

EUMETSAT Plans

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EUMETSAT

INTRODUCTION

The EUMETSAT Convention states as the primary objective of EUMETSAT to establish, maintain and exploit European systems of operational meteorological satellites, taking into account as far as possible the recommendations of the World Meteorological Organization. A further objective of EUMETSAT is to contribute to the operational monitoring of the climate and the detection of global climatic changes.

EUMETSAT is an intergovernmental organisation with 25 Member States and 5 Cooperating States

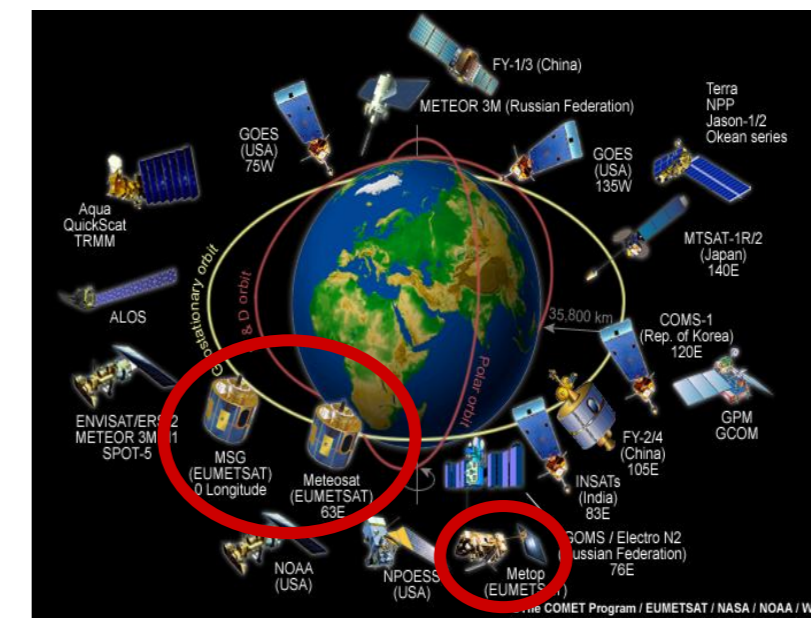
OPERATIONAL CORE SERVICES

EUMETSAT core operational services are provided from geostationary orbit with the MSG system over Europe and Africa and with the older MTP over the Indian Ocean. Core operational services from the polar (sun-synchronous) orbit are provided with the EPS/Metop system in the frame of the Initial Joint Polar System with NOAA. Services are provided 24 hours a day on 365 days of the year.

EUROPEAN and GLOBAL CONTEXT

EUMETSAT's meteorological satellites are part of the Global Observation System under the auspices of the World Meteorological Organisation (WMO). Close co-operation between European, French and German Space agencies (ESA, CNES, DLR) and also with the U.S. partner NOAA, and NASA, the US space agency ensures the provision of global satellite data, data exchange and the coordinated development of new generations of meteorological satellites.

WMO



Climate Monitoring

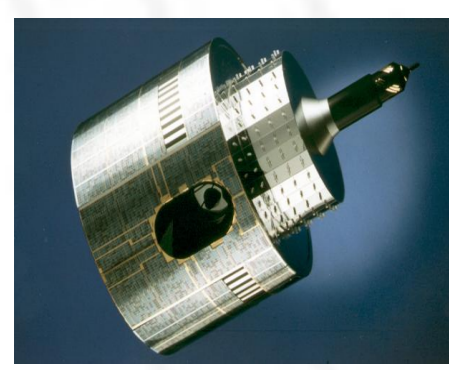
Global climate has been changing continuously and there are now strong indications that human activities are causing some of the significant observed changes observed over recent decades. EUMETSAT with its satellite data contributes to monitor these changes, like rising temperatures, melting ice and increasing sea level. The EUMETSAT Satellite Application Facilities (SAF) are delivering products (Essential Climate Variables) for climate change monitoring.

Geostationary Systems

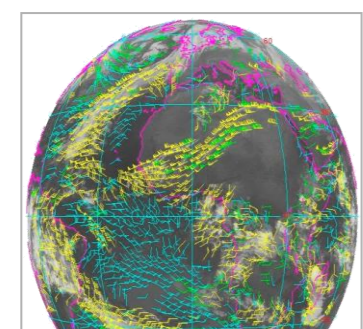
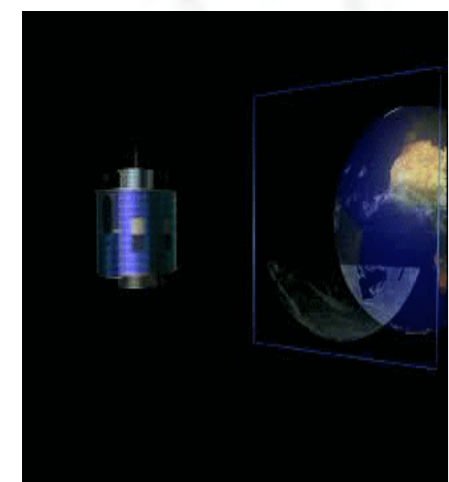
EUMETSAT OPERATIONAL SYSTEMS

Low Earth Orbiting Systems

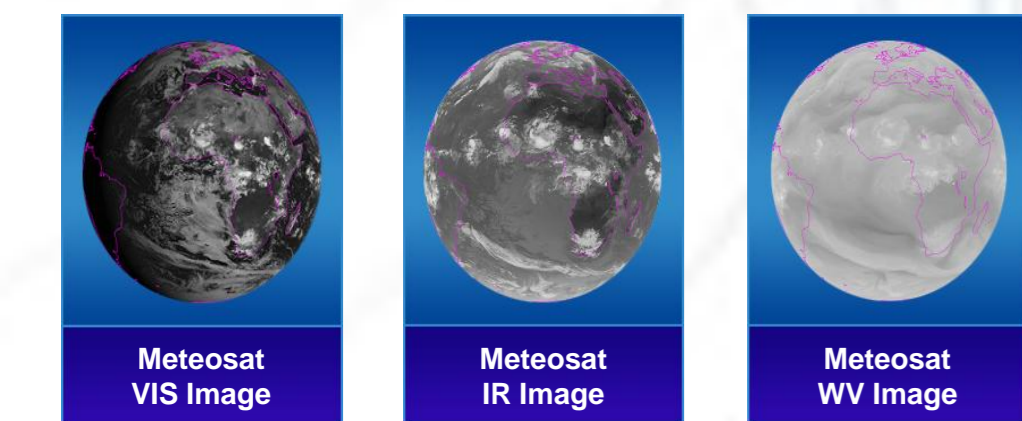
Meteosat First Generation (MTP)



The first generation Meteosat series, providing 30 minute images in three spectral channels was originally developed by ESA and first launched in 1977. Operations were taken over by EUMETSAT in 1995. The last satellites of the first generation are still providing data services over the Indian Ocean and support a regional Tsunami warning system (Meteosat-6 at 67.5°E, Meteosat-7 At 57.5 °E). Fuel for M-6 until 2011, decision on re-orbiting in 2010. After re-orbiting M-7 will take over service.

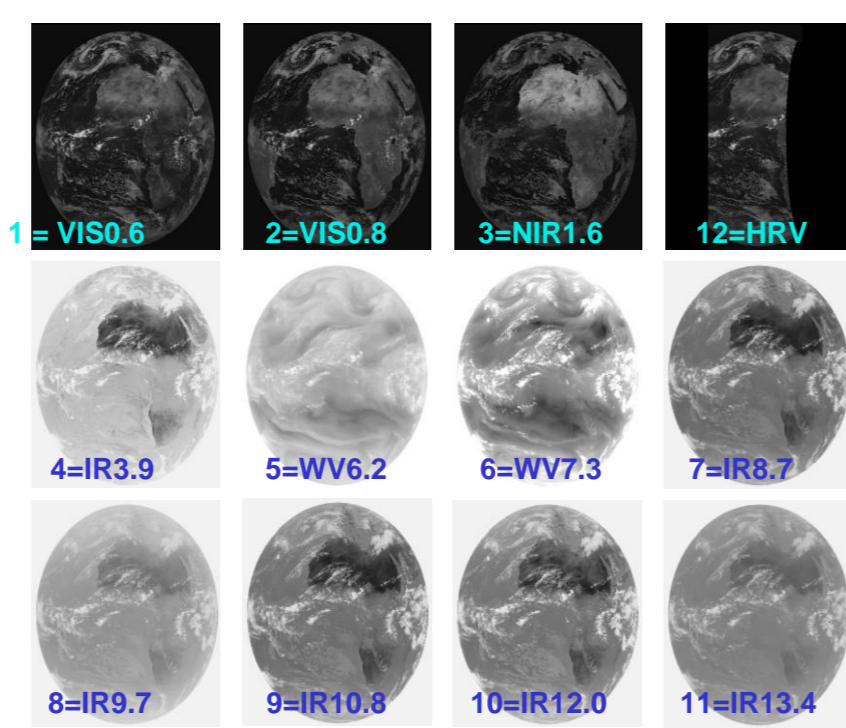
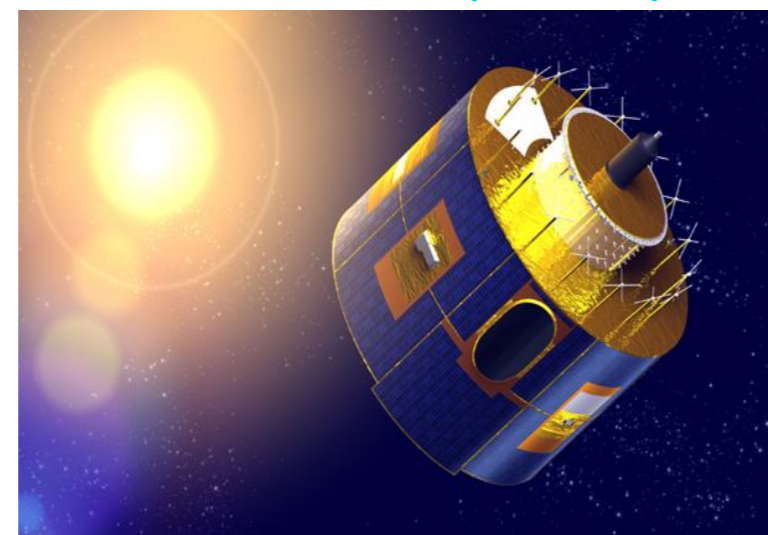


Atmospheric Motion Vectors



• (Image every 30 minutes)

Meteosat Second Generation (MSG)



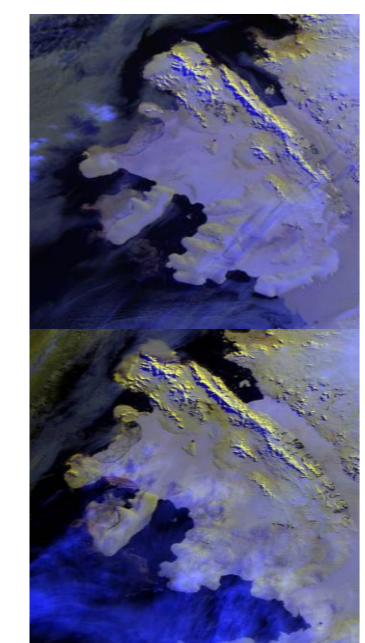
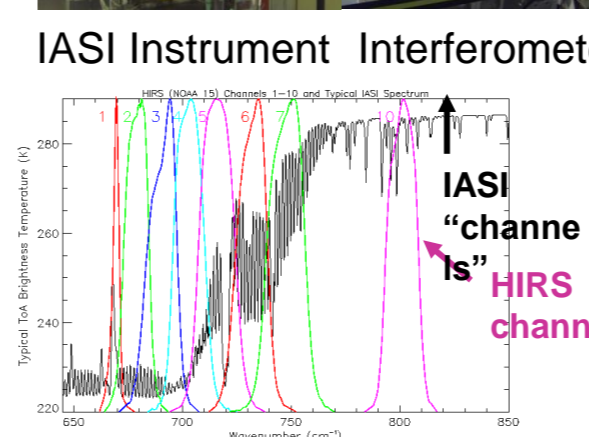
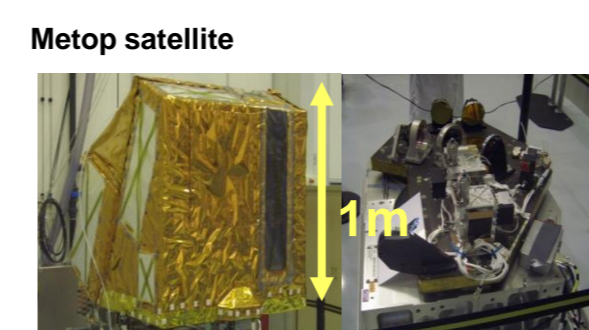
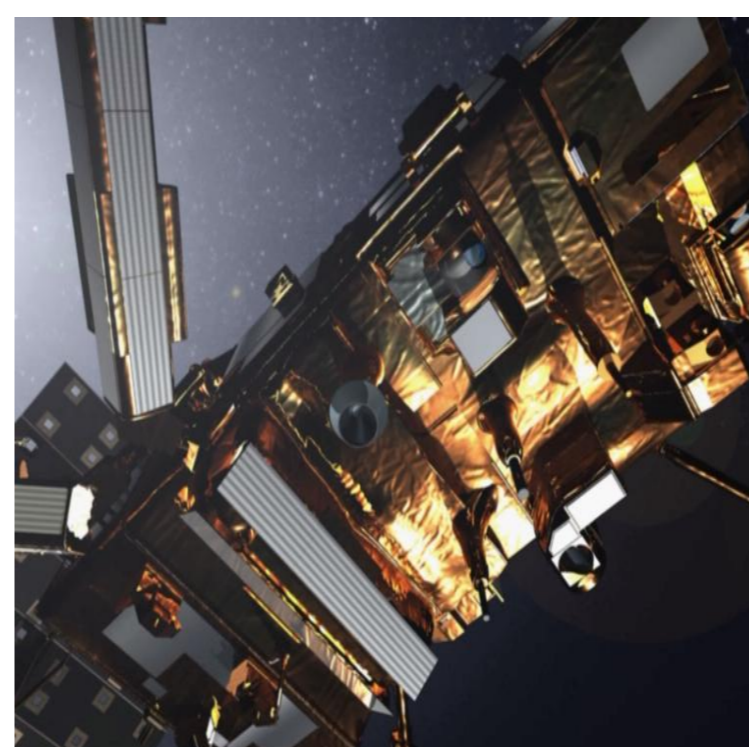
Current operational satellite Meteosat-9 (MSG-2) (0°), Meteosat-8 (MSG-1) backup and rapid-scan service (9.5°E). MSG-3 is in storage and is planned to be launched in 2012. It will become Meteosat-10 in orbit. MSG-4 is being worked on. It will go into storage and will be launched in 2014. (TBC)

EUMETSAT currently operates (since 2002) the second generation of geostationary Meteosat satellites over Europe. They provide a high stream of high-quality images from the 12 channel SEVIRI instrument every 15 minutes, to support improved forecasting and severe weather warning. The Geostationary Earth Radiation Budget (GERB) Instrument provides Information on the regional Radiation Budget.

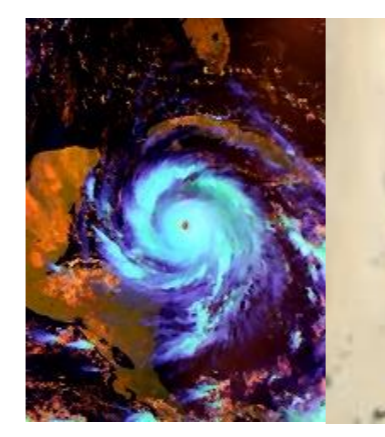


MSG-3 in long-term storage

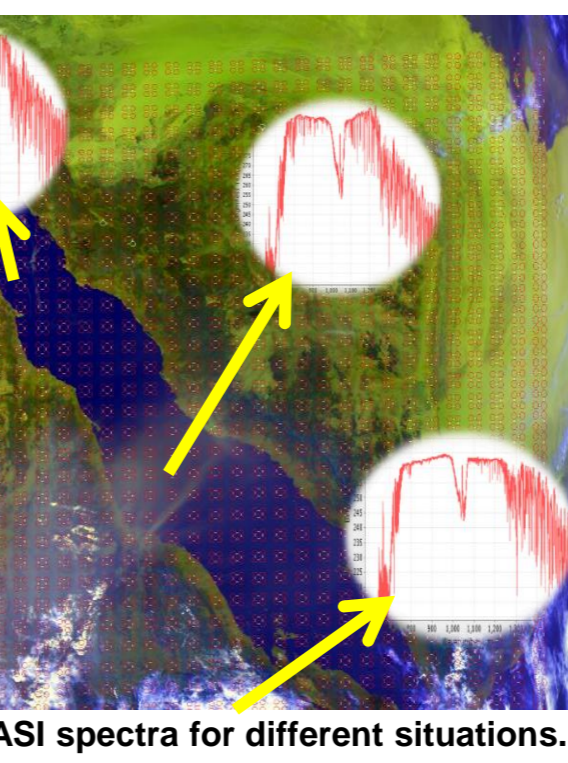
EUMETSAT Polar System (EPS) / Metop



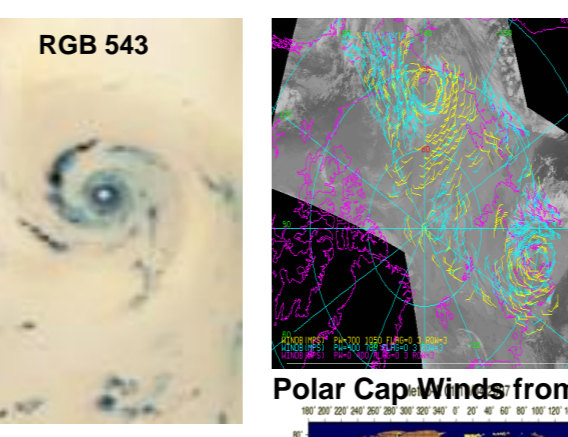
Ice Monitoring with AVHRR (Wilkins Ice Shelf, Antarctica)



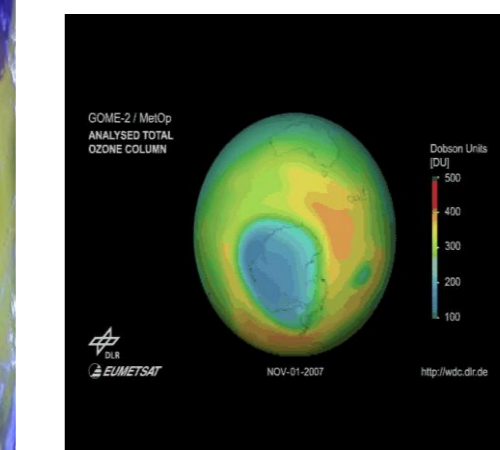
Hurricane Monitoring with AVHRR and MHS



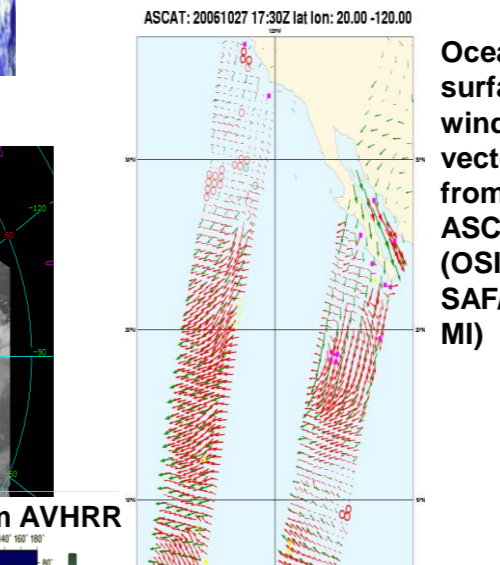
Typical IASI spectra for different situations.



Polar Cap Winds from AVHRR



Global Ozone monitoring with GOME-2

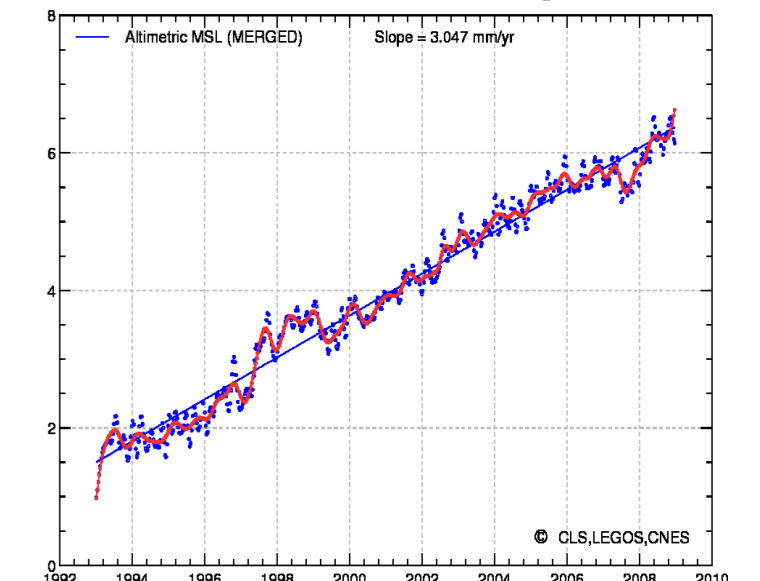


Ocean surface wind vectors from ASCAT (OSI SAF/KN MI)

Jason-2/-3/CS



On 20 June 2008 EUMETSAT entered the area of operational Ocean monitoring with the launch of the Jason-2 satellite. Ocean monitoring is another element contributing to the understanding of climate change. Jason-2 is a joint project between CNES, NOAA, NASA and EUMETSAT. EUMETSAT provides the operational support for real-time dissemination of products and services in Europe.



EUMETSAT is preparing jointly with its partners the Jason-3 programme (approved in 2010) for a follow on mission of Jason-2 with a launch in 2013. Further in the future Jason-CS is planned to provide continuation services.

Meteosat Third Generation (MTG)



Jointly with ESA, EUMETSAT is currently preparing the third generation of Meteosat satellites. The project is currently in its Phase B.

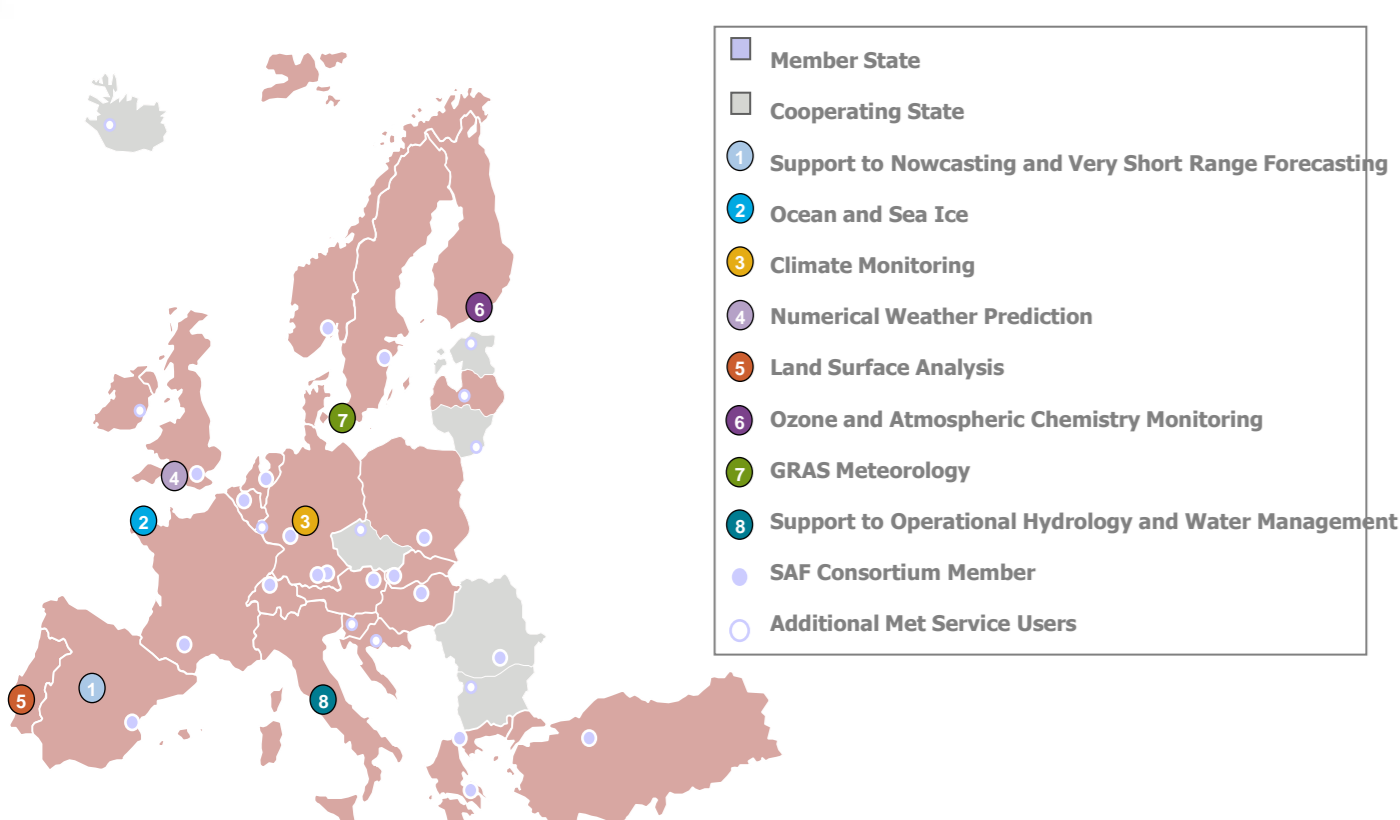
For the first time Meteosat satellites will be based on a three-axis stabilized platform. It is planned to have a system of two imaging satellites (MTG-I) and one sounding satellite (MTG-S) and with the launch of the first MTG-I satellite planned in 2016 and the launch of the first MTG-S satellite planned in 2018. The Imaging satellite will carry the Flexible Combined Imager (FCI) with 16 channels, and a lightning Imager (LI). The Sounding Satellite will carry an Infrared Hyperspectral sounder (IRS) and a UVVIS spectrometer (GMES Sentinel-4).

3-axis stabilised satellites
Twin Sat configuration
Class 2.7 – 3.1 ton

GMES Sentinel-3

EUMETSAT has the responsibility of operations of the GMES Sentinel-3 marine missions (in coherence with the EUMETSAT Jason activities). The GMES S3 Programme is co-funded by ESA and EC. A third party S3 Programme was established and approved by Council and subsequently, an Implementing Arrangement for S3 was approved by EUM Council and ESA PBE0. Sentinel 3A is planned for launch in 2013.

EUMETSAT Distributed Application Ground Segment



Data processing and product generation and dissemination is done centrally in Darmstadt at EUMETSAT HQ, but also decentralised by a network of Satellite Application Facilities (SAF), centres of excellence in certain fields of meteorology and applications. Typical products include detailed ocean and land surface parameters and information on atmospheric composition, but also software packages to process EUMETSAT data. There are currently eight SAFs distributed over Europe.

FUTURE SYSTEMS

Post EPS

EUMETSAT is preparing the EPS follow on system, Post-EPS, jointly with partners (ESA, NOAA, CNES, DLR). The need date for the first satellite is 2018. Planned missions will continue, extend and improve the current EPS services. Candidate missions have been identified. Priorities have been established with Users. The project is entering Phase-A

Post EPS Candidate Missions and Priorities

•Infrared Sounding (IRS)	Very High	•Radar Altimetry (ALT)	Low
•Microwave Sounding (MWS)	Very High	•Cloud and Precipitation Profiling Radar (CPR)	Medium
•VIS/IR Imaging (VII)	Very High	•MW Imaging-Cloud (MWI-C)	Medium
•Scatterometry (SCA)	Very High	•Radiant Energy Radiometry(RER)	Low
•MW Imaging-Precipitation (MWI-P)	Low	•Total Solar IrradianceMonitoring (TSIM)	Low
•MW Imaging-Ocean/Land (MWI-OL)	Low	•Limb Infra-Red Sounding (LIR)	Medium
•Radio Occultation (RO)	High	•Limb Millimetre-Wave Sounding (MWS)	Medium
•UVNS Sounding (UVNS)	Medium	•Ocean Colour Imaging (OCI)	Low
•Multi-viewing Multi-polarisation-Imaging (3MI)	Medium	•Aerosol Profiling Lidar (APL)	Low
•Doppler Wind Lidar (DWL)	Medium	•Differential Absorption Lidar (DIAL)	Low
•Dual View Radiometry (DVR)	Low		

•GMES Sentinel-5 implemented on Post EPS

GROUND SYSTEMS

EUMETCast Dissemination

All EUMETSAT satellites transmit their measurement and telemetry data to receiving stations on the ground. From there they are relayed to the Control Centre in Darmstadt, Germany. Data are processed, archived in the EUMETSAT Data Centre, and in near real-time retransmitted to the User community, mainly via EUMETSAT's own EUMETCast dissemination system. EUMETCast is a multi-service dissemination system based on standard Digital Video Broadcast (DVB) technology. It uses commercial telecommunication geostationary satellites to multicast files (data and products) to a wide user community. EUMETCast is the EUMETSAT contribution to GEONETCast.

