

SWF - Ifri Annual Space Conference, Brussels

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GMES

Global Monitoring for Environment and Security



GMES - Status & Programmatic Challenges

Dr. Josef Aschbacher, Head, ESA GMES Space Office



GMES is the most ambitious operational Earth Observation programme to date.

It will provide global, timely and easily accessible information ...

... in domains such as

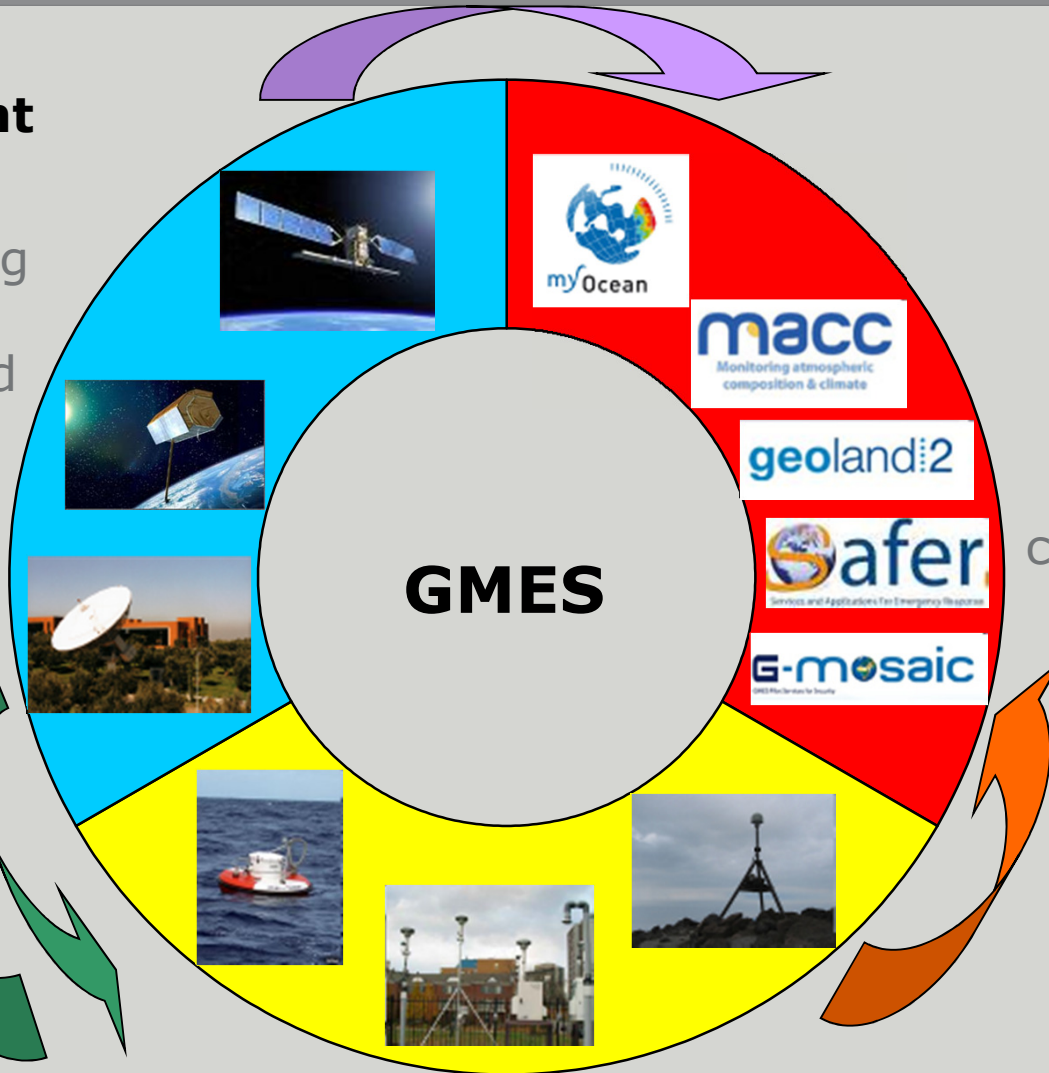
- **Land**
- **Marine**
- **Atmosphere**
- **Emergency response**
- **Climate Change**
- **Security**

GMES Components



Space Component

Sentinels,
Contributing
Missions
and related
Ground
Segment



Services Component

Information
services for
land, marine,
atmosphere,
emergency,
security and
climate change

In-situ Component Land, air and water monitoring sensors



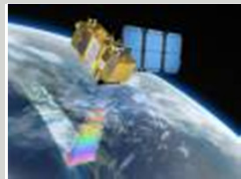
GMES dedicated missions: Sentinels



Sentinel 1 – SAR imaging

All weather, day/night applications, interferometry

2013 / 2015



Sentinel 2 – Multi-spectral imaging

Land applications: urban, forest, agriculture,..
Continuity of Landsat, SPOT

2013 / 2015



Sentinel 3 – Ocean and global land monitoring

Wide-swath ocean color, vegetation, sea/land
surface temperature, altimetry

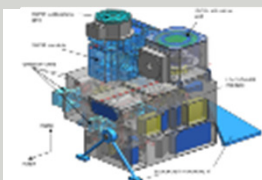
2013 / 2014



Sentinel 4 – Geostationary atmospheric

Atmospheric composition monitoring, trans-
boundary pollution

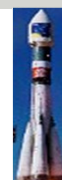
2020



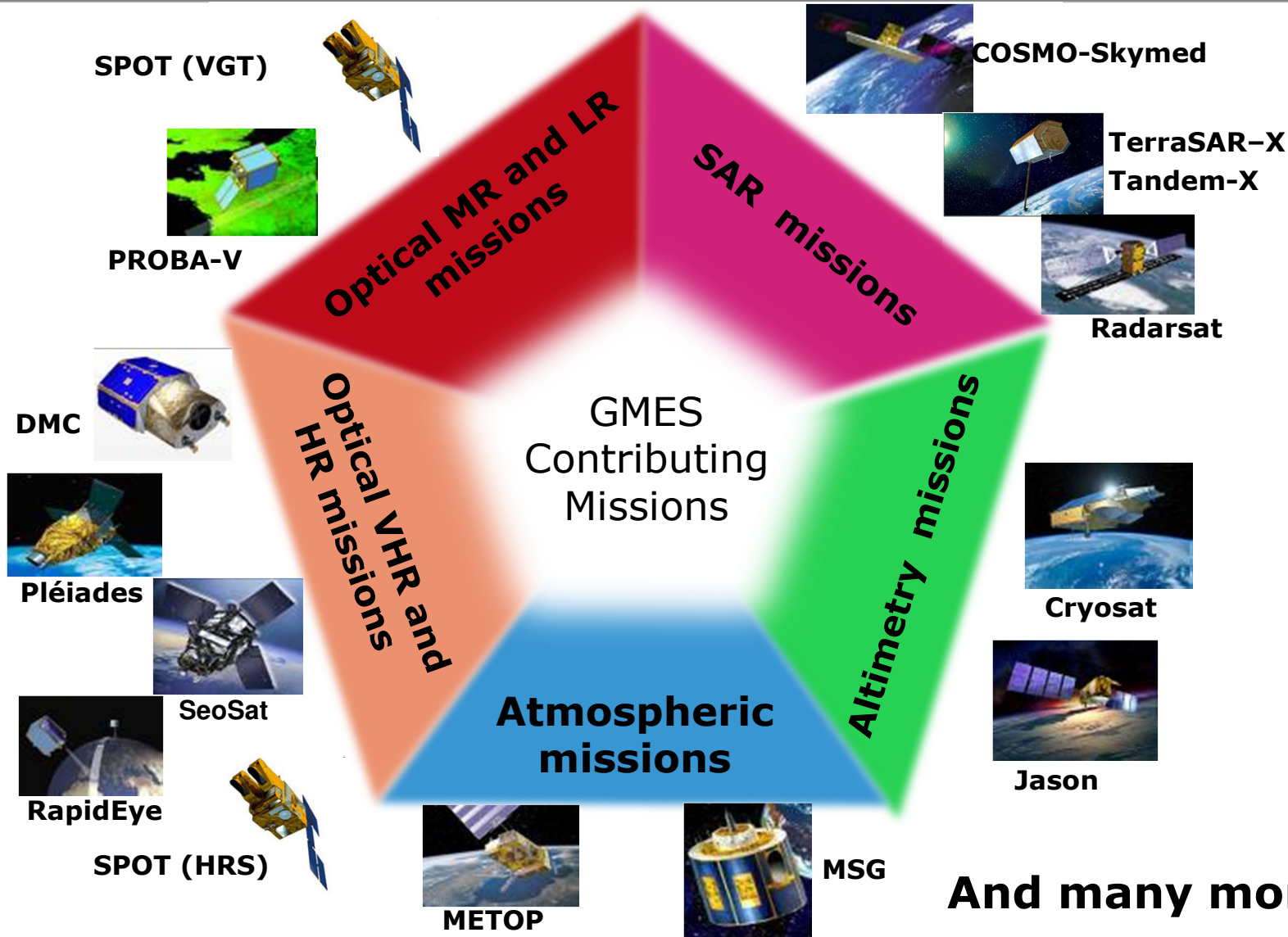
Sentinel 5 – Low-orbit atmospheric

Atmospheric composition monitoring
(S5 Precursor launch in 2015)

2020+



Potential Contributing Missions – Some examples



Available today or planned at European, national and international level

Developed for purposes other than GMES but making important data available for GMES

And many more ...



Users need decade-long term perspectives



GMES Space Component Long-Term Scenario (Preliminary)

2011-2013	2014-2018	2019-2023	2024-2028
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Access to Contributing Missions

Sentinel-1 A/B/C
Sentinel-1 A/B/C 2nd Gen

Sentinel-2 A/B/C
Sentinel-2 A/B/C 2nd Gen

Sentinel-3 A/B/C
Sentinel-3 A/B/C 2nd Gen

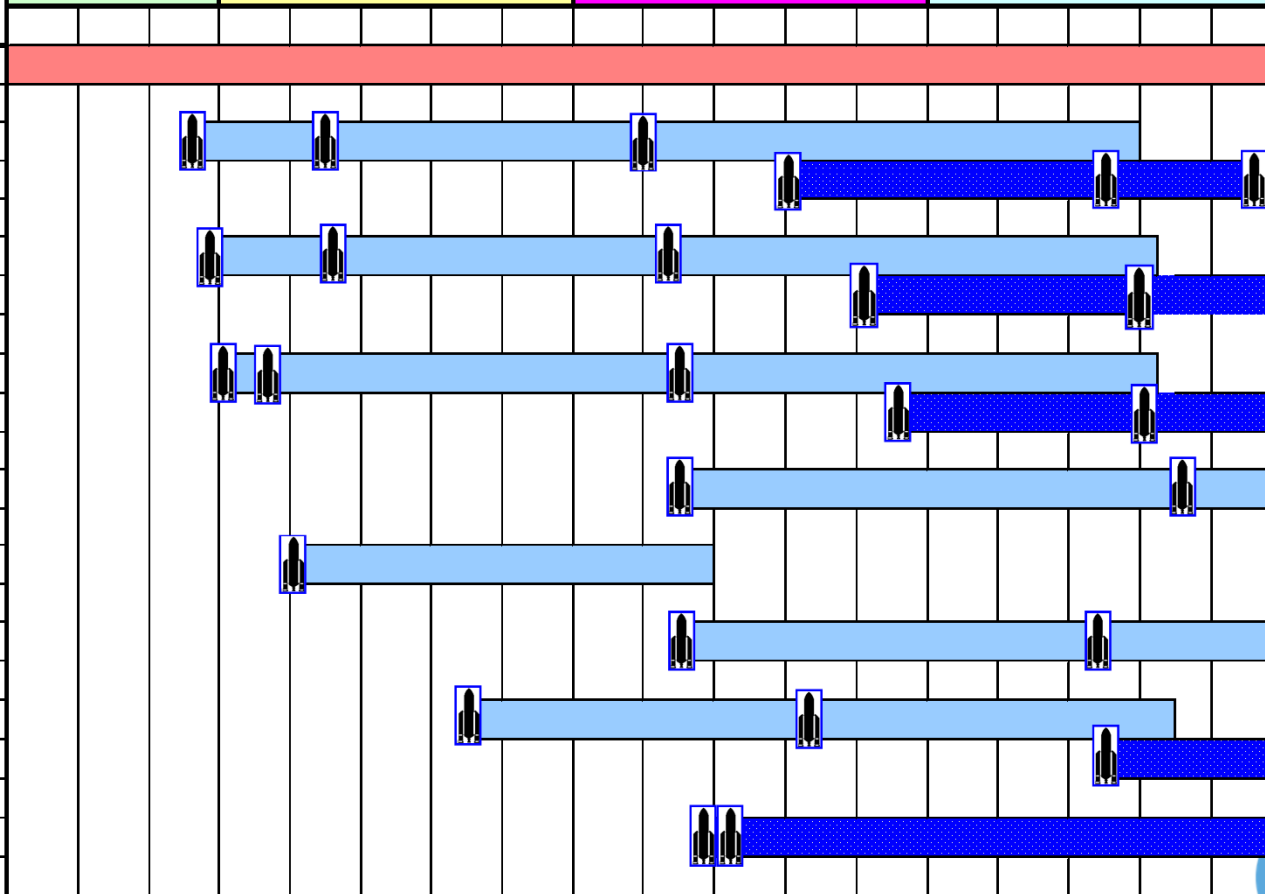
Sentinel-4 A/B (MTG-S1/2)

Sentinel 5 Precursor

Sentinel 5 A/B (MetOp-SG)

Jason-CS A/B
Jason -CS Follow-on A/B

Emerging Observation (GSC Ev.)



GSC build-up

2.3 bn Euro already provided by ESA MSs and EC



A wide-angle photograph of a desert landscape at sunset. The sun is low on the horizon, creating a bright orange and yellow glow. The foreground is dominated by sand dunes with fine, rhythmic ripples. Sparse, dark vegetation is scattered across the dunes.

FULL and OPEN*

* Joint EU/ESA Data Policy Principles adopted by ESA PBE0 in Sep '09, EU approval ongoing

* if not constrained by security or technical restrictions

The GMES Space Component (GSC) build-up is funded, the operational phase not yet



Today, funding is available for the following elements of the GSC:

- Development of Sentinels-1A/B, 2A/B, 3A/B, 4A/B, 5 precursor
- Launch and IOV of Sentinel-1/2/3 A and 5 precursor
- Data Access to national and EUMETSAT missions
- Ground segment to operate Sentinels and provide access to contributing missions
- Sentinel initial operations until mid 2014

The GSC development is largely within schedule and budget, which is a real achievement for a space programme of this size and complexity

At **ESA CMIN-12**, the following is proposed to complete GSC build-up:

- Sentinel-5A, Jason-CS A, Ground segment adaptations, Evolution studies

What is missing (expected through **EU funding**):

- Launch of Sentinel-1/2/3 B units, operation of overall GSC after mid 2014, data access, recurrent units, future evolution



GMES Funding by the EU – An open issue



The Commission's proposal for the EU budget 2014-2020, released on 29 June 2011 (COM(2011)500 final), suggests that

- GMES is funded **outside** the EU Multi-annual Financial Framework (MFF)
- GMES requires **834 M€/year** for its operational phase

The **EC** in its staff working paper (SEC(2011) 868 final) considers that the decision to fund GMES outside the MFF will *"...create high uncertainty for GMES [...], the EU would withdraw from GMES while it has not reached its maturity yet. It would be more than likely that this option **would mean a discontinuation of GMES** as no other partners would be in a position to take over the prominent role played so far by the EU in structuring and supporting – both politically and financially – GMES. **It would lead to sunken costs and past investment would be lost**".*

Also, a key motivation for putting GMES outside the MFF - cost overruns and delays - has not really materialised until now.



Recommendation on GMES funding by the EU



In order to

- guarantee sustainability, which is a pre-requisite for users to engage in GMES
- being able to serve a large variety of users at European and national level,
- being able to launch Sentinels on time to avoid data gaps, i.e. after Envisat and Spot-5
- remain coherent with past political declarations by the EU and EC
- make maximum use of past investments (~3.2 bn Euro)

ESA considers that

- GMES should be **funded by the EU within the MFF 2014-2020**, and
- GMES should be **funded at the level indicated by the EC (834 M/yr)**, which ESA considers sufficient



Governance – “the one who pays, says”



Governance is determined by those who fund the programme. It involves

- **Decision making**
- **Management of programme**
- **Ownership of assets**
- **Data and information policy**
- **Security aspects**

Governance is different for space component, services, in-situ.

ESA is primarily concerned with governance of space component – within an overall governance of GMES



GMES overall is EU-led

- EC leads Services Component
- EEA leads In-situ Component
- ESA leads Space Component

The GMES Space Component (GSC)

- The GSC programme is an optional ESA programme, to which EU contributes
- ESA funds are governed by ESA MSs, i.e. Council, PB-EO, etc.
- EU funds are governed via EU-ESA Agreement - ESA to report regularly to EC; ESA audited by ECA; Joint Monitoring Board as top-level governing mechanism

Future governance of the GMES space component

- Balance of funding for the **operational phase** will determine governance
- GMES has to remain an **EU led programme**, for many reasons
- **ESA** likely continues to be involved in the **GMES Space Component**, typically funding R&D-type of activities
- Despite the funding uncertainty, it is important that **EU and ESA MSs prepare important decisions**, preferably in 2012, regarding
 - **Ownership** of Sentinels
 - Sentinel **data policy**, within an overall GMES data & information policy
 - **Launch dates of Sentinels** (assuming operations funding can be organised)
- GMES is a unique programme. It requires political support today more than ever.

Further information



For further information please visit:

ESA GMES website
www.esa.int/gmes

EC GMES website
www.ec.europa.eu/gmes

