



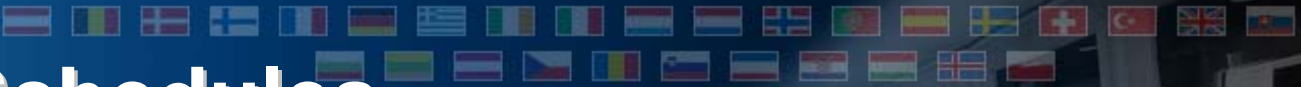
EUMETSAT Plans

Dieter Klaes

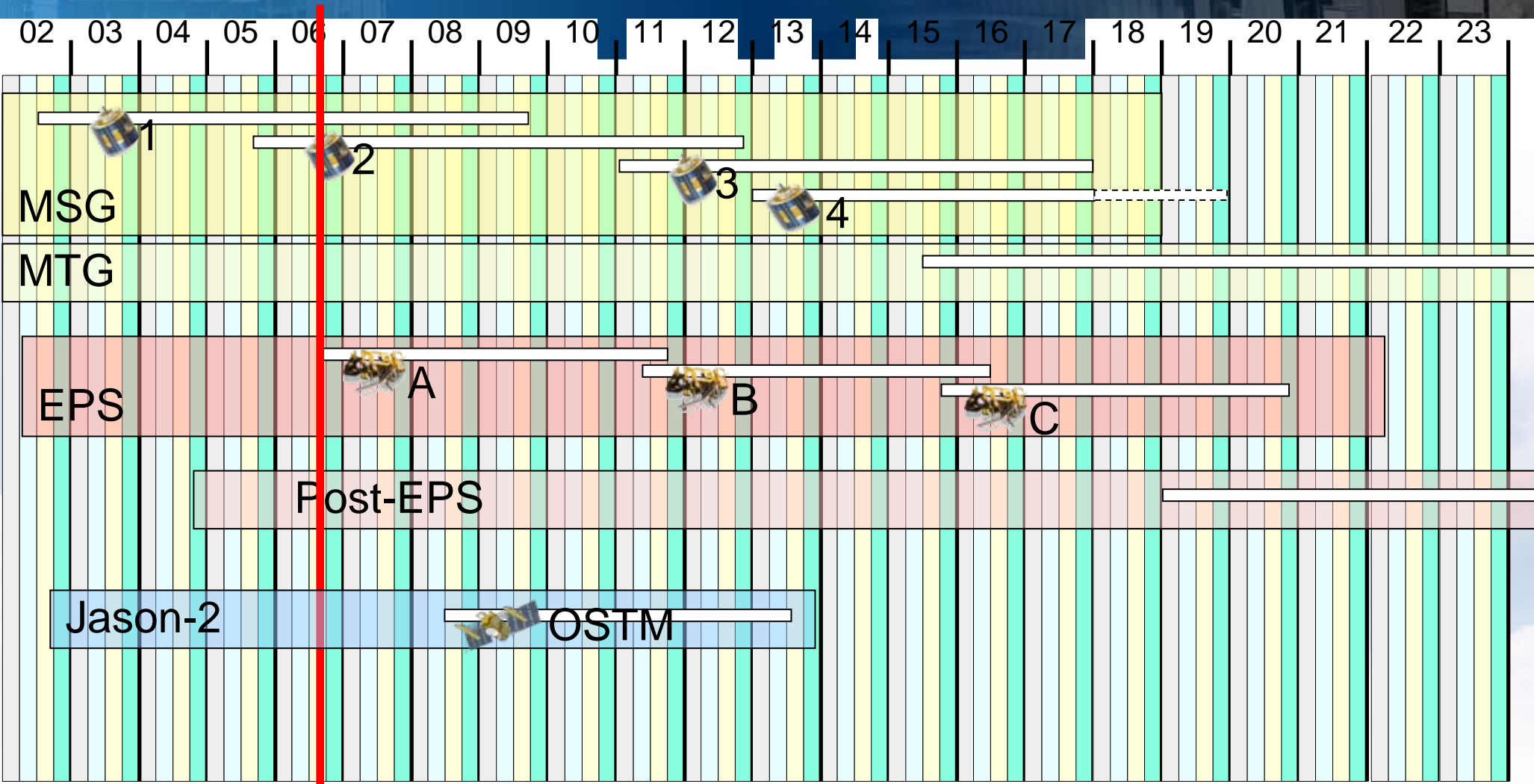
EPS Programme Scientist

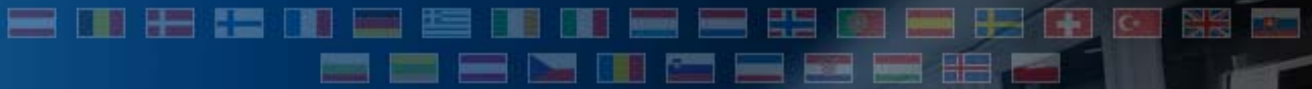
Content & Scope

- 1 Introduction**
- 2 Satellite Programmes**
 - 2.1 EUMETSAT Polar System**
 - 2.2 Geostationary Systems**
- 3 EARS**
- 4 OSTM Contribution**
- 5 Outlook**



Programme Schedules





- 1 Introduction**
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NEW LAUNCH DATE FOR METOP-A...

17 October 2006





THE LAUNCH ATTEMPTS IN JULY

...were not successful due to a problem in the launcher support software

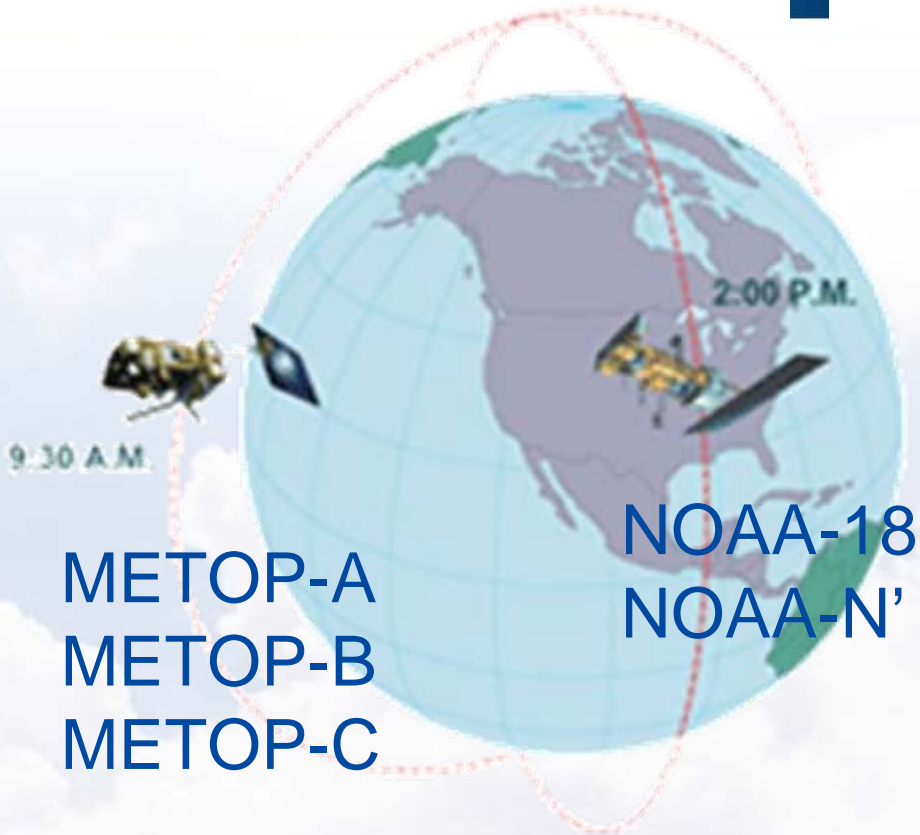


- Spacecraft
- LEOP support
- Ground Segment

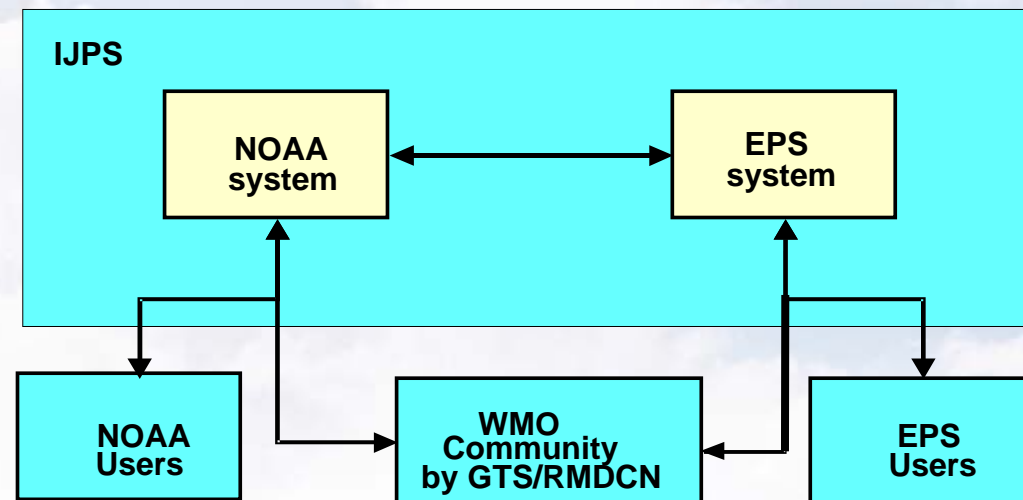
were all green during all launch attempts



EPS is part of the Initial Joint Polar System (IJPS)



- Coordinated programmes
- Exchange of instruments
- Coordinated operations, data and services
- Only Metop provides mid-morning service





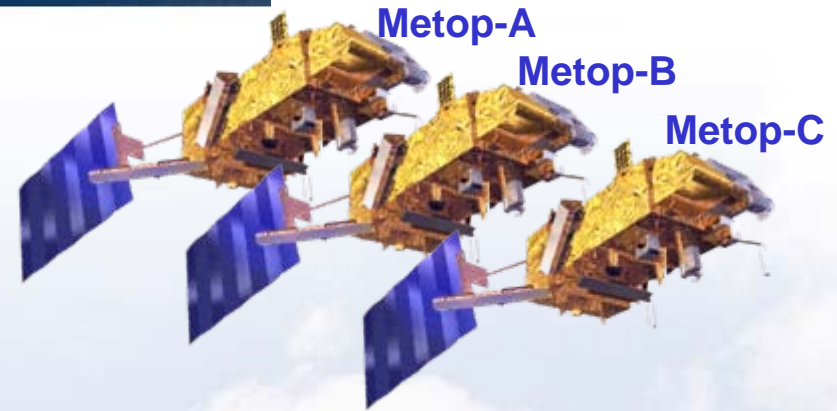
The EPS Programme Elements



**Polar Stations
Svalbard, 78 deg North**



**Launcher Service
(Soyuz)**



- Metop-A launch scheduled on **17 Oct. 2006**
- Sun Synchronous orbit
- 820 km, 9h30 LST, 102 min
- Sole source of mid-morning orbit data
- 11 Instruments
- Metop-B and Metop-C recurrent models
- Soyuz Launcher Service (Baikonur)
- ESOC LEOP Service (Darmstadt)
- Central & distributed Ground Segment components
- 14 years of operations



**LEOP Service
(ESOC)**

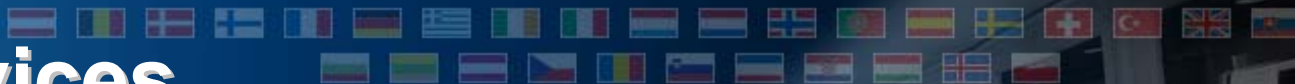


**EUMETSAT
Mission Control Centre**

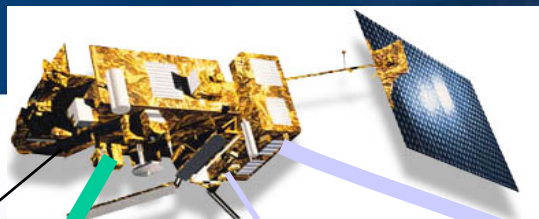


**Satellite Application
Facilities
(SAF)
8 Meteorological
Themes**

The EPS Services



Local mission : real-time transmission of imaging and sounding data to local user stations.



Global mission : delivery of global measurements to Met Services and NOAA within 2¼ hours of the instant of observation (GTS, EUMETCast)

Search and Rescue service (S&R).



ARGOS collection and retransmission of in-situ observational data.



Data Dissemination

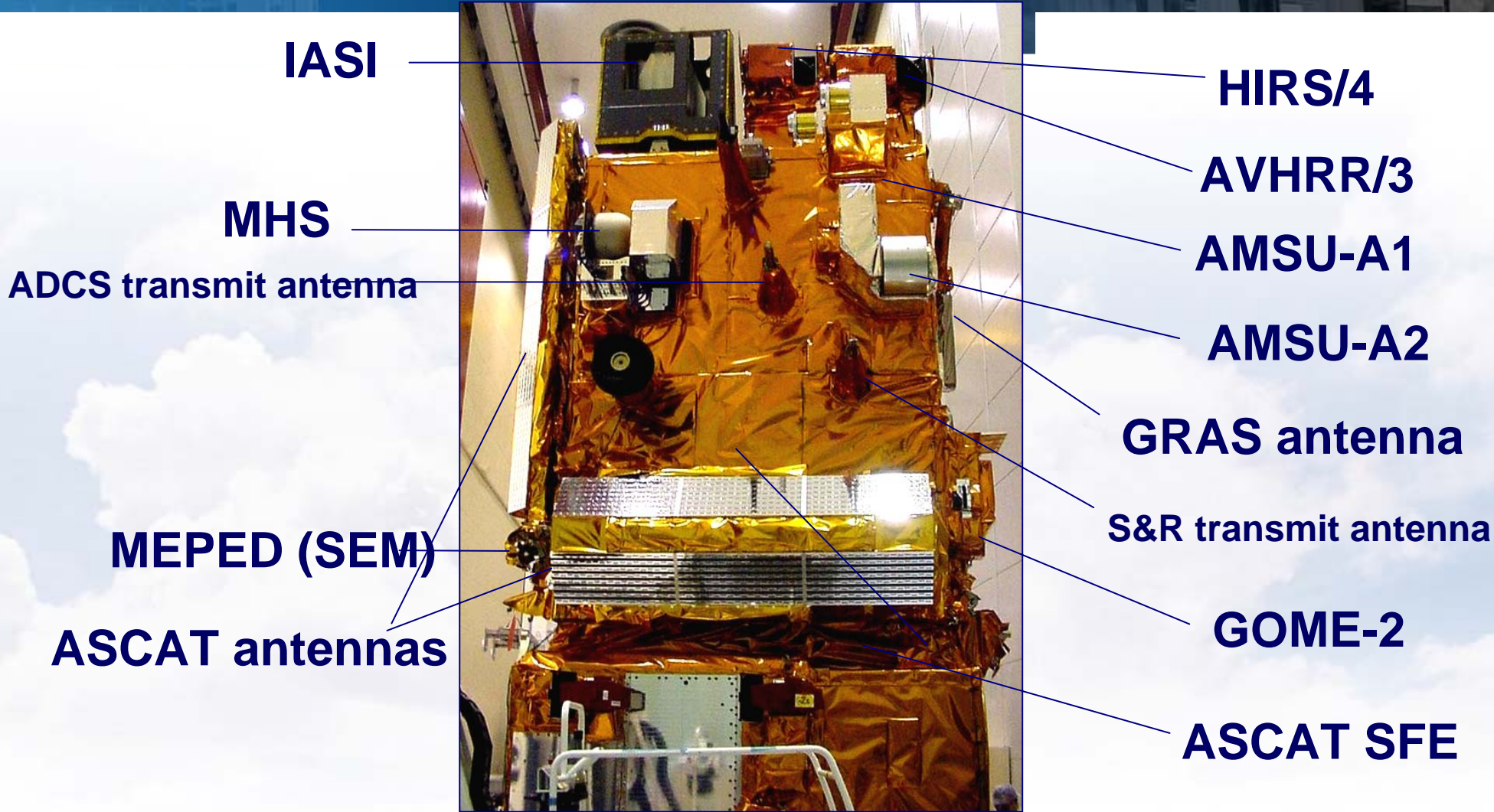
EUMETCast: Full NRT data stream
GTS: Subset



Archiving & Retrieval

All data and products are archived in the **UMARF**

Metop Instrument Accommodation



EUMETSAT Ground Segment Overview

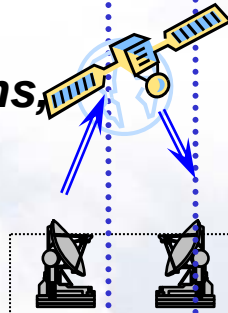


Polar Site, Svalbard



METOP
NOAA N, N'

2 Metop
Polar stations,
Svalbard



Fibre link

Prime Control
Center, Darmstadt

EUM HQ

Product
Generation

Product
Dissemination

Product
Processing

Product
Quality
Control

IASI
GRAS
ATOVS
ASCAT
GOME

Archive



EUMETCAST

USERS
SAFs



WMO Network
GTS

Back up Control
Center, Madrid



EPS Products (1)

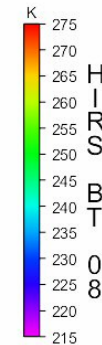
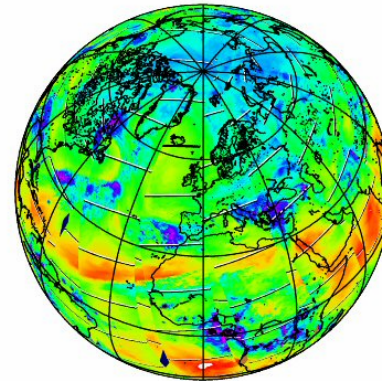
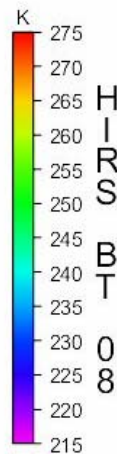
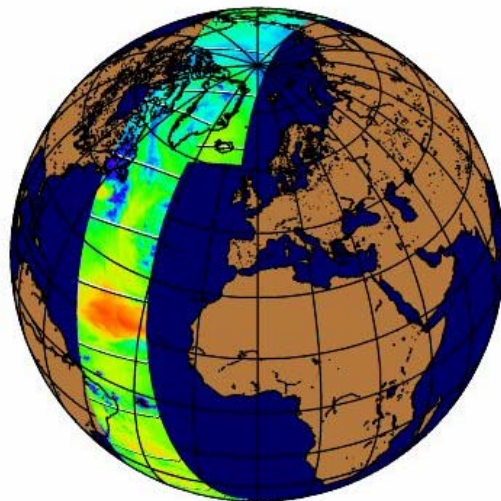
Level 1 NRT Products (2h15min)

Level 2 NRT Products (3h)

Global Sounding: NOAA17 26022005

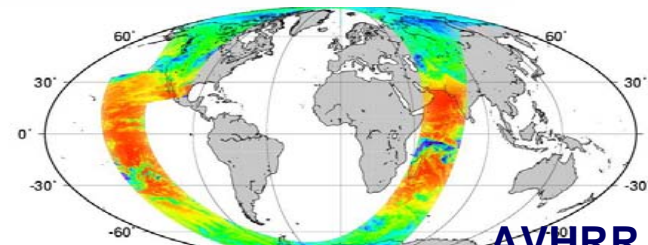
Global Products are dump-based

NOAA/NESDIS SAA

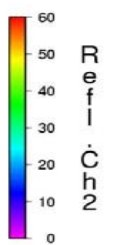
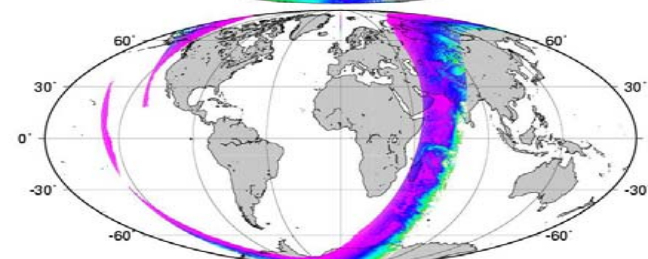
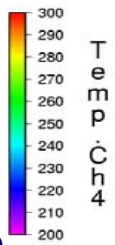


Composite of 14 level-1b products of one day from HIRS covering the Earth twice

2005 Mar 21 11:00:21 KDK 08:2005



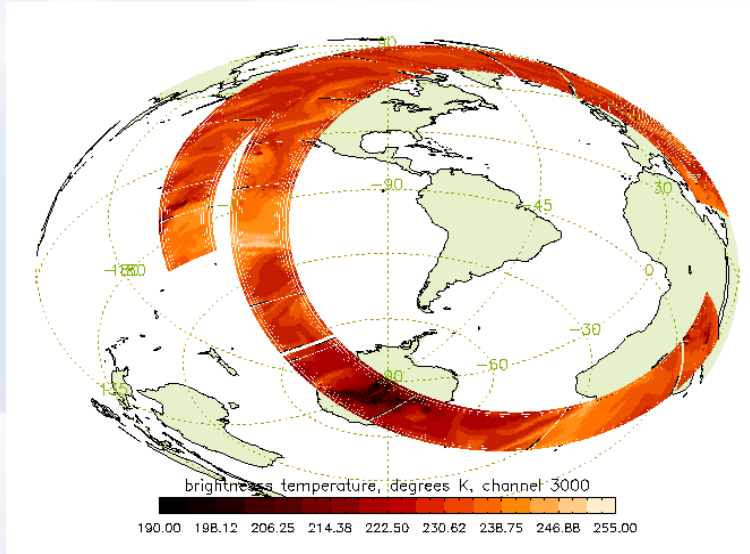
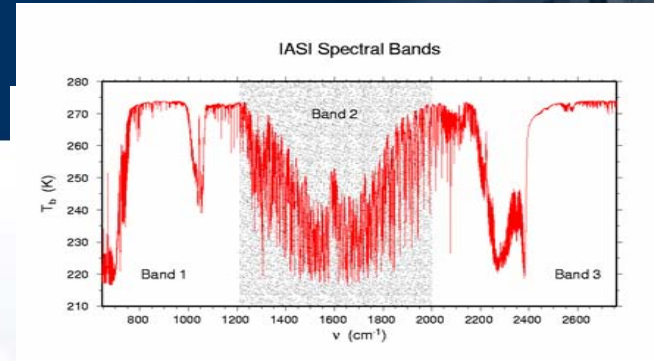
AVHRR Level 1b



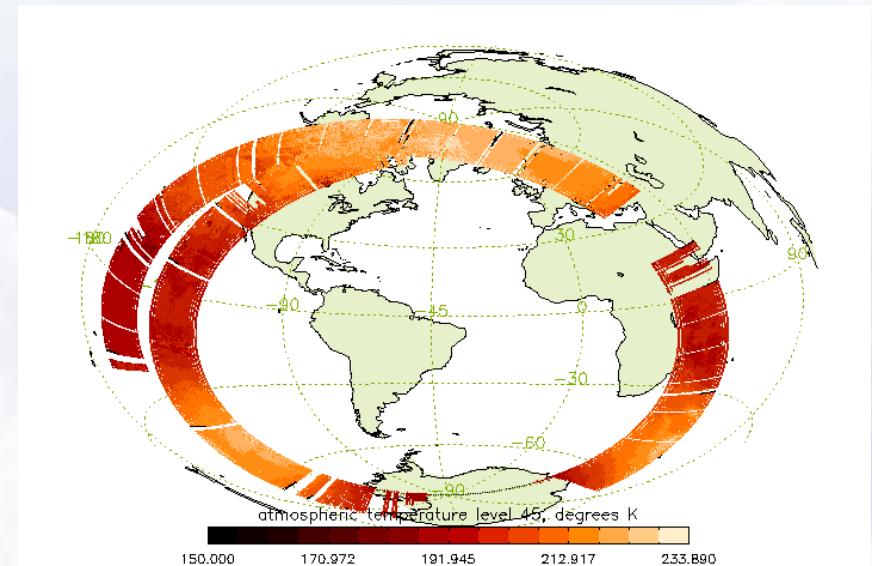
Continuity: ATOVS and AVHRR Level 1b and Level 2 products

EPS Products (2)

Level 1 NRT Products (2h15min)
 Level 2 NRT Products (3h)
 Global Sounding:



Brightness temperature as measured by channel 3000 (1394.75 cm^{-1})

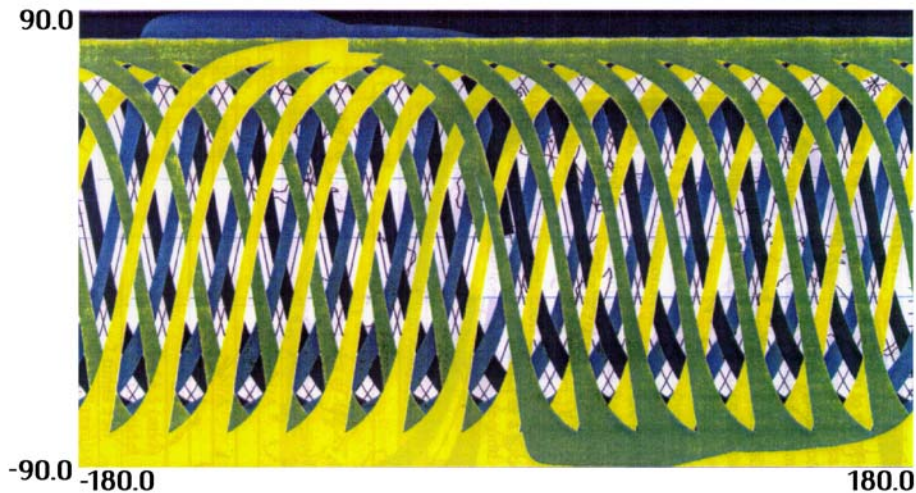


Schematic illustration of the global variation in retrieved atmospheric temperature, degrees K, at pressure level 45 (93.2 hPa).

New technology with IASI: IASI Level 1c and Level 2 products

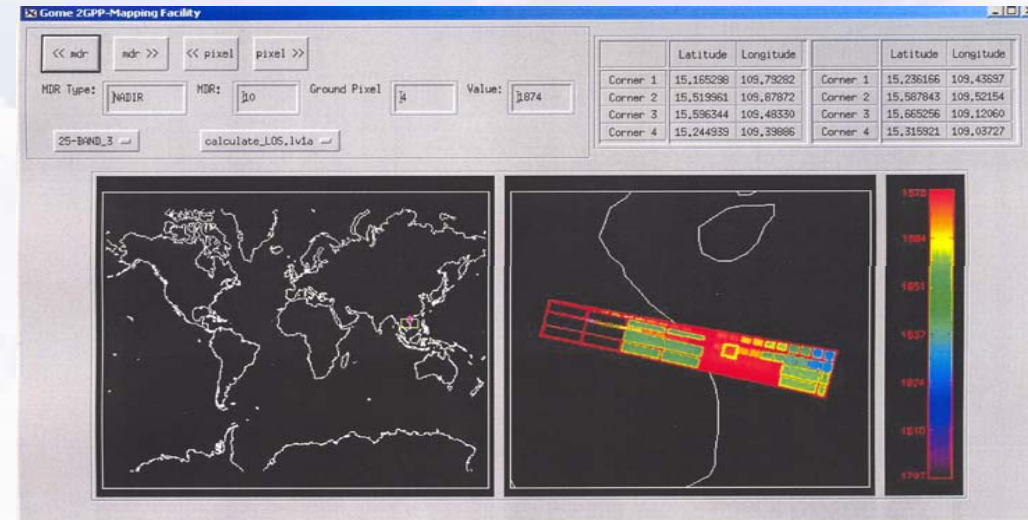
EPS Products (3)

Level 1 NRT Products (2h15min) Wind and Ozone Monitoring:



Improved Earth Coverage with ASCAT during one day due to dual swath measurement

GOME-2 Level 1 Ground Processor Prototype Output Example for CGS product (1 granule)

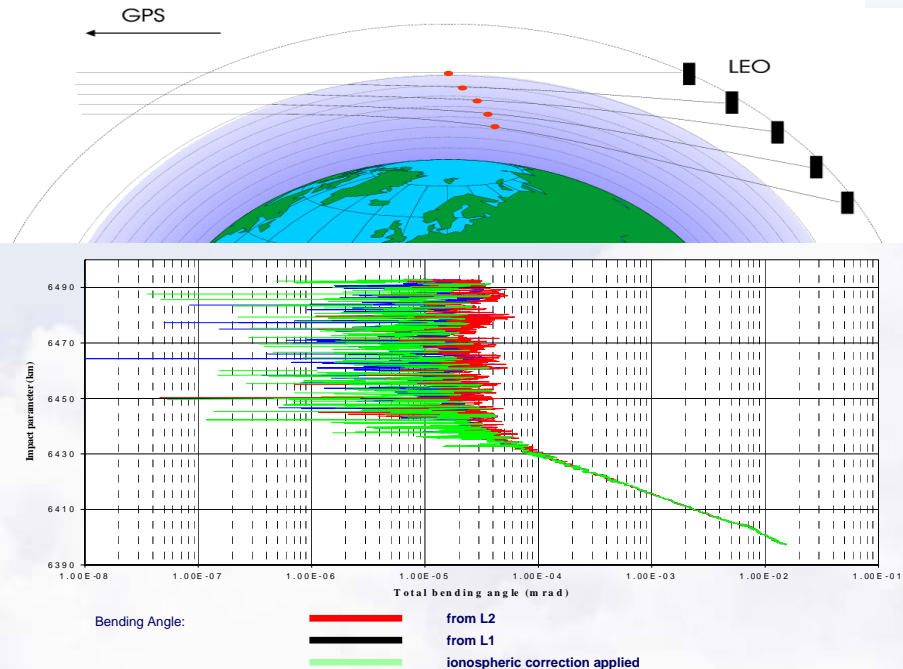
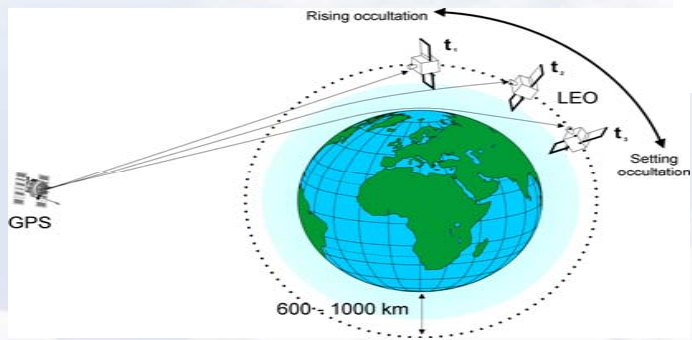


Proven Research Instruments become operational: ASCAT and GOME

EPS Products (4)

Level 1 NRT Products (2h15min) Sounding again:

GRAS: limb sounding by occultation of GPS signals



From Luntama (2000)

Level 1 b product: Bending angle.

First use of Radio Occultation technique in operations requires development of a whole system

EPS Products (5)



Level 2 and higher Products:

5 SAFs in the Initial Operations Phase

(until February 2007)

- *SAF on Nowcasting and Very Short-Range Forecasting*
- *SAF on Ocean and Sea Ice*
- *SAF on Climate Monitoring*
- *SAF on NWP*
- *SAF on Land Surface Analysis*

2 SAFs completing developments

(until February 2007)

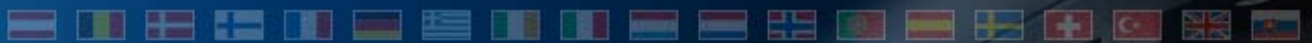
- *SAF on Ozone Monitoring*
- *SAF on GRAS Meteorology*

SAF Network

Use of EUMETCast for dissemination of OSI SAF and Land SAF (planned) products.

SAF on Support to Operational Hydrology and Water Management started

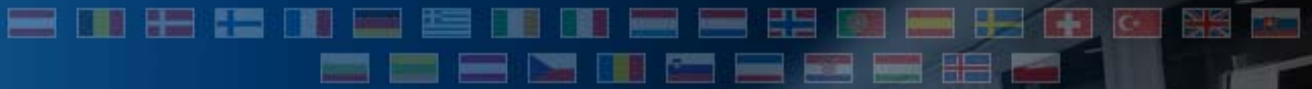
SAF funding for continuous Development and Operations (CDOP, 2007-2012) approved by Council in June 2004.



Unified Meteorological Archive / Retrieval Facility (UMARF)

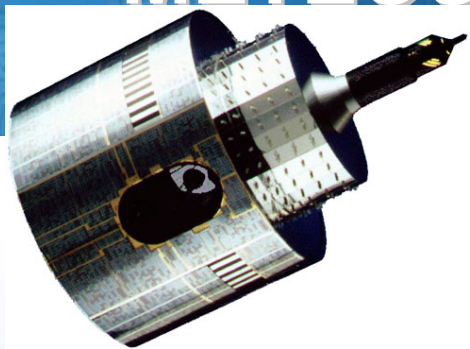
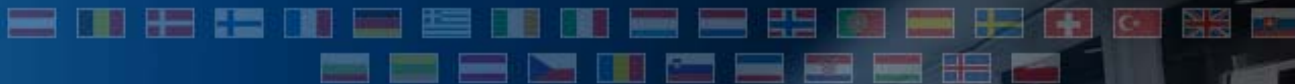


U-MARF provides the product archiving and retrieval functionality for Meteosat MTP, MSG (U-MARF V1) and EPS (U-MARF V2).



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METEOSAT



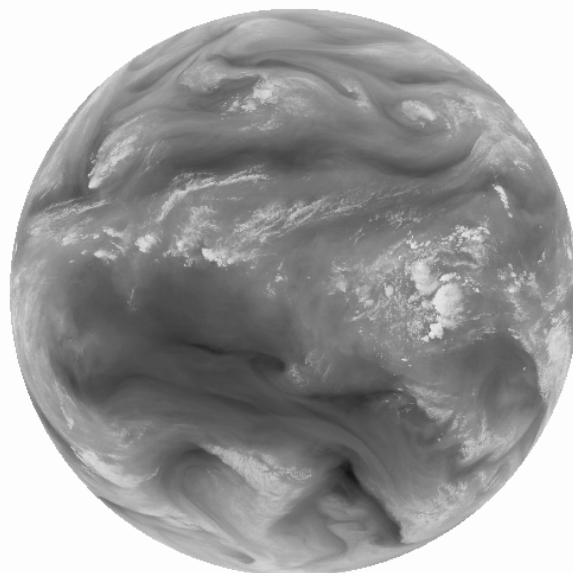
Meteosat Operational Programme (MOP)

and

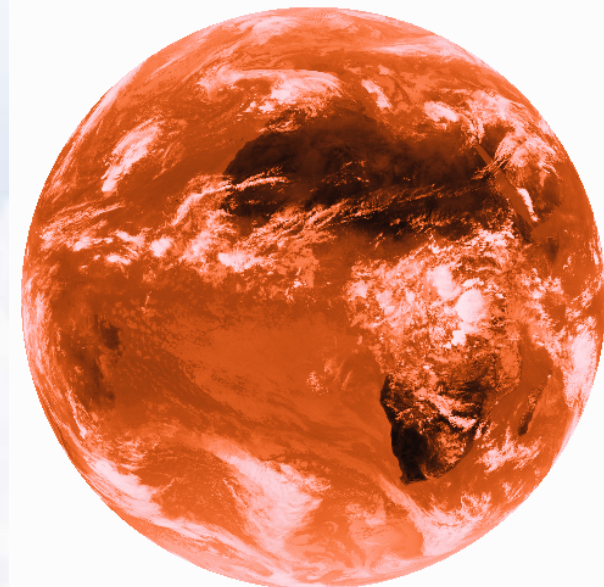
Meteosat Transition Programme (MTP)



Visible (VIS)
0.4 - 1.0 μm
5000 x 5000



Infrared (IR)
10.5 - 12.5 μm
2500 x 2500



Water Vapour (WV)
5.7 - 7.1 μm
2500 x 2500

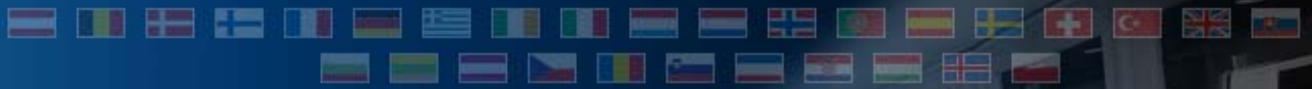
EUMETSAT Indian Ocean Data Coverage (IODC)



From end of May 1998 Meteosat-5 has been located at 63°E where it supported INDOEX until the end of 1999 and will continue as IODC until 2006, will be replaced by Meteosat-7 (after commissioning of MSG-2) through the end of 2008. M7 is currently being moved to 57.5°E.

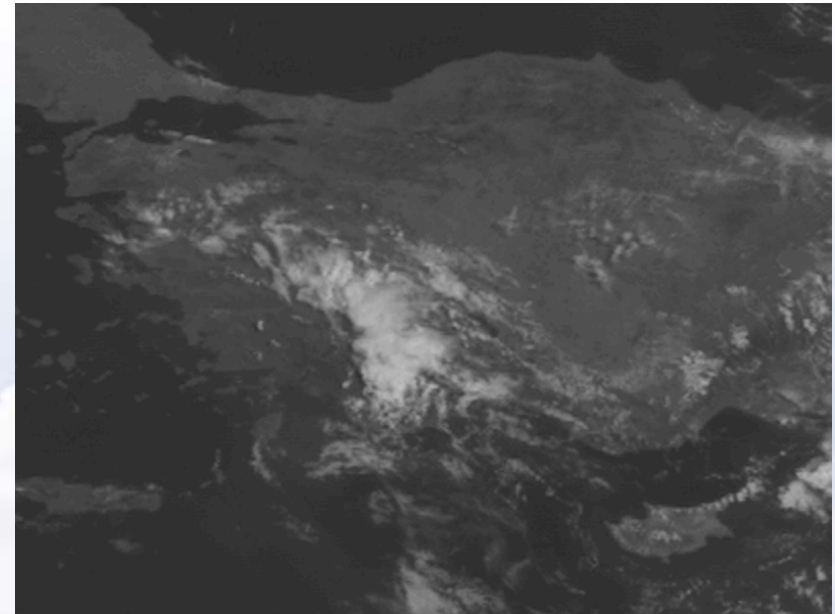
EUMETSAT

Rapid Scanning Service (RSS)



- Resulting from a request to support the Mesoscale Alpine Project (MAP) in September 1999 the backup spacecraft Meteosat-6 was configured to conduct a series of rapid scan operations

- Initially the rapid scan area covered the Alpine region at 5 minute intervals



⇒ In 2000 the scanned area was increased significantly and the repeat cycle fixed to 10 minute intervals. From mid 2001 the Rapid Scanning Service became operational

METEOSAT SECOND GENERATION - MSG

- **MSG-1:**

- launched August 2002
- Routine Operations started Jan 2004
- **MSG-1** renamed **Meteosat-8**



- **MSG-2:**

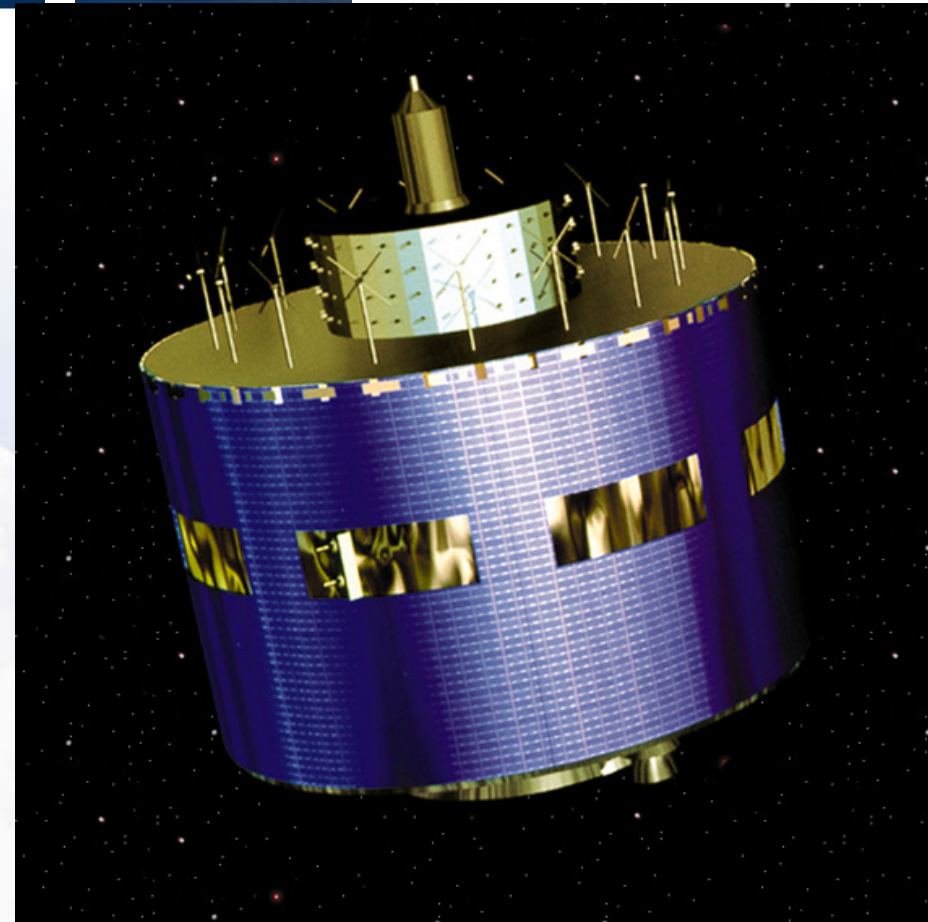
- launched December 2005
- Under commissioning
- Will operate in parallel to Meteosat-8 and will be renamed **Meteosat-9**

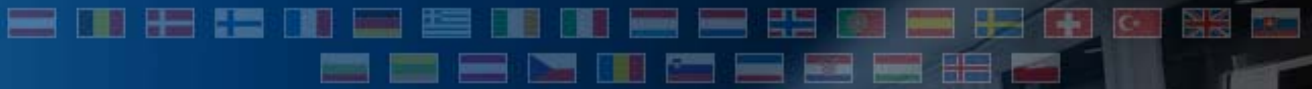
- **MSG-3:**

- in storage, launch according to current plans January 2011

- **MSG-4:**

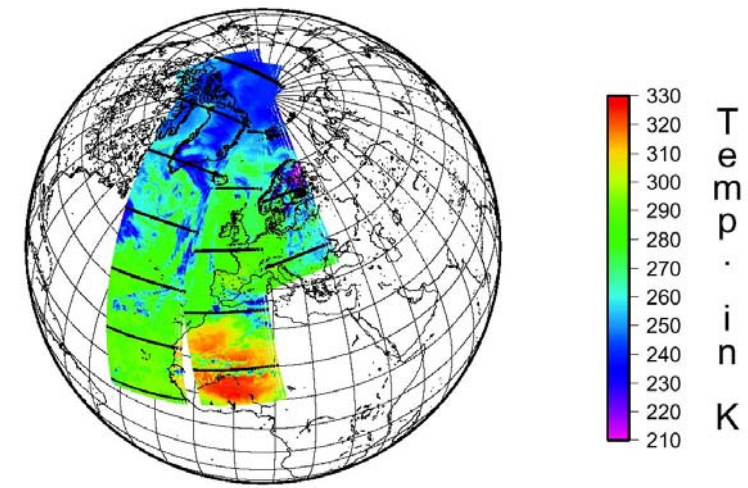
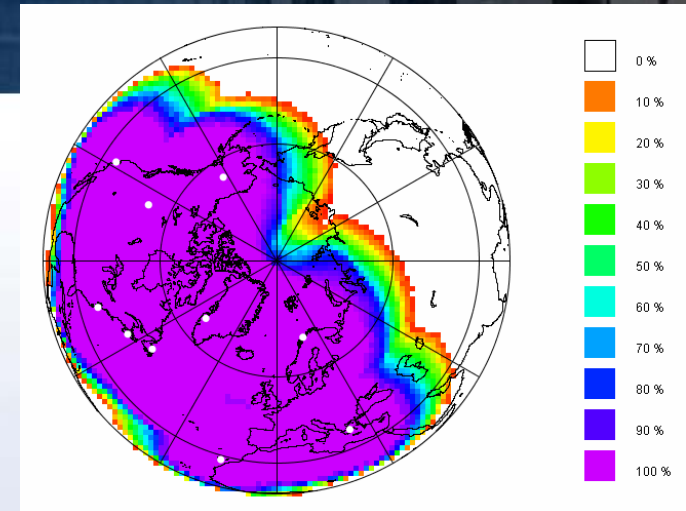
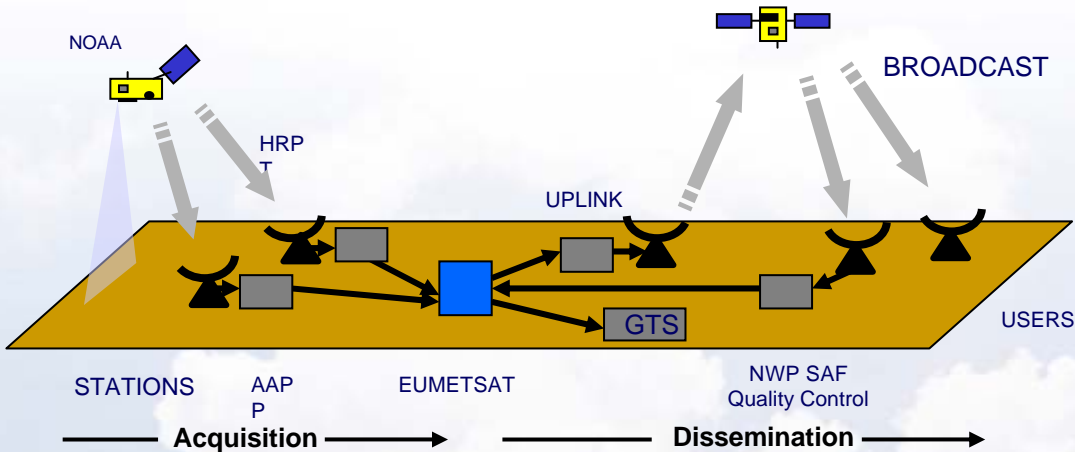
- under production
- in storage from spring 2007
- launch 2013



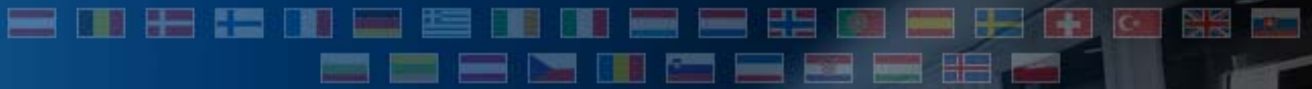


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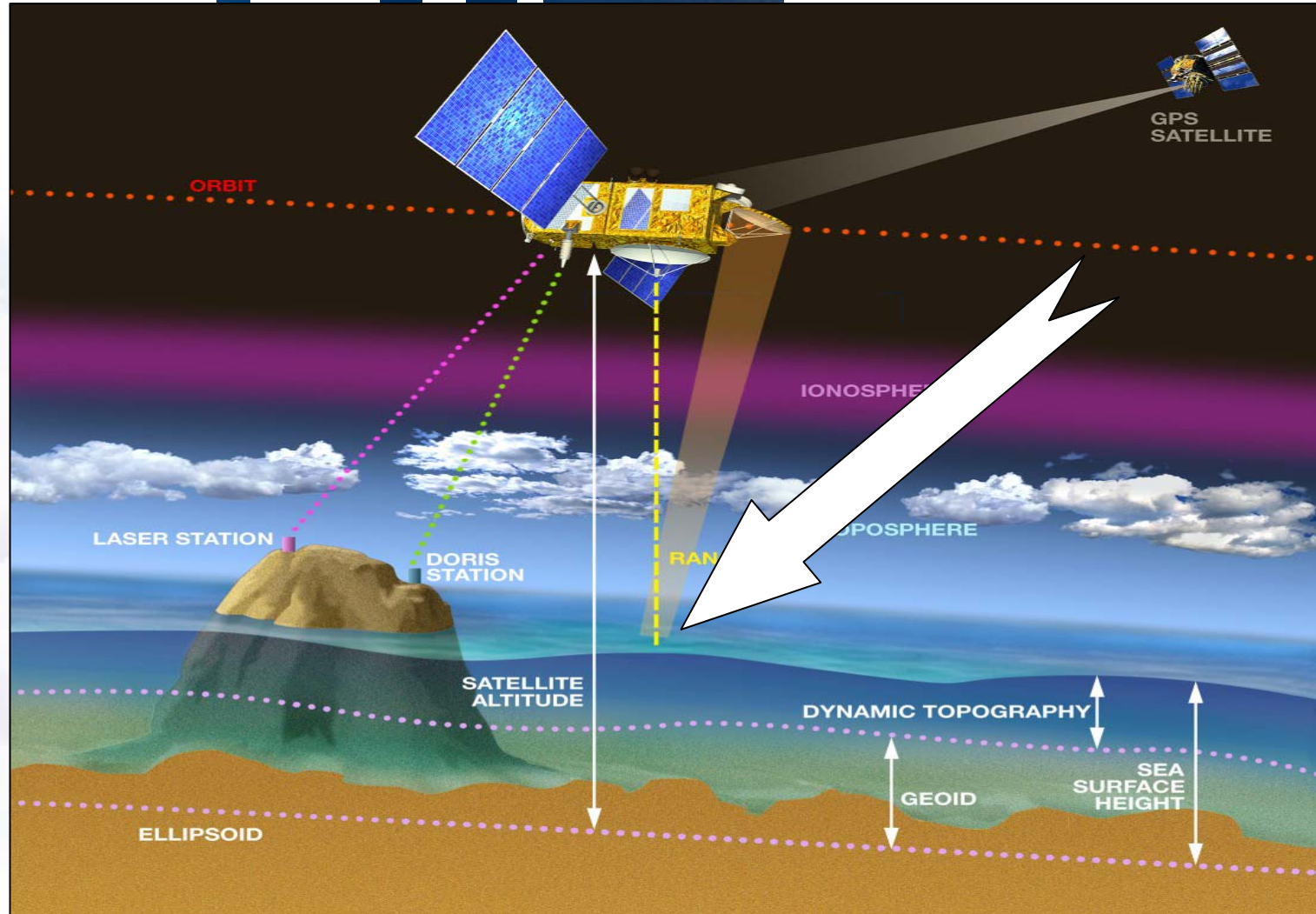
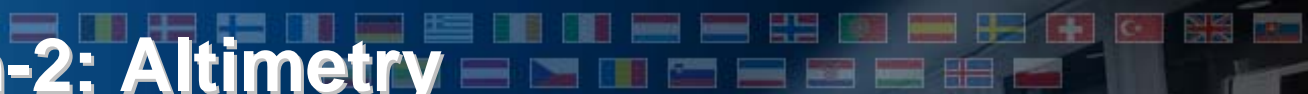
EUMETSAT ATOVS Retransmission Service (EARS)



- Demonstrates potential future dissemination concepts to meet shorter timeliness requirements
- Planned to be extended for NOAA-N,N', Metop
 - MHS
 - ASCAT
 - AVHRR



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OUTLOOK



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METEOSAT THIRD GENERATION (MTG)

MTG Phasing

First User Consultation Workshop	November 2001
Phase 0 (including ESA Pre-Phase A Studies)	2002 - 2005
Observation Techniques & Sensor Concept Studies	2003 - 2004
Pre-Phase A Mission Architecture & System Concept Studies	2004 - 2005
User Workshop on Mission Concepts	Locarno April 2005
Parallel EUMETSAT & ESA Phase A Studies	2006 - 2007
Coordinated EUMETSAT / ESA Phase B Studies and Programme Approval	2008 - 2009
Development & Testing of the MTG System	2009 - 2014
MTG Need Date	2015

MTG Candidate Missions

- High resolution fast imagery (HRFI)
- Full disk high spectral resolution imagery mission (FDHSI)
- Infrared sounding mission (IRS)
- Lightning imaging mission (LI)
- Atmospheric composition sounding mission, operating in the ultraviolet and the visible (UVS)



Post-EPS

Post-EPS Phasing

Phase 0	Phase 0 - Mission Analysis	2005 - 2008
Phase A	Phase A - Feasibility	2008 - 2010
Phase B	Phase B - Preliminary Definition	2010 - mid 2012
Phase C,D	Phase C,D - Detailed Definition, Production	Mid 2012 - 2018
Operations	Operations - First Element ready in Orbit	2019

Post-EPS Strawman Missions

- Atmospheric Sounding;
- Wind Profiling;
- Ocean Imaging including Sea Ice and Surface Wind;
- Ocean Surface Topography;
- Cloud, Precipitation, and Large-scale Land Surface Imaging;
- Atmospheric Chemistry.

The analysis of user requirements has been conducted with support by Application Expert Groups,

URs were endorsed by UC workshop in March 2006 and subsequently adopted by Council

Ready to derive Mission Requirements