

# **European Space Activities - “Benefits for the Society”**

**European Interparliamentary Space  
Conference**

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# Main topics

- **EU & Space - some political perspectives**
- **The EU Space Research Programme**
- **Global Monitoring for Environment and Security (GMES)**
- **Research in Strengthening Space Foundations**
- **International Cooperation**
- **New Technologies in Space Research**



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# A New Decade: 2010-2020

## 1. Political background

- President Barroso's second term of office
- Entry into force of the Lisbon Treaty
- Reinforced institutions of the EU
- Article 189 of the Treaty: EU is given the power to establish a 'European space programme'
- Establish 'appropriate relations with ESA'



# A New Decade: 2010-2020

## 2. Strong link to the Commission's main programme 'Europe 2020'

- 'Smart, sustainable and inclusive growth'
- Developing an economy based on knowledge and innovation
- Investing 3 % of GDP in R&D (EU at present: 2%, US: 2.6 %, Japan: 3.4 %)
- Developing an effective space policy to address some of the key global challenges



# A New Decade: 2010-2020

## 3. Priorities for future programmes

- Galileo
- GMES - Climate change
- Space and Security (including SSA)
- Space exploration

## 4. Move from research to operations

- Achieved for Galileo
- In the pipeline for GMES  
(GMES Regulation published in OJ L 276 of 22/10/2010)



# A New Decade: 2010-2020

## 5. Factors for success

- **New multi-annual financial framework to be agreed between Commission, Council and European Parliament**
- **Commission's proposal: 5+5 years**
- **Stable budgetary conditions: 2014 -> 2024**
- **Rebalancing between spending blocks, i.e. agriculture, regional aid and research**



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# Space in the EU Research Framework Programmes

## 7th Framework Programme for research and development - FP7 (2007 – 2013)

- About €1.4 billion over 7 years
- Two main areas of research:
  - Global Monitoring of Environment and Security - GMES
  - Strengthening Space Foundations



# EU – ESA

## Who does what in Space?

**GMES services**

**Galileo services**

**Enabling  
technologies**

**Grants – open to  
3rd countries**

**GMES satellites**

**Galileo satellites**

**Applied  
technologies**

**Procurement - in  
ESA member states**



# EU-ESA Coordination

- **EU-ESA Framework Agreement**
- **EU-ESA Delegation Agreement**
- **EU-ESA Joint Monitoring Board**

**EU attends numerous  
ESA bodies, e.g.**

- **The ESA Council**
- **The Programme Board  
Earth Observation**
- **The Industrial Policy  
Committee**

**ESA attends numerous  
EU bodies, e.g.**

- **The FP7 Programme  
Committee**
- **The GMES Programme  
Committee**
- **The Space Advisory  
Group**

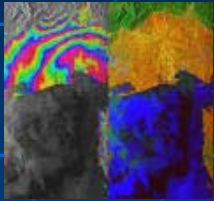


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# GMES: dedicated space infrastructure



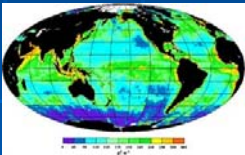
## Sentinel 1 – SAR imaging (radar data) (2011)

- All weather, day/night applications, interferometry
- successor of ENVISAT



## Sentinel 2 – Multispectral imaging (2012)

- for land applications, e.g. urban, forest, agriculture
- successor of SPOT, Landsat



## Sentinel 3 – Ocean & Land monitoring (2012)

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



## Sentinel 4 – Geostationary atmospheric (2017)

- Atmospheric composition monitoring, trans-boundary pollution

## Sentinel 5 – Low-orbit atmospheric (2019)

- Atmospheric composition monitoring



# Five GMES services

## Five FP7 Collaborative Projects funded



Atmosphere: **MACC**



Emergency Response: **SAFER**



Land: **geoland2**



Marine: **MyOcean**



Security: **G-MOSAIC**



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# Strengthening Space Foundations

- Focus on **upstream** aspects, *i.e.*:
  - innovative launch/propulsion technologies
  - Space science and exploitation of science data
  - Space technologies and components
- Open to **international cooperation**







# PRoVisG



- **Planetary Robotics Vision Ground Processing**
- **Boosting robotic vision for planetary exploration**
- **Electronic eyes and ears lead the way**
- **1 August 2008 – 39 months**
- **Partners from Russia and Ukraine**
- **University of Ohio and NASA JPL**



# FOSTERNAV



- **Flash Optical Sensor for Terrain Relative Robotic Navigation**
- **Improving the accuracy and robustness of spacecraft position and attitude control**
- **Landing softly and precisely, placing scientific payloads on extraterrestrial bodies**
- **Successful proposal from the 3rd Call**
- **Under negotiation**

# European Space Situational Awareness – SSA

- Develop a **capability** for the monitoring and surveillance of the space infrastructure and of space debris
- **Space weather:** impact on telecom infrastructure, power transmission, air transport etc.
- Active **debris removal** via laser cannons, solar sails or electromagnetic tethers



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# Opportunities for third countries to participate in FP7

- Space is a **global** endeavour
- **Participation in the above areas** is possible for researchers from all countries
- The active participation of third country partners represents an **added value to our programme**
- Strong focus on cooperation with **space faring nations** like US, Russia, Japan
- Also **emerging space powers** like China, India, South Africa, Brazil



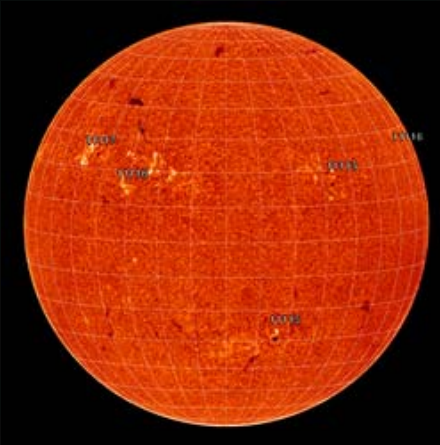


# International participation in Space Calls

**Examples** for successful proposals in Space Science and Technology :

- **LIROC** – Laser ignition for rocket engines
- **BIOSMHARS** – Bio-contamination specific modelling in habitats related to space
- **DEORBITSAIL** – Deorbiting with solar sails
- **PLASMON** – Modelling of Earth's plasmasphere, space weather
- **AFFECTS** – Advanced Space Weather Forecast for Ensuring Communications
- **COMESSEP** – Coronal mass ejections, forecasting space weather impact



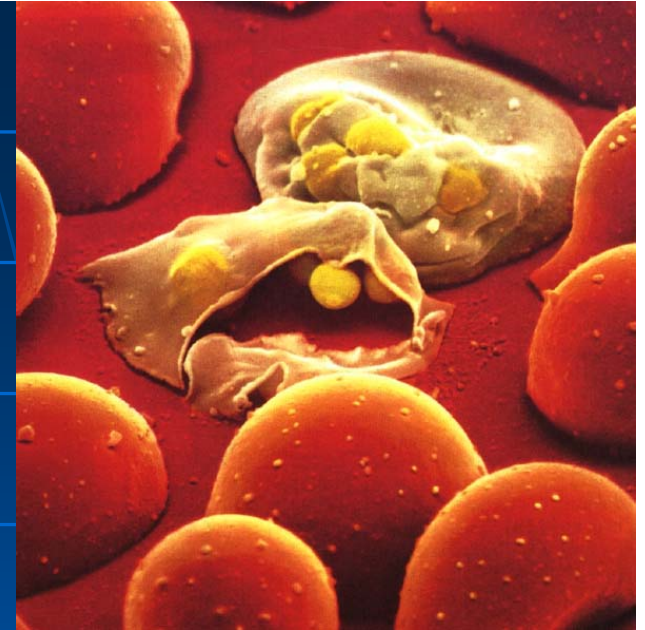


## **AFFECTS – Advanced Space Weather Forecast for Ensuring Communications**

- **Objective:** to analyse and model the Sun-Earth Chain of effects on the Earth's ionosphere and their impact on communication systems
- **Partners:** University of Göttingen, NOAA, Belgium, Norway and Ukraine
- **Access to NASA and NOAA space weather data**
- **I-Phone application: Solar Monitor**
- **Under negotiation**

## **Malareo: Earth Observation in Malaria Vector Control and Management**

- “The goal is to halve malaria mortality in Africa by 2010.” (WHO, 2008, Status Report on Malaria in the African region)
- Develop technology and implement EO capacities in malaria **vector control and management** programs (using data on meteorology, moisture, small water bodies, wind directions ...)
- Installation of an EO monitoring cell that will support the daily work of the national malaria control centres





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# Topics in the 4th Call for Proposals

Focus on **upstream** aspects, *i.e.*:

- Innovative launch/ **propulsion technologies**
- Exploitation of mission data
- **Space exploration** technologies (robots, access to planetary surfaces)
- Prevention of impacts from collision with **Near Earth Objects** (possibly with US; RU)
- Access to space for small scale research missions (e.g. **cube- and nanosats**)

**All open to international cooperation**

The End



# Thank you for your attention

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[http://ec.europa.eu/enterprise/space\\_research/index\\_en.htm](http://ec.europa.eu/enterprise/space_research/index_en.htm)

