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United Nations Institute for Training and Research

Operational Satellite Applications Programme (UNOSAT)

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UNOSAT

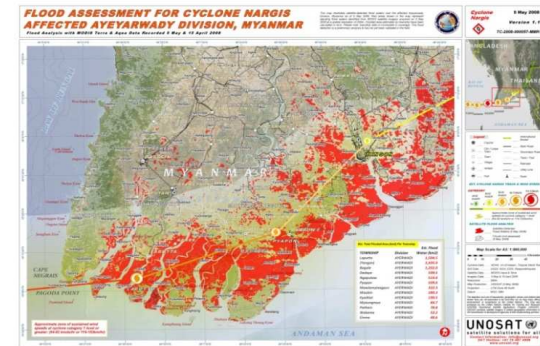
- UNOSAT is part of the United Nations Institute for Training and Research (UNITAR)
- UNOSAT = Operational Satellite Applications Programme – entirely dedicated to **researching and applying solutions in geospatial information and integrated systems** (GIS, navigation, geopositioning)
- Launched in 2000 as a project, evolved into a UN centre of excellence with global outreach supported by a worldwide network of partners
- UNOSAT means over 1000 maps/analyses since 2000, taskings in over 250 emergencies & conflicts; professional training; research & methodology



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

Humanitarian Aid and Relief Coordination

- Crisis & Situational Mapping
- Damage assessment



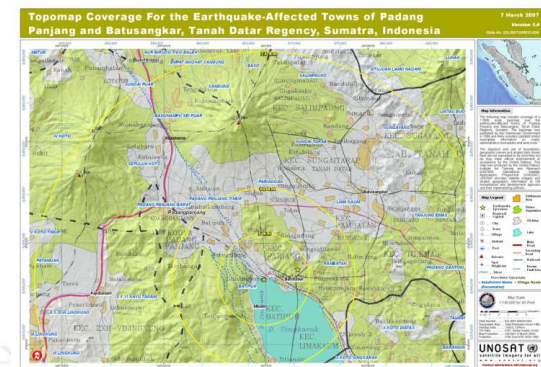
Human Security

- Monitoring
- Human Rights
- Safety and Security

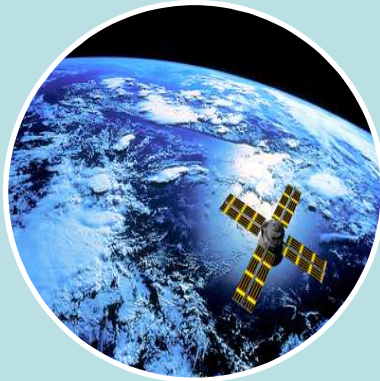


Territorial Planning and Monitoring

- Capacity Development & Technical Assistance
- Training and Knowledge Transfer



UNOSAT COMPETENCIES & SKILLS



MAPPING

Research,
Analysis &
Applications



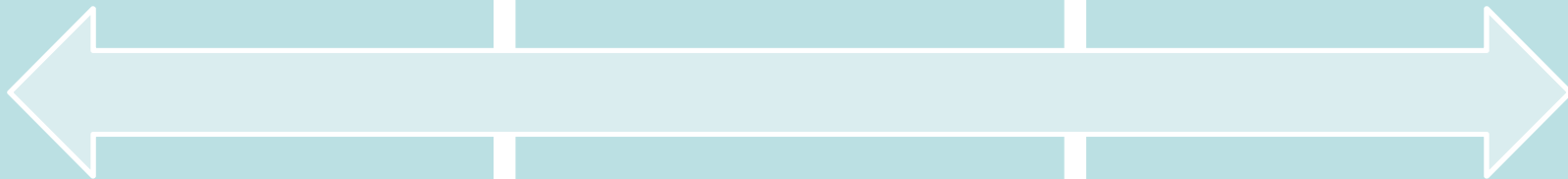
IN-FIELD

Technical Support
and Capacity
Development



PROJECTS & METHODOLOGY

Training, Design,
Knowledge Dev



knowledge, innovation, expertise, research, technology, transfer, learning by doing, networking, skills building, training, etc.

TECHNOLOGY & INNOVATION

CHANGE

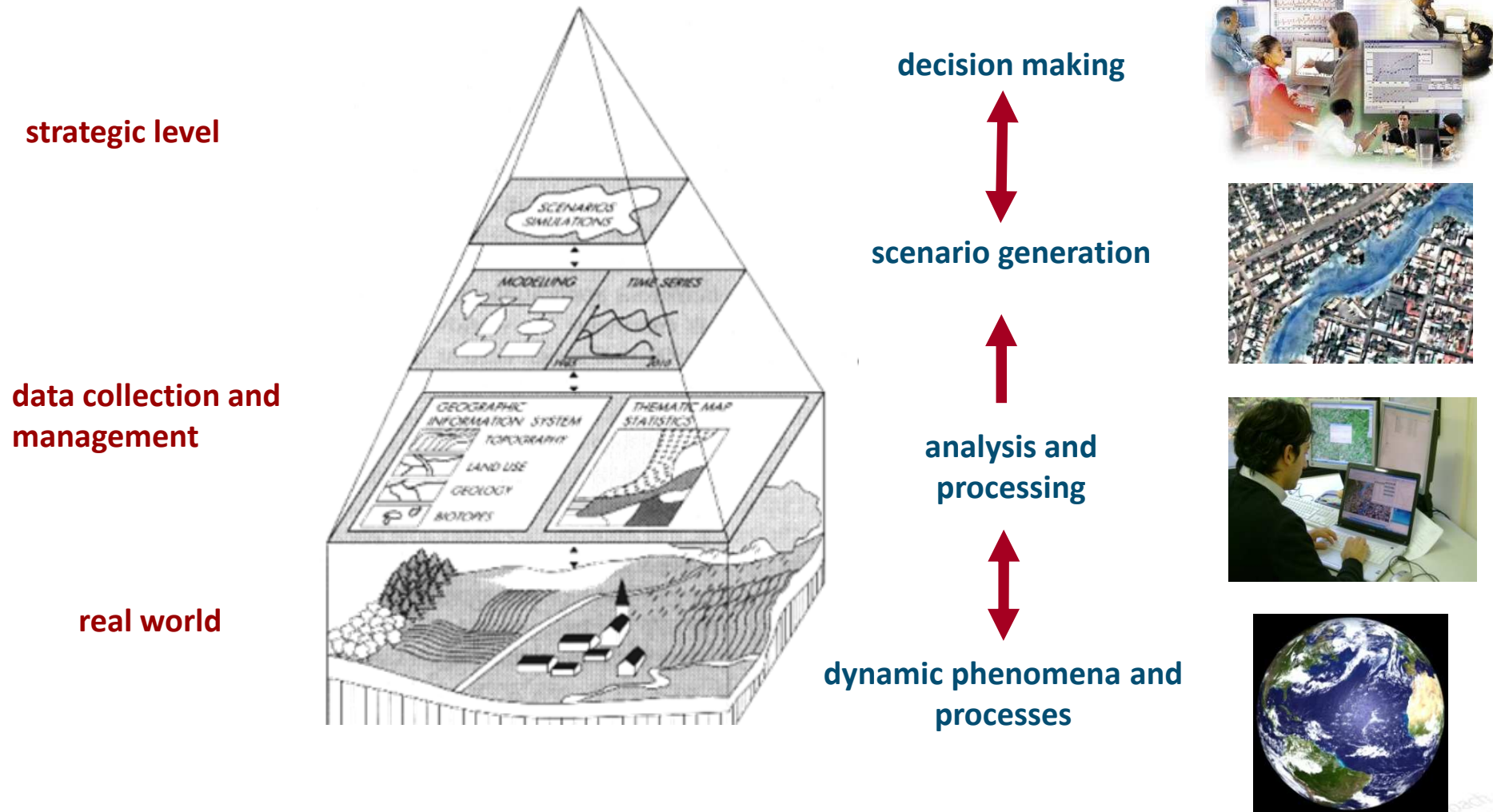
FROM NEEDS TO SOLUTIONS

PROCESSES

CAPACITY DEVELOPMENT

knowledge, international, participatory approach,
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GIS: rendering information in geographic layers



By using a GIS a simplified world can be visualised in a dynamic way to support decision making and monitoring

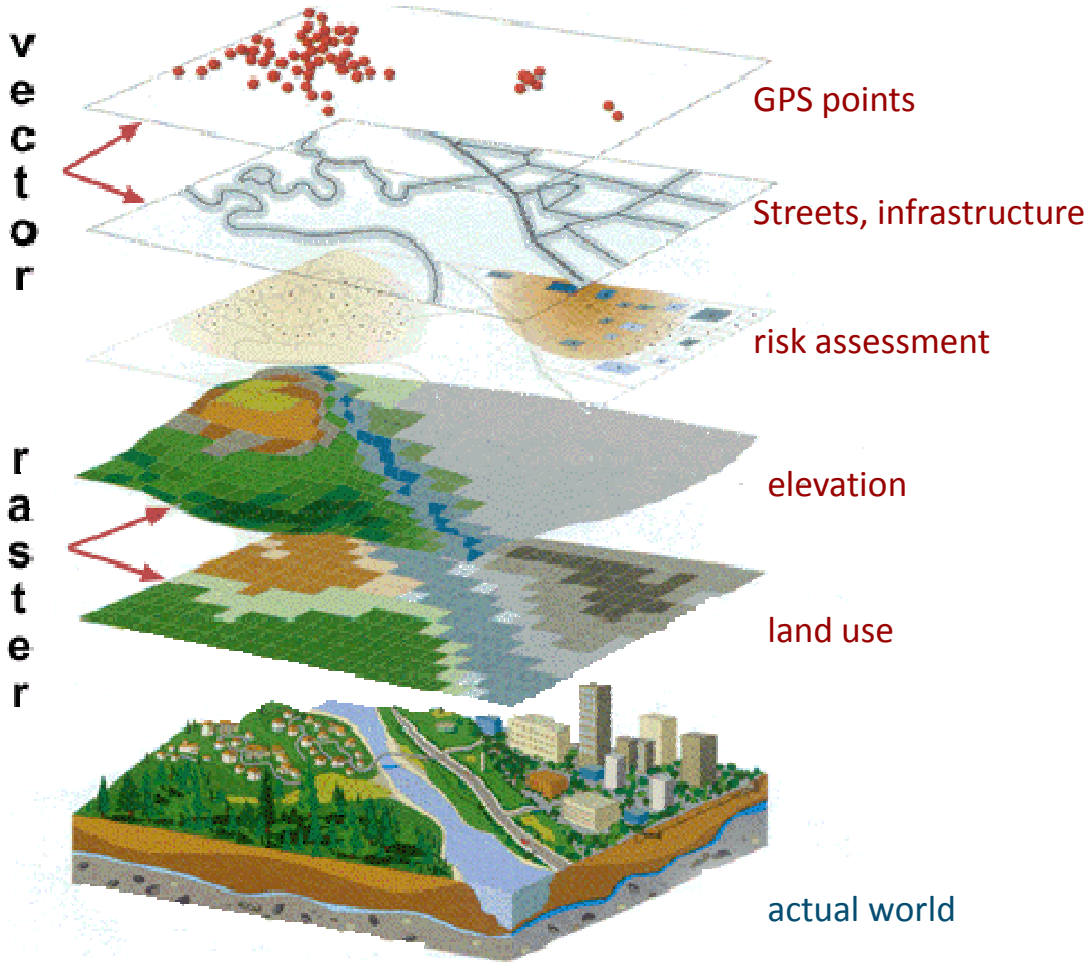
knowledge, innovation, knowledge sharing, research, diversity, innovation, expertise, new technology, transfer, learning by doing, network, ship, skills building, etc

GIS data integration



GIS integrates a variety of data layers (spatial datasets) from different sources and digital formats (e.g. satellite images, topographic maps, spreadsheets, etc.).

Condition for data integration within a GIS is that all data are geo-referenced in a given coordinate system with a known datum.

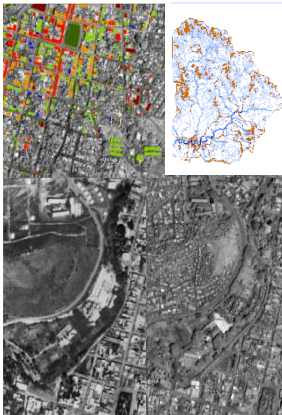


knowledge, international, participatory approach, diversity, innovation, knowledge sharing, research, transfer, expertise, new technology, learning by doing, network, ship, skills building, etc.

GIS competency centres

Dashboard

- Analysis
- Decision making
- Evaluation




- Territorial management
- Urban planning
- Disaster risk reduction
- Environmental assessment
- Project monitoring

Agriculture	Transport
Water Resource	Education
Environment	Health
Housing	Works
Land and Survey	Urban Development
Information	Others..

Thematic Data

Aerial/Satellite Data



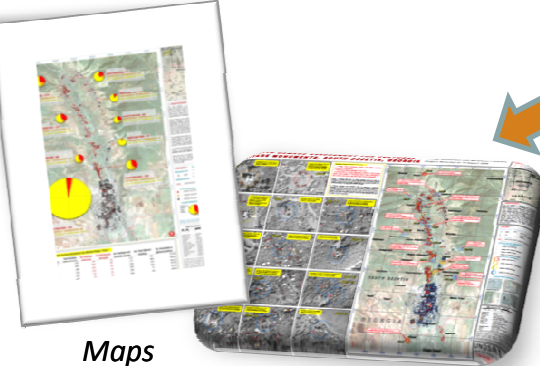
Field Data



Situation Room



Maps Analysis



Communication Web



Decision Making

Planning

Evaluation Monitoring

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...diversity, win-win transfer, learning by doing, network
...hip, skills building, ext

UPDATE 2: FLOOD WATER OUTFLOW FROM INDUS NEAR SUKKUR BARRAGE ENTERING BALOCHISTAN PROVINCE, PAKISTAN

Flood Analysis Based on Satellite Data Recorded on 18 August 2010

ANALYSIS SUMMARY: Flood waters breach the covering a total of 2,070 km² (800 sq miles) in the west and east, leaving the area inundated to rapidly advance towards the coast. The city of Sukkur is severely affected, with flood waters nearly surrounding the city. Flood waters are expected to reach the city of Jaggobabad in the next 2-3 days. The city of Jaggobabad is severely affected, with flood waters nearly surrounding the city. Flood waters are expected to reach the city of Jaggobabad in the next 2-3 days. The city of Jaggobabad is severely affected, with flood waters nearly surrounding the city. Flood waters are expected to reach the city of Jaggobabad in the next 2-3 days.

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

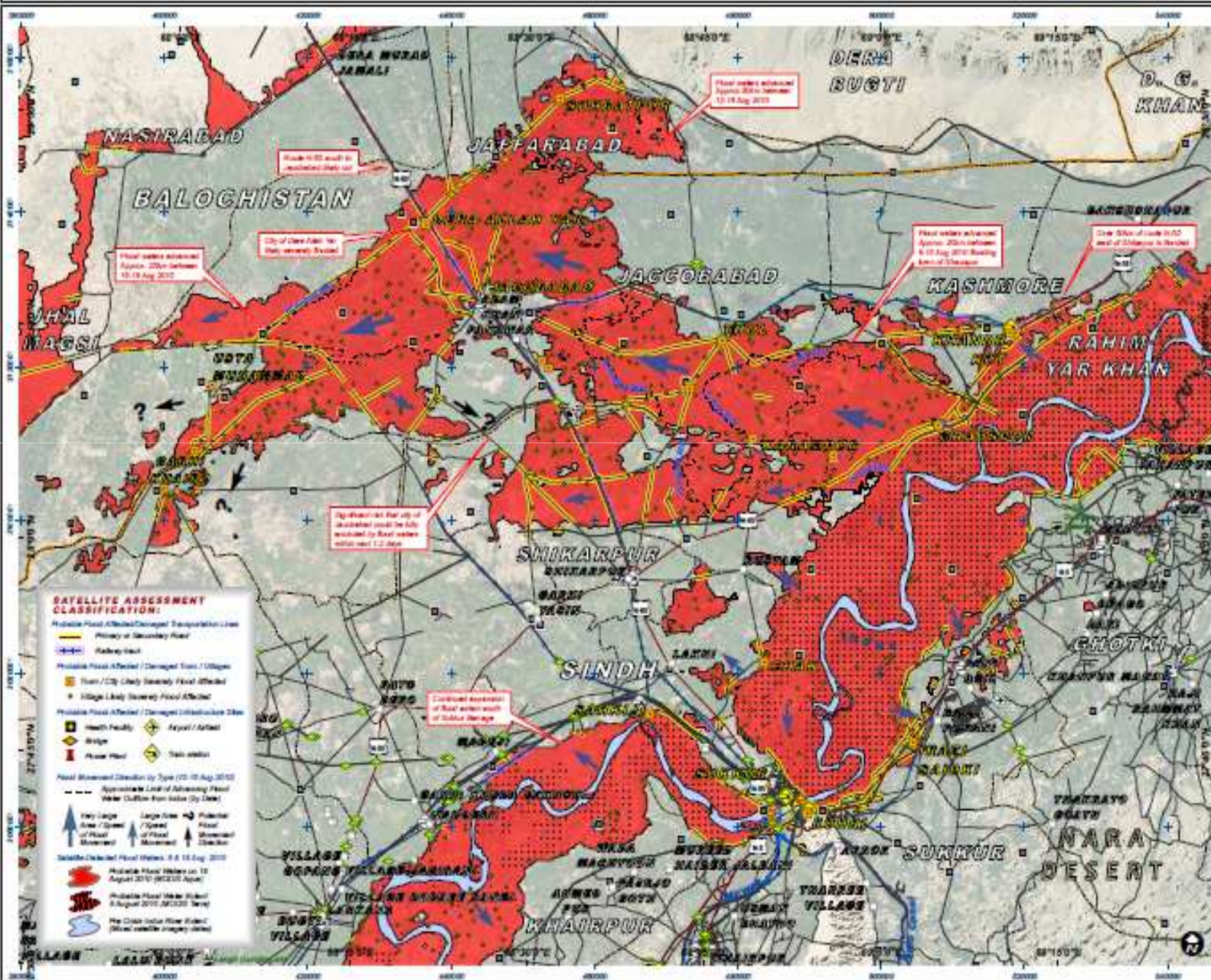


Monsoon Rains & Flooding

18 August 2010

Version 3.0

Slide No: FL-2010-000141-PAK



This map presents an updated line series analysis of the satellite observation of flood water in flow from the Indus River, immediately north of the city of Sukkur, South Province, Pakistan, covering the period from 8 to 18 August 2010. The analysis is based on post-disaster satellite imagery collected by MODIS sensors from 8 to 18 August 2010 and Sentinel-2 data on 17 August 2010. Please note that the numbers of affected locations presented in this map represent minimum estimates because of limitations in satellite resolution and frequent cloudiness. It is noted that the numbers of affected villages, towns and affected infrastructure / transportation lines are underestimated. Also note that satellite water bodies data reflect an underestimation of all flood-affected areas (2010). The map notes: This analysis has not yet been validated in the field. Please send ground feedback to UNOSAT/UNOSAT.

Legend

- Town / City
- Health Facility
- Ayaz / Market
- Train station
- Bridge
- Provisional City
- Province Boundary
- District Boundary
- Sub-District Boundary
- Primary Road
- Secondary Road
- Railroad
- International Canal

MAP SCALE FOR A3: 1:500,000

0 5 10 15 20 Kilometers

Click Satellite Data (1) — MODIS Aqua 8 News
Resolution: 250 meters
Image Date: 8-18 August 2010
Source: USGS Rapid Response
Click Satellite Data (2) — RADARSAT-2
Resolution: 25 meters
Image Date: 7-August 2010
Copyright: National ID MOD 2010
Source: Canadian Space Agency
GIS Data: NASA, NOAA, USGS, OSM
Transport Data: Google Map Maker
Transport Data Copyright: © 2008 Google - Imagery with Google Map Maker
Map/Imagery Data: UNOSAT
Map/Imagery Date: WGS
Flood Analysis: UNOSAT/UNOSAT
Map Production: UNOSAT/UNOSAT
Projection: UTM Zone 42N
Datum: WGS 84

The depiction and use of boundaries, geographic names and related data shown here are not warranted to be error free nor do they imply either 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 operating partners.

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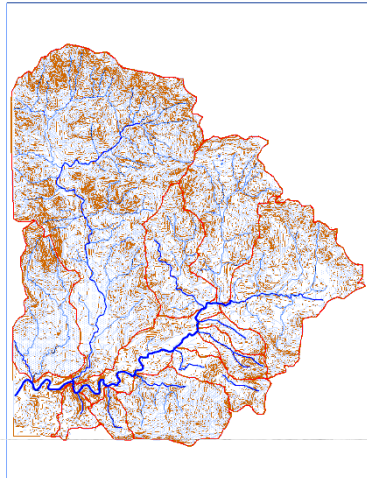
Risk identification at the local level

Matagalpa example



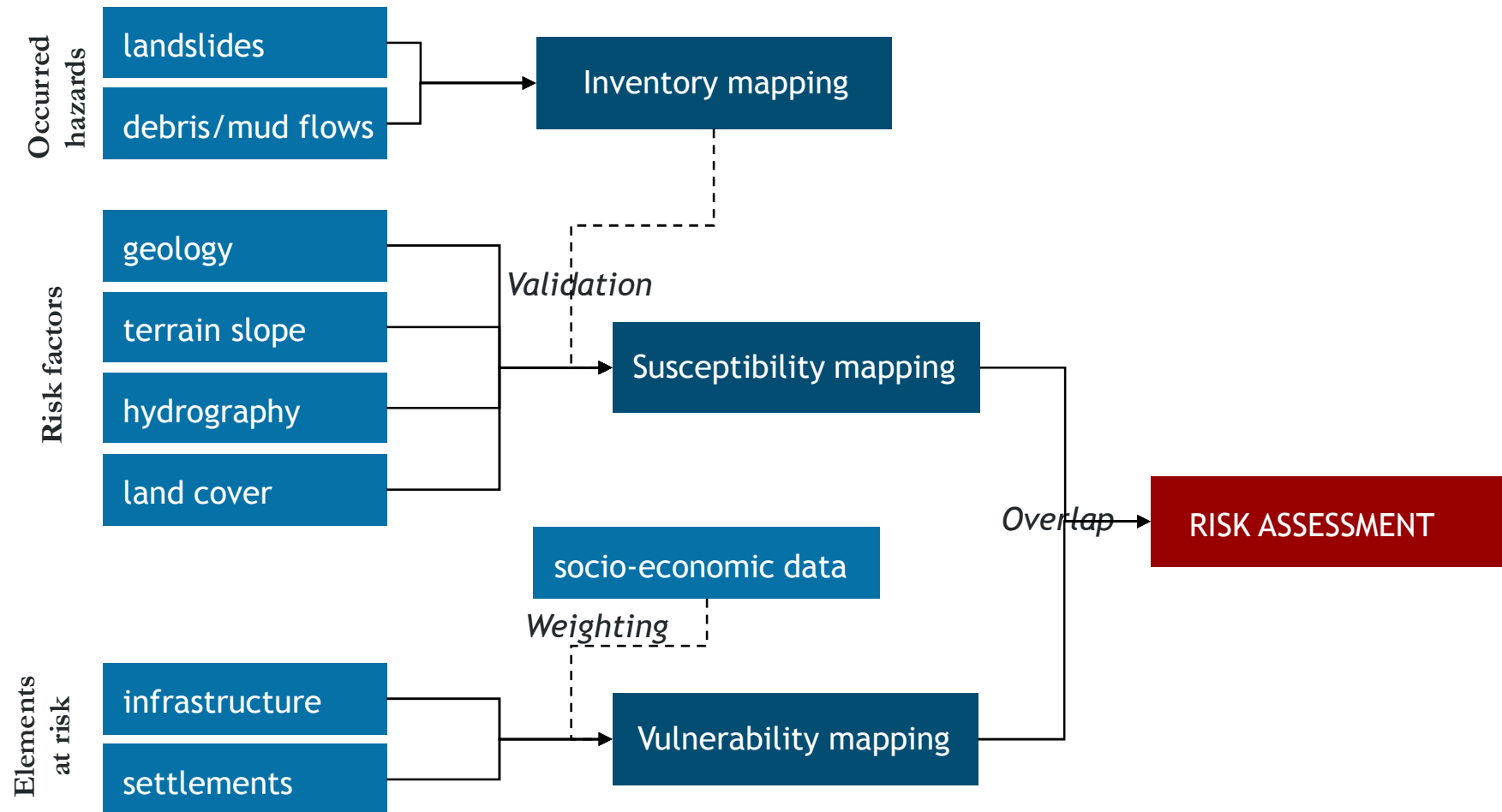
- Collaboration with local authorities in the aftermath of Hurricane Mitch, 1998;
- - Destructive phenomena: flash floods, debris flows, landslides
 - Immediate assistance to victims and their settlements based on poorly informed decisions

Implementation of a GIS resource center - CIGMAT

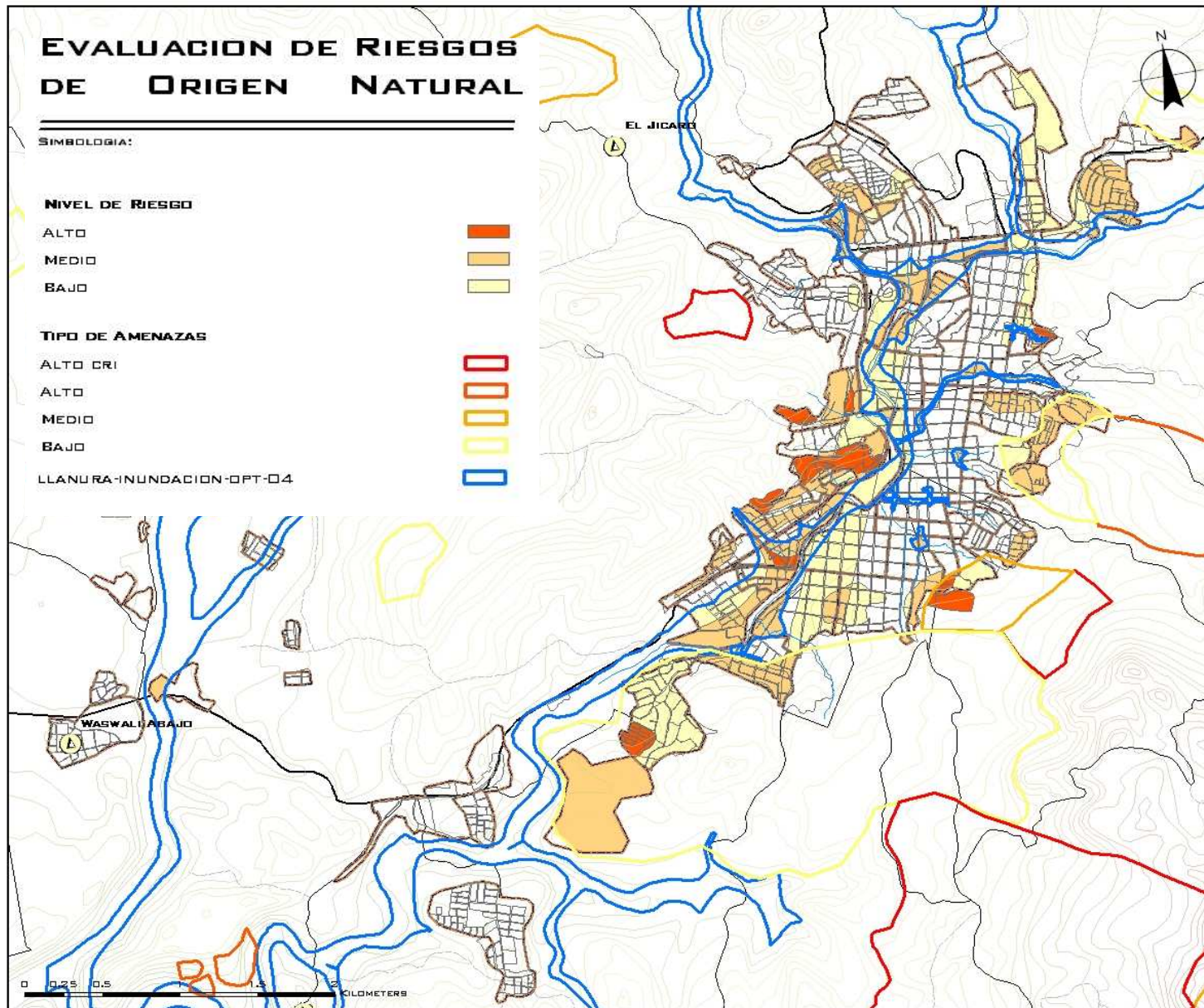


- Establishment of GIS office for improved risk assessment and urban planning
- Local authorities focus on safety and territorial management
- Know-how transfer to facilitate geographic data management (staff trained by UNOSAT)
- CIGMAT is currently generating its own projects and has its own clients

From hazard mapping to risk assessment

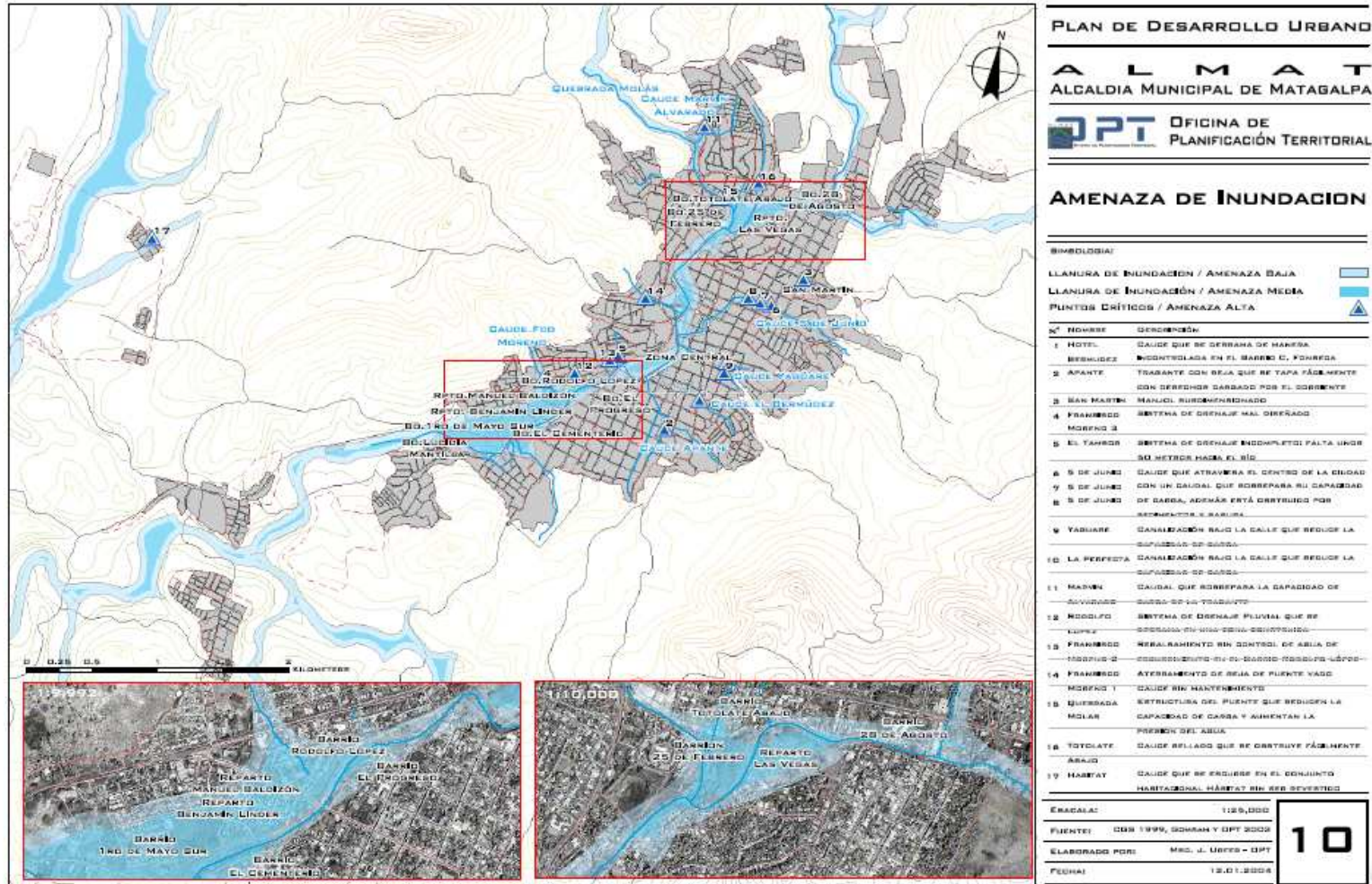


Risk mapping



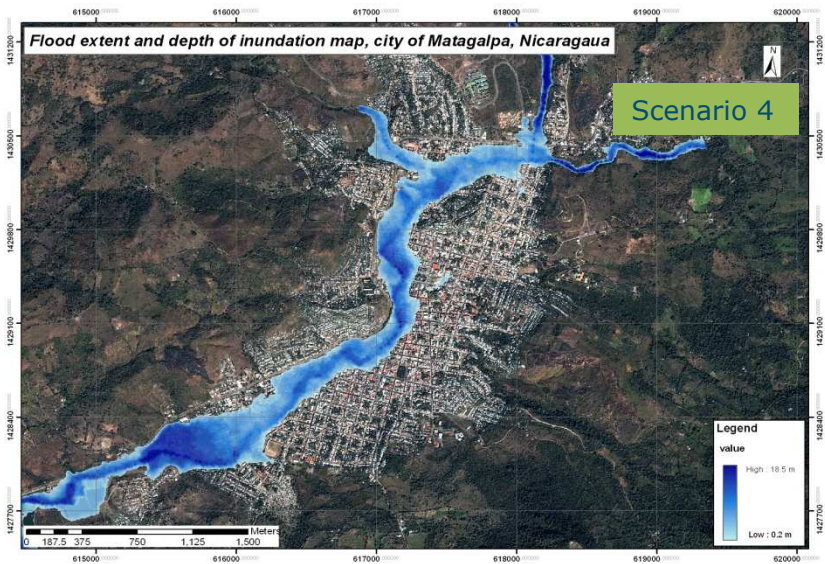
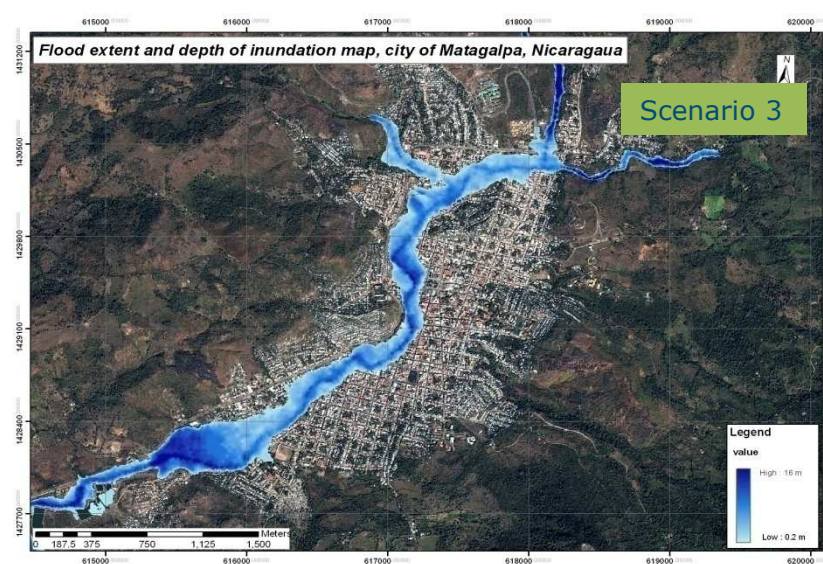
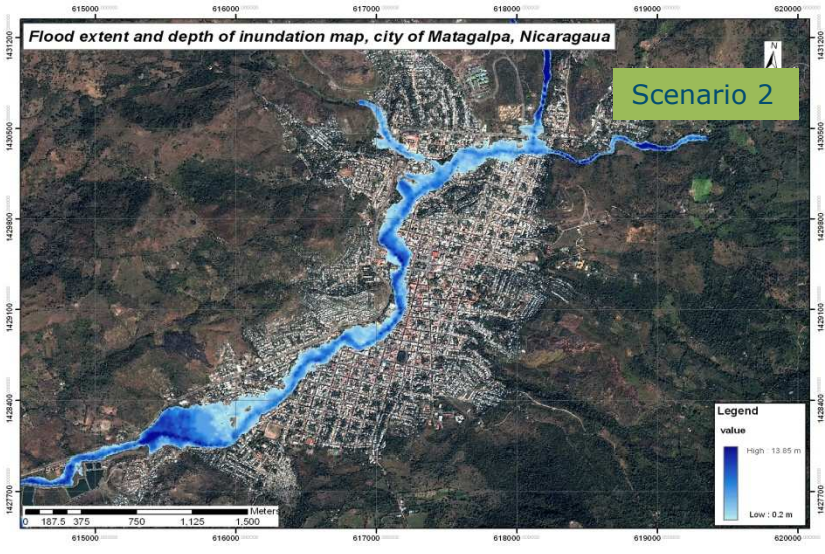
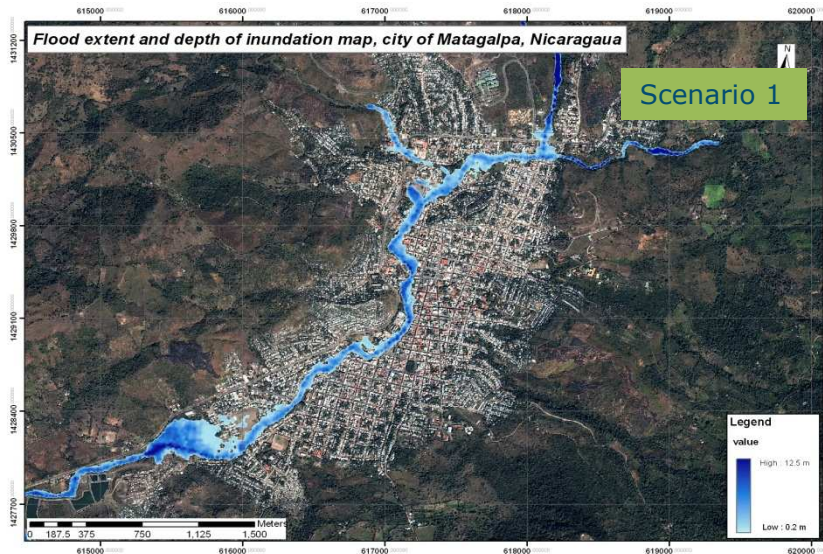
Susceptibility X Vulnerability

Risk identification at local level : flood preparedness



Risk Mapping & Prevention

Phenomena modeling in GIS



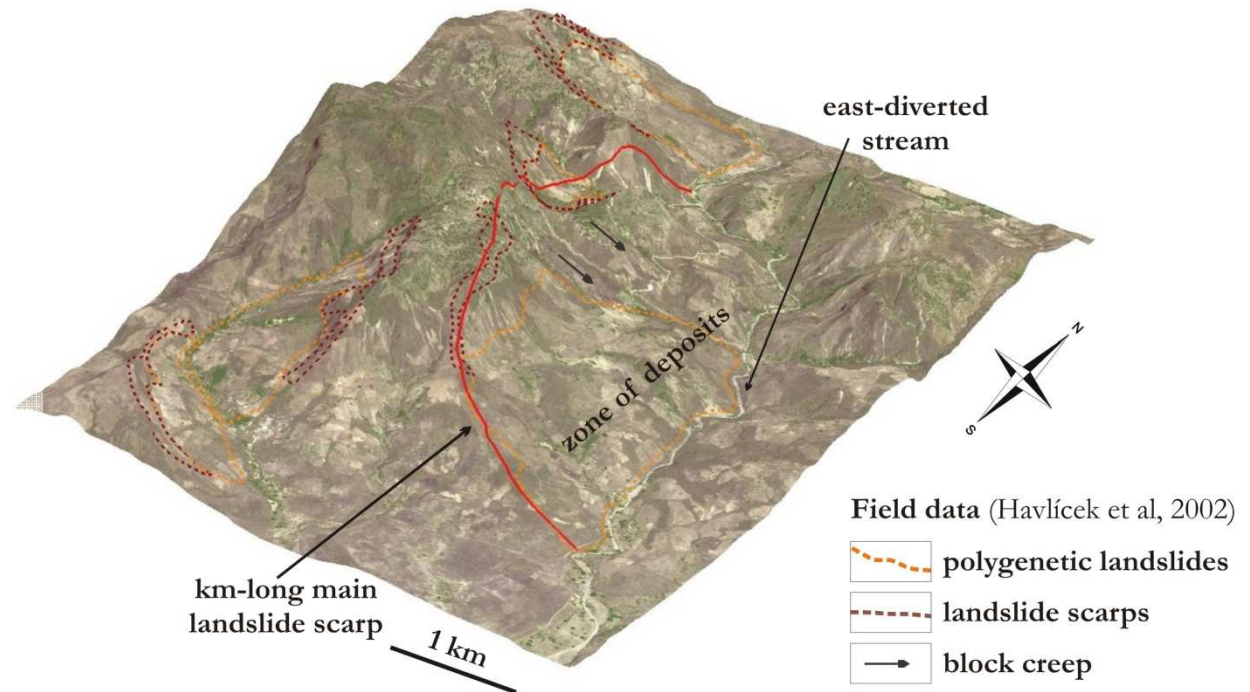
landslide risk assessments using 3D analysis

- ❑ Tailored for detection of landslides and recent debris and mud flows at scales up to 1:25'000 (master plan)

- ❑ Satellite image detected hazard phenomena are consistent with field observations

- ❑ Qualitative monitoring of landslide activity through vegetation disturbance

- ❑ Senior geologist interpreter required



www.unitar.org/unosat

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