



EUMETSAT Headquarters Darmstadt, Germany

Central Operations Report for the period January to June 2009



EUMETSAT Central Operations Report for January – June 2009

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



EUMETSAT Central Operations Report for January - June 2009

Introduction

Welcome to the report on EUMETSAT Operations for the first six months of 2009.

The half-year saw a few operational problems, but nevertheless service availability was mostly above target, with only the Rapid-Scanning Service suffering marked impact in April.

Two events which occurred near the end of last year included the unforeseen switch-off of the IASI instrument onboard the Metop-A satellite (occurred 29th December) and the antenna outage at the Svalbard Ground Station which started on the 31st.

The recovery from the antenna outage fortunately could be achieved relatively quickly within the very early hours of 1st January, thanks to the timely response of operations staff. The recovery from the IASI switch-off was completed by the 2nd January, the lengthy duration being necessary to allow thorough investigation by the instrument engineers, followed by the execution of the switch-on procedure.

Later in the reporting period, further significant events included the outage of the EUMETCast system on 14th March (affecting all services using it) and Meteosat-9





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Introduction (continued)

→ entering safe-mode on the 17th April. The latter necessitated switching the prime 0° imaging service to Meteosat-8, which unfortunately implied stopping the Rapid-Scanning Service. Further information on both events is provided on slide 8.

Please note that new service availability slides have been added to the report as of this issue:

- Meteorological Products derived from Rapid-Scan SEVIRI Image Data (9.5°E) on slide 14
- Jason-2 OGDR Service on slides 35-36

Please also be aware that the 'Other Geostationary Satellite Services' section has now been positioned after that for Jason-2.

Best regards,
Mikael Rattenborg
Director of Operations

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**
- **EUMETSAT's Archive Service**
- **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.

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.

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)

Meteosat Services: Operational Events with General Impact

The following events impacted Meteosat Services to the extents described:

14 March 2009: A EUMETCast outage of approximately 100 minutes, resulting in up to one hour of lost data and a further 1 to 2 hours' period of delays for various Meteosat services (all other services using EUMETCast were similarly impacted). The outage was caused by the (initially-undetected) failure of a power-supply fuse in the EUMETCast service provider's equipment.

17 April 2009: Meteosat-9 entered safe-mode, attributable to cosmic radiation adversely effecting onboard electronics, this causing an automatic safe-guard action onboard the satellite. Resumption of the prime 0° imaging service was achieved after approximately 3 hours by switching the mission to Meteosat-8. This implied the stoppage of the rapid-scanning service.

Once investigation into the safe-mode had been performed and it was determined that it was safe to reactivate the satellite, the reconfiguration of Meteosat-9 was commenced, and as soon as thermal stability was achieved, the 0° service using that satellite was resumed and Meteosat-8 was returned to supporting the rapid-scan service.



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Meteosat Services → SEVIRI 0° Image Data

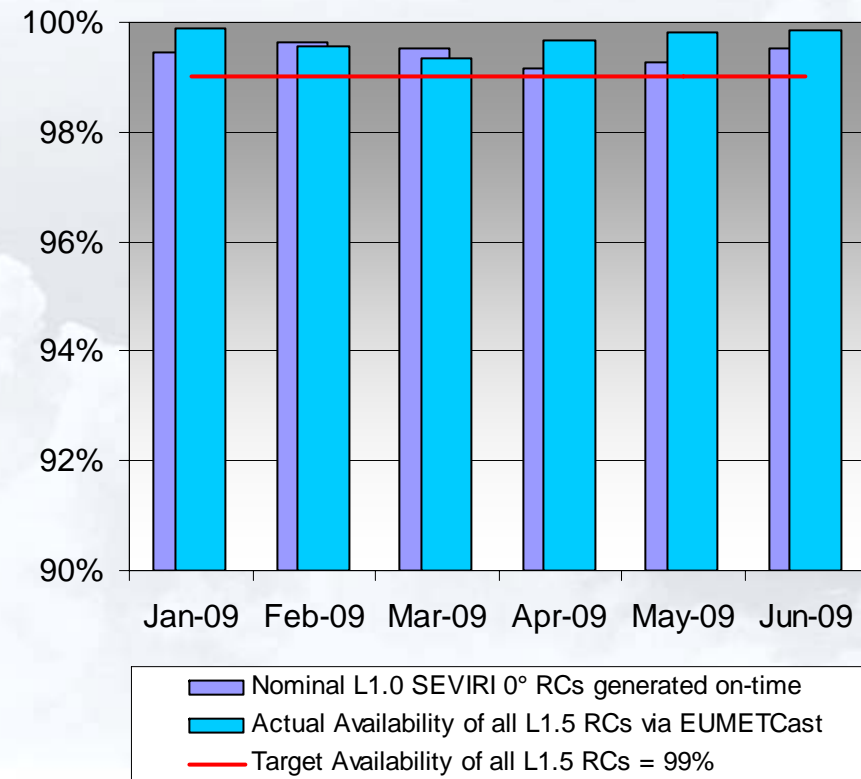
Performance measured in terms of:

- 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:

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

Nominal RCs for April additionally impacted by Met-9 entering safe-mode on 17-April-09 and mission being resumed using Met-8 approximately 3½ hours later.





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Meteosat Services → IODC 57°E Image Data

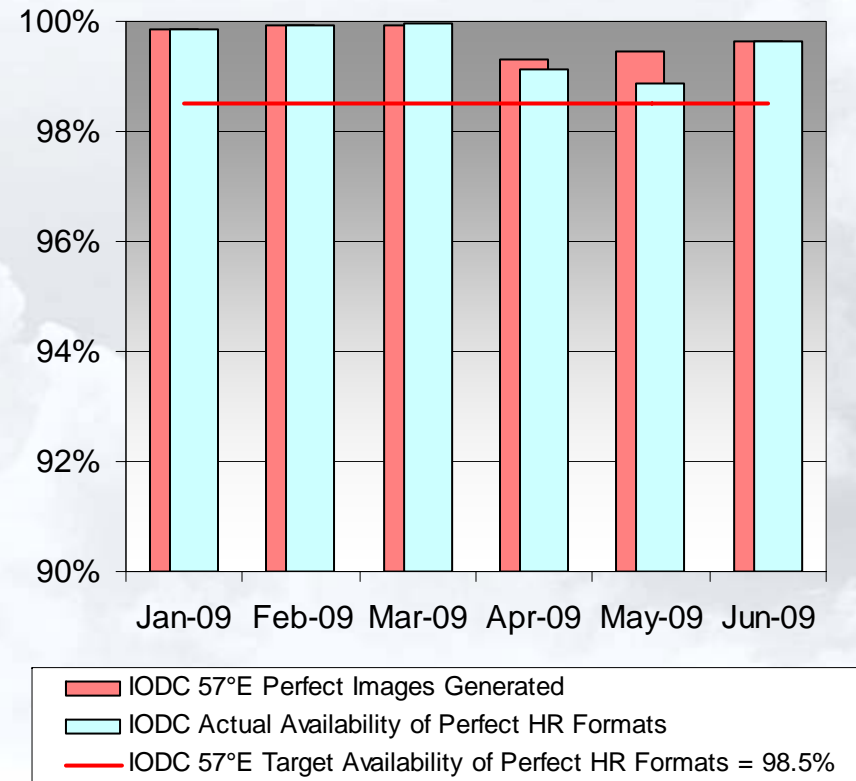
Performance measured in terms of:

- (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:

April 2009: Perfect Images impacted by problems with image-processing at EUMETSAT

May 2009: Perfect Images impacted by Ground Station antenna problems and Perfect HR Formats additionally impacted by an outage of equipment which resulted from a maintenance activity.





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

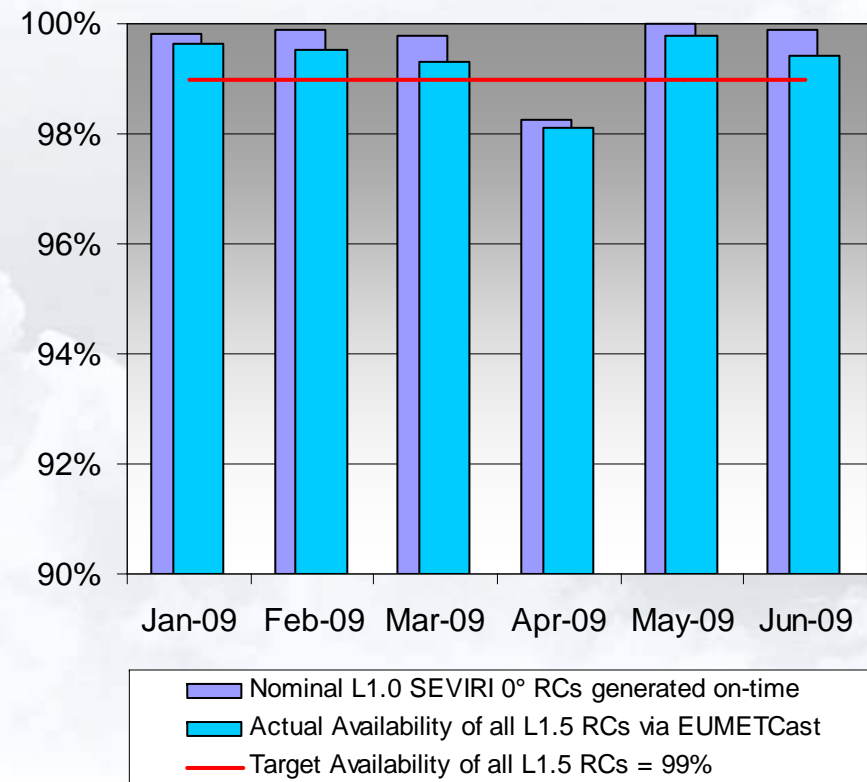
Meteosat-8 currently supports the MSG Rapid-Scan Service (RSS), using a scan period of 5 minutes, covering the latitude range of 15 to 70°, using all 12 SEVIRI spectral channels.

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:

17-April-2009: Availability of L1.0 and L1.5 RCs was impacted by the stoppage of RSS needed in order to switch Meteosat-8 to supporting the SEVIRI 0° Service (as a result of Meteosat-9 entering safe-mode).





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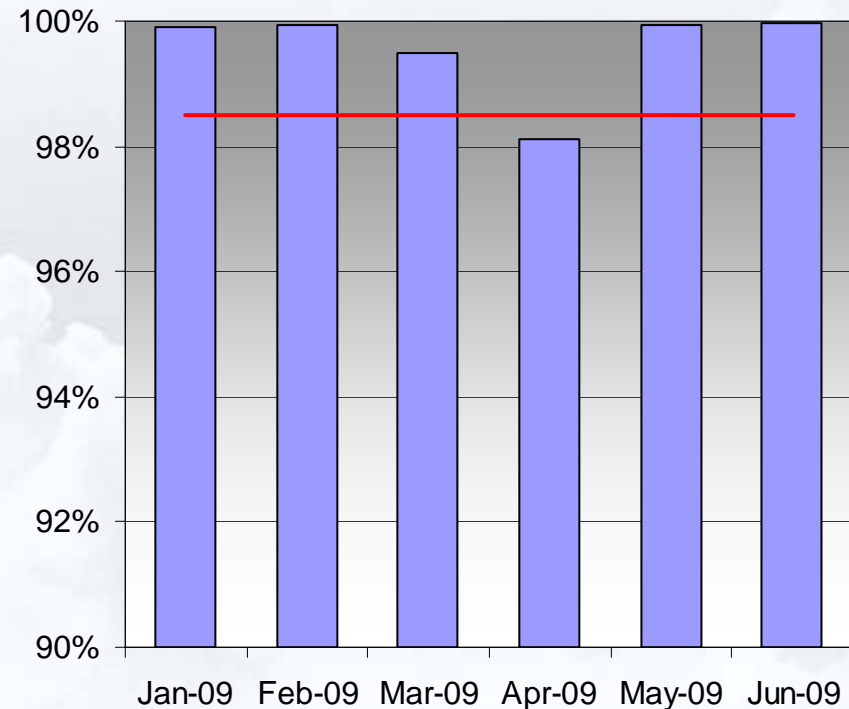
Meteosat Services → Meteorological Products derived from 0° Data

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:

March 2009: Software problems suffered by the product extraction system impacted the generation of products.

April 2009: Met-9 entry into safe-mode and the resulting switch of the 0° mission to Met-8 impacted the generation of products.



— 0° Met Product Target Availability 98.5%



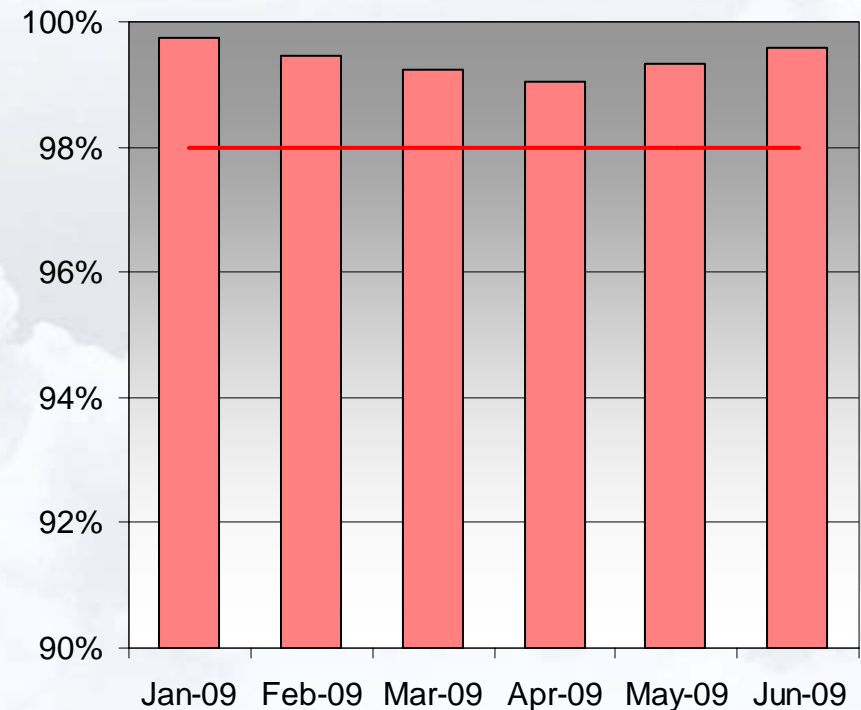
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Meteosat Services → Meteorological Products derived from 57°E Data

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:

None significant.



— IODC Met Product Target Availability 98%



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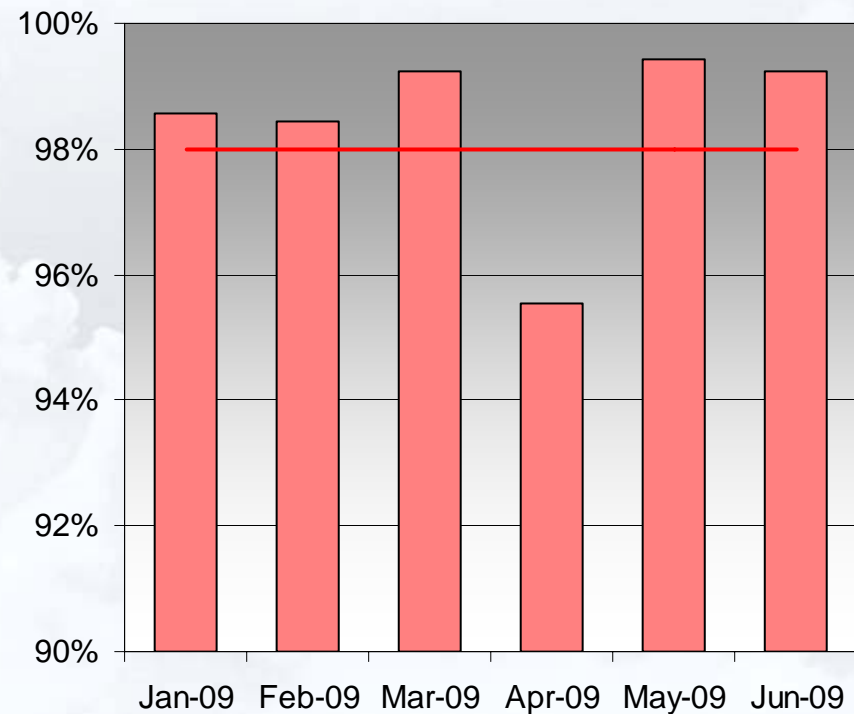
Meteosat Services → Meteorological Products derived from 9.5°E RS Data

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:

17 April 2009: The Rapid-Scanning mission supported by Met-8 was stopped in order that the satellite be switched to supporting the 0° mission. The remainder of met. products scheduled for that day were not generated.



— RSS Met Product Target Availability 98%



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Meteosat Services → DCP Channel Availability at 0°

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

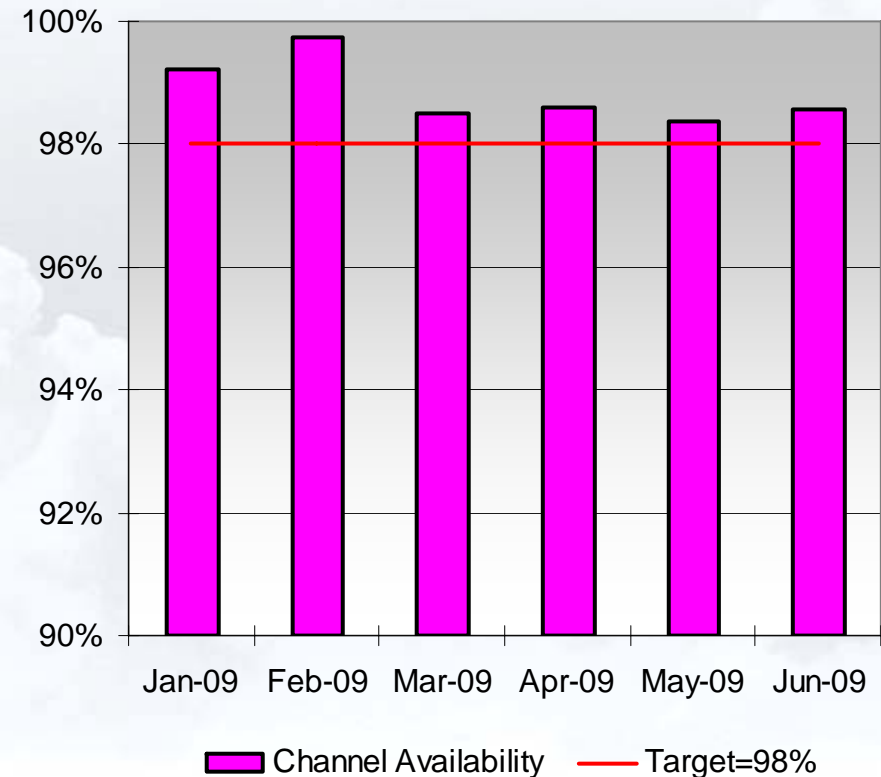
As of the end of June 2009, there were 563 active Data Collection Platforms (DCPs) out of a total of 1003 registered units, belonging to 117 operators.

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 currently not included)

Events Which Impacted Availability:

None significant.





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Metop/NOAA Global Data Service

This service comprises the provision of Level 0 data and Level 1 products derived from the data generated by the following Metop-A instruments:

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

EUMETSAT also produces Level 1 products based on the data from NOAA-18's AMSU, AVHRR, HIRS and MHS instruments (NOAA-19's from 2-June-2009 onwards).

In addition, the Global Data Service also includes Level 2 products based on Metop-A IASI and ATOVS data.

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

Note: Unless otherwise indicated, the availability figures are derived as shown here:

- 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 (US)
- For Level 2:** as for Level 1



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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.



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

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

01 January 2009: A software problem with satellite-tracking equipment at the Ground Station in Svalbard (which started the previous day, 31-Dec-08) impacted data acquisition for 2 orbits of Metop-A and 3 of NOAA-18.

14 March 2009: EUMETCast outage of approximately 100 minutes, resulting in up to one hour of lost data and a further 1 to 2 hours' period of delays for various Metop/NOAA services (all other services using EUMETCast were similarly impacted). The outage was caused by the (initially-undetected) failure of a power-supply fuse in the EUMETCast service provider's equipment.



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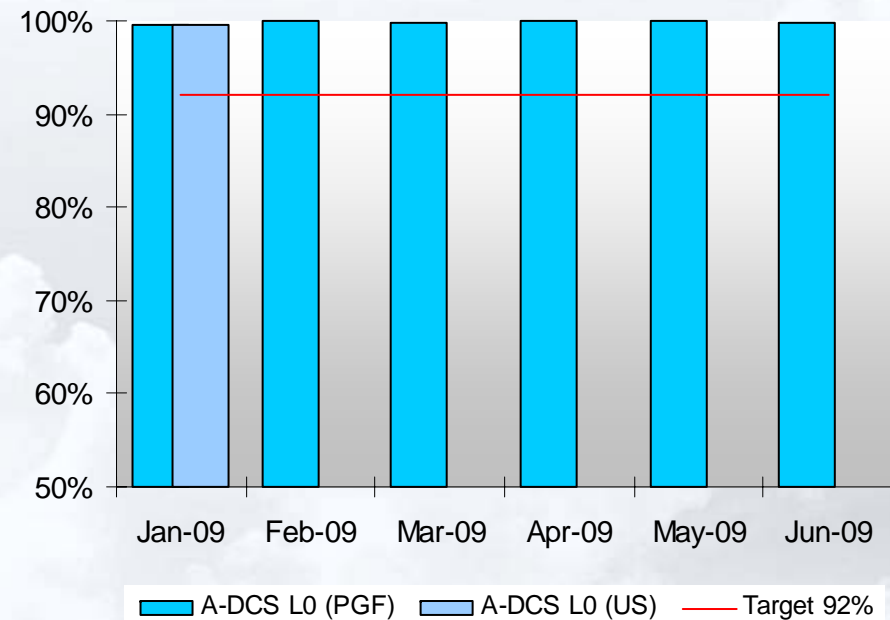
Metop/NOAA Global Data Service → A-DCS Level 0 Data

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:

8 January 2009: Mission data corruption occurred which caused approx. 29 hours' of unusable data and necessitated a restart and patching of the instrument (Level 0 data packet stream continued despite the invalid data content).





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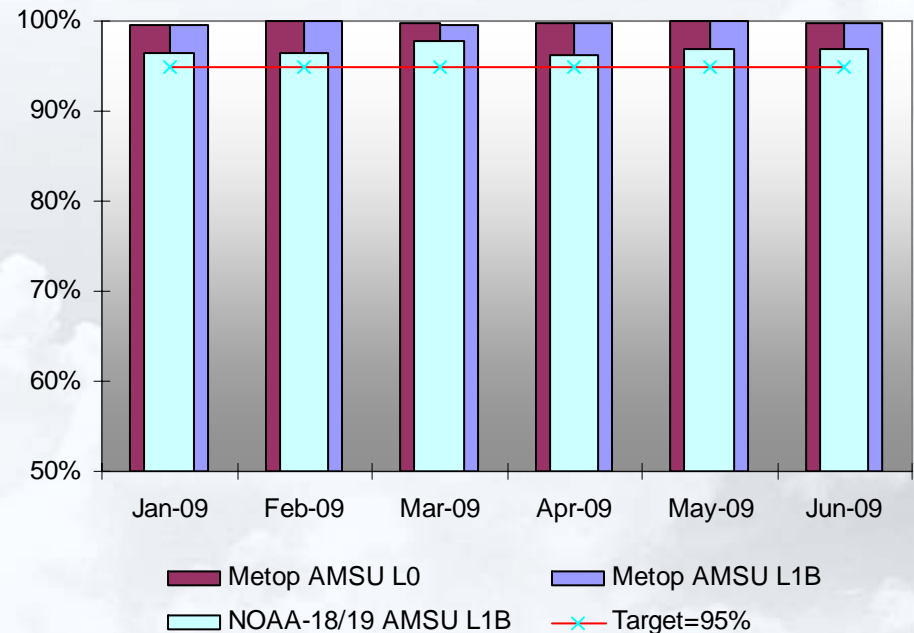
Metop/NOAA Global Data Service → AMSU Level 1B BUFR Products

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-18/19 satellites (NOAA-18 up to 2-Jun-09, and NOAA-19 thereafter).

Events Which Impacted Availability:

None significant for Metop-A or NOAA-18/19.



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.



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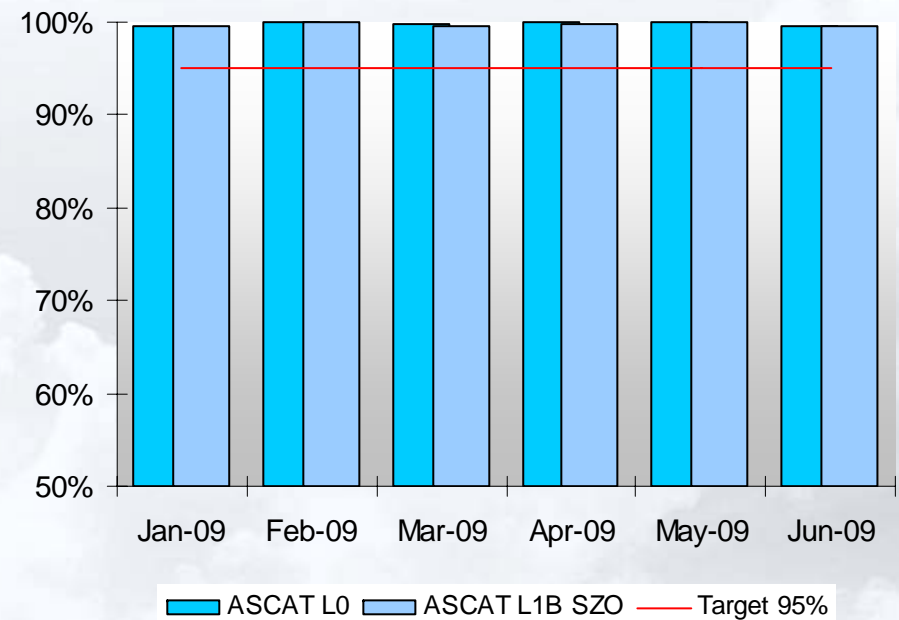
Metop Global Data Service → ASCAT Level 1B (SZO) Products

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.





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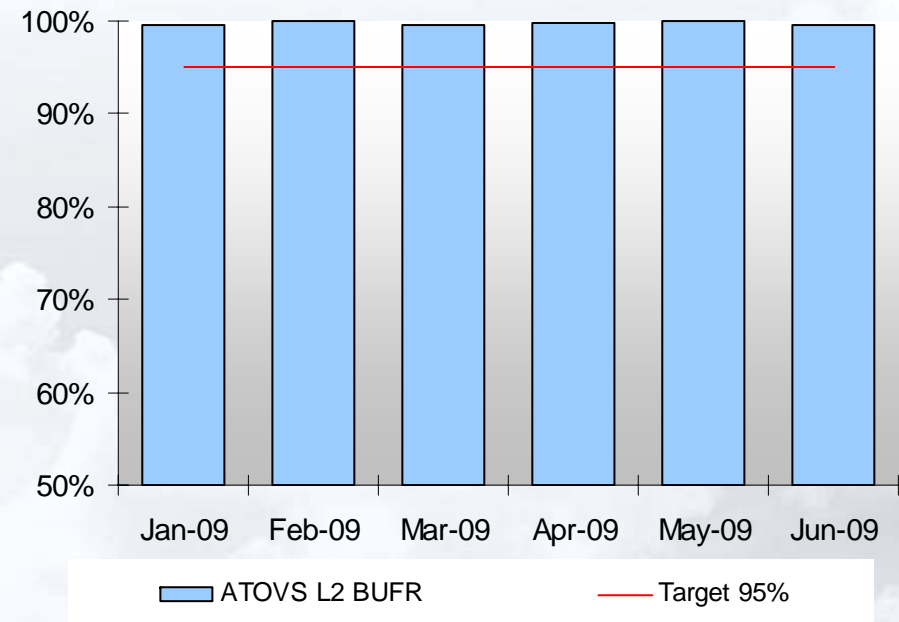
Metop/NOAA Global Data Service → ATOVS Level 2 Products

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.





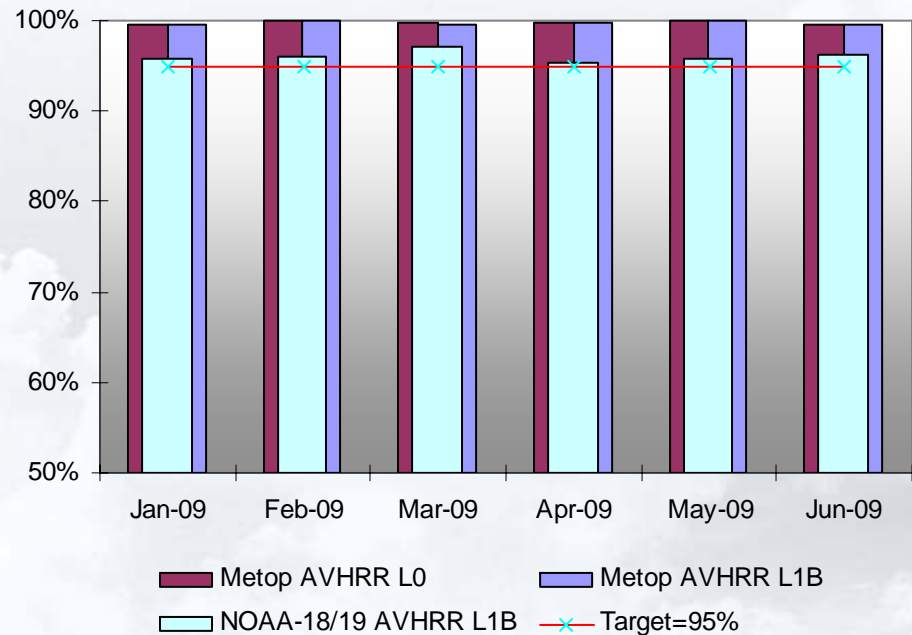
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Metop/NOAA Global Data Service → AVHRR Level 1B Products

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:

None significant for Metop-A or NOAA-18/19.



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.



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

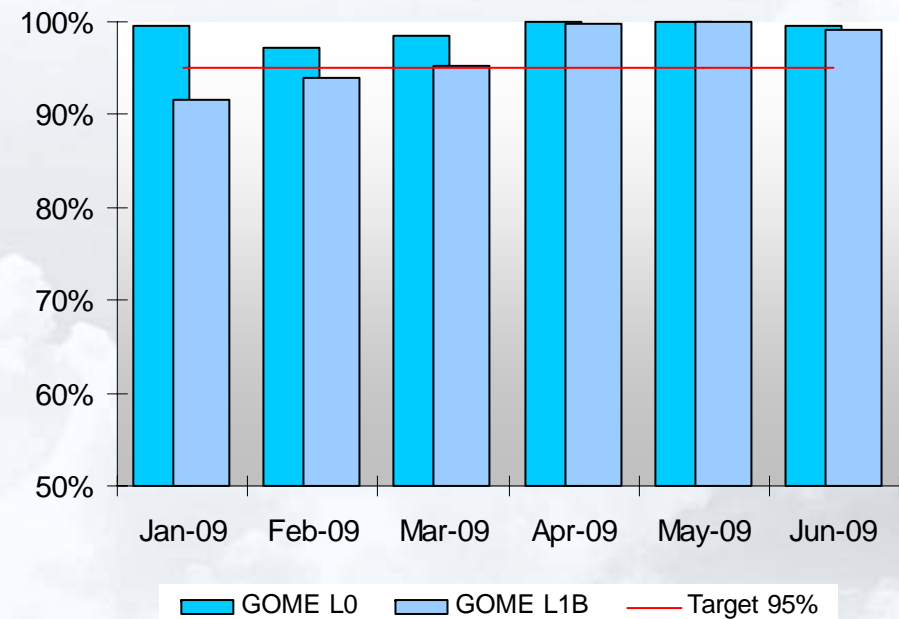
The Global Ozone Monitoring Experiment-2 (GOME-2) is a scanning spectrometer used to measure profiles of atmospheric ozone and other trace gases.

Events Which Impacted Availability:

January 2009: Throughput tests* resulted in an approximate total of 76 hours' outage of Level 1B data of nominal quality in the period 26-29 January.

16 February 2009: The GOME-2 instrument entered standby/refuse mode due to a command-transfer error, interrupting L0 data for approx. 18.6 hours and L1B for approx. 37.5 hours.

2-3 March 2009: Co-adding patch performed successfully, which interrupted L0 data for approx. 8.5 hours and L1B for approx. 30.6 hours.



* Degradation of instrument throughput was 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.



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Metop Global Data Service → GRAS Level 1B Products

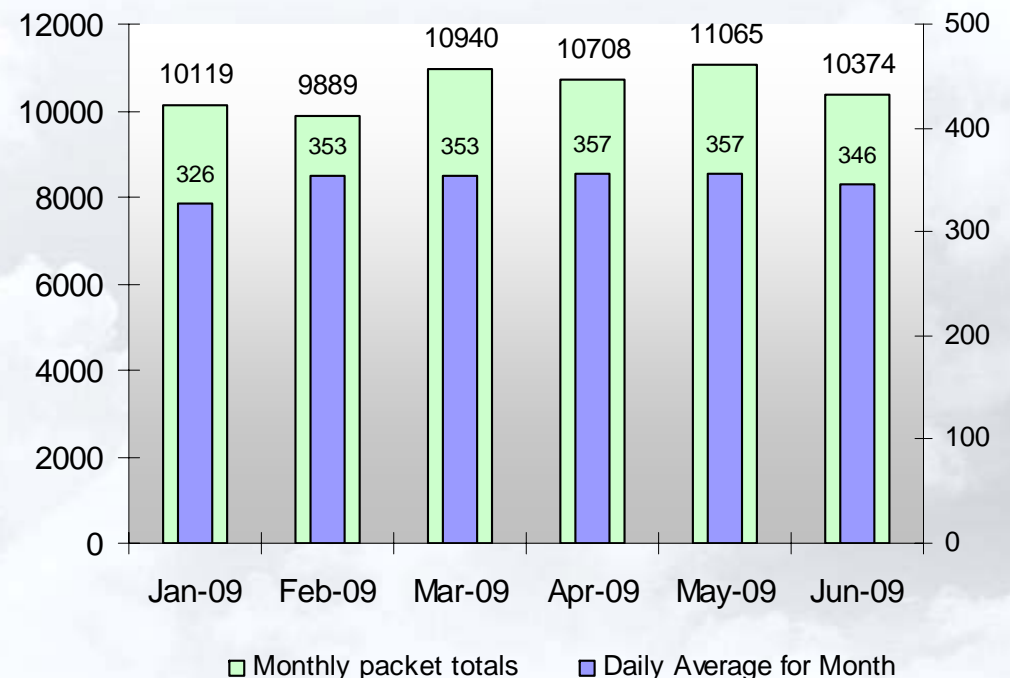
The GNSS Receiver for Atmospheric Sounding (GRAS) is a radio occultation instrument which determines atmospheric profiles using GPS signals.

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:

In-plane manoeuvres on 22 January and 18 June impacted the quality of occultations for a period of approximately 16 hours each.



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. This totalled approximately 80 hours in 2009/H1 (i.e. ~1.8%)



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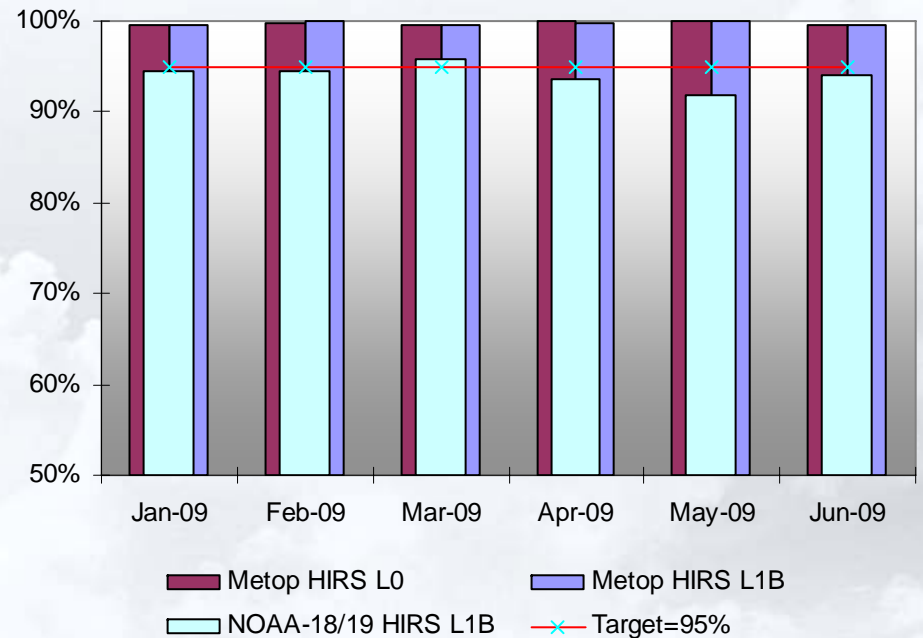
Metop/NOAA Global Data Service → HIRS Level 1B BUFR Products

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-18/19 satellites (NOAA-18 up to 2-Jun-09, and NOAA-19 thereafter).

Events Which Impacted Availability:

None significant for Metop-A.

For NOAA-18 in April and May: Noise levels increasingly affected the low-signal channels of the HIRS instrument and thus impacted Level 1B data (improvement seen in June as a result of switching to NOAA-19).



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.



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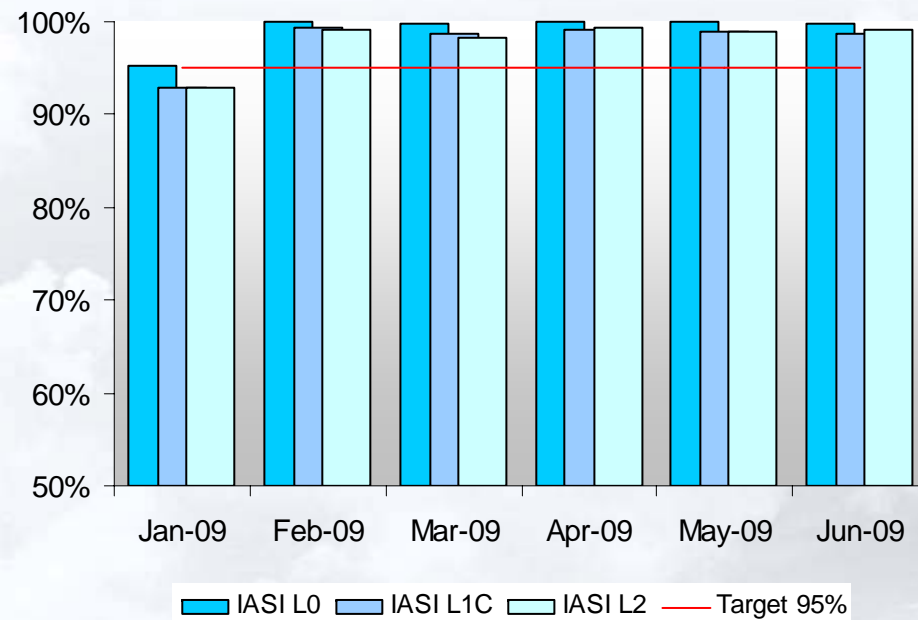
Metop Global Data Service → IASI Level 1C & Level 2 BUFR Products

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:

1 – 2 January 2009: An IASI instrument switch-off occurred on 29th December (attributable to an SEU) which resulted in an Level 0 data outage until approx 12:00z on 2 January and Level 1/Level 2 until 13:54z on the same day.

14 January 2009: A moon-avoidance operation impacted Level 1/Level 2 data for a further 12 hours.



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.



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

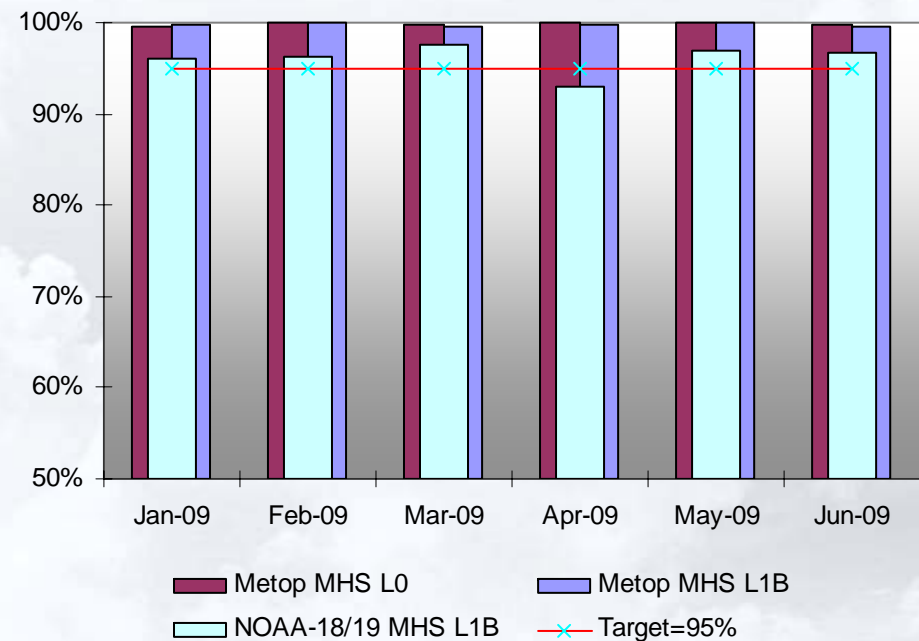
The Microwave Humidity Sounder (MHS) is used to measure atmospheric humidity primarily, but also to measure cloud liquid water content and to provide qualitative estimates of precipitation. Level 1B products are derived from the data generated by the instruments onboard both Metop-A and NOAA-18/19 satellites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

Events Which Impacted Availability:

None significant for Metop-A.

19 April: The NOAA-18 MHS instrument entered into 'spin state' (likely due to radiation-induced electronic disturbance) and thereafter into fault mode unexpectedly during the recovery procedure. Total L1B data outage approx. 24 hours.

27 June: Problems reported with the NOAA-19 MHS instrument on channels 3 and 4.



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.



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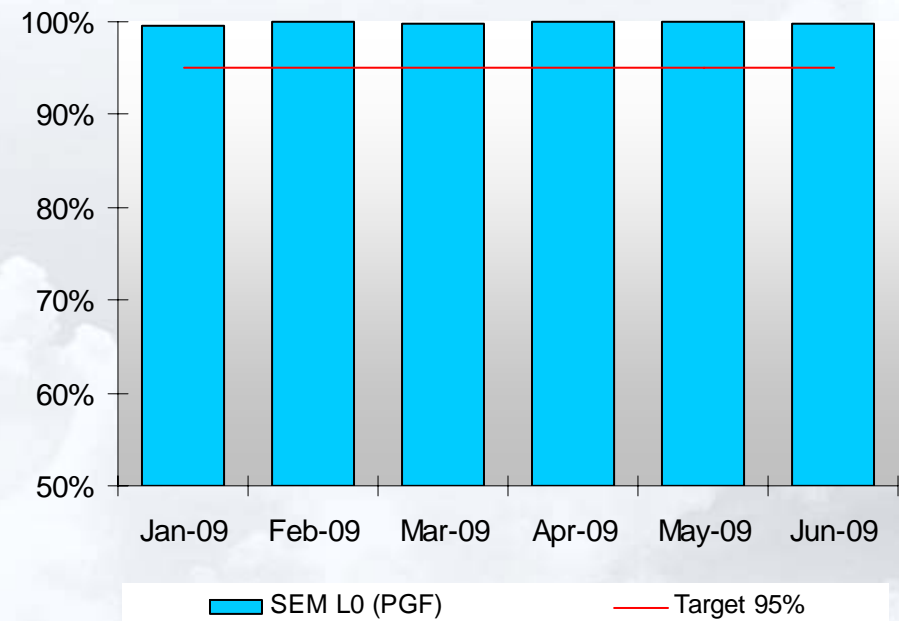
Metop/NOAA Global Data Service → SEM Level 0 Data

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.





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Metop/NOAA Regional Data Service

This service category comprises EARS-ATOVS and EARS-AVHRR services, and as of 16 December 2008, a third service, namely EARS-ASCAT. For the latter, 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.

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



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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 and N18, from Metop-A (AHRPT partial coverage data), and as of 2-June-09, N19.

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.

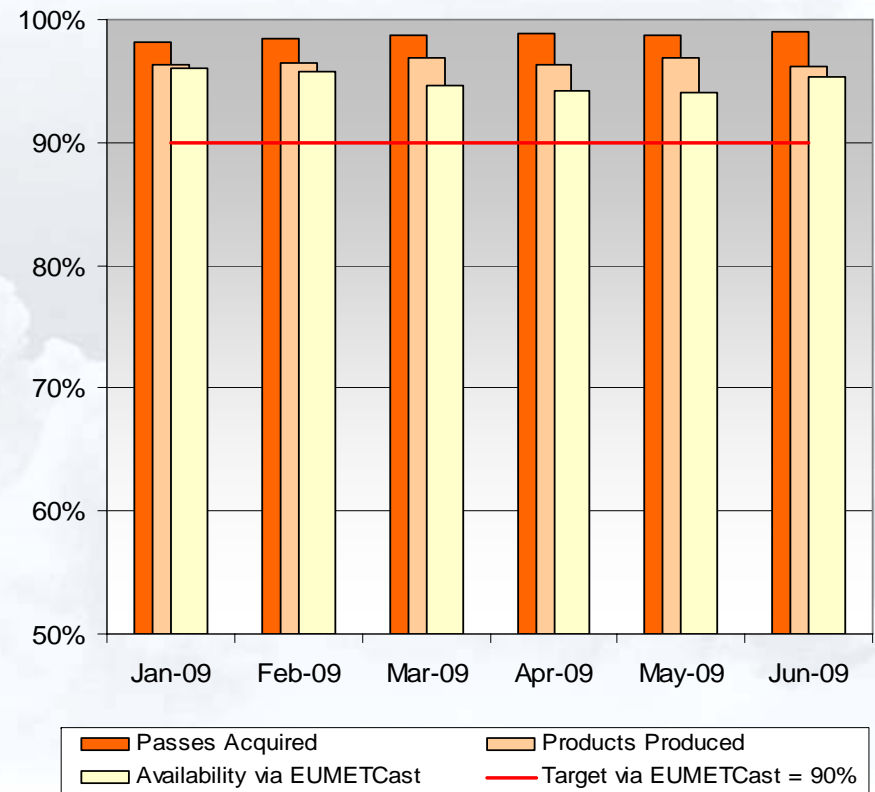
Events Which Impacted Availability:

14-March 2009: EUMETCast outage (see slide 18).

19-20 April: A NOAA-18 HIRS instrument anomaly impacted product generation.

9-11 May: Ground station antenna problems impacted reception of NOAA-16 and Metop-A data.

5 June onwards: A NOAA-15 HIRS instrument anomaly impacted product generation.





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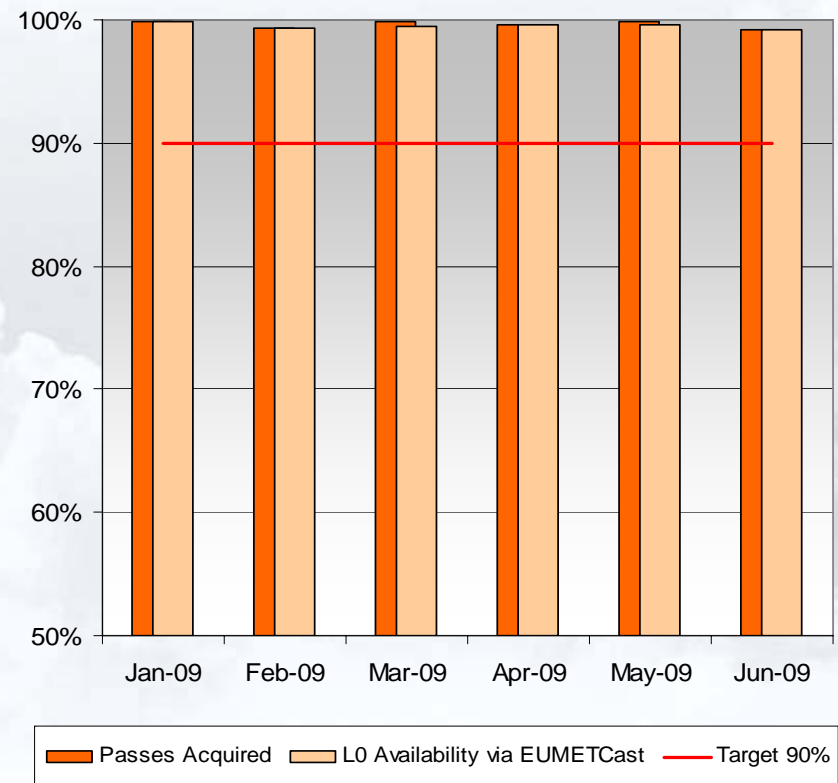
Metop/NOAA Regional Data Service → EARS-AVHRR

This service provides data from the AVHRR instruments onboard the two contributing NOAA satellites (N17 and N18).

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:

14-March 2009: EUMETCast outage (see slide 18).





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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.

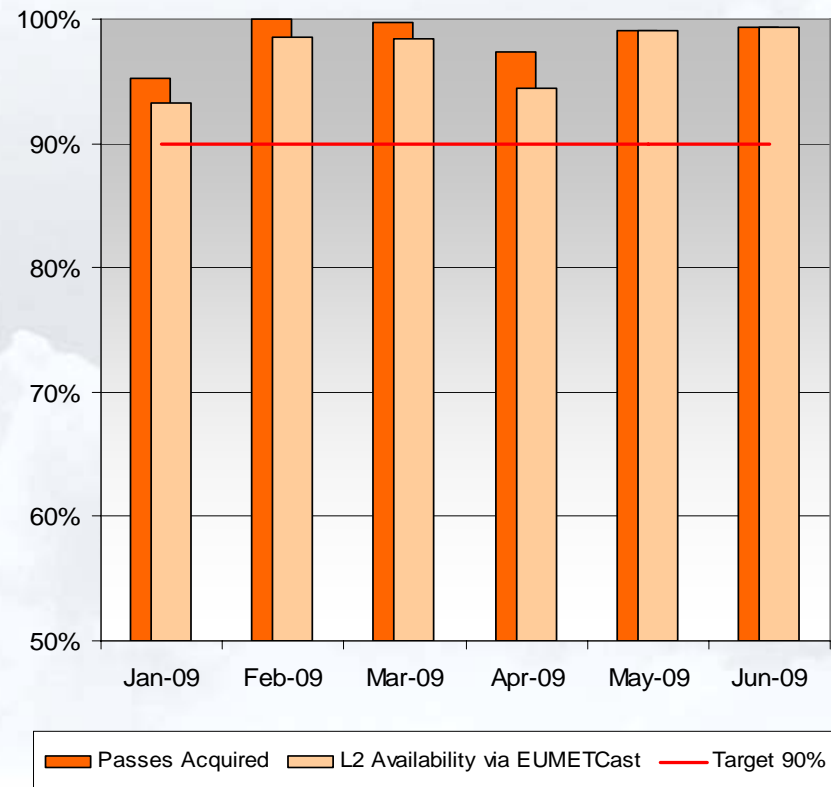
As explained earlier, the Fast Dump Extract System (FDES) at the Svalbard ground station extracts the relevant data from the X-band dump acquired there and provides it to EARS, which performs Level 1 processing and forwards the resultant products to KNMI in the Netherlands for the generation of Level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

January: A 3-day EARS-ASCAT system outage at Svalbard started on 31 December and continued until 2nd January and this impacted availability for January.

14 March: EUMETCast outage (see slide 18).





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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 January – June 2009, and 98.3% for Meteosat-9 (the reduction due to the satellite being in safe-mode on 17-April-09).



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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.



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Jason-2 OGDR Service

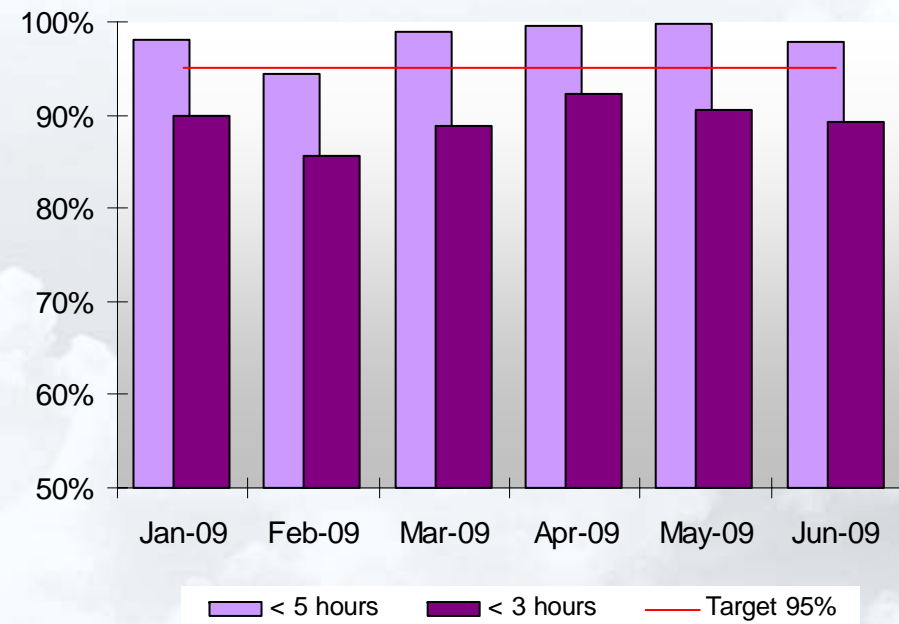
The chart shows the availability of the Jason-2 near real-time Operational Geophysical Data Record products disseminated via EUMETCast.

Note that the monthly statistics shown are currently approximations derived from weekly availability figures.

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 measure of 3-hour timeliness is provided for comparison.

Events Which Impacted Availability:

February: Timeliness affected by needing to redump data after several passes were lost due to a recurring problem with connections between CNES and the Usingen Earth Terminal.





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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



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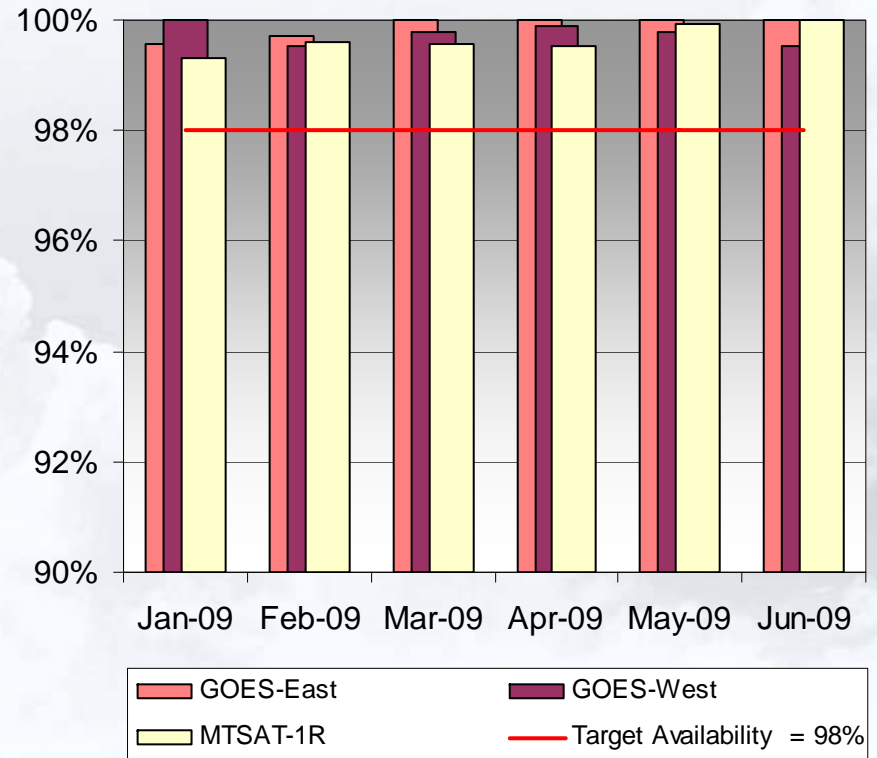
Other Geostationary Satellite Services → GOES and MTSAT Image Data

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

Note that the statistics are currently based on segments of formats and not on complete formats.

Events Which Impacted Availability:

None significant.





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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 supplies requested data and products from the EUMETSAT Data Centre via physical media and the Internet.

Charts currently provided show the following :

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

Note that availability figures for Metop-A Level 0 data in the archive are currently not available, but we hope to be able to supply them in a future issue of the report.



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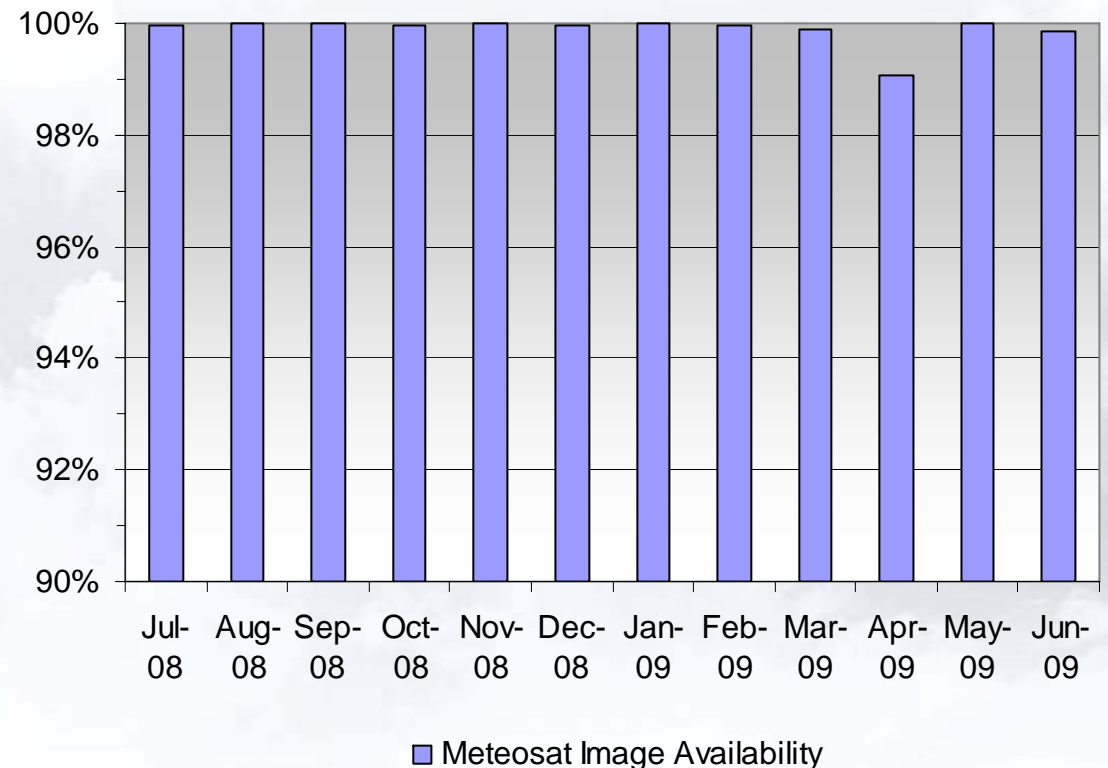
Archive Service → Meteosat Image Availability

The chart here shows the availability of all Meteosat images (0°, 9.5°E & 57°E) held by EUMETSAT's archive facility 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 Influenced Availability:

17 April 2009: Meteosat-9 entered safe-mode, necessitating the swap of the prime mission to Meteosat-8, which resulted in a loss of 6 SEVIRI 0° RCs and the non-production of 85 9.5°E RCs in the remainder of the day.





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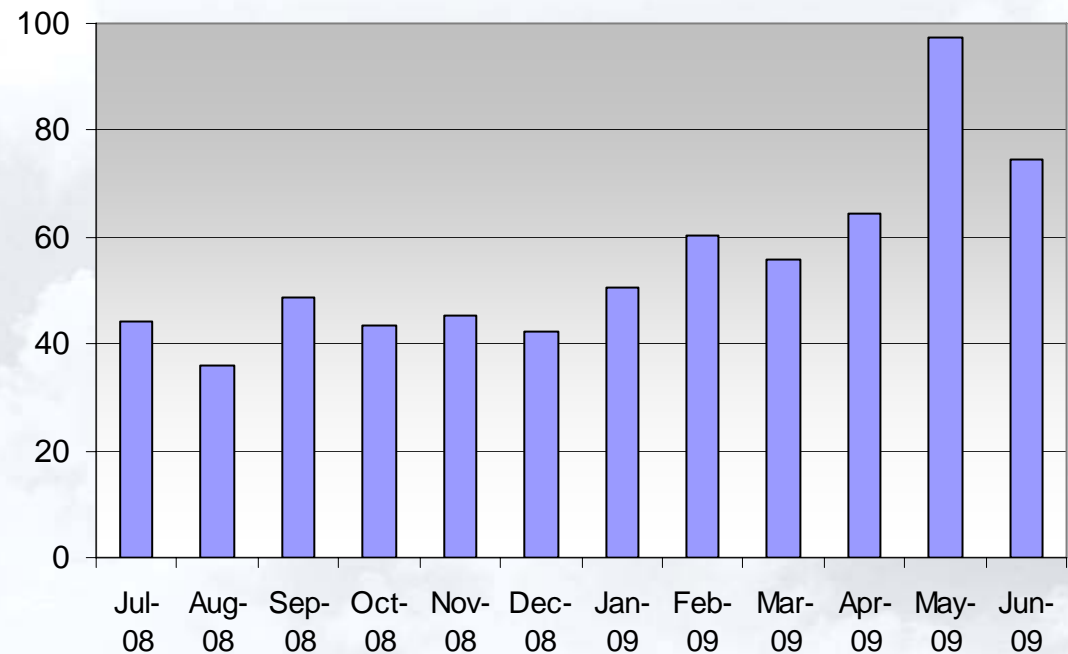
Archive Service → Total Data Volumes Retrieved

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 :

May 2009: The volume for the month peaked due to the processing of large orders expedited by upgraded hardware which improved throughput capability.

Note that the figures presented in the last issue of the COR for July-Dec 2008 were below actual – they have been adjusted here.



■ Total Monthly Retrieval Volumes in Terabytes

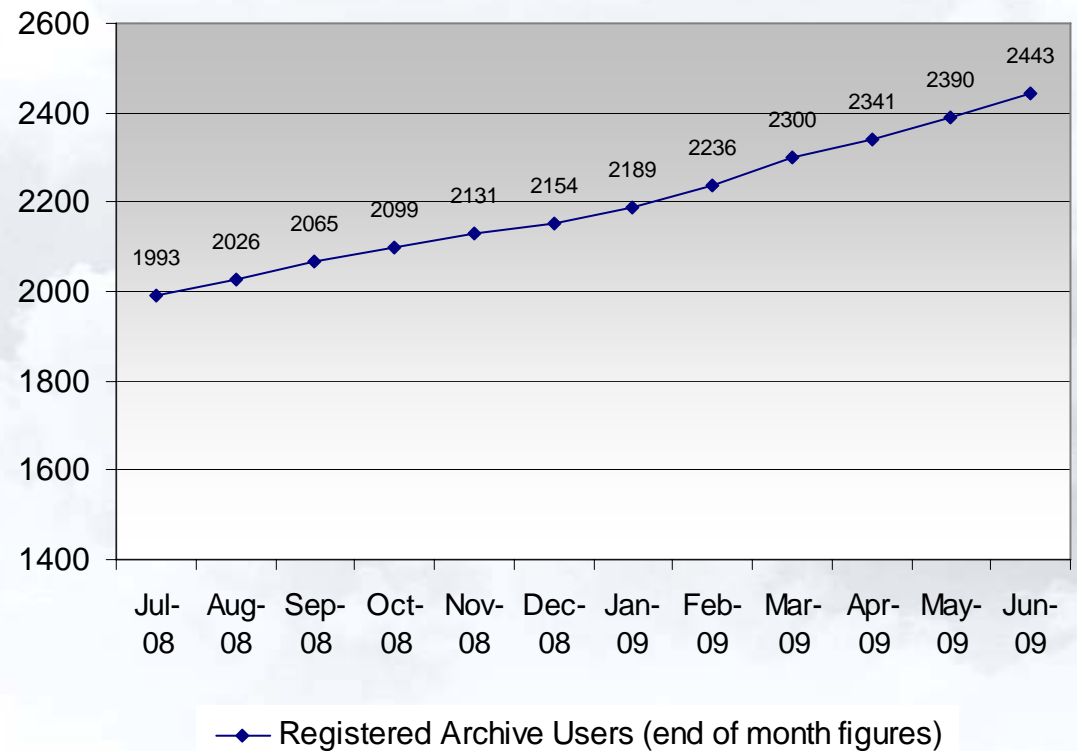


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Archive Service → Registered Users

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

A continuous, relatively constant growth of new registrations can be seen on the chart (on average about 40 new users per month), this correlating with the trend of increasing numbers of data retrievals and deliveries from the Archive.





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User Support Service

As part of its role, 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 countries and groups that gave rise to the most significant numbers of user requests
- User registrations and user enquiries by category



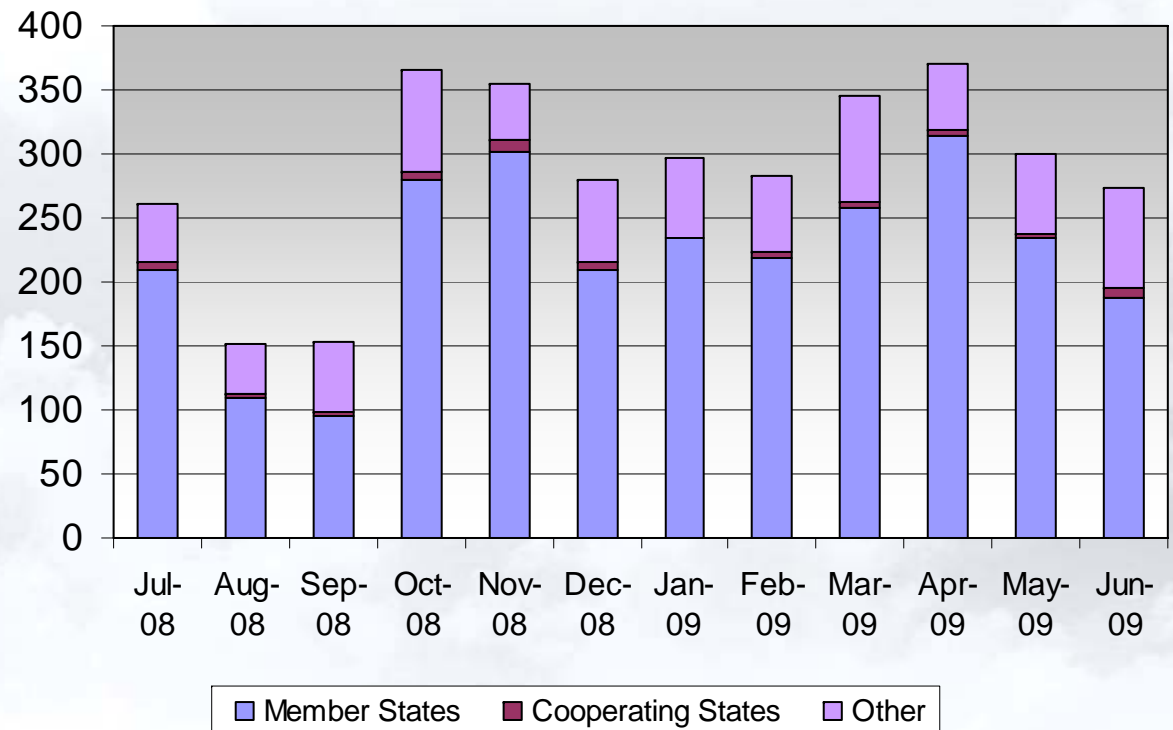
EUMETSAT Central Operations Report for January - June 2009

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 the 12 months ending June 2009 totalled 3535, of which 1868 were received in the period January-June 2009. The requests comprised 779 registrations and 1089 enquiries.

The next slides show user requests by country of origin, user registrations by category and user enquiries by subject area. The subject timeframe for each is the period January-June 2009.





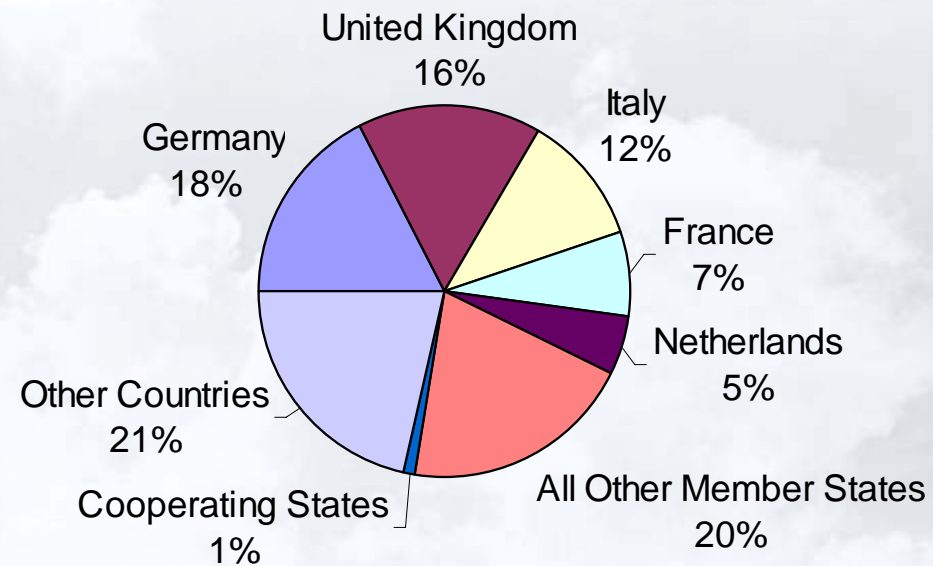
EUMETSAT Central Operations Report for January - June 2009

User Support Service → User Requests by Country of Origin

The pie chart here shows the requests received in the first half of 2009 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.



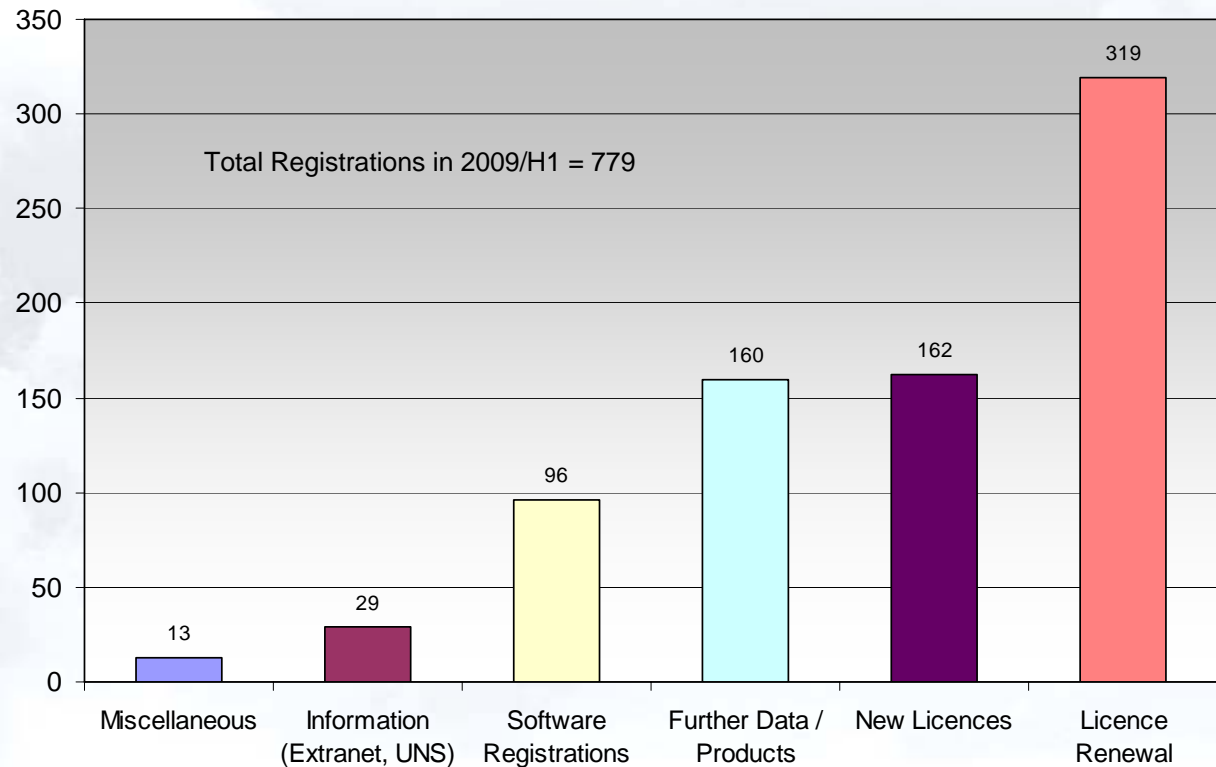


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User Support Service → User Registrations by Category

The chart shows the spread of registrations processed in the reporting period across the various registration categories (which have been rationalised since the last issue of this report to give a simpler, clearer focus).

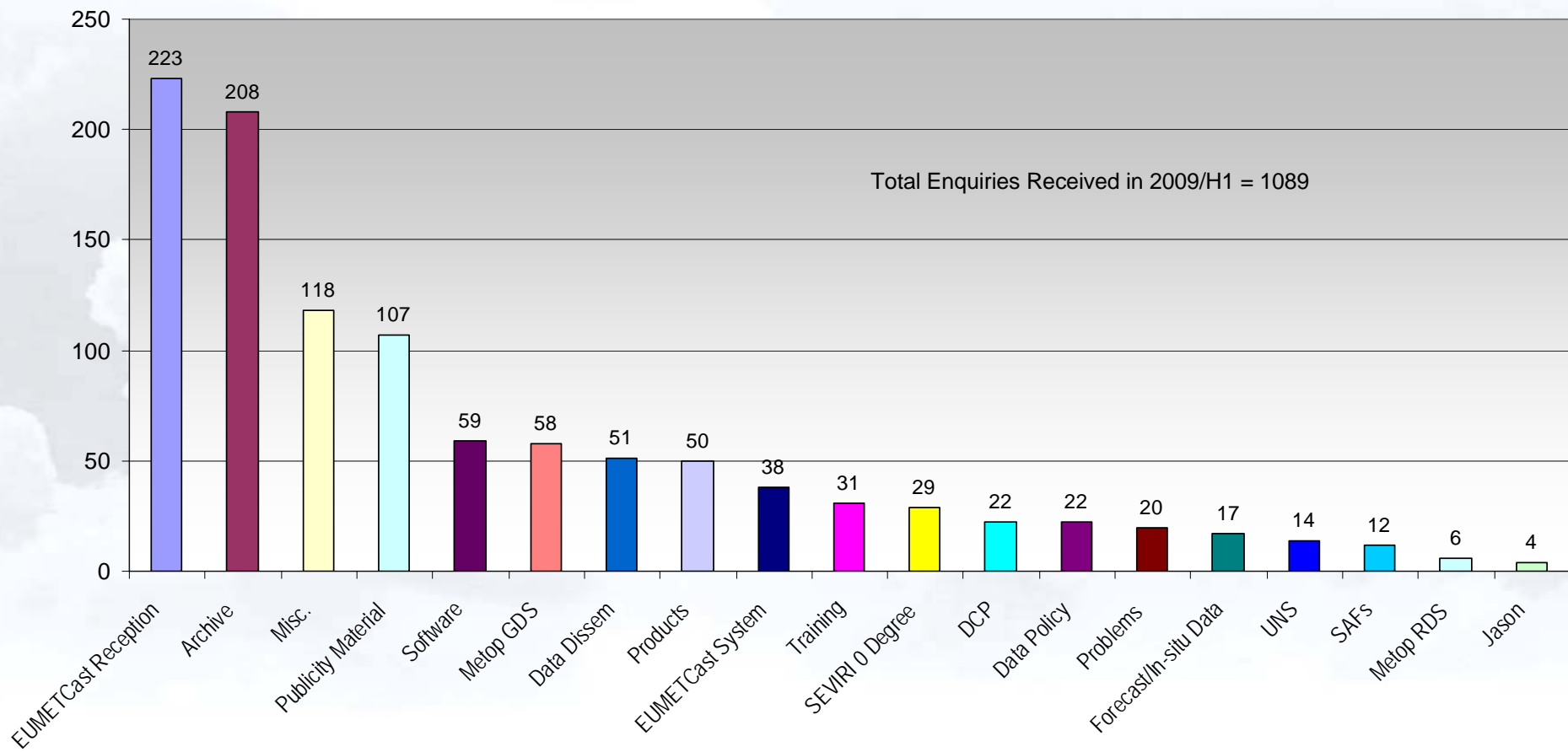
The category 'Further Data / Products' refers to existing licences for which access to extra items is requested, e.g. when a new product is made available on EUMETCast.





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User Support Service → User Enquiries by Subject Area





EUMETSAT Central Operations Report for January - June 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 |
|-------------|----------------------|--|
| 27 January | OSI SAF products | EUMETCast dissemination of Global Metop SST (Sea-Surface Temperature) and Metop North Atlantic & Regional Seas (NAR) SST products commenced |
| 28 January | Archive Service | Option of delivery of data on LTO-4 tape media introduced (and obsolete media types DDS2, DDS4 and DAT72 discontinued); BUFR format introduced for Metop and NOAA products |
| 12 February | Metop Direct Readout | 'Reduced zone' service declared operational after trial in the latter months of 2008 |
| 3 March | GOME Data | New software installed on instrument to improve saturation problem |
| 3 March | OSI SAF products | EUMETCast dissemination of 12.5 km ASCAT wind product commenced |

Section continued on next slide...



EUMETSAT Central Operations Report for January - June 2009

Changes to EUMETSAT's Services

(continuation of section from previous slide)

| Date | Service / Product(s) | Description |
|----------|--|--|
| 19 March | User Notification Service | UNS extended to include Archive Announcements |
| 31 March | LSA SAF products | EUMETCast dissemination of the Land Surface Temperature (LST) and Down-welling Surface Long-wave Flux (DSLW) products commenced. |
| 31 March | EUMETSAT website | Online registration for access to EUMETSAT and SAF level 2 products on EUMETCast introduced |
| 1 April | EUMETSAT's Data and Product Server for GSICS (Global Space-based Inter-Calibration System) | Pre-operational version of the server made available in support of the CGMS and WMO initiative for consistent calibration and inter-calibration of operational meteorological satellite instruments. |
| 16 April | GRAS SAF products | EUMETCast dissemination of the Radio Occultation Refractivity Product commenced. |

Section continued on next slide...



EUMETSAT Central Operations Report for January - June 2009

Changes to EUMETSAT's Services

(continuation of section from previous slide)

| Date | Service / Product(s) | Description |
|----------------|----------------------------------|--|
| 25 May | Metop Direct Readout | A 2-month pre-operational phase of improved HRPT service commenced: coverage zone extended to included the Gulf of Mexico in the west (from 35°N to 5°N, descending) and the Indian Ocean in the east (from 45°N to 40°S, descending). |
| 2 June onwards | Metop / NOAA Global Data Service | On 2 June, NOAA-19 superseded NOAA-18 as the prime satellite supporting the afternoon orbit. ATOVS Level-1 products (exc. MHS) became operational on that day, MHS Level-1 on 16 June, and ATOVS Level-2 on 30 June. |
| 2 June | OSI SAF products | EUMETCast dissemination of NOAA-18 NAR SST (North Atlantic & Regional Seas Sea-Surface Temperature) product commenced. |
| 19 June | O3M SAF products | BrO and UV products became operational and available for retrieval via the EUMETSAT Data Centre. |

Section continued on next slide...



EUMETSAT Central Operations Report for January - June 2009

Changes to EUMETSAT's Services

(continuation of section from previous slide)

| Date | Service / Product(s) | Description |
|---------|------------------------------|--|
| 23 June | MODIS products | EUMETCast dissemination of Chlorophyll Alpha product commenced. |
| 25 June | GEONETCast Product Navigator | Dissemination of the tool via EUMETCast-Europe, EUMETCast-Africa and EUMETCast-Americas commenced. Tool allows the searching for information on data and products disseminated via the GEONETCast global family of dissemination systems, namely EUMETCast, CMA's FENGYUNCast and NOAA's GEONETCast Americas system. |



EUMETSAT Central Operations Report for January - June 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 January - June 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 January - June 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 January - June 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 January - June 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 January - June 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. |