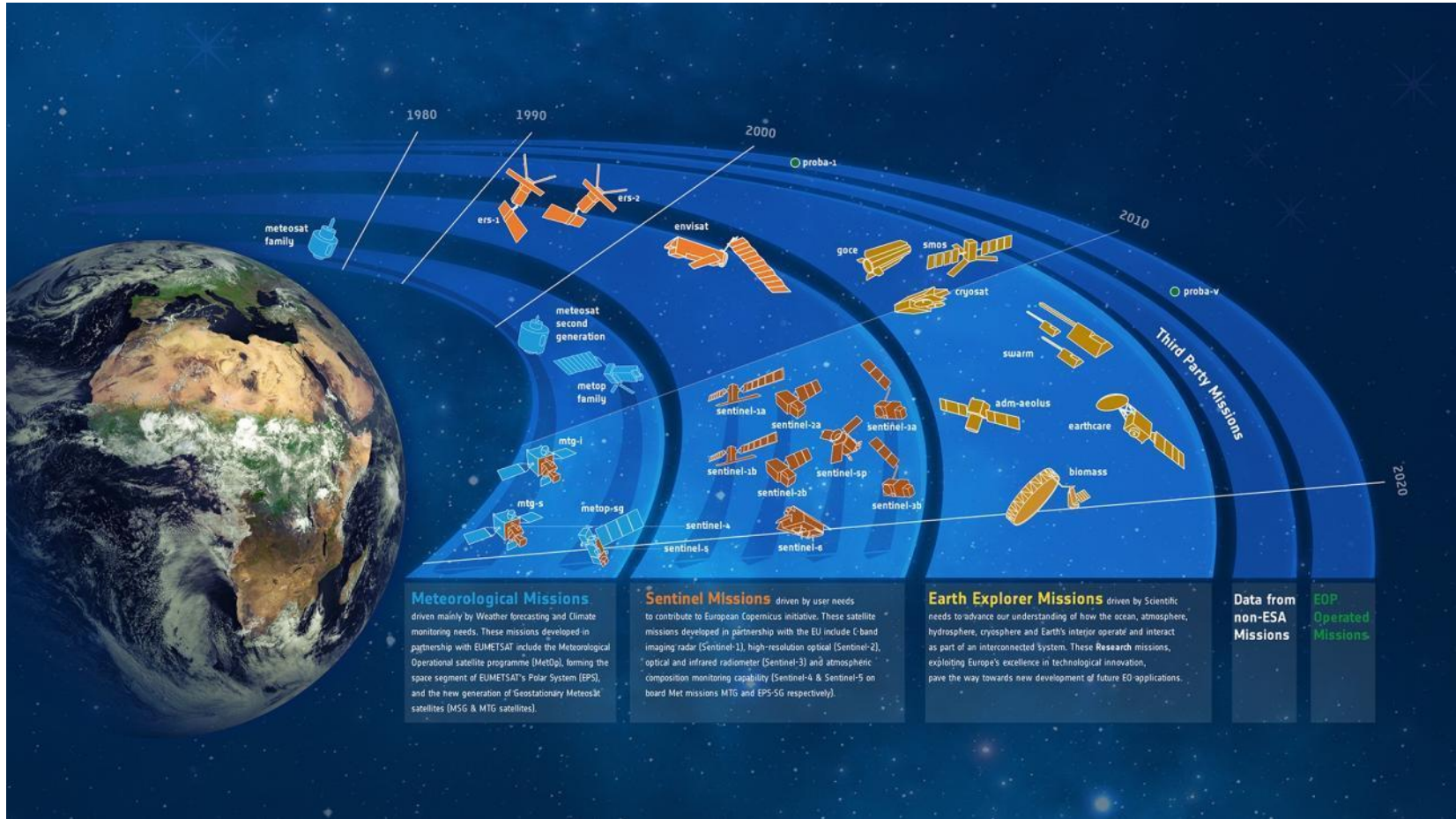




# Status report on the current and future satellite systems by the European Space Agency (ESA)

Presented to CGMS-43 Plenary session, agenda item D

## Overview - Planning of ESA satellite systems



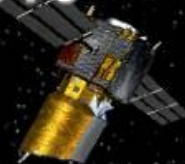
ESA'S EARTH EXPLORER SATELLITES – HIGH-END SCIENCE RESEARCH MISSIONS

**GOCE**  
17 March 2009 -  
11 November 2013

**SMOS**  
2 Nov. 2009



**ADM-AEOLUS**  
2016



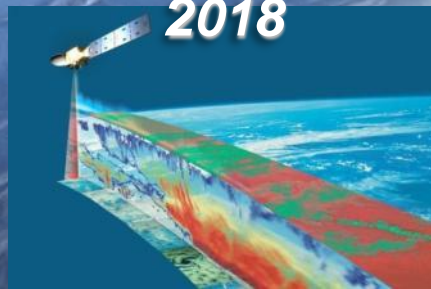
**CryoSat-2**  
8 April 2010



**SWARM**  
22 November 2013



**EARTH  
CARE**  
2018



**7<sup>th</sup> EE**  
**BIOMASS**

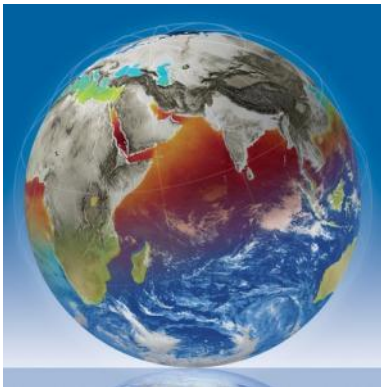
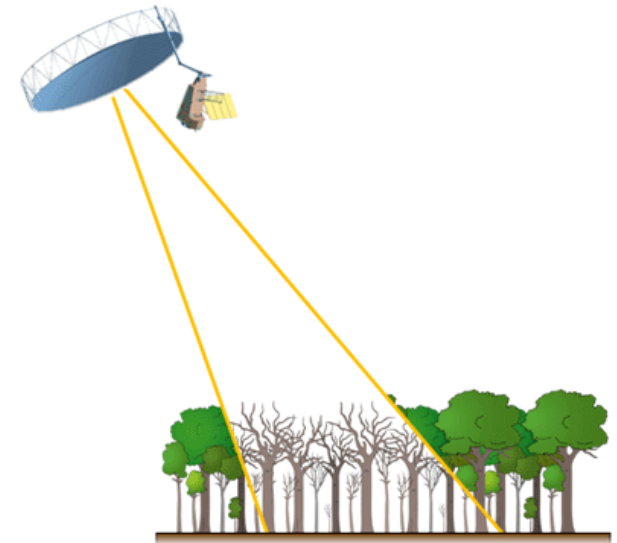
**8<sup>th</sup> EE**



## FUTURE EARTH EXPLORER SATELLITES

BIOMASS will be the 7<sup>th</sup> Earth Explorer:

- **BIOMASS** will provide **continuous global interferometric and polarimetric Radar observations of forested areas.**
- Essential to the understanding of the role of forests in Earth's **carbon cycle** and in **climate change.**



Candidate missions for the 8<sup>th</sup> Earth Explorer:

- **FLEX:** global maps of vegetation fluorescence
- **CarbonSat:** distribution of carbon dioxide and methane
- **8<sup>th</sup> EE User Consultation: 15-16 September 2015**

**Coordination Group for  
Meteorological Satellites**

**Krakow, Poland**



## THE ESA CLIMATE CHANGE INITIATIVE

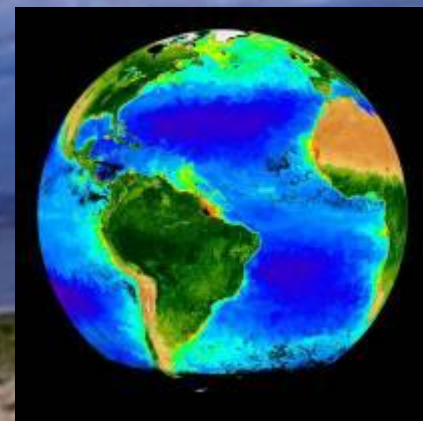
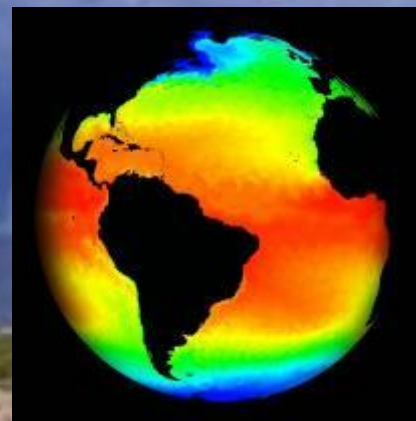
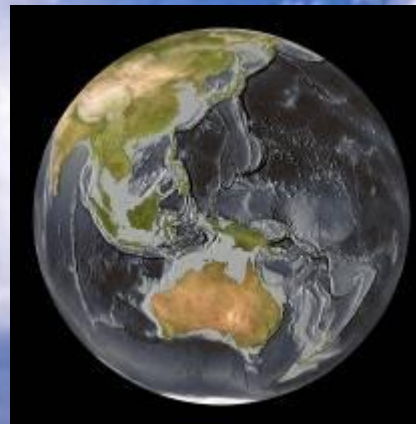
- The ESA Climate Change Initiative launched in 2009 aims to address the GCOS Essential Climate Variable (ECV) requirements for satellite datasets and derived products.
- The CCI complements existing efforts in Europe (e.g. led by EUMETSAT through the CM SAF) and internationally which focus on datasets characterizing meteorological aspects of the climate system.



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## ESSENTIAL CLIMATE VARIABLES UNDER THE ESA CCI

- Cloud Properties
- Carbon Dioxide, Methane & others GHGs
- Ozone
- Aerosol properties
- Sea Surface Temperature
- Sea Level
- Sea Ice
- Ocean Colour
- Glaciers and ice sheets
- Land cover
- Fire disturbance
- Soil moisture





## METEOROLOGICAL MISSIONS

- Cooperation model:
  - **ESA** develops and launches the European meteorology missions
  - **EUMETSAT** operates them
- Currently Meteosat Second Generation (MSG) in GEO and MetOp in LEO
- MSG-3 and Metop-B launched in 2012, MSG-4 due to launch in July 2015, Metop-C in 2017
- MeteoSat 3<sup>rd</sup> Generation (MTG) and Metop 2<sup>nd</sup> Generation (Post-EPS) under development



## COPERNICUS SPACE COMPONENT – UPCOMING LAUNCHES

- COPERNICUS is a European space flagship programme
- COPERNICUS provides the necessary data for operational monitoring of the environment and for civil security

### Sentinel-1A – launched 3 April 2014



### Sentinel-2A – due for launch on 12 June 2015



### Sentinel-3A – due for launch by October 2015



Sentinel-5Precursor due for launch in 2016  
Sentinel-6 (aka Jason-CS) open for subscription by member states at EUMETSAT June Council



## COPERNICUS SERVICES

- The Sentinels provide the basis for offering COPERNICUS Services to European users
  - Land Monitoring
  - Marine Services
  - Atmosphere
  - Emergency Response
  - Civil Security
  - Climate Change
- ESA and the EU invested 100 M€ each in the preparation of a wide user basis
  - **330+ organizations** are ready to use Sentinel data from services

