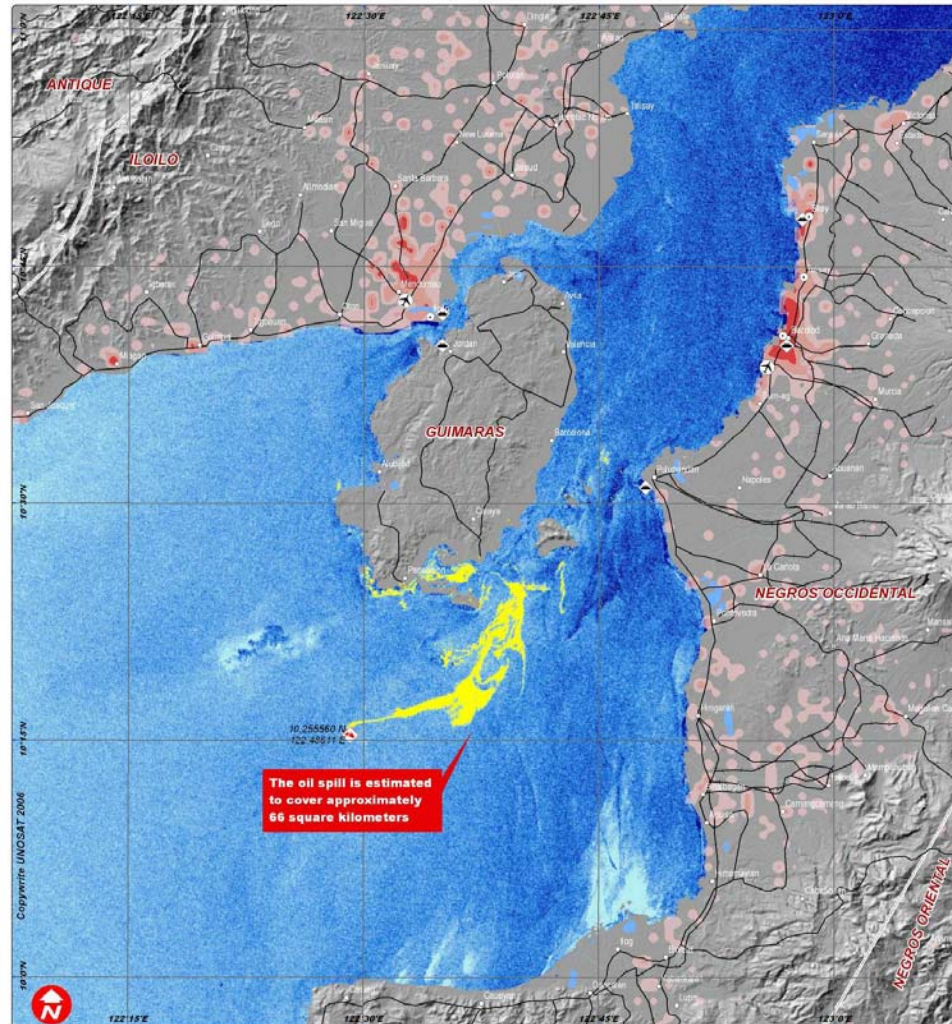
knowledge, international, participatory approach, research, diversity, innovation, knowledge sharing, research, ship, transfer, expertise, new technologies, learning by doing, networks, ship, skills building, etc.

Satellite Identification of Major Oil Spill off the Coast of Guimaras Island, Philippines

24 August 2006

Oil spill signature derived from radar satellite image recorded 24 August 2006

v1.1



On 11 August 2006, M/V Starbuck (aka I) with 20 crew on board capsized approximately 10 nautical miles southwest off Guimaras Island due to strong winds and high waves. The tanker transported 13,000 barrels or 2,667,000 liters of industrial fuel oil to Guimaras from Luzon. Before its capsizing, the tanker of the 20 crew were able to service using the ship's life raft and drilled advance while this oil was expected to reach the ship's life raft and drilled advance 100-150 kilometers (60-100) or 550-900 sq. mi. The capsized tanker has been compromised spilling more than 200,000 liters of fuel oil as indicated by the presence of oil spill at the accident site. Source: Republic of the Philippines National Disaster Coordinating Council (NDCC).

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Map Legend

- Ship Accident Location
- Port
- Village/Town
- Airport
- Road
- Railroad
- Oil Spill Concentration
- Lake
- High Population Density
- River
- Province Boundary

Map Scale: 1:400'000 (A3 printout)

Sensor: ... ENVISAT ASAR
 Image acquisition date: ... 24 August 2006
 Image resolution: ... 75 m
 Copyright: European Space Agency 2006
 Population data: ... Landscan 2002

Data Sources: ... GIS: ReliefWeb, USGS
 Scale (in A3): ... 1:400'000
 Map created: ... 24 August 2006
 Projection: ... UTM Zone 51N
 Datum: ... WGS 1984

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Technical/chemical

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diversity, innovation, knowledge sharing, research
ship, transfer, expertise, new technologies
learning by doing, networks
ship, skills building
ing, ext



Meteorological and hydrological information needs

- Detailed meteorological forecasts services needed globally (based on lat/lon, not just main towns)
 - Precipitation
 - Temperature
 - Wind (direction, strength)
 - Snow depth
- Climate data & models (monthly averages, min/max)
- Flood models
- Detailed elevation data for deriving hydro-networks (SRTM, GEO review of ASTER 30 m in collaboration with Swisstopo)
- Build on good experience WMO-ECMWF-UNOSAT

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