EUMETSAT PLANS

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EPS Programme Scientist
Programme Schedules

MSG

MTG

EPS

Post-EPS

Jason-2

OSTM

14th International (A)TOVS Study Conference
Beijing, China, 25 - 31 May 2005

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EUMETSAT Plans

1 Introduction
2 Satellite Programmes
  2.1 Geostationary Systems
  2.2 EUMETSAT Polar System
3 EARS
4 OSTM Contribution
5 Outlook
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.
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 ➔ Meteosat-8

• MSG-2:
  - launch planned 23 August 2005

• MSG-3:
  • in storage, launch early 2009 (TBC)

• MSG-4:
  - under production
  - in storage from spring 2007
  - launch 2011 - 2012
SEVIRI Channels

and the solar channels:

VIS0.6
VIS0.8
NIR1.6
HRV
SEVIRI Channel Weighting Functions

Mean Weighting Functions of SEVIRI Channels at Middle Latitudes

Local Zenith Angle = 55 deg

Pressure vs. Weighting Function

Channels:
- 3.8 mic
- 4.7 mic
- 6.2 mic
- 7.3 mic
- 8.7 mic
- 10.8 mic
- 12.0 mic

EUMETSAT
# Meteosat-8 Baseline Products

<table>
<thead>
<tr>
<th>Products</th>
<th>Acronym</th>
<th>UMARF</th>
<th>GTS</th>
<th>EUMETCast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atmospheric Motion Vectors</td>
<td>AMV</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Cloud Analysis</td>
<td>CLA</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Cloud Analysis Image</td>
<td>CLAI</td>
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<td>Cloud Mask</td>
<td>CLM</td>
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<td>Cloud Top Height</td>
<td>CTH</td>
<td>Yes</td>
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<td>Clear Sky Radiance</td>
<td>CSR</td>
<td>Yes</td>
<td>Yes</td>
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<td>Climate Data Set</td>
<td>CDS</td>
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<td></td>
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<tr>
<td>High Resolution Precipitation Index</td>
<td>HPI</td>
<td>Yes</td>
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<td></td>
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<tr>
<td>ISCCP Data Set AC, B1 &amp; B2</td>
<td>IDS</td>
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<td></td>
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<tr>
<td>Tropospheric Humidity</td>
<td>TH</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Total Ozone</td>
<td>TOZ</td>
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<td>Yes</td>
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<td>Sea Surface Temperature (1)</td>
<td>SST</td>
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<td>Scenes Analysis (1)</td>
<td>SCE</td>
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<tr>
<td>Radiative Transfer Model (1)</td>
<td>RTM</td>
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<tr>
<td>Calibration Support</td>
<td>CAL</td>
<td>Yes</td>
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<tr>
<td>Global Instability</td>
<td>GII</td>
<td>Yes</td>
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<tr>
<td>Clear-sky Reflectance Map (2)</td>
<td>CRM</td>
<td>Yes</td>
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</table>

Table 2: The status of the meteorological products extracted centrally with Meteosat-8.
1) Internal products only, 2) Not fully operational
Ivory Coast
Aerosol Information

03 March 2004, 1245 - 1900 UTC,
RGB NIR1.6 / VIS0.8 / VIS0.6
Global Instability Index Product: still experimental

Lifted Index (Europe), compared to colocated radiosondes
Geostationary Earth Radiation Budget Experiment (GERB)

On Meteosat-8, MSG-2, MSG-3 and MSG-4
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EUMETSAT POLAR SYSTEM

- Metop-2 Scheduled launch April 2006
- Metop-2 renamed Metop-A after launch
- Sun Synchronous orbit 820 km, 9h30 LST
- 14 years of operation
- Central and distributed Ground Segment components

- Metop-B and Metop-C recurrent models
**EPS Services**

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

**Global mission**: delivery of global measurements to NMSs of Member States, NOAA within 2¼ hours of the instant of observation (GTS, EUMETCast)

**Search and Rescue** service (S&R).

**DCP (data collection)** mission of in-situ observational data.
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:

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

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).
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

Proven Research Instruments become operational: ASCAT and GOME

GOME-2 Level 1 Ground Processor Prototype Output
Example for CGS product (1granule)
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.  
Proposal for a SAF on Support to Operational Hydrology and Water Management delivered to EUMETSAT in January 2005, evaluated, and submitted to EUMETSAT Delegate Bodies for recommendation/decision.  

## EPS Product Formats

Summary of EUMETCast level-1 and level-2 EPS distribution formats for global products

<table>
<thead>
<tr>
<th></th>
<th>EUMETCast</th>
<th>GTS</th>
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<tbody>
<tr>
<td></td>
<td>Level 1</td>
<td>Level 2</td>
<td>Level 1</td>
<td>Level 1</td>
<td>Level 2</td>
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<td>ASCAT</td>
<td>BUFR and PFS</td>
<td>BUFR from SAF</td>
<td>BUFR</td>
<td>BUFR from SAF</td>
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<td>ATOVS</td>
<td>BUFR</td>
<td>BUFR</td>
<td>BUFR</td>
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<td>AVHRR</td>
<td>PFS</td>
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<tr>
<td>GOME</td>
<td>PFS</td>
<td>BUFR from SAF (TBC)</td>
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<td>BUFR from SAF</td>
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<tr>
<td>GRAS</td>
<td>BUFR and PFS</td>
<td>BUFR from SAF (TBC)</td>
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<td>BUFR from SAF</td>
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<td>IASI</td>
<td>BUFR</td>
<td>BUFR</td>
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<td>BUFR</td>
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</tr>
</tbody>
</table>
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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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, IASI
  - ASCAT
  - AVHRR
Jason-2: Altimetry
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IR Sounding (IRS) Mission

<table>
<thead>
<tr>
<th>Observation Area Name</th>
<th>Coverage (degrees)</th>
<th>Repeat Cycle (min)</th>
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</thead>
<tbody>
<tr>
<td>LAC</td>
<td>18°x6°</td>
<td>10</td>
</tr>
<tr>
<td>FDC</td>
<td>Φ18°</td>
<td>30</td>
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<table>
<thead>
<tr>
<th>Mission Band</th>
<th>Frequency range</th>
<th>Threshold Task</th>
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<tbody>
<tr>
<td>IRS-0</td>
<td>667 cm⁻¹ to 700 cm⁻¹</td>
<td>Temperature profile</td>
</tr>
<tr>
<td>IRS-1</td>
<td>700 cm⁻¹ to 770 cm⁻¹</td>
<td>Temperature profile</td>
</tr>
<tr>
<td>IRS-2</td>
<td>770 cm⁻¹ to 980 cm⁻¹</td>
<td>Window observation</td>
</tr>
<tr>
<td>IRS-3</td>
<td>980 cm⁻¹ to 1070 cm⁻¹</td>
<td>Tracer profile/Chemistry</td>
</tr>
<tr>
<td>IRS-4</td>
<td>1070 cm⁻¹ to 1210 cm⁻¹</td>
<td>Window observation</td>
</tr>
<tr>
<td>IRS-5</td>
<td>1210 cm⁻¹ to 1600 cm⁻¹</td>
<td>Humidity/tracer profile</td>
</tr>
<tr>
<td>IRS-6</td>
<td>1600 cm⁻¹ to 2000 cm⁻¹</td>
<td>Humidity/tracer profile</td>
</tr>
<tr>
<td>IRS-7</td>
<td>2000 cm⁻¹ to 2250 cm⁻¹</td>
<td>Chemistry</td>
</tr>
<tr>
<td>IRS-8</td>
<td>2250 cm⁻¹ to 2400 cm⁻¹</td>
<td>Temperature profile</td>
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<td>IRS-9</td>
<td>2400 cm⁻¹ to 2500 cm⁻¹</td>
<td>Window observation</td>
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</table>

*: Only one of the two band is required
Post-EPS Need Date and Overall Planning


- MTG Reference
- Phase 0
- Phase A
- Phase B
- Phase C

- EPS Baseline
- METOP-A (09:30)
- METOP-B (09:30)
- METOP-C (09:30)

- POES/NPOESS Assumptions
- NOAA-N (14:30)
- NOAA-N’ (14:30)

- C1 (21:30)
- C2 (13:30)
- C3 (17:30)
- C4 (21:30)
- C5 (13:30)
- C6 (17:30)

- Post EPS Development
- Phase 0
- Phase A
- Phase B
- Phase C, D

- Post-EPS Need Date

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