UNOSAT

satellite imagery for all

Integrating telecommunition and geopositioning functions to deliver better and faster the satellite imagery to disaster managers

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2. Telecom and Navigation functions within UNOSAT: What for?
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What is UNOSAT

1. 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.

2. Supports early warning, crisis response, sustainable recovery, vulnerability reduction and local capacity building

3. Countries in the south are UNOSAT's main beneficiaries

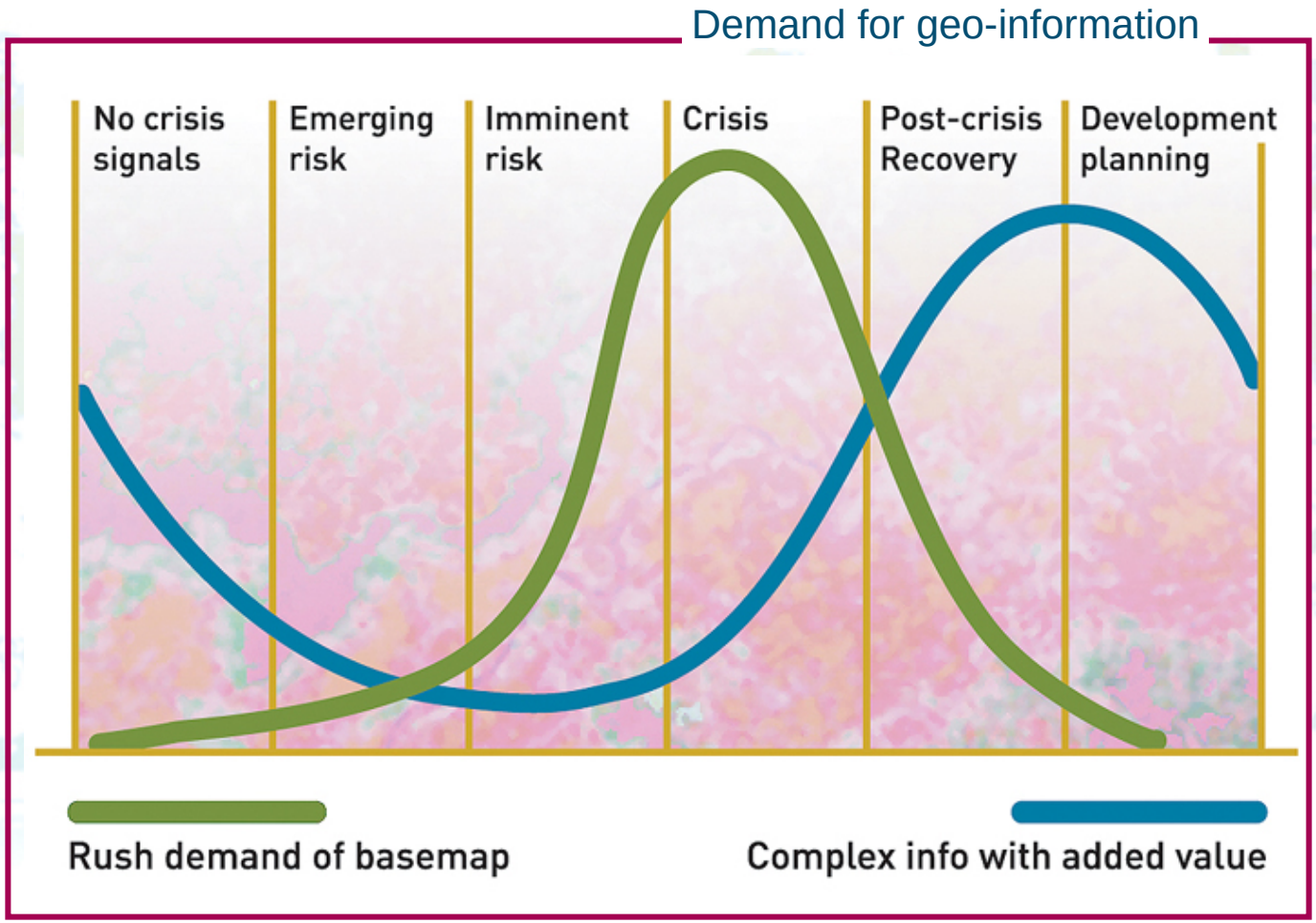
4. UNOSAT is the main implementing agency within the UN for the International Charter "Space and Major Disasters"

5. Has evolved into a mature UN service with global outreach and supported by a network of partners world wide

6. Diversifying the offer of satellite & IT based services and adapt it to specific user needs of the international community

7. UNOSAT works always upon request of at least one major organization directly or indirectly involved in field operations and validated by relevant UN coordination mechanisms

UNOSAT promotes the UN Reform
by making satellite imagery affordable



Basic Service Platform

Procurement Service
- Satellite imagery procurement
- Orthorectification chain

Mapping Service
- Humanitarian and Conflict Mapping
- Environmental Mapping
- Rapid Mapping
- Vulnerability Reduction Services

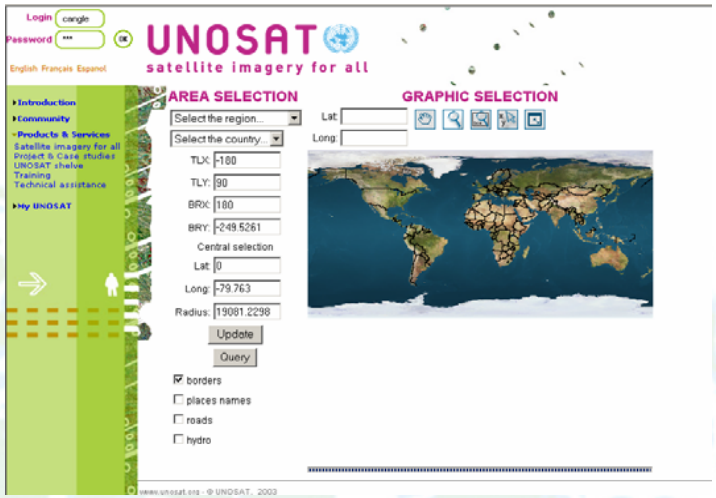
IT and Web Service
- Information dissemination (ImageWebServer)
- Data hosting
- User website development

Training Service
- Project-based (operational)
- On-line modules: GIS and RS (New!!)

Advisory Service
- Support to resource mobilization
- Project implementation

Public Relations
- Humanitarian awareness
- Technologies dissemination
- Financial assistance to users

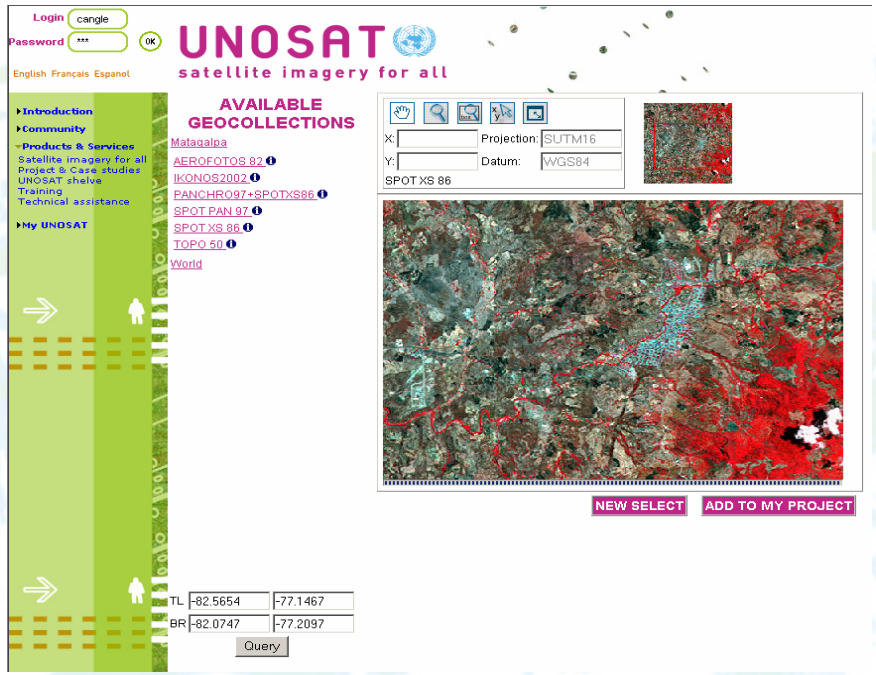
www.unosat.org



Area selection

Product Metadata

(DIMAP file)



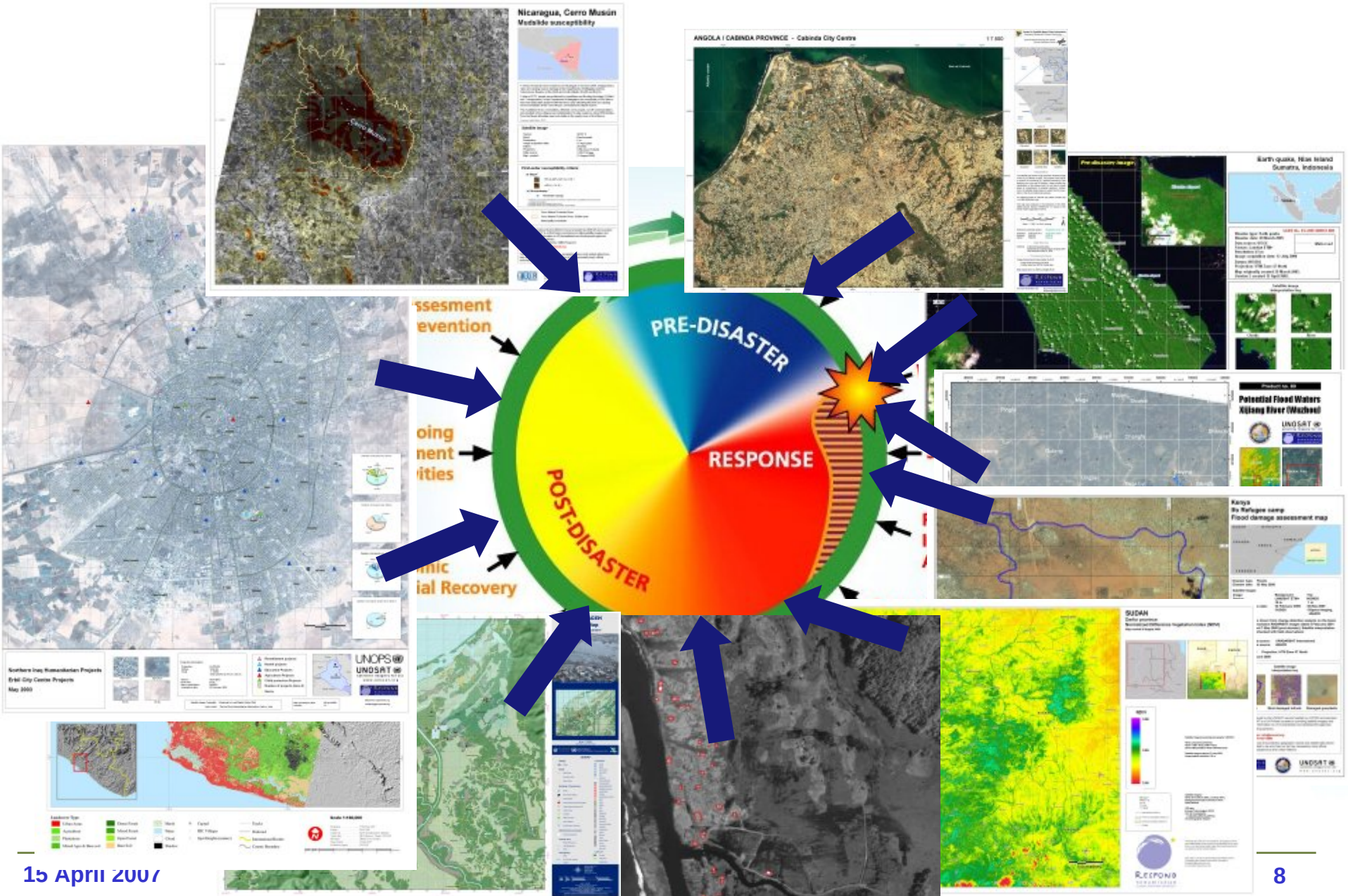
Available products (UNOSAT archive)

A powerful on-line data catalogue hosted at CERN, accessible from anywhere

UNOSAT open partnership

satellite imagery for all

EO and the disaster cycle

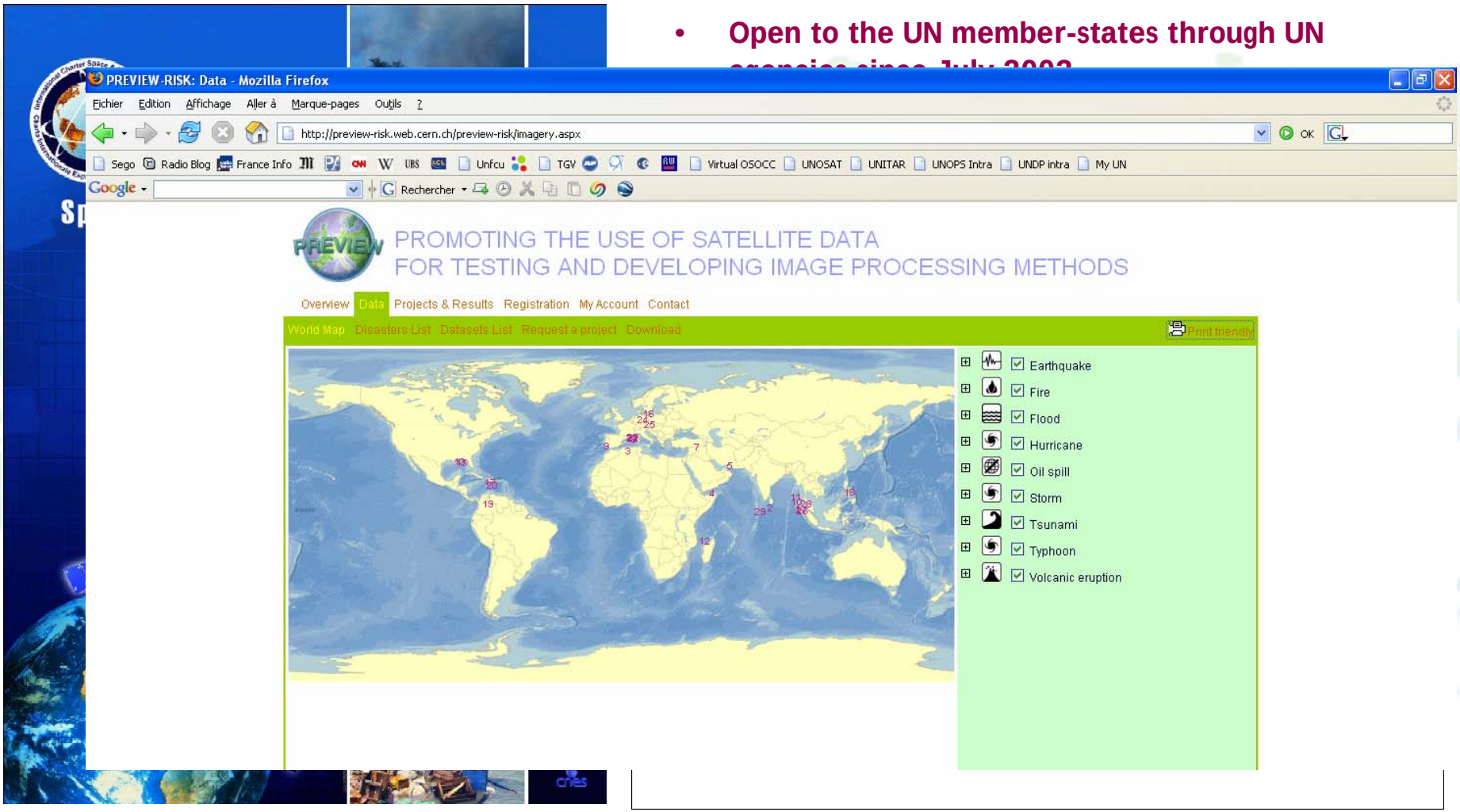


Criteria for selecting space telecom and navigation technology

- Common standard for all agencies
- Rapid deployment
- Low installation and operation cost
- Robust systems
- Highly transferable to host-countries

International Charter on Space and Disasters

- Open to the UN member-states through UN



The pioneer partnership with OCHA and TSF:

we finished that map at 10 pm in Geneva, it was available at 6am on the Muzaffarabad airfield …

Example: Before-after image comparison, Guningkelir, Bawqukan Satu and Tegalrejo villages in Pleret subdistrict

11 July 2003

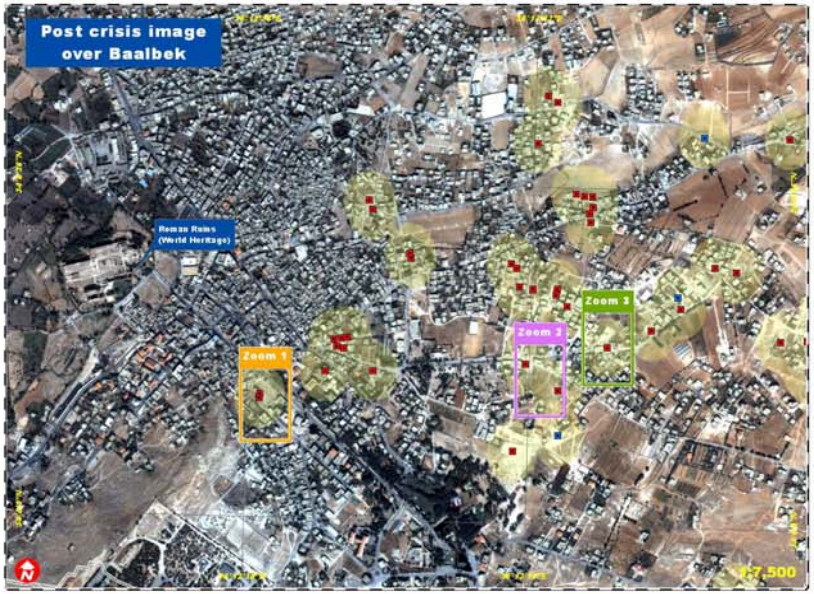
31 May 2006

Ground Verification of Satellite Damage Identification in Baalbek, Lebanon

2 November 2006

Post-Crisis Ikonos Satellite Imagery Recorded on 10 September 2006

Version 1.0



Results of ground verification process

Figure A + B: Complete destruction of a former 3 storey building. The building was situated where now there is the debris cone in Figure A. The adjacent building in Figure B has been severely damaged as well. This attack point has not been identified. Reason: The destructed building could have been identified most clearly by its missing shadow. However, at the time of image acquisition, the ground has already been cleared. In this case, it was thus not possible to distinguish between an ordinary demolition that might have taken place. Following a conservative approach the site has not been marked as being bombed.

Figure C + D: Complete destruction of a four storey building. The building's dimensions contained 9 apartements and 15 garages. This attack point has clearly been identified on the Ikonos image.

Date of photo acquisition: October 2006

Crisis Background Information

Following the 12 July 2006 abduction of two Israeli soldiers by Hezbollah, the Israeli Defense Force (IDF) launched a large scale military operation in Lebanon. Simultaneously, Hezbollah launched rocket attacks into Israel. This crisis resulted in hundreds of deaths and injuries on both sides, massive population displacement and extensive damage to civilian infrastructure.

In support to the United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA), UNOSAT activated its 24/7 Rapid Mapping service to quickly provide the international humanitarian community and local actors with detailed satellite map atlases and damage assessments of key affected villages.

Map Information

Damage assessment has been done using photo-interpretation of pre and post-conflict Ikonos satellite imagery recorded 26 July 2005 and 10 September 2006 respectively.

Results of the damage assessment have been verified in the field for a selected number of sites. This map references photos taken at damage sites to the corresponding pre and post satellite imagery. It discusses completeness and quality of the remote sensing based damage assessment approach for three examples.

Principal results of investigation on these and further examples are:
- Damage identified had a slight tendency to be under estimated
- Practically no damage over-estimation has been identified
- High importance of prompt ground verification and post image acquisition due to site cleaning

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).

Results of ground verification process

Figure A: Complete destruction of a four storey building. Destruction has been unquestionably identified in the satellite image.

Figure B: This building is at about 20 meters distance of the identified bomb attack point. It is found to be severely damaged.

Figure C + D: In the foreground, another four storey building has been completely destroyed. The soil has already been partly cleared. Buildings in the back at an approximate distance of 50 meters exhibit moderate to severe damage.

Date of photo acquisition: October 2006

Results of ground verification process

Figure A: This former three floor building next to the road has been completely destroyed. The destruction has been clearly identified using pre post image comparison.

Figure B: The adjacent building surprisingly shows minor to moderate damage only. Most probably, refurbishment has already been performed at the time of photo acquisition.

Figure C: This two storey building is at about 20 meters distance from the bombed site D. It has been severely damaged.

Figure D: A three floored building has been completely destroyed. The destruction has not been identified as the shadows drawn by the remaining wall persist to be rectilinear.

Date of photo acquisition: October 2006

Map Legend *Site locations of identified damage*

- Bridge
- Road
- High-rise apartment building
- Agricultural building
- Building (general)
- Field (cultivated)
- Irrigation canal
- Field (uncultivated)
- Industrial building
- 100m Blast Radius
- Baladia Boundary (Admin. level 3)

Scale (overview map) 1:7,500 for A1 Print

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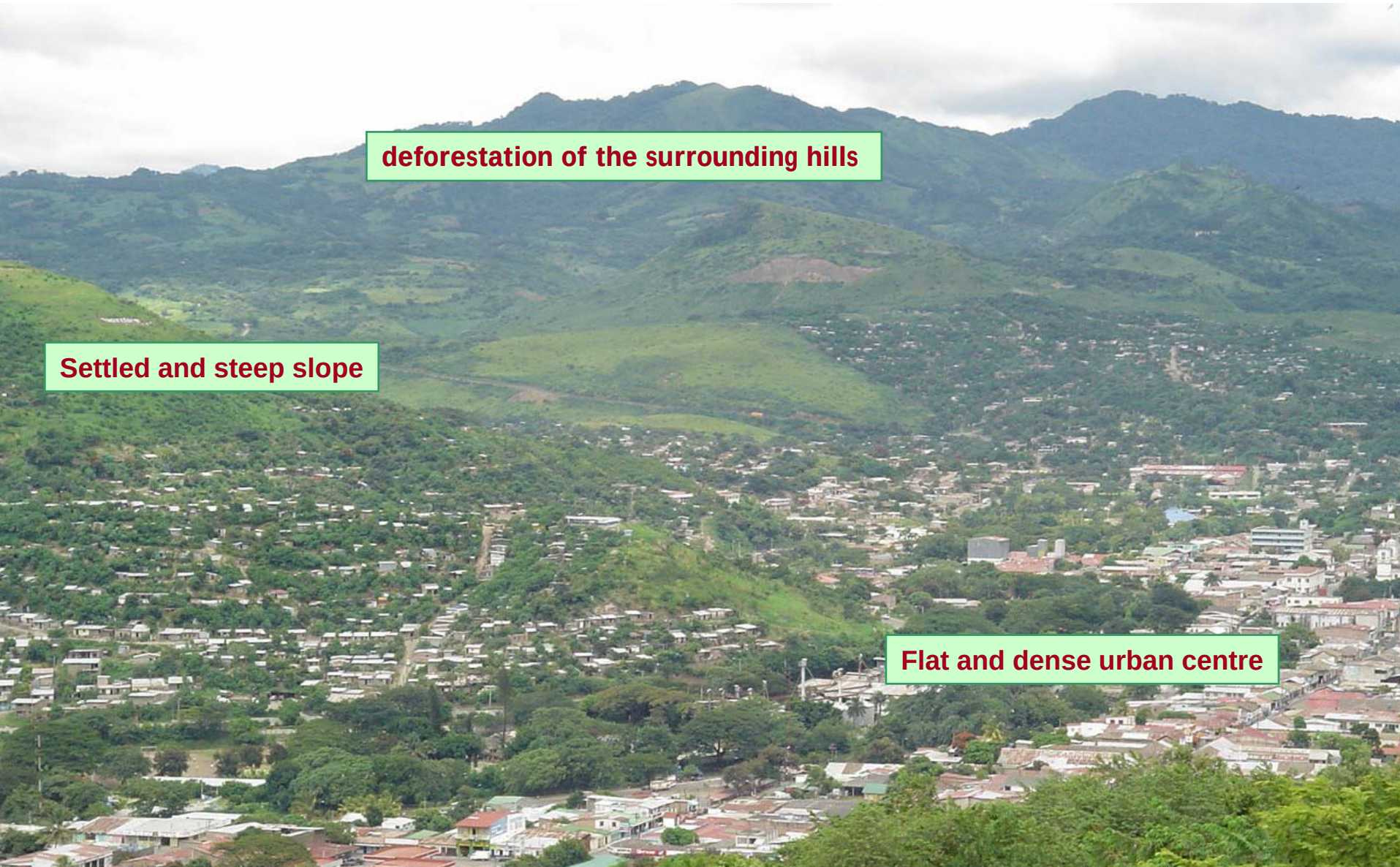
“Matagalpa Misión Agua”: General Context



Problematic (1)

1. Deforestation due to urban growth
2. Steep Slopes
3. Terrain stability
4. Pollution
5. Buildings almost inside the river channel or in flood prone areas

Problematic (2)

6.Typical Urban Drainage System

7.Drainage Canals and Culverts

Evaluating Flood Protection Measures: Gabions (3)

Barrio Rodolfo Lopez: Flood scenario without gabions

Evaluating Flood Protection Measures: Gabions (2)

Barrio Rodolfo Lopez: Flood scenario with gabions (for a given discharge rate)

Fleet Management Project

FLEET FORUM

NOVACOM services

UNOSAT
satellite imagery for all

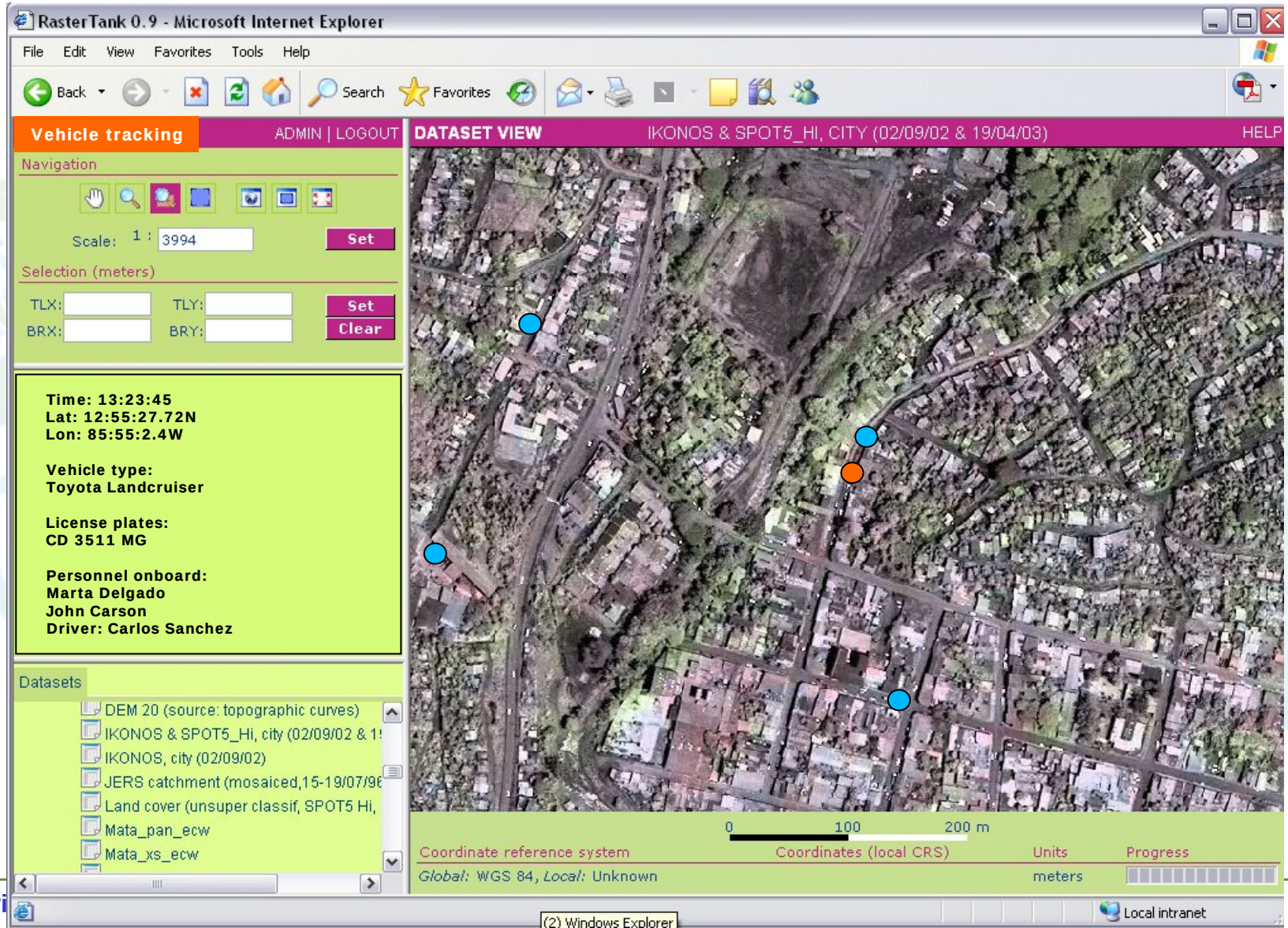
satellite tracking and data capture for all

Examples of on board equipment

Screwed
Magnetic stand

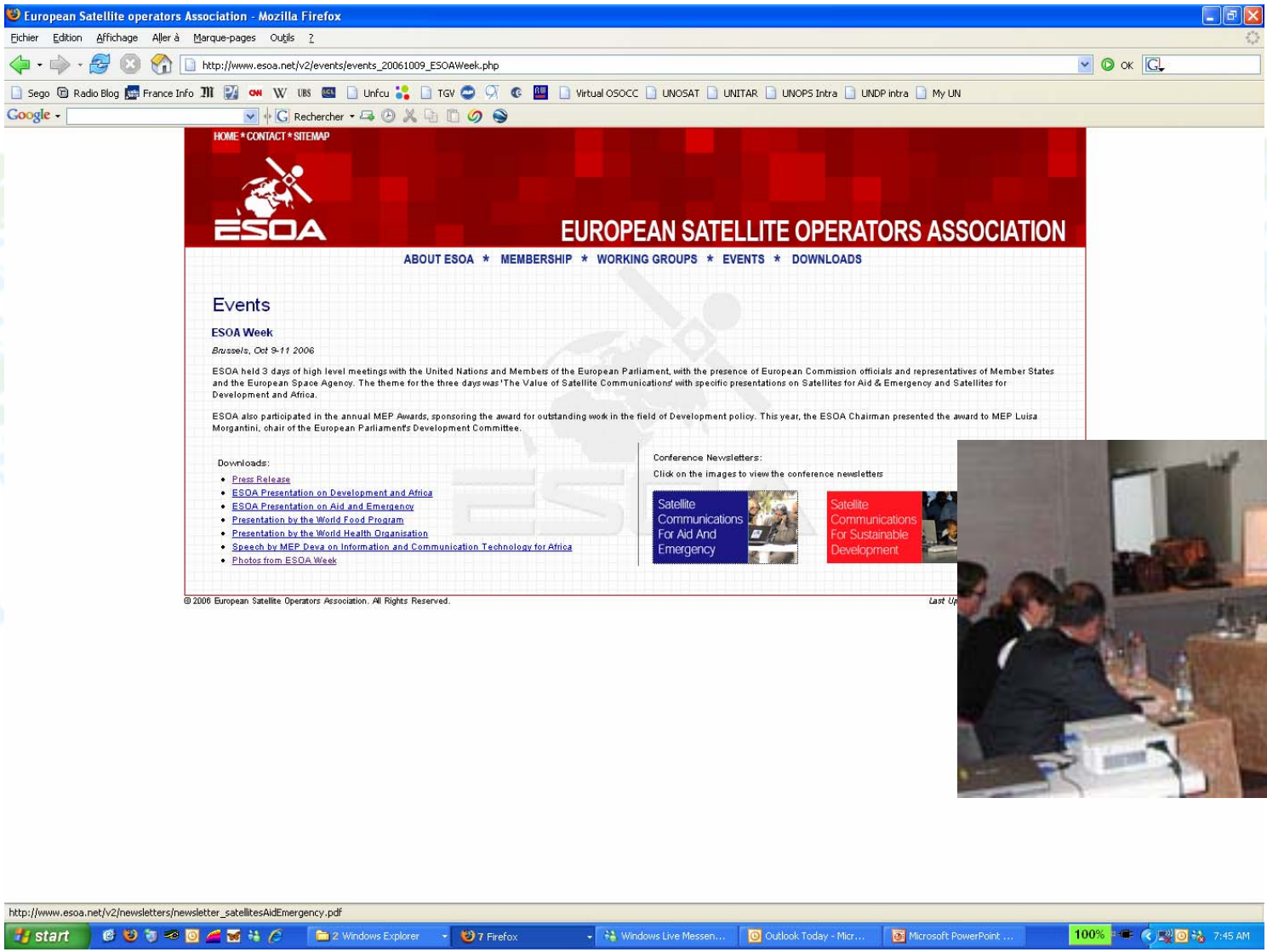
In cab

Vehicle exact position on a satellite image



- Support to installation
- Web portal
- Training
- User feedback
- Contracting

Emerging cooperation with sat telecom operators (MoU ESOA-UNOSAT)



Recommendations

1. Internet is the key vector for new technologies, digital divide a burden
2. Space is the best alternative to bridge digital divide despite the high cost
3. Charter « space and major disasters » is a successful partnership that can be extended for food security
4. Same mechanisms should apply for telecoms and navigation services
5. Micro satellite technology offer affordable solutions for emerging countries
6. Interoperability of systems must be ensured and strengthened

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Thank you for your attention

Merci de votre attention