

UN COPUOS – 52nd session of the Scientific and Technical Subcommittee



COPERNICUS - an European Achievement

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What is Copernicus?



European Earth Observation System

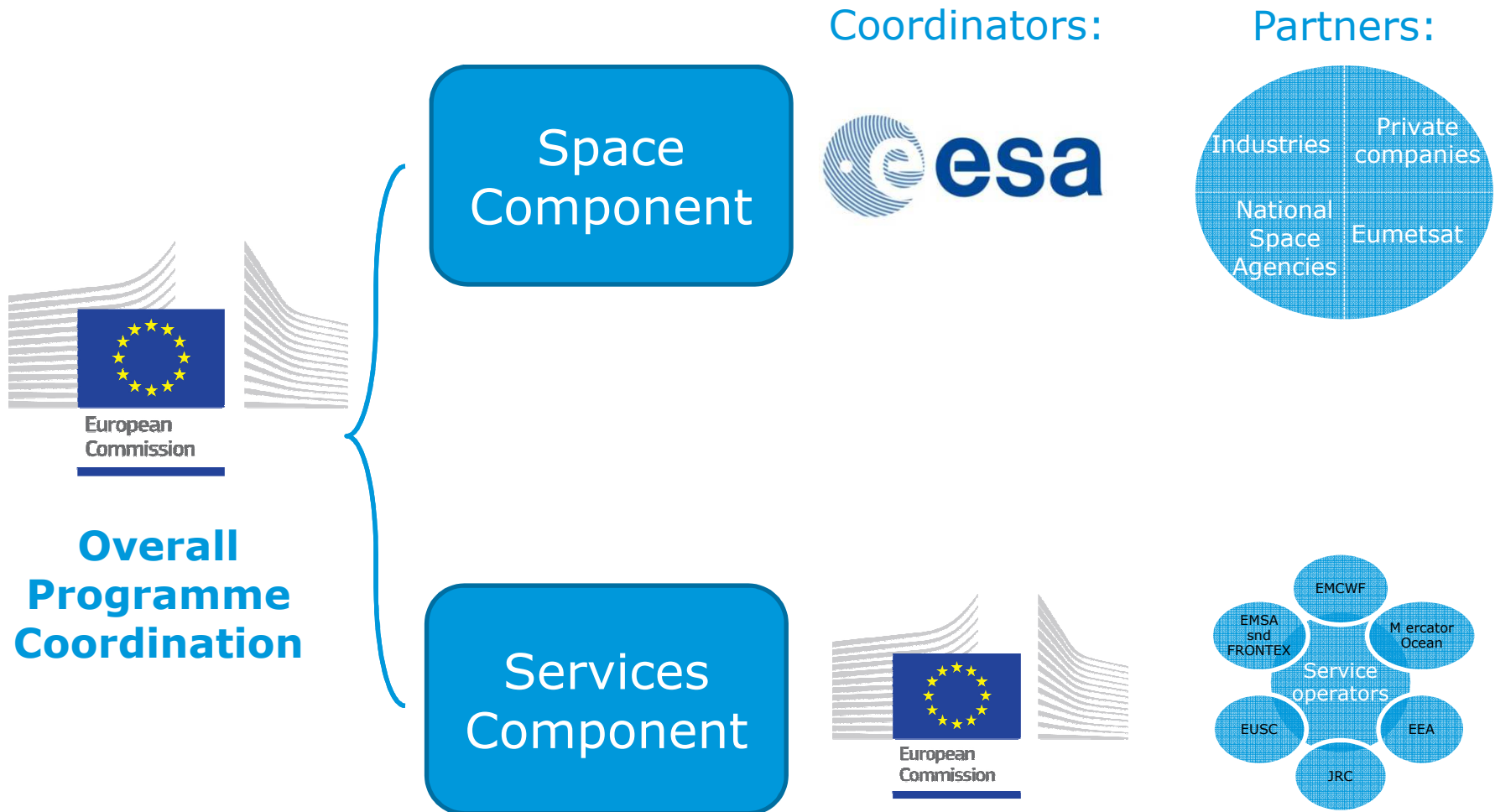
European response to global needs:

- to manage the environment,
- to mitigate the effects of climate change and
- to ensure civil security

European independence, contribution to global system (GEOSS)



Components & Competences



In-situ data are supporting the Space and Services Components

Legal framework of the EU-ESA cooperation for Copernicus



- ❑ The **Regulation**, published in April 2014, establishes the operational EU Copernicus programme, the funds (budget 2014-2020: EUR 4.3 billion) allocated to each Component and the responsibilities of all parties involved.

It forms the legal basis for the establishment of the EU-ESA Copernicus Agreement.

- ❑ The **EU-ESA Agreement**, signed in October 2014, defines the terms and conditions relating to the implementation of the Copernicus Space Component by ESA, e.g.:
 - ✓ **Technical tasks entrusted to ESA within the allocated budget**
 - ✓ **Contracting Authority and procurement rules**
 - ✓ **Reporting to the Commission**
 - ✓ **Assets ownership transfer**

EC Delegated Regulation on Data and Information Policy



It entered into force in December 2013 after several months of negotiation.

This Regulation is in line and reinforces the Sentinel Data Policy approved by ESA MSs in September 2013, which stipulates:

- ✓ **Open** access to Sentinel data by anybody and for any use
- ✓ **Free** of charge data licenses
- ✓ **Restrictions possible** due to technical limitations or security constraints.

Copernicus Contributing Missions data access will follow their owners data policies.

Copernicus Services Component



Copernicus Space Component: the dedicated Sentinels ...



S1A/B: Radar Mission

3 Apr 2014/early 2016



S2A/B: High Resolution Optical Mission

June 2015/2016



S3A/B: Medium Resolution Imaging and Altimetry Mission

end 2015/2017



S4A/B: Geostationary Atmospheric Chemistry Mission

2021/2027



S5P: Low Earth Orbit Atmospheric Chemistry Mission

2016



S5A/B/C: Low Earth Orbit Atmospheric Chemistry Mission

2021/2027



S6A/B: Altimetry Mission

2020/2025

... with a long-term operational perspective



2011

2014

2020

2030

Access to Contributing Missions

S-1 A/B/C/D



S-1 2nd Generation



S-2 A/B/C/D



S-2 2nd Generation



S-3 A/B/C/D



S-3 2nd Generation



S-4 A/B (on MTG)



S-5 Precursor



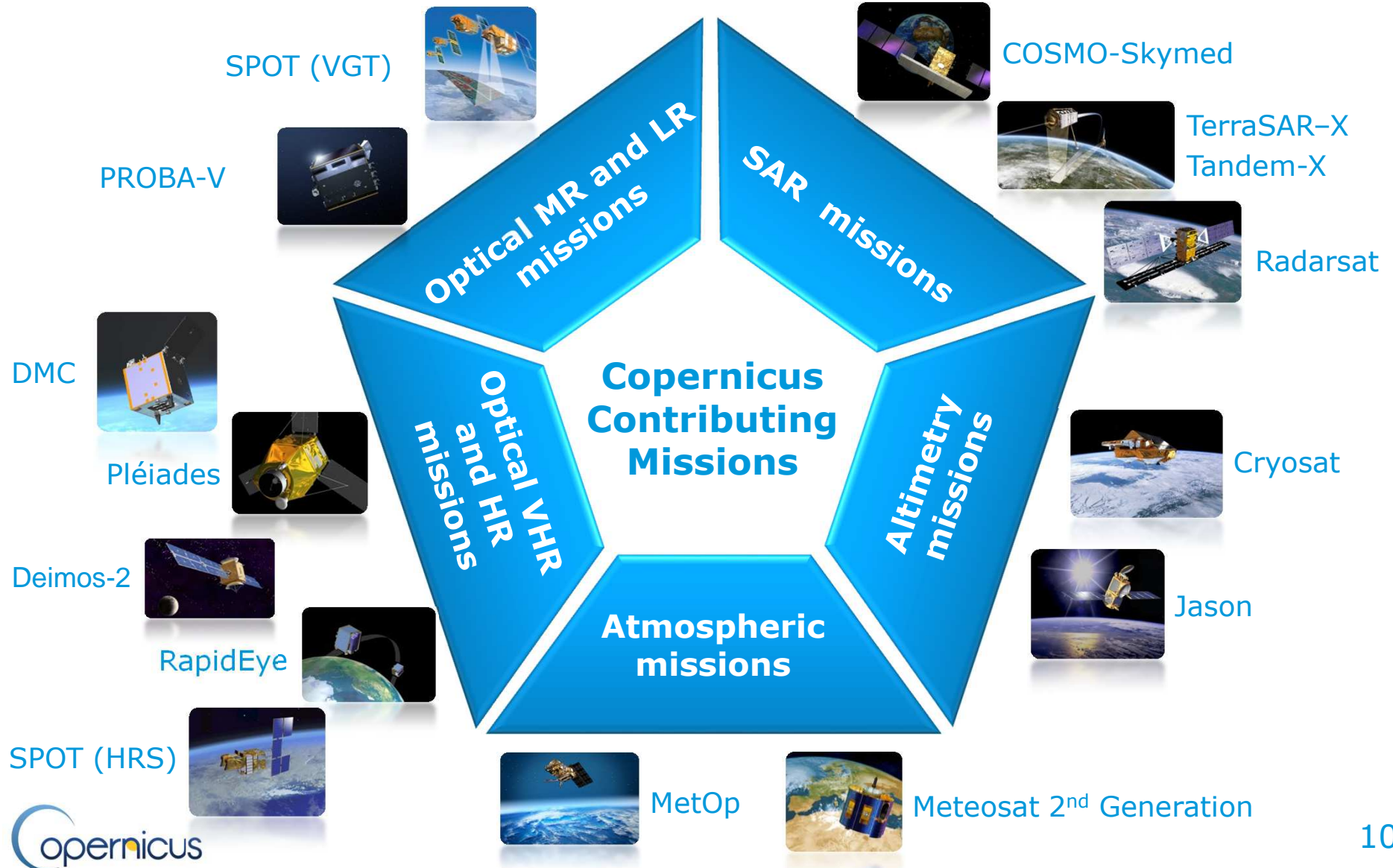
S-5 A/B/C (on MetOp-SG)



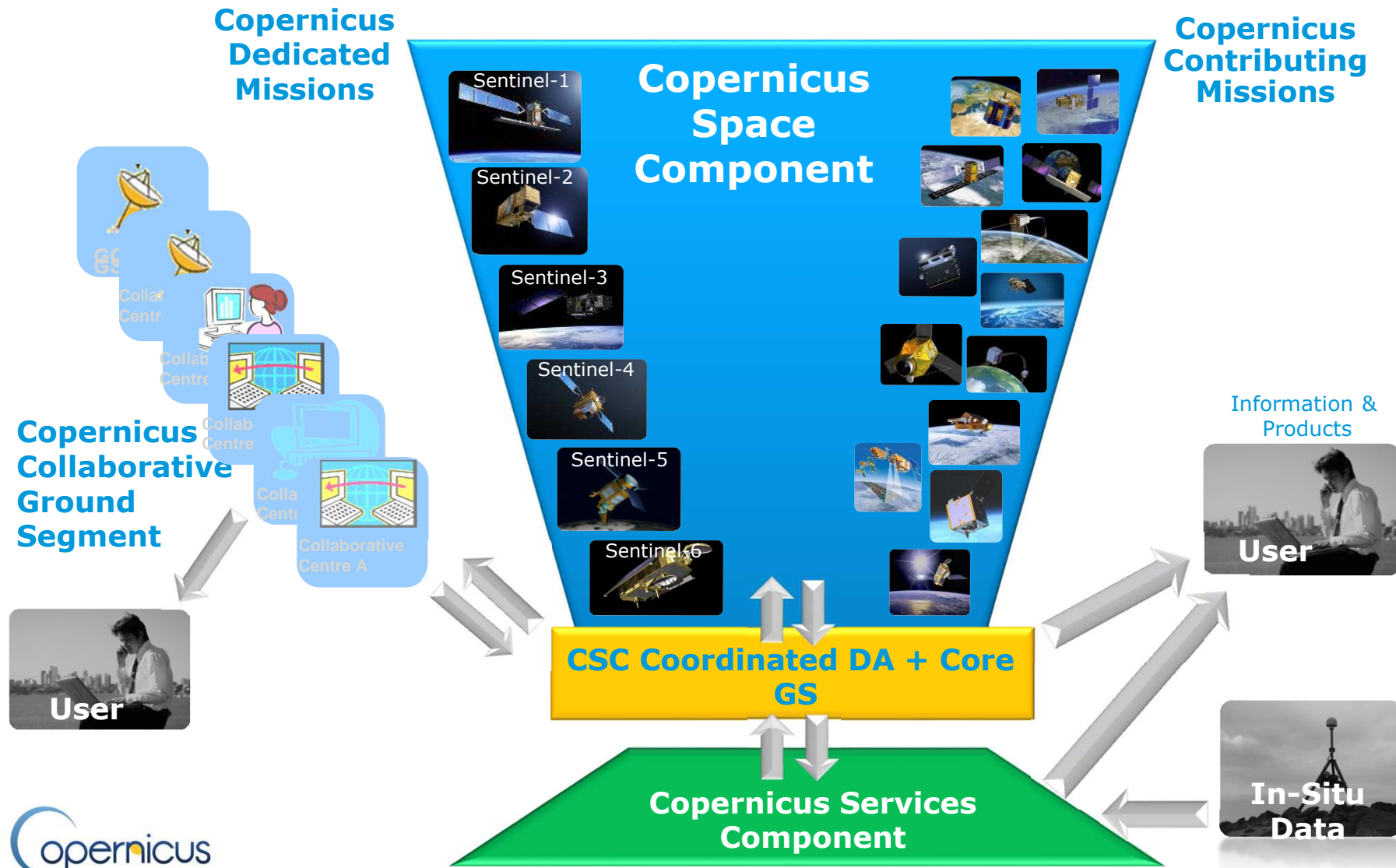
S-6 A/B



Copernicus Space Component: the Contributing Missions



Copernicus Space Component: the Ground Segment ...

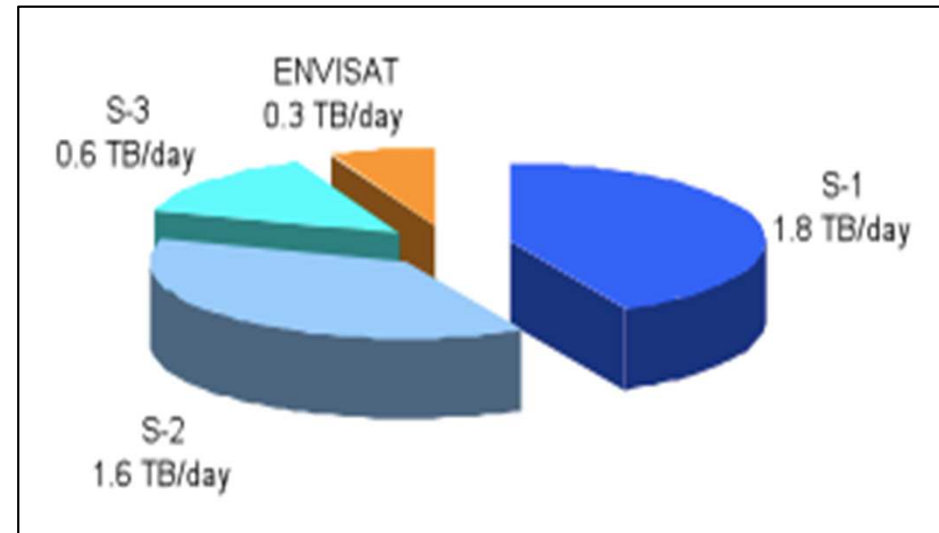


... guaranteeing systematic Earth Monitoring



Sentinel-1, Sentinel-2, Sentinel-3 acquire data

- continuously,
- over much wider swaths,
- at improved resolutions,
- in more spectral bands than any of their 'predecessors'



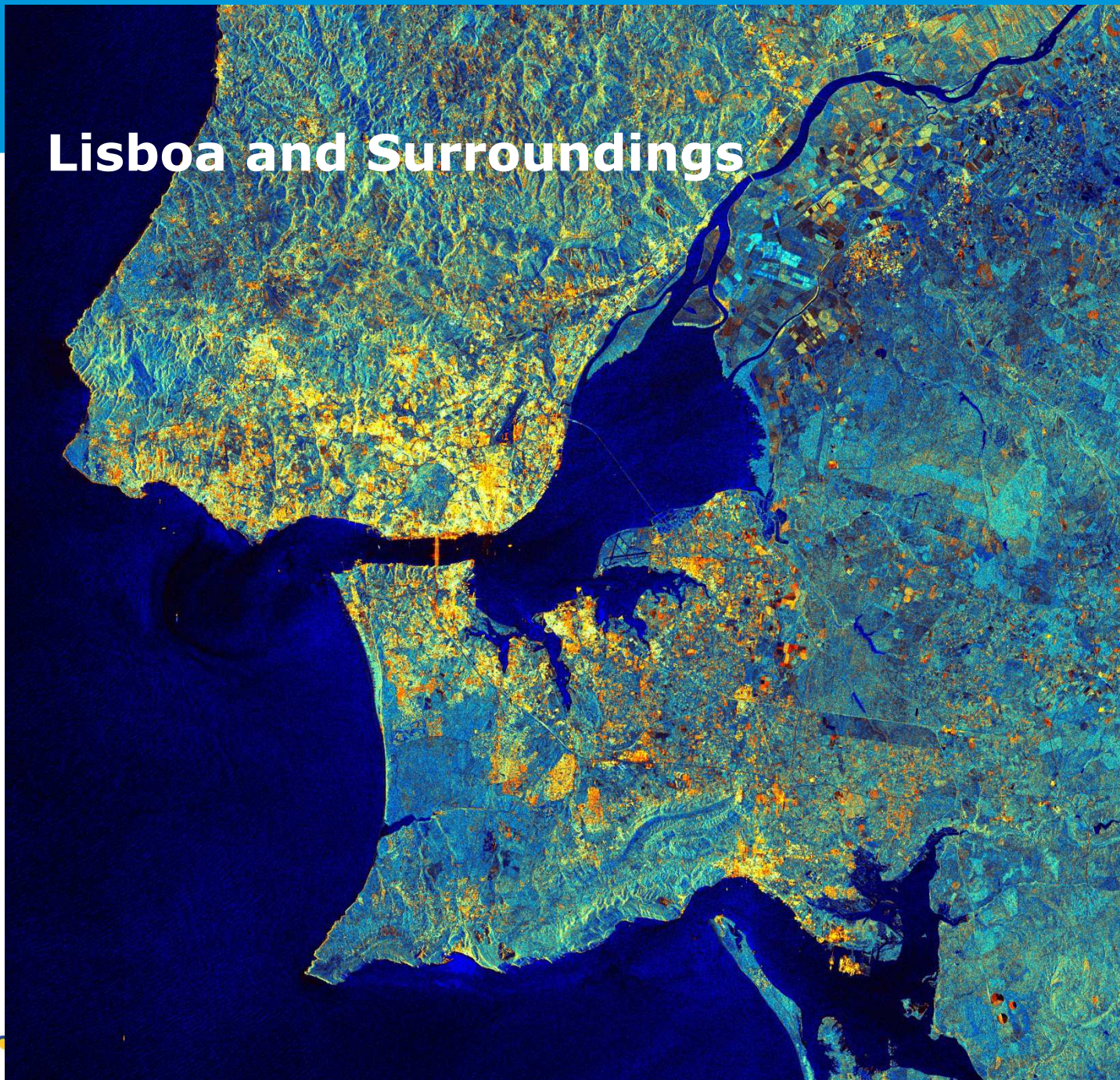
Sentinels-1/-2/-3 (A+B) generate, together, more than **13 times the volume of data** generated by the 10 instruments on board Envisat, the largest EO satellite ever

Copernicus Space Component: current status



- **Funding of GMES/Copernicus by ESA/EU 8 B€ since 2006**
- **Third development segment under way (GSC-3) – ESA funding secured at last ESA Ministerial Council in Dec.'14**
- **Sentinels-1, -2 and -3 operations and procurement of recurrent units C and D (First Generation) covered by current EU MFF**
- **Definition of Second Generation Sentinels to start in 2017, based on user requirements from the European Commission**
- **Next launches: Sentinel 2A and 3A this year, full operational capacity with 2 units of each Sentinel 1,2,3 family in 2017**

Lisboa and Surroundings



Brussels and Surroundings

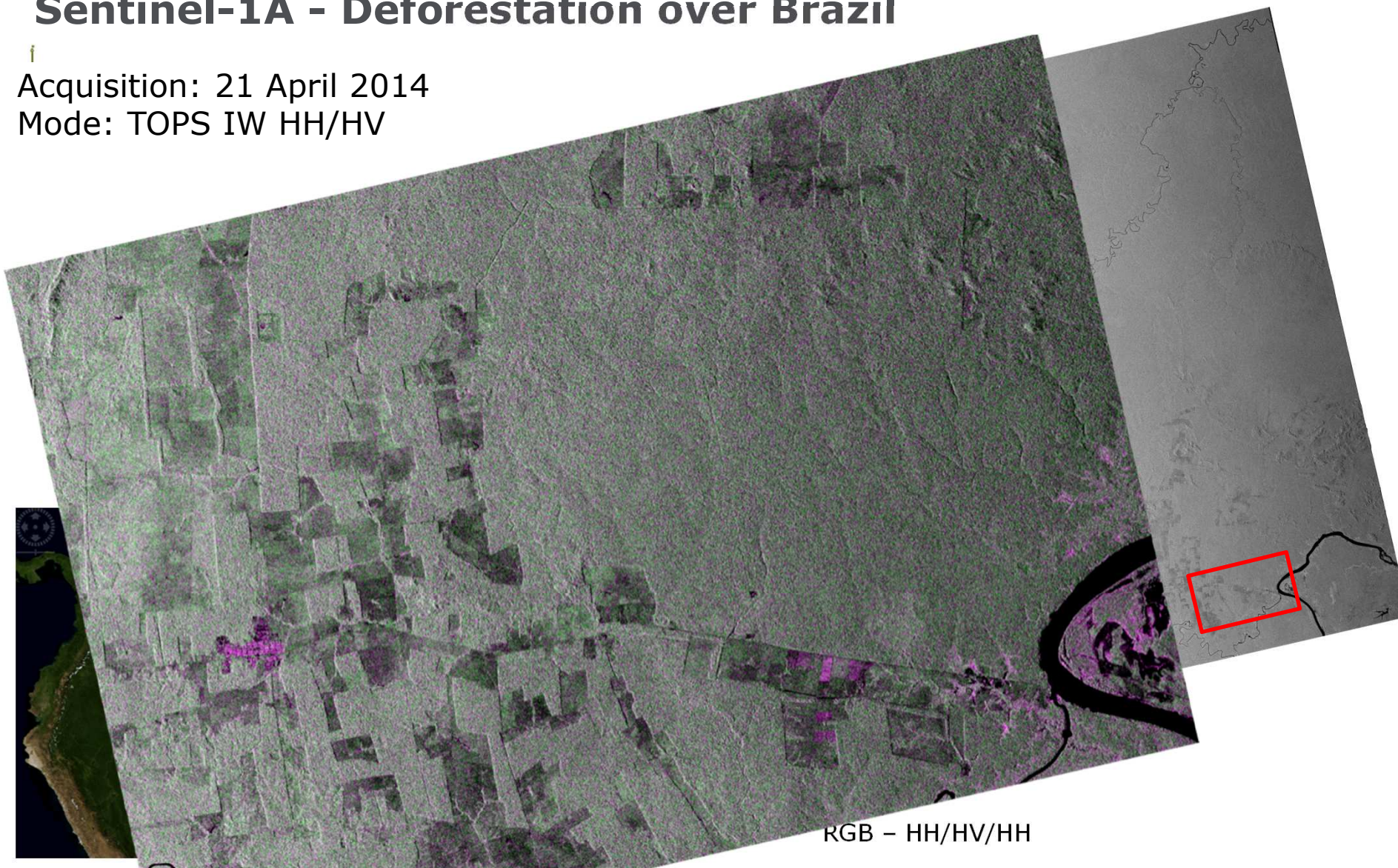


a



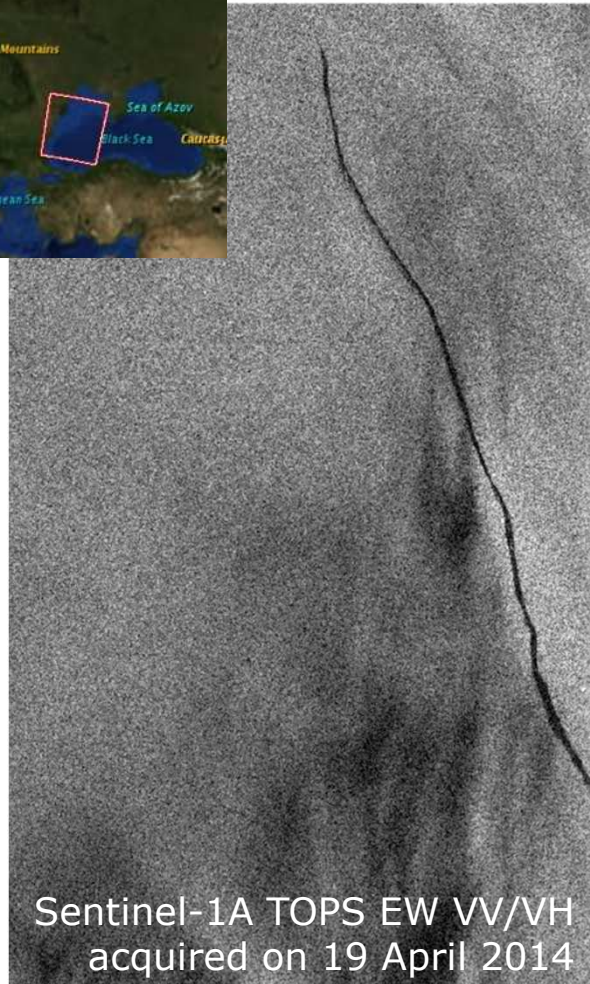
Sentinel-1A - Deforestation over Brazil

Acquisition: 21 April 2014
Mode: TOPS IW HH/HV

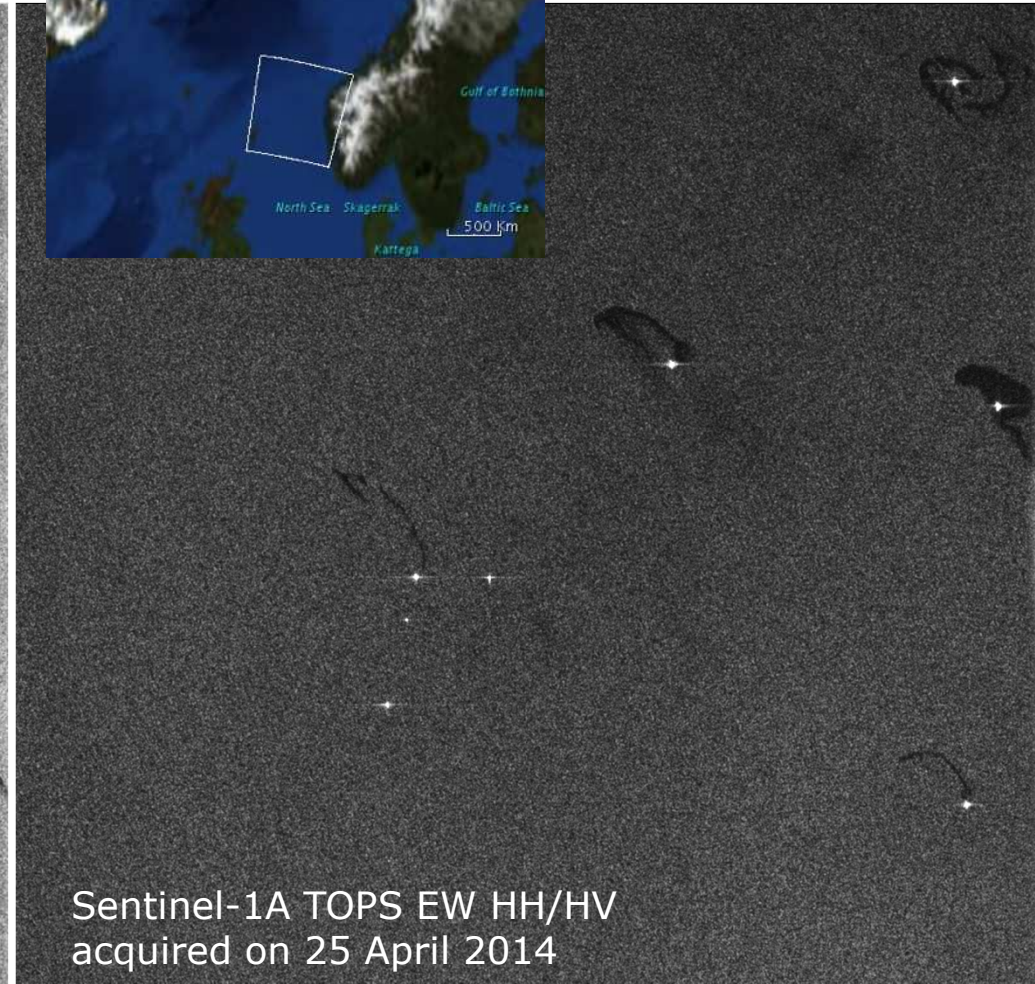


RGB - HH/HV/HH

First Oil Spills Detected by Sentinel-1



Sentinel-1A TOPS EW VV/VH
acquired on 19 April 2014



Sentinel-1A TOPS EW HH/HV
acquired on 25 April 2014

GUIDE number: FF-2014-000058-BIH Activation ID: EMER-GE7
 Product N.: D7/Balaton_v1

Balaton - BOSNIA AND HERZEGOVINA Flood - 13/05/2014 Delineation Map - Detail



Production date: 27/05/2014
 1:22500 Full color ISO A1, high resolution (300 dpi)

0 0.5 1 2 km
 Grid: WGS 1984 UTM Zone 34N map coordinate system
 Tick marks: WGS 84 geographical coordinate system

Legend

| General Information | Hydrology | Point of Interest | Transportation |
|---------------------------|-----------|-------------------|----------------|
| Area of interest | River | Harbour | Primary Road |
| Urban Feature | Stream | Water | Secondary Road |
| Administrative boundaries | Lake | Reservoir | Local Road |
| International boundary | | | |
| Region | | | |

Settlements

| Settlement | Population | Area (km²) | Year (est.) |
|------------|------------|------------|-------------|
| Belatin | 10,000 | 10 | 2010 |
| Macvanski | 5,000 | 5 | 2010 |
| Stari Grad | 2,000 | 2 | 2010 |
| Novi Grad | 1,500 | 1.5 | 2010 |
| Stari Vrh | 1,000 | 1 | 2010 |
| Novi Vrh | 800 | 0.8 | 2010 |
| Stari Vrh | 700 | 0.7 | 2010 |
| Novi Vrh | 600 | 0.6 | 2010 |
| Stari Vrh | 500 | 0.5 | 2010 |
| Novi Vrh | 400 | 0.4 | 2010 |
| Stari Vrh | 300 | 0.3 | 2010 |
| Novi Vrh | 200 | 0.2 | 2010 |
| Stari Vrh | 100 | 0.1 | 2010 |
| Novi Vrh | 50 | 0.05 | 2010 |

Map Information
 On 13 May 2014, heavy storms and widespread flooding hit large parts of Bosnia and Herzegovina, heavily impacting its urban landscape, in particular the region of Dobruša and Zenica. The same users of the maps are Cluster Response Authorities involved in operations.

Data Sources
 Most maps based on Administrative boundaries, LINC 2013, GISCO 2010, Eurotopography, imagery, Transportation features, 2013, COG River, 08 © EULAC 2007, Settlements Coordinates, 2013.
 Satellite imagery (Landsat 5 TM) © 2005 NASA, 16.11 UTC, GSD 30 m provided by the European Space Agency.
 Satellite imagery (SPOT5) © Airbus Defense and Space (acquired on 13/05/2014 08:58 UTC, GSD 2.5 m, 0% cloud coverage), 08:58 UTC, 16.11 UTC, GSD 2.5 m, 0% cloud coverage.
 Data under license from the OpenStreetMap Foundation, Coordinates (approx. 1:10,000), extracted on 21/05/2014, retrieved by ITNACA. Source information is provided in metadata.
 Population data (Lambert 2010) © IUT BATELLE, LLC.
 Choropleth data (Lambert 2010) in pixels, height in meters above mean sea level.
 All data sources are complete and with no gaps.

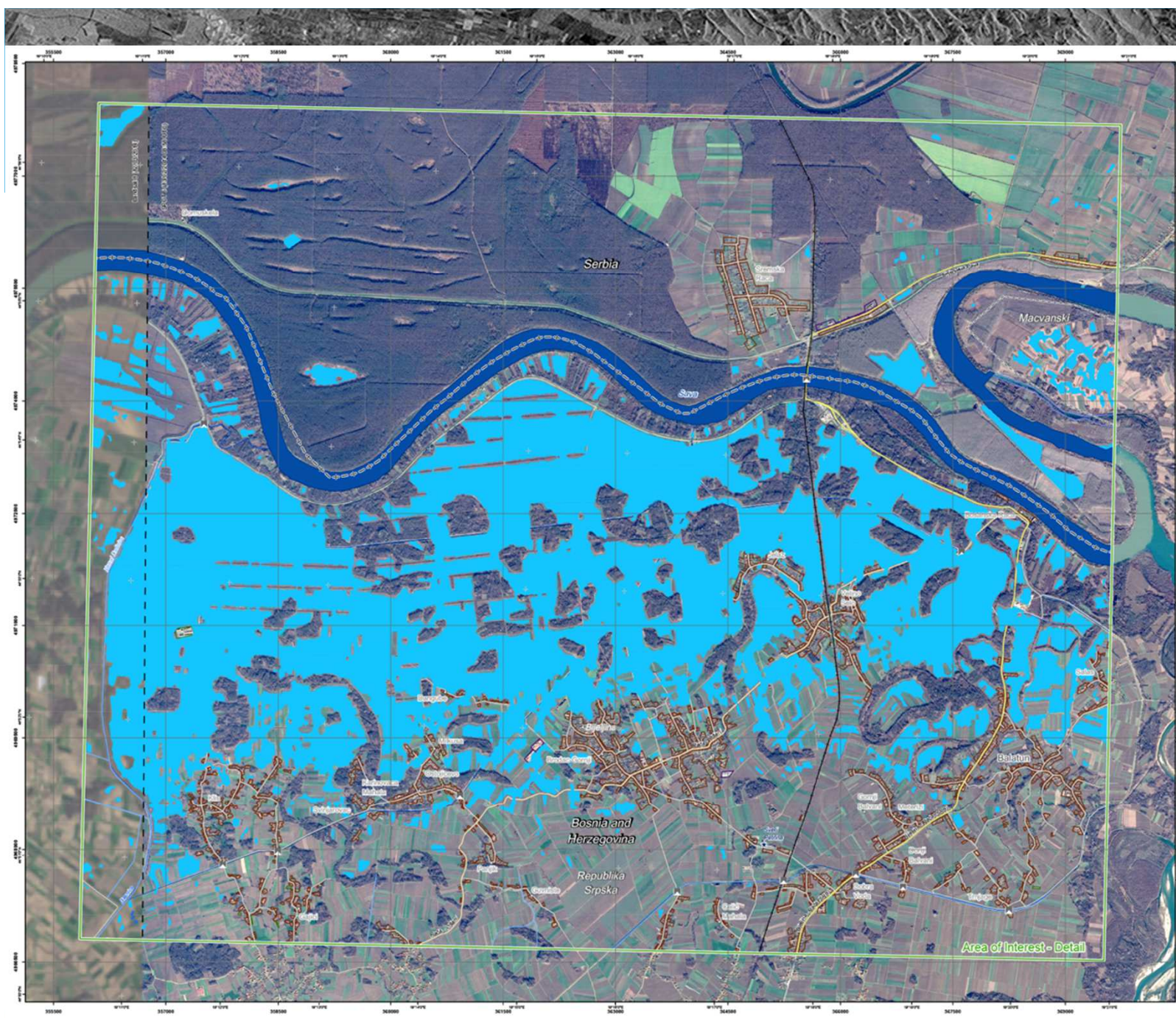
Dissemination/Publication
 No restrictions on the publication of the mapping with:
 Delivery formats are GeoTIFF, GeoPDF, GeoPDF, GeoPDF and vectors (shapefile and KMZ, formats).

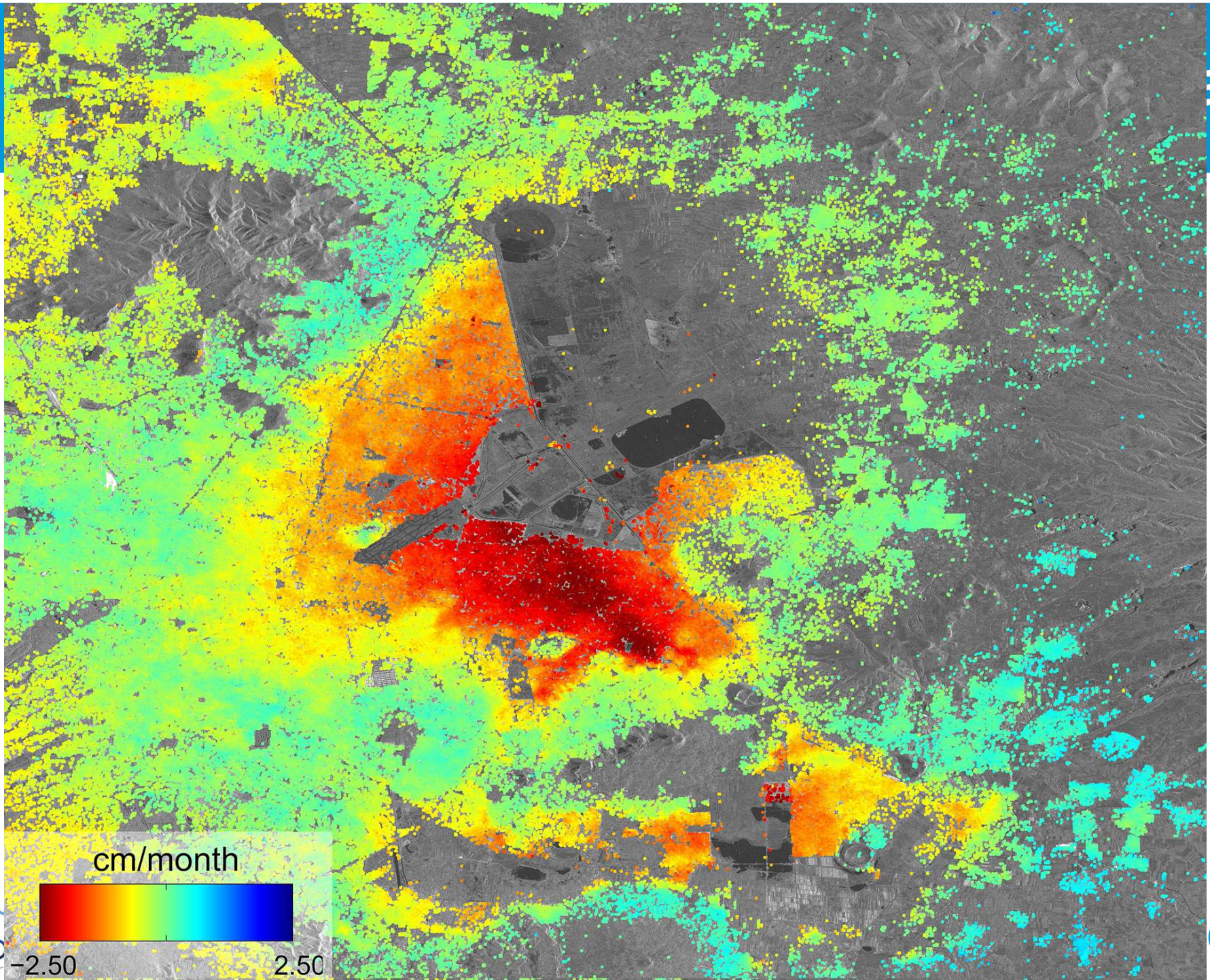
Framework
 The products elaborated in the framework of current mapping in such mode activation are related to the level of our ability, within a very short time frame during a crisis, optimising the available data and information. All geographic information has limitations due to scale, resolution, date and interpretation of the original data sources. The products are compliant with OCHA's Rapid Response Framework.

Map Production
 The present map shows the flood delineation in the area of Balaton (BOSNIA AND HERZEGOVINA).
 The basic geographic features are derived from public datasets, retrieved by means of visual interpretation of pre-event orthorectified imagery from SPOT5 © Airbus Defense and Space (acquired on 13/05/2014 08:58 UTC, GSD 2.5 m, 0% cloud coverage).
 Imagery, imagery, imagery for the delineation of the event have been derived from post-event image Sentinel-1A, acquired on 24/05/2014 16:31 UTC, GSD 10 m provided by the European Space Agency.
 All satellite images have been radiometrically enhanced and compared to the pre-event image.
 The technical accuracy of this product is 0.5 m in GSD or better, from neither technical accuracy of the background satellite image.
 The delineation accuracy of this product is 0.5 m, or better, based on previous experience in using high-resolution SAR for flood extent delineation. Please be aware that the delineation accuracy might be lower in urban and forested areas due to local variations of the analysis technique.
 Map produced on 27/05/2014 by ITNACA under contract 2012/10 with the European Commission. All products are © of the European Commission.
 Names of the rescue industry quality centres: GAF AG (GSD).
 E-mail: nan@ema-gris.eu

Map products available at <http://emergency.opencim.eu/mapping/di-components/EMRAG7>

OCHA Production
 Emergency
 Delineation Map - Detail
 Planning
 Sentinel-1A/EO European Space Agency
 13/05/2014





cm/month

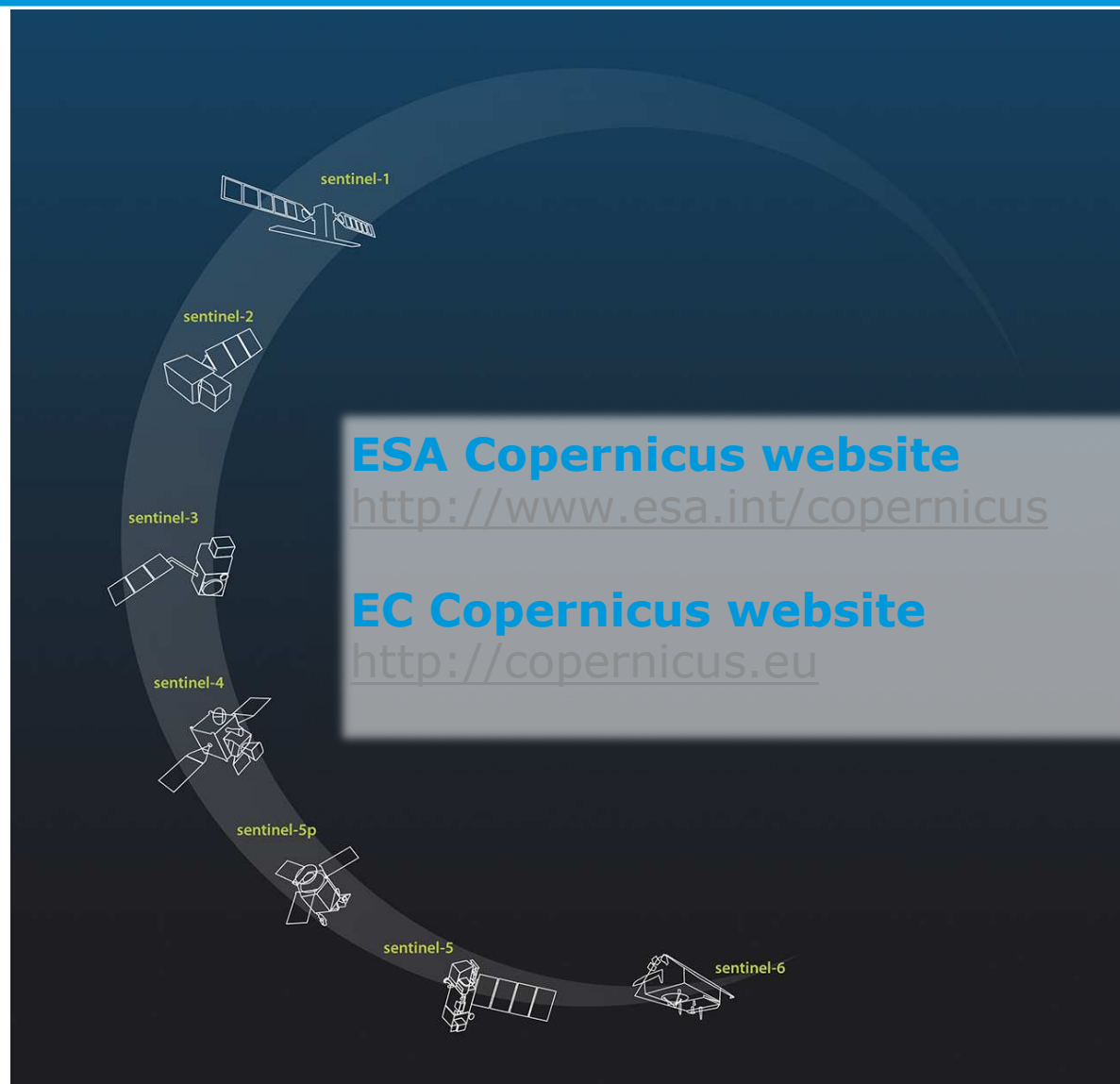
-2.50

2.50

a

0

Interested In More?



The diagram shows a series of Sentinel satellites orbiting Earth. The satellites are labeled as follows from top to bottom: sentinel-1, sentinel-2, sentinel-3, sentinel-4, sentinel-5p, sentinel-5, and sentinel-6. Each satellite is represented by a white line-art icon showing its structure and solar panels. The Earth is depicted as a dark blue arc at the bottom of the orbit.

ESA Copernicus website
<http://www.esa.int/copernicus>

EC Copernicus website
<http://copernicus.eu>