



EUMETSAT Headquarters Darmstadt, Germany

CENTRAL OPERATIONS REPORT for the period July to December 2007



EUMETSAT Central Operations Report for July-Dec 2007

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



EUMETSAT Central Operations Report for July-Dec 2007

Introduction

Welcome to the new format of our half-yearly report on EUMETSAT's provision of services to its user community. We have changed from the former portrait style to landscape, in order to provide a more useful format for the EUMETSAT website and a 'ready-made' presentation for use in forums where operations performance appears on the agenda.

This is the first time that our half-yearly operations report covers the new EPS 'Global Data Service' (GDS) which delivers products derived from the data acquired from the instruments on board the polar-orbiting satellite 'Metop-A'.

Naturally, coverage of the long-established services related to the Meteosat System, EUMETSAT's Archive Facility and its User Support function continues, as does that of the EARS network, although the latter now appears under the service category 'EPS Regional Data Service'.

In addition to the services named so far, there are also the categories 'Environmental Data Services' and 'Other Geostationary Services' (see the EUMETSAT website for details) which, as time progresses, are increasing in scope and becoming more significant parts of our service palette. →

(continued on the next slide...)



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Introduction (continued)

→ We plan to include coverage of the performance of services in these categories in a future enhancement of this report.

As far as the performance of the services currently covered in this report is concerned, we achieved above-target results mostly all-round in the second half of 2007, with the exceptions of Meteosat 0° SEVIRI imagery in August and all EPS instrument data in September. Further details are provided on slides 8 and 15.

Best regards,
Mikael Rattenborg
Director of Operations



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Service Performance Reporting

Service Categories:

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

- **Meteosat Services**
- **EPS Global Data Service**
- **EPS Regional Data Service (EARS)**
- **EUMETSAT's Archive Service**
- **EUMETSAT's User Support Service**

Special Terminology:

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



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Service Performance Reporting: Conventions

The Availability Charts:

These typically show the month-by-month availability of the services and are accompanied by commentary identifying any events which may have had impact on the provision of them.

Events Impacting Availability:

Some operational events impact the availability of more than one service category or component service within a category. Where this is the case, the event(s) are described on a separate slide preceding all the component services for which the event(s) had impact.

Events (whether satellite or ground-segment in nature) which significantly affected the availability of a single service (e.g. data associated with a single EPS instrument) are indicated on the relevant slide for that service.



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Meteosat Services

The service category 'Meteosat Services' refers to the dissemination of data and products produced with the Meteosat System, which comprises geostationary satellites positioned at longitudes 0° and 57°E. The latter is the current operating location for 'Indian Ocean Data Coverage' (IODC).

The individual services addressed in this section are as follows:

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



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Meteosat Services

SEVIRI 0° Image Data

Performance here is measured in terms of:

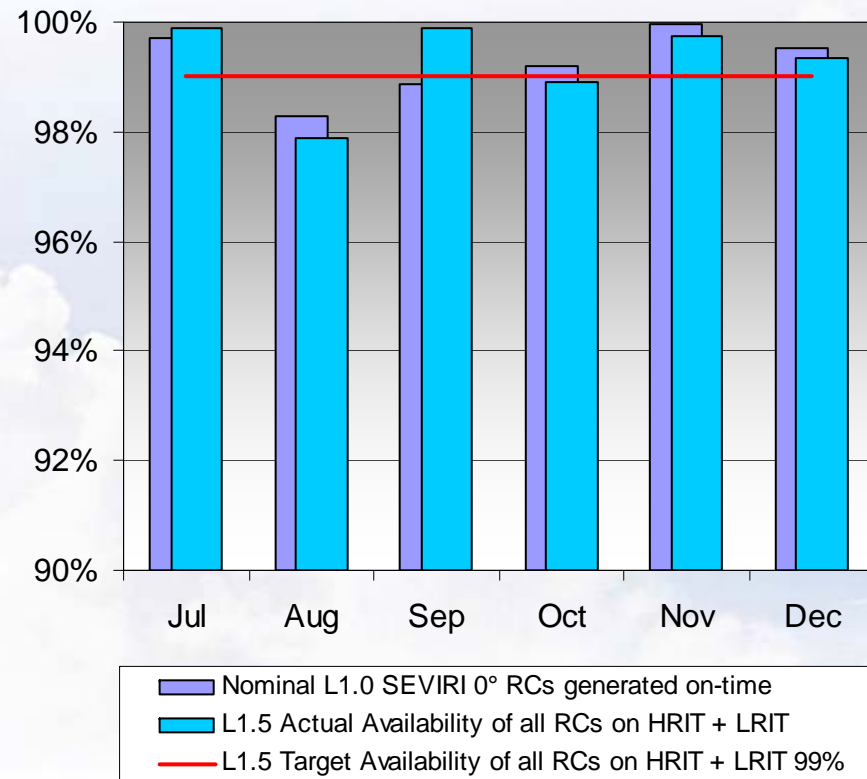
- 1) the number of Nominal Level 1.0 Repeat Cycles (RCs) which have been generated 'on-time', as a percentage of those scheduled
- 2) the combined timely availability of all Level 1.5 data over the HRIT and LRIT channels of EUMETCast

Events Which Impacted Availability:

August 2007: Problems related to attitude model update following Met-9 manoeuvre impacted the number of nominal RCs produced. Overall availability of L1.5 data was also impacted by other problems concerning the dissemination facility and EUMETCast uplink station.

September 2007: Number of nominal RCs impacted by reduced geometric quality on exit from eclipses.

October 2007: Ground segment problems involving EUMETSAT's dissemination facility and the EUMETCast uplink station impacted L1.5 availability.





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Meteosat Services

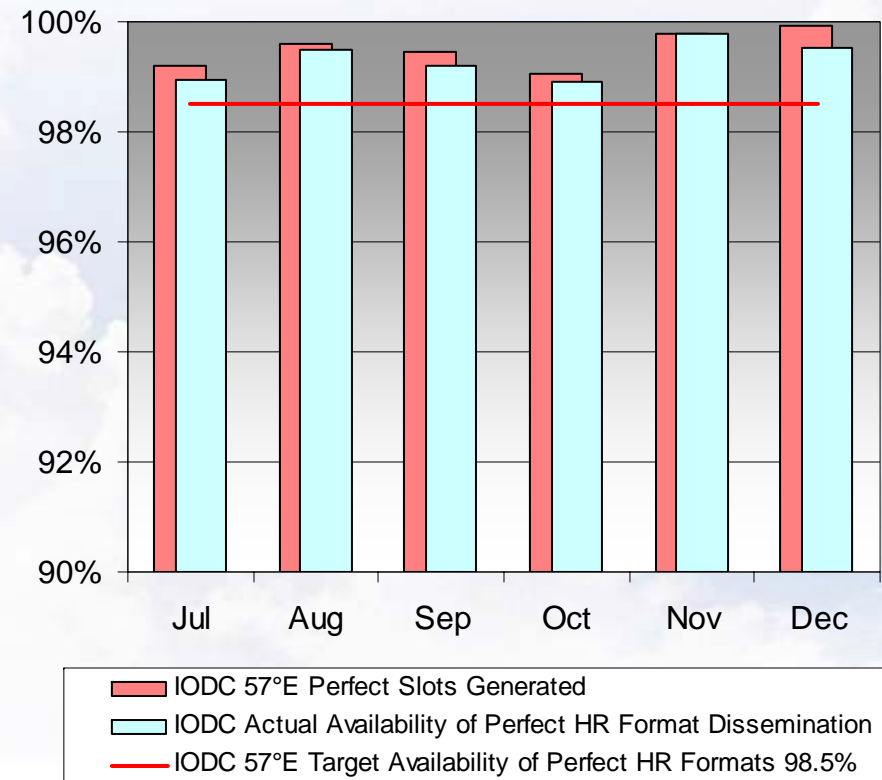
IODC 57°E Image Data

Performance of this service is 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 disseminated via Meteosat-7, as a percentage of those scheduled

Events Which Impacted Availability:

July and October 2007: greater numbers of satellite downlink drops than average impacted acquisition of raw image data in these months.





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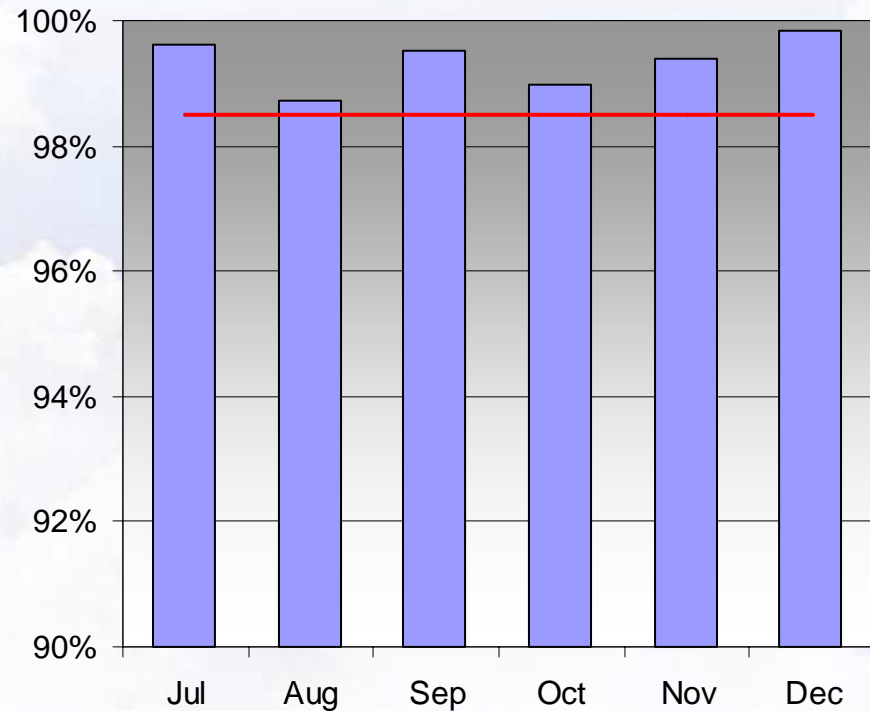
Meteosat Services

Meteorological Products derived from 0° data

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:

August 2007: The availability of the image data (seen on the 'SEVIRI 0° Image Data' slide) had partial effect on the availability of the meteorological products derived.



— 0° Met Product Target Availability in Archive 98.5%



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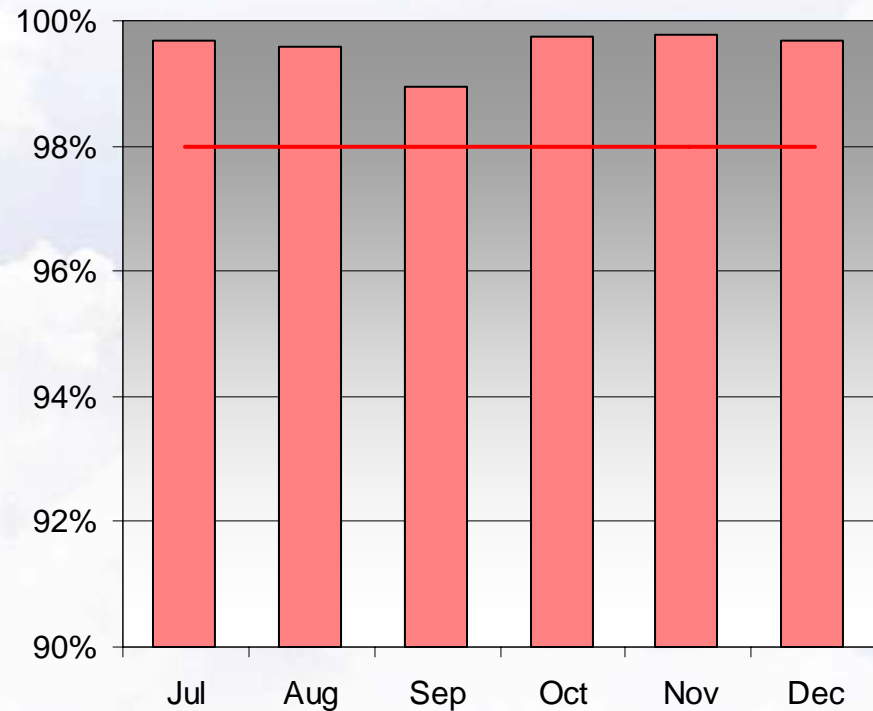
Meteosat Services

Meteorological Products derived from 57°E data

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:

None significant.



— IODC Met Product Target Availability in Archive 98%



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Meteosat Services

DCP Channel Availability at 0°

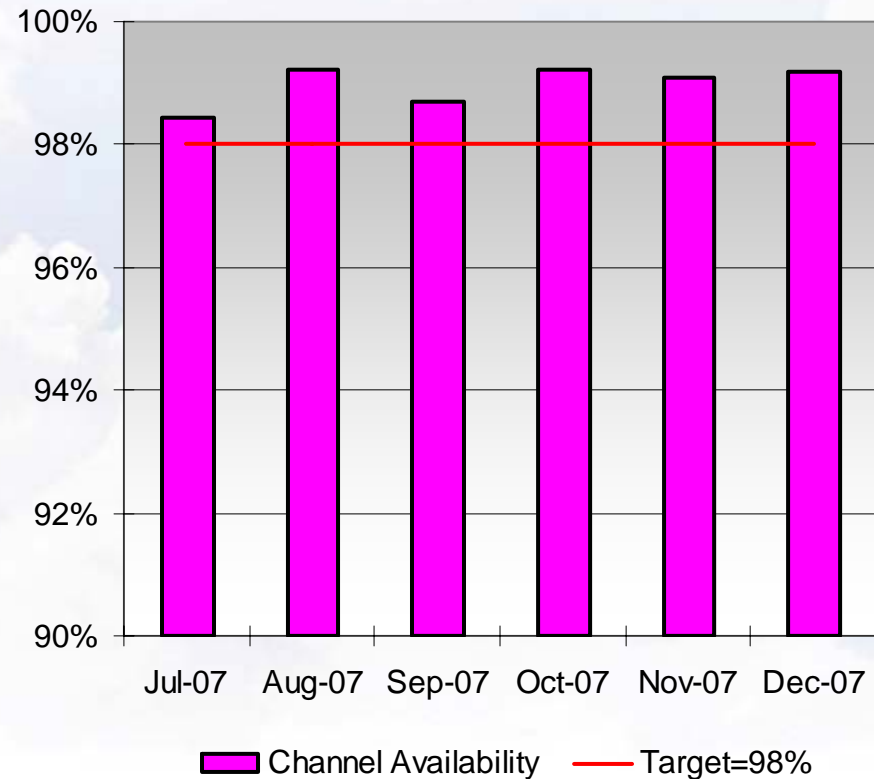
Data Collection and Retransmission operations at 0° in 2007/H2 have been based on the use of Meteosat-9's international and regional DCP channels.

Availability of this service 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 an additional 4 international DCP channels are supported by Meteosat-6 as part of the Indian Ocean Tsunami Warning System.

Events Which Impacted Availability:

None significant.





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EPS Global Data Service

This service currently comprises the provision of level 0 and 1 products derived from the data originating from the following Metop-A instruments:

A-DCS, AMSU, ASCAT, AVHRR, GOME-2, GRAS, HIRS, IASI, MHS, SEM

The charts on the following pages show the month-by-month availability of the products, identifying any significant events which impacted the service.

Unless otherwise indicated, the availability figures are derived from:

For Level 0: production statistics from EUMETSAT's EPS Product Generation Facility (PGF)

For Level 1: reception statistics from EUMETSAT's reference EUMETCast User Station



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EPS 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 (note: as of the end of 2007, ATOVS and IASI Level 2 products were classified as being of 'commissioning status', not operational)

Special note concerning the EPS GDS statistics:

An automated event-logging and reporting mechanism for the EPS ground segment is used to provide the statistics on the following slides. For some types of data, there are small inaccuracies (< 0.1%) in the monthly availability figures, sometimes resulting in the availability at the reference User Station being shown marginally higher than at the PGF. Actual availability at the two measurement points should be viewed as equal, unless indicated otherwise. Improvement of the reporting mechanism is ongoing.



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EPS Global Data Service

Operational Event with General Impact

The following event impacted all types of EPS GDS data:

17 September 2007: A 'Payload Switch-Offline' (PLSOL) occurred on the Metop-A satellite, attributable to a 'Single Event Upset' (SEU), resulting in the stoppage of data from all instruments.

(Note: when such a complete switch-off occurs, investigation and analysis of the cause is first carried out. If it is determined that it is safe to resume normal operations, then the satellite sub-systems and the instruments are reactivated / switched back on. The overall process takes approximately two days to complete)



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EPS Global Data Service

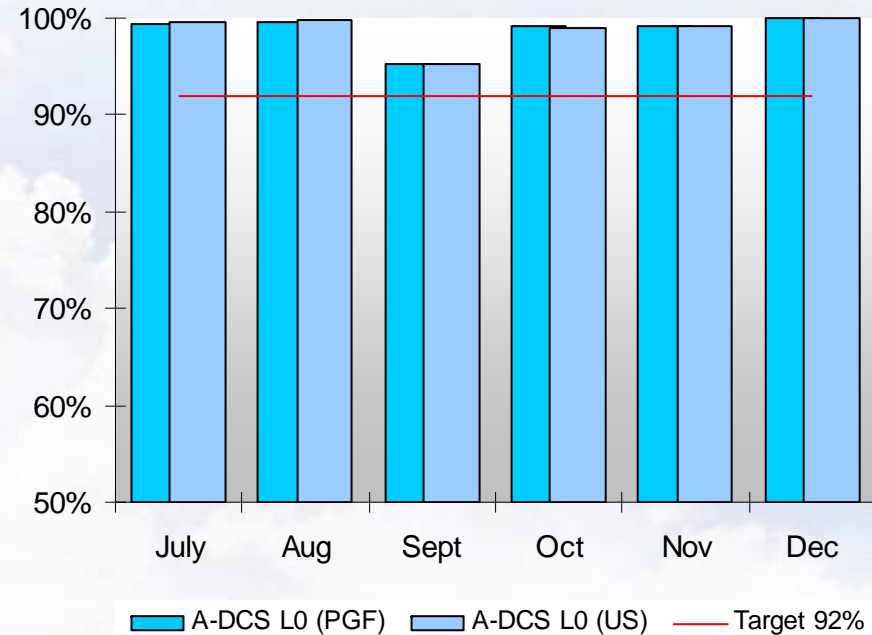
A-DCS Level 0 Data

Metop-A carries an instrument for the Argos Advanced Data Collection System. Data is collected and relayed by EUMETSAT to CLS in Toulouse.

Performance in all months of the reporting period above target.

Events Which Impacted Availability:

September 2007: PLSOL (general impact on EPS GDS)





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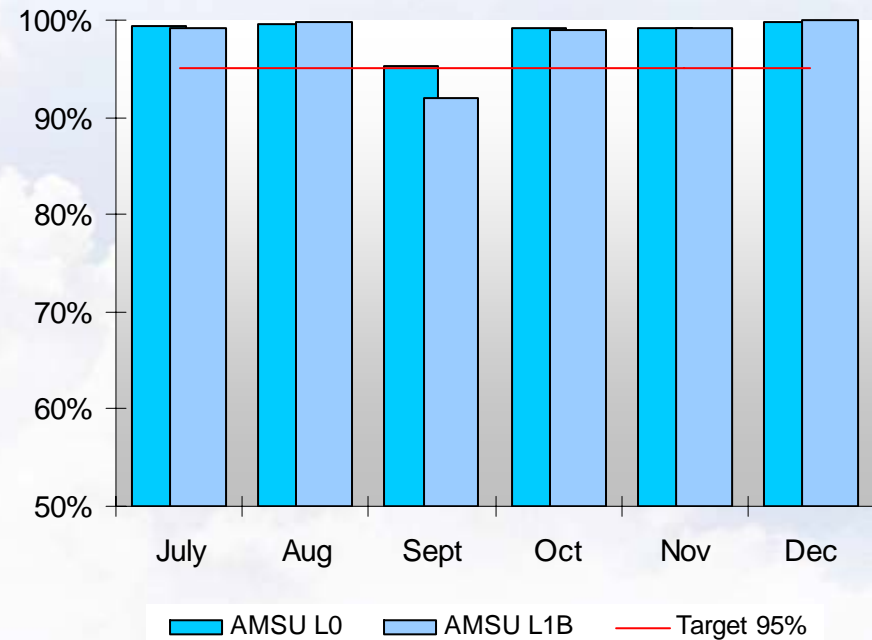
EPS Global Data Service

AMSU Level 1B BUFR Data

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

Events Which Impacted Availability:

September 2007: PLSOL (general impact on EPS GDS)





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EPS Global Data Service

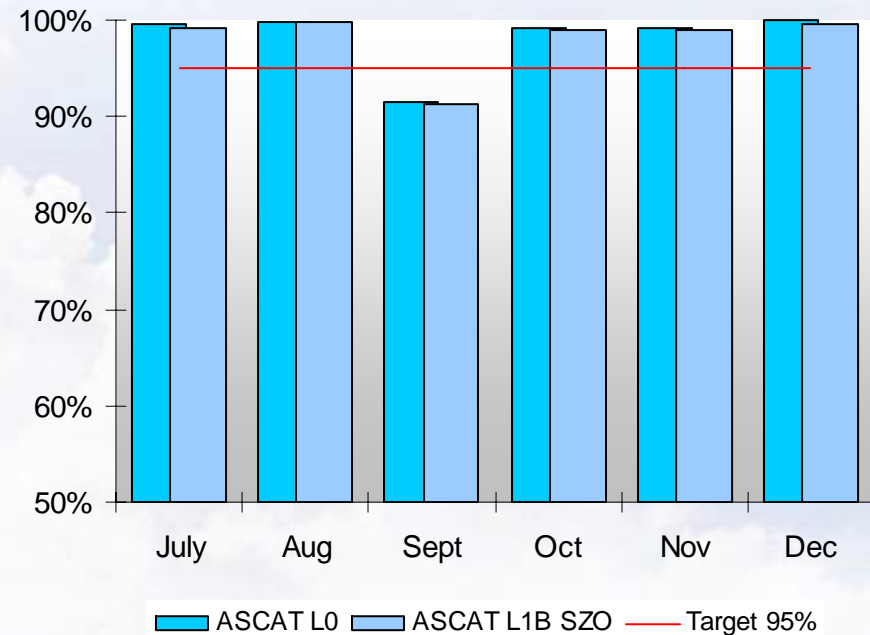
ASCAT Level 1B (SZO) Data

The Advanced Scatterometer 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 user station (US).

Events Which Impacted Availability:

September 2007: PLSOL (general impact on EPS GDS)





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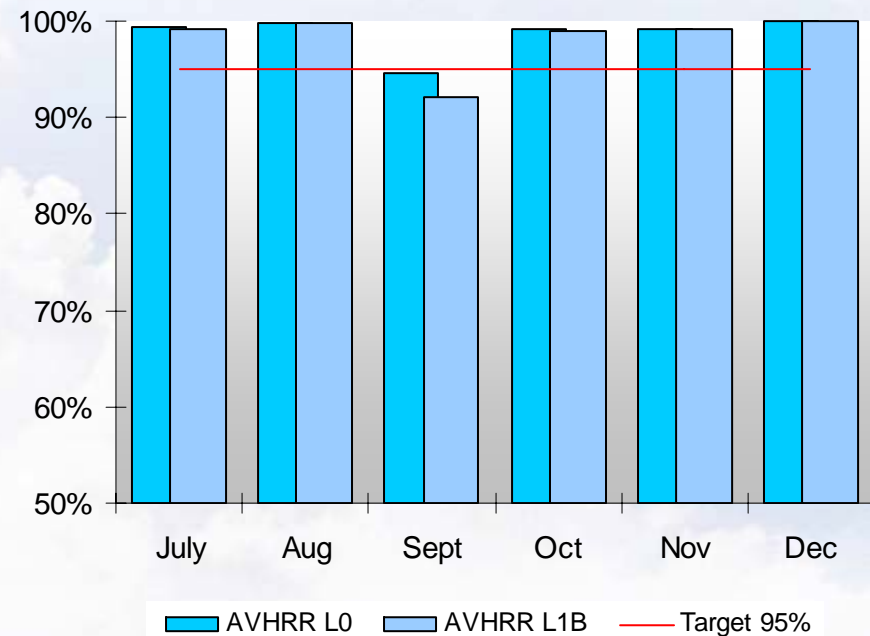
EPS Global Data Service

AVHRR Level 1B 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.

Events Which Impacted Availability:

September 2007: PLSOL (general impact on EPS GDS)





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EPS Global Data Service

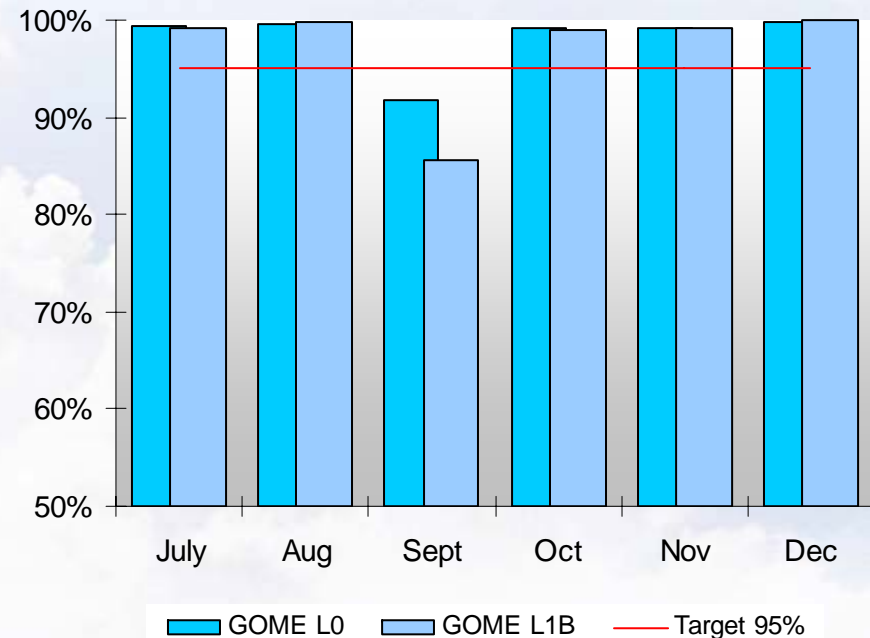
GOME-2 Level 1B Data

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

(Note: GOME-2 level 1B data provided in pre-operational mode in 2007/H2)

Events Which Impacted Availability:

September 2007: PLSOL (general impact on EPS GDS)





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EPS Global Data Service

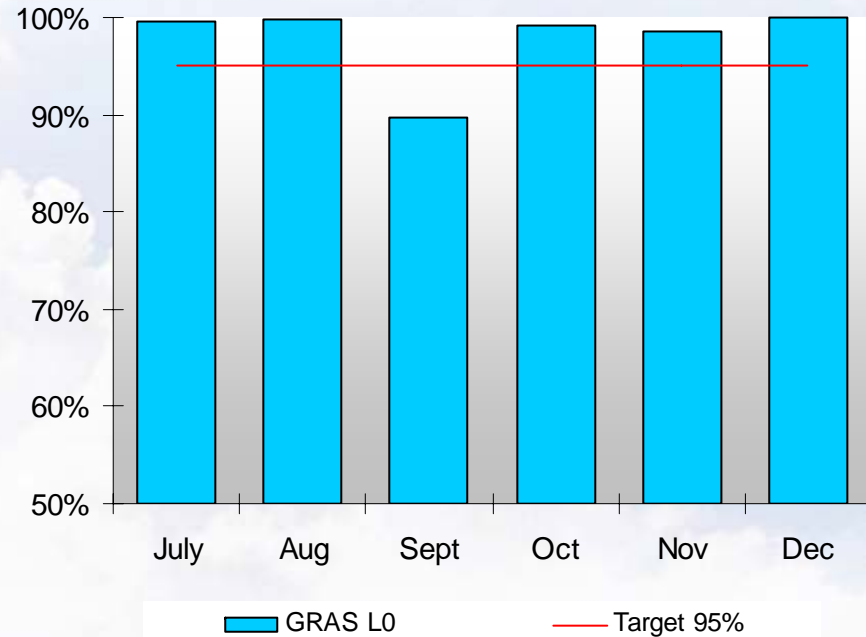
GRAS Level 1B BUFR Data

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

Test dissemination of GRAS Level 1B commenced in August 2007. The performance is believed not to diverge from that for Level 0, although the monitoring and performance-reporting software is currently not able to produce statistics.

Events Which Impacted Availability:

September 2007: PLSOL (general impact on EPS GDS)





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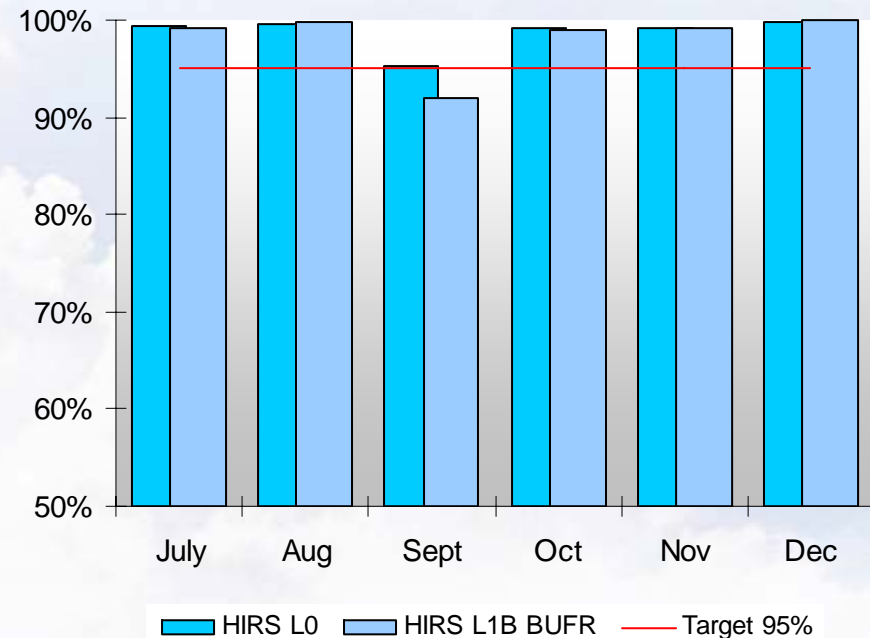
EPS Global Data Service

HIRS Level 1B BUFR Data

The High Resolution Infrared Radiation Sounder 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.

Events Which Impacted Availability:

September 2007: PLSOL (general impact on EPS GDS)





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EPS Global Data Service

IASI Level 1C BUFR Data

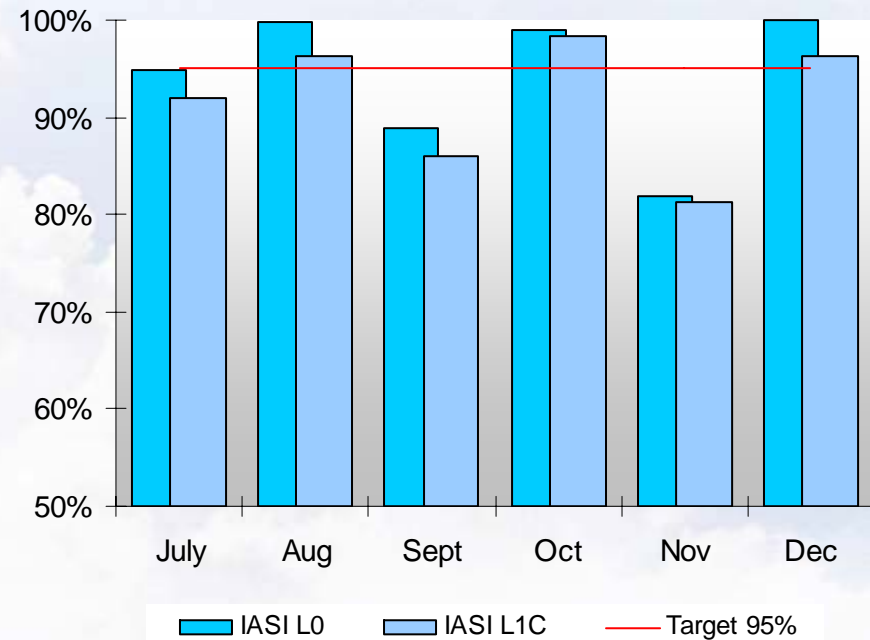
The Infrared Atmospheric Sounding Interferometer measures temperature, water vapour and trace gases.

Events Which Impacted Availability:

July 2007: IASI instrument entered Heater-Refuse Mode, provoked by a suspected Single Event Upset (SEU).

September 2007: PLSOL (general impact on EPS GDS)

November 2007: IASI instrument entered Heater-Refuse Mode again on 8 Nov 08, provoked by another SEU. On 18 Nov 08, IASI entered Standby-Refuse Mode, once again suspected as resulting from an SEU.





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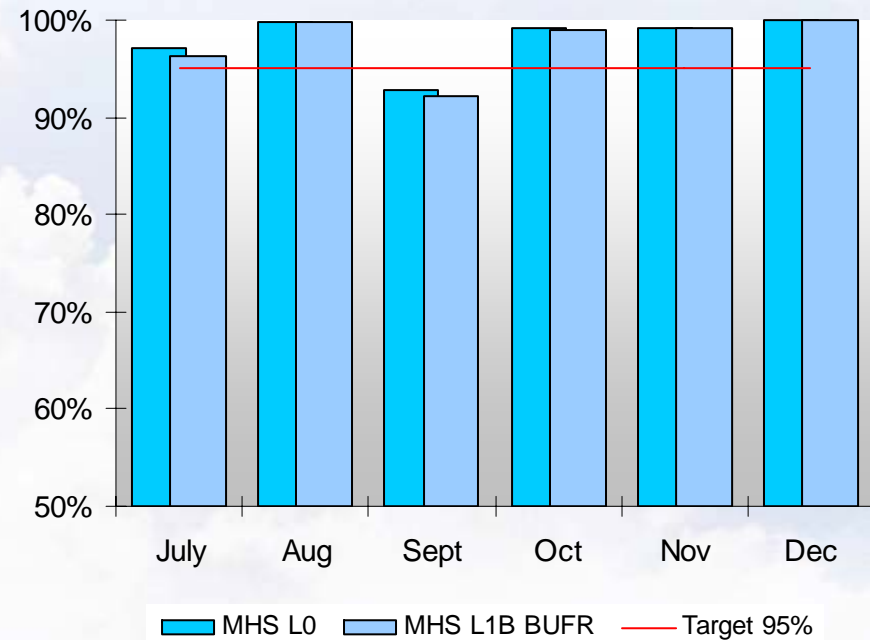
EPS Global Data Service

MHS Level 1B BUFR Data

The Microwave Humidity Sounder is used to measure atmospheric humidity primarily, but also to measure cloud liquid water content and to provide qualitative estimates of precipitation.

Events Which Impacted Availability:

September 2007: PLSOL (general impact on EPS GDS)





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EPS Global Data Service

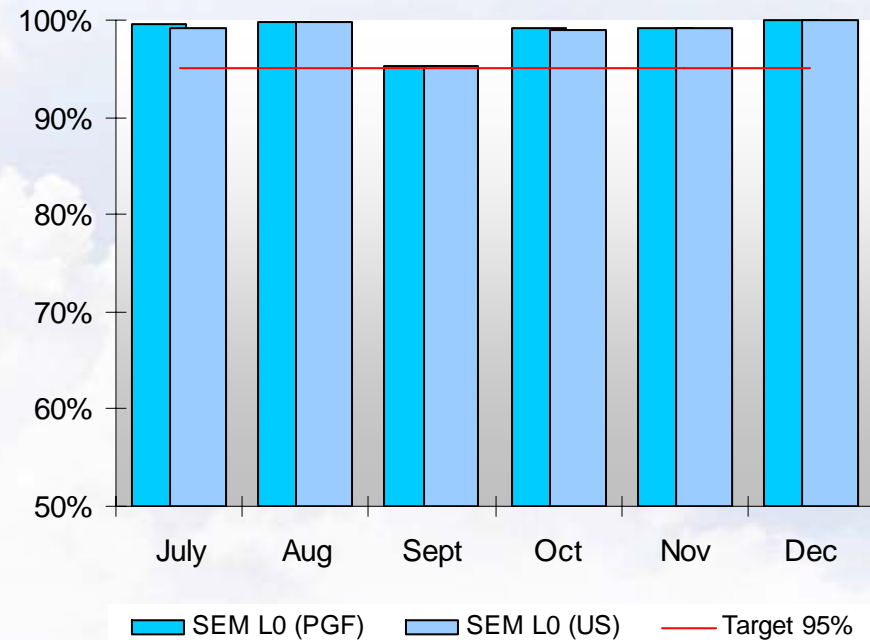
SEM Level 0 Data

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 altitude.

Note that only Level 0 data (consisting of the SEM instrument source packets in EPS native format) is provided as a service.

Events Which Impacted Availability:

September 2007: PLSOL (general impact on EPS GDS)





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EPS Regional Data Service

This service category comprises EARS-ATOVS and EARS-AVHRR services. A third service originally foreseen (namely EARS-ASCAT) is not available due to the failure of HRPT on Metop-A.

>>> Note that, for this issue (July – Dec 2007) of the Central Operations Report, performance data is only available for the EARS-ATOVS service and not the EARS-AVHRR service.



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EPS Regional Data Service

EARS-ATOVS

Note: 'Availability of all products' (i.e. on the user stations) covers Levels 1A and 1D in addition to Level 1C products.

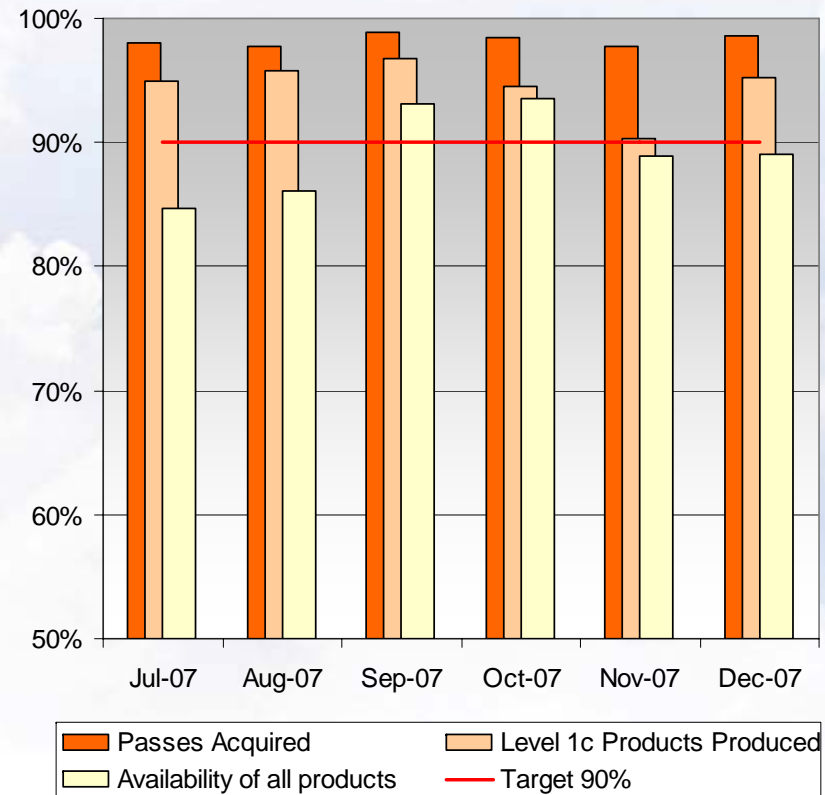
Target for availability of EARS service is 90% (according to EARS Operational Service Specification v3A, Oct 2005).

Events Which Impacted Availability:

July & August 2007: Degraded Internet link to Kangerlussuaq impacted timeliness

October 2007: Antenna hardware failure at the Maspalomas station

November 2007: Monterey station outage of 2.5 days





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EPS Regional Data Service

EARS-AVHRR

EARS-AVHRR collects AVHRR instrument data from the NOAA 17 and NOAA 18 satellites via a network of AHRPT/HRPT stations and retransmits it via EUMETCast.

<< **Sorry, performance data for EARS-AVHRR currently not available** >>



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Archive Service

This service allows registered users to request and receive data acquired from any of EUMETSAT's operational satellites and any products derived from the data. EUMETSAT provides an online 'self-service' ordering mechanism and can supply requested data and products from its archive via physical media and the Internet.

Note that this section is being enhanced for the next issue of the report to provide better presentation of the performance of the Archive Retrieval Service.

Charts currently provided show the following :

- **Meteosat Image & Product Availability**
- **Total Data Volumes Retrieved**



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Archive Service

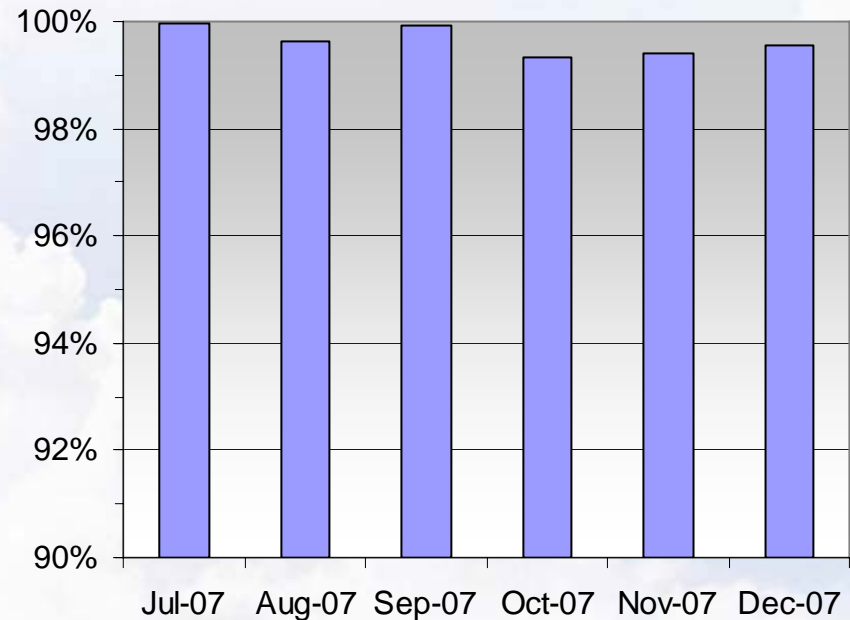
Meteosat Image & Product Availability

The chart here shows total numbers of Meteosat images & products held by EUMETSAT's archive facility for each of the months in the reporting period, as a percentage of what was scheduled to be produced (eclipse seasons taken into account). Many factors influence the final availability of data in the archive, from the point when a satellite generates the raw data, through ground acquisition and processing, to the point where it is ingested and stored.

Note that statistics for EPS data are not available for 2007.

Events Which Influenced Availability:

None, other than those indicated on the 'Meteosat Services' slides.



■ Image / Product Availability



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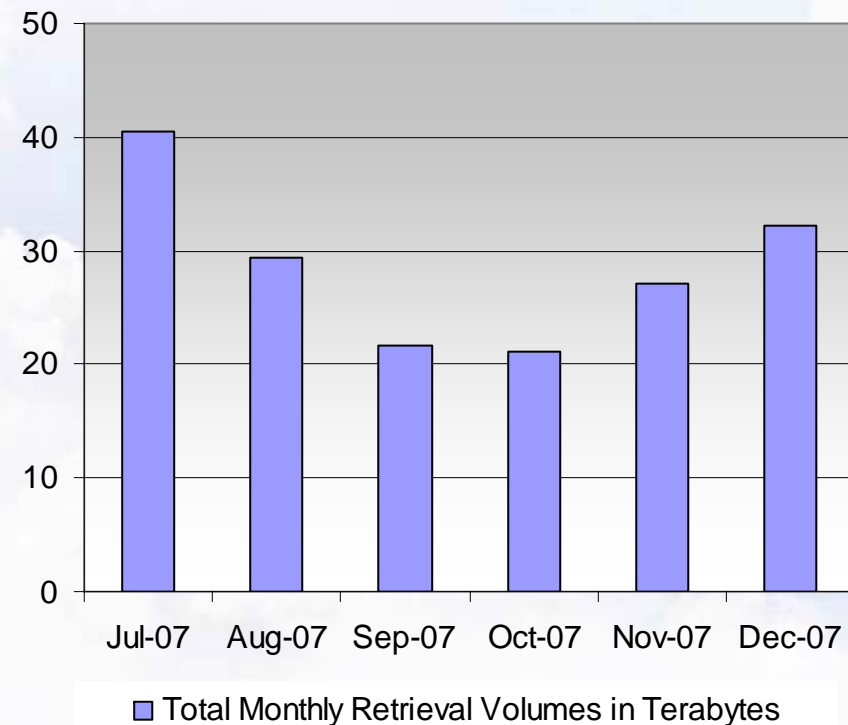
Archive Service

Total Data Volumes Retrieved

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 :

July 2007: Significant retrieval volume in the context of EPS commissioning activities.





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User Support Service

EUMETSAT's User Helpdesk receives requests from users that are classified as either 'enquiries' (related to services provided) or 'registrations' for one or more of the services.

Charts on the following slides show:

- User requests received from Member States, Cooperating States and 'Other Countries'
- The 'Top 5' countries that gave rise to user requests
- User enquiry and user registration breakdowns



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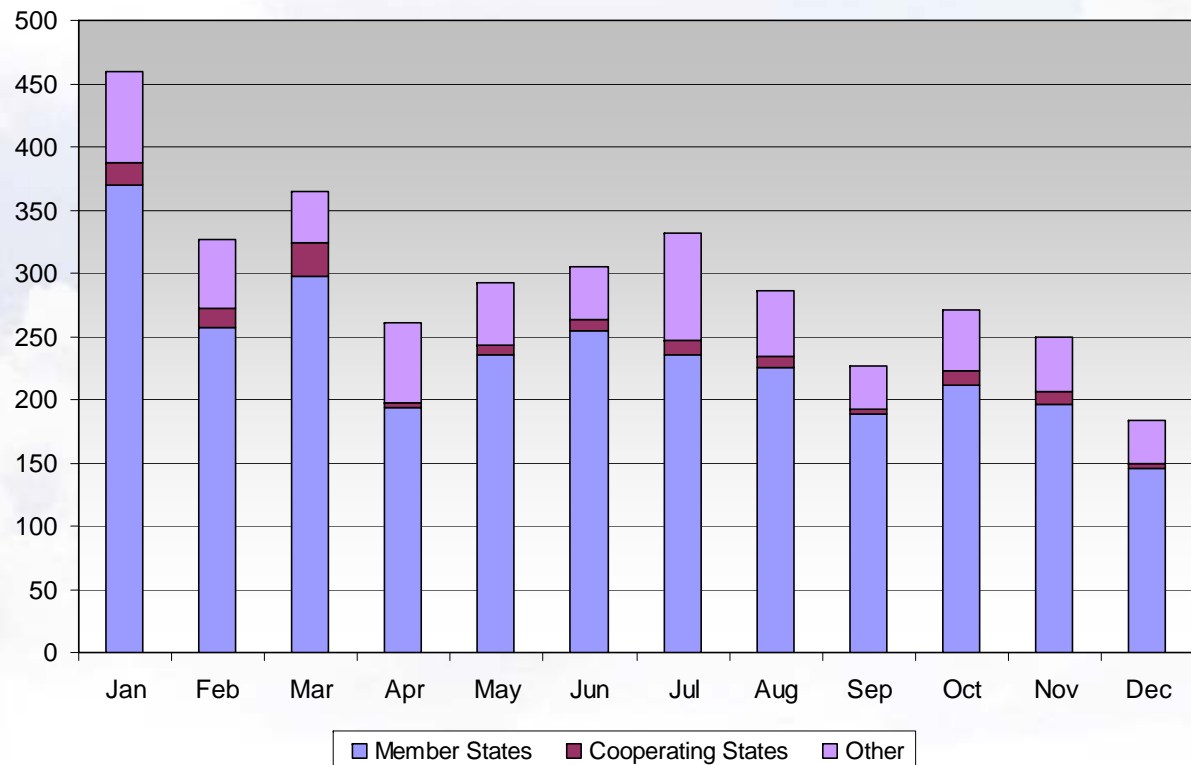
User Support Service

User Requests 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 requests received in in the full 12 months of 2007 totalled 3558, of which 1549 were received in the period July to December. Requests comprise registrations and enquiries.

The next slide shows user requests by country of origin, and then following two slides show the breakdown into (1) user registrations by category and (2) user enquiries by subject area. The subject timeframe for each is the period July-Dec 2007.





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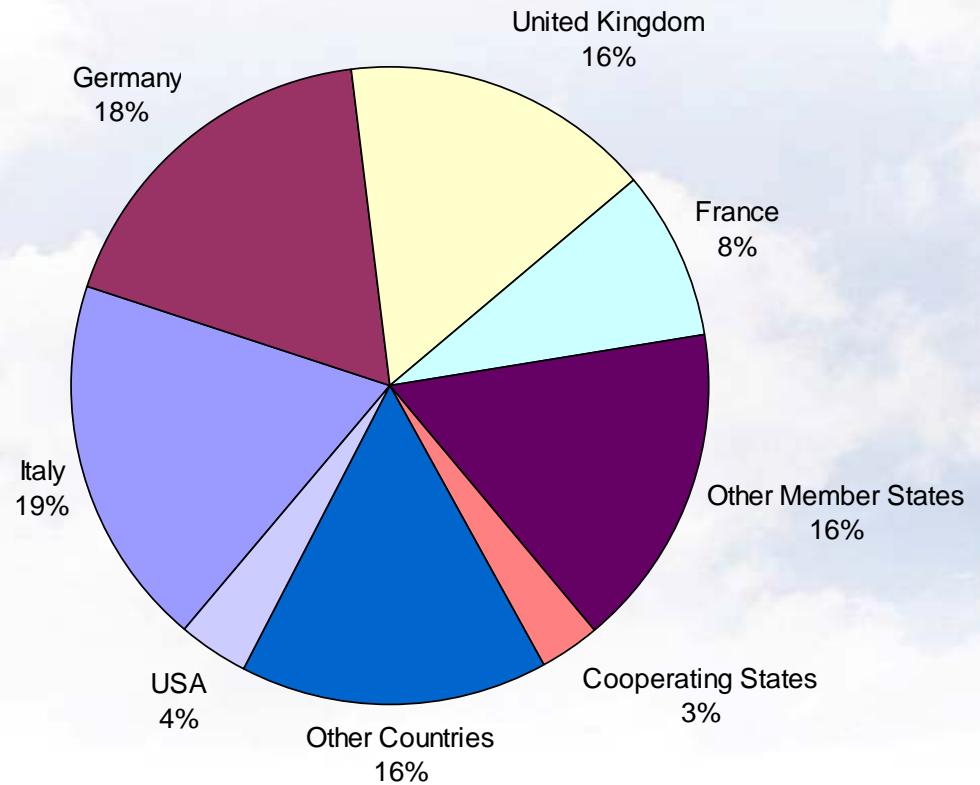
User Support Service

User Requests by Country of Origin

The pie chart here shows the requests received in the second half of 2007 from:

(1) the 5 countries that gave rise to the largest numbers of requests, and

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



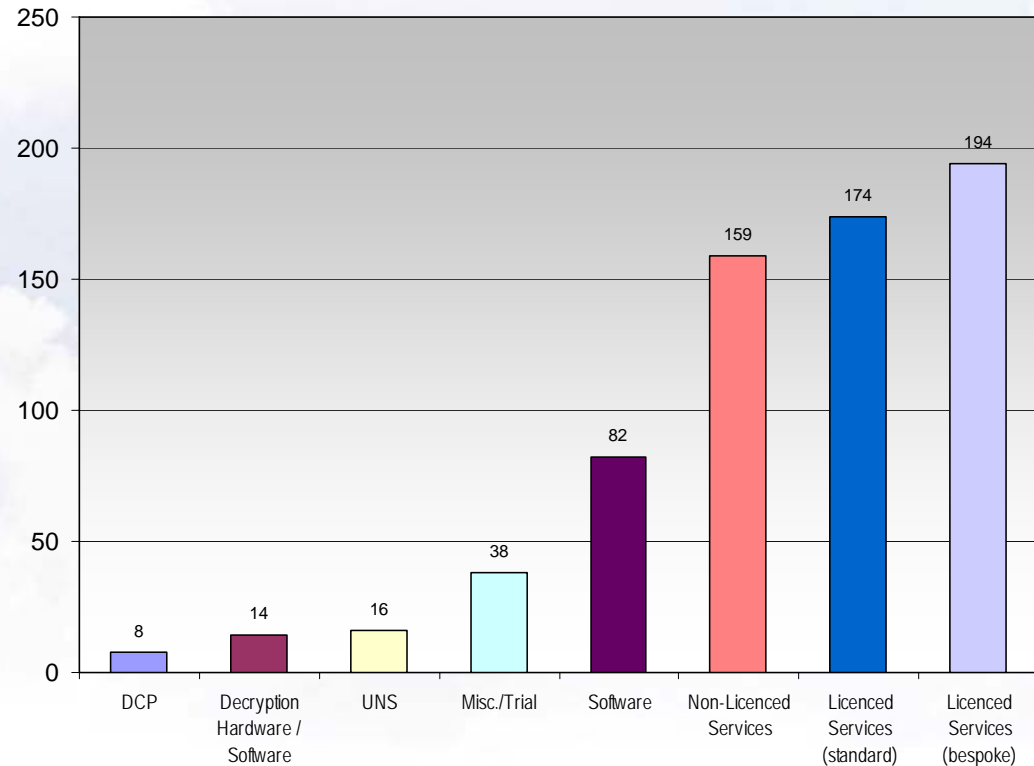


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User Support Service

User Registrations by Category

The chart shows that a majority of registrations were for licenced services, and of those, marginally more registrations were of the type that required an amount of manual processing, compared with those that are handled by means of the self-service mechanism on the EUMETSAT website.

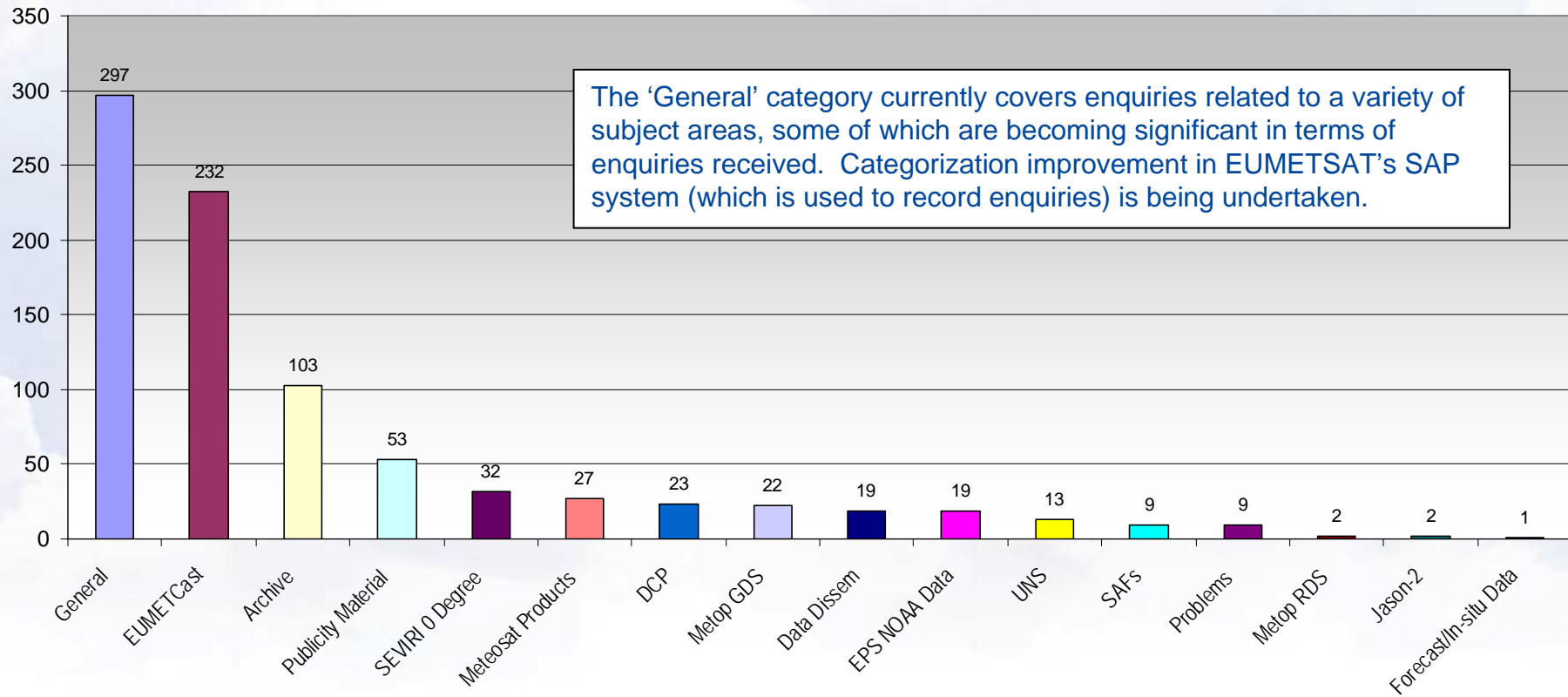




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User Support Service

User Enquiries by Subject Area





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Changes to EUMETSAT's Services

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

| Date | Service | Description |
|--------------|---|---|
| 26 July | Metop-A IASI Level 1C products | Products declared fully operational. |
| 29 August | GRAS Level 1B products: BUFR (partial and full) and PFS | Demonstration service on EUMETCast-Europe to NMSes, manufacturers and licenced users commenced. |
| 30 August | Jason-1 OSDR data (Operational Sensor Data Record) | Demonstration service on EUMETCast-Europe to NMSes and manufacturers commenced. |
| 25 September | IASI Level 2 pre-operational products: TWT and CLP | Addition to EUMETCast-Europe for all users. |
| 8 October | OSI SAF ASCAT Wind Vector Product (25km grid resolution) | Product declared pre-operational. |
| 10 October | ASCAT Level 1 | Product upgraded and declared pre-operational. |

Continued on next slide...



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Changes to EUMETSAT's Services (continued)

Further changes to services in this reporting period:

| Date | Service | Description |
|----------------|--|---|
| 31 October | O3M SAF pre-operational products: NO2 and O3 (in HDF5 format) | Trial dissemination on EUMETCast-Europe commenced. |
| 1 November | Jason-1 OSDR data (Operational Sensor Data Record) | Demonstration service on EUMETCast-Europe made available for all users. |
| 21 December | ATOVS sounding product | Trial dissemination on EUMETCast-Europe to NMSEs and manufacturers commenced. |



EUMETSAT Central Operations Report for July-Dec 2007

Glossary

Special terms used in this presentation are explained in the table below and on subsequent slides.

| Term | Service | Description |
|-----------|-----------------|---|
| Formats | Meteosat (IODC) | High-Resolution Image (HRI) formats disseminated via Meteosat's direct dissemination broadcasts. |
| Level 0 | EPS GDS | 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 which 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. |

Continued on next slide...



EUMETSAT Central Operations Report for July-Dec 2007

Glossary (continued)

| Term | Service | Description |
|-------------|----------------------|--|
| Level 1A | EPS GDS | Instrument data in full resolution with radiometric and geometric (i.e. Earth location) calibration computed and appended but not applied. |
| Level 1B | EPS GDS | Calibrated, earth-located and quality-controlled product, in the original pixel location, packaged with ancillary, engineering and auxiliary data. |
| Level 1C | EPS GDS | In the case of the IASI spectra, level 1b data after the application of the apodization function. |
| Level 2 | EPS GDS | Earth-located values converted to geophysical parameters at the same spatial and temporal sampling as the Level 1B and 1C data. |
| 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. |

Continued on next slide...



EUMETSAT Central Operations Report for July-Dec 2007

Glossary (continued)

| Term | Service | Description |
|------------------------|----------------------|--|
| '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. |
| Repeat Cycles (or RCs) | Meteosat (0° SEVIRI) | The period in which the 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. |