



ROMANIA



European Interparliamentary  
Space Conference (EISC)

ROMANIA 2016

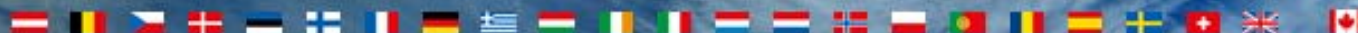


# Space and Security

## #SPACE4.0

Jan Wörner  
European Space Agency

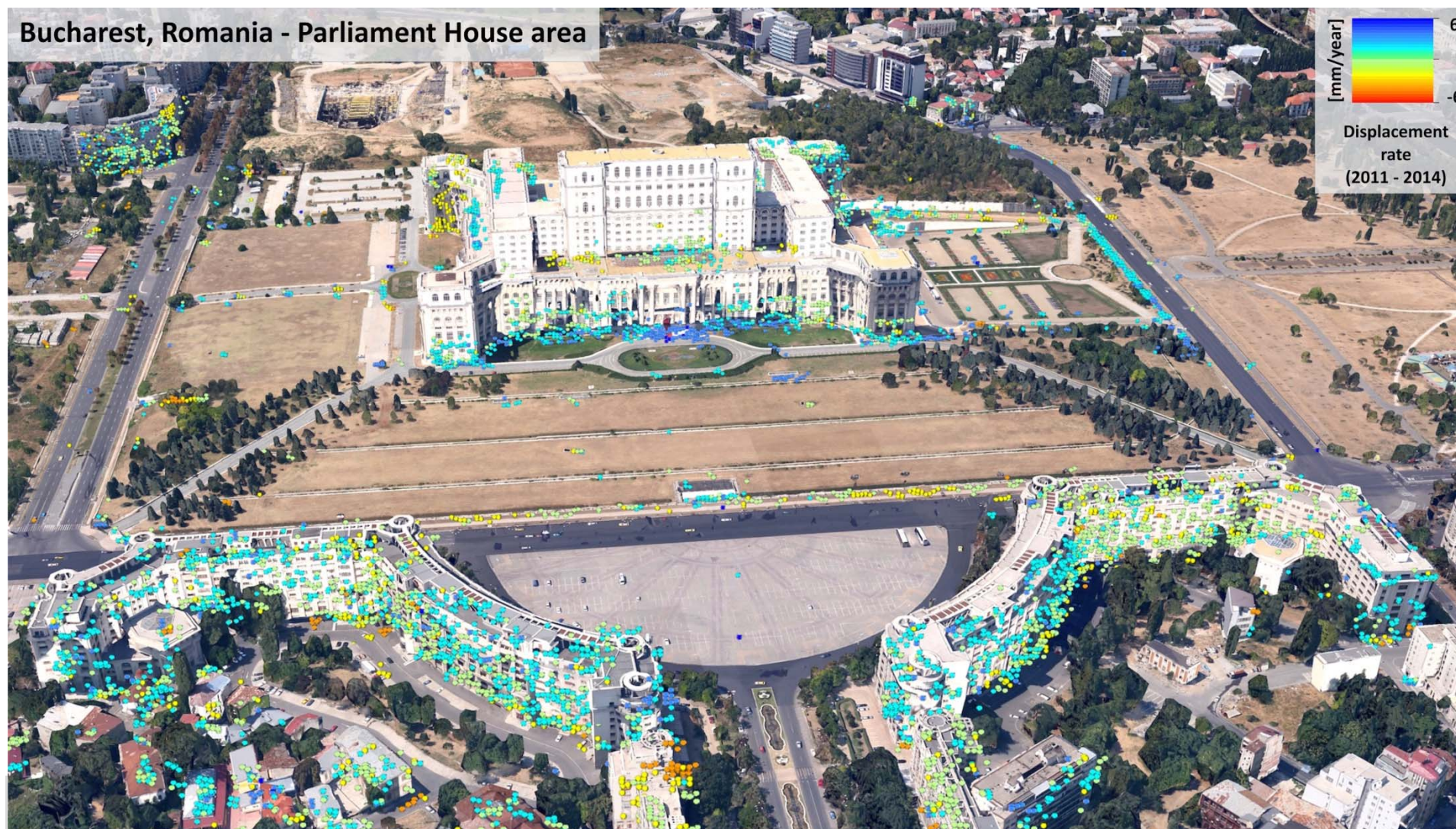
ESA UNCLASSIFIED - For Official Use



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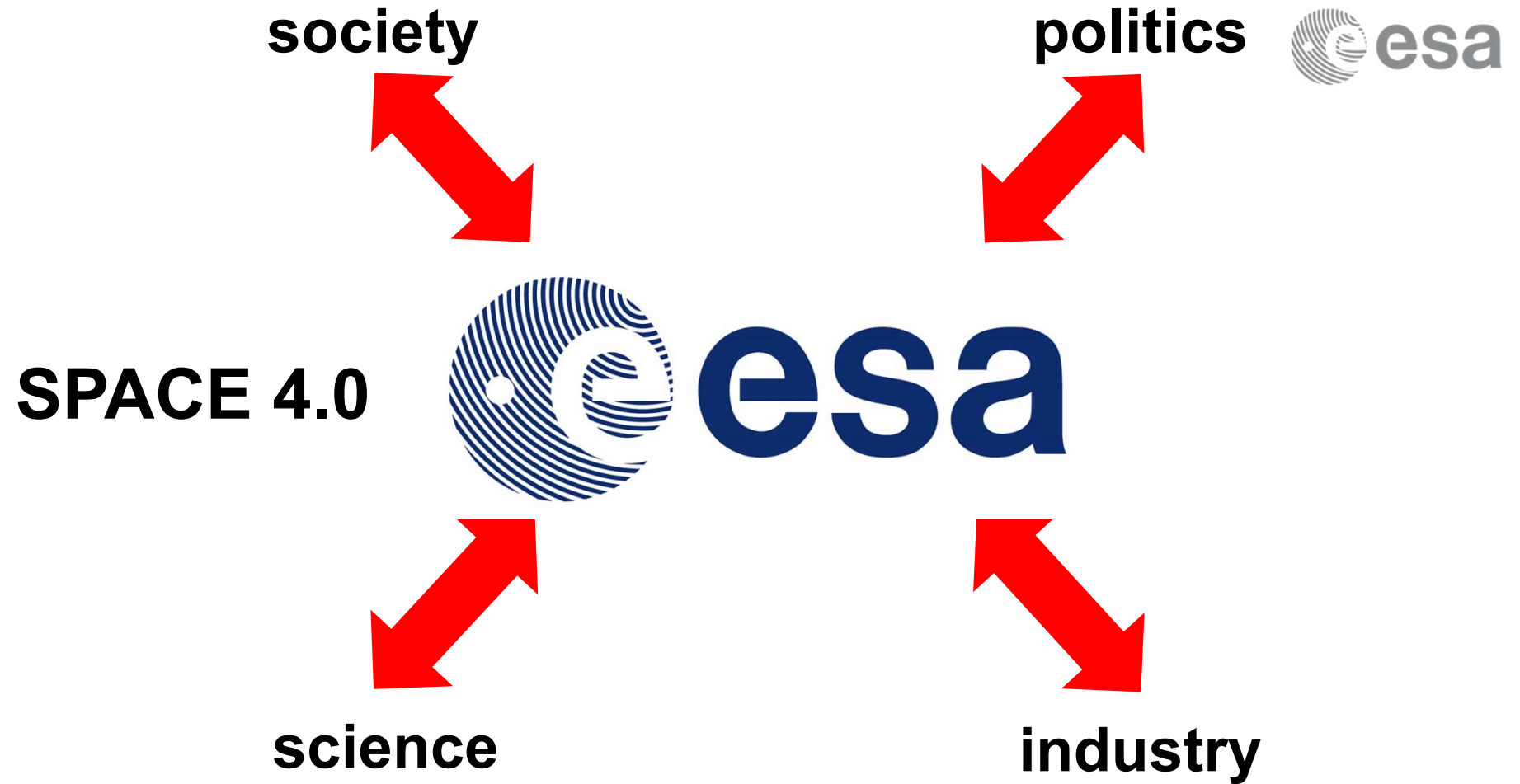
Bucharest, Romania - Parliament House area











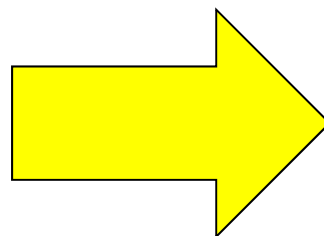
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## European Union



## United States of Europe



→ **United Space in Europe!**





**European identity, spirit and cohesion**



**Integration of space  
into European society  
and economy**

**Globally competitive  
European space  
sector**

**European autonomy in  
accessing and using  
space**



**Excellence in space science and technology**





goals, objectives



**VISION(S)**

Projects, Activities  
Roles and Tasks



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Common European Goals

Joint statement EC-ESA



specific  
ESA-objectives



specific  
EU-objectives

programmes/projects



programme implementation





security



A large yellow arrow with a blue outline, pointing from left to right. Inside the arrow's tail section, the words 'Security', 'Safety', 'Health', and 'Freedom' are listed vertically.

Security  
Safety  
Health  
Freedom

Recognition of  
importance only in  
case of deficits...





## **Space and Security**

- **Communication**
- **Observation**
- **Navigation (Galileo PRS...)**
- **Electronic Intelligence**
- **Space Traffic Management**
- **Air Traffic Monitoring**
- **Cyber-Security**
- **...**



# Seamless Chain of Innovation



Invention → Missions → Innovation



basic research    applied research    technology development    projects missions    market public appl.



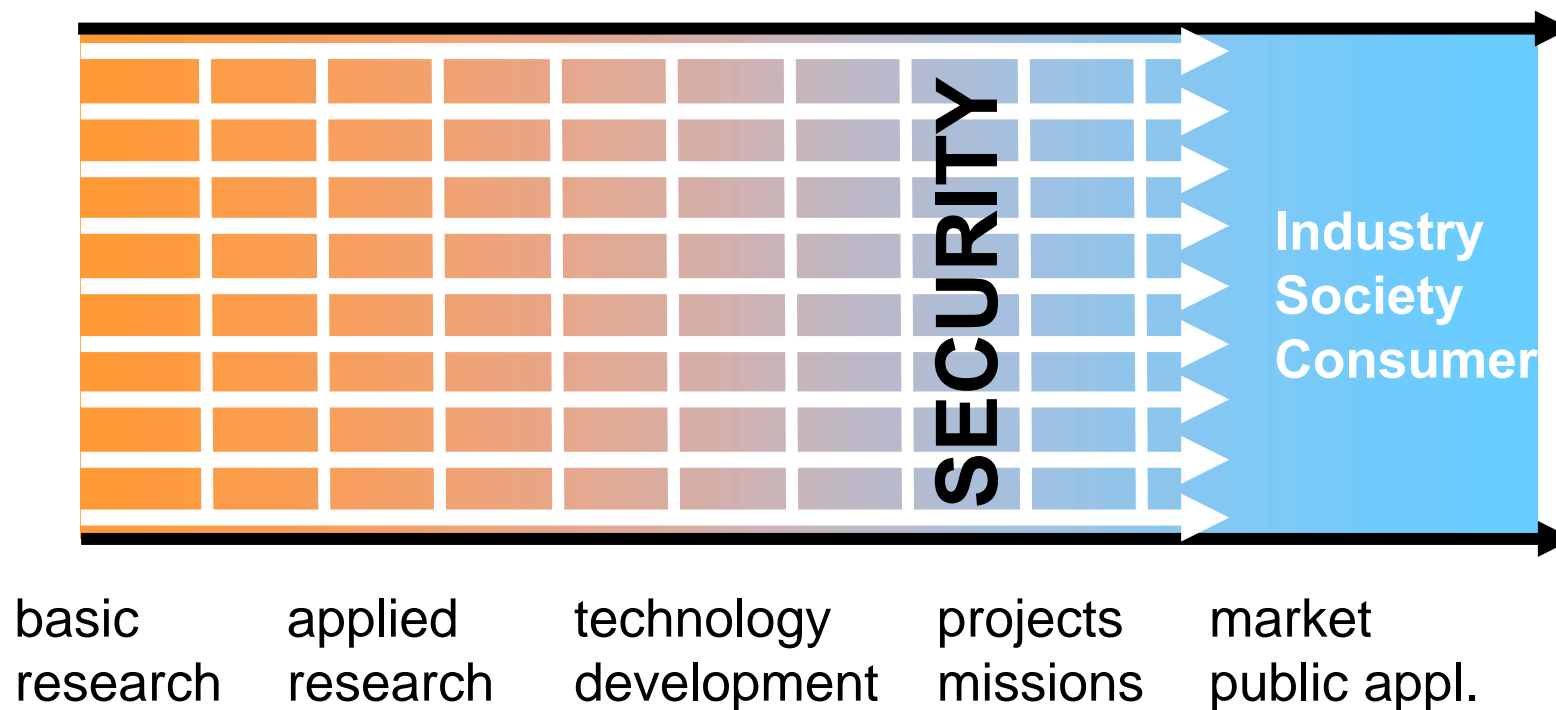
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# Seamless Grid of Innovation



Invention → Missions → Innovation



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# Security

→ change of global security demands

- Terrorism Worldwide
- Regional Military Conflicts
- Piracy
- Asymmetric Conflicts
- Cyber-Crime
- Natural and Man Made Disasters
- Migration
- Food Security





protection of critical infrastructures



crisis reaction and -management



# ESA: Space and Security



in Space

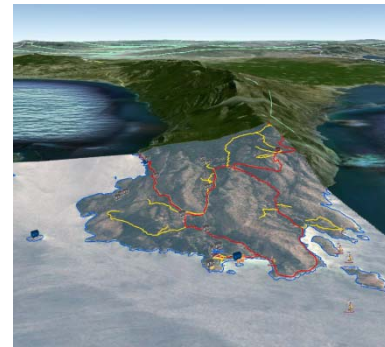


Space Traffic Management

from Space



Maritime



Border Control



Food



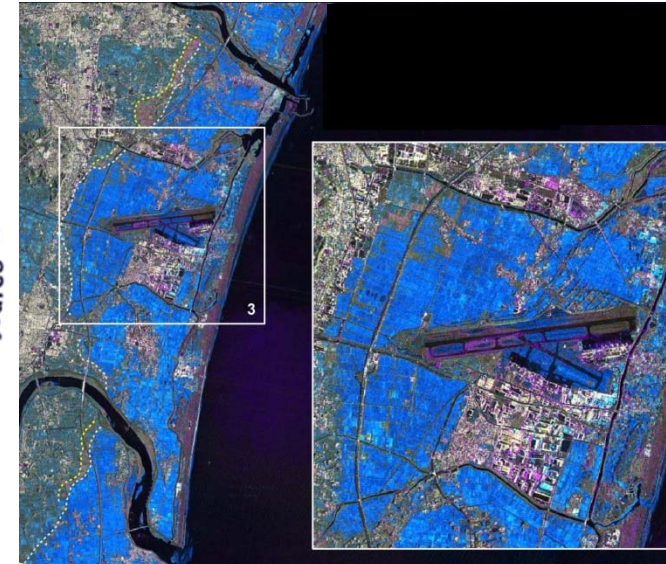
Disaster Management



Migration



# International Charter Space and Major Disasters

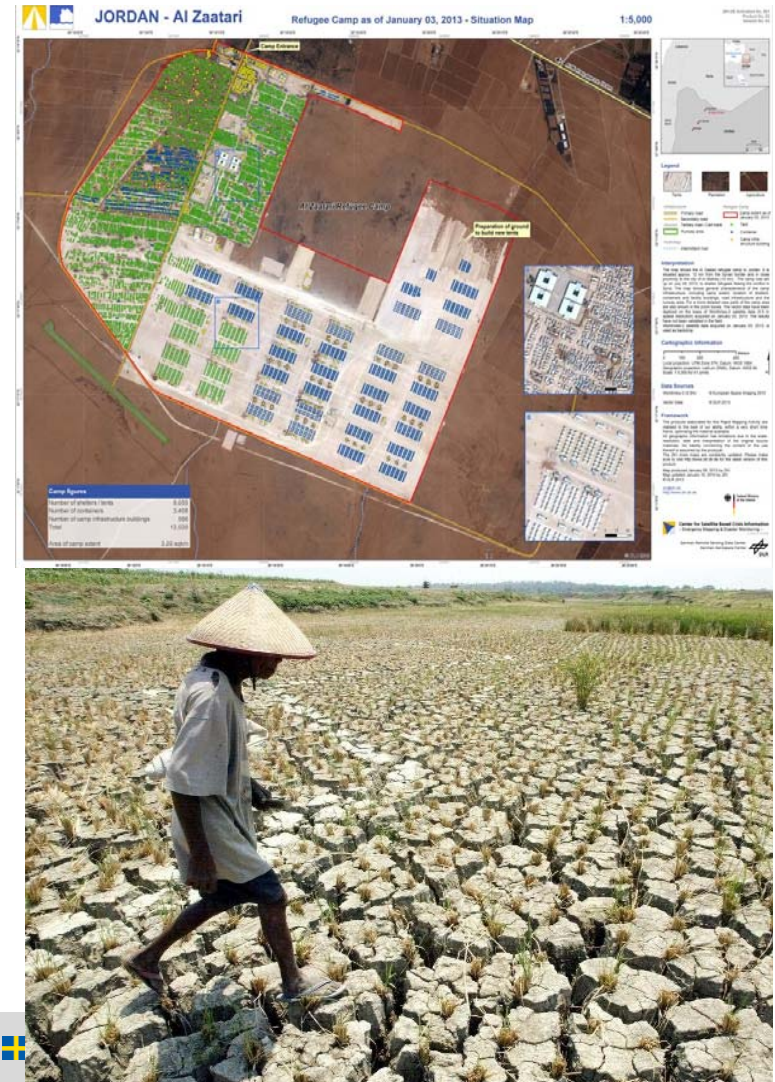


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# Space and Migration

- Flow of refugees
- Camps
- Distress at sea
- Borders
- Peace safeguard
- Agriculture
- Water supply
- Waste management
- Energy
- Technology
- Education
- Tele-medicine
- Communication
- Inspiration

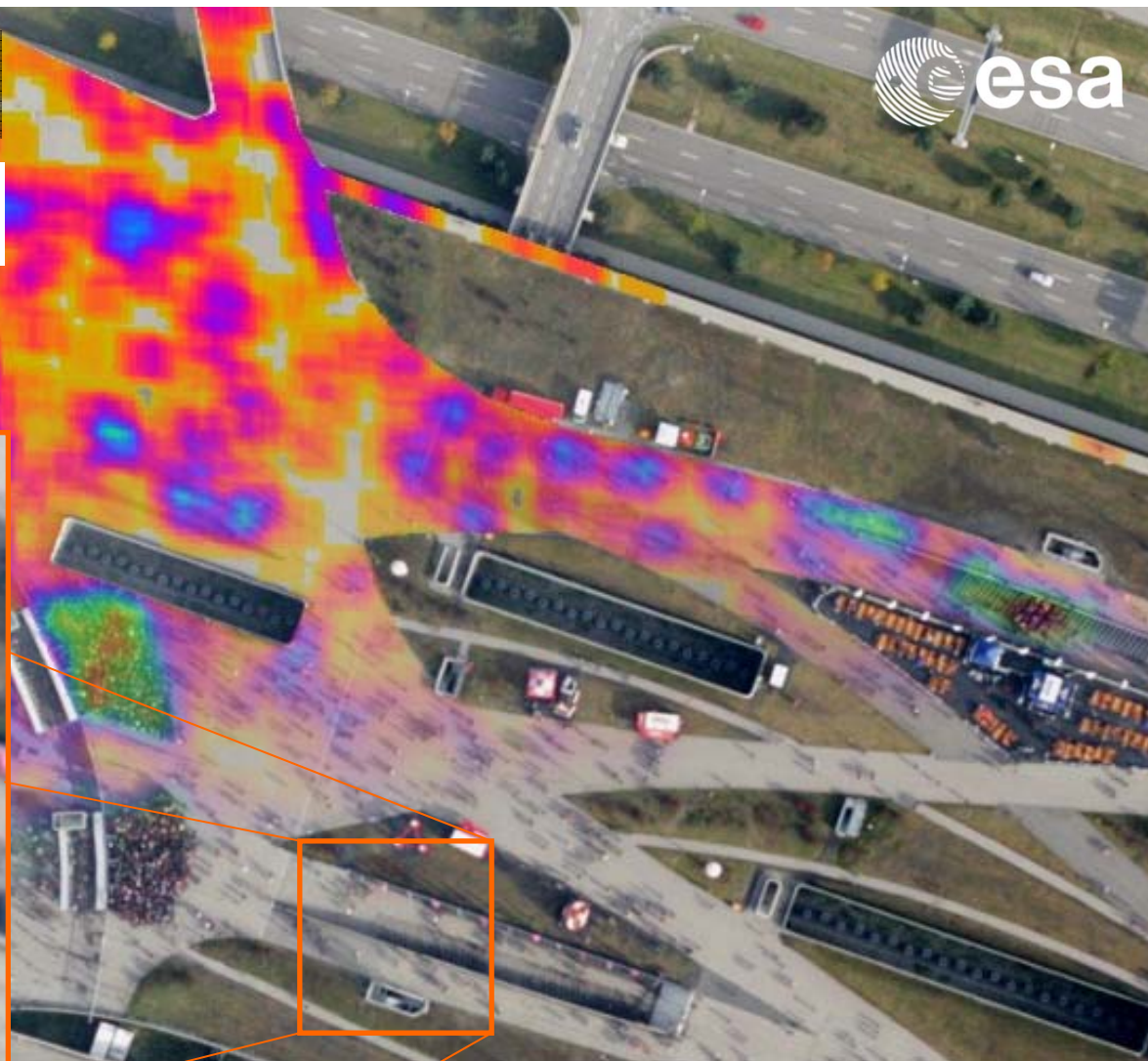




# Crowd Observation



low ← people density → high





# Terrorist training camp detection





**MH370 Last radar  
contact with plane**

**MALAYSIA**

**MH370 Takes off from  
Kuala Lumpur**

**POSSIBLE DEBRIS FOUND**

**MADAGASCAR**

**RÉUNION ISLAND**

**MH370 Search Area**

**AUSTRALIA**

**Perth**







Regions » [Africa](#) | [Americas](#) | [Asia](#) | [China](#) | [Europe](#) | [Middle East](#) | [World](#)

# Where is MH370?





# Air Traffic Monitoring







Navigation à la souris

Mesurez la distance entre deux points au niveau du sol.

Longueur de la carte : 2,00 Kilomètres

Longueur au sol : 2,00

Direction : 145,15 degrés

Navigation à la souris

Enregistrer Effacer

LKP

N33°51'

N33°45'

N33°39'

N33°33'

N33°27'

N33°21'

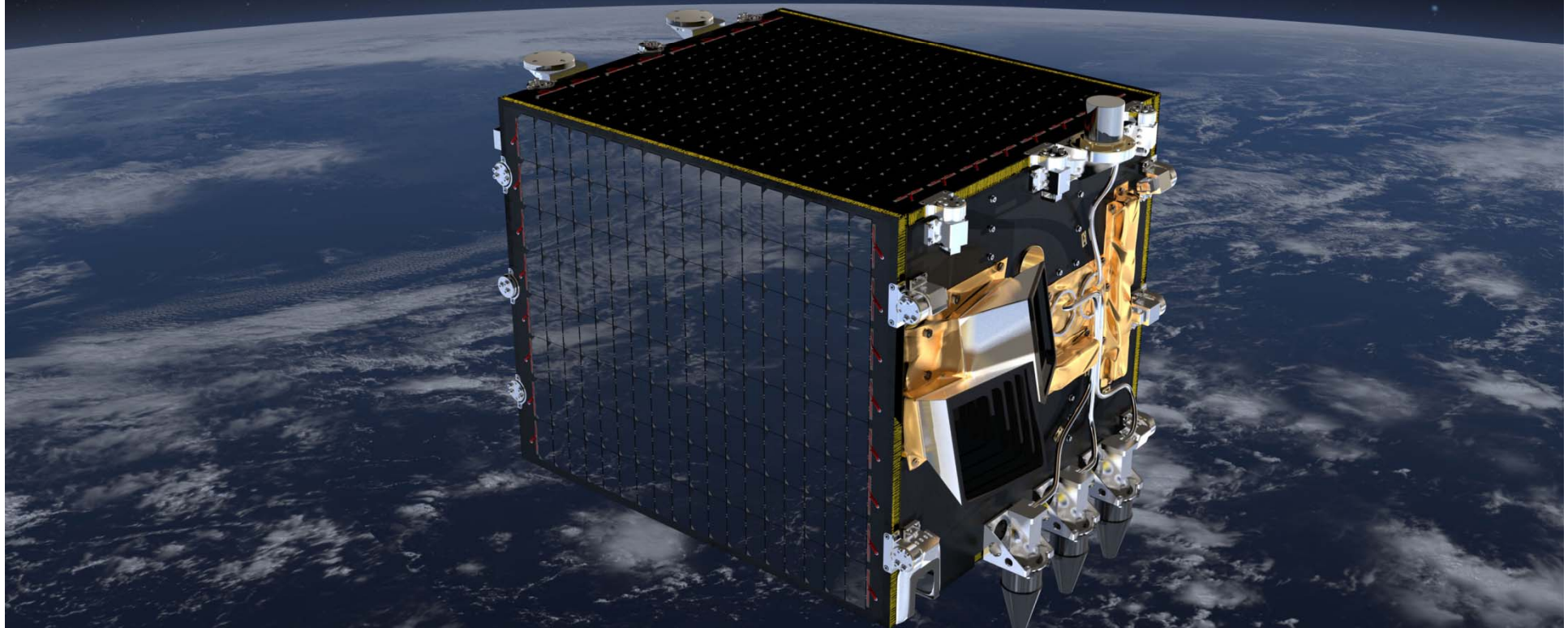
N33°15'

E 28°33' E 28°39' E 28°45' E 28°51' E 28°57' E 29°03' E 29°09' E 29°15' E 29°21' E 29°27' E 29°33' E 29°39' E 29°45' E 29°51' E 29°57'





# Air Traffic Monitoring PROBA-V with ADS-B-Receiver

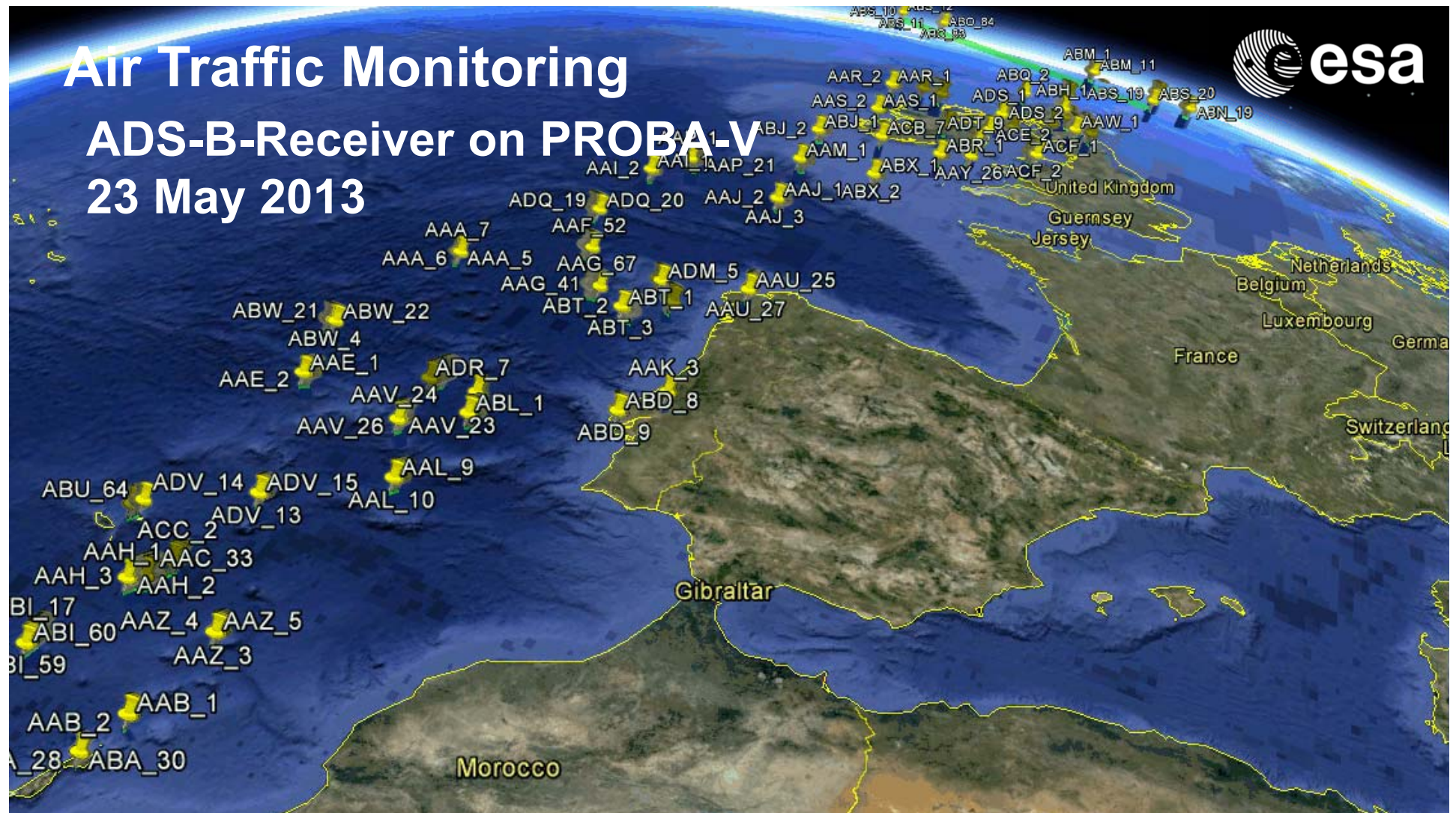




# Air Traffic Monitoring

## ADS-B-Receiver on PROBA-V

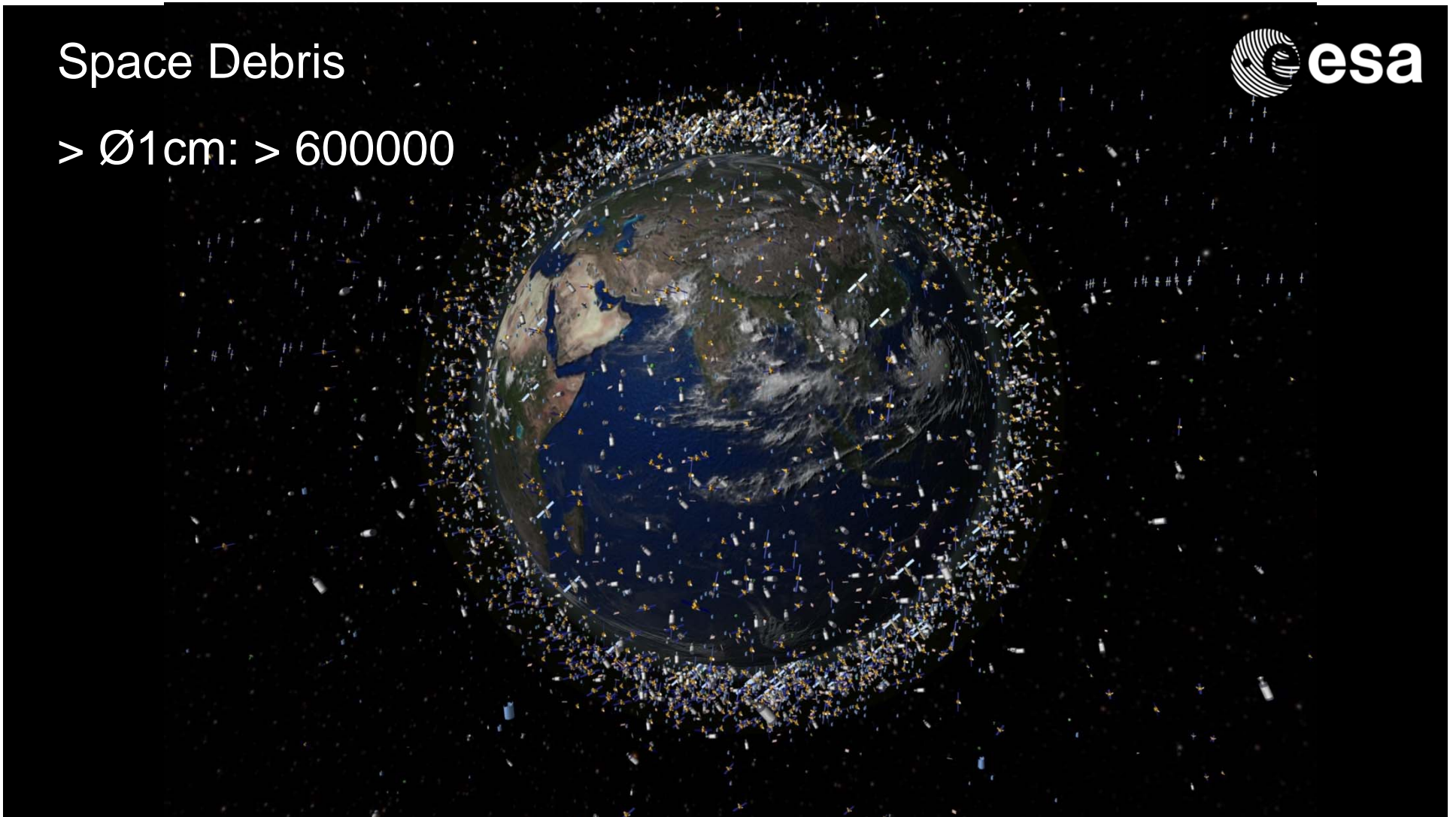
23 May 2013





# Space Debris

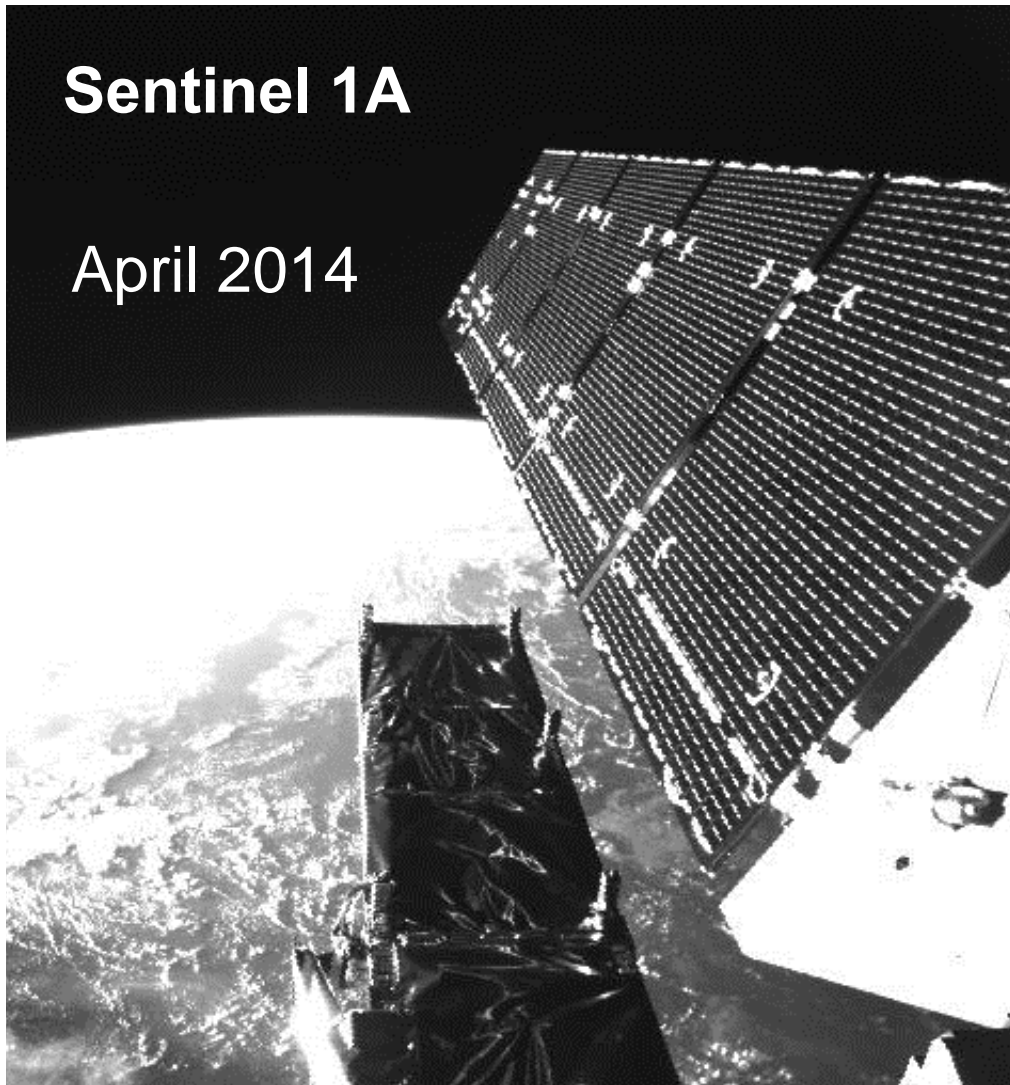
> Ø1cm: > 600000





**Sentinel 1A**

April 2014



August 2016





# Space Traffic Management

## SCAS: Spacecraft Collision Avoidance System





# Space Debris

> Ø1cm: > 600000



SPIEGEL ONLINE

2013.02.15 09:10:49















**aim**



**dart**



**aida**





Concepts  
Agreements  
Networks  
Trained Staff  
Security Procedures and  
Clearance

**Architect and Expert**

Technologies  
Instruments  
Labs  
Ground Facilities  
Access to Space  
Archives  
Missions



**Space  
and  
Security**



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# Space as an enabler

- **expanding the frontiers of knowledge**
- **assisting decision and policy makers in sectorial policies** (e.g. agriculture, environment, energy, transport, foreign policy, security)
- **enabling growth**
- **inspiring and motivating**



- ➔ **1 Euro invested in space creates**
- ➔ **6 Euros in economic return**



European Space Agency





**THE European Space Agency**