UNITED NATIONS | UNOOSA | **UN-SPIDER**

United Nations Platform for Space-based Information for Disaster Management and Emergency Response

Space-based Solutions for Disaster Management and Emergency Response

Juan Carlos Villagrán de León,
UNOOSA/UN-SPIDER

ESPI Workshop: Space for Civil Protection
Vienna, 6 May 2011

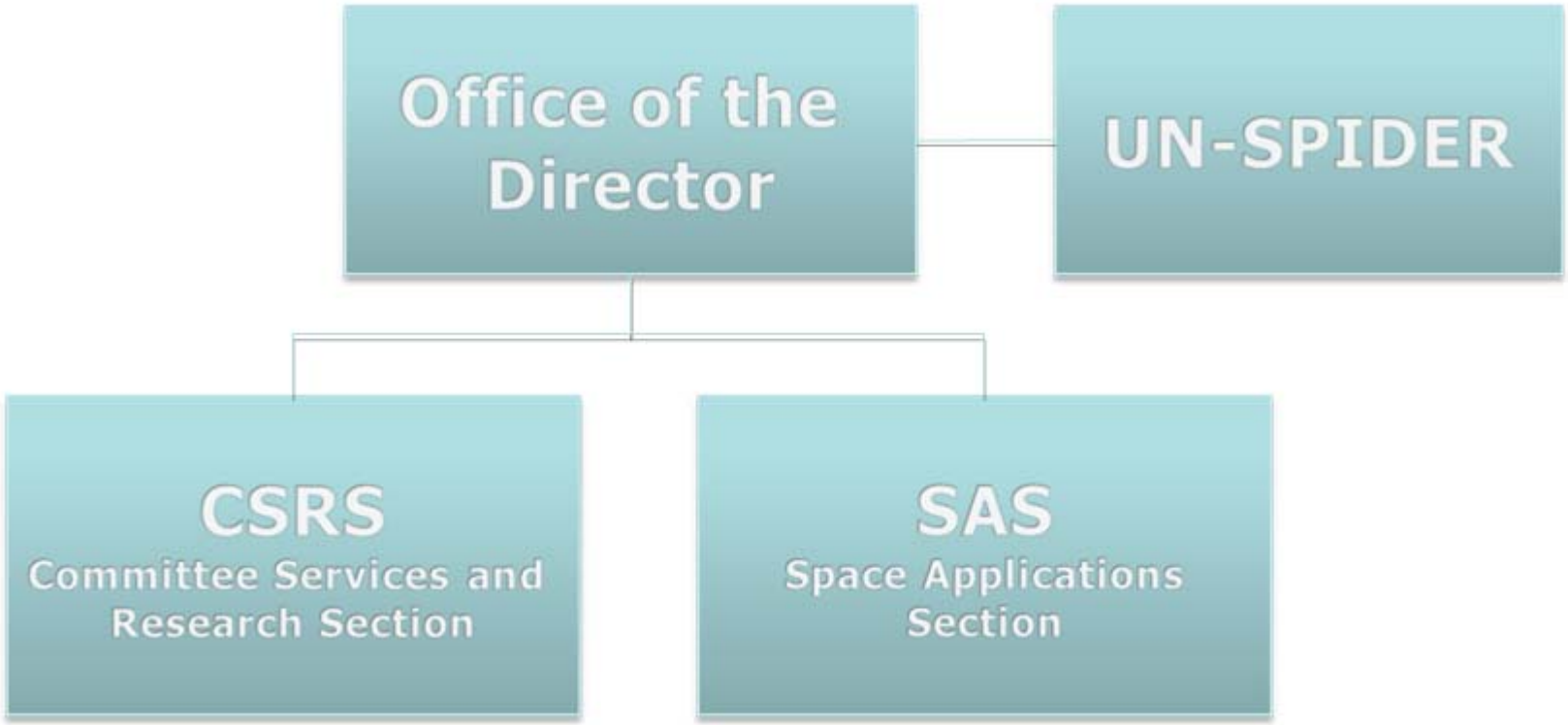
UN-SPIDER: Mission and Mandate

On 14 December 2006 the United Nations General Assembly, established UN-SPIDER as a programme implemented by the United Nations Office for Outer Space Affairs (UNOOSA), with the following mission statement:

"Ensure that all countries and international and regional organizations have access to and develop the capacity to use all types of space-based information to support the full disaster management cycle."

- Especially by being a gateway to space information for disaster management support;
- serving as a bridge to connect the disaster management and space communities; and
- being a facilitator of capacity-building and institutional strengthening (**A/RES/61/110**).

UNOOSA


Office of the Director
UN-SPIDER
CSRS
Committee Services and Research Section
SAS
Space Applications Section

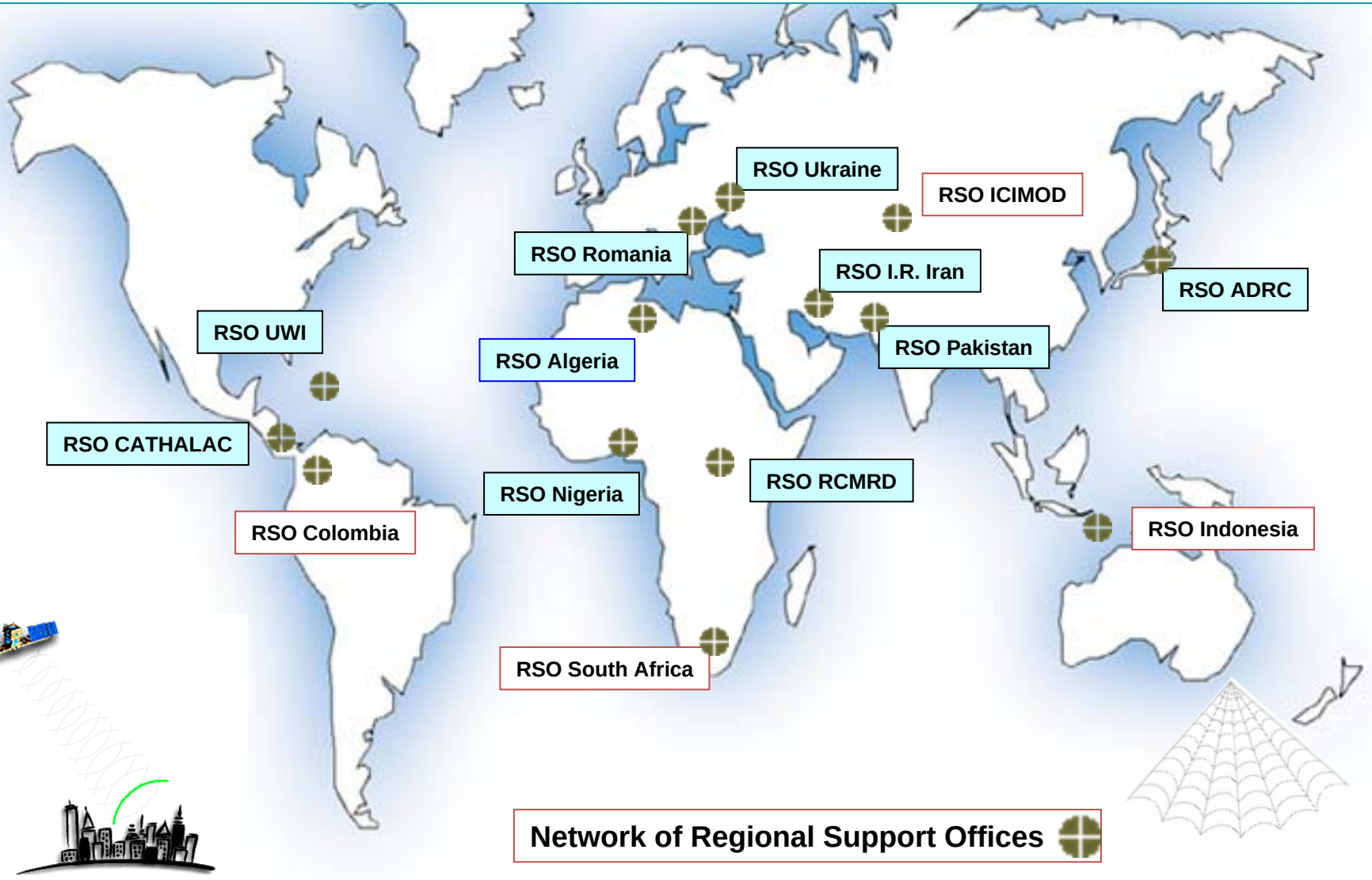
UNITED NATIONS | UN

United Nations Pla
Disaster Managem

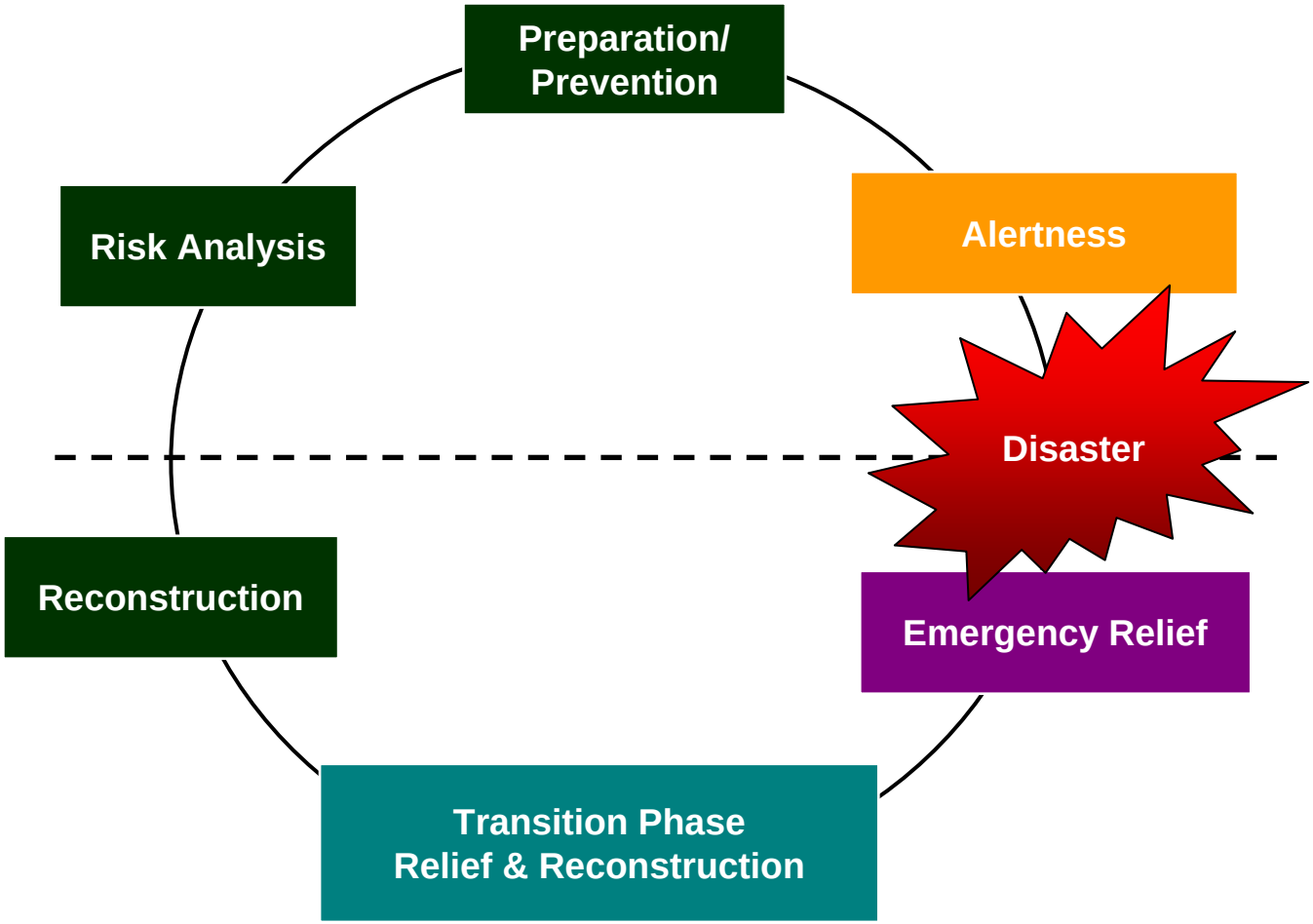
Network

- UN-SPIDER Team
- Network of Regional Support Offices (RSOs) (10 + 4)
- National Focal Points (41)

UN-SPIDER Regional Support Offices



...to support the full Disaster Management Cycle



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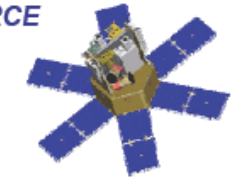
United Nations Platform for Space-based Information for Disaster Management and Emergency Response

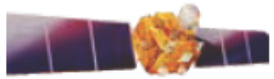
…the Space-Community perspective & expertise…

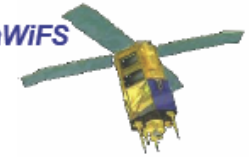
United Nations Platform for Space-based Information for Disaster Management and Emergency Response

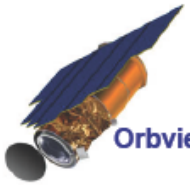

GeoEye 1


QuikScat

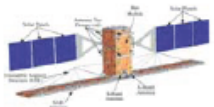

SORCE


SPOT 4, 5


SeaWiFS

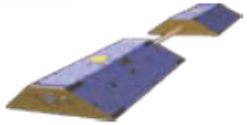

Orbview 2, 3


SeaWinds

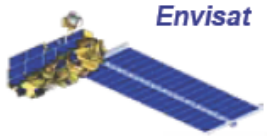

Radarsat


ERBS

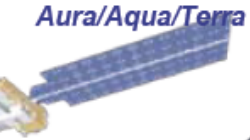

QuickBird


Grace


UARS

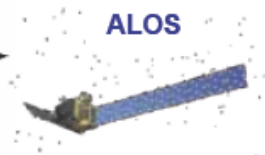

Envisat

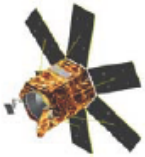

IKONOS

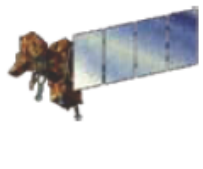

Aura/Aqua/Terra


SPIN-2

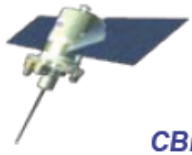

DMC

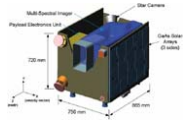

ALOS

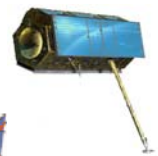

EROS A1

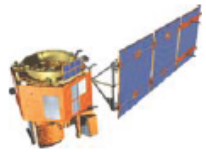

Jason

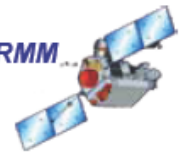
Landsat 7

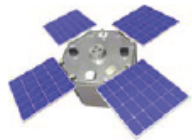

Sage


RapidEye


TerraSAR X


CBERS


TRMM


ACRIMSAT


Toms-EP


CBERS 3, 4

Space Technologies for Disaster Risk Management

Images from earth observing satellites help assess the damage caused by disasters like earthquakes, volcano eruptions, oil spills and floods.

Satellite communications help warn people who are at risk, especially in remote areas. They help connect a disaster zone to the outside world

Global navigation satellite systems enable us to obtain positional information on events that have to be mapped

Talking about „Space-based Information“ from the user perspective

What information exists?

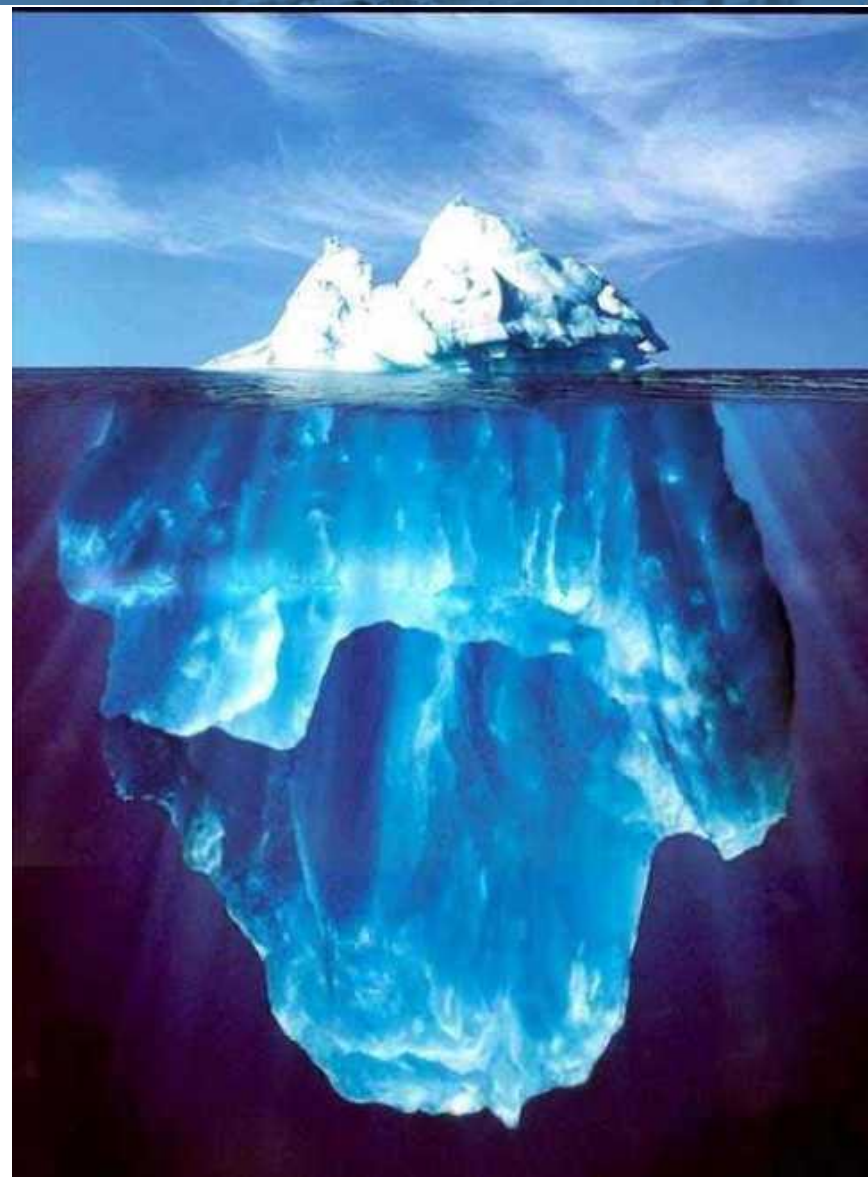
Where to find?

How to access?

What are the costs?

What is the actuality?

What is the quality?



Knowledge Portal

A web portal for information, communication, and process support. A platform which supports knowledge management, capacity building, technical advisory support and SpaceAid.

www.un-spider.org

Capacity Building

To increase the capacity of **Networks of practitioners from the disaster management and space communities to access and to use all types of space-based information** to support the full disaster management cycle.





SPIDER Thematic Partnership for DRR

1 Established within the framework of partnerships and networks designed by ISDR to thrust the Hyogo Framework for Action.

2 Focusing on supporting National Platforms for Disaster Reduction begin set up by ISDR worldwide.

3 Targeting the use of space-based information for disaster risk reduction.

4 As a vehicle to achieve results that could not be achieved by individual institutions or agencies

Major Outreach Activities - 2010

- UN-SPIDER Regional Workshop "Building Upon Regional Space-based Solutions for Disaster Management and Emergency Response for Africa“ in **Addis Ababa** from 6 – 9 July 2010

- Fourth international UN-SPIDER workshop, on disaster management and space technology: from concept to application, **Bonn, Germany**, 12 – 14 October 2010

UN-SPIDER Regional Africa Workshop

Recommendations for Emergency Response

- Increase knowledge on existing opportunities and resources available
- Better understanding on activation procedures and broadening the scope
- Building institutional capacity
- Make use of local knowledge of institutions and commercial services
- Improve data access and distribution

Technical Advisory Support - Objectives

- **Assessing national capacity and evaluating disaster and risk reduction activities, policies and plans with regard to the use of space-based information**
- Assisting in the definition of risk and disaster management plans and policies and developing guidelines and templates for DRR/ER
- Facilitating access of national institutions to space-based information to support DRR and ER activities.
- Identifying training needs and facilitating the implementation of capacity building activities.
- Supporting the implementation of risk reduction and emergency response activities using space-based technologies.

Technical Advisory Support

The SpaceAid Framework

"Ready to support emergency response"

§ **The SpaceAid Framework** – A framework that ensures all countries and international and regional organisations are able to access and use all types of space-based information for humanitarian and emergency response.

- 24/7 Hotline for NFPs and UN (telephone, email or fax)

How can we ensure every disaster receives all available support ?

Universal access to space-based information

Building upon local expertise and knowledge

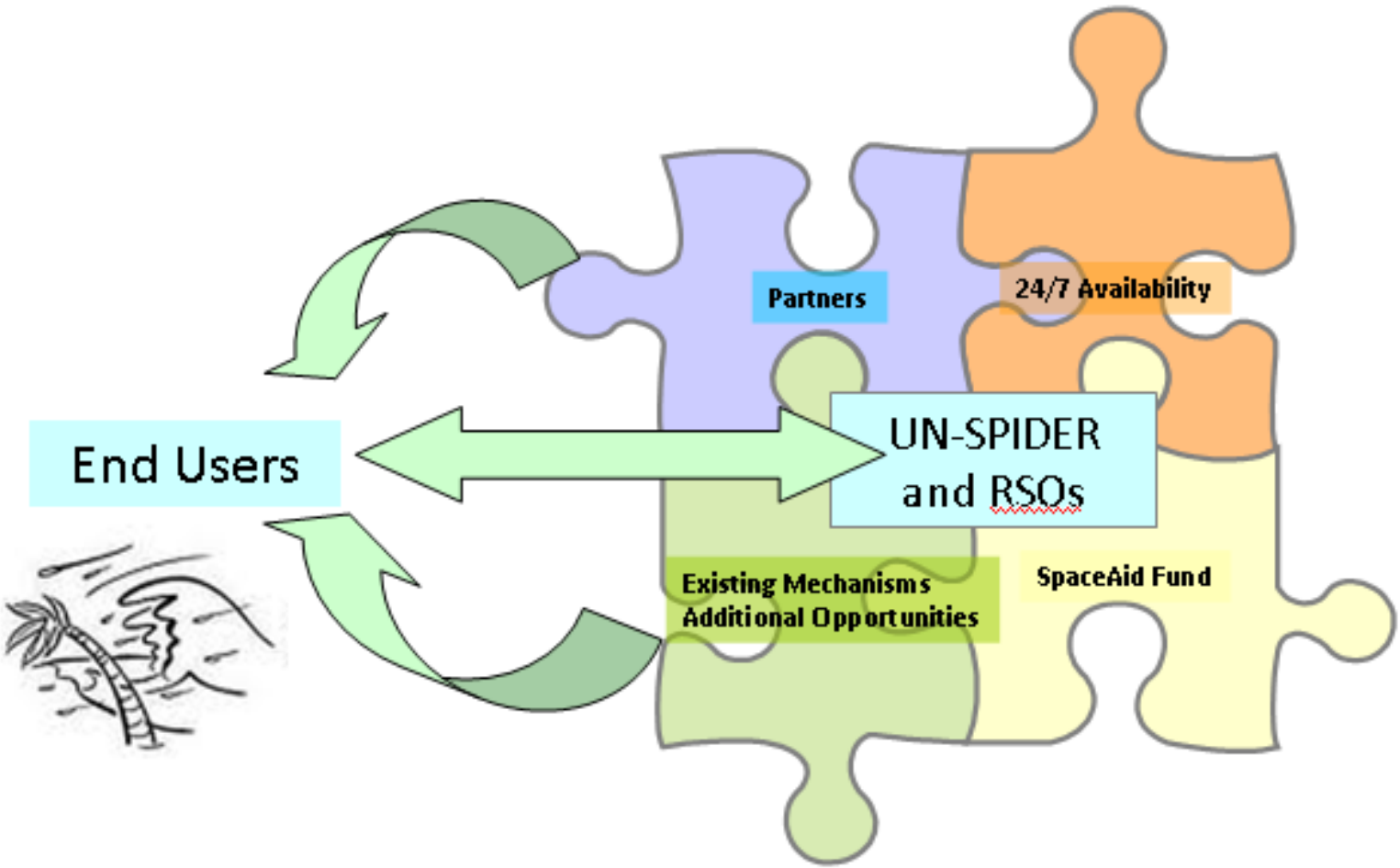
Building upon existing regional networks

Providing value-added products

Involving available expertise and informal networks

Directly supporting end users: making a difference

The SpaceAid Framework



Bridging the gap

Direct Access

Existing international mechanisms (providing value added products)

Services being set-up by companies

DIGITALGLOBE Crisis Event Service

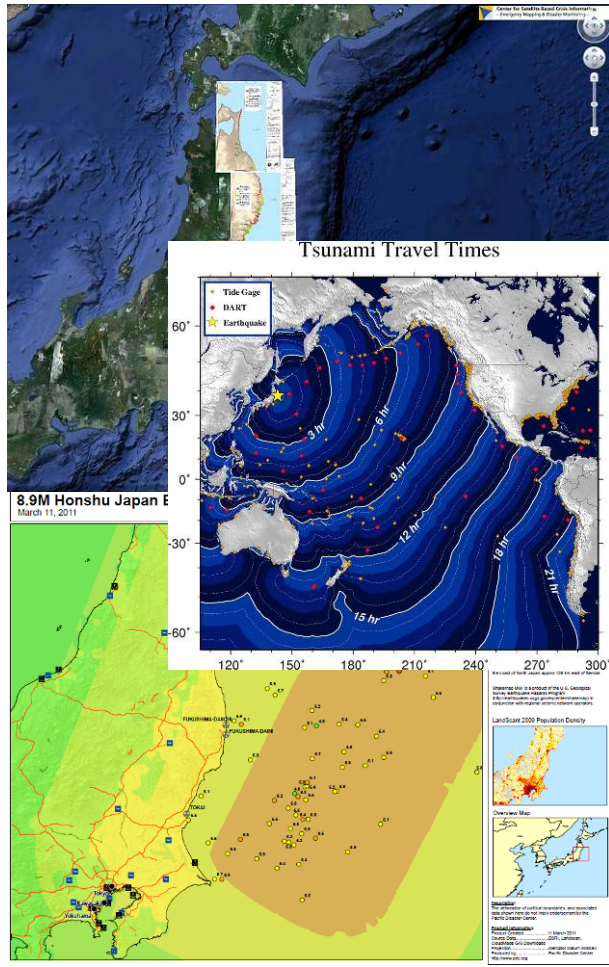
SpaceAid – Events Supported in 2010

- Benin
- Burkina Faso
- Chile
- China
- Cook Islands
- Gaza oPt
- Guatemala
- Haiti
- Kazakhstan
- Kenya
- Madagascar
- Moldova
- Myanmar
- Pakistan (3x)
- Philippines
- Senegal
- Solomon Islands
- Sri Lanka
- South Sudan
- Tajikistan
- Thailand
- Tonga
- Turkey
- Uganda
- Ukraine (2x)

SpaceAid support to respond to recent disasters in Japan

- **On the 11th of March 2011 Japan suffered a major earthquake and tsunami.**

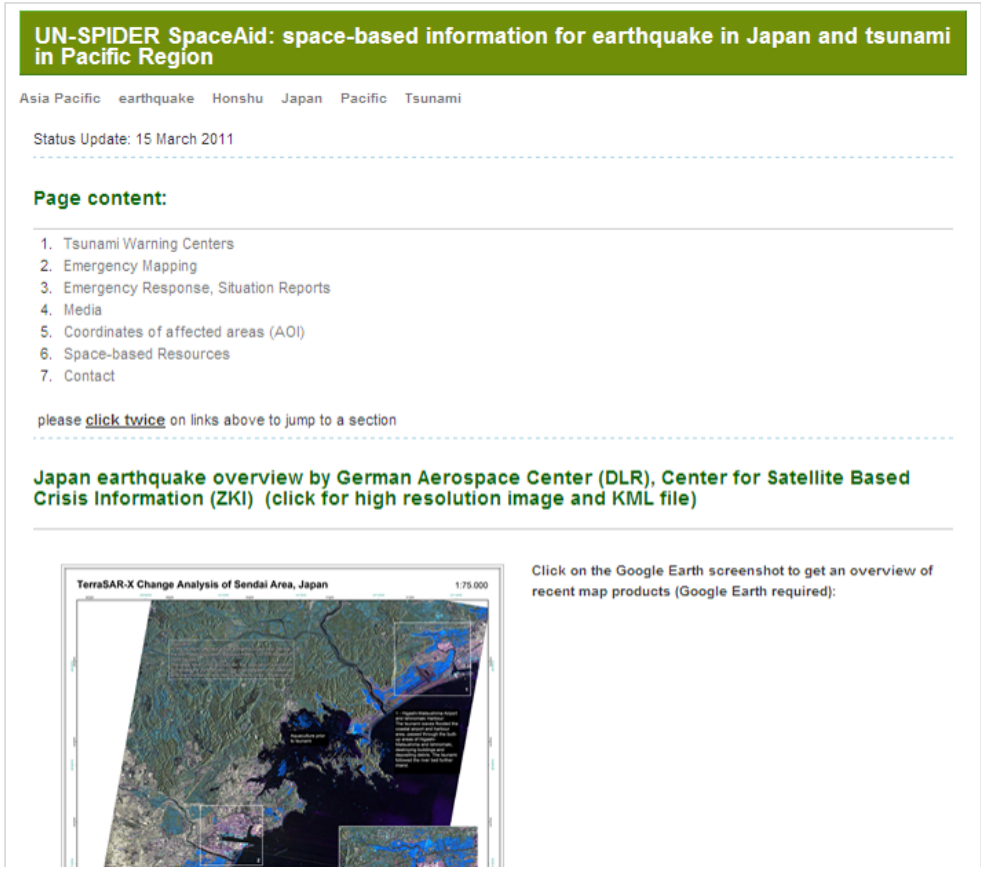
- **<u>Involvement of UN-SPIDER</u>:**
- **Collaborated with major international partners**
- **Contacted RSOs and NFPs in the region to receive first-hand information**
- **Established a resource page on the Knowledge Portal**



The SpaceAid Framework - JAPAN

The Japan specific website on the UN-SPIDER Knowledge Portal can be accessed through:

www.un-spider.org/japan-pacific



UN-SPIDER SpaceAid: space-based information for earthquake in Japan and tsunami in Pacific Region

Asia Pacific earthquake Honshu Japan Pacific Tsunami

Status Update: 15 March 2011

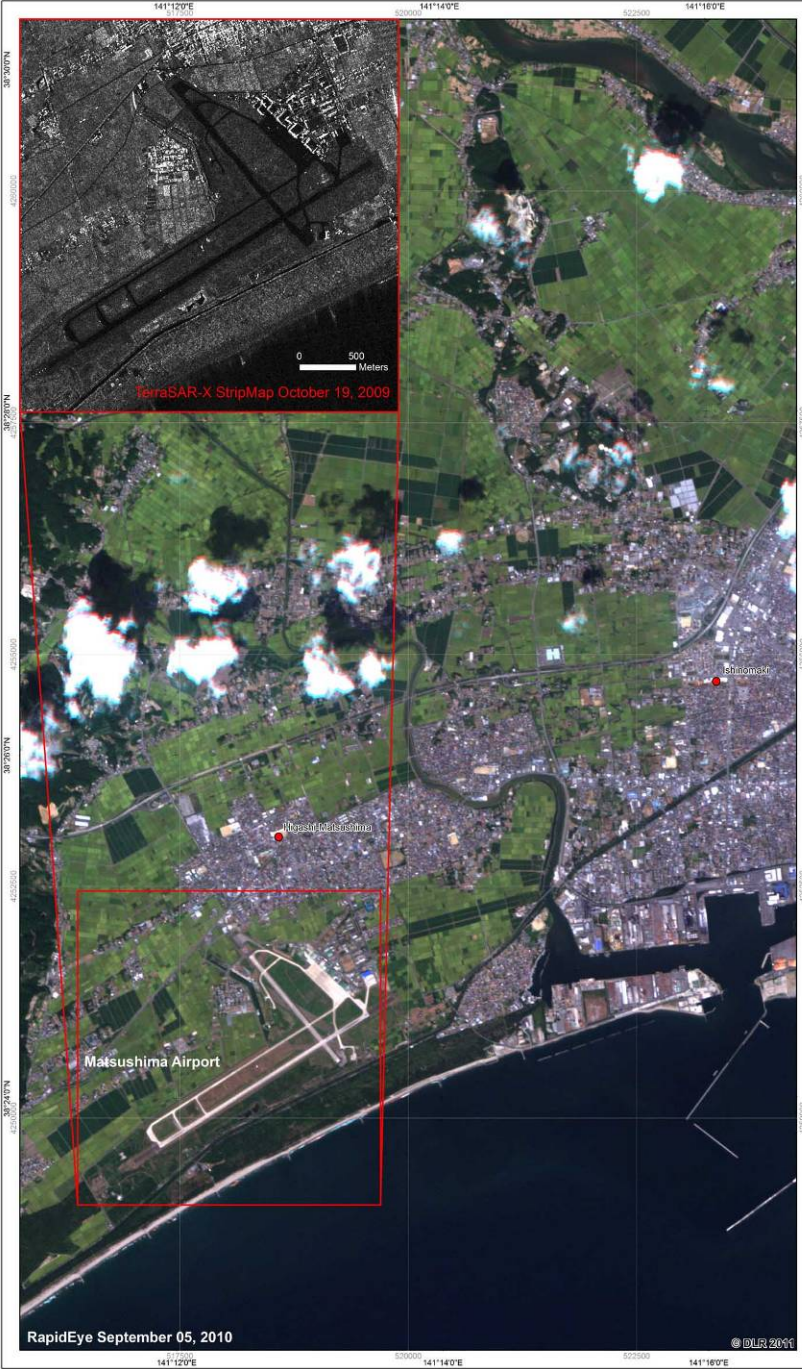
Page content:

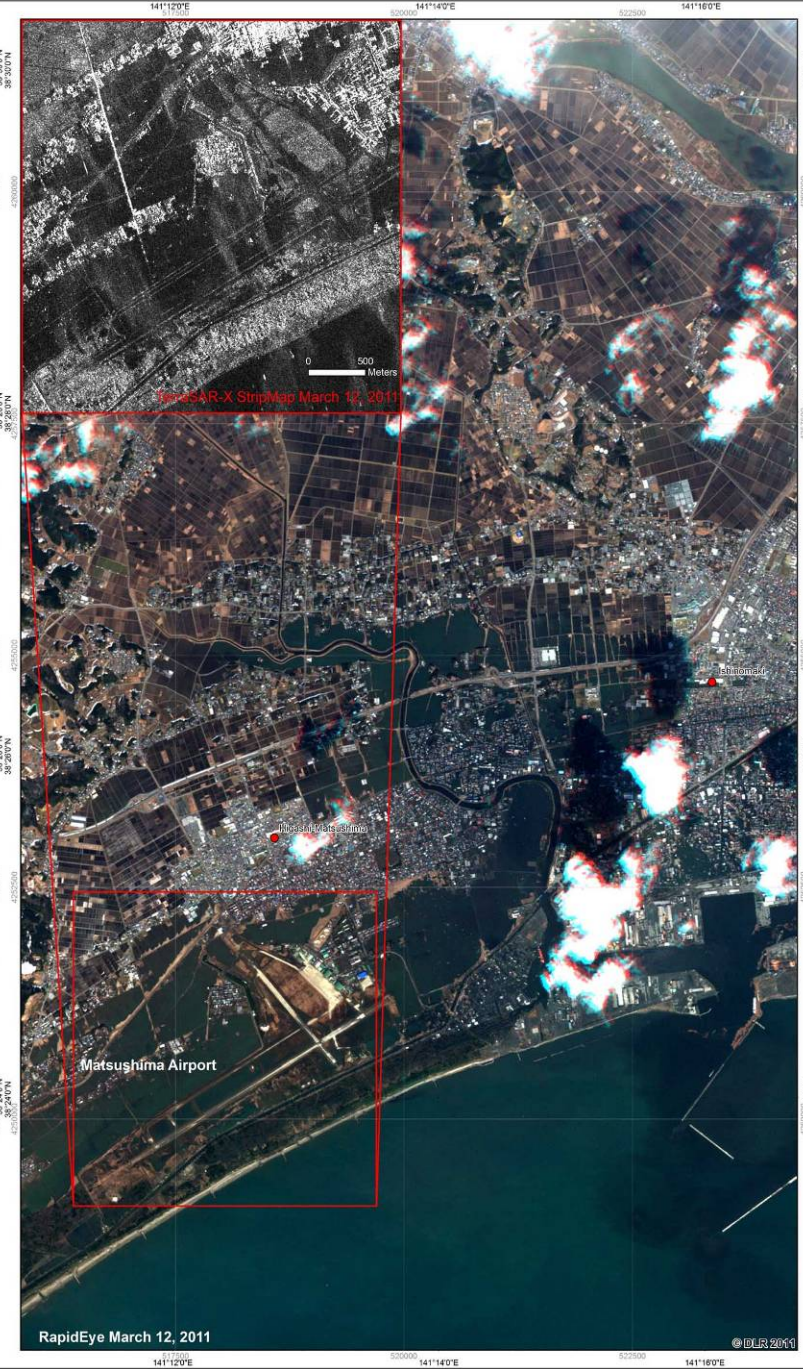
1. Tsunami Warning Centers
2. Emergency Mapping
3. Emergency Response, Situation Reports
4. Media
5. Coordinates of affected areas (AOI)
6. Space-based Resources
7. Contact

please click twice on links above to jump to a section

Japan earthquake overview by German Aerospace Center (DLR), Center for Satellite Based Crisis Information (ZKI) (click for high resolution image and KML file)

Click on the Google Earth screenshot to get an overview of recent map products (Google Earth required):





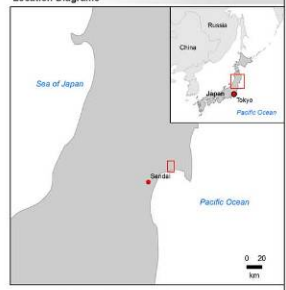
Glide No. EQ-2011-000028-JPN
Product No. 03

JAPAN - Higashi-Matsushima Earthquake/Tsunami

Disaster Extent as of March 12, 2011

Scale: 1:25,000

Location Diagrams



Legend

Agriculture | Settlement | Clouds

Population

Town/Village

Interpretation

On March 11, 2011 an earthquake with a magnitude of 8.8 hits north-east Japan followed by a series of powerful aftershocks of magnitudes up to 7.5. The epicentre was located 250 miles (400km) from the capital Tokyo at a depth of 20 miles (32km). Numerous roads and towns have been inundated and destroyed by a tsunami triggered by the earthquake. Thousands of people lost their lives.

The map shows the area around Higashi-Matsushima before and after the devastating tsunami. The detail image subsets highlight the destruction of the airport.

The pre-disaster RapidEye data was acquired on September 05, 2010 and the post-disaster RapidEye data on March 12, 2011. The pre-disaster TerraSAR-X data was acquired on October 19, 2009, and the post-disaster TerraSAR-X data on March 12, 2011.

Please note that due to cloud cover only parts of the image could be analysed.

Cartographic Information

0 500 1.000 1.500 2.000 Meters

N

Local projection: UTM Zone 54N, Datum: WGS 1984
Geographic projection: Lat/Lon (DMS), Datum: WGS 84
Scale: 1:25,000 for DIN A1 prints.

Data Sources

RapidEye (6.5 m)	© RapidEye AG 2010/2011
TerraSAR-X (2.75 m)	© German Aerospace Center (DLR) 2009/11, Commercial exploitation rights: Infoterra GmbH
Vector data	© Google Earth 2011

Framework

The products elaborated for this Rapid Mapping Activity are realised to the best of our ability, within a very short time frame, optimising the material available.

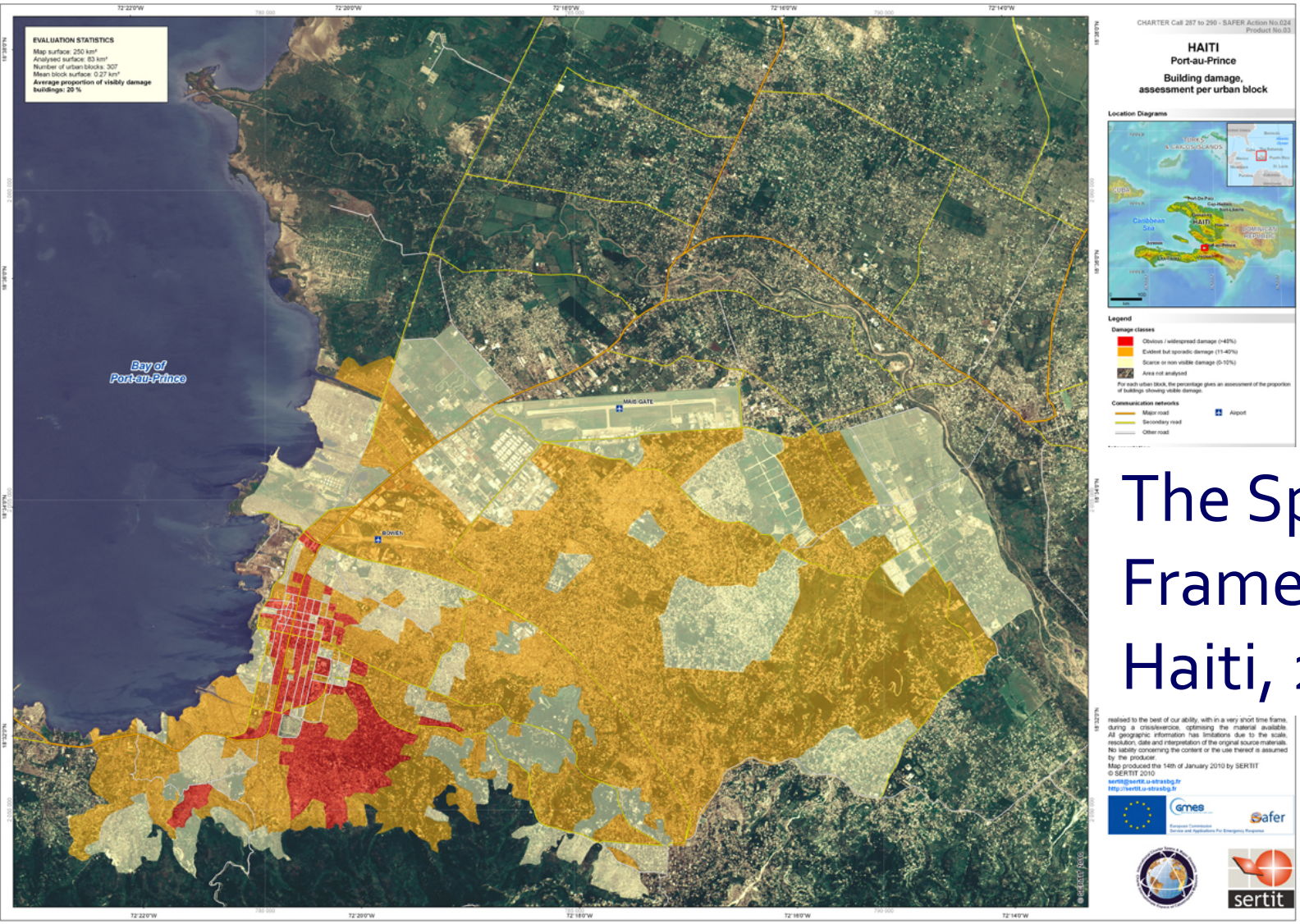
All geographic information has limitations due to the scale, resolution, date and interpretation of the original source materials. No liability concerning the content or the use thereof is assumed by the producer.

Map produced March 12, 2011 by ZKI

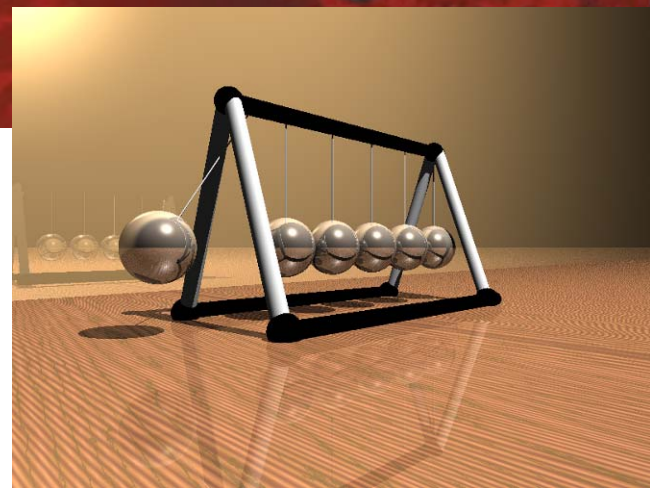
zki@dlr.de
http://www.zki.dlr.de

DLR
Center for Satellite Based Crisis Information
- Emergency Mapping & Disaster Monitoring -

RapidEye
geo facts turned into knowledge



The SpaceAid Framework – Haiti, 2010



SpaceAid in Action –

Standard Operational Procedure:

1) Request by National Focal Point or UN
2) Verification of situation and identification of AOI together with partners
3) Coordination with local UN agencies
4) Activation of SpaceAid Framework
5) Decision to request activation of specific mechanisms
6) Information to Partners through SpaceAid mailing list and SpaceAid Updates page on Knowledge Portal
7) Facilitate the provision of data and follow-up activities

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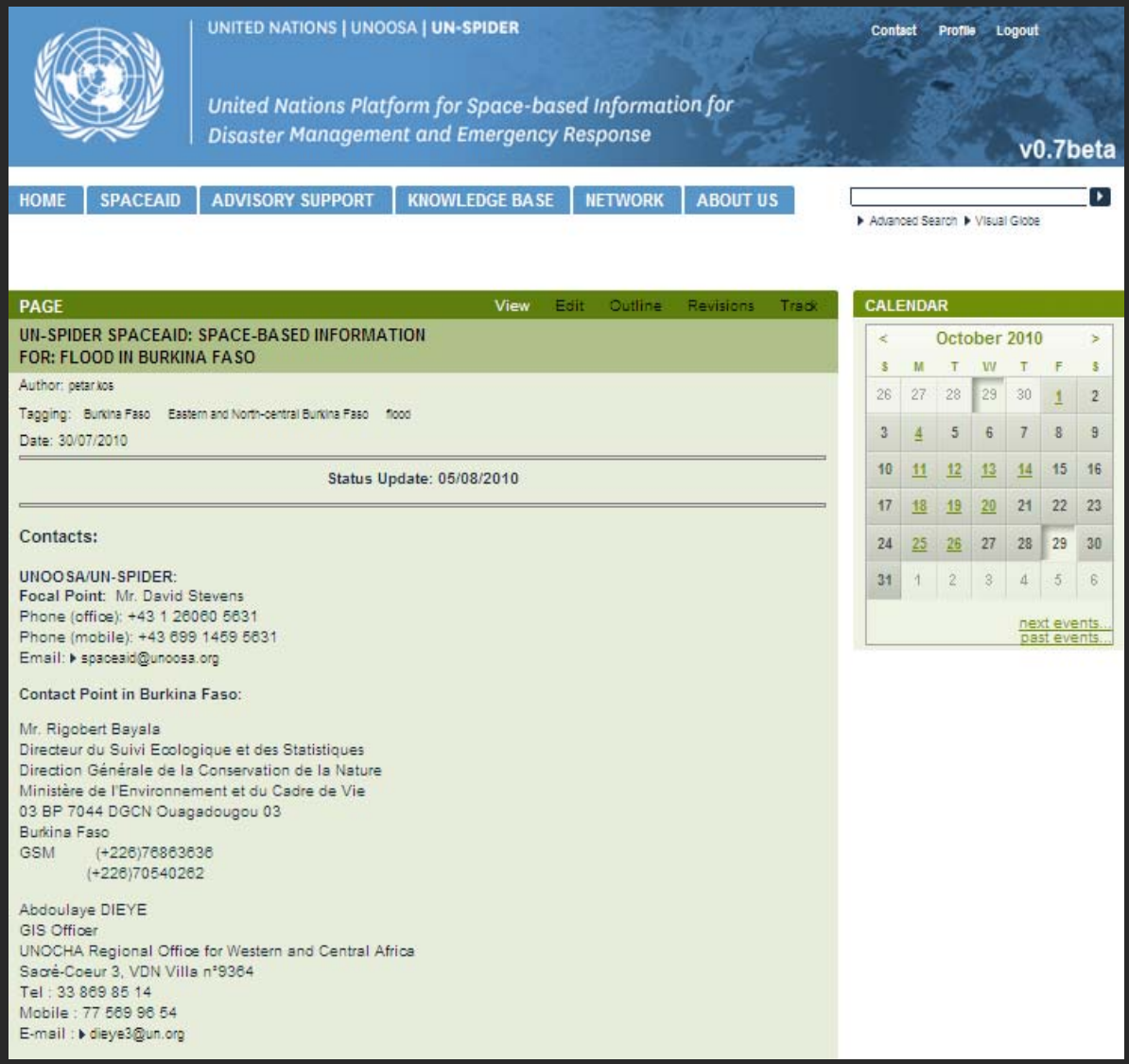
United Nations Platform for Space-based Information for Disaster Management and Emergency Response



Coordinates of affected areas (AOI)

Geographical Coordinates for SAFER activation request

AOI 1

Upper Left :
Lat: 13°44'16.8"N
Long: 0°45'57.6"W

Lower Right :
Lat: 12°23'52.8"N
Long: 0°2'16.8"E

AOI 2

Upper Left :
Lat: 14°02' N
Long: 0°00'30"W

Lower Right :
Lat: 13°24' N
Long: 0°46' E

AOI 3

Center point
Lat: 13°18' 56.01" N
Long: 0°31'12.85" W

SAFER

Activation requested on 30/07/2010
Activation Request accepted: 30/07/2010
Requested by WFP on behalf of UNOOSA \ UN-SPIDER
Link:

Project Manager:

David Hello
SAFER Focal Point contact
Phone: +32 28 08 43 09

Space-based resources:

Satellite Tasking No	Satellite	Sensor	Time (UTC)	Area	Type	Status	Remarks/ Products
0	Landsat-7	TM	1/11/2001	**Upper Left**: Lat:13° 44'16.8"N Long:0° 45'57.6"W **Lower Right** : Lat: 12° 23'52.8"N Long: 0° 2'16.8"E	Archive	Acquired	ZKI* ZKI*
1	Radarsat-2	SAR	1/08/2010	**Upper Left**: Lat:13° 44'16.8"N Long:0° 45'57.6"W **Lower Right** : Lat: 12° 23'52.8"N Long: 0° 2'16.8"E	Post-disaster	Acquired	ZKI* ZKI*
2	Terra	ASTER	8.8.2010, 10.8.2010	**Upper Left**: Lat:13° 44'16.8"N Long:0° 45'57.6"W **Lower Right** : Lat: 12° 23'52.8"N Long: 0° 2'16.8"E	Post-disaster	Scheduled	

How can we ensure every disaster receives all available support ?

“The only tools you will use in a crisis are the ones you have been using already”

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