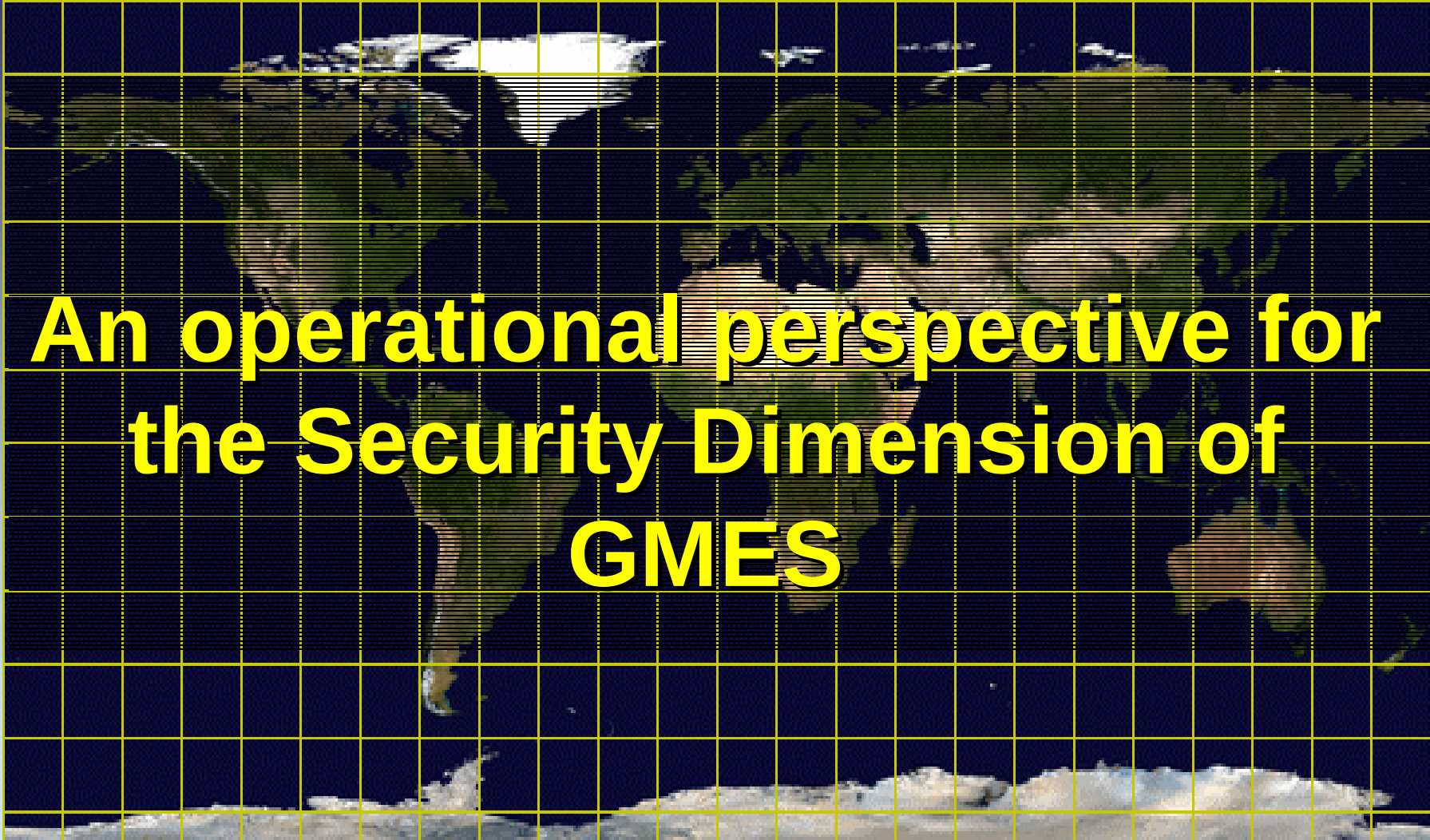




European Union Satellite Centre

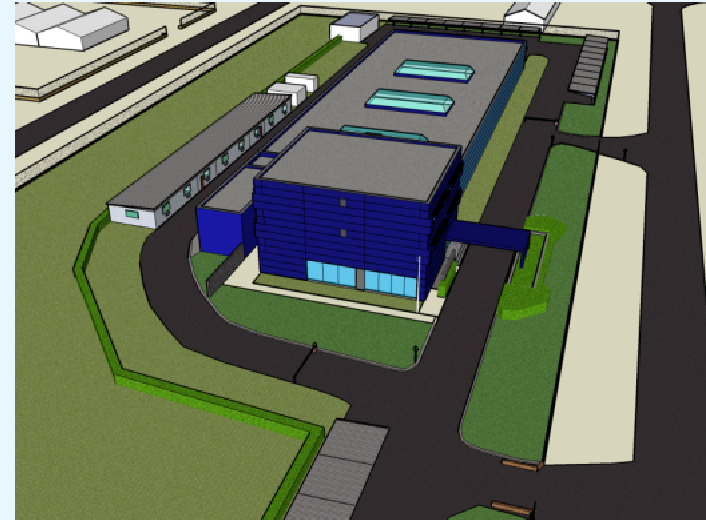
A world map with a yellow grid overlay, showing the continents and oceans. The map is centered on the Atlantic Ocean.

An operational perspective for the Security Dimension of GMES



European Union Satellite Centre (EUSC)

- 1991 WEU Council decided to set up the WEU SATCEN at Torrejon Air Base, Madrid
- 1993 Building inaugurated
- 1997 SATCEN declared fully operational
- 68 personnel



- 1 Jan 2002: transferred to the EU (Joint Action)
- 21 Dec 2006: Mandate updated and enlarged
- Ca. 100 personnel (74 Staff + experts and local staff)
- Budget ca. 12 Mio. €



Mission of the EU Satellite Centre

(Council JA 2006/998/CFSP of 21 December 2006 Art. 2)

1. The Centre shall, in coherence with the European Security Strategy, support the decision-making of the [European Union](#) in the field of the CFSP, in particular of the ESDP, including European Union crisis management operations, by providing, as appropriate, products resulting from the analysis of satellite imagery and collateral data, including aerial imagery, and related services ...
2. In the framework of this mission, the SG/HR will, upon a corresponding request and if the capacity of the Centre so allows, direct the Centre to provide products or services to:
 - i. A [Member State](#) or the [Commission](#);
 - ii. [Third states](#) having agreed to the provisions set out in the Annex on the association with the Centre's activities;
 - iii. If the request is relevant in the field of the CFSP, [international organisations](#) such as the [UN](#), the OSCE and [NATO](#).



Customers, Tasking

The Council
and
its bodies

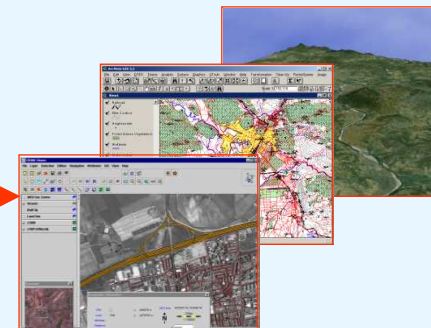
Member States
Commission

International
Organizations

Third
States



Daily tasking business:
SG/HR's PoC in the
EU Council Secretariat
(DG E 8)





GMES Mandate

Gothenburg EU Summit 2000

GMES: A Joint EC-ESA Initiative
Adopted by the EU Heads of State
« achieving by 2008 an **operational and autonomous** European capability ».



European
Union



New horizon: 2014 (GiO 2011)

Short time to get the S of GMES better defined including EUSC role assessment.



GMES: The Security Dimension

COM 2004(65) February 2004

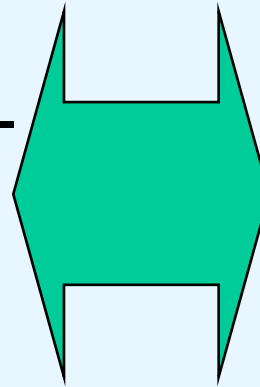
GMES has to support the following policies:

- Civil protection
- Development and humanitarian aid
- **EU Common Foreign and Security Policy (CFSP), including the European Security and Defence Policy (ESDP)**
- Other policies relevant to European citizen's security, notably policies related to **EU Justice and Home Affairs**
(e.g. border control, fight against organised crime, etc)



EUSC Tasking

- Arms control
- Counter-proliferation
- Treaty verification
- Indications and warnings
- Peace-keeping, -making, -enforcement
- EU operations
- Humanitarian missions
- Counter-terrorism
- Border monitoring



GMES

**Test potential
GMES services
for CFSP/ESDP.**

**EUSC supports
the development
of services.**

COM 2005(565) Final November 2005

“GMES: From Concept to Reality”

“GMES will make an important contribution to serve the EU’s civil security needs. In addition, it will provide opportunities for **additional capabilities for the European Security and Defence Policy (ESDP)**. All possible **civil and military synergies should be pursued** to ensure a better use of resources, in **full complementarity with the EU Satellite Centre (EUSC), which is already operational in this area.**”



GMES: The Security Dimension

Events/Working Groups related to GMES Security Dimension

ISS Seminar on GMES Security Dimension in March 2007

“Emergency should not (and cannot) be seen decoupled from an overall ‘Security’ context. This fast track is a first step in developing services applicable in the area of Security.”

Informal Security GMES Advisory Council (November 2008)

GMES Bureau: Border Surveillance WG

GMES Bureau: External Action WG (Start Dec. 2009)



GMES: The Security Dimension

GMES Security dimension priority areas for actions for 2010 onward:

- **Border surveillance**
- **Maritime surveillance**
- **External action**

Ongoing projects with EUSC involvement:

LIMES Project (MARSUR, LAND, Humanitarian Aid & CP)

End in May 2010

GMOSAIC (Peacekeeping, border control, counter trafficking, etc)

End Dec. 2011

⇒ **Follow up ? MARSUR 2011**



GMES: The Security Dimension

In 2010 Emergency, humanitarian aid are now associated with GMES Initial Operations (GIO).

Ongoing projects with EUSC involvement:

SAFER: Service and Applications for Emergency response.

=> Follow up ? GIO 2011



EUSC & GMES: Projects demonstrations

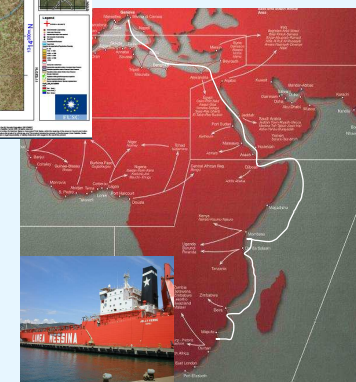
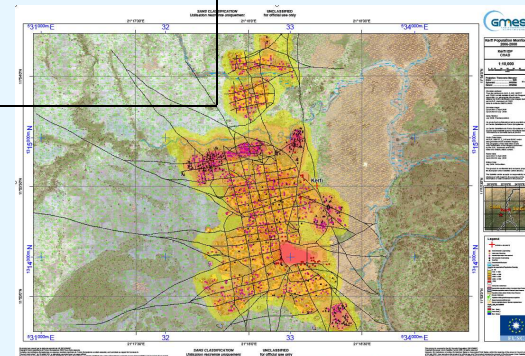
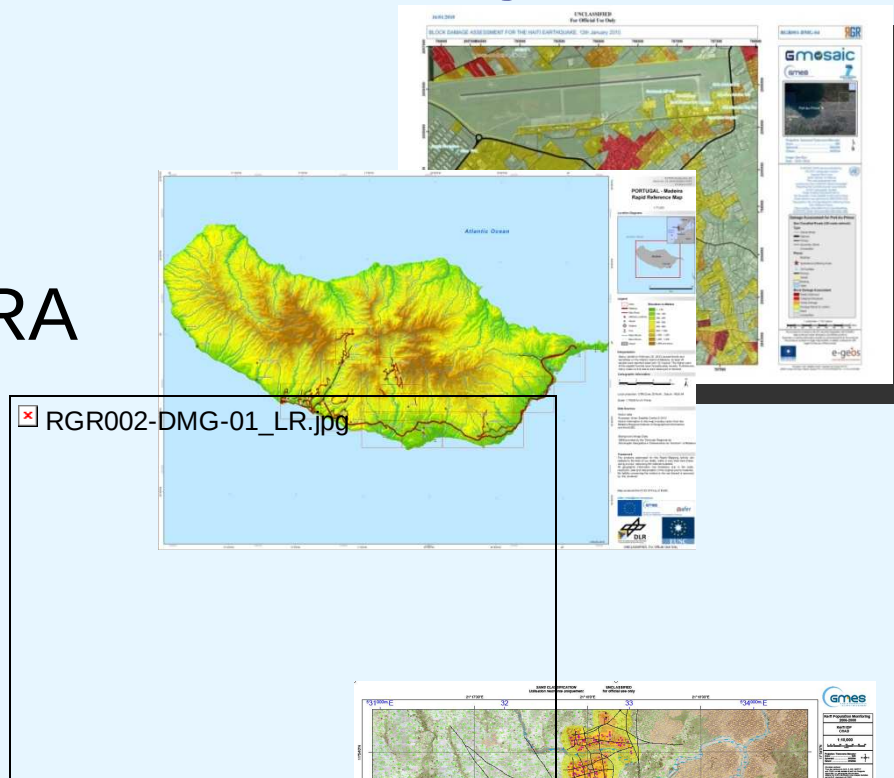
- HAITI

- MADEIRA

- CHILE

- EUFOR TCHAD

- EUNAVFOR





LIMES Project => SUPPORT EUFOR TCHAD

ACTION PLAN:

→EUSC was tasked by the Secretariat General of the Council to prepare the product following OHQ requirements.

→As soon as Imagery was available, the Service Chain involving several GMES partners was activated to provide the better Product as possible within deadlines.

→EUSC quality checked the product and delivered it to EUFOR OHQ and to the Member States.



LIMES Project => SUPPORT EUFOR TCHAD

SERVICE WORKFLOW

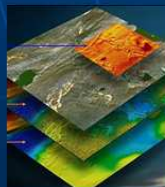


OPERATIONAL
REQUEST
OHQ
MONT VALERIEN



EUFOR TCHAD/RCA
OHQ
MONT VALERIEN

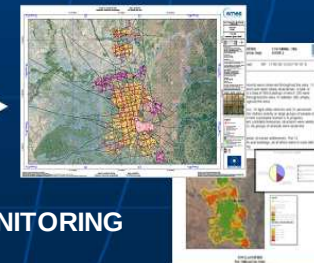
FHQ
Abéché



Input EO data



Processing
Analysis / Integration / Intelligence
Delivery



POPULATION MONITORING
IDP MAPS, etc



LIMES Project => SUPPORT EUFOR TCHAD

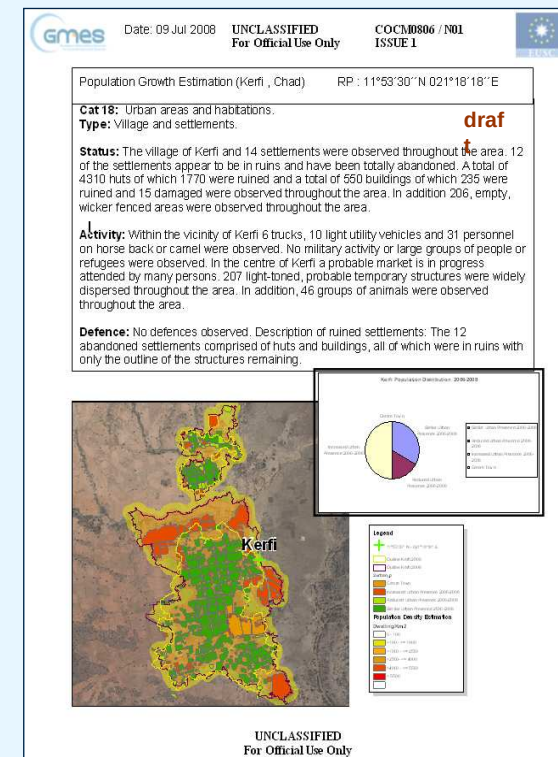
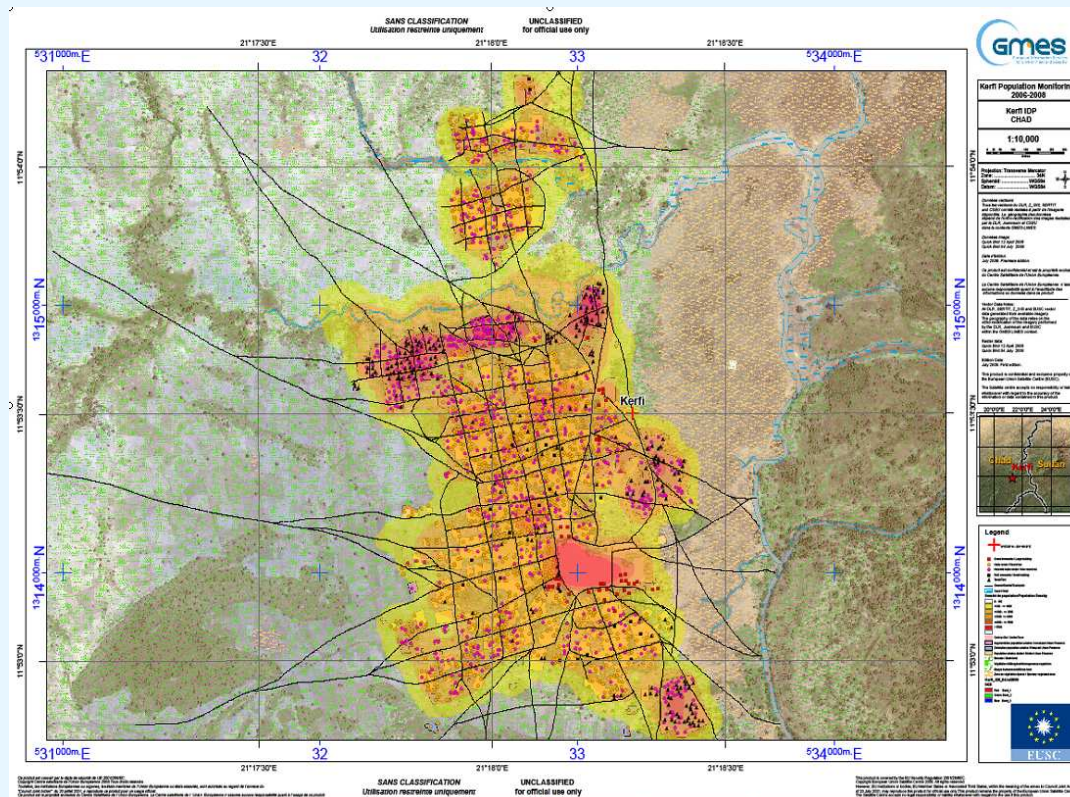
IDP POPULATION MONITORING 2008

Time constraint well taken into account.
(44 hours)

Quality and standards used for the
product according to EUFOR
requirements.

WAY AHEAD (EUFOR Feedback):

GMES could also provide other location of interest.





LIMES MARSUR - Demonstration Storyboard

- Storyboard: Vessel monitoring from Mediterranean Sea toward Southern East Africa coast.
- Duration: 2 months (21st July '09 – 16th Sept2009)



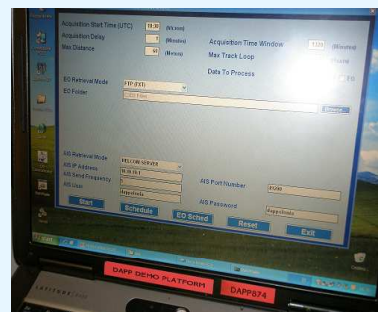
ORBCOMM Antenna



AIS Antenna



GPS Antenna



5450-P01 ARMP



5430-P01
INAV

AIS Receiver

ORBCOMM
Transceiver

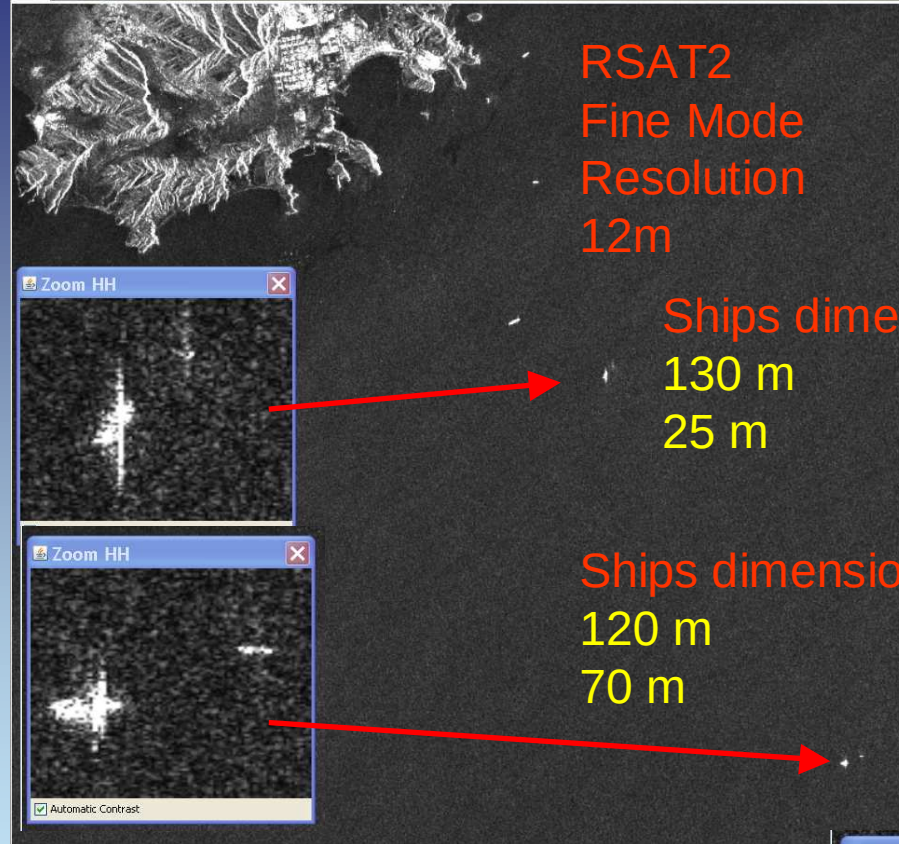


Hot Spot Monitoring

SUMO Application - Vessel Detection Software from the European Commission Joint Research Centre

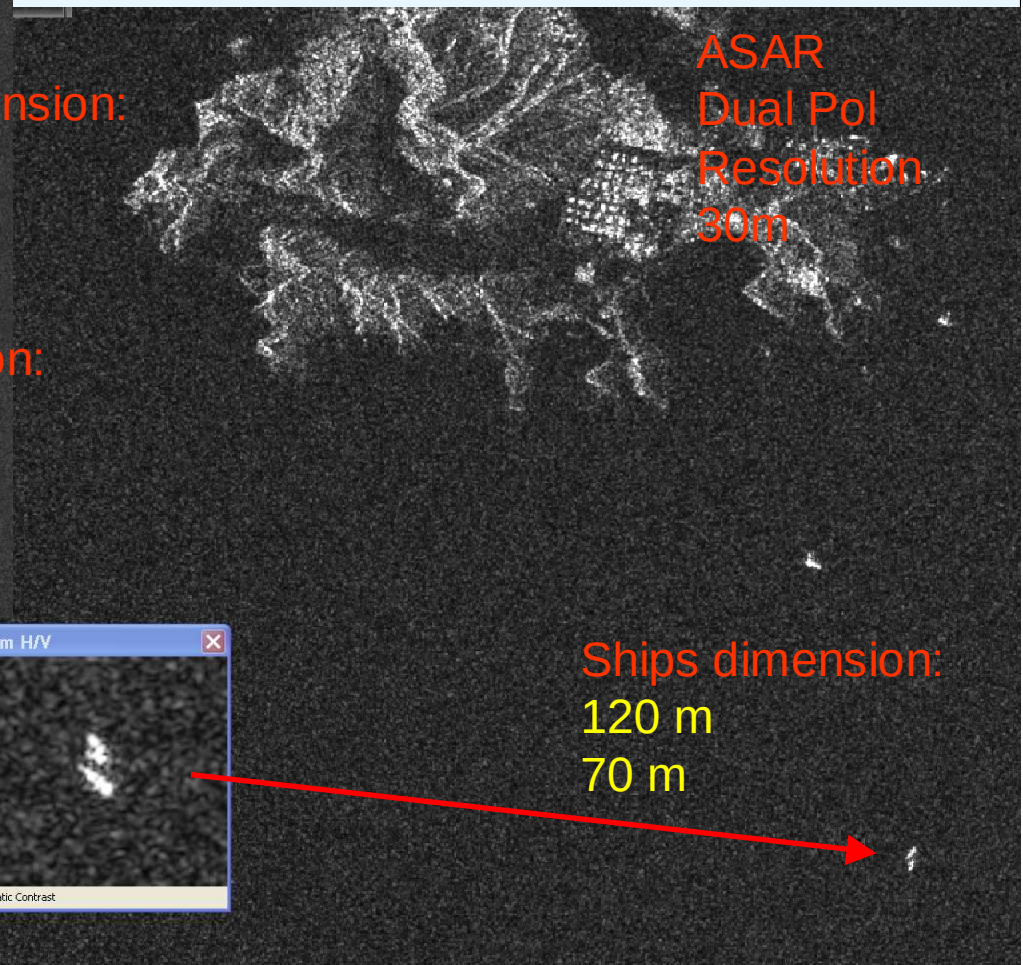
System Help Import Tools

Image Repository 3D



Suspicious situations in the Gulf of Aden:

- Large boat close to a small boat and far from the coast (about 10 km)
- Large and small boats at a quite similar position a week after



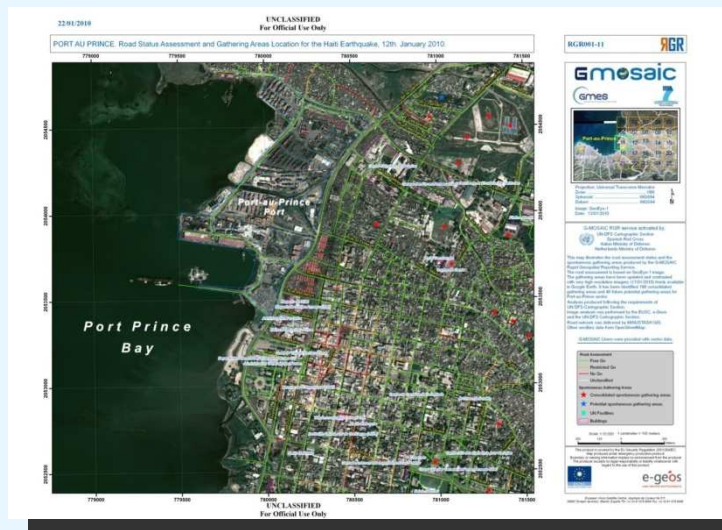


Haiti earthquake – EUSC/GMES Cooperation

GMES (G-MOSAIC Project) activated by **United Nations (DFS), Spanish Red Cross and other National users.**

EUSC tasked by **Dutch MoD.**

Both **GMES & EUSC worked in coordination** to provide Rapid Mapping including damage assessment, road trafficability, airport and port analysis .



Good example of synergies between EUSC and GMES.

Operational experience of the EUSC for the benefit of GMES.

More products available for a wider community of users: distribution via EUSC to 27MS+EC+UN.

Exchange of data with UN.

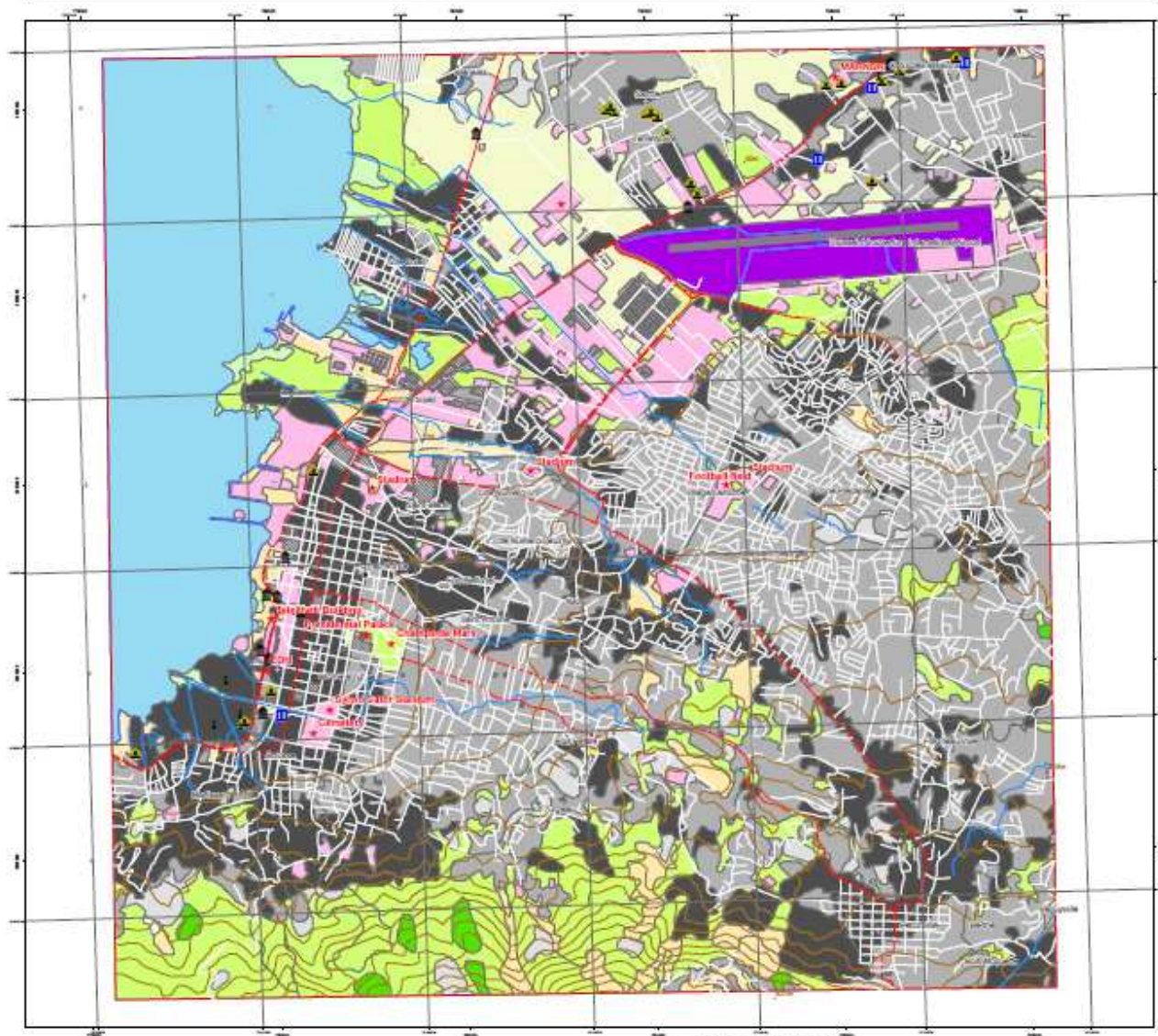


Reference Map

15/01/2010

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Port-Au-Prince - HAÏTI - Reference map - 1/15000



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REFERENCE MAP

G-mosaic

Gmes infoterra



Projection: Universal Transverse Mercator
Zone: 18N
Spheroid: WGS84
Datum: WGS84
Image: Source
Date: 25/05/05
Scale: 1:15,000
Accuracy: 10m

Situation assessment has been done using pre-event (when available) and post event satellite imagery, both optical and radar.

Vector data source: OpenStreetMap - NGA Esri/Google - Photocopy/asterisk
Data source: SRTM - 1/50,000
Interpolated contour lines: 25m

TABLE OF CONTENT

• School	• Airfield (AGB005)
• Church	• Dense
• Medical	• Moderate
• Services	• Other Area
• Open Areas	• Sparse
• SpotElevation	• Cropland (AEB010)
• Toponymy	• Grassland (AEB010)
• Contour (LCA010)	• Lake (ABH080)
• River (LBH140)	• Scrub or Bush (AEB020)
• Runway (LB050)	• Soil Surface (ADA010)
• Local Road	• Trees (AEC030)
• National Motorway	
• Primary Route	
• Secondary Route	
• Unknown	
• cache	
• Building (AAL015)	

Map produced under emergency production process.
Secondary or saving information implies no endorsement from the producer.
The producer accepts no legal responsibility or liability whatsoever with
regard to the use of this product.

Infoterra France
Pars Technologies de l'Esprit
15, avenue de France
92022 Neuilly-sur-Seine Cedex
Tel: +33 (0)1 47 33 10 10



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PORT AU PRINCE. Road Status Assessment and Gathering Areas Location for the Haiti Earthquake, 12th. January 2010.



96



Projection: Universal Transverse Mercator
Zone: 18N
Spheroid: WGS84
Datum: WGS84
Image: GeoEye-1
Date: 13/01/2010

G-MOSAIC RGR service activated by:
 UN-DFS Cartographic Section
 Spanish Red Cross
 Italian Ministry of Defense
 Netherlands Ministry of Defense

This map illustrates the road assessment status and the spontaneous gathering areas produced by the G-MOSAIC Rapid Geospatial Reporting Service.

The road assessment is based on GeoEye-1 image. The gathering areas have been updated and contrasted with the very high resolution imagery (17/01/2010) freely available in Google Earth. It has been identified 188 consolidated gathering areas and 40 future potential gathering areas for Port-au-Prince sector.

Analysis is conducted following the requirements of UN-DFS Cartographic Section.

Image analysis was performed by the EUSC, e-Geos and the UN-DFS Cartographic Section.

Road network was delivered by MINUSTASH GIS.

Other ancillary data from OpenStreetMap.

G-MOSAIC Users were provided with vector data.

- Free Go
- Restricted Go
- No Go
- Unclassified

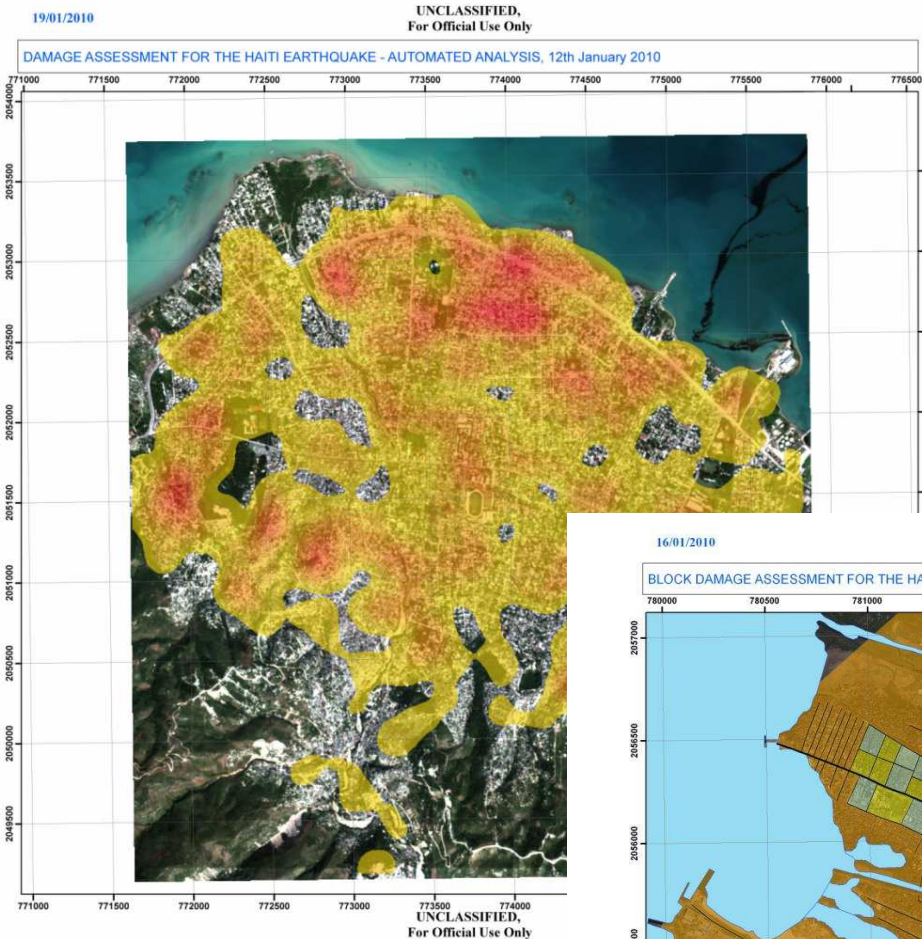
★ Consolidated spontaneous gathering areas.

★ Potential spontaneous gathering areas.

UN Facilities

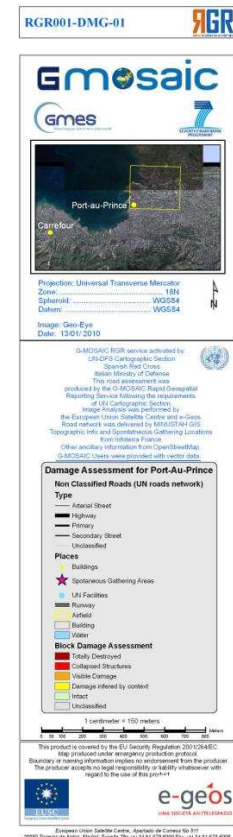
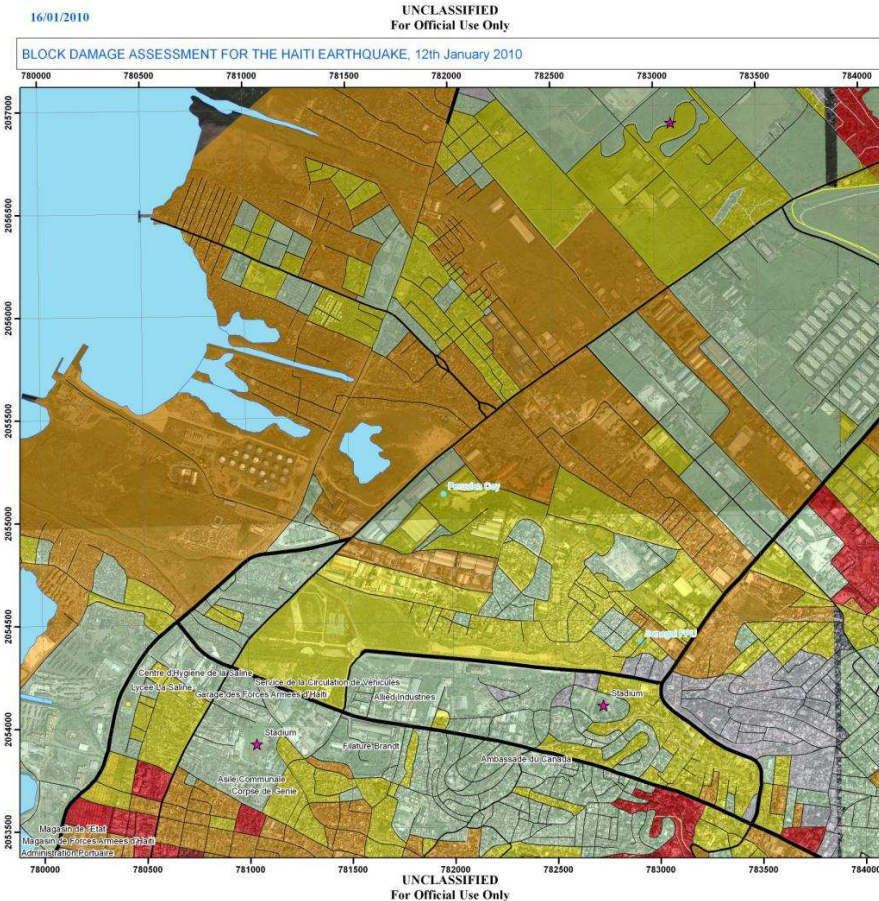
Buildings

Damage assessment (by IA)



Port-Au-Prince

Damage assessment (Automatic R&D)





Port-au-Prince International Airport

Date: 22 Jan 2010

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COHU 1001 / N02 ISSUE 01
External Ref.: CO 2010 13 NL

Toussaint L'Ouverture Port-Au-Prince International Airpo



RP: 18°34'48" N 072°17'34" W

Damage Assessment January 2010

Gmosaic

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COHU1001 N02 I01

Introduction

This briefing note covers Toussaint L'Ouverture, Port-au-Prince International Airport in Haiti and provides image analysis of the status, activity and facilities of the airfield with particular regard to any observed damage due to the recent earthquake. The note has been produced using a GeoEye multispectral image, dated 13 January 2010 which has been combined with open source collateral information. The information cut-off date of this briefing note is 22 January 2010.

1. Location and Type:

Reference Point (RP): RP: 18°34'48"N 072°17'34"W

International Airport

2. Status

Permanent, serviceable, occupied and operational

3. Activity

Aircraft activity included, two light helicopters, two executive jets and a single, probably unserviceable Boeing 727 airliner observed on the passenger terminal aircraft parking apron (Figure 3). On the grass area adjacent this, two light transport helicopters were observed with their rotor turning. On the central aircraft parking apron, 24 aircraft were observed. These comprised of 13 twin, propeller engine aircraft, 10 single, propeller engine aircraft, an executive jet and three light helicopters (Figure 4). On the apron located to the east of the UN Logistics Base (1) a Casa C212 Aviocar transport aircraft and a Dash 7 transport aircraft were parked. In addition, four Mi 8/17 'HIP' transport helicopters and five UH-1N Iroquois transport helicopters were also observed (Figure 5). Airborne and approaching the parking apron was a single light helicopter.

On the access roads leading to the airport vehicle traffic appeared to be moving freely with no visible damage or obstructions on the roads. Ground support equipment within the airport was also active.

4. Defences

No air or ground defences were observed at the airfield or in the surrounding area.

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5. Description of Facilities

Toussaint L'Ouverture, Port-au-Prince International Airport has a single, concrete runway known as RWY 10/28 with usable length of 3,000 m and a width of 50 m. The runway has a turning area 650 m from the eastern end and a second turning area at the western end. Three link taxiways connect the runway to three aircraft parking aprons. These aprons comprise of a concrete 1770 m by 110 m, in front of the airport passenger terminal (Figure 3), ally located, concrete apron of 170 m by 100 m to the south of the (Figure 4) and a concrete apron of 150 m by 160 m to the SE of the (Figure 5).

ssenger terminal is equipped with three passenger bridges and also lodates the air traffic control (ATC) tower on its roof. Adjacent to the per terminal are numerous cargo transshipment buildings (Figure 3). To : of the passenger terminal is a POL storage area with three flat-roofed rage tanks (Figure 3). In addition, a UN logistics base is contained in ound to the west of the south eastern aircraft parking apron. The nd contains a hospital, numerous storage and support buildings and parking areas occupied by light-toned UN vehicles (2) (Figure 5). The navigation and landing aids include an ILS system and PAPI system at item end of the runway. The airport is partly wall and partly fence- i with watch towers and a perimeter patrol track. The main access to ort is via a twin lane asphalt road leading to the airport terminal.

Damage Assessment

h open source media reports have stated that the airport's ATC tower l damage during the earthquake and is not in use, no damage, such as cracks or collapsed buildings and structures was visible on the image inuary 2010. All of the aircraft operating areas and the internal roads serviceable

omment:

h no damage was visible to the buildings and structures at airport, : may have occurred to the interior of buildings and also to technical nt essential to maintain the full operational status of the airport. This xplain the open source media reports that the airport's ATC tower is se.

ces: (1) WFP Logistics Cluster, Haiti Map dated 13 Jan 2010
(2) UN Cartographic Section, Haiti Map dated 13 Jan 2010

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3 of 6

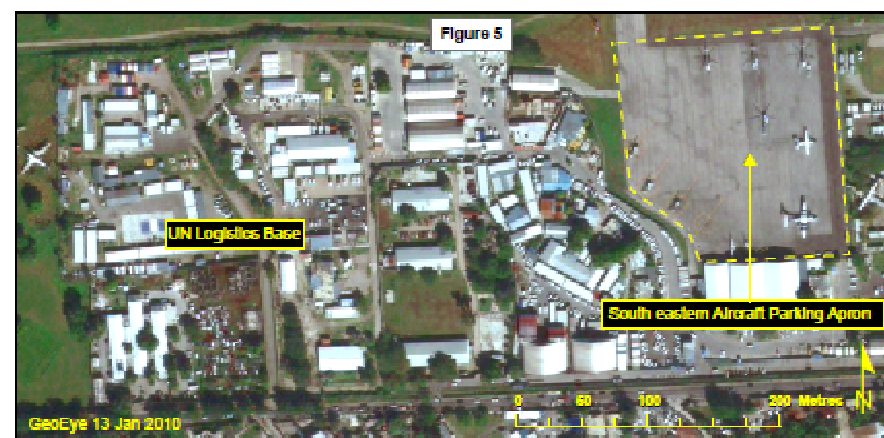
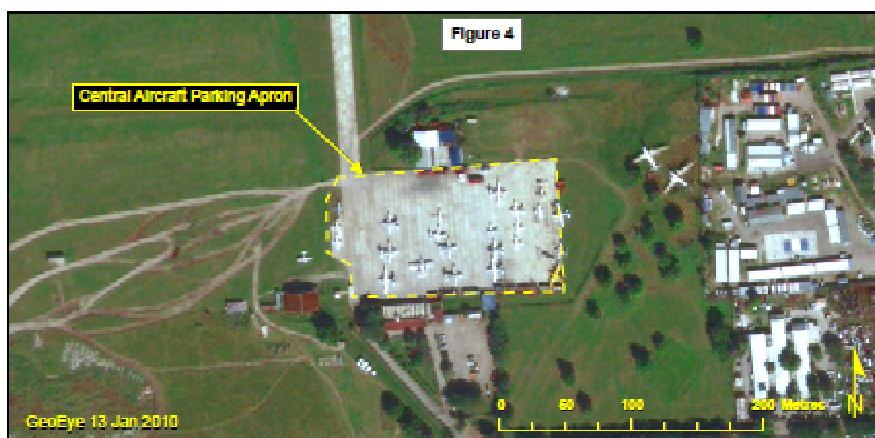
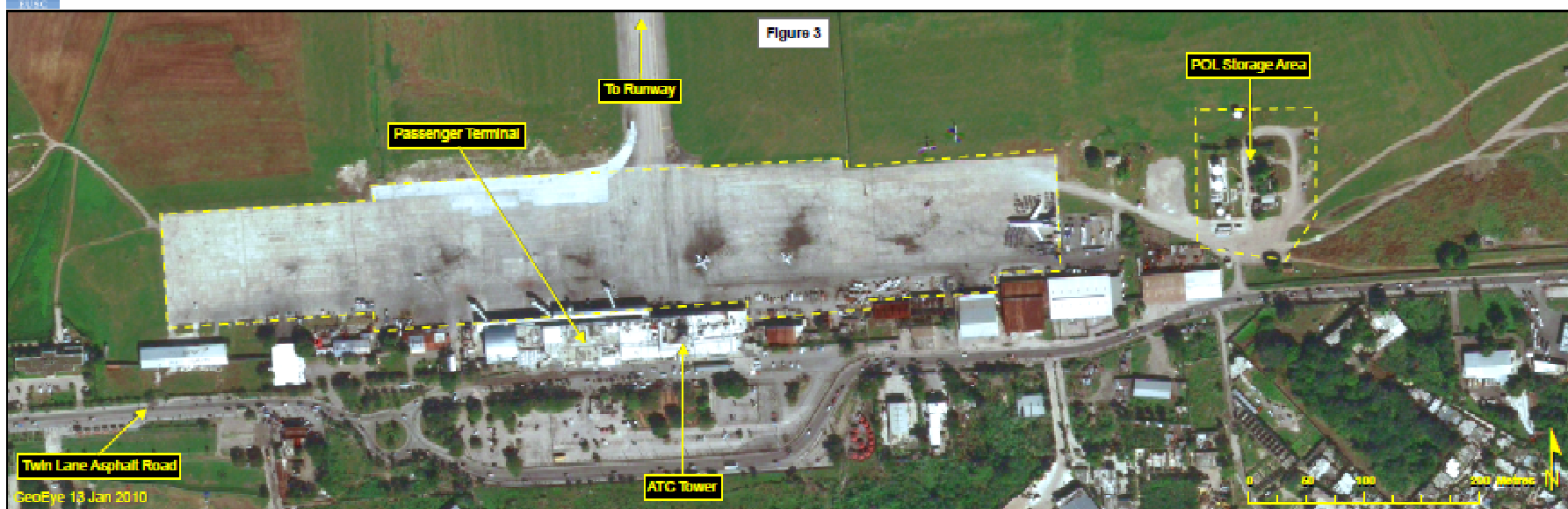


Port-au-Prince International Airport

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COHU 1001 / N02 ISSUE 01

Activity on Toussaint L'Ouverture Port-au-Prince International Airport



[contact](#) | [sitemap](#) | [user area](#) | [partners area](#)

PROJECT OVERVIEW

TEAM

PUBLICATIONS

PRESS & NEWS

CALENDAR

LINKS

G-MOSAIC activated for Haiti earthquake



The G-MOSAIC project has been first activated on January 14th by the United

Haiti Activation

Catherine Ashton

GMFS

GMES (Environmental Monitoring and Information System) is the name of the new European environmental observation system, launched by the Commission.

Multi

Hans

A strong earthquake of magnitude 7.0 on the Richter scale hit Haiti (local time). The main shock's epicentre is located 15km to the west of the capital, Port-au-Prince. In the past few days, hundreds and tens of thousands of deaths and casualties are reported. Many presidential buildings, as well as hospitals or the cathedral, and the Stabilization Mission in Haiti (MINUSTAH) are very seriously damaged.

Following these tragic events, the G-MOSAIC Rapid Mapping set off in the afternoon on request of the United Nations Division of Field Support, the Italian Ministry of Defence and Ministry for External affairs, to monitor about any evolution during the following hours.

The G-MOSAIC team immediately started working, following the production with its representatives, making it possible to produ

As soon as the morning of Saturday January 16th, the G-MOSA to its users (shape files to be used in geographical information systems) first maps were delivered on Sunday January 17th.

Since then, products and data sets have been produced and requests have been received for other affected areas (Leogane Netherlands, has expressed its interests and needs in joining the Rapid Geospatial Reporting service products.

The data and products delivered or being developed include:

- Preliminary road classification analyses (Free Go, No Go)
- Preliminary damage assessment analyses (five classes of damage)
- Pre and Post event Very High Resolution Optical imagery
- Multitemporal coherence analysis of Pre and Post event Aperture Radar imagery (Cosmo-SkyMed satellite data)
- Preliminary Critical Assets Monitoring analyses
- Automatic identification of destroyed buildings
- Land cover classification

Detailed maps of the **Port-au-Prince** sector with road status assessments and identification of spontaneous gathering areas. The analysis was performed based on GeoEye 1 optical imagery acquired on January 13th and the up-to-date information on gathering areas was derived from Very High Resolution imagery freely available in Google Earth on January 17th.

Tile 01: PDF JPG(LR- MR- HR)
 Tile 02: PDF JPG(LR- MR- HR)
 Tile 03: PDF JPG(LR- MR- HR)
 Tile 04: PDF JPG(LR- MR- HR)
 Tile 05: PDF JPG(LR- MR- HR)
 Tile 06: PDF JPG(LR- MR- HR)
 Tile 07: PDF JPG(LR- MR- HR)
 Tile 08: PDF JPG(LR- MR- HR)
 Tile 09: PDF JPG(LR- MR- HR)

Tile 10: PDF JPG (LR MR HR)
 Tile 11: PDF JPG (LR MR HR)
 Tile 12: PDF JPG (LR MR HR)
 Tile 13: PDF JPG (LR MR HR)
 Tile 14: PDF JPG (LR MR HR)
 Tile 15: PDF JPG (LR MR HR)
 Tile 16: PDF JPG (LR MR HR)
 Tile 17: PDF JPG (LR MR HR)

Tile 18: PDF JPG(LR - MR - HR)
 Tile 19: PDF JPG(LR - MR - HR)
 Tile 20: PDF JPG(LR - MR - HR)
 Tile 21: PDF JPG(LR - MR - HR)
 Tile 22: PDF JPG(LR - MR - HR)
 Tile 23: PDF JPG(LR - MR - HR)
 Tile 24: PDF JPG(LR - MR - HR)
 Tile 25: PDF JPG(LR - MR - HR)

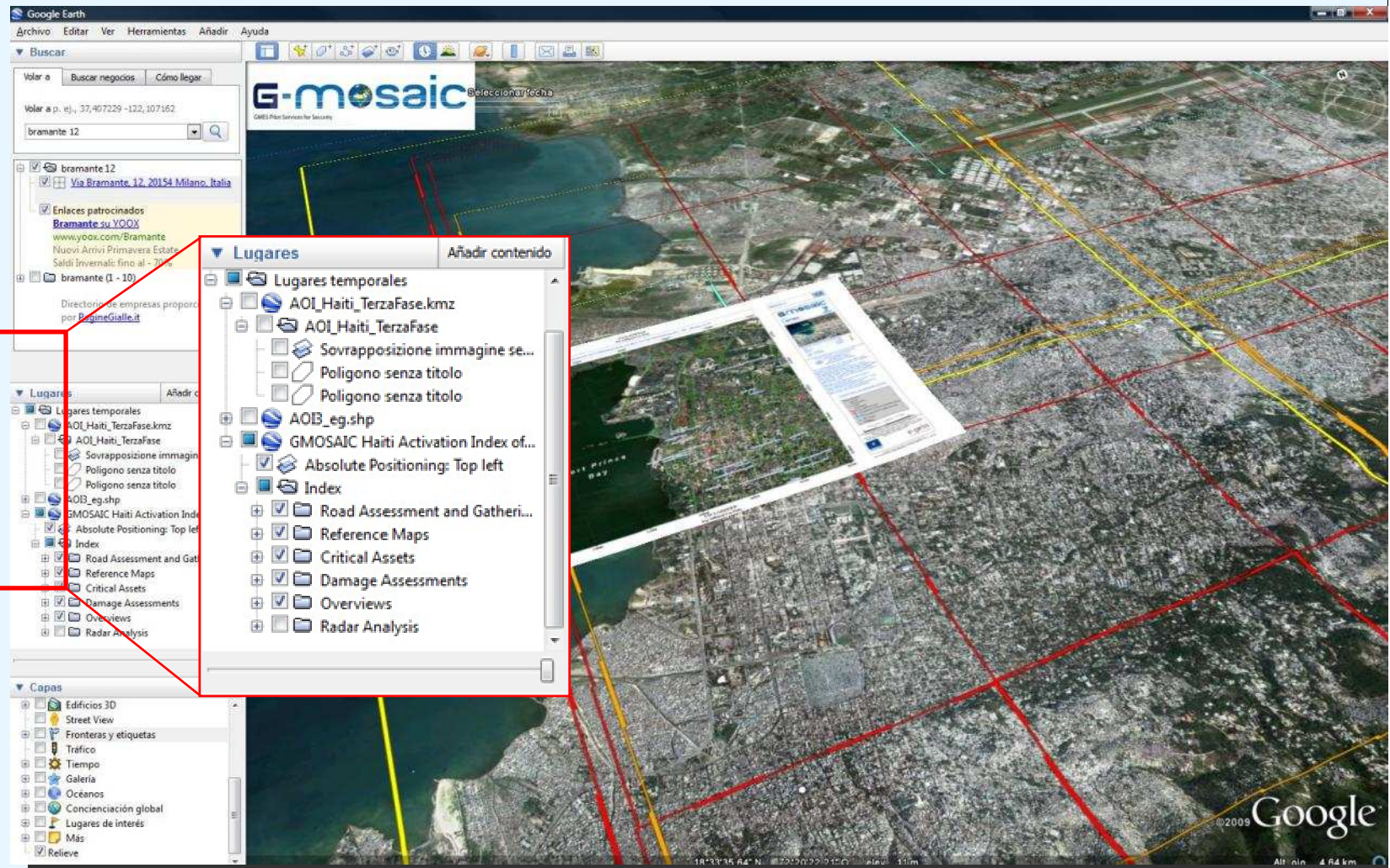
Legend key:

- UN facilities
- NO Go - Street is totally blocked
- PARTIAL GO - Transit is very limited
- FREE GO - Free of obstacles
- ★ Consolidated spontaneous gathering areas.
- ★ Potential spontaneous gathering areas.



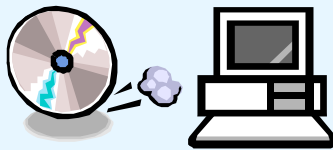
Dissemination

Google Earth Index

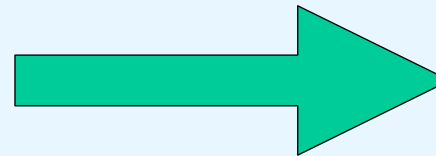




EUSC Dissemination



-  Unclassified
-  Restricted
-  Confidential
-  Secret UE



**EUSC
DISTRIBUTION TO
COUNCIL + 27MS
+ EC
VIA OFFICIAL
CHANNELS.**

**Remark: FOR GMES NO NEEDS OF
CLASSIFIED DISTRIBUTION SO
FAR ...**

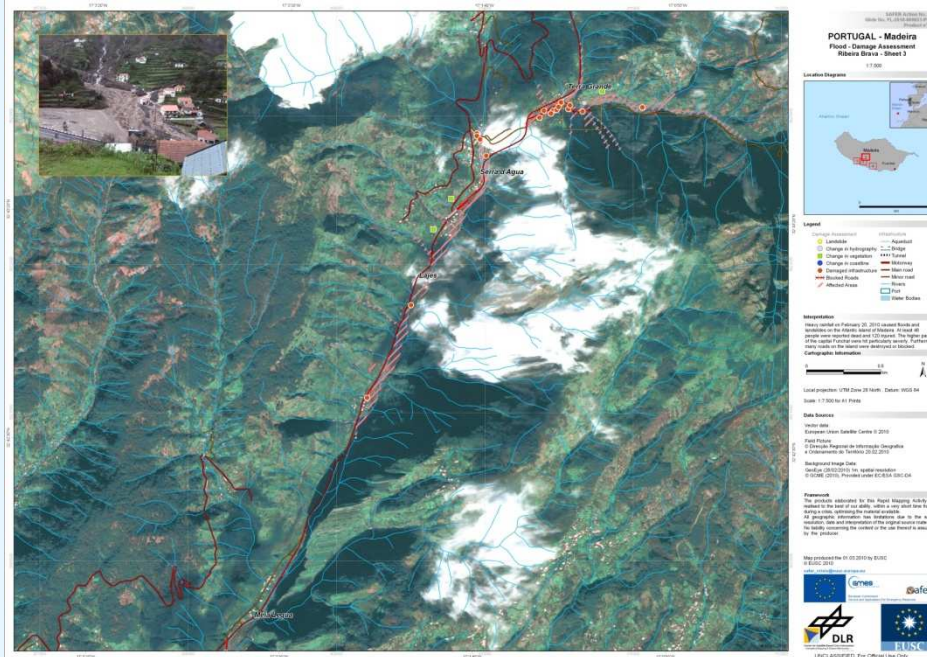




MADEIRA Floods– EUSC/GMES Cooperation

GMES (SAFER) activated by Portuguese Civil Protection and then by Portuguese MoD via EUSC.

Both GMES (SAFER/DLR) & EUSC worked in coordination to provide Rapid Mapping including damage assessment, road trafficability, airport and port analysis .



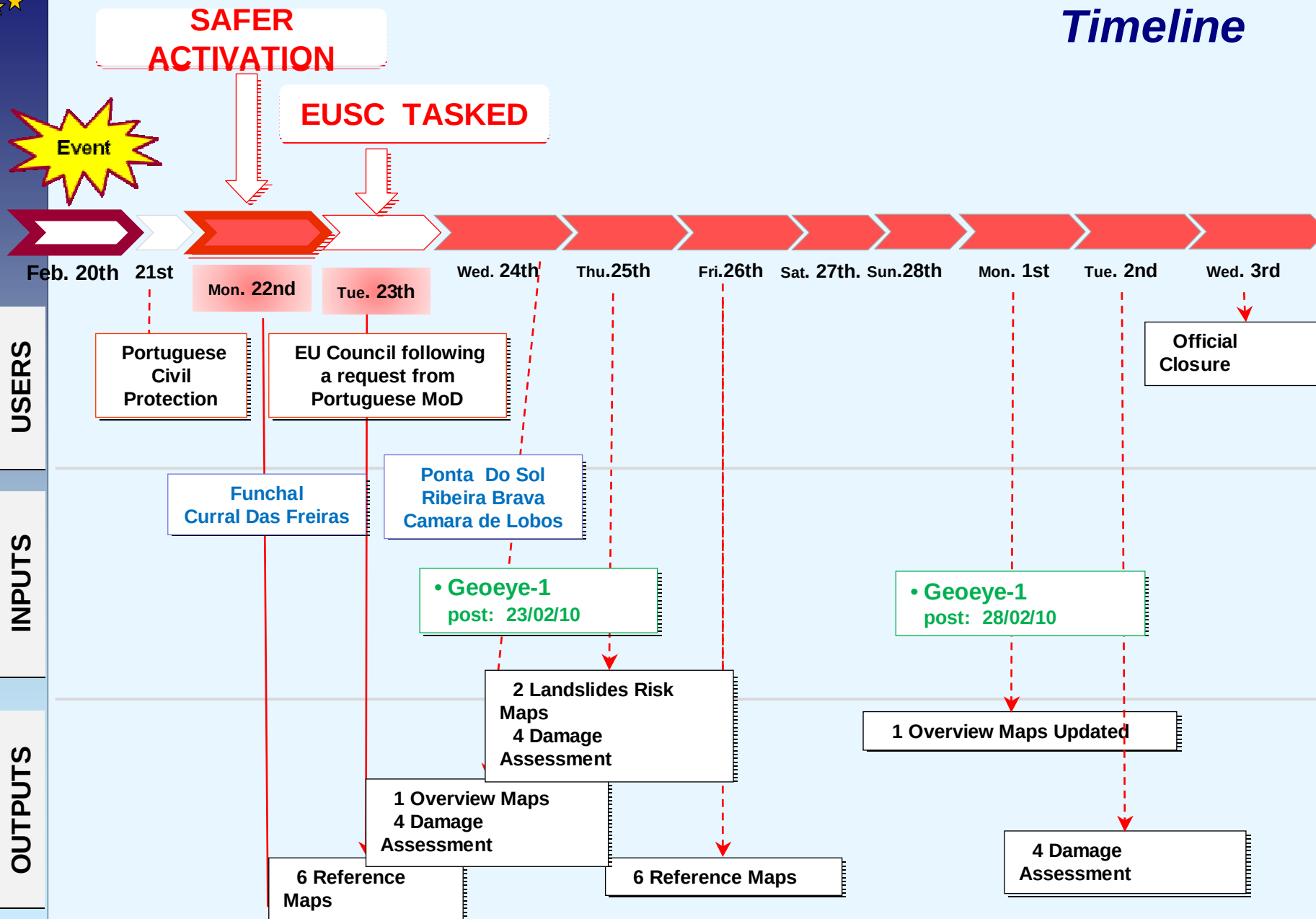
Good example of synergies between EUSC and GMES (EUSC provided set of data already available from previous project).

Operational experience of the EUSC for the benefit of GMES.

More products available for a larger community of users: distribution via EUSC to 27MS+EC+UN.



Madeira Floods and Landslides Timeline



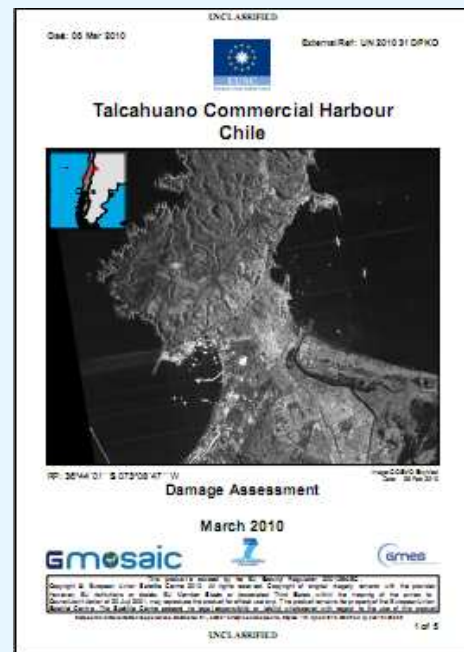
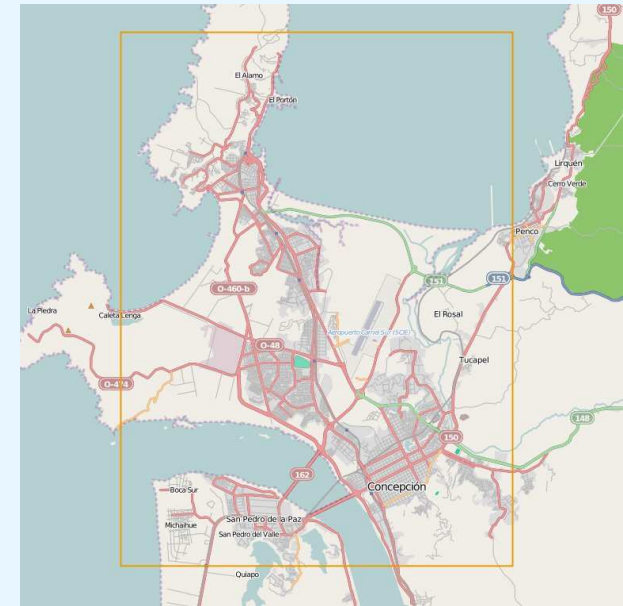


CHILE Earthquake– EUSC/GMES Cooperation

GMES (GMOSAIC) activated by UN Cartographic Service (NY).

EUSC tasked by UN Cartographic Service (NY) via EU Council.

Both GMES (GMOSAIC) & EUSC worked in coordination to provide Rapid Mapping including damage assessment, road trafficability, airport and port analysis.



Good example of synergies between EUSC and GMES.

Operational experience of the EUSC for the benefit of GMES.

More products available for a larger community of users : distribution via EUSC to 27MS+EC+UN.



GMES: Projects demonstrations

■ PRELIMINARY LESSONS LEARNED

Emergence of **two communities** of **motivated users** in Security & Emergency:

MoDs, MFAs, UN Peacekeeping, ... in GMOSAIC (Security)

Civil Protection, WFP, ONG, ... in SAFER (Emergency)

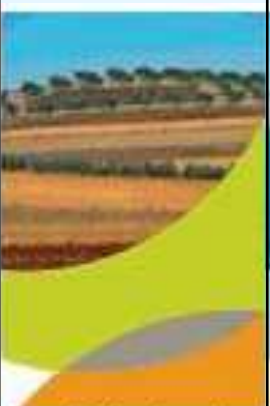
- ⇒ Both **Security and Emergency users communities** are frequently activating GMES for **important disasters/crisis** regardless to the type of event (natural, man made, conflict, etc).
- ⇒ **Mapping services** provided by **Emergency & Security** projects are **mature and useful** (however Security projects have limited resources versus Emergency) .
- ⇒ **EUSC** can: 1) speeds up the process of GMES **service operationalisation** 2) **coordinates security users requests** 3) **widen products distribution**.

STRONG SYNERGIES TO BE ESTABLISHED BETWEEN GMES
EMERGENCY & SECURITY MAPPING.

**LESSONS LEARNED HAVE TO BE TAKEN INTO ACCOUNT INTO GIO
WORK PROGRAMME.**



GMES Services relevant to Security & Defence

FP7 Preparation of future GMES Operational Services	 Land Monitoring (geoland2)	 Ocean Monitoring (MyOcean)	 Atmosphere Monitoring (MACC)	 Emergency Response (SAFER)	 Security (G-MOSAIC)
Service status	pre-op	pilot	pilot	pre-op	pilot
2011-2013	Initial Operations	R&D FP7	R&D FP7	Initial Operations	R&D FP7 MARSUR
Relevant for Security & Defense.	YES Mapping, etc.	YES	YES Air quality, climate change	YES Mapping	YES (directly applicable)



“ISS Seminar on GMES Security Dimension in March 2007

Emergency should not (and cannot) be seen decoupled from an overall ‘Security’ context. This fast track is a first step in developing services applicable in the area of Security.”



Current approach for the role of the EUSC in GMES

RESULTS OF MS, EU COUNCIL & EC THOUGHTS.

Axis A: Interface between CFSP/ESDP users and GMES services relevant for security and defence.

Axis B: EUSC providing services beyond the sole remit of CFSP/ESDP users.

Axis C: EUSC as a coordinating entity for space data access in the field of security (longer term)

CHALLENGE

EUSC role implementation depend of a consensus between MS, the EC and the EU Council Secretariat.

Important and urgent work to be done to address legal, financial, technical and governance issues related to EUSC role as soon as possible: to be taken into account for GMES operations (2014).



ELEMENTS FOR THE OPERATIONAL WAY AHEAD

- Need to better define how GMES 'security' users will be provided with an harmonized access to GMES full range of service (**Land**, Atmosphere, Ocean, **Emergency**, Security);
- **Synergies between Security and Emergencies** (and Land) to be established in the area of **Mapping Services**. Such synergies to be taken into account for **GMES Initial Operations**. EUSC is supporting this process;
- Pursue R&D and progressively implement operational services in Maritime Surveillance and other areas for innovation;
- **EUSC role of interface with CFSP/ESDP** users (and further European External Action Service users) to be progressively implemented; Technical, legal, financial and governance issues to be addressed.
- **EUSC expertise** in support to the **development and delivery of GMES operational services** to be pursued.



Thank you for your attention!

Patricia Romeyro Mascarenhas
Project Administrator
p.romeyro@eusc.europa.eu