EUMETSAT Plans

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EPS Programme Scientist
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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

- 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

Polar Stations
Svalbard, 78 deg North

Launcher Service
(Soyuz)

Satellite Application
Facilities
(SAF)
8 Meteorological Themes

EUMETSAT
Mission Control Centre

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

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

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

- IASI
- MHS
- ADCS transmit antenna
- MEPED (SEM)
- ASCAT antennas
- HIRS/4
- AVHRR/3
- AMSU-A1
- AMSU-A2
- GRAS antenna
- S&R transmit antenna
- GOME-2
- ASCAT SFE
EPS Products (1)

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

- Global Products are dump-based

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

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)

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

Schematic illustration of the global variation in retrieved atmospheric temperature, degrees K, at pressure level 45 (93.2 hPa).
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 (1granule)

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

Level 1 b product: Bending angle.
First use of Radio Occultation technique in operations requires development of a whole system
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

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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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
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.
• 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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Jason-2: Altimetry
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## MTG Phasing

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

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<th>Description</th>
<th>Duration</th>
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<tr>
<td>Phase 0</td>
<td>Phase 0 - Mission Analysis</td>
<td>2005 - 2008</td>
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<td>Phase A</td>
<td>Phase A - Feasibility</td>
<td>2008 - 2010</td>
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<td>Phase B</td>
<td>Phase B - Preliminary Definition</td>
<td>2010 - mid 2012</td>
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<tr>
<td>Phase C,D</td>
<td>Phase C,D - Detailed Definition, Production</td>
<td>Mid 2012 - 2018</td>
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<tr>
<td>Operations</td>
<td>Operations - First Element ready in Orbit</td>
<td>2019</td>
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### 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
International TOVS Study Conference, 15th, ITSC-15, Maratea, Italy, 4-10 October 2006