

# EISC–ESA ‘Space for Sustainability’ Award

EISC 2015 Plenary Conference - Madrid  
21/09/2015  
Marion Mirailles

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## PURPOSE OF THE AWARD

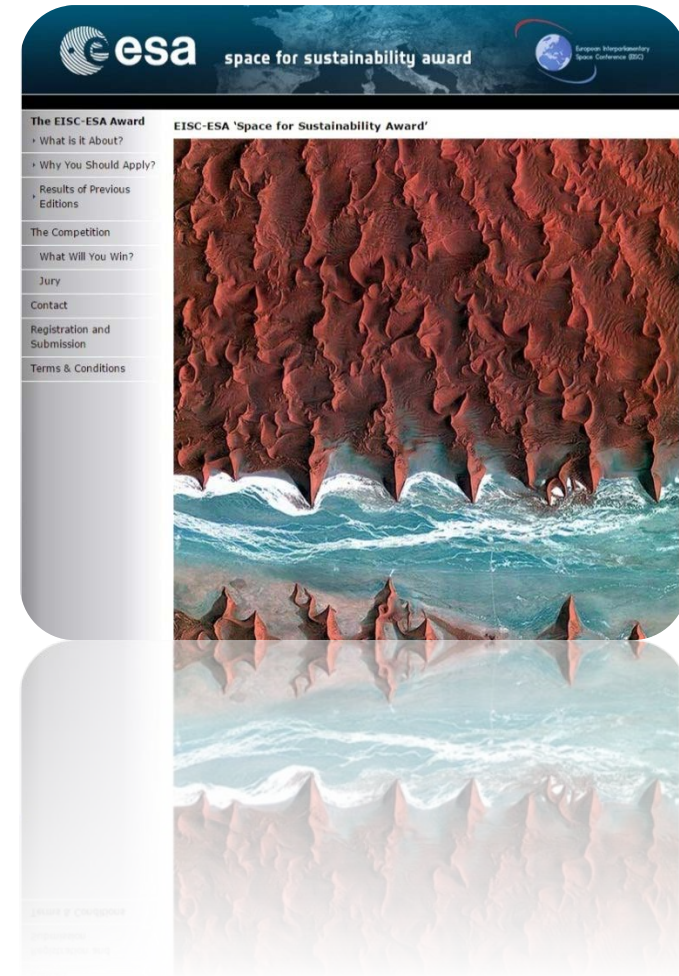
The 'Space for Sustainability Award' is rewarded annually to the best Project Idea that integrates application areas focusing on sustainability linked to space

- Stimulate the debate and raise awareness on space and sustainability issues among the young Europeans
- Be a tool for innovative and creative project ideas in those areas

<http://sdaward.eisc.esa.int/>

## THE AWARD SO FAR IN A NUTSHELL

- 3 Editions
- 41 participants
- 13 nationalities represented
- Age average: 25 years old
- 2 launches attended:
  - GAIA in December 2013
  - Galileo Satellite in March 2015



## THE JURY

**Jean-François Clervoy**  
**Delphine Gillaizeau-David**  
**Monica Moreno**  
**Philippe Vallette**  
**Daria Golebiowska Tataj**  
**Olympios Raptis**  
**Nathalie Meusy**

**Astronaut / Chairman of the Jury**  
Representatives of the French Presidency of EISC 2014  
Representative of the Spanish Presidency of EISC 2015  
Co-Chair of World Ocean Network  
Professor from the Warsaw University of Technology Business School  
Head of Eurospace Brussels Office  
Head of the ESA Coordination Office on Sustainable Development

## THE PROJECT IDEAS

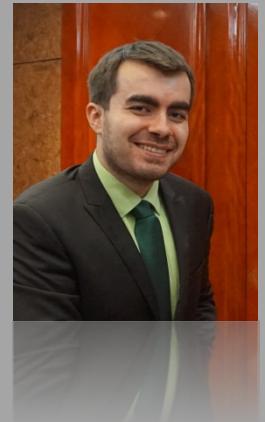


**LAURENT BRACH 'Oceans Plastic Pollution' / Winner of the Award**

- ✓ Using satellite to map the plastic accumulation zones in the oceans to intend to remedy the plastic issue

**ALEXANDRU GEORGESCU 'Space for Heritage Conservation' / Special Mention of the Jury**

- ✓ Using space capabilities for the conservation of European heritage



# Plastic Pollution in the Ocean

## Satellites can help us to clean the oceans

EISC 2015 Plenary Conference - Madrid  
21/09/2015  
Laurent BRACH

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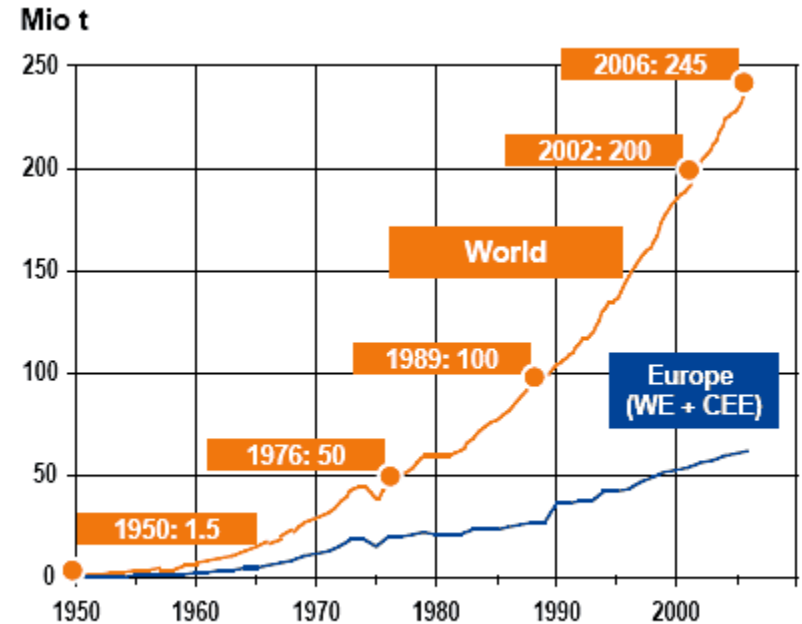
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## A world of plastics

- 60 years old
- Many advantages
- Can't live without it



Albatross with plastics in stomach



Source: PlasticEurope Market Research Group (PEMRG)

Plastic production since 1950

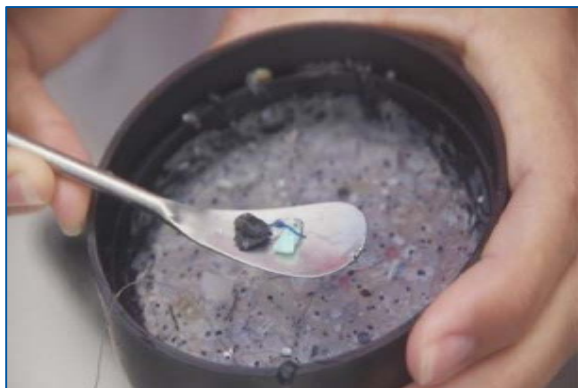


Cole - Microplastic Ingestion by Zooplankton - 2013

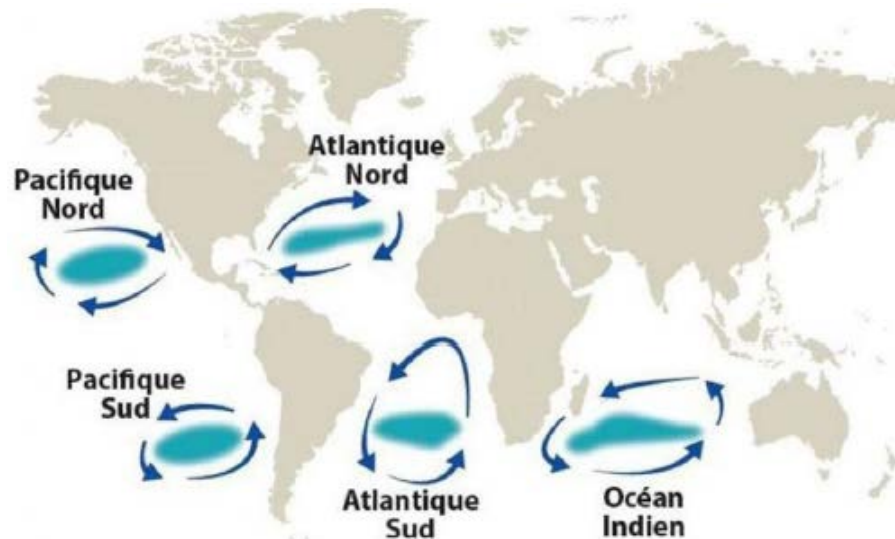


## Why this pollution appeared?

- Behavioral problems
- Political barriers
- Economic limitation
- Wars



Plastic Soup



5 gyres in the world

Great Pacific Garbage Patch = 6 x France





## EXPEDITION 7<sup>e</sup> CONTINENT

**North Atlantic:**

15 May - 20 June 2015

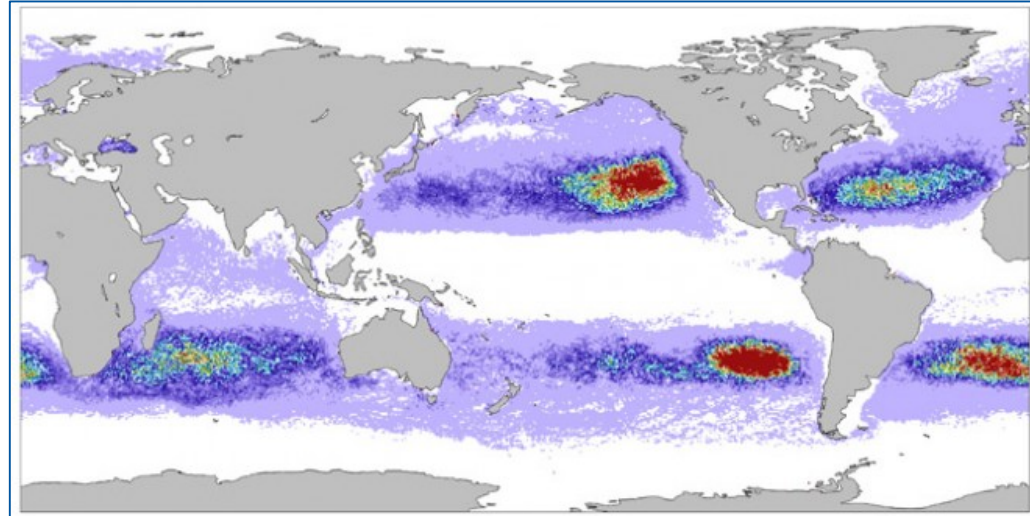
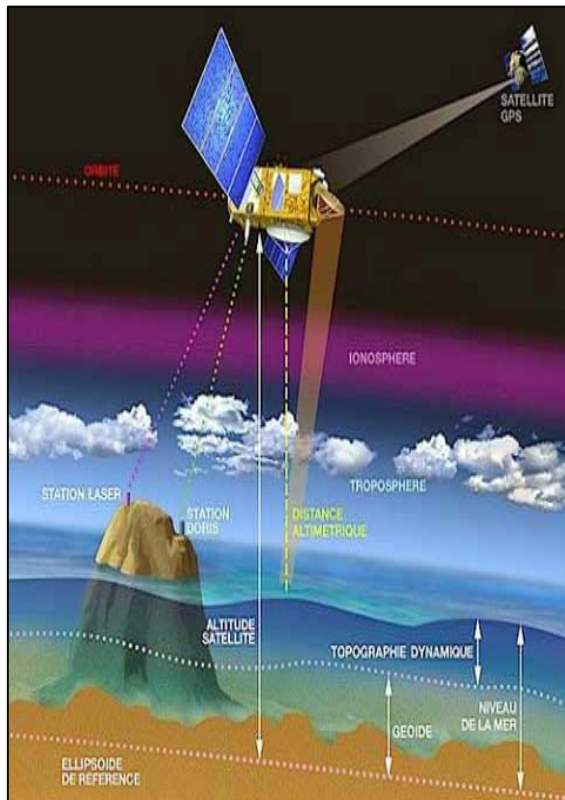
Scientific samplings all days



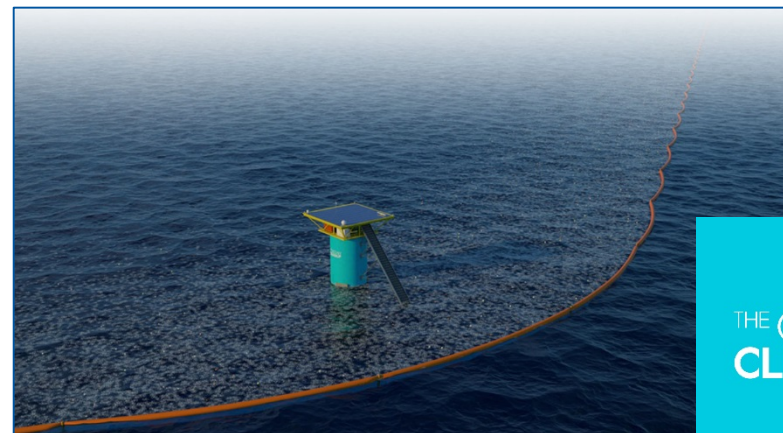


## Idea

Map the accumulation zones :  
locate precisely plastics



Maximenko simulation - Pathways of marine debris derived from trajectories of Lagrangian drifters – 2012

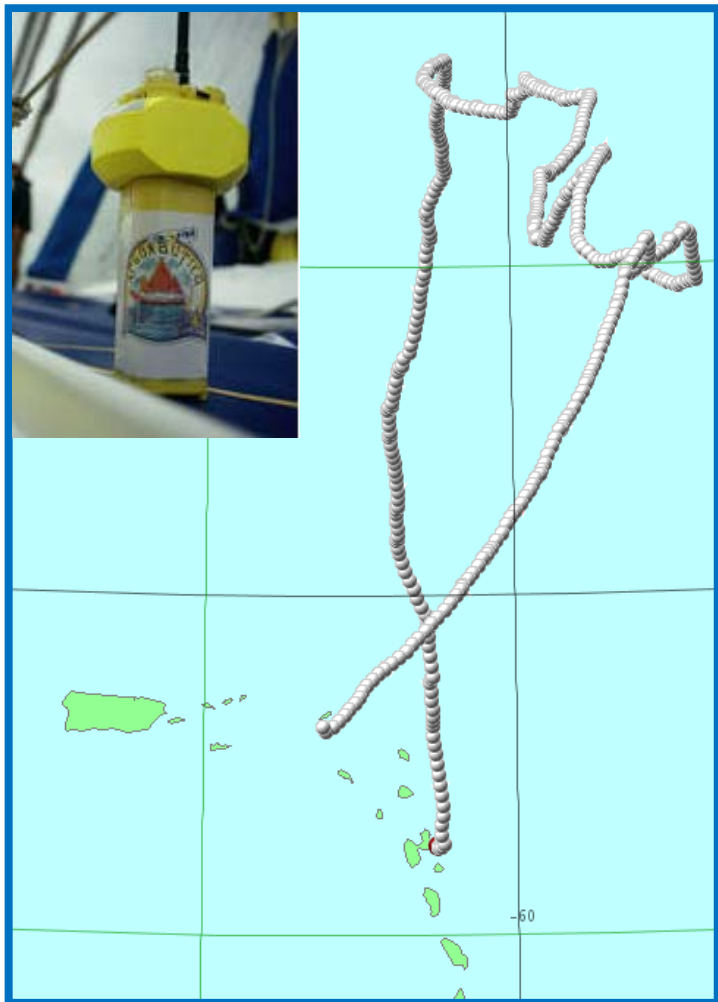


Boyan Slat's project

THE OCEAN  
CLEANUP

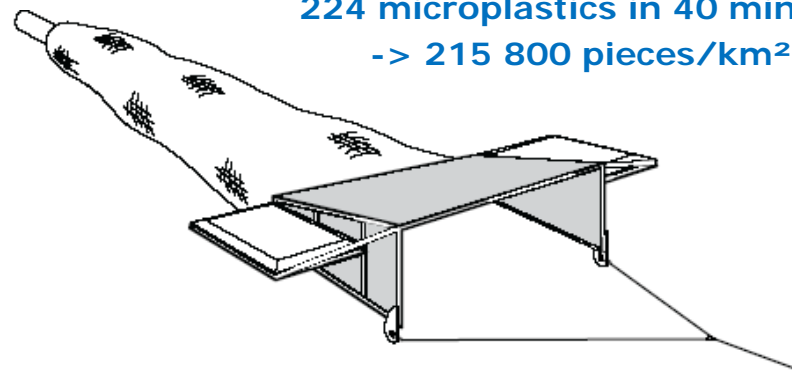


# How can space help?



Mercator Ocean : center for analysis and forecasting of the global ocean based in Toulouse in charge of the program Copernicus Marine Service

**Thursday 11th May 2015**  
**224 microplastics in 40 minutes**  
**-> 215 800 pieces/km<sup>2</sup>**



***THANKS FOR YOUR ATTENTION***

# Space Applications for European Heritage Site Conservation

EISC 2015 Plenary Conference - Madrid  
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Alexandru Georgescu

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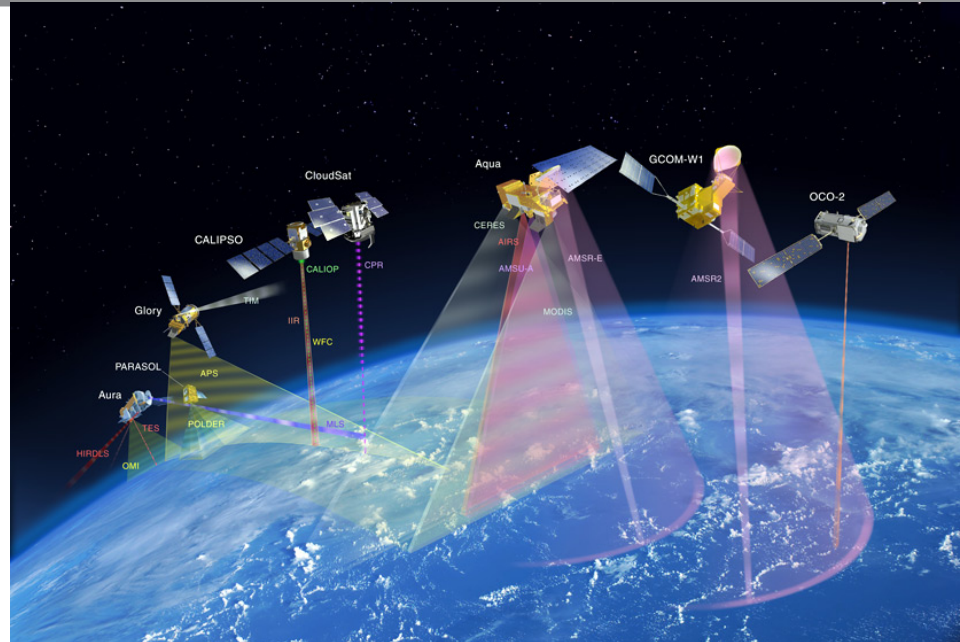
European Space Agency

# What is the proposal about?

The proposal addresses the opportunity of using space capabilities to aid in the conservation and protection of European heritage sites in a more cost effective and impactful manner.

This involves not only technical solutions, but new tools and modes of cooperation to ensure that good practices are adopted in every EU country;

Space systems have become a critical enabler of new applications, in all fields, especially communications and **Earth Observation**;



- Of similar importance is the revolution in business models for access to space services, such as that of the COPERNICUS/GMES Programme.

- **National Monuments are Critical Infrastructures** – assets and systems whose disruption or destruction would cause damage and hardship at societal level in the hosting state, with the risk of transmission to other infrastructures or even beyond national boundaries.
- **Source of identity, pride, moral**
- **Economic resource**
- **May perform current functions**
- **Repository of important artifacts**
- **Objects of scientific study**
- **Their damage, destruction and disfigurements may have significant consequences**

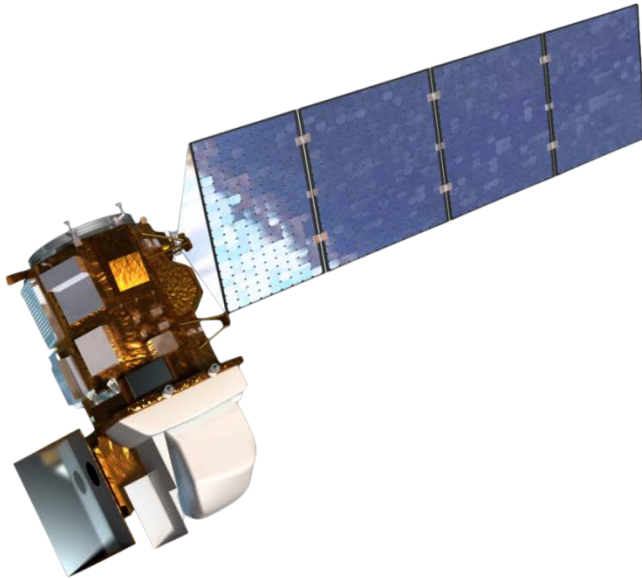




# Threats to European Heritage



- 1. Natural factors with instant function, such as natural disasters (earthquake, lightning, fire, flood, drift and movement of earth);**
- 2. Natural factors with gradual function;**
  - Physical factors (wind, sunlight, changes in moisture, changes in temperature, acid rain, air pollutants);
  - Chemical and electrochemical factors found in nature;
  - Plant and animal based destructive factors;
  - Biological and microbiological factors;
- 3. Social factors due to profiteering or negligence and mismanagement;**
- 4. Inherent and internal factors due to the weakness of techniques or lack of knowledge about the climate or available material;**
- 5. Complex factors, integrating all of the above.**



**Weather  
Monitoring &  
Atmospheric  
Composition**

**Surveillance of  
Surroundings**

**Soil Chemistry,  
Geology,  
Water Tables**

**Historical  
Datasets for  
Research**

**Assessments  
and  
Investigations**

A partnership between ESA and Conservationists studying the intersection between space capabilities and conservation needs in a cost-effective, multidisciplinary, novel and scalable way.

1. Researching and compiling space tools for Heritage conservation;
2. Establishing modes of access to data and services;
3. Dissemination and education to close the gaps:
  - Between urban conservation and rural conservation;
  - Between resources and methods in the West and in the East;
  - Between already established sites and new sites;
  - Between sites in heavy use and sites more accessible for conservationists.

