Copernicus

Overview and Emergency Management Service

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European Commission

Open informal session of the United Nations Inter-Agency Meeting on Outer Space Activities

12 March 2013, Geneva

Copernicus (ex GMES) in a nutshell

- Copernicus is an **EU-led initiative** for an autonomous and operational European Earth monitoring capacity.

- Copernicus aims at **providing relevant information** to policy-makers and other users, particularly in relation to **environment** and **security**

- Copernicus is a **flagship of the European Space Policy** with Galileo and EGNOS

The Copernicus programme comprises of:

1. a **service component** ensuring access to information

2. a **space component** ensuring sustainable space borne observations for the service areas

3. an **in-situ component** ensuring observations through airborne, seaborne and ground-based installations for the service areas

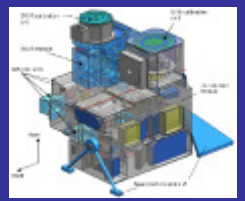
Copernicus dedicated missions: Sentinels

Sentinel 1 – SAR imaging
All weather, day/night applications, interferometry

Sentinel 2 – Multispectral imaging
Land applications: urban, forest, agriculture,..
Continuity of Landsat, SPOT

Sentinel 3 – Ocean and global land monitoring
Wide-swath ocean color, vegetation, sea/land surface temperature, altimetry

Sentinel 4 – Geostationary atmospheric
Atmospheric composition monitoring, trans-boundary pollution



Sentinel 5 – Low-orbit atmospheric
Atmospheric composition monitoring
(S5 Precursor launch in 2014)

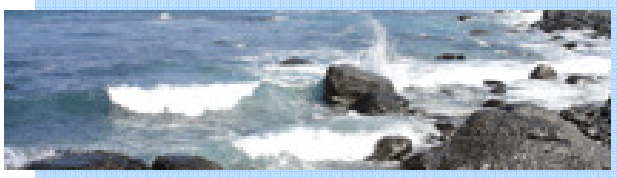
European Commission

Copernicus services

Monitoring of earth systems

Vertical services

Land



Marine

Atmosphere

Security

Emergency

Climate Change

Horizontal services

Global Land Monitoring

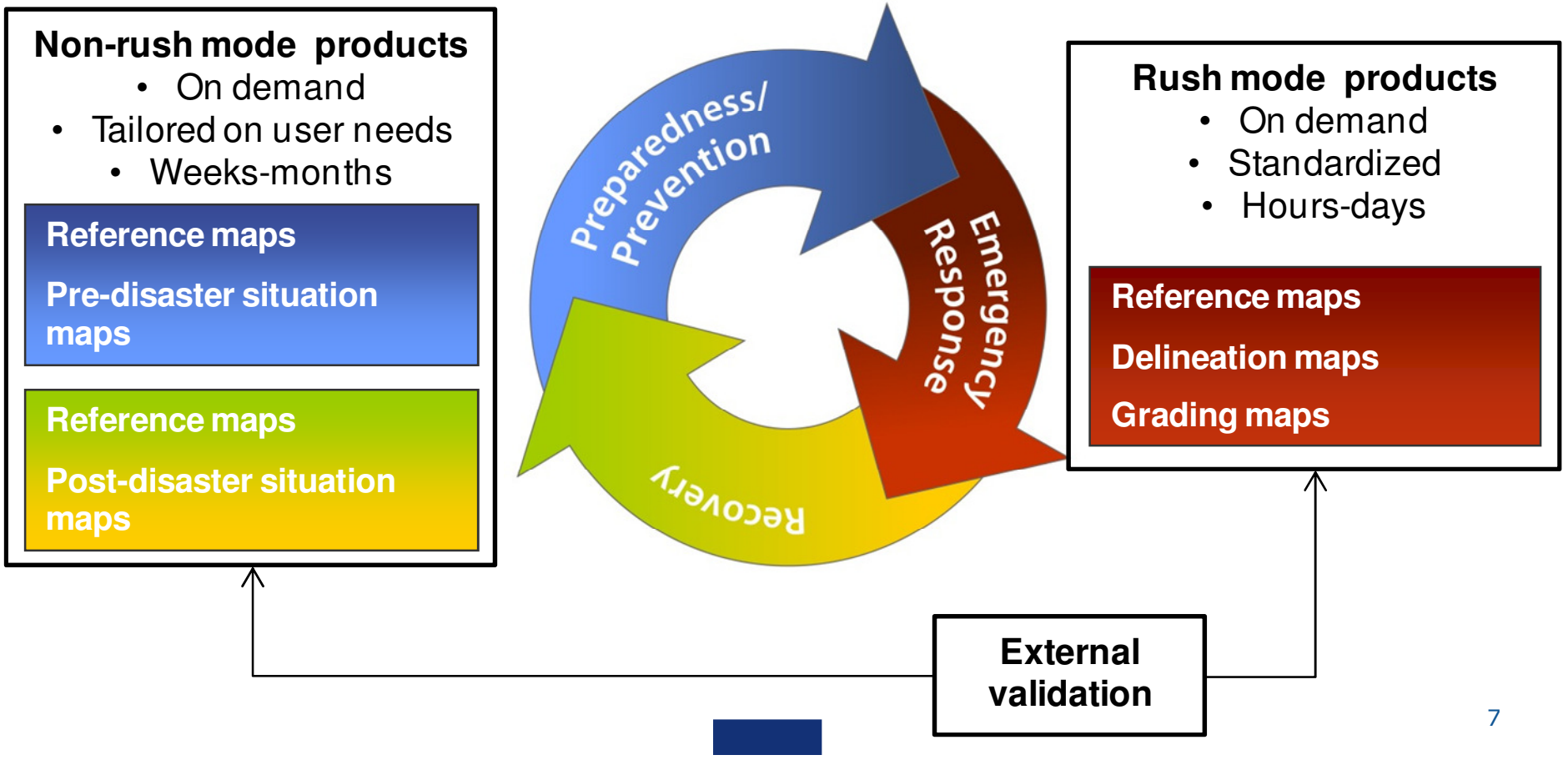
Crop Monitoring and Food Security

Natural Resources monitoring

Water Management and Drought

Terrestrial Carbon Cycle monitoring

Copernicus Emergency Management Service: operational service since 1 April 2012



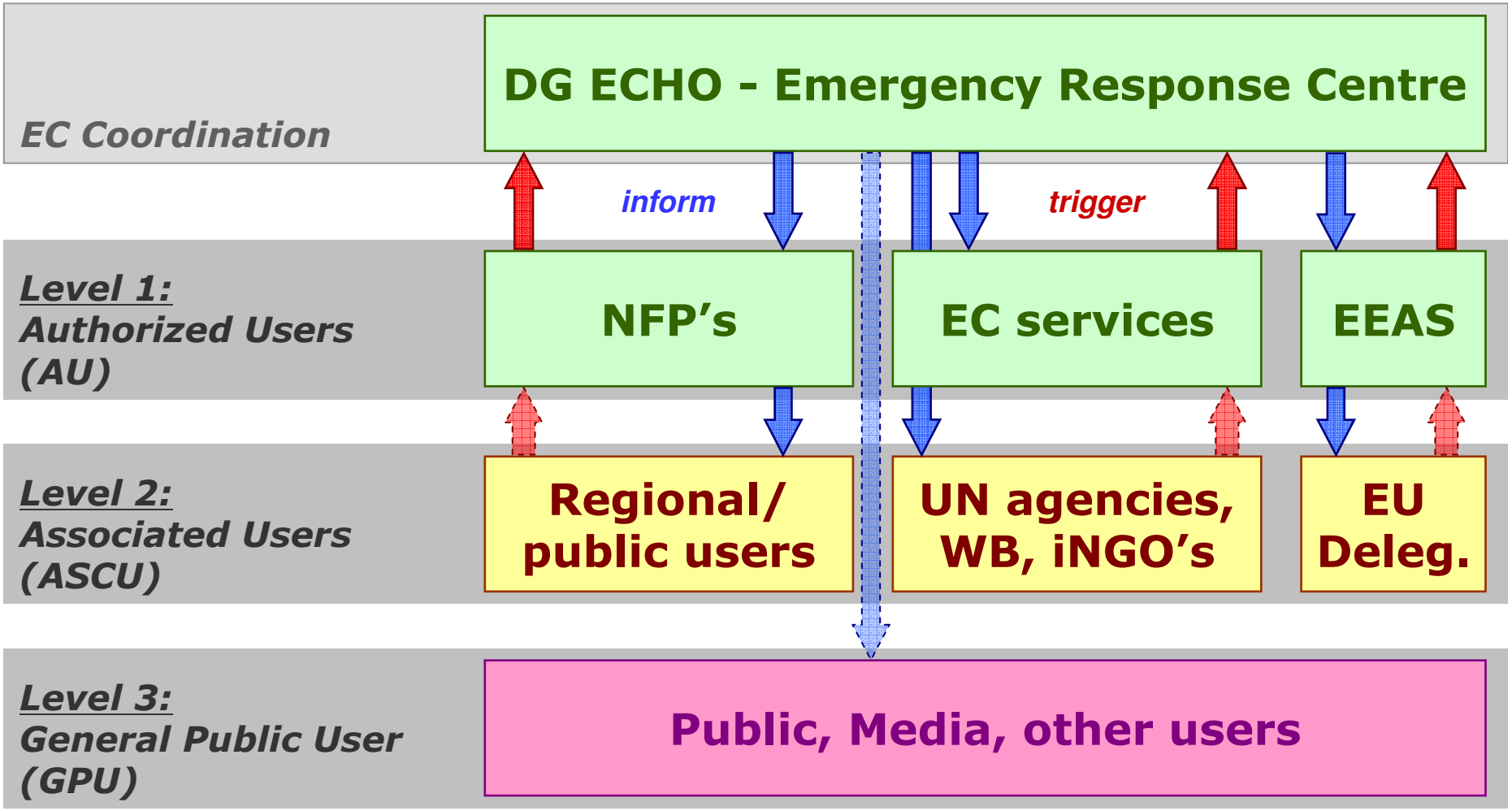
Non-Rush Mode Products

MAP TYPE	CONTENT
REFERENCE	Status of the territory and assets in a disaster risk reduction context.
DELINEATION	Thematic information for contingency planning on areas vulnerable to hazards, to minimise loss of life and damage. Examples: hazard exposure, vulnerability, resilience, risk status, evacuation plans, modelling scenarios.
GRADING	Information for reconstruction needs and planning, and progress monitoring, mapping long-term impact, etc. Examples: post disaster needs assessment, recovery plans, reconstruction/rehabilitation monitoring, Internally Displaced Persons (IDP) monitoring, Refugee Camp monitoring.

Rush Mode Products

MAP TYPE	CONTENT
REFERENCE	Status of the territory and assets prior to the crisis.
DELINEATION	Assessment of the event impact and extent.
GRADING	Assessment of the damage grade and its spatial distribution.

GIO EMS TRIGGERING / INFORMATION FLOW



NFP: National Focal Point, EC: European Commission

EEAS: European External Action Service

List of International Associated Users

ID	Organisation	International Associated Users (UN agencies, the World Bank, INGO's)
1.	UN-OCHA	United Nations - Office for the Coordination of Humanitarian Affairs
2.	UNDPKO	United Nations Department for Peacekeeping Operations
3.	UNHCR	United Nations High Commissioner for Refugees
4.	UNOOSA	United Nations Office for Outer Space Affairs
5.	UNOSAT	UNITAR's Operational Satellite Applications Programme
6.	UNOOSA-UNSPIDER	UN office of Outer Space affairs - platform for Space-based information for Disaster Management and Emergency Response
7.	UNICEF	United Nations International Children's Emergency Fund
8.	WFP	World Food Programme
9.	WHO	World Health Organisation, Public Health Information and GIS (GIS), Health Statistics and Informatics (HSI), Information Evidence and Research (IER)
10.	WB	World Bank
11.	ICRC	International Committee of the Red Cross
12.	IFRC	International Federation of Red Cross and Red Crescent Societies

Copernicus EMS mapping in rush mode

- 28 activations in the period April 1, 2012 – now;
- 58% of activations, 72% of map products in Europe;
- In Europe: 7 forest fires, 5 floods, 2 earthquakes, 2 "other" events;
- Activations by AU in HU, IT (2), BG (2), ES (4), SE, PL, PT, RO, DE, FR, UK, SI;
- Outside Europe: 4 floods, 8 humanitarian assessments triggered by European AU and ASCU (WFP, UNHCR) through DG ECHO-MIC;

Event types (disaster) covered:

- Forest fire, wild fire
- Flood
- Wind storm
- Earthquake
- Industrial accident
- Other: geophysical (tsunamis, landslides, severe storms/hurricanes, volcanic eruptions), humanitarian crisis, other hazards that are considered to be covered by emergency management

GLIDE number: EQ-2012-000080-ITA

Activation ID: EMSR-004

Product N.: 01Finale, v1

Finale Emilia, Emilia Romagna, ITALY

Earthquake - 20/05/2012

Grading Map - 01Detail

Production date: 26/05/2012

Cartographic Information

1:6000

Full color ISO A1, high resolution (300 dpi)

0 0.125 0.25 0.5 km

N

Map Coordinate System: WGS 1984 UTM Zone 32N

Graticule: WGS 84 geographical coordinates

Legend

Area of Interest

Crisis Information

Gathering of People

Road Block

Building Grading

Completely Destroyed (EMS 5)

Damaged (EMS 4,3,2)

Not Affected

Transportation

Primary Road

Secondary Road

Local Road

Bridge

Points of interest

Transportation

Institutional

Educational

Religious

Medical

	Consequences within the AOI				
Estimated AOI population	[illegible] inhabitants				
Destroyed assets	11 Buildings				
Damaged assets	70 buildings				
	Destroyed	Damaged		Destroyed	Damaged
Residential	12	[illegible]	Educational	0	0
Industrial	1	0	Medical	0	0
Commercial	0	0	Recreational	0	0
Institutional	0	0	Religious	0	1
Multi-functional	0	0	Transportation	0	0
Other	1	2	Military	0	0

Map Information

A strong earthquake has affected large parts of northern Italy, causing at least seven deaths and seriously damaging historic buildings such as churches, bell towers and a medieval castle. The 6.0-magnitude earthquake occurred just after 4:04 a.m. on 20/05/2012, about 35km (22 miles) north-northwest of Bologna (4 kilometers outside Camposanto), at a relatively shallow depth of 10 km. A series of strong aftershocks hit the area, the strongest measuring 5.1 magnitude (source: BBC).

The end users of the map are Civil Protection authorities involved in operations in the field. The aim of the map production is to support the emergency response activities.

Data Sources

Airborne imagery © 2012 Courtesy of Blom CGR (acquired 23/05/2012, 0% cloudy, 0.07m resolution).

Background imagery © 2012 Courtesy of AGEA (0% cloudy, 0.5m resolution, acquired in 2011).

Landscan ©UT BATTELLE, LLC, 2010 (approx. 1km resolution).

Base vector layers based on Openstreetmap and Wikimapia refined by GAF (nominal scale 1:5000).

All Data sources are complete and with no gaps.

Dissemination/Publication

No restrictions on the publication of the mapping apply.

Delivery formats are GeoTIFF, GeoPDF, GeoJPEG and vectors (shapefile and KML formats).

Framework

The products elaborated for this rapid mapping are realized at the best of our ability, within a very short time frame during a crisis, optimising the available data and information. All geographic information has limitations due to scale, resolution, date and interpretation of the original data sources. The products are compliant with GIO-EMS RUSH Product Portfolio specifications.

Map production

The present map shows a building damage assessment in the area of Finale Emilia, ITALY, based on visual interpretation of post-event aerial imagery acquired on 23/05/2012 (spatial resolution 0.07 m, courtesy of Blom CGR). Aerial images have been rectified using DEMs collected on the 2011 aerial orthoimage (resolution 0.5 m) courtesy of AGEA.

The estimated geometric accuracy of this product is 5 m CE90 or better, from native positional accuracy of the background orthoimage.

The estimated thematic accuracy of this product is 85% or better, as it is based on visual interpretation of recognizable items on very high resolution optical imagery.

Map produced on 26/05/2012 by GAF under contract 257219 with the European Commission. All products are © of the European Commission.

Name of the release inspector (quality control): GAF AG (DDC)

E-mail: [illegible]

Earthquake

Civil Protection

Response

Grading Map - Detail

Planning

Airborne imagery © 2012 Courtesy of Blom CG

20-05-2012

Legend

Area of Interest

Crisis Information

Gathering of People

Road Block

Building Grading

Completely Destroyed (EMS 5)

Damaged (EMS 4,3,2)

Not Affected

Transportation

Primary Road

Secondary Road

Local Road

Bridge

Points of interest

Transportation

Institutional

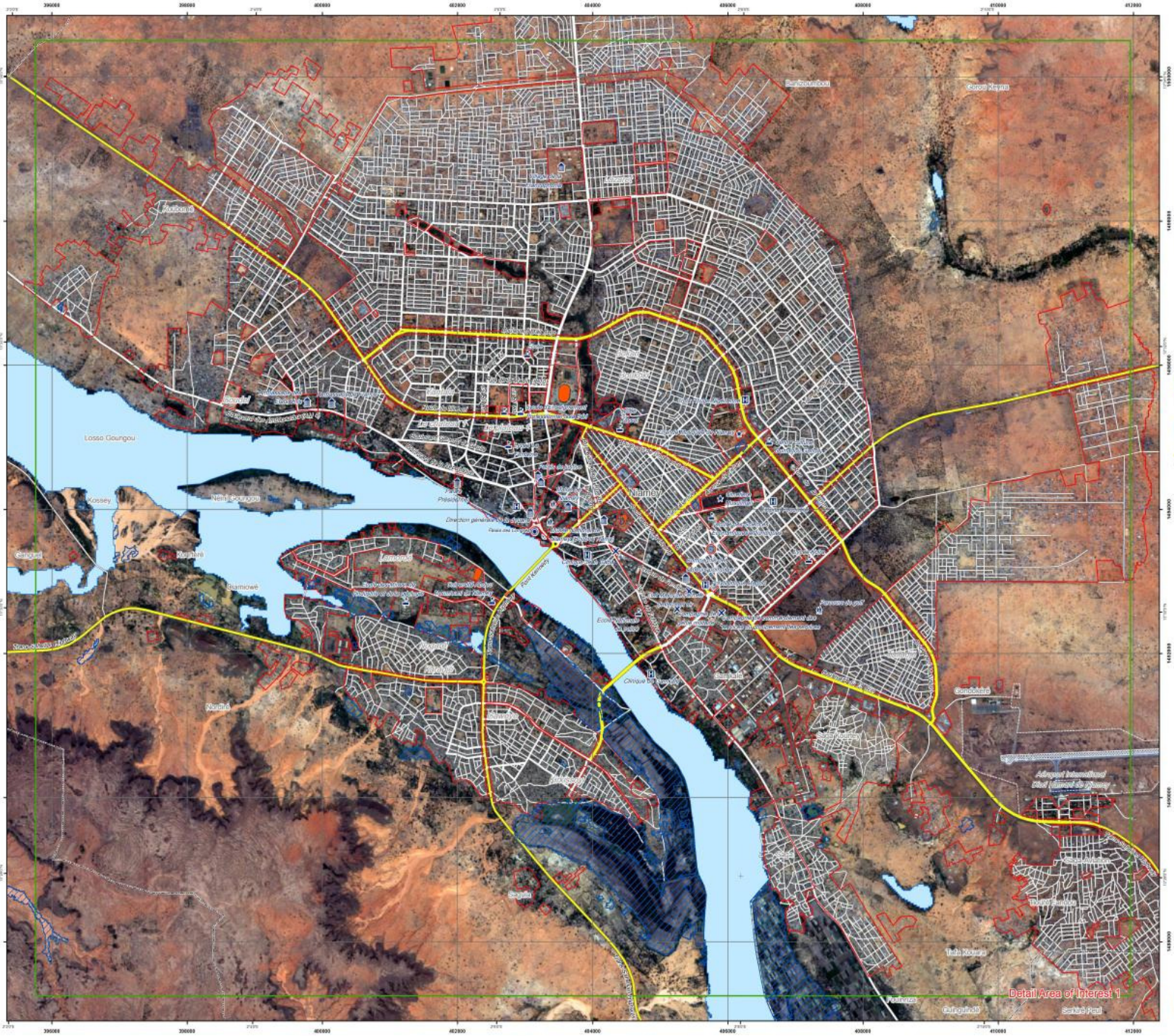
Educational

Religious

Medical

	Consequences within the AOI
estimated AOI population	6500 Inhabitants
Destroyed assets	14 Buildings
Damaged assets	70 Buildings

	Destroyed	Damaged		Destroyed	Damaged
Residential	12	62	Educational	0	0
Industrial	1	5	Medical	0	0
Commercial	0	0	Recreational	0	0
Institutional	0	0	Religious	0	1
Multi-Functional	0	0	Transportation	0	0
Other	1	2	Military	0	0



GLIDE number: N/A

Activation ID: EMSR-018
Product N.: 01Niamey, v1

Niamey - NIGER
Flood - 24/08/2012
Delineation Map - Detail 01 Niamey

Production date: 31.08.2012

Cartographic Information

1:25.000

Full color ISO A1, medium resolution (200 dpi)

0 0,5 1 2 km

Map Coordinate System: WGS 1984 UTM Zone 31N
Graticule: WGS 84 geographical coordinates

N

Legend

General Information
- Area of Interest
- Admin. Boundary

Crisis Information
- Flooded Area

Transportation
- Primary Road
- Secondary Road
- Local Road
- Aerodrome
- Runway

Building
- Stadium

Building Blocks
- Building Blocks

Hydrology
- Water Bodies

Point of Interest
- Commercial
- Educational
- Institutional
- Medical
- Military
- Recreational
- Religious

Assets	Consequences within the AOI			
	0 Points of Interest			
Commercial	0	Educational	0	
Institutional	0	Medical	0	
Military	0	Recreational	0	
Airport	0	Religious	0	

Map Information

Heavy rain over the past few weeks has caused severe flooding over large areas of Niger. The southern region of Dosso has been worst affected, with over 10,000 homes destroyed (UN sources). The River Niger has also burst its banks in the capital Niamey, flooding the city's suburbs.
This is a delineation map covering Niamey to show the situation after the event.
The core users of the map are the Direction Générale de la Sécurité Civile et de la Gestion des Crises, CODIC - France.
The scope of the map production is support to emergency response activities.

Data Sources

RapidEye © RapidEye (acquired on 23/10/2010, 24/11/2010 and 26/12/2010), GSD 6.5 m, <5% cloud coverage) provided under ESA GSC-DA DWH License.
COSMO-SkyMed © e-GEOS (acquired on 31/08/2012, GSD 5m, approx. 0% occlusion) provided under ESA GSC-DA DWH License.

Base vector layers based on Openstreetmap, Wikimapia, Geonames, and Bing Maps, refined by SIRS.
All Data sources are complete and with no gaps.

Dissemination/Publication

No restrictions on the publication of the mapping apply.
Delivery formats are GeoTIFF, GeoPDF, Geo/JPEG and vectors (shapefile and KML formats).

Framework

The products elaborated in the framework of current mapping in rush mode activation are realized to the best of our ability, within a very short time frame during a crisis, optimizing the available data and information. All geographic information has limitations due to scale, resolution, date and interpretation of the original data sources. The products are compliant with GIO-EMS RUSH Product Portfolio specifications.

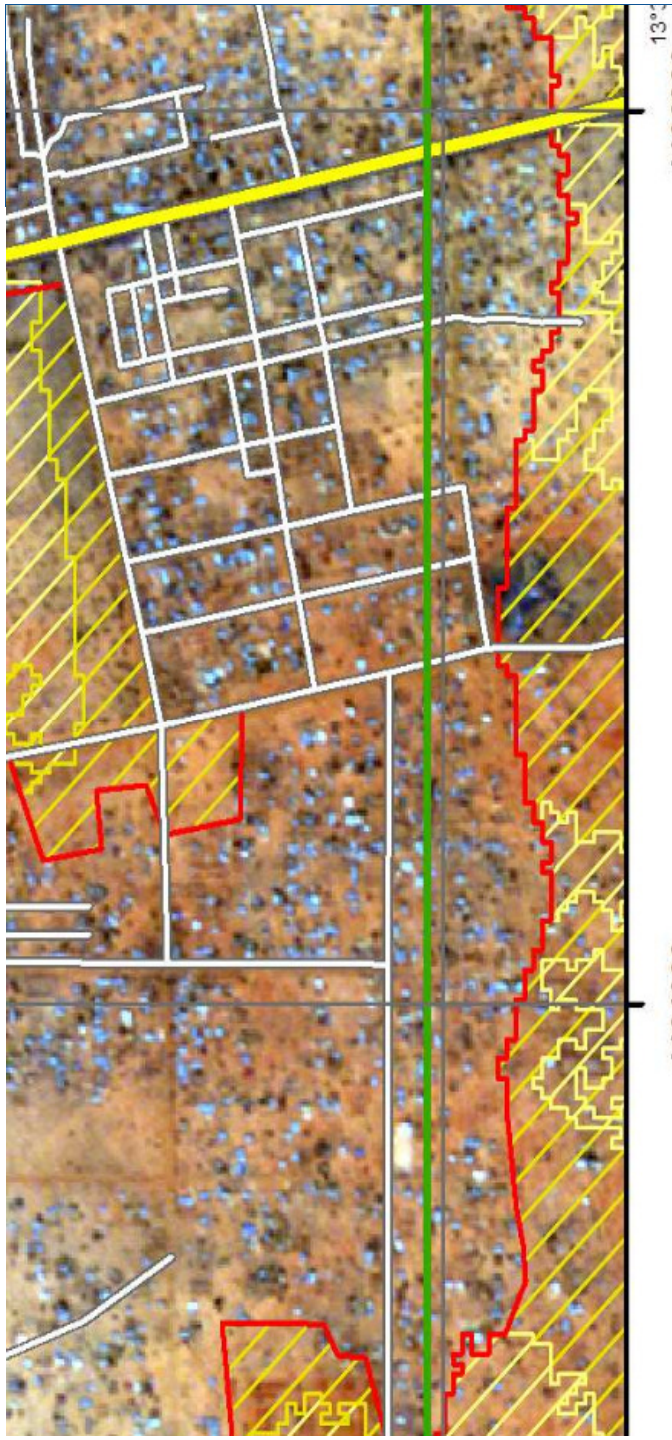
Map production

The present map shows flood affected areas visible from a COSMO-SkyMed image (31/08/2012). Flooded areas have been derived by semi-automatic image processing techniques.
Basic topographic features such as transportation, hydrology and settlements in the area of Niamey (NIGER) are derived from public datasets, refined by mean of visual interpretation of pre-event satellite images RapidEye © RapidEye (acquired on 23/10/2010, 24/11/2010 and 26/12/2010, GSD 6.5 m, <3% cloud coverage).
All satellite images have been radiometrically enhanced and georeferenced.
The estimated geometric accuracy of this product is 20 m CE90 or better, from native positional accuracy of the background satellite image.
The estimated thematic accuracy of this product is 85% or better, as it is based on previous experience in using high-resolution SAR for flood extent delineation. Please be aware that the thematic accuracy might be lower in urban and forest areas due to known limitations of the analysis technique.

Map produced on 31/08/2012 by SAF under contract 257219 with the European Commission. All products are © of the European Commission.
Name of the release inspector (quality control): e-GEOS (ODO).
E-mail: rush@sirs-gmes.eu

Flood
Civil Protection
Response
Delineation Map - Detail
Support to logistics
COSMO-SkyMed
24-08-2012

GMES



Legend

General Information
- Area of Interest
- Admin. Boundary

Transportation
- Primary Road
- Secondary Road
- Local Road
- Aerodrome
- Runway

Building
- Stadium

Built-Up Area
- Residential

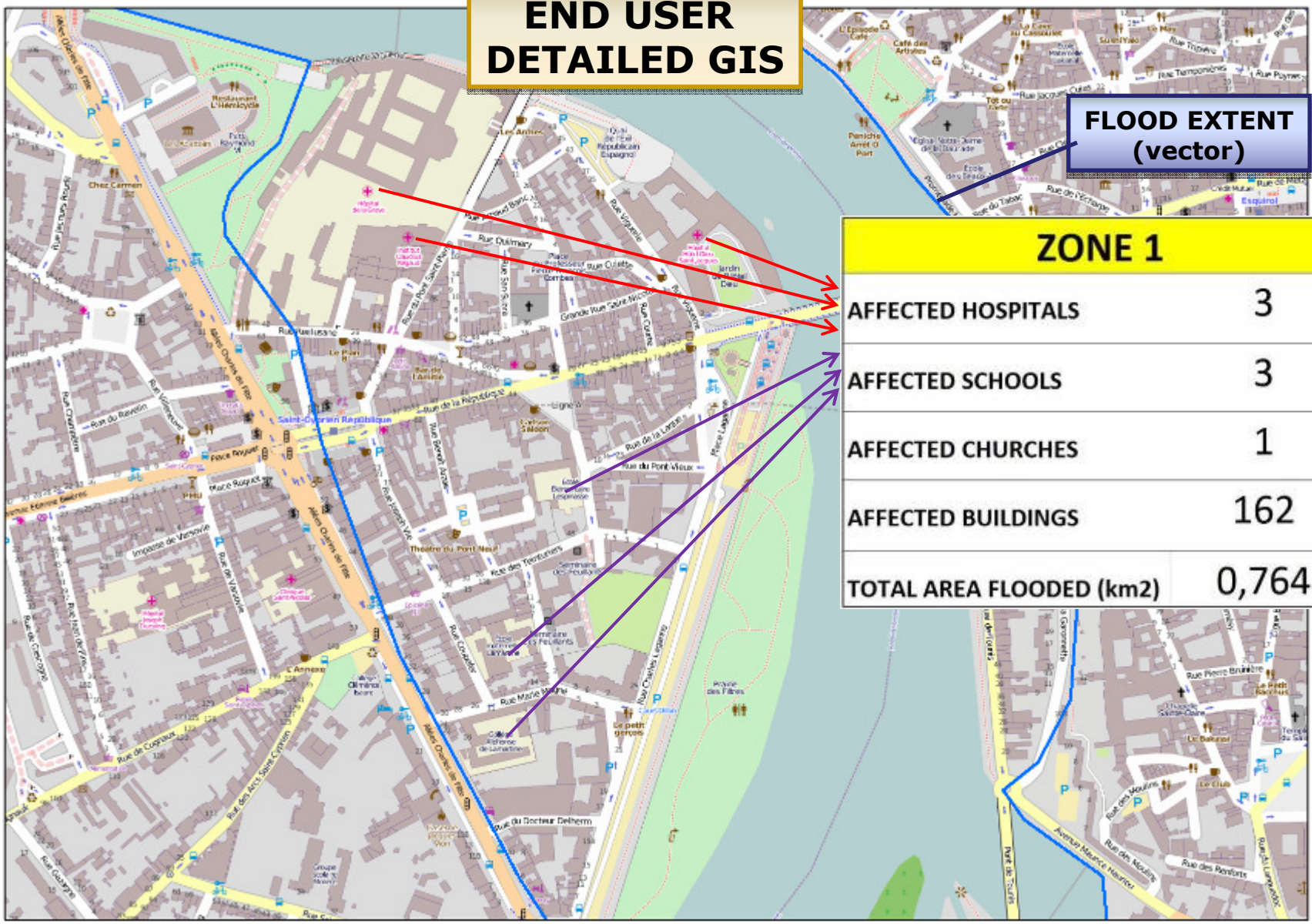
Hydrology
- River

Agriculture and Nature
- Woodland
- Bare Ground
- Cropland

Point of Interest
- Commercial
- Educational
- Institutional
- Medical
- Military
- Recreational
- Religious

	Exposure within the AOI			
Assets	38 Points of Interest			
	Commercial	1	Educational	11
	Institutional	10	Medical	6
	Military	4	Recreational	3
	Airport	1	Religious	2

END USER DETAILED GIS



ZONE 1	
AFFECTED HOSPITALS	3
AFFECTED SCHOOLS	3
AFFECTED CHURCHES	1
AFFECTED BUILDINGS	162
TOTAL AREA FLOODED (km2)	0,764

http://portal.ems-gmes.eu/

GMES EMERGENCY MANAGEMENT SERVICE

EMS – MAPPING PORTAL

Home | What is GMES | The Emergency Management Service | Download center

GIO EMS-MAPPING

- The service
- Who can use the service
- How to use the service
- Products
- Quality Control/Feedback
- User Guide
- List of activations

Early Warning

- The European Flood Awareness System

Welcome to the portal of the
GMES Emergency Management Service

A service in support of european emergency response

List of submitted GIO Rush Mode activations - showing the last 5 activations (within the last 90 days)

The GMES Emergency Management Service (EMS) is the first GMES service to become operational.

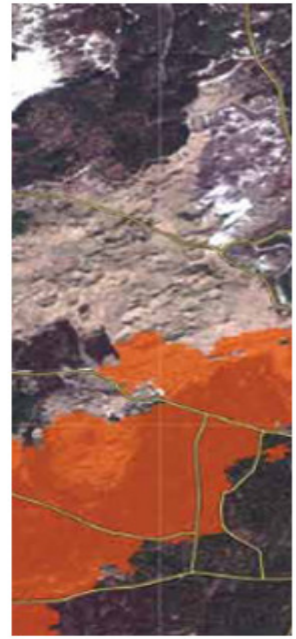
EMS started operations on April 1st, 2012 and consists of a set of services funded by the European Commission.

Access Rush Mode
conection to the portal

Non-rush mode

Access
Authorised users only

Download Portal User Manual



Conclusions and outlook

Copernicus Emergency Management Service is aimed at being flexible and adapted to emergency response actors

- **Adapted to the needs of Civil Protection Authorities within Europe**
- **Available also for the benefit of humanitarian aid and disaster management interventions worldwide, in particular to UN agencies**
- **'public good' data policy: open access and free licensing to general public users**

Thank you for your attention

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