Copernicus Emergency Management Service for Risk planning and Recovery

Copernicus Emergency Management Service

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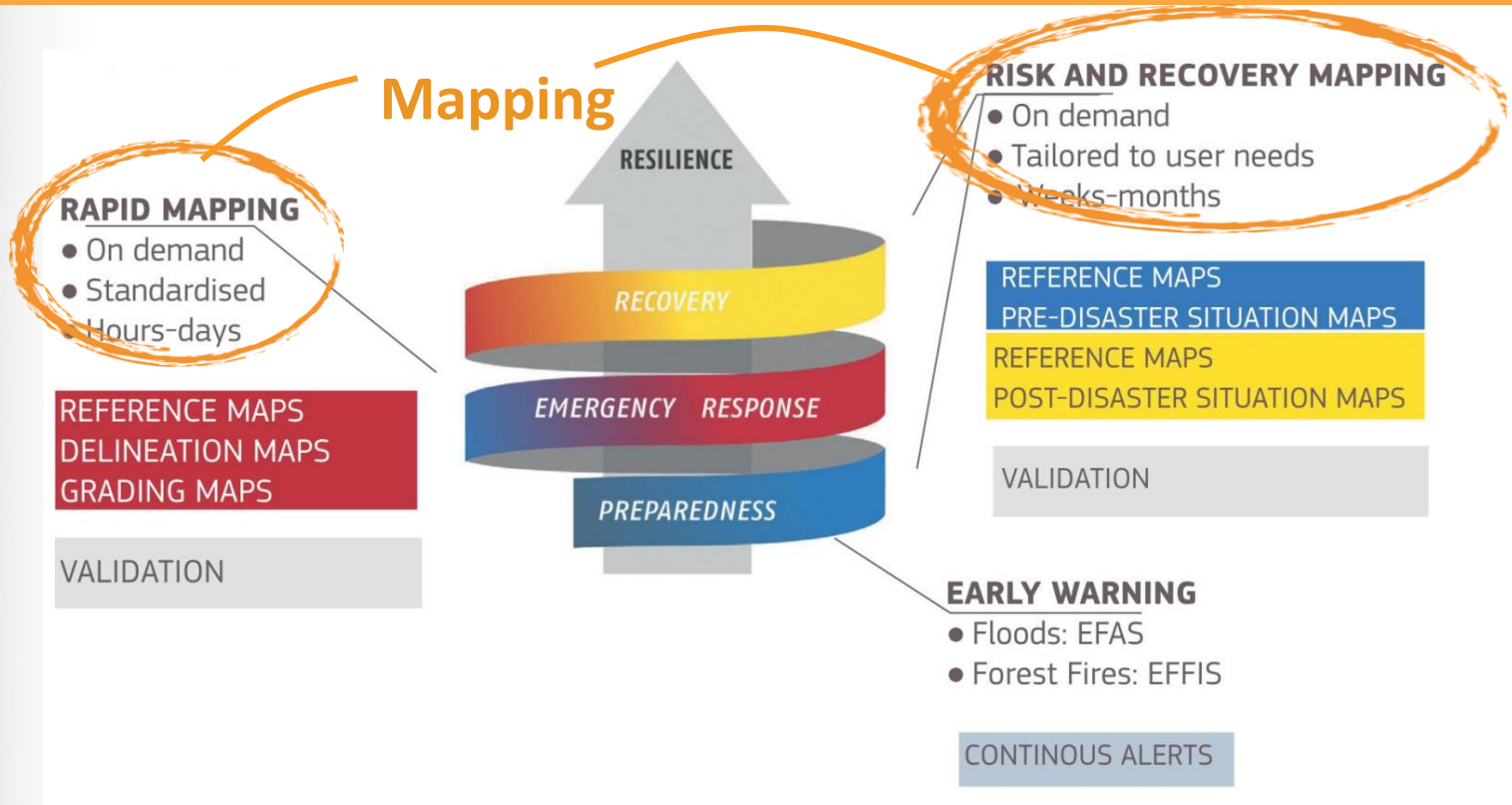
Emergency Management

Copernicus EMS - components



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Risk and Recovery mapping

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- Not constrained by the need for rapid delivery
- Serves prevention, preparedness, disaster risk reduction, reconstruction, recovery
- Service is customised to suit the user requirements specific to each activation
- Product delivery in weeks/month
- Is more dependent on the integration of relevant ancillary layers

Map Types

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Reference maps comprehensive and updated knowledge of the territory and relevant assets in a disaster risk reduction context

- **Pre-disaster situation maps** thematic information supporting planning for contingencies on vulnerable areas. Examples include hazard exposure, vulnerability, resilience, risk status, evacuation plans and modelling scenarios
- **Post-disaster situation maps** thematic information in support of post-disaster activities such as reconstruction planning and progress monitoring. Examples include post-disaster needs assessment, recovery plans, reconstruction/rehabilitation monitoring, including Internally Displaced Persons (IDP) and refugee camps monitoring

Reference Map

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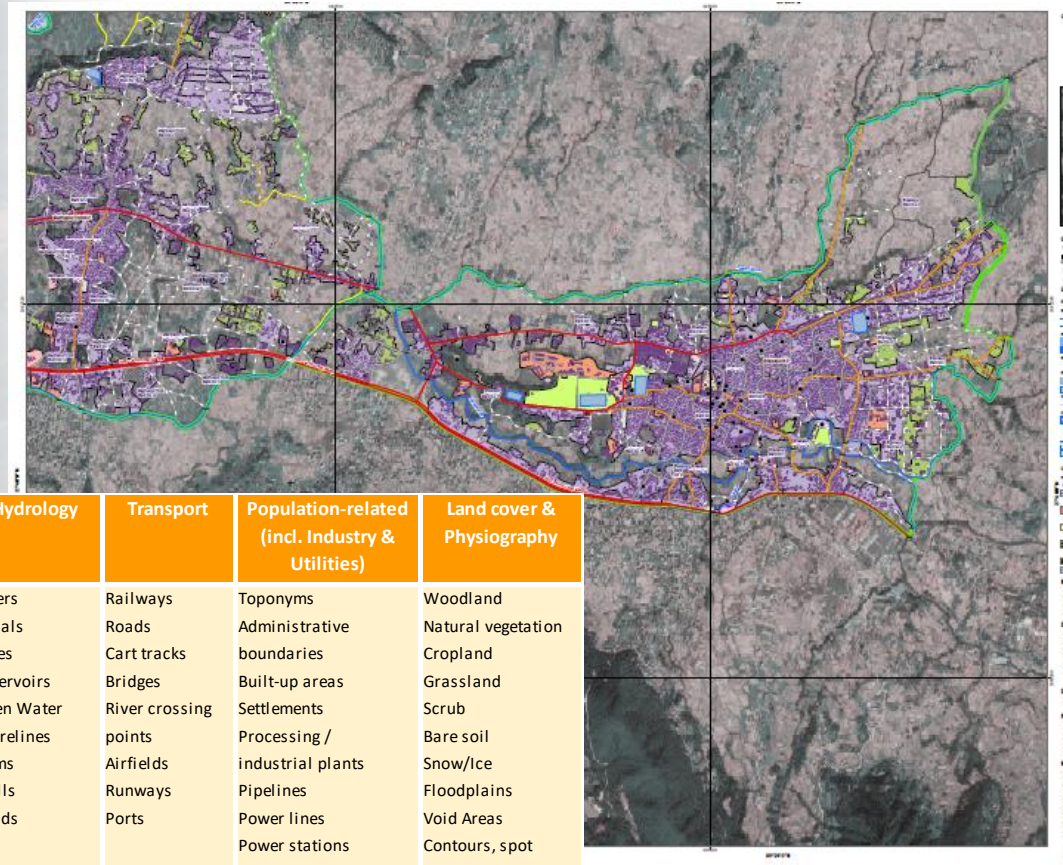

Legend

Hydrography
- River Line (>=150m)
  - Intermittent
  - Perennial
- River Area (>=0.25Ha)
  - Intermittent
  - Perennial
- Reservoir Point (<0.25Ha)
  - Reservoir Point
- Reservoir Area (>=0.25Ha)
  - Intermittent
  - Perennial
- Ditch Line (>=150m)
  - Ditch Line
- Ditch Area (>=0.25Ha)
  - Ditch Area
  - Natural Pool
  - Cistern
  - Intermittent Lake
  - Perennial Lake

Transportation
- Crossing Point (<50m)
  - Bridge Point
  - Culvert
  - Ford
- Crossing Line (>=50)
  - Bridge
  - Culvert
  - Ford
  - Tunnel Point (<50m)
  - TunnelLine (>=50m)
  - Airfield Point (<0.25Ha)
  - Airfield Area (>=0.25Ha)
- Road Network
  - Primary paved
  - Secondary paved
  - Secondary unpaved
  - Local paved
  - Local unpaved
  - Cart Track
  - Trail
  - Railway

Urban Areas
- Buildings
- Built Up Area
  - Agricultural
  - Commercial
  - Educational
  - Industrial
  - Institutional
  - Medical
  - Military
  - Other
  - Recreational/Sports
  - Religious
  - Residential Formal
  - Residential Informal

Utilities
- Point <0.25Ha / Area>=0.25Ha
  - Cem Cemetery point
  - Cemetery Area
  - Power Station Point
  - Power Station Area
  - Power Substation Point
  - Power Substation Area
  - Extraction Mine Point
  - Extraction Mine Area
  - Quarry Point
  - Quarry Area
  - Settling Basin

Area of Interest
- AOI

Points of Interest
- Commercial
- Educational
- Fire brigade
- Governmental
- Hospital
- Hotel
- Industry
- Military
- Other
- Police station
- Recreational/Sports
- Religious

Typical key features

Hydrology	Transport	Population-related (incl. Industry & Utilities)	Land cover & Physiography
Rivers	Railways	Toponyms	Woodland
Canals	Roads	Administrative boundaries	Natural vegetation
Lakes	Cart tracks	Built-up areas	Cropland
Reservoirs	Bridges	Settlements	Grassland
Open Water	River crossing points	Processing / industrial plants	Scrub
Shorelines	Airfields	Pipelines	Bare soil
Dams	Runways	Power lines	Snow/Ice
Wells	Ports	Power stations	Floodplains
Ponds			Void Areas
			Contours, spot heights
			Cliffs

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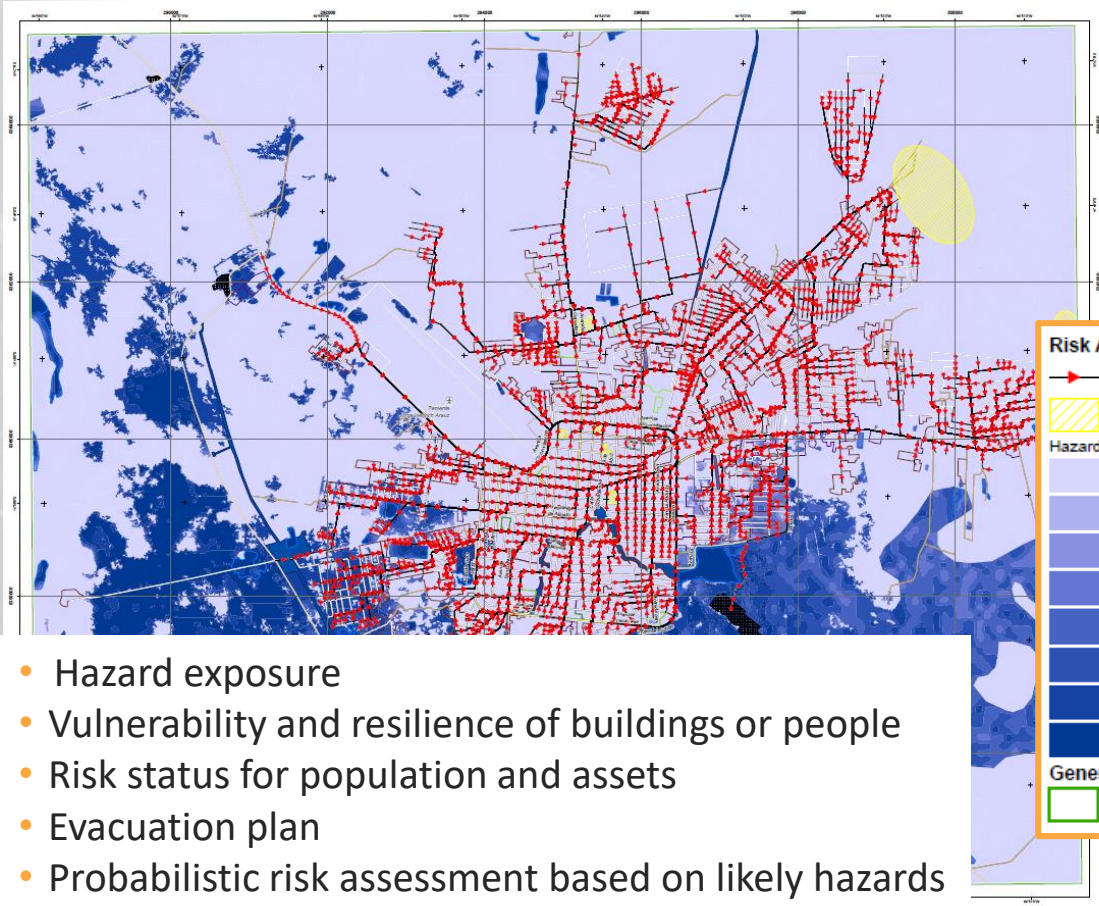
Pre-Disaster Situation Map



Application examples

- Hazard exposure
- Vulnerability and resilience of buildings or people
- Risk status for population and assets
- Evacuation plan
- Probabilistic risk assessment based on likely hazards

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Post-Disaster Situation Map

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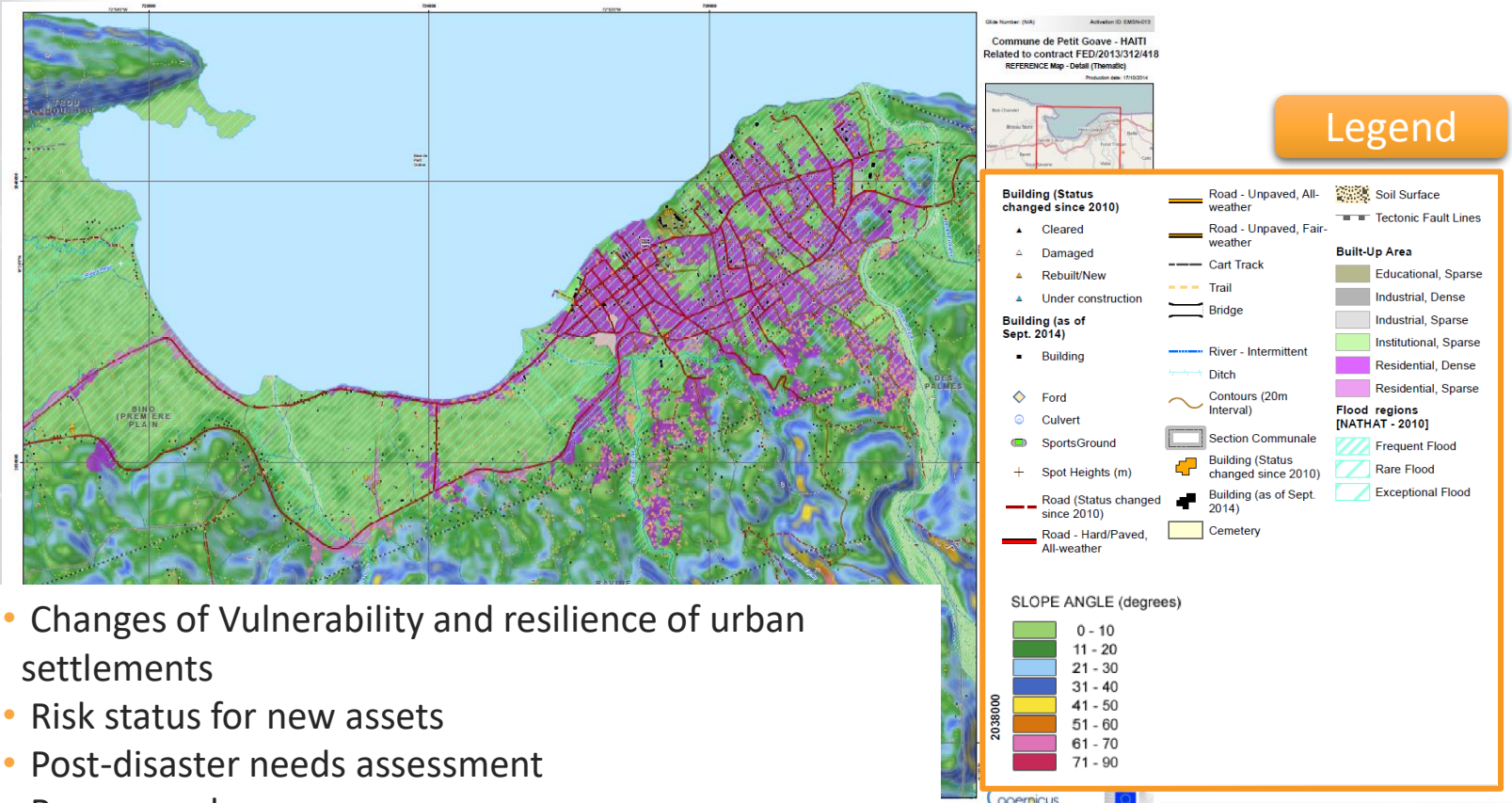

Application examples

- Changes of Vulnerability and resilience of urban settlements
- Risk status for new assets
- Post-disaster needs assessment
- Recovery plans
- Reconstruction/rehabilitation monitoring

Timeliness

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After receipt of Technical Annex the Service Providers (SP) have the following deadlines:

- 7 working days for questions
- 10 working days for sending an offer
- JRC: evaluation(3days), preparation of contract (5days)
- SP: 20working days from contract signature

a technical report is issued to summarize the results explane the workflow and techniques used to derive map products

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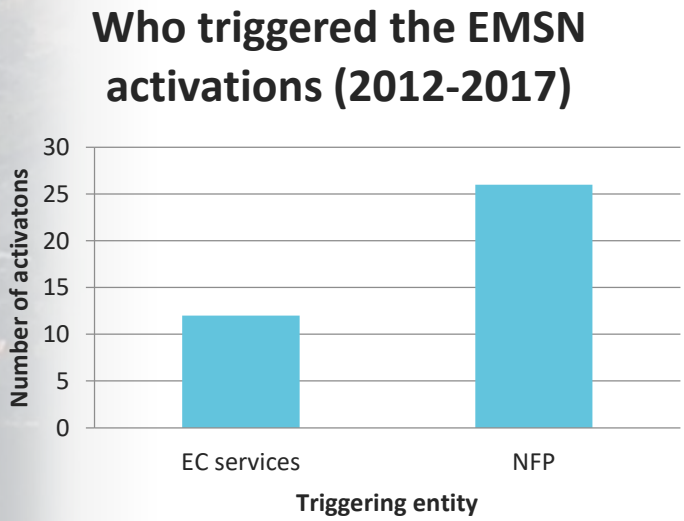
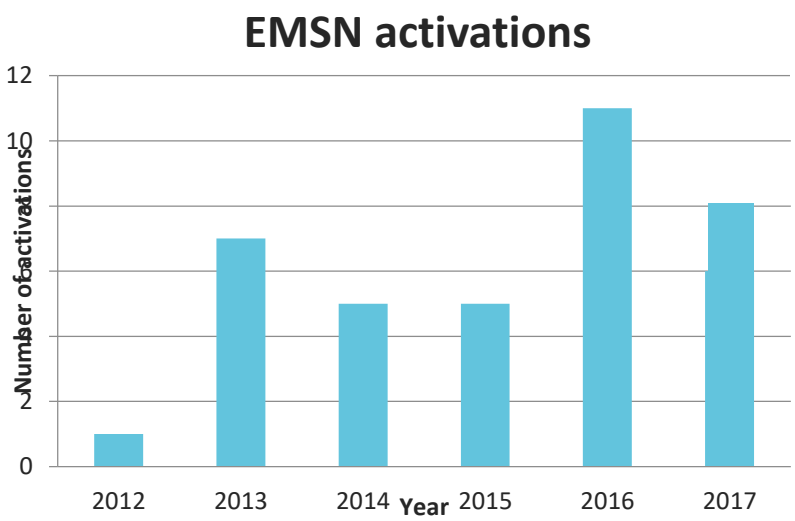
The Risk and Recovery Mapping service has been activated 43 times since the beginning of the service





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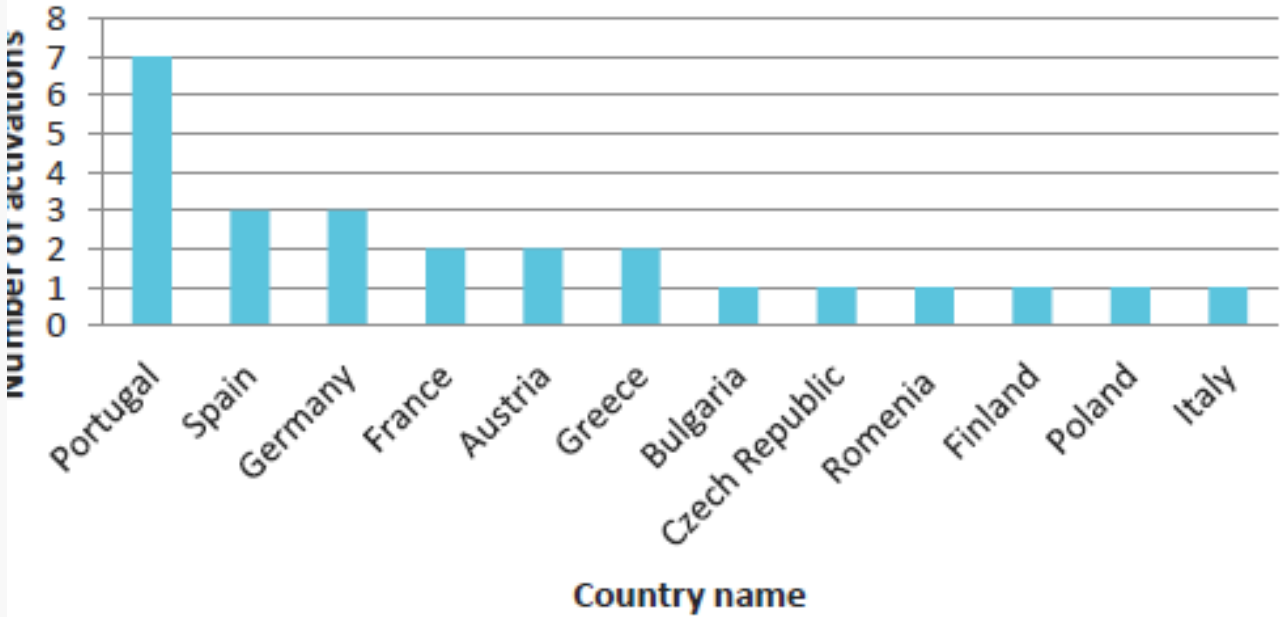
Number of EMSN activation per EU country (2012-2017)



RRM subjects of interest

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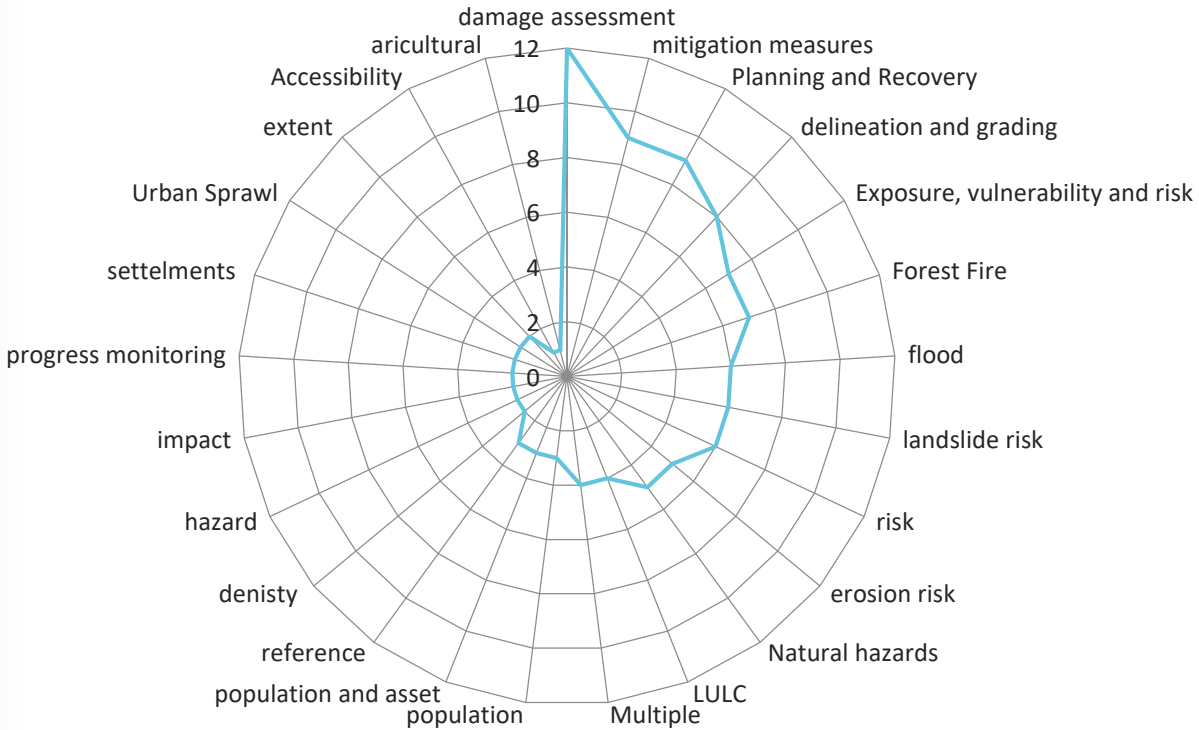

How to access the RRM Service

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- The Service can be directly activated by nominated Authorised Users (AU)
- Entities which are not Authorised Users, and who wish t… must conta… contact the…
- All Commis… External Action's Situation room are Authorized Users
- The AU must fill the Services Request Form (SRF) available on the EMS portal www.emergency.copernicus.eu

AU in Ireland is the National Directorate for Fire and Emergency Management

Department of Environment, Heritage and Local Government

European Commission

Service Request Form (SRF)

Copernicus EMS
Risk and Recovery Mapping

To be sent to the ERCC (Mon-Fri 9-17h)

Email: echo-ercc@ec.europa.eu
Tel: +32-2-29-21112

Please provide the information requested in the areas marked in blue.

☐ EEAS

Mobile:
Fax:

Region/district, country:

Brief description of the activation:
(event type, affected population, etc.)
Intended use of the maps to be produced:

Product Details

Map types

Please select the product type and provide a brief description/name (e.g. Earthquake hazard analysis for Teheran; Flood risk analysis for population and assets in Senegal; Evacuation plan for Haiti; etc.)

Type	Short description/name
☐ Reference map	
☐ Pre-disaster situation map	
☐ Post-disaster situation map	

Delivery package

- Typical example of product delivery (forest fire in Portugal)

Product name	Scale	No of maps
Rference	1:10.000 1:15.000	11
LULC		11
Forest fire delineation and grading		11
Erosion risk		11
Landslide risk		11
Loss assessment	1:10.000 1:20.000	9

- Csv and metadata
- Geodatabase (gdb)
- Final Report
- Field work results

EMSR034 - Coastal flood risk analysis PT

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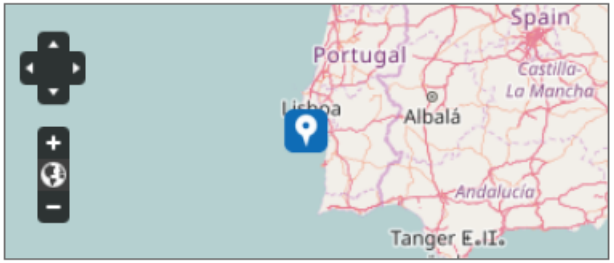
Event Type: Flood (Tsunami and storm surges hazard)
Activation Time (UTC): 2017-04-21 00:00
Activation Status: Closed
Affected Countries/Territories:
Portuguese Republic
Area Descriptor: Costa da Caparica, Setúbal, Portugal
Authorized User:
Autoridade Nacional Protecao Civil (ANPC)
Activation Reason:
The scope of the service request EMSN034 is to generate: Pre-disaster situation analyses and maps to provide thematic information supporting planning for contingencies on vulnerable coastal areas along with a European framework directive on the assessment and management of the flood risk. Risk assessment products: exposure, vulnerability and risk maps and modeling scenarios for population and assets concerning the following hazards: 1) Tsunami and storm surges hazard, 2) Coastal erosion hazard.



Tweet Coverage map: GeoRSS:

Products

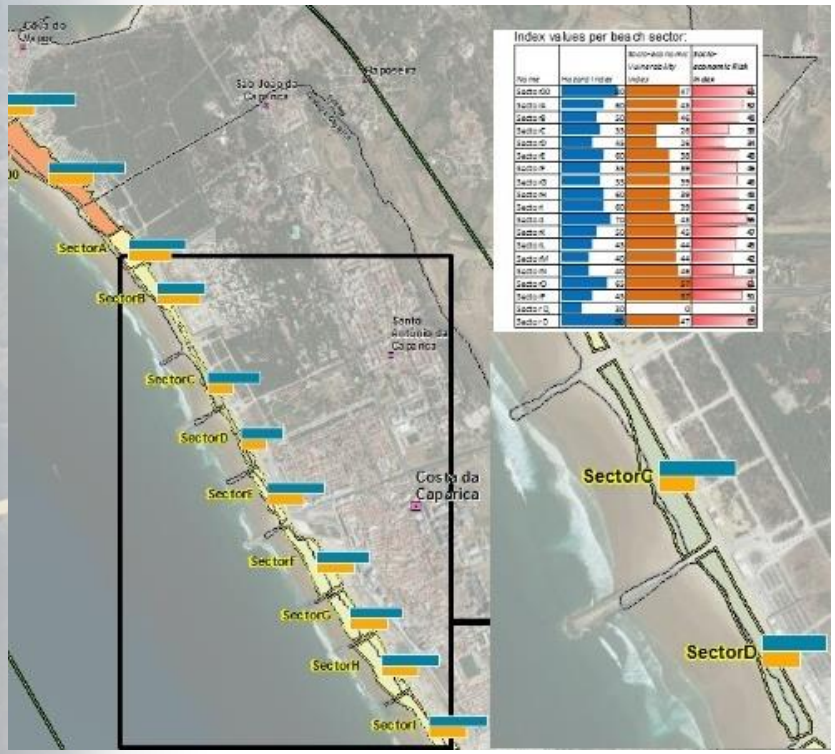
- Flood risk maps considering hazard, exposure and vulnerability (physical, social, economic, environmental) with respect to assets and population. Two methodologies used (the one provided and one alternative considering physical and socio-economic vulnerability)
- Coastal erosion hazard maps
- Maps with mitigation measures, plans for disasater preparedness and response mechanisms
- UAV orthophotos and DSM

Coastal flood risk map: methodology 1:

Modelling the different components that contribute to total water level during a storm: barometric setup, wind, waves, tide, plus a component of sea level rise to account for future climate change.

The input data were provided for five different probability scenarios, from frequent (5 years return period) to improbable (100 years return period).

The slope of the beach and the artificial protection structures °(input to the model) was extracted from the DSM



Coastal flood risk map: methodology 2

Creation of a Flood Hazard Index (FHI) composed of four variables:

- the alongshore variability of breaking wave height
- beach and nearshore slope
- presence or absence of artificial structure

The final value of the FHI was combined with socioeconomic indicators.

A risk matrix combined the vulnerability dimensions on specific risk measures. Each of the census units and coastal sections can be characterized by a risk value and its contributing factors.

An EMS success story: Seine River May 2016

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2016.05.30 EFAS early warning for potential rapid mapping activation for France

EW

- Heavy rains are affecting central and northern parts especially during Monday 30 May until Wednesday 1 June. EFAS predicts a high risk of flooding from Tuesday 31 May onward for the Seine and Loire river basins.
- Affected region(s): Indre-et-Loire, Seine-et-Marne, Essonne, Loir-et-Cher, Loiret
- Predicted start of the event: Tuesday 31 May
- Next situation update: 31 May 2016

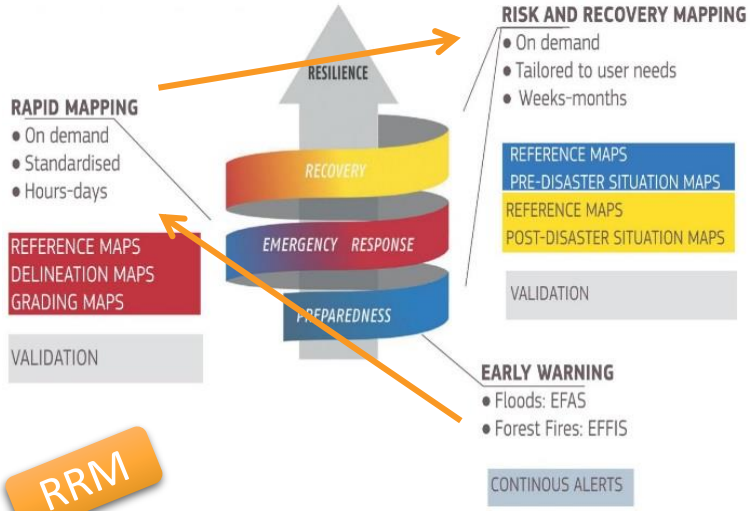
RM

2016.05.30 13:03 the Rapid Mapping service is proactively activated on the basis of the EFAS Early Warning

- A potential affected Areas of Interest was proactively defined
- Satellite data were promtptly tasked

2016.06.01 16:45 the Rapid Mapping is activated by the COGIC (EMSR165)

- Definitive AOIs are defined by the users
- Satellite data acquired are used to generate 16 delineation and 5 grading maps



RRM

July 2016: the RRM is activated by the COGIC on behalf of Ministère de l'Environnement (EMSR028)

- ✓ Definition of the potential affected Areas of Interest and the satellite acquisition type
- ✓ Submission of SPERF to ESA-REACT
- ✓ Confirmation of the satellite imagery order

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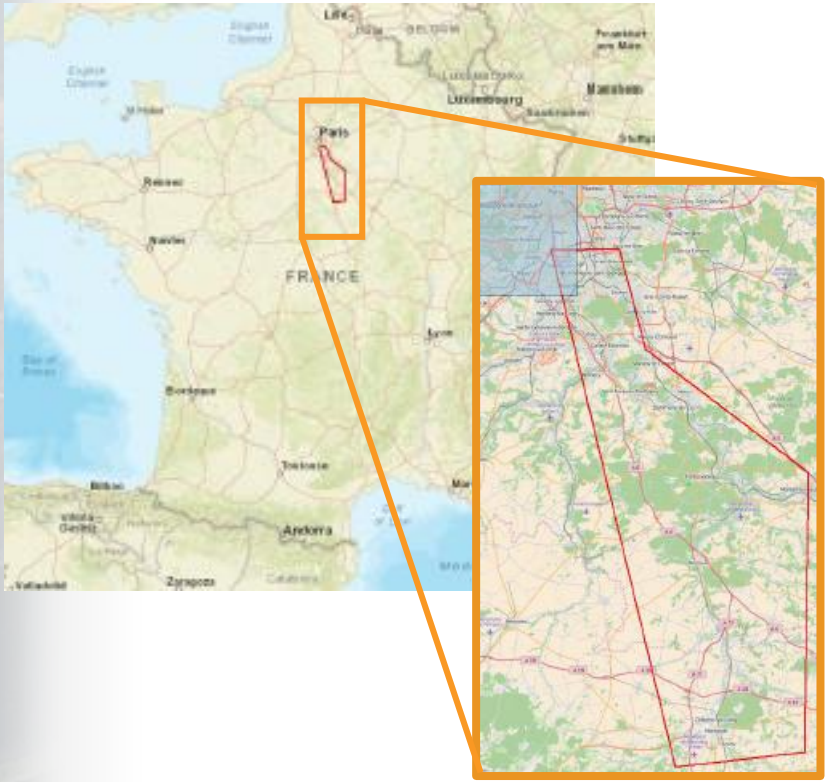
EMSN028 Flood delineation and damage assessment FR



- 2.200 sqkm surface
- 1 overview portrait 1:150.000
- 16 detail maps 1:25.000
- 4 thematic products
  - Observed flood extent and traces mapping;
  - Maximum flood extent and estimated water depth mapping;
  - Impact assessment on land use mapping and associated statistics;
  - Statistics related to the impact assessment on population.

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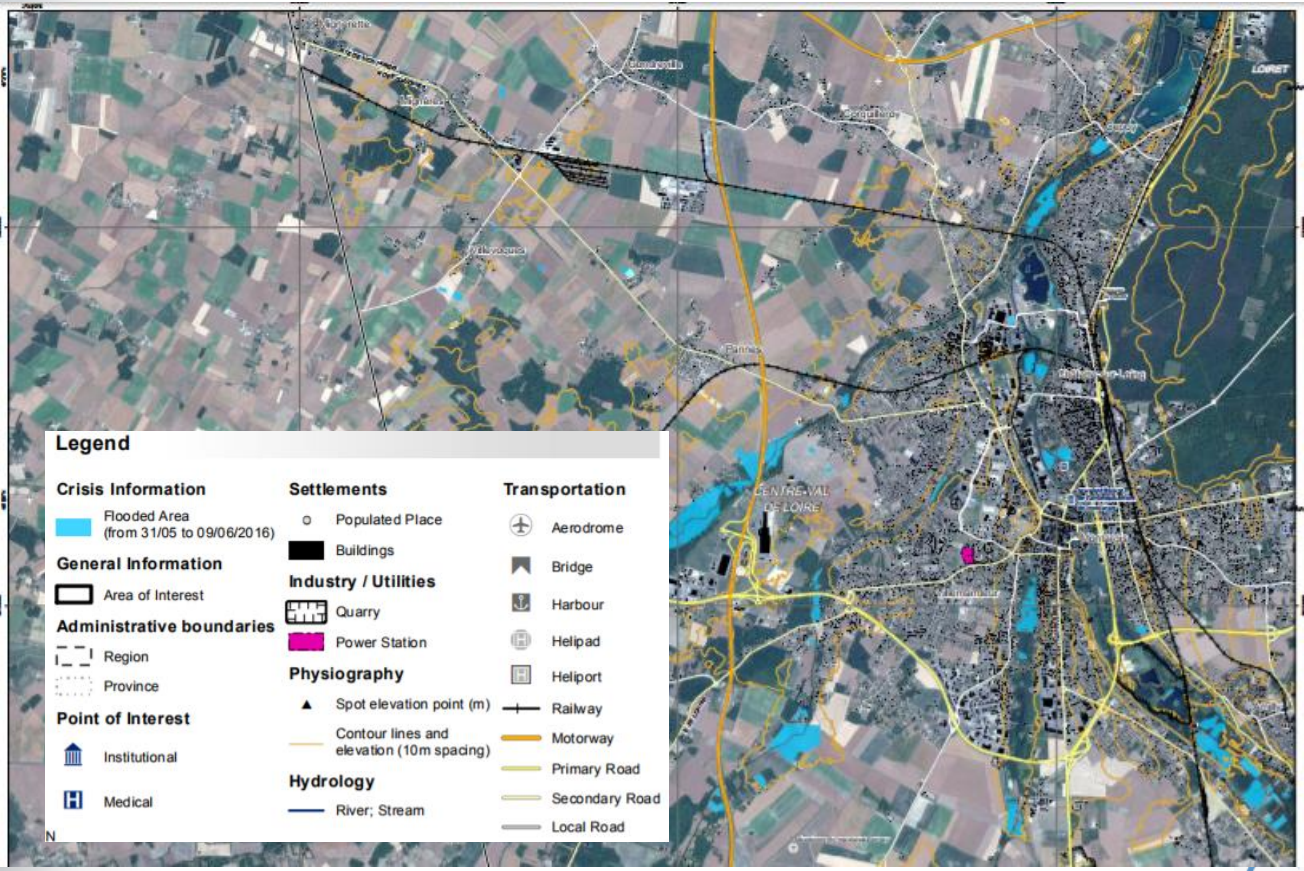
Observed flood extent



Maximum flood extent

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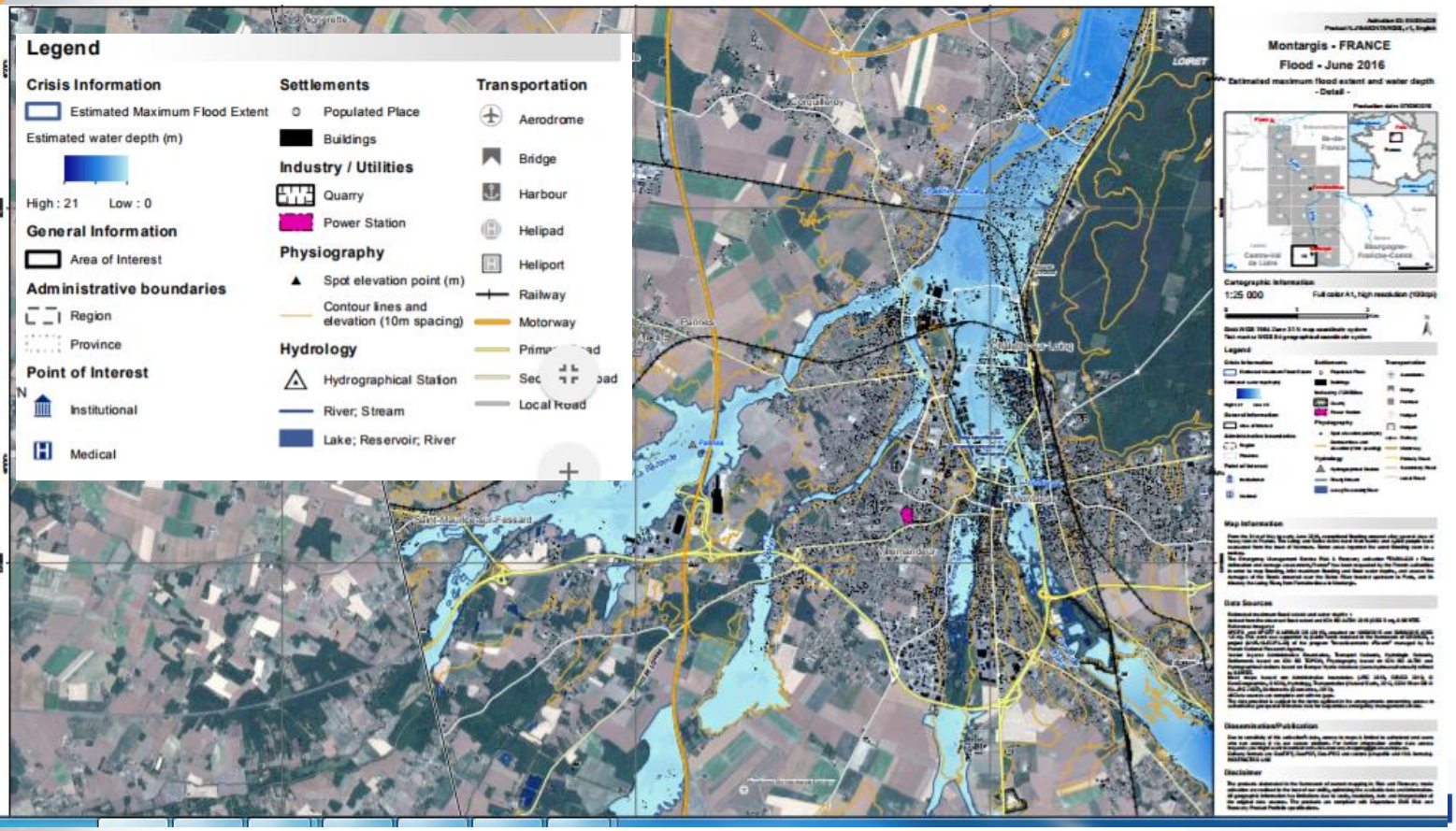

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Flood impact assessment

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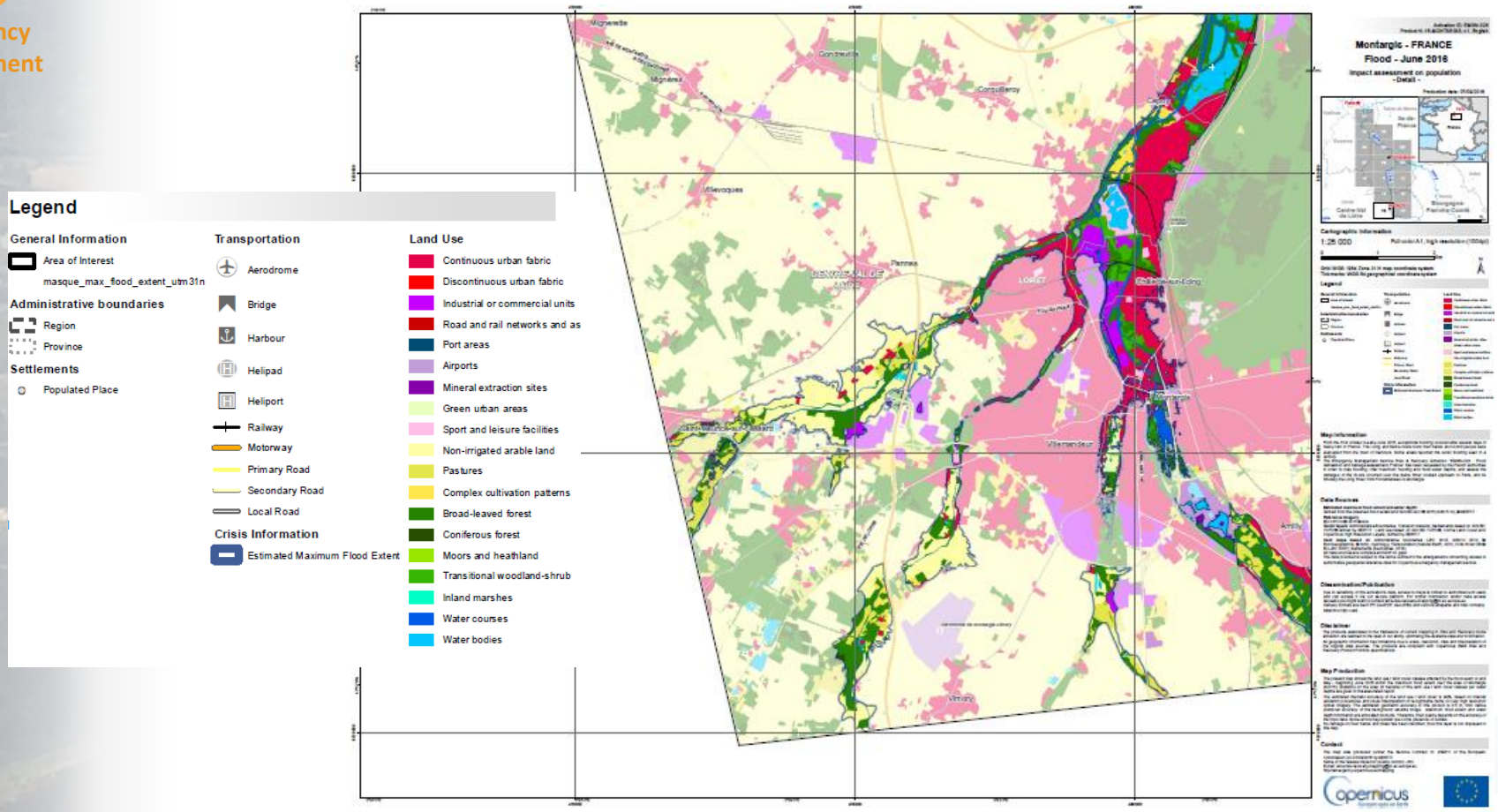

EMS – overview on Rapid Mapping module

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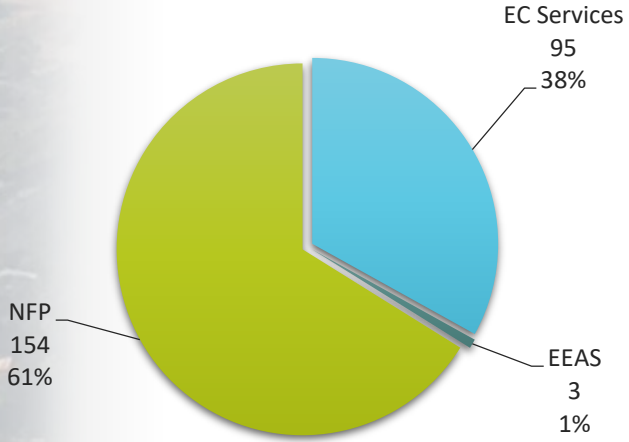
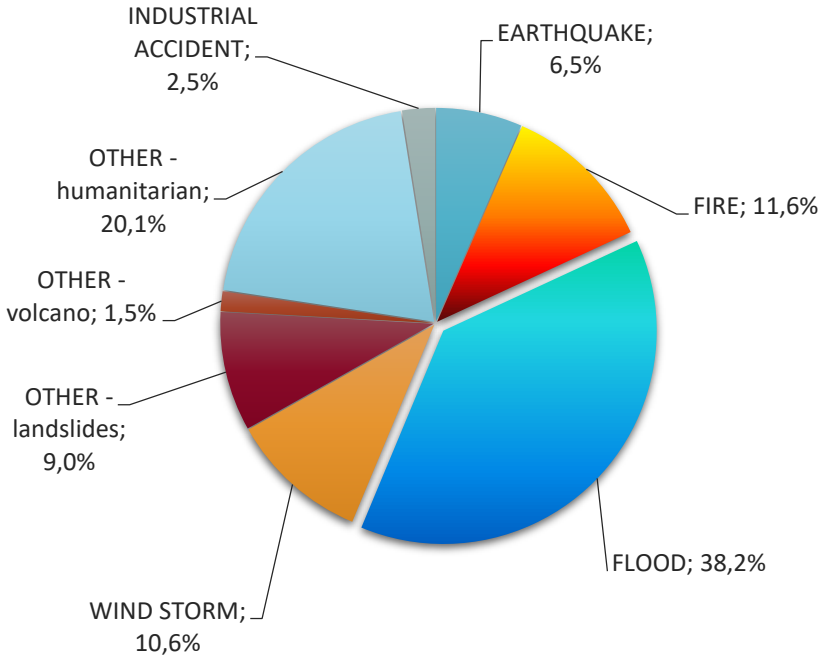
- 24/7 on-demand and fast provision of geospatial information
- On-demand
- Standardised workflow & products
- Uses dedicated mechanisms for rapid tasking & delivery of satellite images
- Delivery of products in hours/days
- Delivery on SFTP, EMS Mapping Portal

Map type	Content	Service Level 1	Service Level 5
Reference	Pre-event situation	9h	5 days
Delineation	Impact area	12h (3h)**	5 days
Grading	Damage assessment	12h (3h)**	5 days

Triggering entity group



Type of disaster



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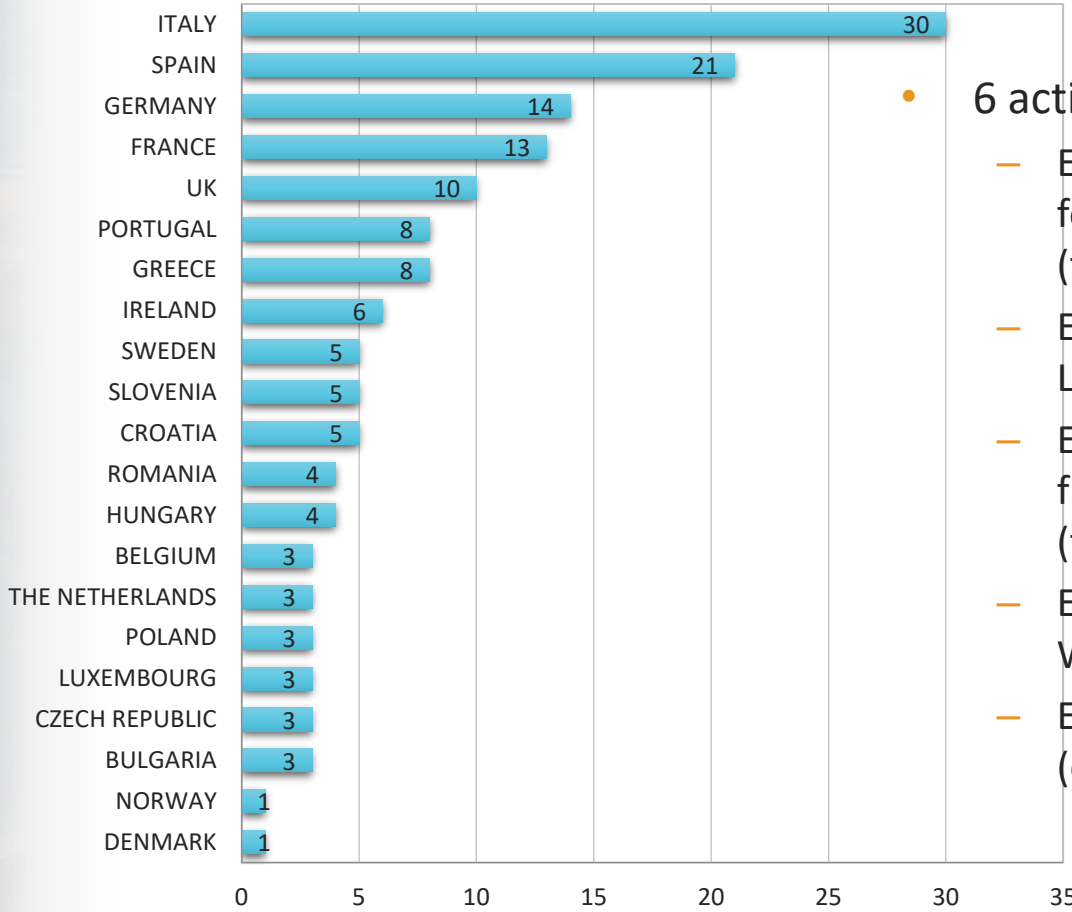

- 6 activations in Ireland
  - EMSR077 – forest damages following violent storms (feb2014)
  - EMSR149 – floods in Limerick/Athlone (apr2015)
  - EMSR154 and EMSR156 – flood in Roscommon (feb/mar2016)
  - EMSR231 – floods in North Western (aug2018)
  - EMSR249 – Hurricane Ophelia (oct2017)

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Contact

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To access the Copernicus EMS Risk & Recovery Mapping Portal go to
http://emergency.copernicus.eu/mapping

To navigate and view the RRM products
http://emergency.copernicus.eu/mapping/list-of-activations-risk-and-recovery

To get support in accessing the EMS mapping please contact ERCC
echo-ercc@ec.europa.eu
Or the Copernicus Support Office
Support@copernicus.eu