



**From Research to Applications, from Data to Information,
from Core to Downstream Services:**

ICUBE-SERTIT a Copernicus Relay for the French Grand Est Region

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SERTIT

SERvice Regional de Traitement d'Image et de Télédétection

More than 30 years of valorization and technological transfer in Space Techniques and Earth Observation applications

Technological Platform of ICUBE
Université de Strasbourg (since 2015)

Applications

- Land management and urban planning
- Environmental monitoring
- Natural resources
- Disaster / Risk management and security

Services

- Specific R&D studies
- Expertise
- Assistance
- Geo-information production
- Operational Service



Resources

- A multi-disciplinary team of 20 people
- Specialised remote sensing & IT equipment
 - A scientific and technical university environment





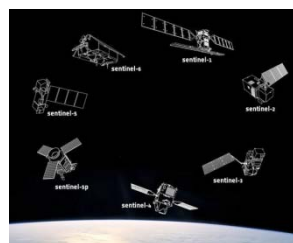
A Copernicus Relay for the French Grand Est Region

An ambassador at a Regional level

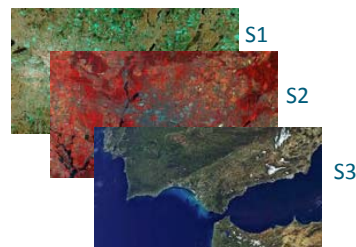
- Promotion of Copernicus programme, Data and Services



Source: EU Copernicus



Sentinel Satellites



Sentinel Data



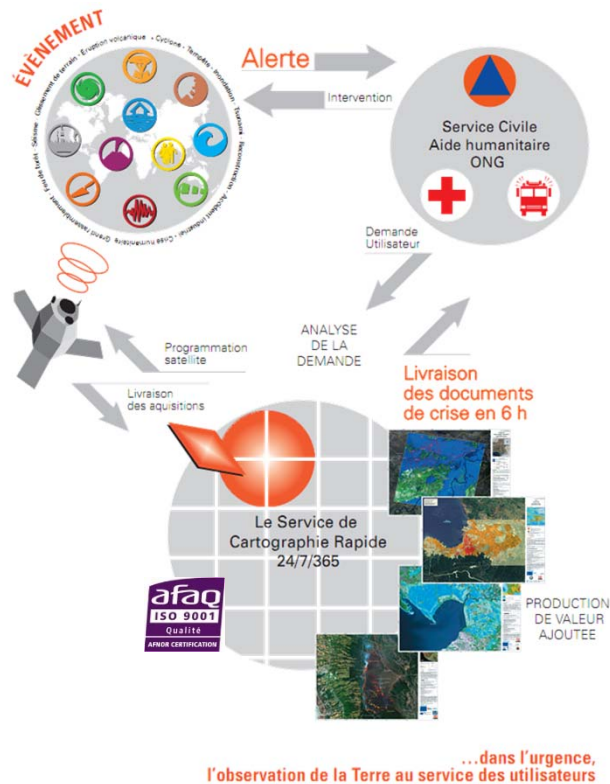
- Atmosphere Monitoring;
- Marine Environment Monitoring
- Land Monitoring;
- Climate Change;
- Emergency Management;
- Security.



- Support contact point for Copernicus related information



An Operational Rapid Mapping Service



- **Aim:** rapidly deliver EO derived geo-information covering catastrophic events
- **Where:** worldwide
- **When:** operational 24/7
- **Delivery delay:** 6 hours after satellite data reception
- **For who:** civil protection authorities, territorial administrations, humanitarian aid organisations...
- **Experience:** 15+ years, 150+ interventions, 1500+ products
- **Framework:**
 - International Charter 'Space and Major Disasters'
 - Copernicus Emergency Management Service (EMS)





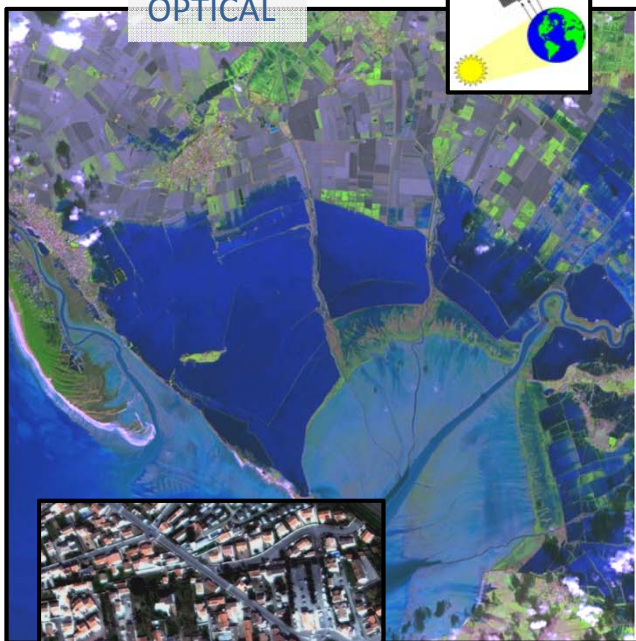
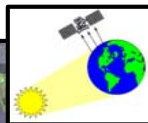
Optical / Radar EO data for Rapid Mapping

From High Resolution ...



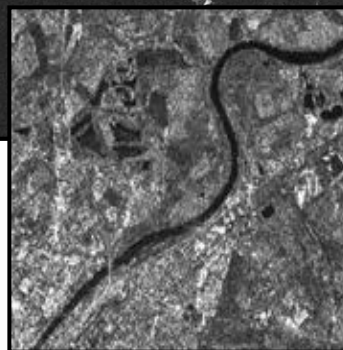
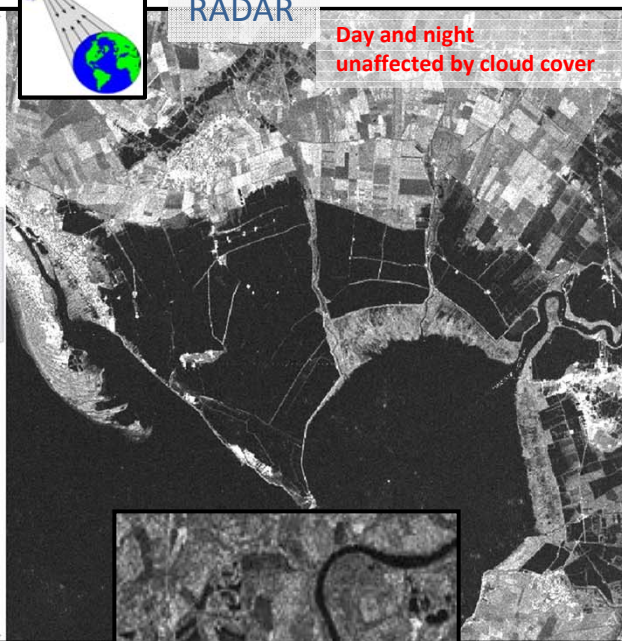
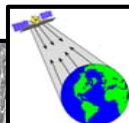
To Very High Spatial Resolution

OPTICAL



Sentinel 2, SPOT6-7, Pleiades, WorldView, ..

RADAR



Sentinel 1, Radarsat 2, TSX, CSX, ..

Day and night
unaffected by cloud cover



Copernicus
Europe's eyes on Earth



SENTINEL-1 A and B:
9-40m resolution, 6 days



SENTINEL-2 A and B:
10-60m resolution, 5 days





An actor in Copernicus Emergency Mapping Service

Provision of geo-spatial information, related to natural or man made disasters, to support:

- ✓ emergency management and humanitarian aid
- ✓ prevention, preparedness, response and recovery activities
- Geo-information products are derived from EO data completed by ancilliary data (opensource)
- Service Activation by AU: National focal Points (eg: COGIC France), EC Services (eg. DG ECHO ERCC)

Rapid Mapping Service : ‘Rush Mode’ (hours-days)

Standardised products

- ✓ Reference maps
- ✓ Delineation (extent) and grading (impact) maps

Risk and Recovery Service : Non-rush Mode (weeks-months)

Tailored products

- ✓ Pre disaster situation maps (hazard, exposure, risk, ..)
- ✓ Post disaster maps (detailed damage assessment, reconstruction monitoring, ..)

European Flood Awareness System: : EFAS

European Forest Fire Information system: EFFIS



A screenshot of the 'EMS Service Request Form'. It contains various fields for user information, contact details, and a section for describing the emergency situation. The form is titled 'Emergency Mapping Service Request Form' and includes a 'Request' button at the bottom.

EMS Service Request Form



<http://emergency.copernicus.eu/>
(open and free access)





COPERNICUS

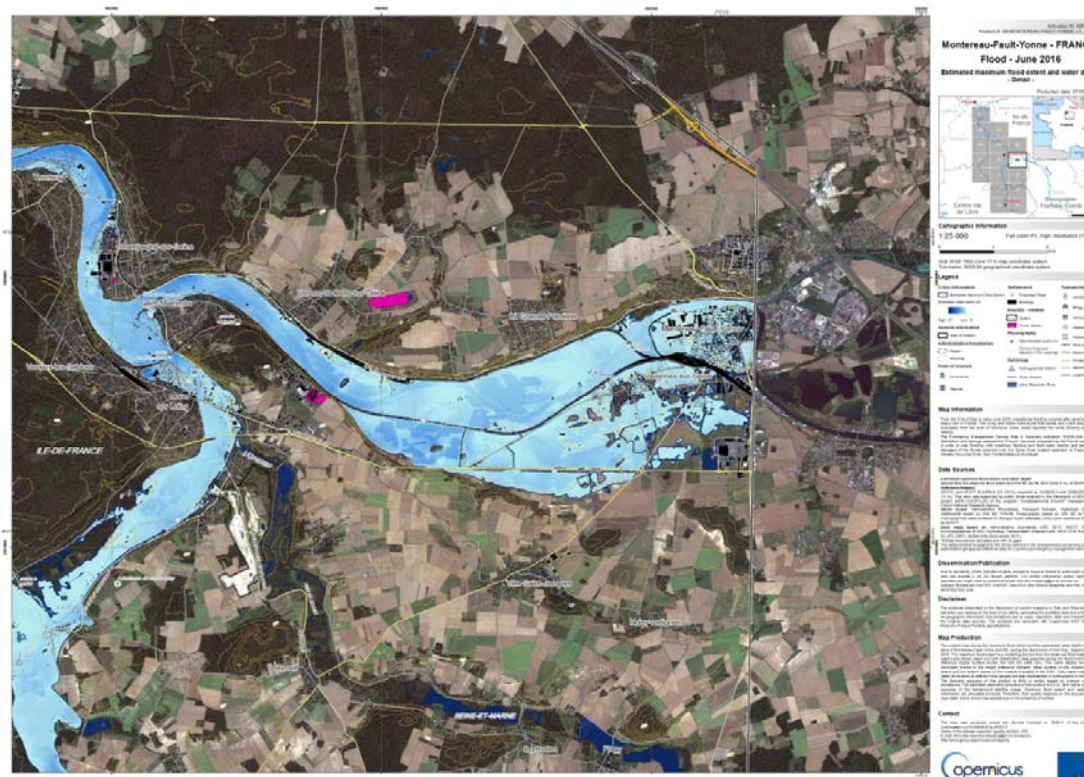
Emergency Management Service

List of EMS Risk and Recovery Mapping Activations

Act. Code	Title	Country/Terr.
EMSN040	Nation-wide asset mapping Finland	Finland
EMSN039	Seismic risk assessment in Croatia	Croatia
EMSN038	Post-disaster situation analyses of flood and landslides in Lima, Peru	Peru
EMSN037	Multiple natural hazards risk assessment for UNESCO in three cities	Chile, Peru, Mozambique
EMSN035	Economic impact of floods on agriculture sector in Centre-Val de Loire region, France	France
EMSN034	Coastal flood risk analysis for population and assets, Portugal	Portugal
EMSN033	Satellite based conflict damage assessment of two selected cities in Libya	Libya
EMSN032	Forest fire damage assessment, Portugal	Portugal
EMSN031	Forest fire damage assessment and landslide risk, Madeira Island, Portugal	Portugal
EMSN030	Ground deformation mapping and monitoring by satellite based multi-temporal DInSAR technique	Ukraine
EMSN029	Forest fire damage assessment - new risks and mitigation	Spain
EMSN028	Flood delineation and damage assessment	France
EMSN027	Monitoring and assessment of local humanitarian recovery construction projects in Somalia	Somalia
EMSN026	Post-disaster assessment of toxic cloud dispersion after an industrial accident in Catalonia/Spain	Spain
EMSN025	Forest fire damage assessment - Planning and Recovery	Greece

40 activations since 2012

EMS Risk and Recovery Mapping example: Post-event impact analysis - Loiret, France 2016



Maximum Flood Extent and water depth





A Copernicus downstream service provider

EUGENIUS (H2020): an European Network of service providers delivering EO derived geo-information for regional territory monitoring and risk management

- Exploitation of Copernicus data, products, and local data
- A common multi-thematic catalog based on complementary skills of the partners:



Agriculture



Water



Forest

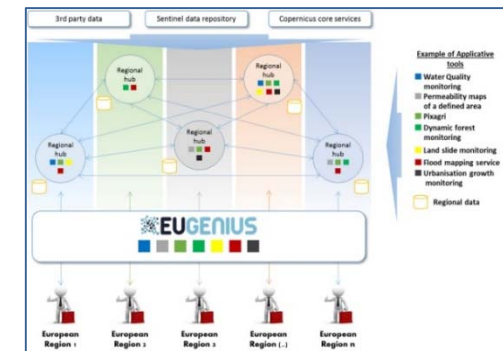
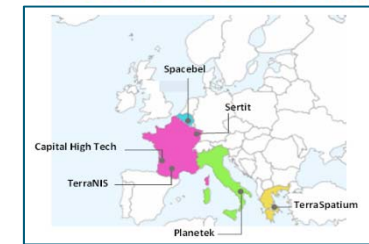


Urbanization



Geophysical & hydrological risk

Pilots for the
French Grand Est Region



Regional Hubs (OGC standard)

<http://www.eugenius-asso.eu/>





Service purpose

Exploitation of Earth Observation Images for

- mapping & monitoring of the development of new urban zones & constructions within authorised built up areas (or cadastral parcels)
- assessment of remaining available spaces in urban planning documents

Service Utility

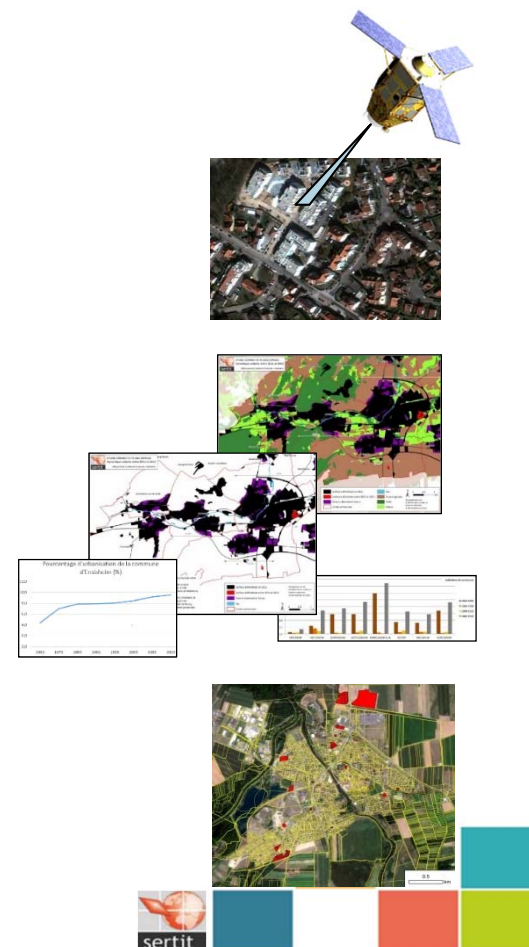
- Urban Zones Development measurement
- Local Urban Plans updating
- Landscape artificialization monitoring / Natural space consumption
- Green Infrastructure diagnostic
- Biodiversity Preservation Indicators

Users

Actors in charge of

- Urban & Land Spatial Planning
- Environmental Management
- Local / Regional Authorities & State Services

The Urbanization Growth Monitoring Service





The Flood Mapping and Monitoring Service

Service purpose

Synergistic exploitation of Earth Observation SAR & Optical Images for

- mapping & monitoring of local & regional flood event (mid size events)
- collecting geo-information related to on-going or historical hydrological events

Service Utility

- Flood situation management
- Flood Event Memory & Flood Atlas
- Flood Risk Prevention
- Flood Modelisation (calibration, validation) & Forecasting
- Water & Environment management (humid areas)

Users

Actors in charge of

- River Basin, Wetlands, Water & Flood Management
- Land Planning & Environmental Management
- Local / Regional Authorities & State Services
- Insurance sector



Date	Surfaces en hectares			
	Superficie N°2	Evolution (%)	Superficie N°1	Evolution (%)
02/05/2010	1154	0	979	0
06/05/2010	1096	-10,27%	955	-4,45%
10/05/2010	698	-23,26%	506	-10,41%
07/06/2010	538	-23,26%	414	-10,41%
04/07/2010	498	-9,85%	384	-10,41%





Actual challenges

A massive data flow to ingest and process, with an unprecedented collection of multi-scale and multi-thematic information to integrate and to disseminate:

- ✓ setting up of adequate storage capacities and adapted processing chain (big data)
- ✓ Data and Information Access Services to put in place (DIAS)

Use of Copernicus data and EO based services to be increased:

- ✓ In the downstream and economic sector, with new transverse services and innovative solutions to be developed, in association to market development support actions (SME solutions / start-ups, boosters, hackathons, ...)
- ✓ In the user communities, with information and training sessions, practical demonstrations and uptake activities to be continued at local, national and trans-national levels combined to communication actions with users practical testimonies.





Thank you for your attention

