



EUMETSAT Headquarters, Darmstadt, Germany

Central Operations Report
for the period July to December 2009





EUMETSAT Central Operations Report for July - December 2009

Contents

- Introduction
- Performance Reporting covering EUMETSAT's Services
- Changes to EUMETSAT's Services in the reporting period
- Glossary

Central Operations Reports are to be found under 'Documentation' on www.eumetsat.int



EUMETSAT Central Operations Report for July - December 2009

Introduction

Welcome to the report on EUMETSAT Central Operations for the second half of 2009.

In overview, the half-year saw good service availability in general, although the Meteosat-9 satellite experienced another safe-mode. There were no other major operational events during the period, but service improvements continued with further expansion of the product suite on EUMETCast and the addition of the HRPT station on La Reunion to the EARS network. The EUMETSAT Data Centre handled an increasing number of data requests, the total volume of data retrieved in 2009 surpassing the 1 Petabyte (10^{18}) threshold.

The second Meteosat-9 safe-mode of 2009 occurred on the 15th August (the previous occurrence was on 17th April), necessitating once again the swap of the prime 0° imaging service to Meteosat-8. The satellite swap was achieved without delays, causing only a short outage to the prime service, but implying a longer outage to the Rapid-Scanning Service. Further information on the event is provided on slide 8.

As concerns Metop-A operations, the IASI instrument onboard the Metop-A satellite experienced three entries into 'heater-refuse mode'. All were determined to be caused by SEUs (Single Event Upsets, i.e. solar particles affecting onboard electronics).

Continued →



EUMETSAT Central Operations Report for July - December 2009

Introduction (continued)

It should be noted that a major update to the IASI onboard software has been implemented, which will enable certain classes of SEUs to be recovered from automatically onboard, thus minimizing service outages.

In August the performance of the Metop / NOAA Global Data Service was impacted negatively by the temporary cancellation of support for NOAA-19 blind orbits in August due to equipment problems at the Svalbard Ground Station.

A routine 'Out-of-Plane' manoeuvre was conducted with the Metop-A satellite in September. This manoeuvre achieved good results, with the outage for the 6 instruments affected kept to a low level.

Finally, in support of climate-monitoring activities, the first reprocessed set of ASCAT data was released in December 2009. A comprehensive plan for the reprocessing of climate-relevant instrument data is under development.

Best regards,
Mikael Rattenborg
Director of Operations



EUMETSAT Central Operations Report for July - December 2009

Performance Reporting: Categories

The charts on the following slides present a summary view of the performance of the services within the categories listed here:

- Meteosat Services
- Metop/NOAA Global Data Service
- Metop/NOAA Regional Data Service (EARS)
- Search and Rescue Support
- Jason-2 OGDR Service
- Other Geostationary Satellite Services
- The EUMETSAT Data Centre
- EUMETSAT's User Support Service

Several terms with special meaning (e.g. Nominal RCs) appear in the following slides. A glossary is provided at the end of the report.



EUMETSAT Central Operations Report for July - December 2009

Performance Reporting: Conventions

Availability of EUMETSAT Services:

The availability of most operational services provided by EUMETSAT is measured against service-specific monthly targets. This report presents the performance of the individual services in the form of charts showing their month-by-month availability, accompanied by commentary identifying any significant events or factors (whether satellite or ground-segment in nature) which may have had impact on the provision of them.

Operational Events with General Impact:

An event which significantly affected the availability of a single service (e.g. the malfunction of a single instrument) is indicated on the relevant slide for that service.

Some operational events impact the availability of more than one individual service (e.g. an outage of EUMETCast). Such events are described on separate slides near the start of the '**Meteosat Services**' and '**Metop/NOAA Global Data Service**' sections. Where needed, slides concerning other services make reference to one or the other.



EUMETSAT Central Operations Report for July - December 2009

Meteosat Services

This service category refers to the dissemination of data and products produced with the Meteosat System, which comprises geostationary satellites positioned at longitudes 0°, 9.5°E and 57°E. These satellites nominally support the prime imaging, Rapid-Scan and 'Indian Ocean Data Coverage' (IODC) services respectively.

The individual services addressed in this section are as follows:

- Meteosat 'Full-Earth Scan' image data acquired at 0° and 57°E
- Meteosat 'Rapid Scan' image data acquired at 9.5°E
- Meteorological products derived from that image data
- Data Collection and Retransmission (the DCP service)



EUMETSAT Central Operations Report for July - December 2009

Meteosat Services: Operational Events with General Impact

The following event impacted Meteosat Services to the extent described:

15 August 2009: Meteosat-9: A PMB anomaly occurred at 05:13 UTC, forcing the satellite into safe-mode. The prime 0° mission was swapped to Meteosat-8 after stopping the rapid-scanning mission. Prime 0° operations resumed at 09:00 UTC. The event was classified as Operational Incident no. 39.

Full-scan 0° SEVIRI imagery was unavailable for approximately 4 hours, derived meteorological products for 9½ hours (MPE products 40 hours) and DCP relay for 2 hours and 21 minutes. As a consequence of Meteosat-8 being used to support the prime mission, the Rapid-Scanning Service (imagery and products) was unavailable for approximately 6 days.



EUMETSAT Central Operations Report for July - December 2009

Meteosat Services → SEVIRI 0° Image Data

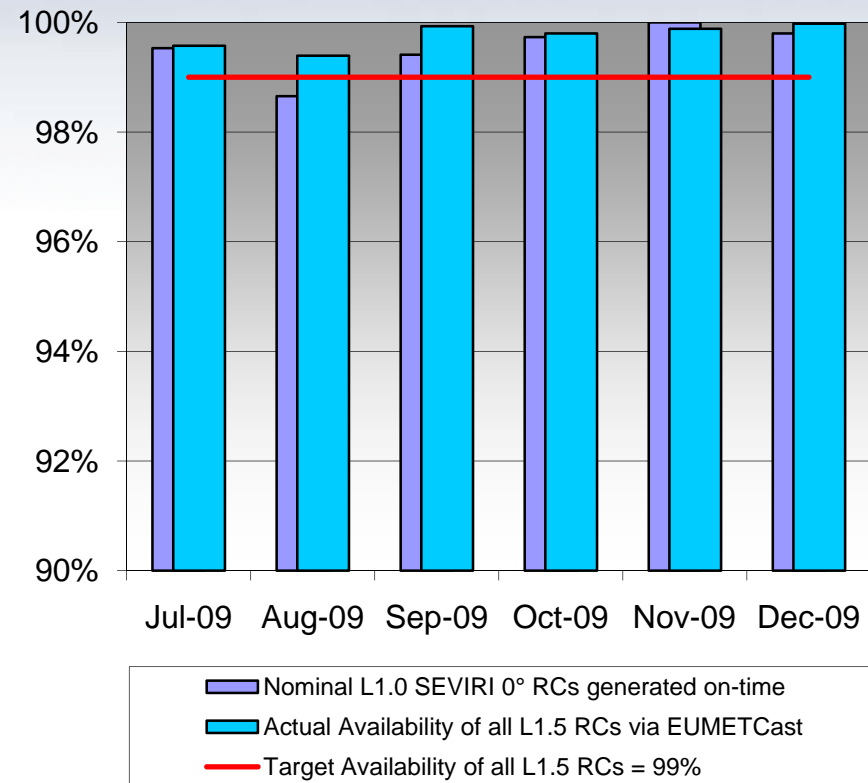
Performance measured in terms of:

- 1) the number of Nominal Level 1.0 Repeat Cycles (RCs) which have been generated 'on-time', as a percentage of those scheduled
- 2) the combined timely availability of all (nominal and otherwise) Level 1.5 RCs (High-Rate and Low-Rate) via EUMETCast

Events Which Impacted Availability:

August: Nominal RCs impacted by satellite swaps necessitated by Met-9 entering safe-mode on 15-Aug-09 (see slide 8). Following the swap to Met-8 on that day, and the swap back on 18-Aug-09, scanning of several RCs needed before geometric quality returned to normal.

September 2009: Nominal RCs impacted by reduced geometric quality resulting from eclipse and from satellite tank heater-switching.





EUMETSAT Central Operations Report for July - December 2009

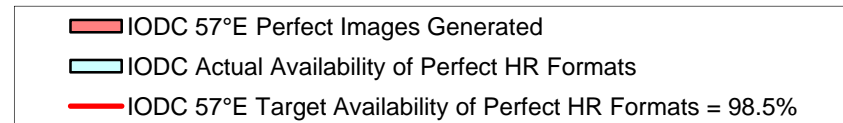
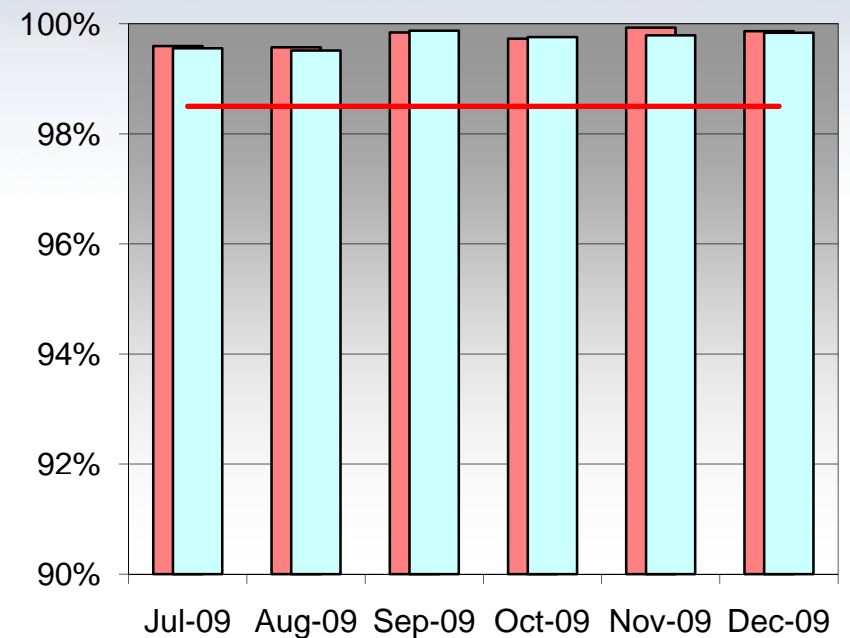
Meteosat Services → IODC 57°E Image Data

Performance measured in terms of:

- (1) the number of Perfect Images which have been generated, as a percentage of those scheduled,
- (2) the availability of Perfect Formats directly disseminated via Meteosat-7, as a percentage of those scheduled.

Events Which Impacted Availability:

None significant.





EUMETSAT Central Operations Report for July - December 2009

Meteosat Services → SEVIRI 9.5°E Rapid-Scan Image Data

Meteosat-8 currently supports the MSG Rapid-Scan Service (RSS), using a scan period of 5 minutes, covering the latitude range of 15 to 70°, using all 12 SEVIRI spectral channels.

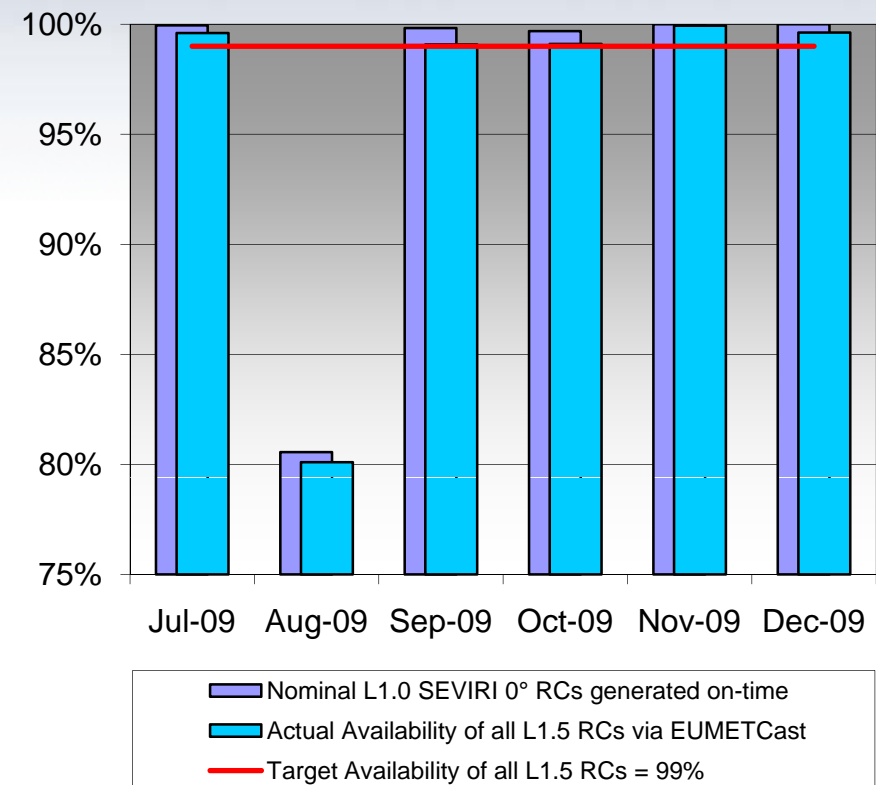
Performance is measured in terms of the number of **nominal** Level 1.0 Repeat Cycles (RCs) which have been generated 'on-time', as a percentage of those scheduled, plus the availability of all Level 1.5 RCs disseminated via EUMETCast.

Note that, due to operational constraints, RSS is interrupted approximately once a month to perform full-Earth scanning, and also for a full month in the December/January timeframe. More information can be found on www.eumetsat.int under 'Access to Data'.

Events Which Impacted Availability:

15 August 09: RSS 6-day stoppage due to operational changes necessitated by Met-9's safe-mode (see slide 8).

9 October 09: A minor anomaly onboard Met-8 led to a short outage.





EUMETSAT Central Operations Report for July - December 2009

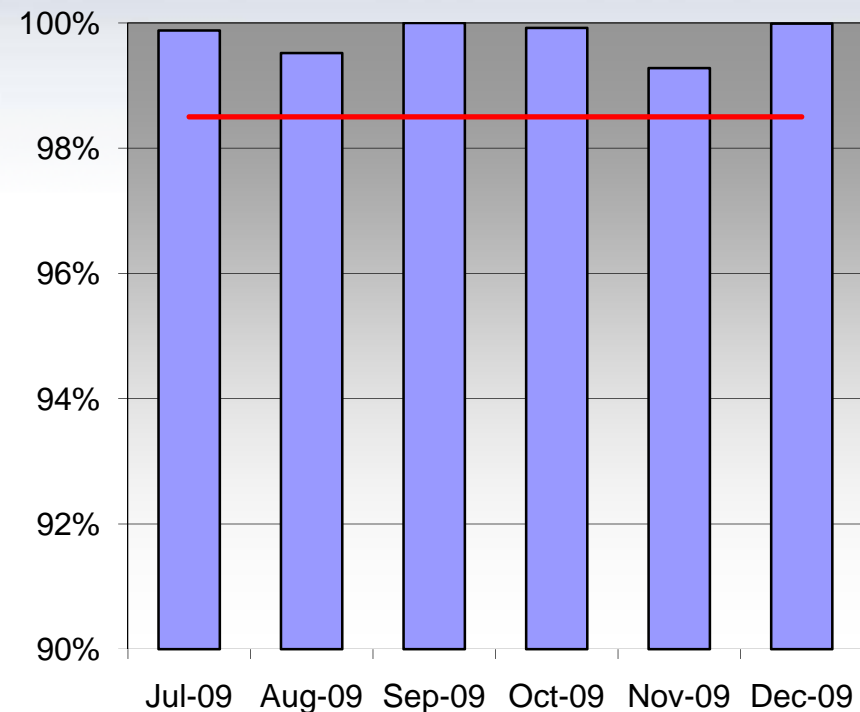
Meteosat Services → Meteorological Products derived from 0° Data

Performance measured in terms of the number of meteorological products which have been generated at EUMETSAT, as a percentage of those scheduled.

Events Which Impacted Availability:

15 August 09: Met-9 entry into safe-mode and the resulting switch of the 0° mission to Met-8 impacted the generation of products.

20-23 November 09: Generation of MPE products not possible for a period of approximately 2½ days due to unavailability of SSMI data.



— 0° Met Product Target Availability 98.5%



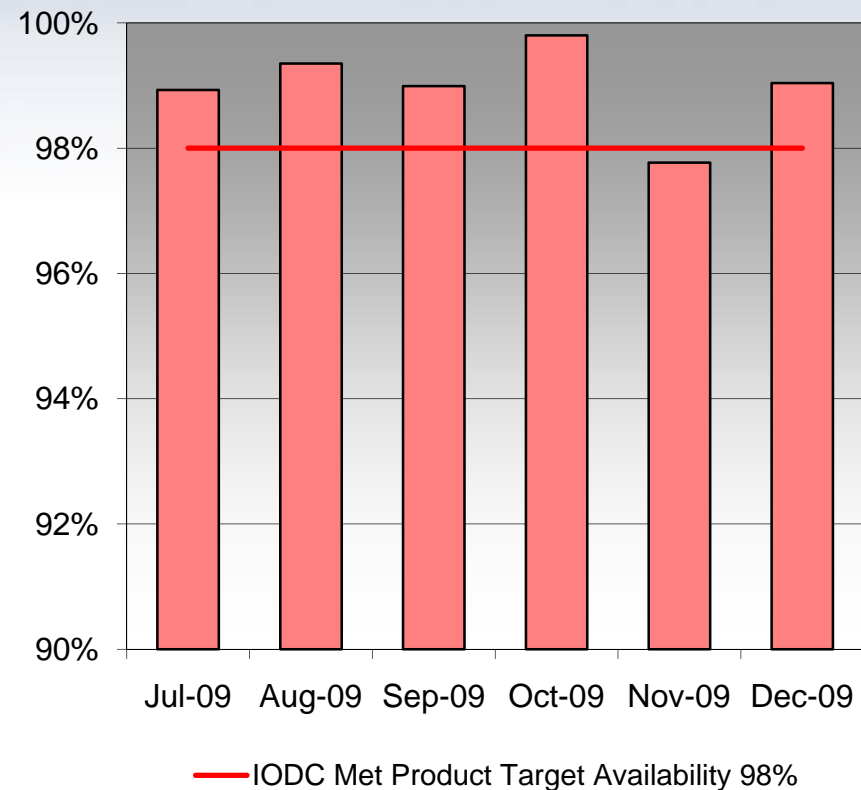
EUMETSAT Central Operations Report for July - December 2009

Meteosat Services → Meteorological Products derived from 57°E Data

Performance of this component of the IODC service is measured in terms of the number of meteorological products which have been generated at EUMETSAT, as a percentage of those scheduled.

Events Which Impacted Availability:

19-23 November 09: Generation of MPE products not possible for a period of approximately 2½ days due to unavailability of SSMI data.





EUMETSAT Central Operations Report for July - December 2009

Meteosat Services → Meteorological Products derived from 9.5°E RS Data

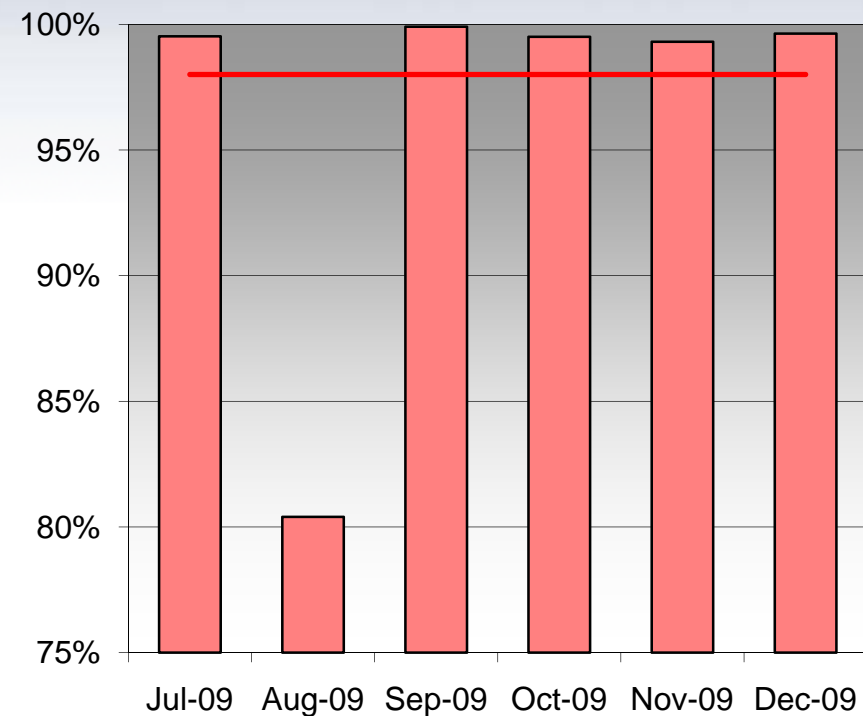
Meteorological products derived from the 5-minute Rapid-Scan (RS) image Repeat Cycles produced using Meteosat-8.

Performance of this service is measured in terms of the number of meteorological products which have been generated at EUMETSAT, as a percentage of those scheduled.

Events Which Impacted Availability:

15 August 2009: The RS mission supported by Met-8 was stopped in order that the satellite be used for supporting the 0° mission. The period of stoppage was approximately 6 days.

Between 17-Nov-09 and 17-Dec-09 there was the annual one-month scheduled stoppage for operational reasons – the statistics for November and December cover the days outside of that period.



— RSS Met Product Target Availability 98%



EUMETSAT Central Operations Report for July - December 2009

Meteosat Services → DCP Channel Availability at 0°

Data Collection and Retransmission operations at 0° utilise Meteosat-9's international and regional DCP channels.

As of the end of December 2009, there were 584 active Data Collection Platforms (DCPs) out of a total of 1017 registered units, belonging to 115 operators.

Availability of the 0° service is shown on the chart to the right. It is measured in terms of the number of hourly reference DCP messages on all operational regional channels which have been successfully received back by EUMETSAT, as a percentage of those sent.

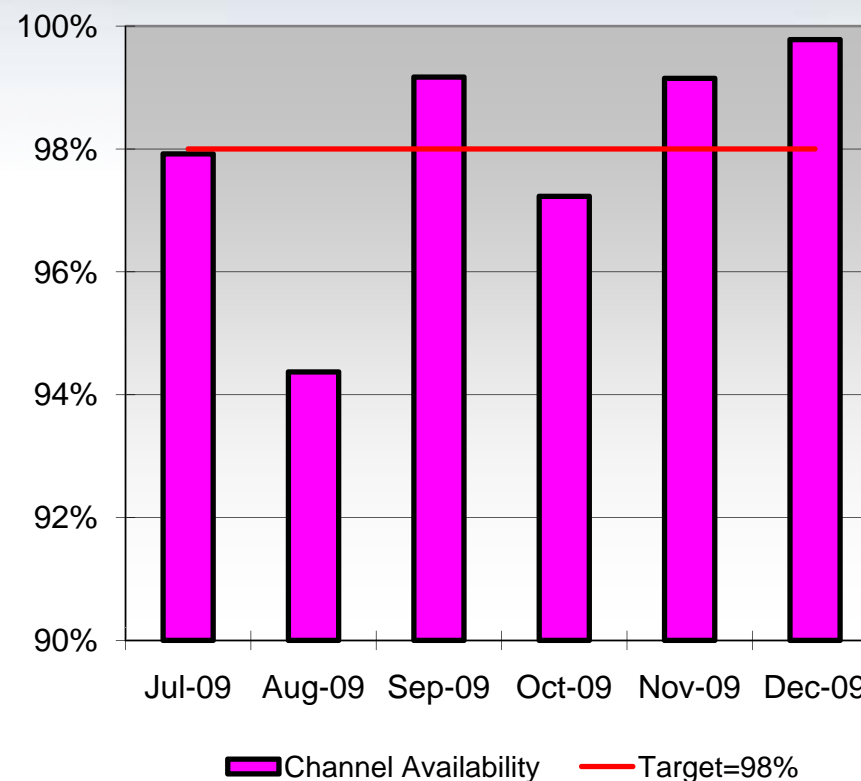
(Note that the availability of the 4 international DCP channels supported by Meteosat-6 as part of the Indian Ocean Tsunami Warning System (IOTWS) is not included)

Events Which Impacted Availability:

July: Urgent problem investigation necessitated some unforeseen ground station equipment downtime.

August : Problems with DCP relay via Met-8 experienced during Met-9's safe-mode on 15-Aug-09.

October: Maintenance of non-redundant ground-station equipment impacted availability of reference transmissions. Actual availability of DCP channels was above target.





EUMETSAT Central Operations Report for July - December 2009

Metop/NOAA Global Data Service: Definition of Availability

Unless otherwise indicated in the availability slides, then the monthly figures are those for 'timely availability', where 'timely' is used to mean the following:

Level 0 & 1: available within 2 hours 15 minutes of sensing

Level 2: available within 3 hours of sensing

Availability figures are given per instrument and for one or more data levels thereof. It is measured in terms of the data / products that have been generated / disseminated for each of the months in the reporting period, as a percentage of that which would nominally have been generated / disseminated in the month had continuous operations been achieved without any deviation.

Note that there are certain cases where the availability of Level 2 products is indicated as being marginally higher than that of Level 1, and similarly, for Level 1 compared to Level 0. This arises because of the differences in time-logging between different stages of production influencing the generation of statistics.



EUMETSAT Central Operations Report for July - December 2009

Metop/NOAA Global Data Service: Operational Events with General Impact

The following events impacted the Metop/NOAA Global Data Service to the extents described:

1-24 August 2009: NOAA 'Blind Orbit' support was cancelled due to equipment problems at the Svalbard ground station. This impacted the availability of instrument data from the NOAA-19 satellite for that period.

17 September 2009: A Metop-A 'Out-Of-Plane' manoeuvre was conducted, which necessitated the deactivation of the AMSU, HIRS, IASI, MHS and SEM instruments for approximately 5-6 hours and the GOME instrument for about 1½ hours.



EUMETSAT Central Operations Report for July - December 2009

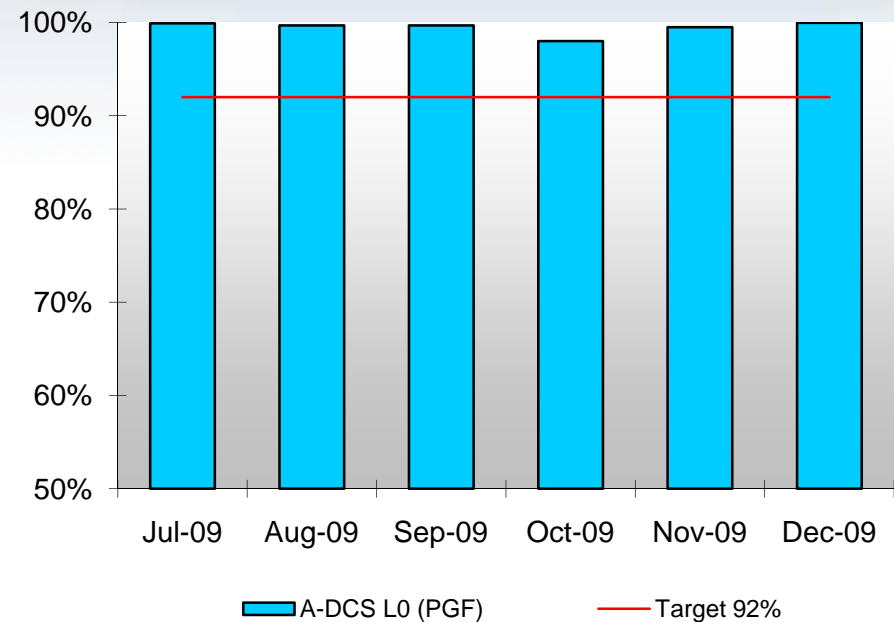
Metop/NOAA Global Data Service → A-DCS Level 0 Data

Metop-A carries an instrument for the Argos Advanced Data Collection System (A-DCS). Environmental data transmitted by measurement platforms (on land or sea or in the atmosphere) is collected and relayed by EUMETSAT to CLS (a CNES subsidiary) in Toulouse.

Dissemination of Level 0 data via EUMETCast was measured on EUMETSAT's reference user station (US) until its discontinuation on 27-Jan-09.

Events Which Impacted Availability:

None significant.





EUMETSAT Central Operations Report for July - December 2009

Metop/NOAA Global Data Service → AMSU Level 1B BUFR Products

The Advanced Microwave Sounding Unit (AMSU) is a 15-channel microwave radiometer supplied by NOAA which measures atmospheric temperature profiles.

Level 1B products are derived from the data generated by the instruments onboard both Metop-A and NOAA-19 satellites.

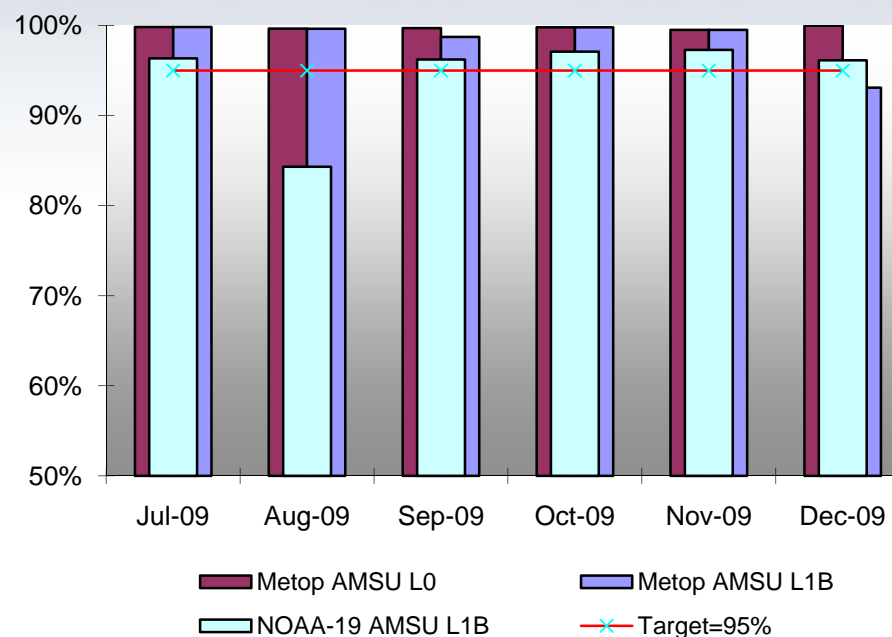
Events Which Impacted Availability:

1-24 August: NOAA Blind Orbit support was cancelled (see slide 18)

17 September: Metop-A manoeuvre (see slide 18)

7 December: Level-1 processing problem impacted channel-7 Earth-view radiances of Metop-A L1B data.

Notes: Metop-A's AMSU channel 7 has degraded beyond specification and is thus no longer used for product processing. NOAA-19's AMSU channel 8 is going out of spec but use of the data continues for the time-being.



The transfer of Level 0 data via the transatlantic link between the NOAA ground stations and EUMETSAT is subject to occasional recurrent anomalies which impacts the availability of the NOAA data.



EUMETSAT Central Operations Report for July - December 2009

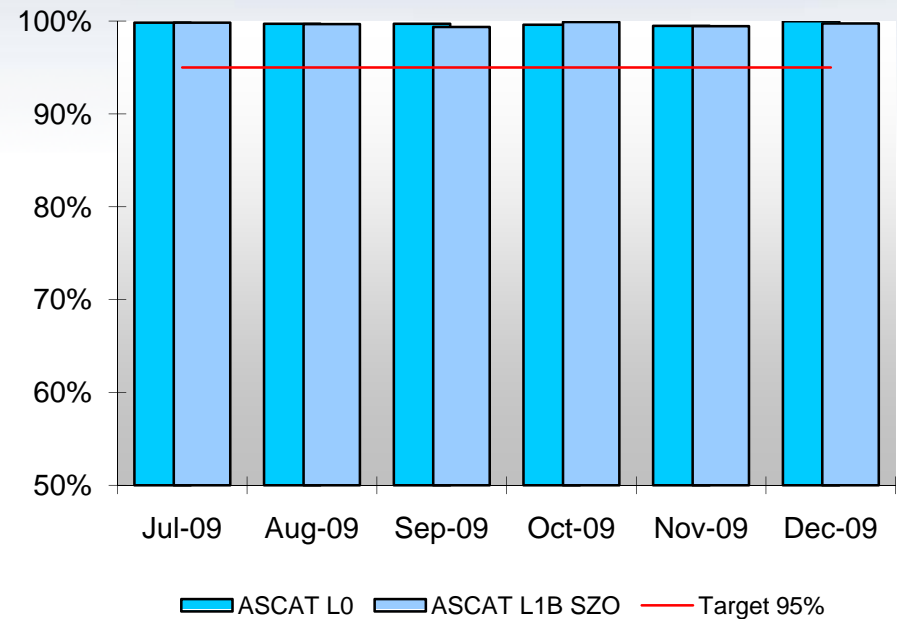
Metop Global Data Service → ASCAT Level 1B (SZO) Products

The Advanced Scatterometer (ASCAT) is a C-band radar provided by ESA which measures global ocean wind vectors.

Performance of the Level 1B service is measured in terms of the timely availability of the 'SZO' product with spatial resolution of 50 km on the EUMETCast reference user station (US).

Events Which Impacted Availability:

None significant.





EUMETSAT Central Operations Report for July - December 2009

Metop/NOAA Global Data Service → ATOVS Level 2 Products

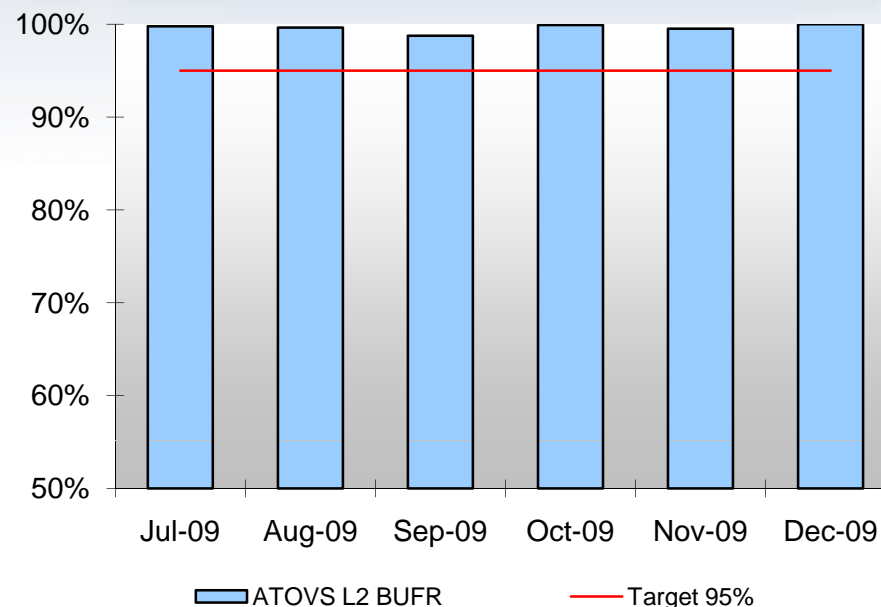
ATOVS Level 2 product processing transforms the calibrated radiance measurements from the AMSU-A, MHS and HIRS instruments into information on the vertical distribution of atmosphere state parameters, on cloud and surface parameters and total atmosphere contents. All the parameters derived are assembled in one ATOVS L2 product.

Performance of the Level 2 service is measured in terms of the timely availability of the BUFR-encoded product received on the EUMETCast reference user station (US).

Events Which Impacted Availability:

None significant.

Note: Metop-A's AMSU channel 7 has degraded beyond specification and is thus no longer used for ATOVS L2 product processing.





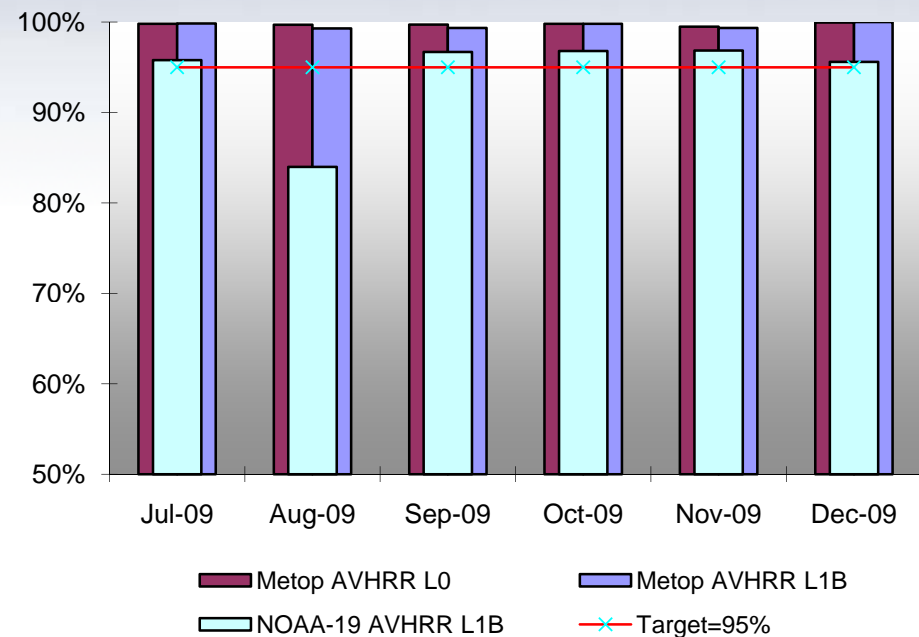
EUMETSAT Central Operations Report for July - December 2009

Metop/NOAA Global Data Service → AVHRR Level 1B Products

The Advanced Very High Resolution Radiometer (AVHRR) is a multi-spectral imaging instrument provided by NOAA which produces global cloud imagery and images of land and sea surfaces. Level 1B products are derived from the data generated by the instruments onboard both Metop-A and NOAA-18/19 satellites (NOAA-18 up to 2-Jun-09, and NOAA-19 thereafter).

Events Which Impacted Availability:

1-24 August: NOAA Blind Orbit support was cancelled (see slide 18)



The transfer of Level 0 data via the transatlantic link between the NOAA ground stations and EUMETSAT is subject to occasional recurrent anomalies which impacts the availability of the NOAA data.



EUMETSAT Central Operations Report for July - December 2009

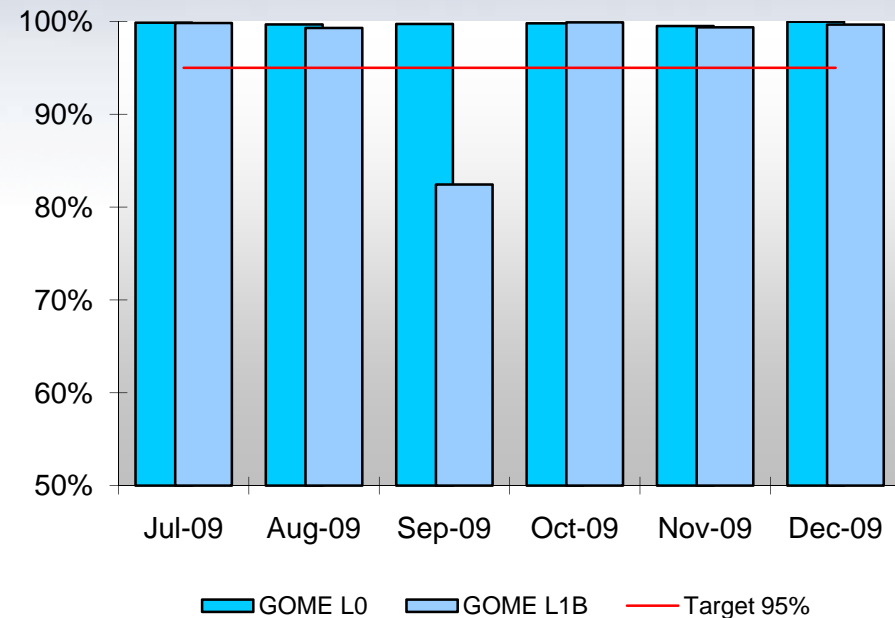
Metop Global Data Service → GOME-2 Level 1B Products

The Global Ozone Monitoring Experiment-2 (GOME-2) is a scanning spectrometer used to measure profiles of atmospheric ozone and other trace gases.

Events Which Impacted Availability:

September: Throughput tests* were conducted in the period 7-12 September, resulting in a foreseen outage of Level 1B data.

* Results of this second test campaign and those of the first in January 2009 did not give a consistent picture and clear understanding of the throughput loss problem. Investigation continues, and a study of the impact on Level 2 product quality is also ongoing.



Degradation of instrument throughput has been identified, varying in accordance with wavelength and angle of scan, this seen to affect high-level products. Throughput tests have been conducted, operating the instrument at non-nominal temperatures, and this impacted operational data.



EUMETSAT Central Operations Report for July - December 2009

Metop Global Data Service → GRAS Level 1B Products

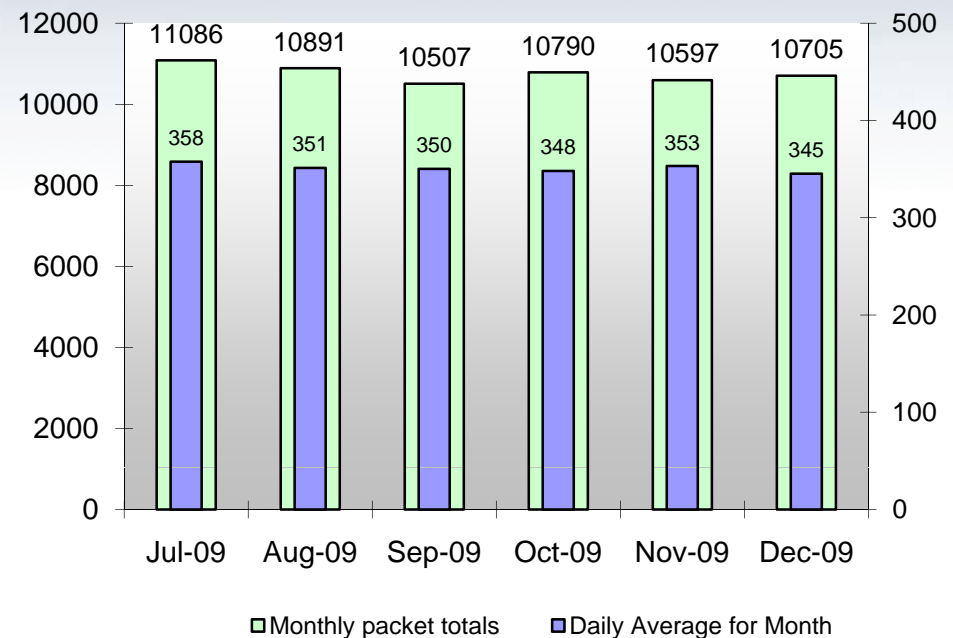
The GNSS Receiver for Atmospheric Sounding (GRAS) is a radio occultation instrument which determines atmospheric profiles using GPS signals.

The chart shows (1) the numbers of those dissemination packets produced per month which contain at least one GRAS Level 1B occultation and associated geolocation and quality flags, and (2) the daily average of such packets for each month.

The number of occultations achieved is dependent on the positions of the GPS satellites relative to Metop-A. A mechanism to provide more precise measurement of the numbers of occultations is being developed in 2009.

Events Which Impacted Availability:

Out-of-plane manoeuvre on 17 September impacted the quality of occultations for a period of approximately 10 hours.



In addition to the outages associated with Metop-A manoeuvres, GRAS L1B data is flagged 'degraded quality' for a fixed 8 hours following any anomaly, regardless of the actual level.



EUMETSAT Central Operations Report for July - December 2009

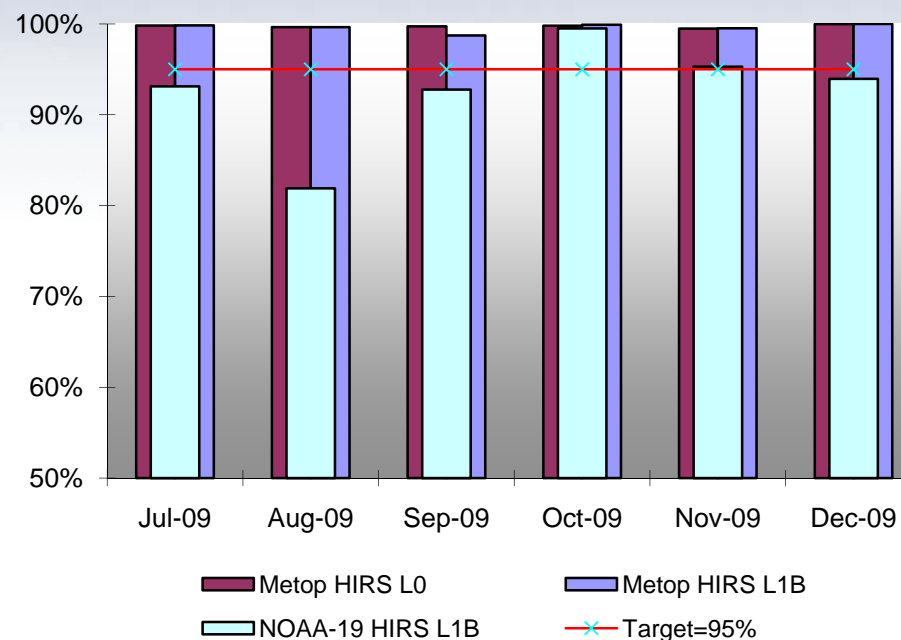
Metop/NOAA Global Data Service → HIRS Level 1B BUFR Products

The High Resolution Infrared Radiation Sounder (HIRS) measures incident radiation using 19 infrared channels and 1 visible channel, the data contributing to the determination of the atmosphere's vertical temperature profile and water vapour from the Earth's surface to an altitude of about 40 km. Level 1B products are derived from the data generated by the instruments onboard both Metop-A and NOAA-19 satellites.

Events Which Impacted Availability:

1-24 August: NOAA Blind Orbit support was cancelled (see slide 18)

17 September: Metop-A manoeuvre (see slide 18)



The transfer of Level 0 data via the transatlantic link between the NOAA ground stations and EUMETSAT is subject to occasional recurrent anomalies which impacts the availability of the NOAA data.



EUMETSAT Central Operations Report for July - December 2009

Metop Global Data Service → IASI Level 1C & Level 2 BUFR Products

The Infrared Atmospheric Sounding Interferometer (IASI) is used for global measurement of atmospheric temperature, water vapour and trace gases, as well as surface temperature, surface emissivity and cloud characteristics.

Events Which Impacted Availability:

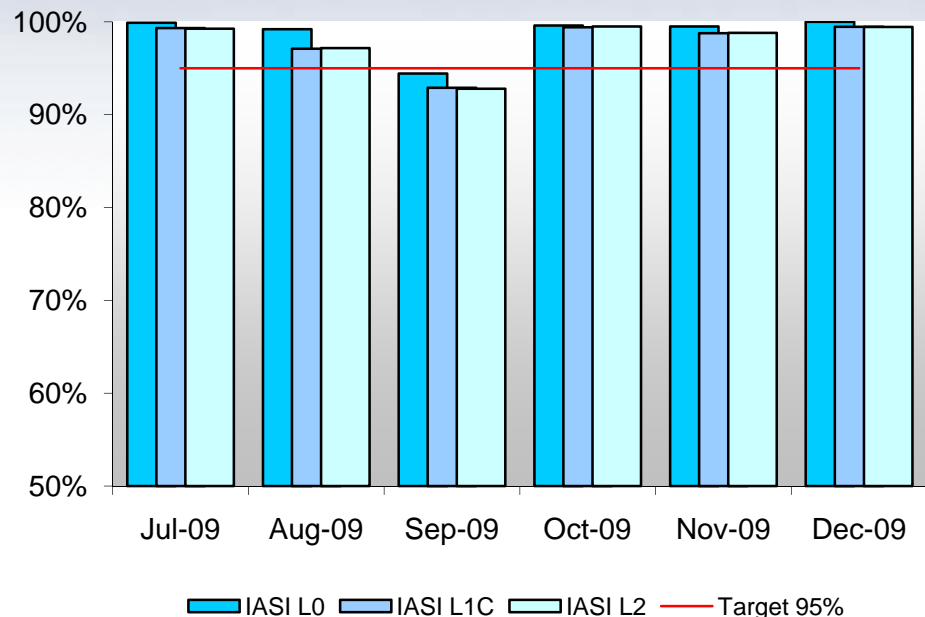
26 August: Instrument entered heater-refuse mode due to an SEU, resulting in a data outage of approx. 4 hours.

7 September: A further SEU-induced entry into heater-refuse mode * (outage approx. 17 hours).

17 September: Metop-A manoeuvre (see slide 18)

30 October: Another SEU-induced entry into heater-refuse mode.

* This particular event did not show a recognised signature of occurrence and thus extra time was required to evaluate the cause and its implications.



Note that external calibrations are performed typically on a monthly basis that reduce the availability of Level 1 / Level 2 data relative to that of the Level 0 data by approximately 0.5 - 0.6% of the scheduled availability.



EUMETSAT Central Operations Report for July - December 2009

Metop/NOAA Global Data Service → MHS Level 1B BUFR Products

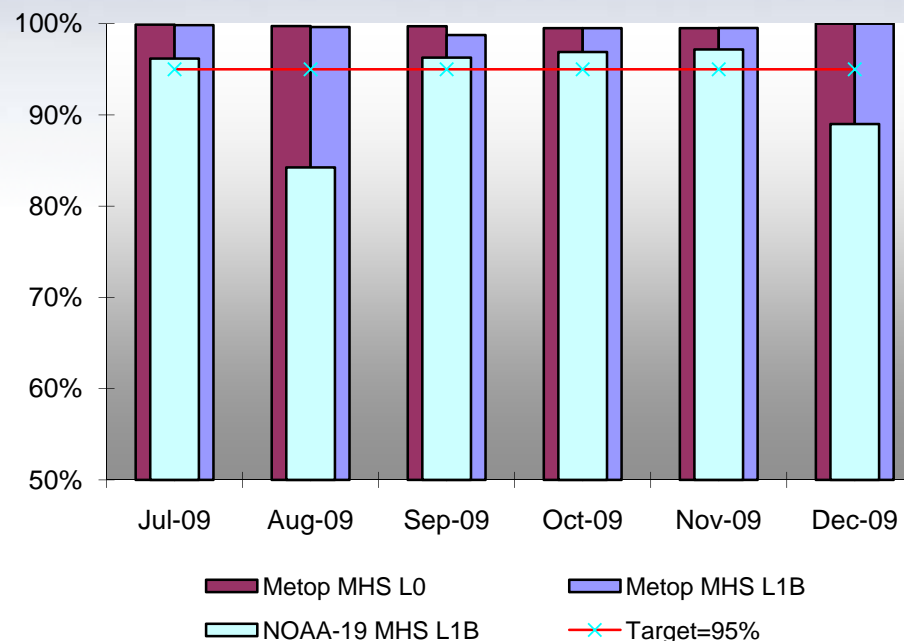
The Microwave Humidity Sounder (MHS) is used to measure atmospheric humidity primarily, but also to measure cloud liquid water content and to provide qualitative estimates of precipitation. Level 1B products are derived from the data generated by the instruments onboard both Metop-A and NOAA-18/19 satellites (NOAA-18 up to 2-Jun-09, and NOAA-19 thereafter).

Events Which Impacted Availability:

1-24 August: NOAA Blind Orbit support was cancelled (see slide 18)

19-21 December: The MHS instrument onboard NOAA-19 went into fault mode, resulting in approx. 48 hours of data outage.

Note: Problems with NOAA-19's MHS instrument on channels 3 and 4 were identified but that with channel 4 later rectified itself. Channel 3 remains out of spec and users are recommended to use channel 4 instead.



The transfer of Level 0 data via the transatlantic link between the NOAA ground stations and EUMETSAT is subject to occasional recurrent anomalies which impacts the availability of the NOAA data.



EUMETSAT Central Operations Report for July - December 2009

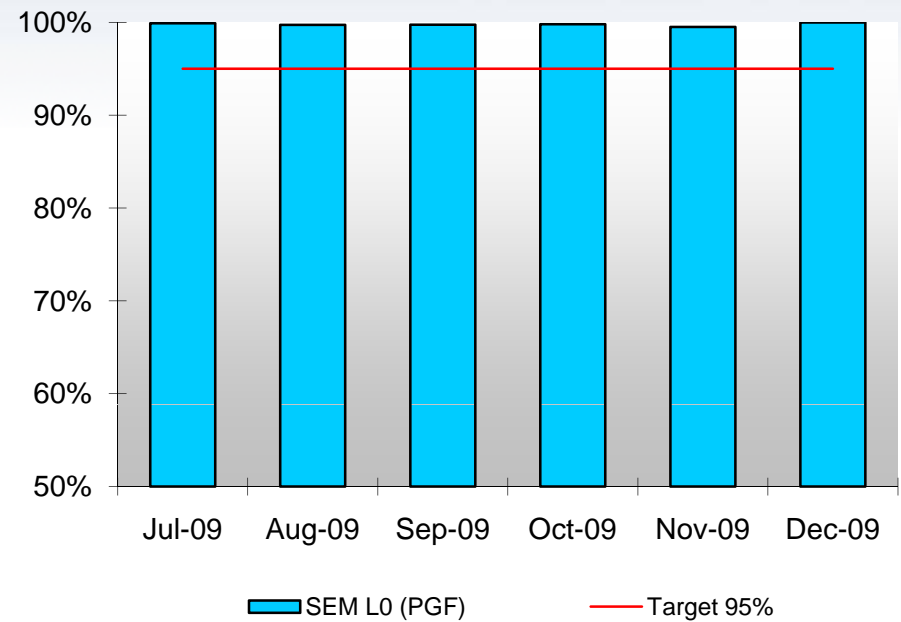
Metop/NOAA Global Data Service → SEM Level 0 Data

The Space Environment Monitor (SEM) consists of a pair of instruments which provide data to determine the intensity of the Earth's radiation belts and the flux of charged particles at the satellite's orbiting altitude.

Level 0 data (consisting of the SEM instrument source packets in EPS native format) is provided to NOAA via dedicated terrestrial line.

Events Which Impacted Availability:

None significant.





Metop/NOAA Regional Data Service

This service category comprises EARS-ATOVS, EARS-AVHRR and EARS-ASCAT services.

For EARS-ASCAT, Metop-A Level 0 data is provided by the Fast Dump Extract System (FDES) at Svalbard. This system provides fast access to the most recent part of each X-band dump and transfers the relevant data to the EARS system for further Level 1 processing. The resultant Level 1 products are forwarded to KNMI in the Netherlands for the generation of Level 2 data.

Performance of the ATOVS and AVHRR services is measured in terms of the availability of the data on the user reception stations within 30 minutes of the instrument's observations. For the ASCAT service, because of the changed approach to Level 0 data acquisition, the timeliness constraint is under redefinition.



EUMETSAT Central Operations Report for July - December 2009

Metop/NOAA Regional Data Service → EARS-ATOVS

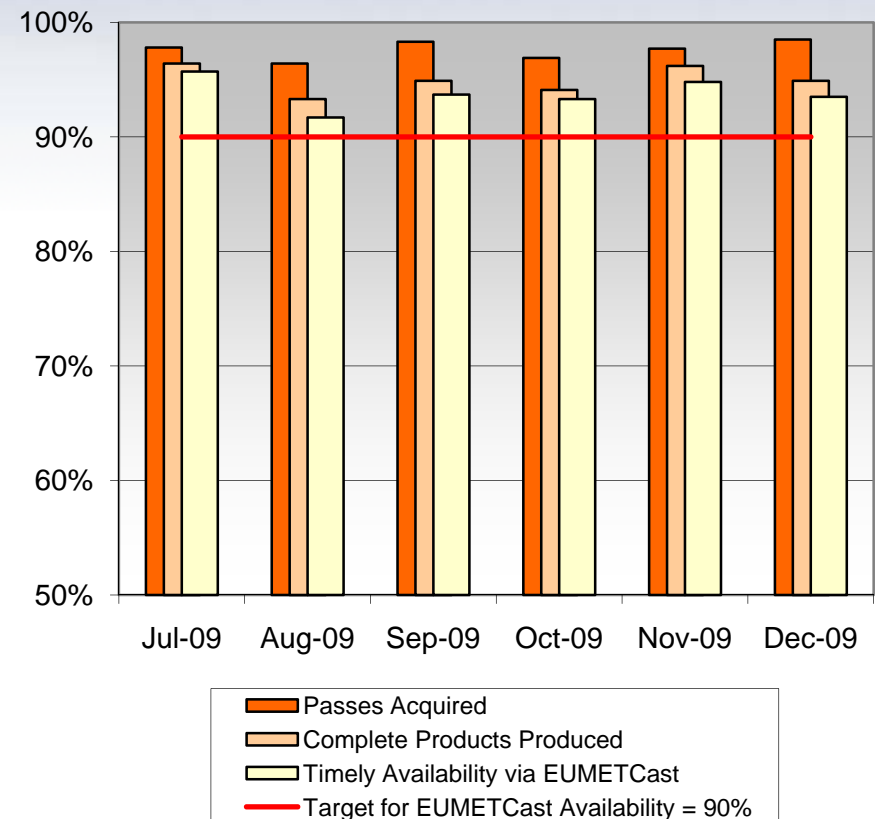
This service provides ATOVS products covering data-sparse areas, derived from data received from the NOAA satellites N15, N16, N17, N18 and N19, and from Metop-A (AHRPT partial coverage data).

Availability shown on the chart is for the products received by users (relative to scheduled ground station passes) and covers Levels 1A and 1C in BUFR and Level 1D products.

Events Which Impacted Availability:

August: Reconfiguration of the transmission frequency of NOAA-18 necessitated HRPT stations adjusting reception. Data acquisition was thus impacted.

September and December: Difference between acquired passes and products produced due to data quality problems resulting from comms link limitations at Ewa Beach (an ongoing situation, but more noticeable in these two months), plus problems at St. Denis in September.





EUMETSAT Central Operations Report for July - December 2009

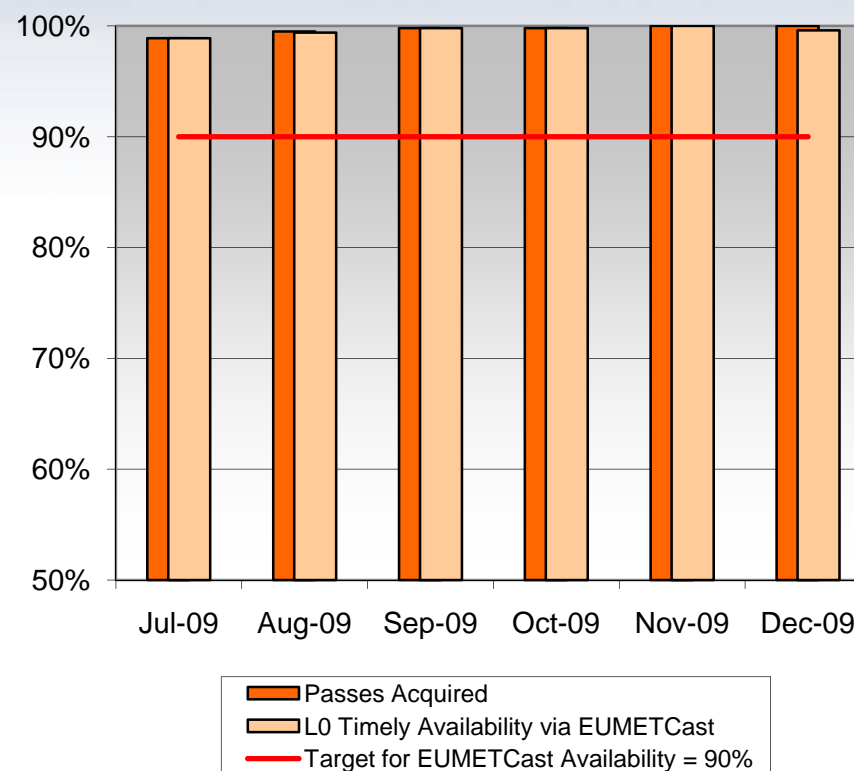
Metop/NOAA Regional Data Service → EARS-AVHRR

This service provides data from the AVHRR instruments onboard the two contributing NOAA satellites (N17 and N19).

Availability shown on the chart is for Level 0 data received by users (relative to scheduled regional passes). Note that no higher-level products are generated.

Events Which Impacted Availability:

None significant.





EUMETSAT Central Operations Report for July - December 2009

Metop/NOAA Regional Data Service → EARS-ASCAT

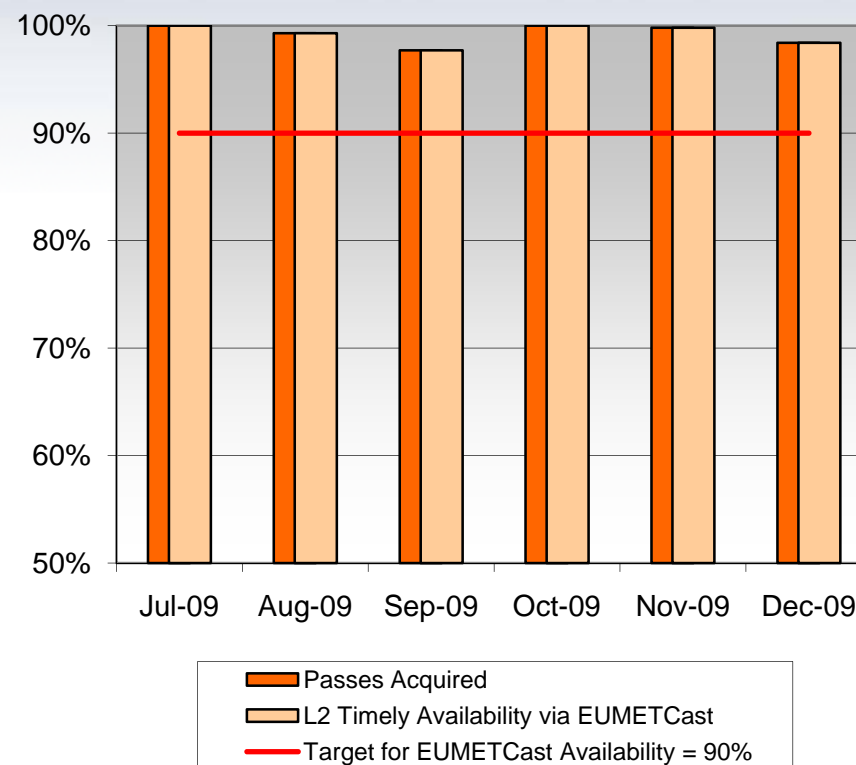
This service provides products derived from the data produced by the ASCAT instrument onboard the Metop-A satellite.

As explained earlier, the Fast Dump Extract System (FDES) at the Svalbard ground station extracts the relevant data from the X-band dump acquired there and provides it to EARS, which performs Level 1 processing and forwards the resultant products to KNMI in the Netherlands for the generation of Level 2 data.

Availability shown on the chart is that of the Level 2 data received by users (relative to scheduled passes).

Events Which Impacted Availability:

September: Svalbard station outage due to failed equipment impacted data acquisition.





EUMETSAT Central Operations Report for July - December 2009

Search & Rescue Support

EUMETSAT supports the Cospas-Sarsat System for Search and Rescue (SAR) by flying a transponder onboard each of its more recently-launched satellites, namely Meteosat-8, Meteosat-9 and Metop-A.

The Cospas-Sarsat System is designed to provide distress alert and location data to assist SAR operations, using a constellation of geostationary and low-altitude Earth-orbiting satellites to relay signals from distress beacons to ground terminals. More information concerning the system can be found on www.cospas-sarsat.org.

The availability of the transponders onboard Meteosat-8 and Metop-A was 100% for the reporting period July – December 2009, and 98.2% for Meteosat-9 (the reduction due to the satellite being in safe-mode 15-18 August-09).



Jason-2 OGDR Service

This service delivers the 'Operation Geophysical Data Record' products, derived from the altimetry data acquired from the Jason-2 satellite.

Jason-2 is the second satellite of the space segment of the Ocean Surface Topography Mission (OSTM), a cooperation between AVISO, CNES, NASA and NOAA. EUMETSAT and NOAA work together to process data from the Jason-2 satellite in near real-time and to archive and disseminate the products.

The chart on the next slide shows the availability of the products within timeliness constraints of 3 hours and 5 hours from the time of sensing.



EUMETSAT Central Operations Report for July - December 2009

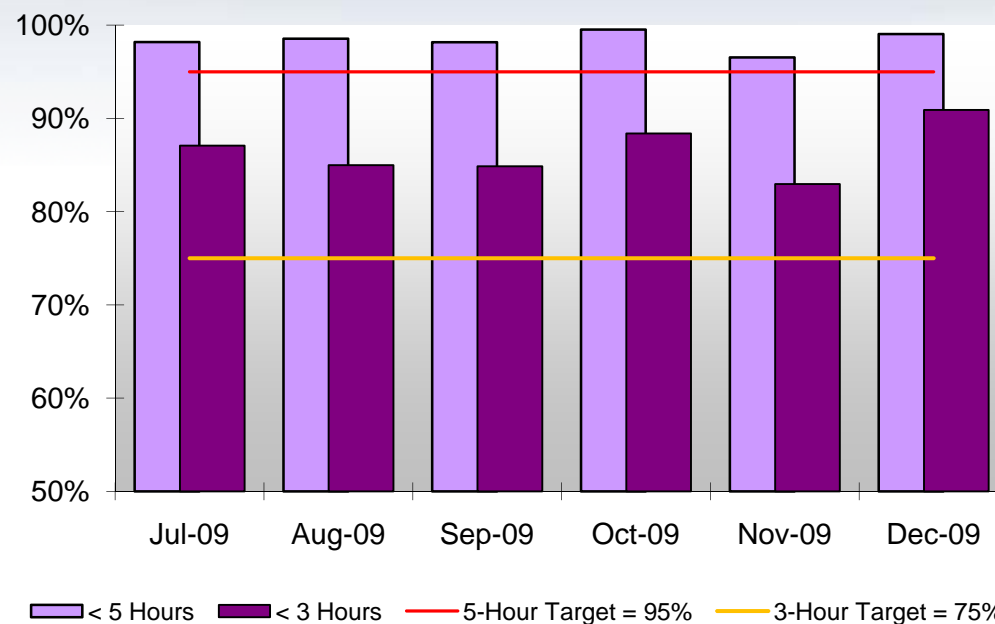
Jason-2 OGDR Service

The chart shows the availability of the Jason-2 near real-time Operational Geophysical Data Record products disseminated via EUMETCast.

The target figure of 95% applies to the availability of data received on EUMETCast reception stations with a timeliness of 5 hours and constitutes EUMETSAT's official commitment. The more demanding target of 75% for 3-hour timeliness is provided for comparison.

Events Which Impacted Availability:

None significant.





EUMETSAT Central Operations Report for July - December 2009

Other Geostationary Satellite Services

In addition to the Meteosat geostationary satellite data, EUMETSAT relays satellite data from partner organisations. Part of an international cooperation, the geostationary satellite data from the National Oceanic and Atmospheric Administration (NOAA) and the Japanese Meteorological Agency (JMA) are made available via EUMETCast, Direct Dissemination and the Internet.

The chart on the next slide shows availability of image data from the following satellites:

- NOAA's GOES-East (GOES-12) satellite stationed at 75°W
- NOAA's GOES-West (GOES-11) satellite stationed at 135°W
- JMA's MTSAT-1R satellite stationed at 140°E



EUMETSAT Central Operations Report for July - December 2009

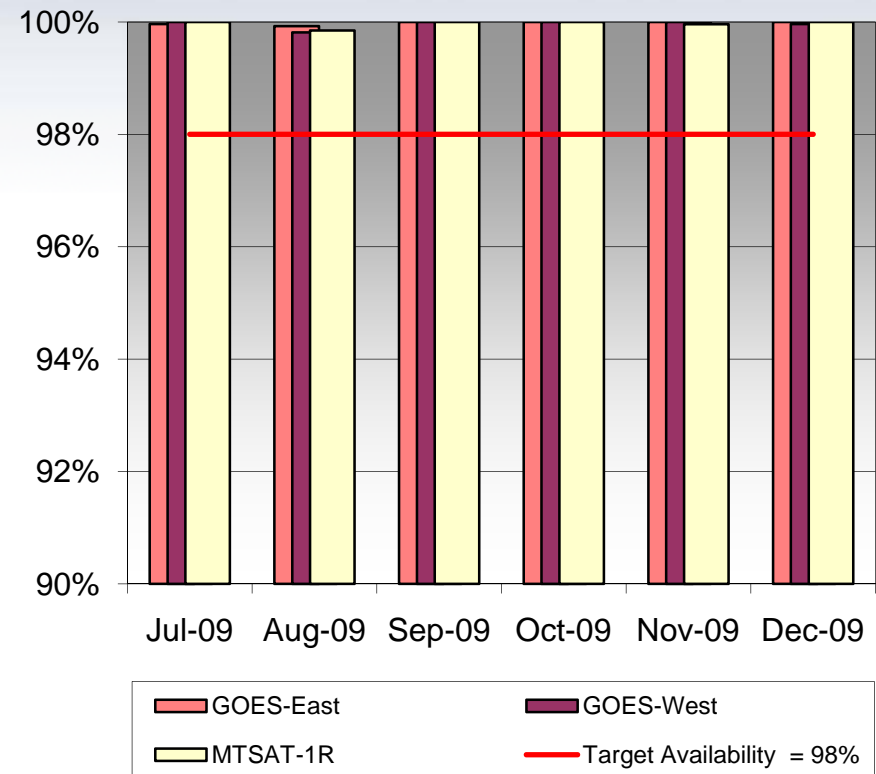
Other Geostationary Satellite Services → GOES and MTSAT Image Data

The chart shows the timely availability of formats disseminated via EUMETCast of image data originating from the indicated satellites.

Note that the statistics are now based on the monitoring of complete formats.

Events Which Impacted Availability:

None significant.





EUMETSAT Central Operations Report for July - December 2009

The EUMETSAT Data Centre

EUMETSAT's Data Centre archives all payload data acquired from EUMETSAT's operational satellites and most of the products derived from that data.

The Data Centre allows registered users to request data and products from the archive by use of its online 'self-service' ordering mechanism and supplies the requested items via physical media and the Internet.

Charts currently provided show the following :

- **Meteosat Image Availability**
- **Total Data Volumes Retrieved**
- **Registered Users**

Note that availability statistics for Metop-A Level 0 data will be included in a future issue of the report.



EUMETSAT Central Operations Report for July - December 2009

The EUMETSAT Data Centre → Meteosat Image Availability in the Archive

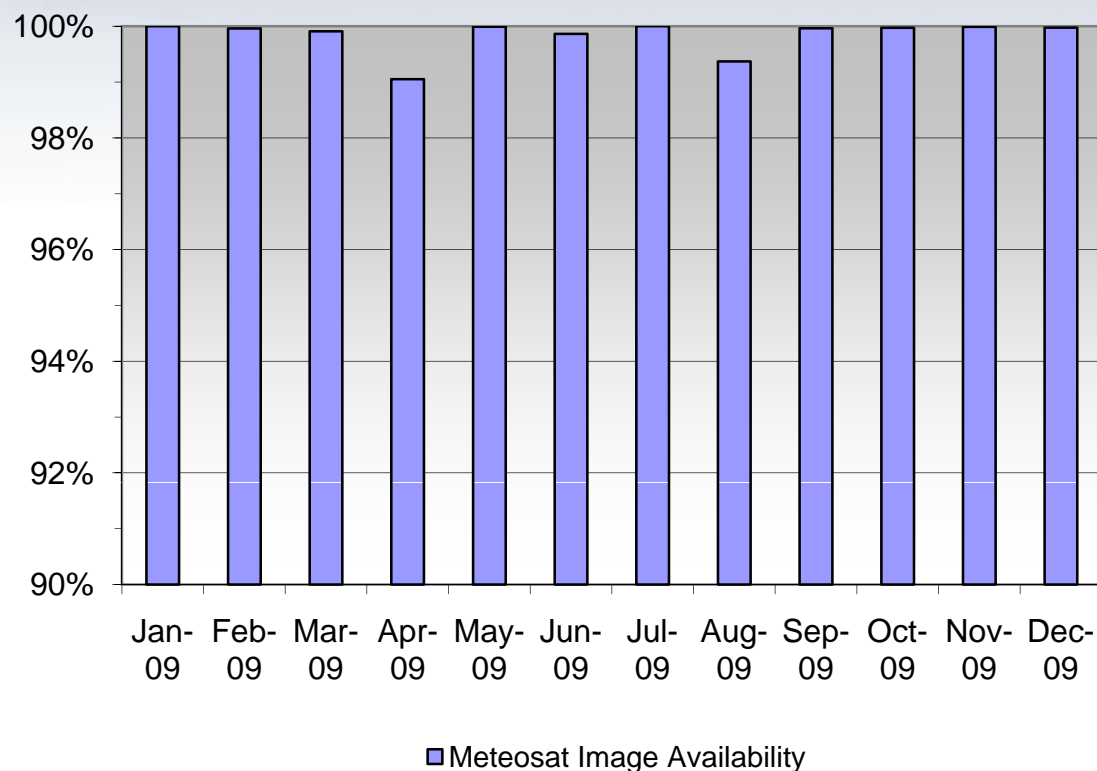
The chart here shows the availability of all Meteosat images (0°, 9.5°E & 57°E) held in EUMETSAT's archive for each of the 12 months in the last 2 reporting periods, as a percentage of what was scheduled to be produced (eclipse seasons taken into account).

Various factors influence the final availability of data in the archive (and its quality), from the point when a satellite generates the raw data, through ground acquisition and processing, to the point where it is ingested and stored.

Events Which Impacted Availability:

17 April 2009: Meteosat-9 safe-mode, swap of the prime mission to Meteosat-8, resultant loss of SEVIRI 0° & 9.5°E RCs.

15 August 2009: Meteosat-9 entering safe-mode once again.





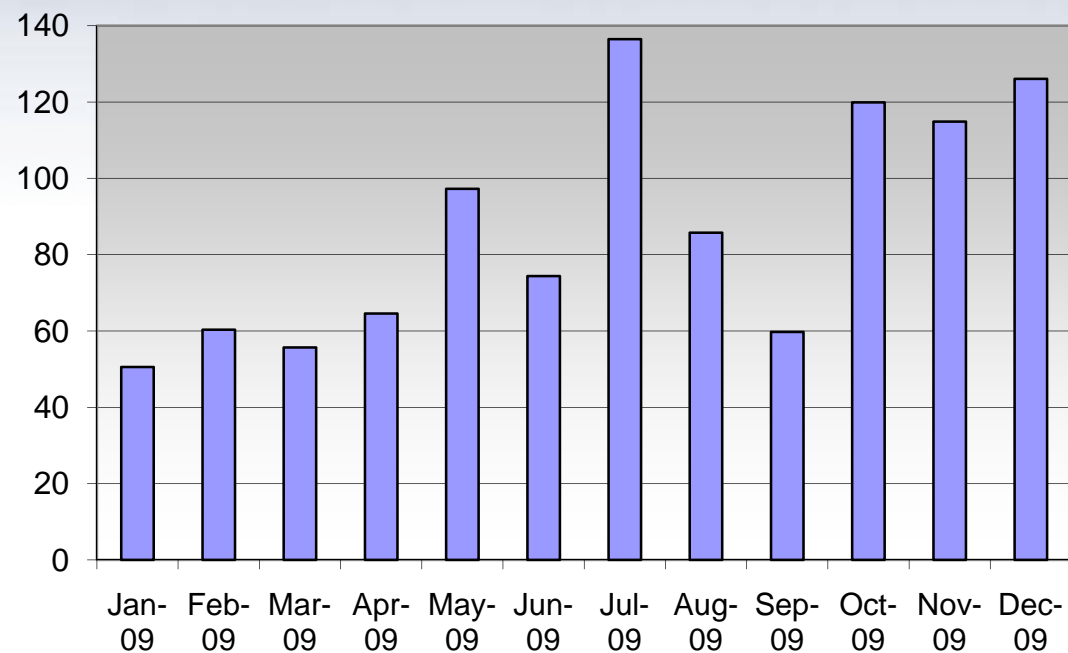
EUMETSAT Central Operations Report for July - December 2009

The EUMETSAT Data Centre → Total Data Volumes Retrieved from the Archive

The chart here shows total volumes of data retrieved from EUMETSAT's archive facility month-by-month. Note that retrieved data is subject to various processing activities prior to its being written to media or being forwarded electronically to Internet recipients.

Events Which Influenced Retrieval Volumes :

High volumes in the months of July and October to December due to continued processing of backlogged plus large orders (made possible by the improved throughput capability acquired earlier in 2009).



■ Total Monthly Retrieval Volumes in Terabytes

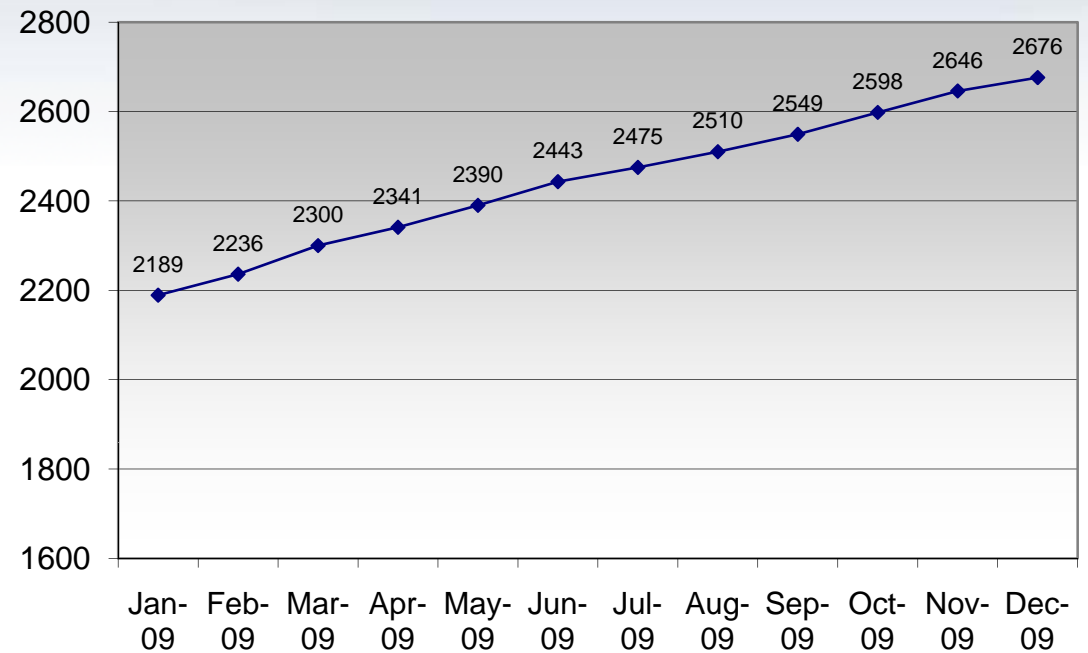


EUMETSAT Central Operations Report for July - December 2009

The EUMETSAT Data Centre → Registered Users

The chart here shows 12-months' progression of the total numbers of registered users of EUMETSAT's archive facility up until the end of December 2009.

Growth in new registrations has continued in the second half of 2009, with a continued average of about 40 new users per month.



◆ Registered Archive Users (end of month figures)



EUMETSAT Central Operations Report for July - December 2009

User Support Service

As part of its role, EUMETSAT's User Helpdesk records user transactions related to EUMETSAT services that are grouped under one of the following categories:

- Enquiries
- Registrations (for one or more of the services)
- User feedback

The charts on the following slides show:

- User transactions with Member States, Cooperating States and 'Other Countries'
- The countries and groups that gave rise to the most significant numbers of user transactions
- Breakdown of user registrations by category and other transactions by subject area



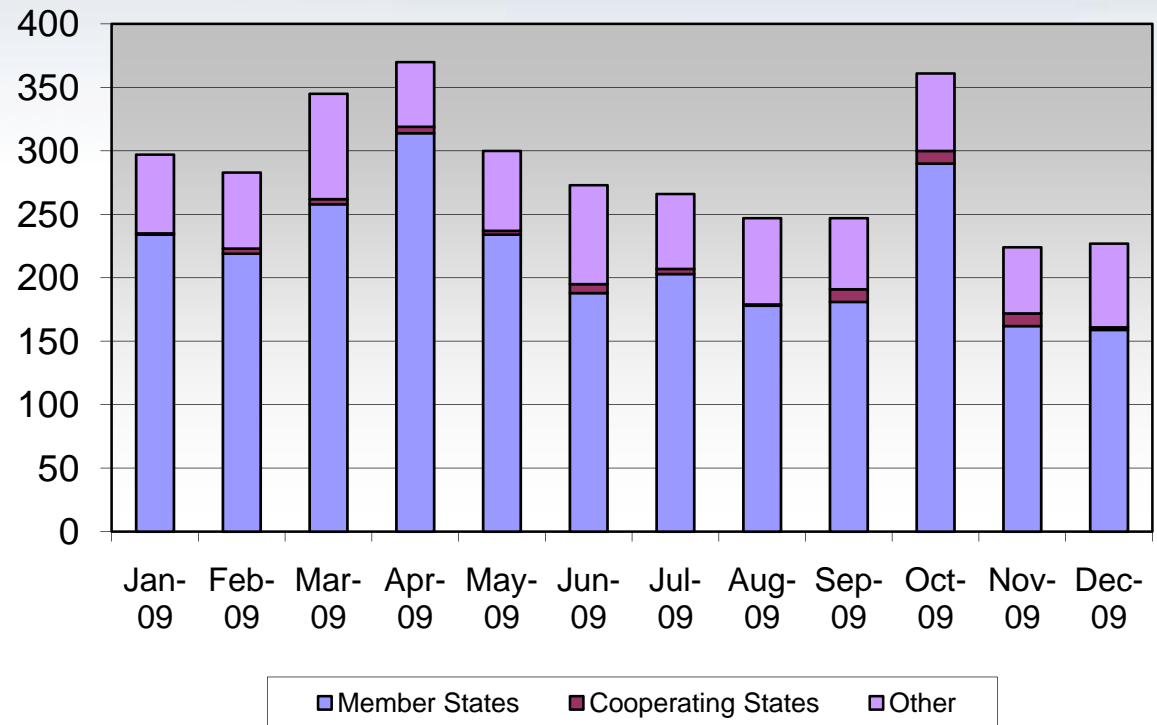
EUMETSAT Central Operations Report for July - December 2009

User Support Service → User Transactions Month-by-Month

The chart here shows the month-by-month split of requests originating from EUMETSAT Member States, Cooperating States and all other countries.

The number of transactions in the 12 months ending December 2009 totalled 3440, of which 1572 occurred in the period July-December 2009. These comprised 891 enquiries, 624 registrations, 31 user feedback comments and 26 enhancement requests.

The next slides show total user transactions by country of origin, user registrations by category and other user transactions by subject area. The subject timeframe for each is the period July-December 2009.





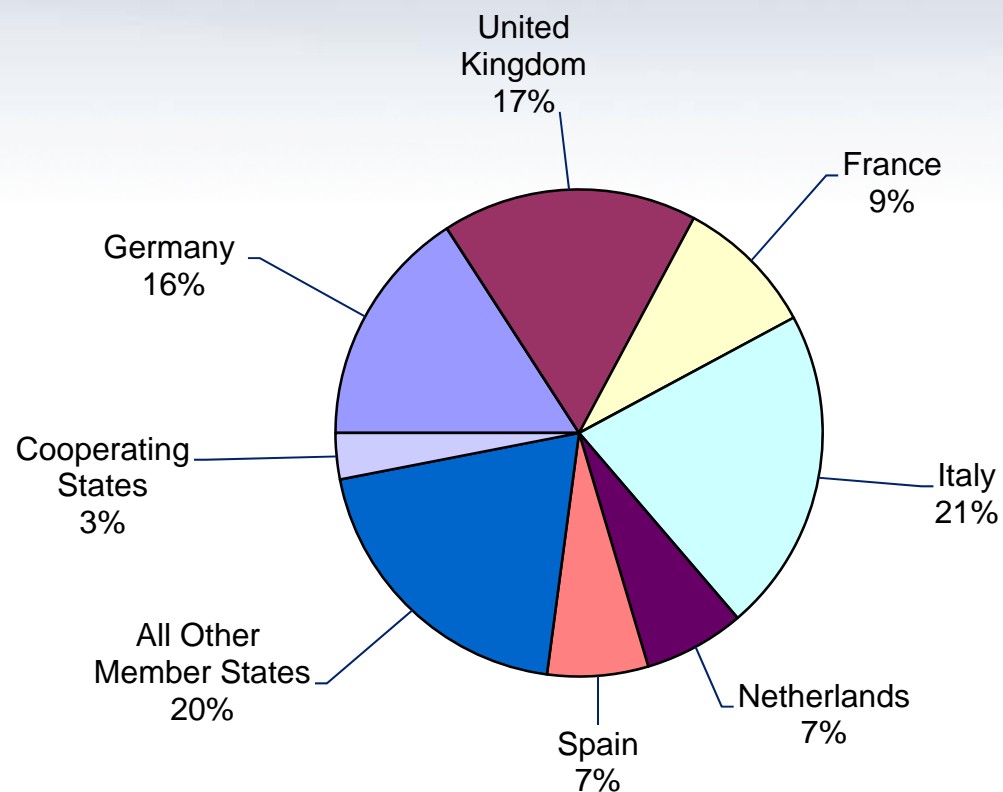
EUMETSAT Central Operations Report for July - December 2009

User Support Service → User Transactions by Country of Origin

The pie chart here shows the transactions in the second half of 2009 from:

(1) the 6 countries that gave rise to the largest numbers of transactions, and

(2) the split of the remainder of the transactions between other Member States, the Cooperating States and other countries.



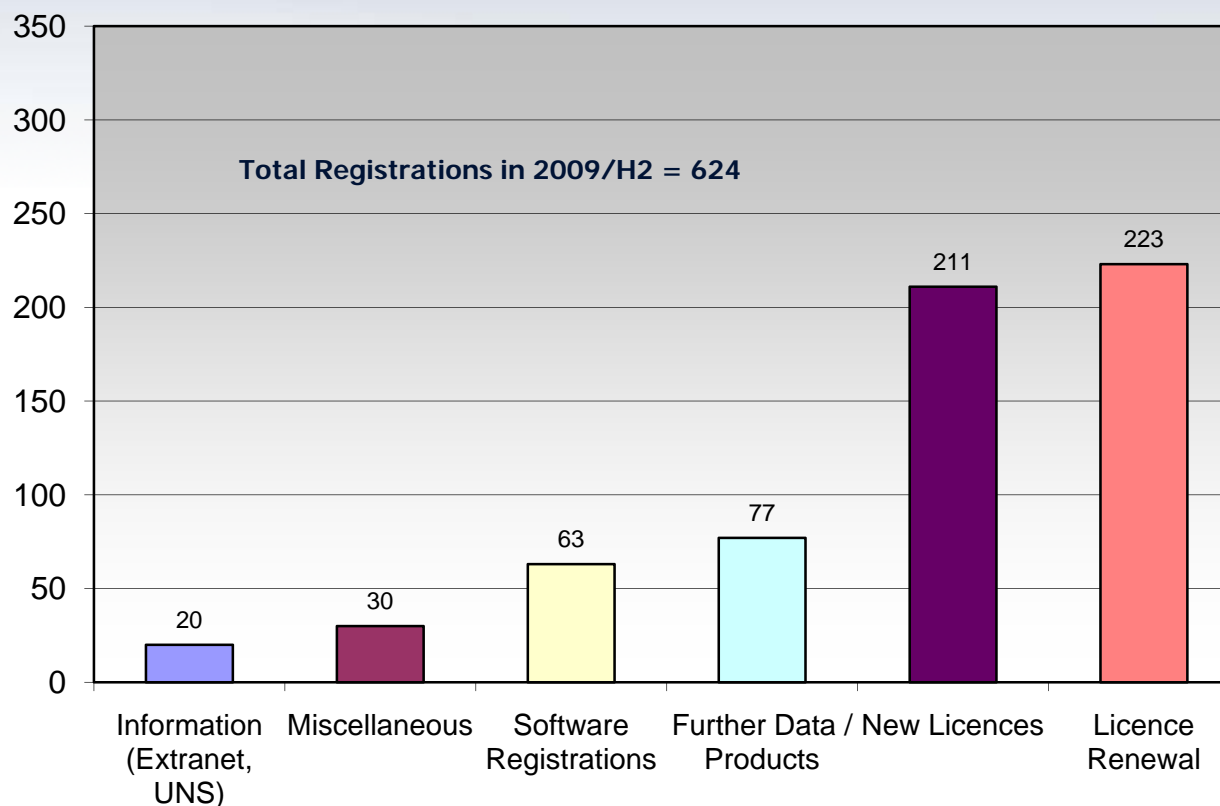


EUMETSAT Central Operations Report for July - December 2009

User Support Service → User Registrations by Category

The chart shows the spread of registrations processed in the reporting period across the various registration categories.

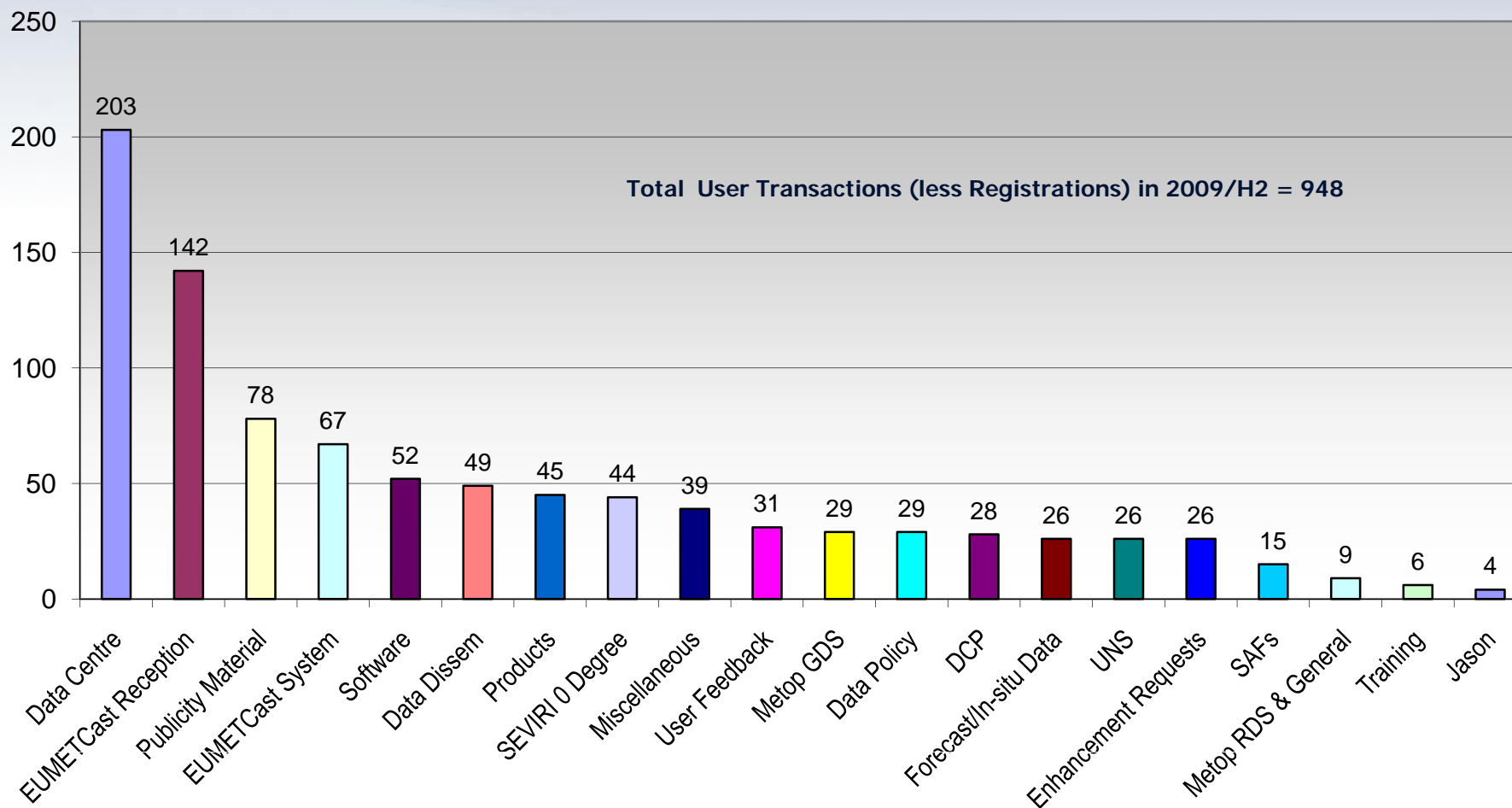
The category 'Further Data / Products' refers to existing licences for which access to extra items is requested, e.g. when a new product is made available on EUMETCast.





EUMETSAT Central Operations Report for July - December 2009

User Support Service → Transactions (less Registrations) by Subject Area





EUMETSAT Central Operations Report for July - December 2009

Changes to EUMETSAT's Services

This section lists the changes to services that have taken place in this reporting period:

Date	Service / Product(s)	Description
3 September	Metop & NOAA Regional Data	Addition of Kangerlussuaq to EARS-AVHRR.
7 September	MSG meteorological products and Metop/NOAA Global Data	Implementation of BUFR edition 4 format (for dissemination via EUMETCast and distribution via the GTS)
8 September	Metop & NOAA Regional Data	Distribution of EARS-ASCAT L2 wind products via the GTS commences.
15 September	Metop & NOAA Regional Data	Météo-France reception station at St. Denis on La Réunion integrated into the EARS network, receiving data from Metop-A and NOAA-17, 18 and 19 satellites.
2 November	MSG meteorological products and Metop/NOAA Global Data	Maximum size for GTS bulletins increased to 50 KB, to allow various future product improvements to be made.
17 November	LSA SAF products	EUMETCast dissemination of new Evapotranspiration (ET) products commenced.

Section continued on next slide...



EUMETSAT Central Operations Report for July - December 2009

Changes to EUMETSAT's Services

(continuation of section from previous slide)

Date	Service / Product(s)	Description
1 December	OSI SAF products	NOAA-19 replaces NOAA-18 as source of data for the processing of the NAR SST (North Atlantic and Regional Sea-Surface Temperature) product
3 December	Metop / NOAA Regional Data	Implementation of BUFR edition 4 format for EARS-ATOVS L1C products (for dissemination via EUMETCast and distribution via the GTS)
7 December	EUMETSAT Data Centre	The first reprocessed ASCAT L1 and L2 soil moisture dataset (covering June 2007 – October 2008) made available. Aim is to provide products consistent across the mission to date.
15 December	GEONETCast / DevCoCast	EUMETCast dissemination of CSIR's Lowveld Fire Danger Index (LFDI) and McArthur Forest Fire Danger Index (FFDI) commenced.
21 December	GEONETCast / DevCoCast	EUMETCast dissemination of the following INPE (Brazilian National Institute for Space Research) products commenced: FDG, FDN, FTC, LDI and UVI.



EUMETSAT Central Operations Report for July - December 2009

Glossary

Special terms used in this report are explained in the table below (continued on several subsequent slides).

Term	Context in which used	Description
A-DCS	Metop/NOAA Global Data	The 'Advanced Data Collection System' instrument on Metop contributes to the Argos programme, which is a satellite-based data location and collection system dedicated to monitoring and protecting the environment.
AMSU-A	Metop/NOAA Global Data	The 'Advanced Microwave Sounding Unit-A' is a multi-channel microwave radiometer provided by NOAA, flying on Metop-A, which is used in combination with the HIRS instrument for measuring global atmospheric temperature profiles.
ASCAT	Metop/NOAA Global Data	The 'Advanced Scatterometer' is a C-band radar provided by ESA, flying on Metop-A, which measures global ocean wind vectors.
ATOVS	Metop/NOAA Global Data	Calibrated radiance measurements from the AMSU-A, MHS and HIRS instruments are transformed into various parameters and assembled in the ATOVS L2 product.
AVHRR	Metop/NOAA Global Data	The 'Advanced Very High Resolution Radiometer' is a multi-spectral imaging instrument provided by NOAA which produces global cloud imagery and images of land and sea surfaces.



EUMETSAT Central Operations Report for July - December 2009

Glossary (continued)

Term	Context in which used	Description
DCP	Meteosat	A 'Data Collection Platform' measures and transmits environmental data which is relayed by Meteosat satellite first to EUMETSAT's central operations, and then forwarded on to the DCP operator via direct, EUMETCast or GTS dissemination.
Formats	Meteosat (IODC)	This refers to the High-Resolution Image (HRI) formats disseminated via Meteosat's direct dissemination broadcasts.
GOME-2	Metop/NOAA Global Data	The 'Global Ozone Monitoring Experiment-2' instrument flying on Metop-A is a scanning spectrometer used to measure profiles of atmospheric ozone and other trace gases.
GRAS	Metop/NOAA Global Data	The 'GNSS Receiver for Atmospheric Sounding' instrument flying on Metop-A is a radio occultation instrument which determines atmospheric profiles using GPS signals.
GTS	General	The 'Global Telecommunications System', established by the WMO, is used by national meteorological services to exchange meteorological data and products. See also 'RMDCN'.



EUMETSAT Central Operations Report for July - December 2009

Glossary (continued)

Term	Context in which used	Description
HIRS	Metop/NOAA Global Data	The 'High Resolution Infrared Radiation Sounder' measures incident radiation in for determining the atmosphere's vertical temperature profile and water vapour from the Earth's surface to an altitude of about 40 km.
IASI	Metop/NOAA Global Data	The 'Infrared Atmospheric Sounding Interferometer' is a multi-purpose sounding instrument used for global measurement of temperature, water vapour, trace gases such as ozone, nitrous oxide, carbon dioxide and methane, as well as surface temperature, surface emissivity, and cloud characteristics.
Level 0	Metop/NOAA Global Data	An instrument's raw data which has been demultiplexed from the total set of data dumped from one orbit of the Metop satellite.
Level 1.0	Meteosat	The raw image data acquired from a Meteosat satellite and preprocessed at the ground station, which is then received by a EUMETSAT image-processing facility, to be geometrically rectified and radiometrically corrected.
Level 1.5	Meteosat	Level 1.0 image data that has been corrected for radiometric and geometric non-linearity and is accompanied by the appropriate ancillary information that allows the user to calculate the geographical position and radiance of any pixel.



EUMETSAT Central Operations Report for July - December 2009

Glossary (continued)

Term	Context in which used	Description
Level 1A	Metop/NOAA Global Data	Instrument data in full resolution with radiometric and geometric (i.e. Earth location) calibration computed and appended but not applied.
Level 1B	Metop/NOAA Global Data	Calibrated, earth-located and quality-controlled product, in the original pixel location, packaged with ancillary, engineering and auxiliary data.
Level 1C	Metop/NOAA Global Data	In the case of the IASI spectra, Level 1B data after the application of the apodization function.
Level 2	Metop/NOAA Global Data	Earth-located values converted to geophysical parameters at the same spatial and temporal sampling as the Level 1B and 1C data.
MHS	Metop/NOAA Global Data	The 'Microwave Humidity Sounder' is a new 5-channel microwave instrument developed for EUMETSAT to measure profiles of atmospheric humidity. Five flight models in total will be flown on the 3 Metop satellites, plus NOAA-N and NOAA-N'.



EUMETSAT Central Operations Report for July - December 2009

Glossary (continued)

Term	Context in which used	Description
Nominal RCs	Meteosat (0° SEVIRI)	SEVIRI repeat cycles consisting of geometrically and radiometrically-corrected data in all 12 channels, with less than 18 missing detector lines in the scanned Earth area for any given spectral channel (54 for HRV), where less than 12 of those lines (36 for HRV) are adjacent to each other.
'On-Time'	All	The data or product has been generated or received 'on-time' at a specified location (e.g. at generation facility or EUMETCast user station respectively) within the relevant timeliness constraint.
Perfect Formats	Meteosat (IODC)	High-Resolution Image (HRI) formats which have no missing lines and are based on the latest scanned image according to schedule.
Perfect Images	Meteosat (IODC)	Rectified images which are 100% complete.
PGF	On Metop performance charts	The Metop 'Product Generation Facility' is the part of the EPS CGS (Core Ground System) which generates Level 0 data and controls the generation of Level 1 and 2 products by the relevant PPFs (Product Processing Facilities).



EUMETSAT Central Operations Report for July - December 2009

Glossary (continued)

Term	Context in which used	Description
Repeat Cycles (or RCs)	Meteosat (0° SEVIRI)	The period in which the MSG SEVIRI instrument performs one scan and then is repositioned ready for the next repeat cycle. A nominal repeat cycle (a scan of the entire Earth disc) has a duration of 15 minutes.
RMDCN	General	The 'Regional Meteorological Data Communication Network' is used by WMO Region VI to carry GTS traffic within Europe. See also 'GTS'.
RSS	Meteosat (9.5° SEVIRI)	Rapid-Scan Service (for MSG), where the repeat cycle has a duration of only 5 minutes, covering the latitude range of 15 to 70°.
SEM	Metop/NOAA Global Data	The 'Space Environment Monitor' consists of a pair of instruments which provide data to determine the intensity of the Earth's radiation belts and the flux of charged particles at the satellite's orbiting altitude.
SEU	Satellite or instrument outages	'Single Event Upset', the term used to refer to an effect on onboard electronics caused by solar particles, possibly resulting in a switch-off of an electronic system.