EMS for floods and storms: emergency alert and crisis operations

Copernicus Emergency Management Service

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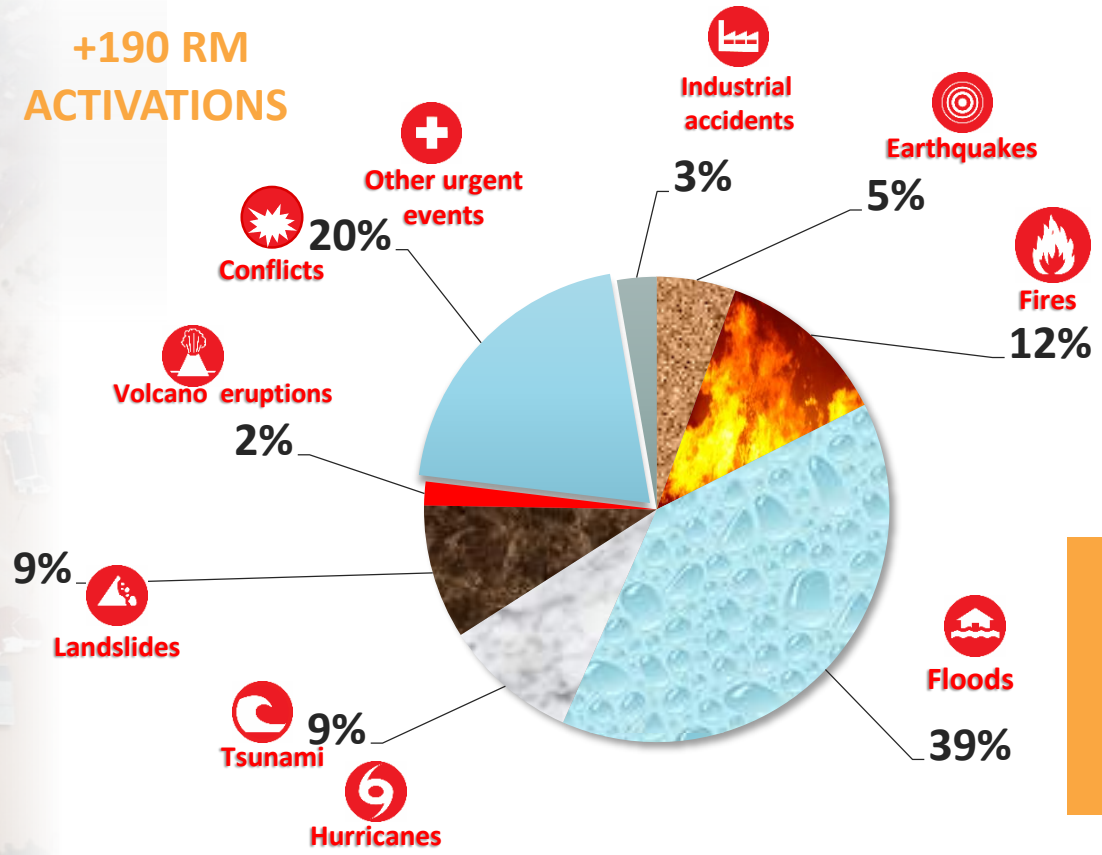
Copernicus EMS Rapid Mapping 2012 -2016

Emergency Management

+190 RM ACTIVATIONS



The Floods are the emergency events for which the RM Service receives more activation requests

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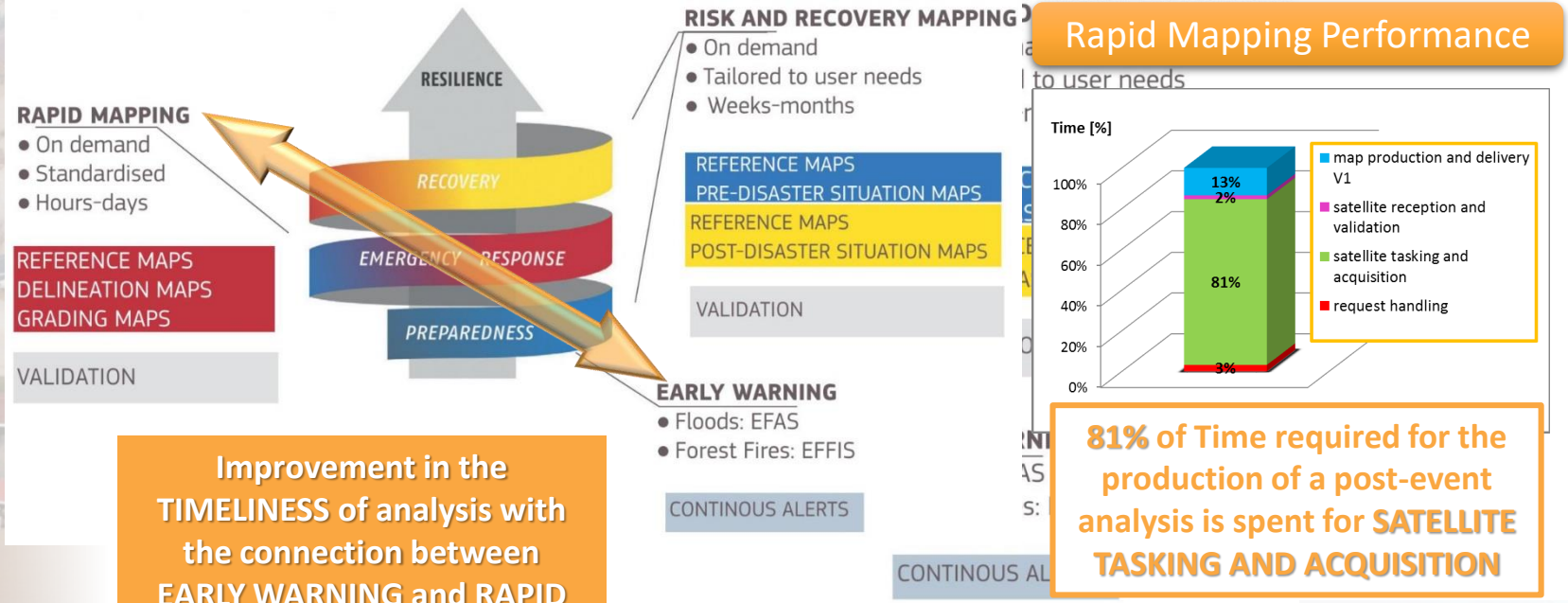
EARLY EARNING & RAPID MAPPING

- **Floods** and **storms** are types of disasters where **EARLY WARNING** and **TIMELY ALERT** are critical for the full success of the EMS Rapid Mapping activations



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OPERATIONAL WORKFLOW STANDARD

Emergency Management

EMERGENCY EVENT

STANDARD WORKFLOW

PRE-EVENT AND POST-EVENT MAPS

Member States Civil Protections

RM request

ERCC

Service activation

Copernicus EMS RM Consortium

Satellite data request

ESA & Satellite Operators

Satellite data delivery

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OPERATIONAL WORKFLOW V2.0

Emergency Management

Early Warning Service

EW ALLERT

Satellite data request

Copernicus EMS RM Consortium

ESA & Satellite Operators

Copernicus EMS RM Consortium

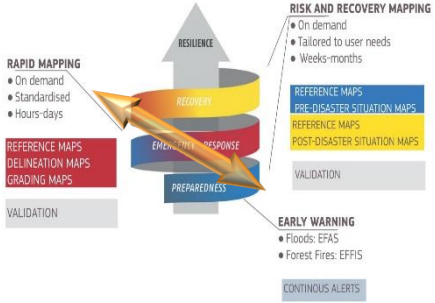
Satellite data delivery

EMERGENCY EVENT

Member States Civil Protections

- ✓ They can activate or not the RM Service
- ✓ Satellite acquisition available timely

NEW WORKFLOW



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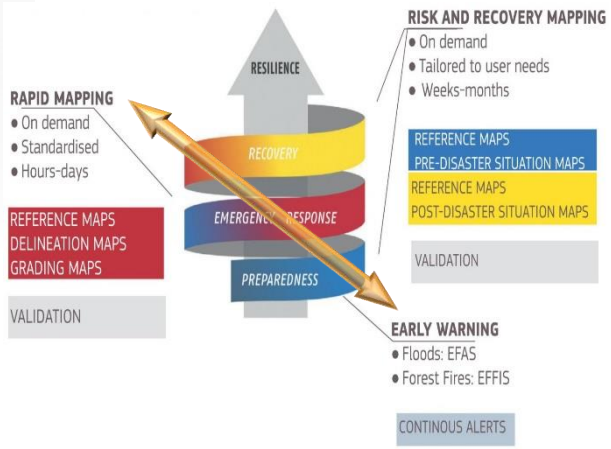
PRE-TASKING SUCCESS STORY

Floods in Loiret – FRANCE, 30 May, 2016



2016.05.30 13:03 RM Team receives an Early Warning by EFAS

- ✓ 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

EFAS early warning for potential rapid mapping activation for France

Situation description: 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 country: France
Affected river basin(s): Seine, Loire
Affected region(s): Indre-et-Loire, Seine-et-Marne, Essonne, Loir-et-Cher, Loiret
Predicted start of the event: Tuesday 31 May
Major affected cities: Montrichard, Romorantin-Lanthenay, Salbris (Region: Loir-et-Cher; severe flooding/peak expected 31 May); Amilly, Chalette-sur-Loing, Montargis (Region: Loiret; severe flooding/peak expected 31 May); Moret-sur-Loing, Nemours (Region: Seine-et-Marne; severe flooding/peak expected 31 May); Crosne (Region: Seine-et-Marne; severe flooding/peak expected 1 June); Coulommiers (Region: Seine-et-Marne; severe flooding/peak expected 2 June); Tours (Region: Indre-et-Loire; severe flooding/peak expected 3 June),
Next situation update: 31 May 2016

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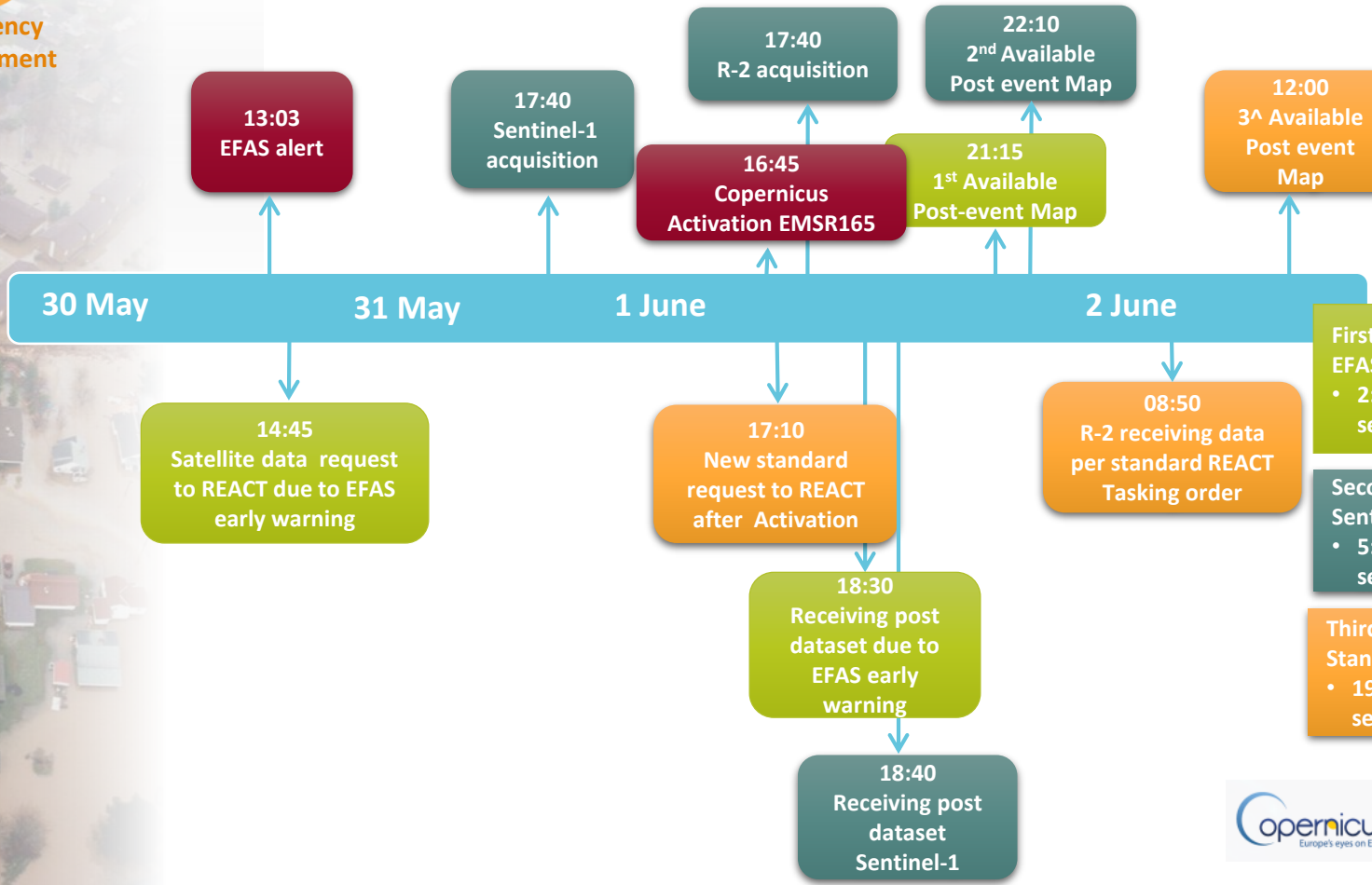
PRE-TASKING SUCCESS STORY



First available map using EFAS early warning:
- 2:45 hours after the service activations

Second available map using Sentinel-1 from Archive:
- 5:25 hours after the service activations

Third available map using Standard Tasking Mode:
- 19:15 hours after the service activations

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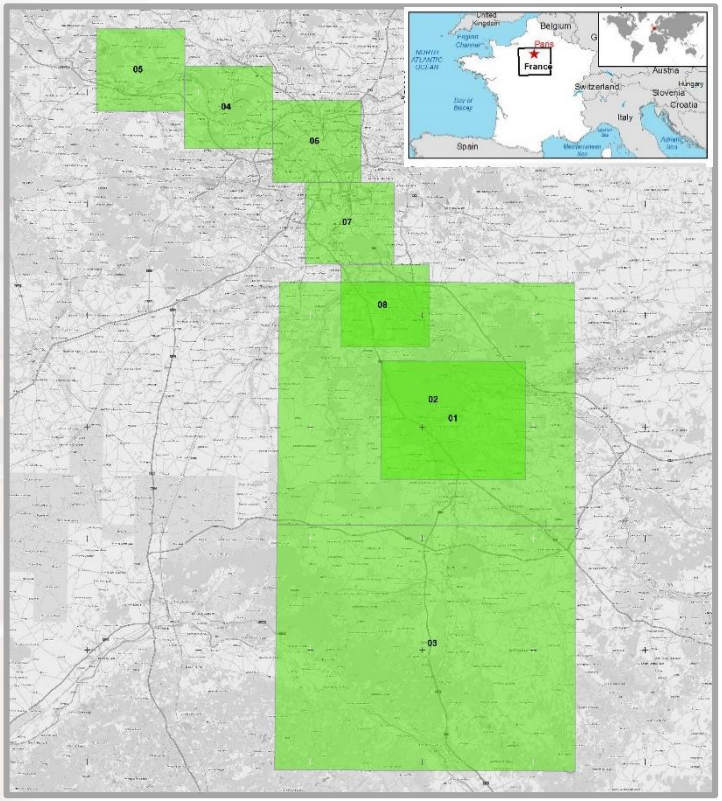
EMSR165 – Flood in Loiret

Emergency Management



Event Time (UTC): 2016-05-30 08:00
Event Time (LOC): 2016-05-30 10:00
Event Type: Flood
Activation Time (UTC): 2016-06-01 18:45
Delineation maps produced: 16
Grading maps produced: 5
Affected Countries/Territories:
French Republic
Area Descriptor: Loiret, central region
Authorized User:
France|Centre Operationnel de Gestion Interministeriel de Crises (C.O.G.I.C)
Activation Reason:
Many localities in central and eastern France following the exceptional flood has induced over Loing river basin, Red early warning was emmtittes by National central forecasting centre
Requested Product: Delineation + Grading

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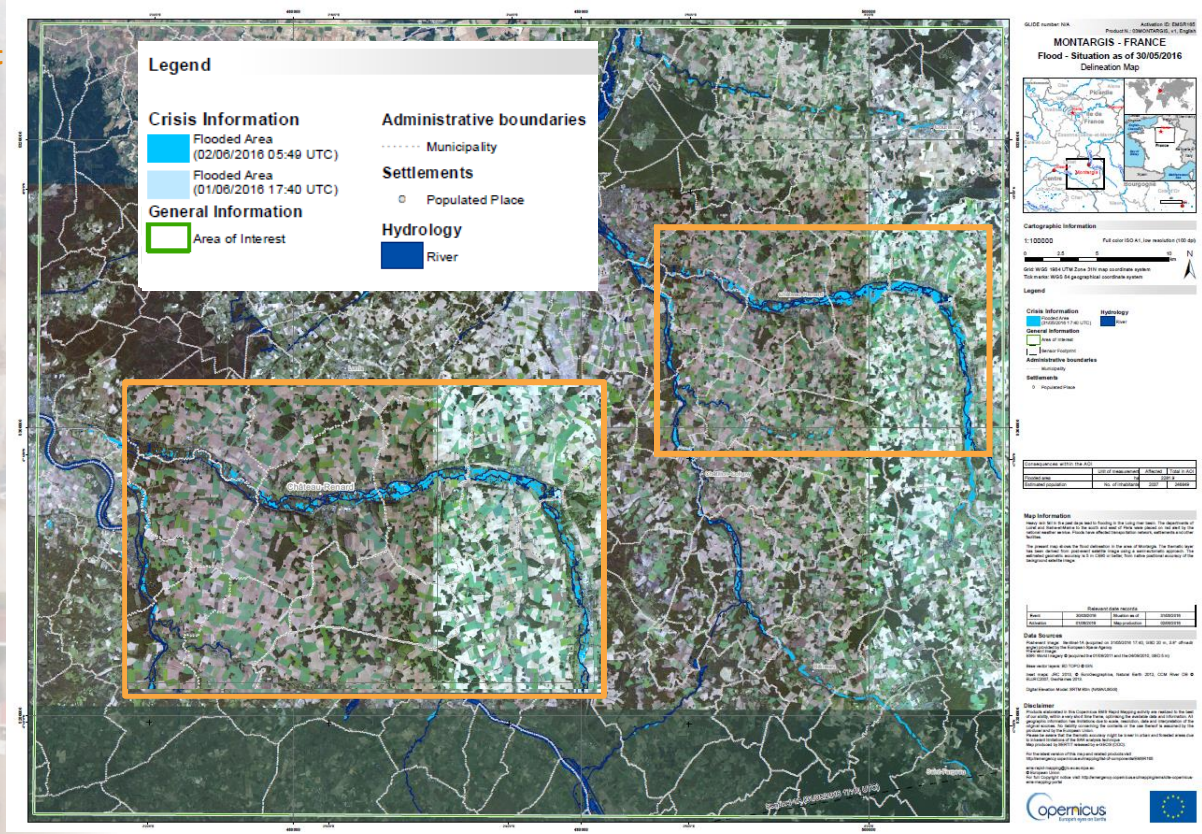
EMSR165 – Delineation Maps

Emergency Management



- ✓ The AU asked the production of **DELINEATION MAPS**
- ✓ Definition of 2 AoIs with a small map scale in order to check the floodmask over a large area → **1:100.000**
- ✓ Tasking of **RADAR Imagery** → it allows to monitor of the event also with bad weather conditions
- ✓ **1 DEL MAP + 2 MONIT MAPS**

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EMSR165 – Grading Maps

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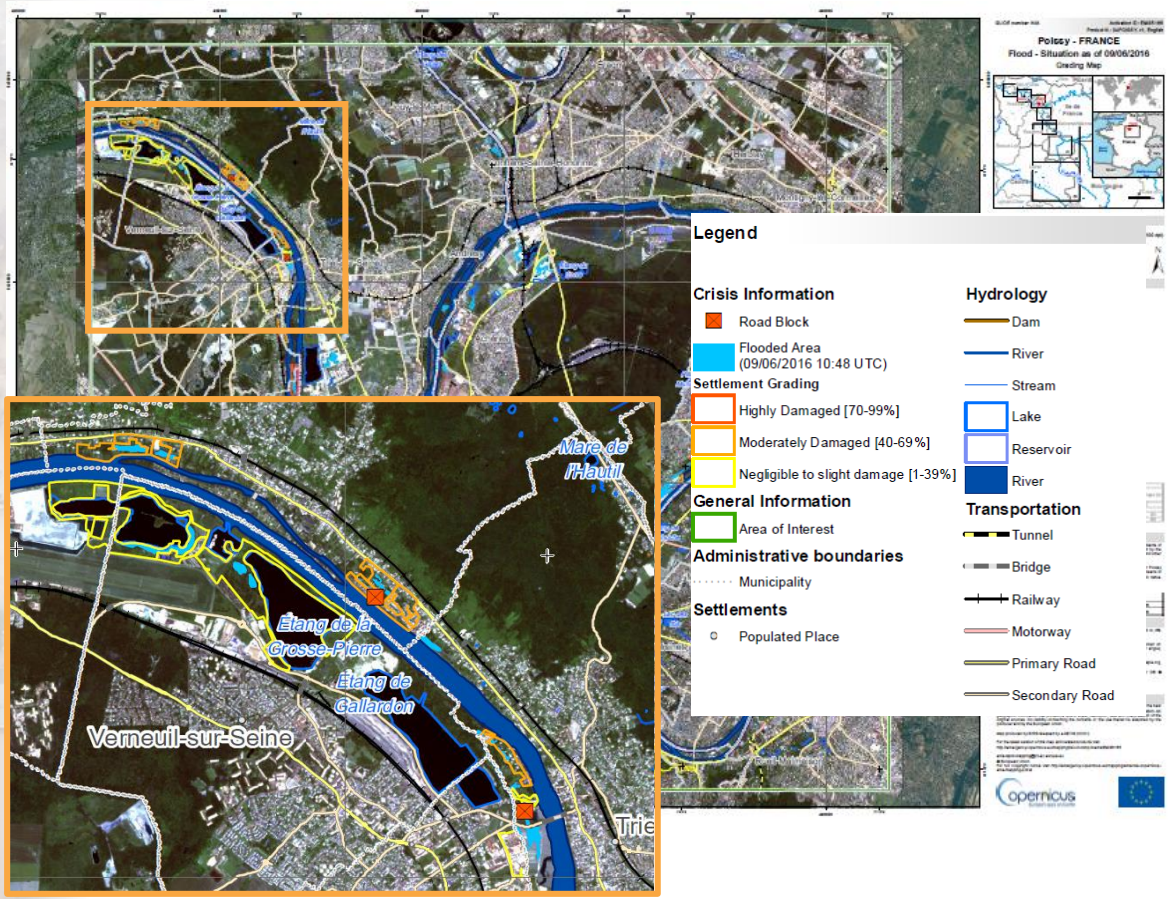

- ✓ The AU asked also the production of **GRADING MAPS**
- ✓ Definition of 5 AoIs with a large map scale in order to provide the damage assessment over the AoI → **1:35.000**
- ✓ Tasking of **OPTICAL Imagery** → VHR resolution – 0.5 m

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Capabilities and limitations

- The **connection** between **Rapid Mapping** and **Early Warning** drastically reduces the time between the request for activation and the first post-event acquisition over the affected areas
- The availability of the **Sentinel-1 mission** improves the potential acquisitions and the possibility to coverage the AoI

- It is not always possible to correctly define the areas of interest
- spatial **resolution versus** large area **coverage**

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