



EUMETSAT Headquarters, Darmstadt, Germany

Central Operations Report
for the period July to December 2012





EUMETSAT Central Operations Report for July - December 2012

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- Performance Reporting covering EUMETSAT's Services
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The Central Operations Reports can be found under 'Service Status' on www.eumetsat.int.

For a full account of service enhancements, please refer to the Product Update History, also on the Service Status webpage.



EUMETSAT Central Operations Report for July - December 2012

Introduction

Welcome to the report on EUMETSAT's Central Operations for the second half of 2012.

Overall operational service performance was very good across almost all services this half-year, with the following events impacting the services indicated:

- **Meteosat-8:** the Rapid Scanning service performance was increasingly affected by the so-called 'wobble', a transient nutation of the satellite spin axis, caused by the changes to mass distribution and thermal environment resulting from the thermal frame losses in 2007, 2008 and 2012.
- **Meteosat-9:** the satellite experienced two thermal frame losses in August and September 2012. The prime 0° service performance has been affected by these events, but to a lesser degree than for Meteosat-8 and remains within specification.

The period was marked by the commissioning of the two new EUMETSAT satellites:

Meteosat-10: commissioning of the MSG-3 satellite was completed by the official handover to Operations and the name change to Meteosat-10 on 12 December. The parallel dissemination of SEVIRI image data and meteorological products from Meteosat-10 started on 18 December. We are happy to report that it took over the prime 0° mission on 21 January 2013.





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Introduction (continued)

Metop-B: The launch of the Metop-B satellite from the Baikonur Cosmodrome in Kazakhstan took place on 17 September. Commissioning proceeded nominally thereafter and the first global release of products took place on 15 November. Metop-B was handed over to Operations on 29 January and is planned to become the prime Low Earth Orbit satellite in spring 2013.

There have been the following operational third-party data service additions of note in the reporting period:

- (1) Processing and EUMETCast dissemination of Level 1+2 Scatterometer data from the Low-Earth Orbit satellite Oceansat-2 satellite (operated by the Indian Space Research Organisation, ISRO) was declared operational 25 October.**
- (2) Sensor Data Records (SDRs, Level 1 equivalent) from the CrIS and ATMS instruments onboard the Suomi NPP satellite were made available on EUMETCast and GTS starting 31 July.**

New slides (and slide additions) in this report: EARS-IASI ([slide 36](#)), OSCAT products ([slide 44](#)), SSMIS products & Suomi NPP SDRs ([slide 45](#)) and EUMETSAT Climate Services ([slide 54](#) onwards).

In summary, 2012 was an extremely eventful year overall, with two launches and several important new data services introduced.

**Best regards,
Mikael Rattenborg
Director of Operations**



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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
- Third-Party Data Services
- EUMETCast
- The EUMETSAT Data Centre
- EUMETSAT Climate Services
- Helpdesk 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.



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Performance Reporting: Conventions

Availability of EUMETSAT Services:

The availability of most operational services provided by EUMETSAT is measured monthly against service-specific 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.

Events with General Impact:

Any 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 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.



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Meteosat Services

This service category comprises the 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)



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Meteosat Services: Events with General / Significant Impact

The following impacted Meteosat Services to the extents described:

- 31 August:** OPS Incident #49 (Meteosat-9 TSOL Divergence): A commanding problem on eclipse exit caused a SEVIRI timing problem, which resulted in the SEVIRI instrument entering standby mode. 24 Repeat Cycles of SEVIRI 0° Image Data and the associated Meteorological Products were lost.
- July – November:** Meteosat-9's attitude stability is affected by thermal frame loss influencing the thermal control configuration on the satellite. As can be seen on the chart of the next slide, SEVIRI 0° RCs were impacted from July to November, compounded by the Incident #49 impact in August. Meteorological Products were virtually unaffected, however.
- 12 Oct – 12 Nov:** Meteosat-8's attitude wobble increased in this period, impacting upwards of 2% of all SEVIRI 9.5°E RSS RCs in each of the months October and November. Meteorological Products were only marginally affected. The increase in wobble is suspected to have been due to a further movement of a detaching thermal frame. This led to a satellite cooling effect that changed the nature of fuel migration, rendering the thermal control previously applied less effective. The latter was changed again mid-November and nominal image quality re-established.



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Meteosat Services → SEVIRI 0° Image Data

The SEVIRI 0° image data service was supported by Meteosat-9 in the reporting period.

The service performance is measured in terms of:

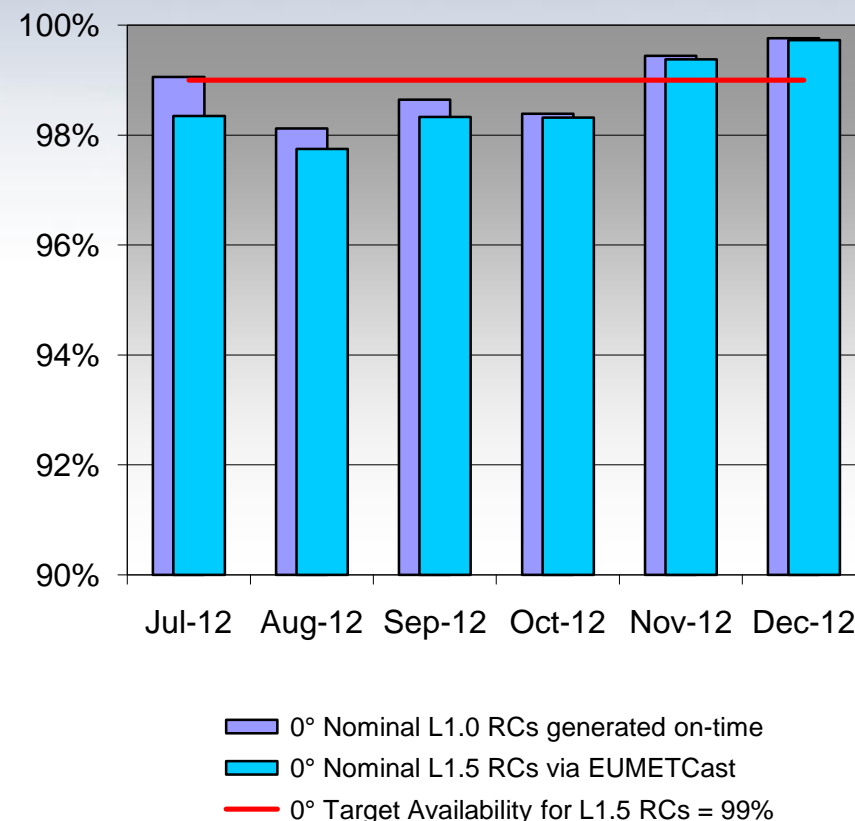
- 1) the number of **Nominal Level 1.0 Repeat Cycles (RCs)** which have been generated 'on-time', as a percentage of those scheduled
- 2) the combined timely availability of nominal HRIT Level 1.5 RCs via EUMETCast

Events Which Impacted Availability:

July-Nov: Nominal L1.0 RCs impacted by fuel-migration effects* (also see [slide 8](#))

31 August: Nominal L1.0 RCs: further impacted by OPS Incident #49 (also see [slide 8](#))

* The image-processing system modifications implemented in September 2011 compensate for some of the effects of Meteosat-9's fuel migration, but not all, hence the residual numbers of RCs impacted in the months shown above. Work continues to reduce the impact where possible.





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Meteosat Services → IODC 57°E Image Data

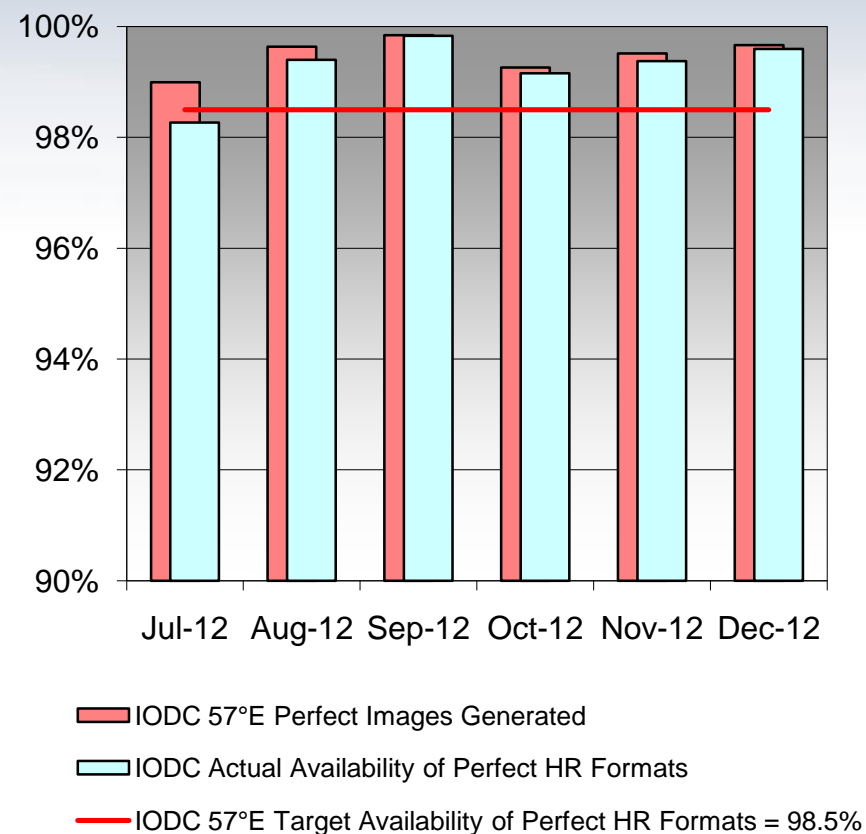
The IODC 57°E image data service was supported by Meteosat-7 in the reporting period.

Performance measured in terms of:

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

Events Which Impacted Availability:

18 July: B0 problem impacted 4 slots (and an above-average no. of downlink drops for the month generally)





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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 latitudes from 15 to 70°N, using all 12 SEVIRI spectral channels.

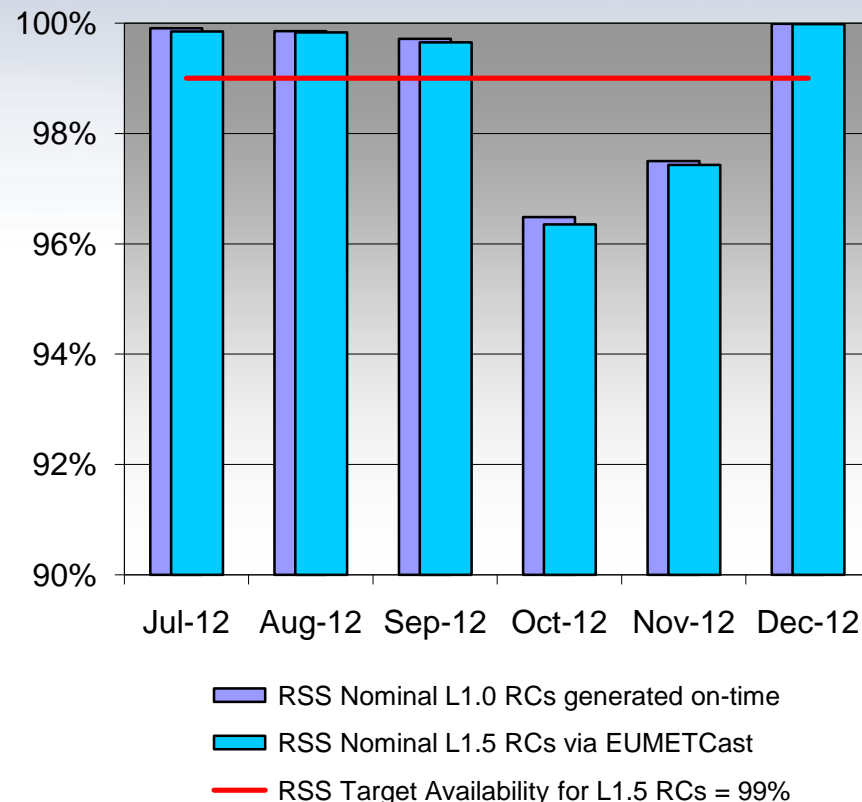
Performance is measured in terms of the number of nominal Level 1.0 Repeat Cycles (RCs) which have been generated 'on-time', as a percentage of those scheduled, plus the availability of Level 1.5 RCs disseminated via EUMETCast.

Note that, due to operational constraints, RSS is interrupted approximately once a month to perform Full-Earth Scanning, (FES) and also for a full month, usually in the November/ December timeframe (this time, FES delayed to January/ February 2013, in order to better accommodate the overall MSG satellite redeployments following Meteosat-10 being taken into operational service).

More info: www.eumetsat.int 'Service Status'.

Events Which Impacted Availability:

October - November: Many RCs' geometric quality affected by Meteosat-8's attitude wobble (see [slide 8](#))





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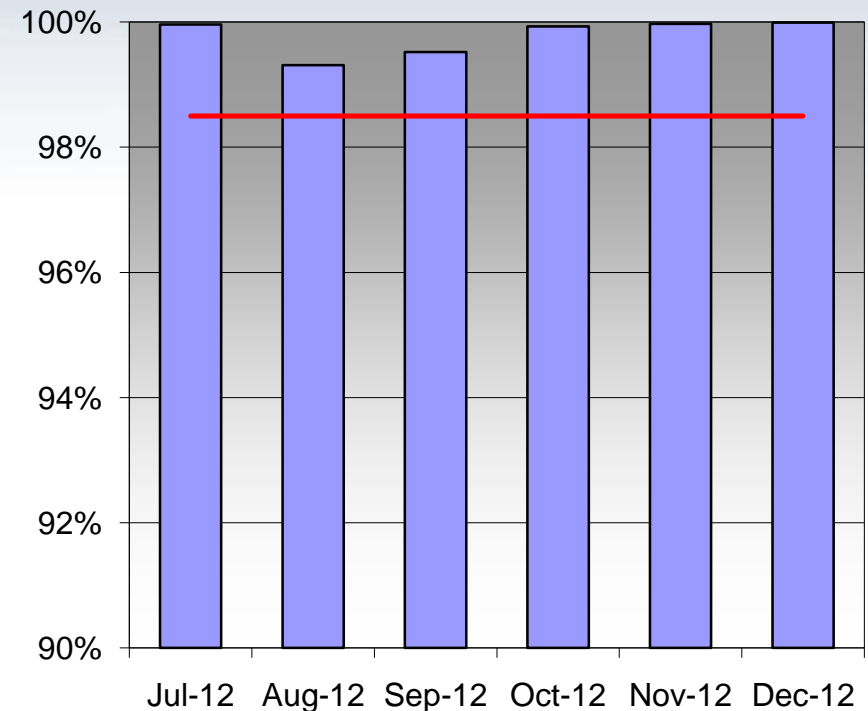
Meteosat Services → Meteorological Products derived from 0° Data

Performance measured in terms of the number of meteorological products which have been generated at EUMETSAT from the Full-Earth Scan images provided by Meteosat-9, as a percentage of those products scheduled.

Note that the availability of products is only measured at the point of generation.

Events Which Impacted Availability:

None significant (non-nominal RCs had only minimal effect on 0° meteorological products)



— 0° Met Product Target Availability 98.5%



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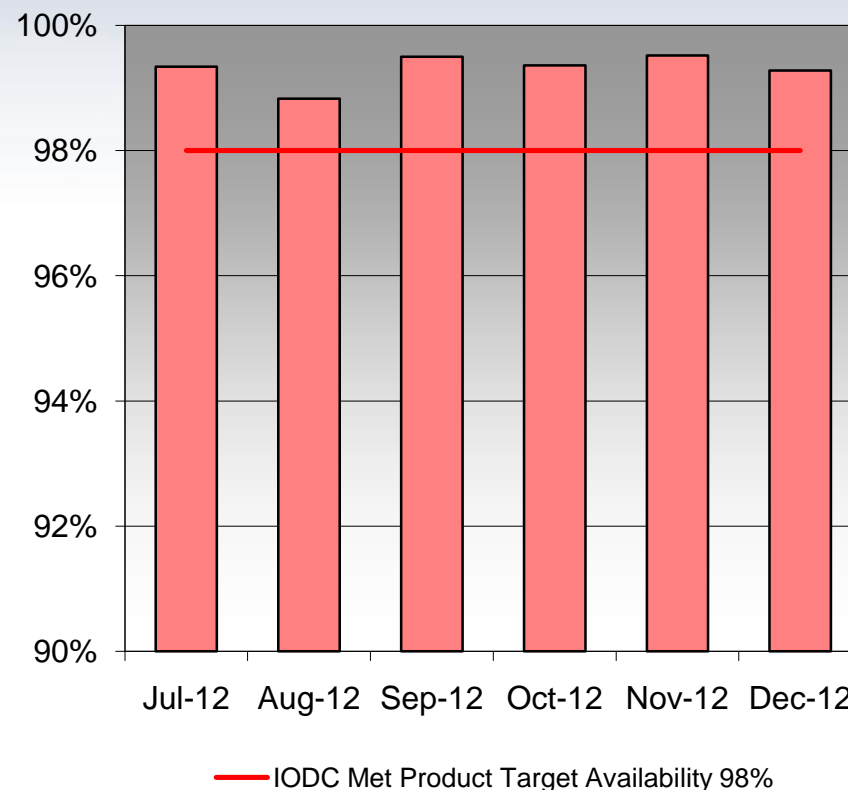
Meteosat Services → Meteorological Products derived from 57°E Data

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.

Note that the availability of products is only measured at the point of generation.

Events Which Impacted Availability:

None significant.





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

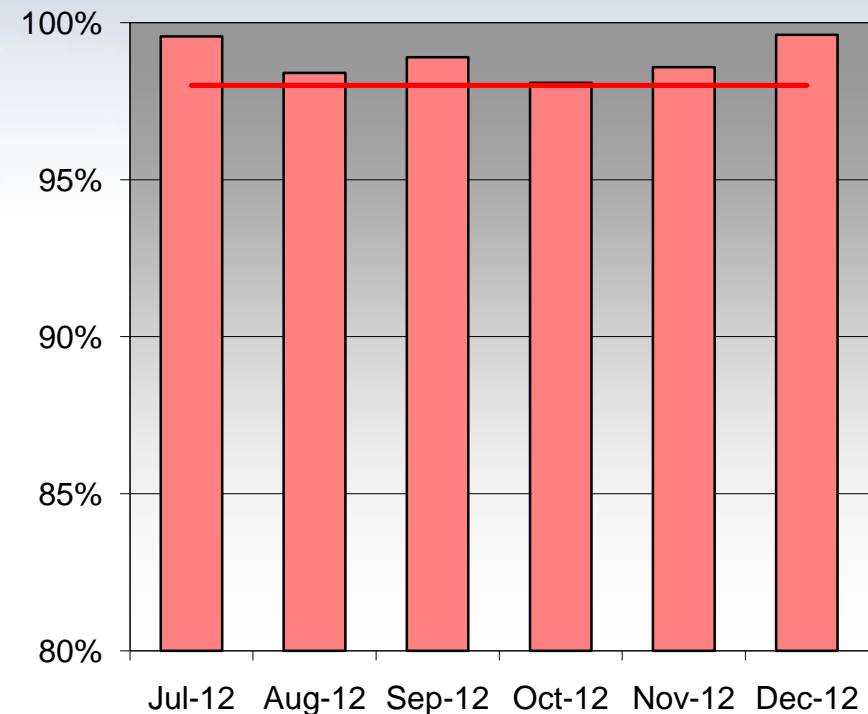
Meteorological products derived from the 5-minute Rapid-Scan (RS) Repeat Cycle images produced using Meteosat-8.

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.

Note that the availability of products is only measured at the point of generation.

Events Which Impacted Availability:

None significant (non-nominal RCs had only minimal effect on 0° meteorological products)



— 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.

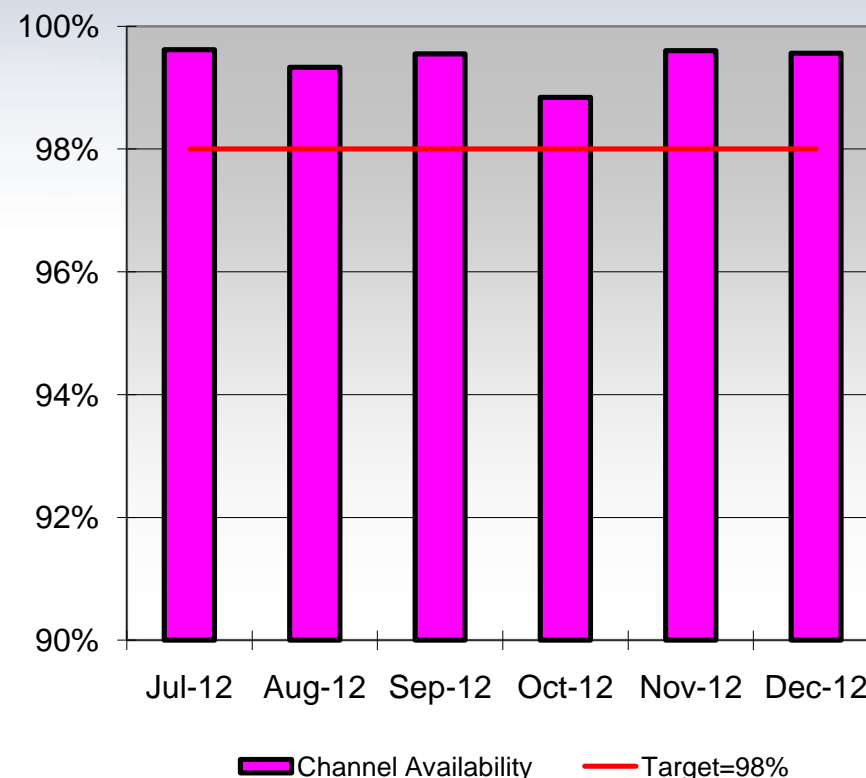
The chart shows the availability of the 0° DCP service. It is measured in terms of the number of hourly reference DCP messages on all operational regional channels which have been successfully received back by EUMETSAT, as a percentage of those sent.

(Note that the availability of the 4 DCP channels supported by Meteosat-7 as part of the Indian Ocean Tsunami Warning System (IOTWS) is not included)

For information concerning the geographical distribution of registered DCPs, please see the next slide.

Events Which Impacted DCP Channel Availability:

None significant.





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Meteosat Services → Geographical Distribution of DCPs

As of the end of December 2012, there were 1087 registered Data Collection Platforms (known as DCPs) belonging to 124 operators and deployed amongst the 78 countries shown in the table to the right.

As of the end of December, out of the total number of registered DCPs, there were 634 units in active operation.

Notes:

(1) Larger numbers of DCPs are highlighted with darker colours.

(2) Red entries indicate countries where DCP operation has ceased, green entries where it has commenced.

DCPs	Country	DCPs	Country	DCPs	Country	DCPs	Country
51	Algeria	1	Finland	3	Maldives	10	Tanzania
11	Angola	113	France	19	Mali	1	Thailand
2	Armenia	1	Gambia	1	Malta	2	Togo
3	Austria	44	Germany	3	Mauritania	4	Tunisia
1	Bangladesh	8	Ghana	4	Mauritius	1	Turkey
2	Belarus	1	Gibraltar	0	Morocco	48	UK
3	Benin	1	Greece	23	Mozambique	22	Ukraine
11	Botswana	11	Guinea	2	Myanmar	1	Union des Comores
1	Brazil	2	Guinea-Bissau	18	Namibia	61	USA
4	Bulgaria	19	Indonesia	23	Niger	2	Vietnam
6	Burkina Faso	2	Iran	16	Nigeria	1	Yemen
61	Cameroon	136	Iraq	10	Oman	15	Zambia
4	Cap Verde	9	Ireland	4	Pakistan	13	Zimbabwe
1	Central African Republic	96	Italy	3	Palestine		
3	Chad	3	Ivory Coast	3	Philippines		
2	Congo	0	Jordan	11	Republic of Moldova		
3	Croatia	4	Kenya	10	Republic of Seychelles		
1	Cyprus	6	Lesotho	12	Romania		
26	Democratic Republic of the Congo	11	Libya	11	Senegal		
2	Djibouti	0	FYR Macedonia	35	South Africa		
1	Egypt	2	Madagascar	7	Spain		
5	Falklands	8	Malawi	3	Sri Lanka		
		1	Malaysia	2	Swaziland		

Total = 1087 DCPs



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

EUMETSAT also produces Level 1 products based on the data from NOAA-19's AMSU, AVHRR, HIRS and MHS instruments.

In addition, the Global Data Service also includes Level 2 products based on Metop-A IASI, and ATOVS data from both Metop-A and NOAA-19.

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, 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

The above timeliness targets are those originally specified for the Global Data Service and delivery is currently measured against them. These targets will be modified to take into account the improved timeliness achieved with 'ADA' (see below), once its operational phase has been established.

On [slide 21](#) onwards, 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 nominal operations been achieved.

Antarctic Data Acquisition ('ADA'): the next slide shows the profile of Metop-A data acquired via the Antarctic ground station, the service currently supported in a demonstrational phase, with a target of acquiring 9 of the potential 14 or 15 passes per day. The significance of ADA lies in the positive impact that it has on the timeliness of the data and products being made available to users. From 2014/Q2 onwards, it is expected that all passes will be supported in the operational phase.

Note: There are cases sometimes 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: Antarctic Data Acquisition (ADA)

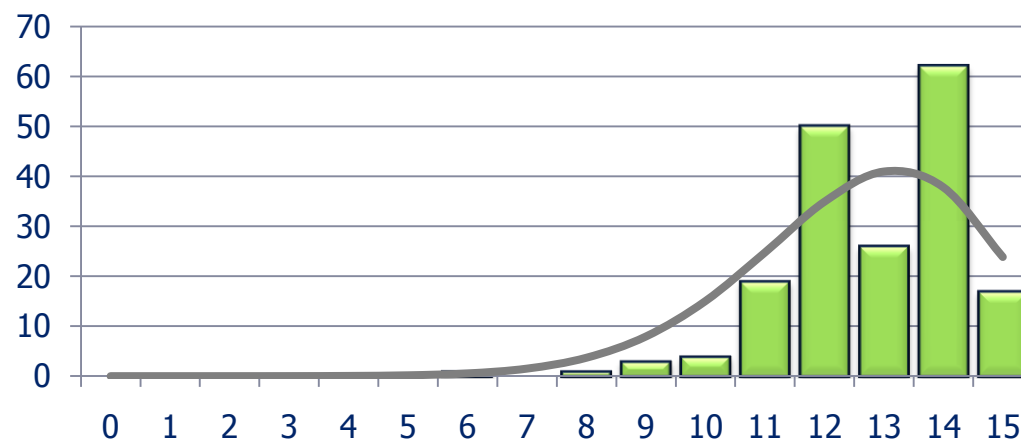
Metop-A data is acquired at NASA's ground station on McMurdo Sound in Antarctica and routed to EUMETSAT HQ. This acquisition complements that of Svalbard, and its contributing value lies in allowing data to be processed and disseminated earlier, thus improving data timeliness of Metop-A-based products.

Each chart shows the **numbers of days (y-axis)** in the respective half-year period on which the **number of passes (x-axis)** were successfully acquired at McMurdo and relayed to Darmstadt. Note the difference between the two y-axis scales.

Overall average passes per day achieved for the two half-years are shown. Current target is 9 passes per day (during demo phase until 2014/Q1), out of the 14-15 daily orbits of Metop-A.



2012/H1
Average
passes/day
= 11.4



2012/H2
Average
passes/day
= 12.8



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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 given:

- None significant -



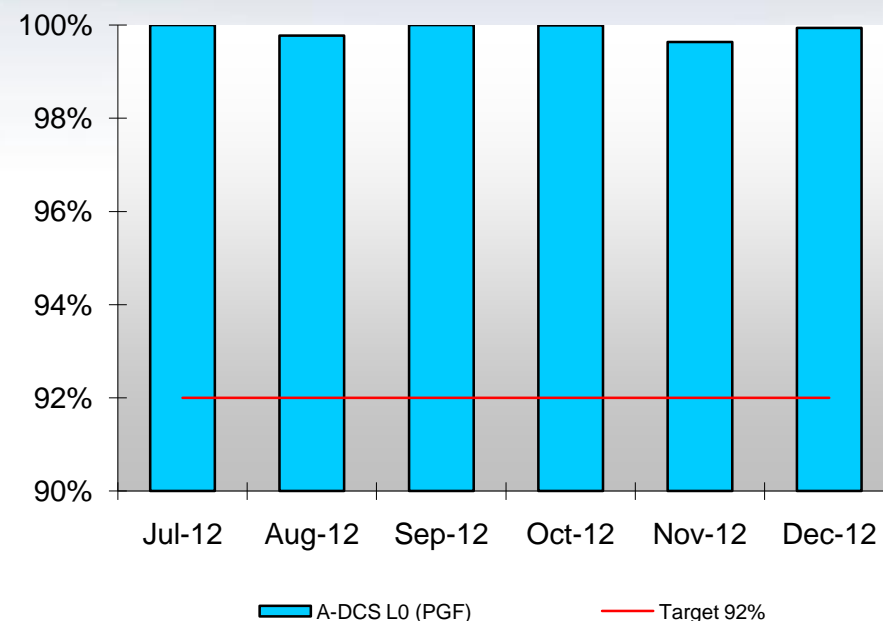
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Metop Global Data Service → A-DCS Level 0 Data

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.

Events Which Impacted Availability:

None significant.





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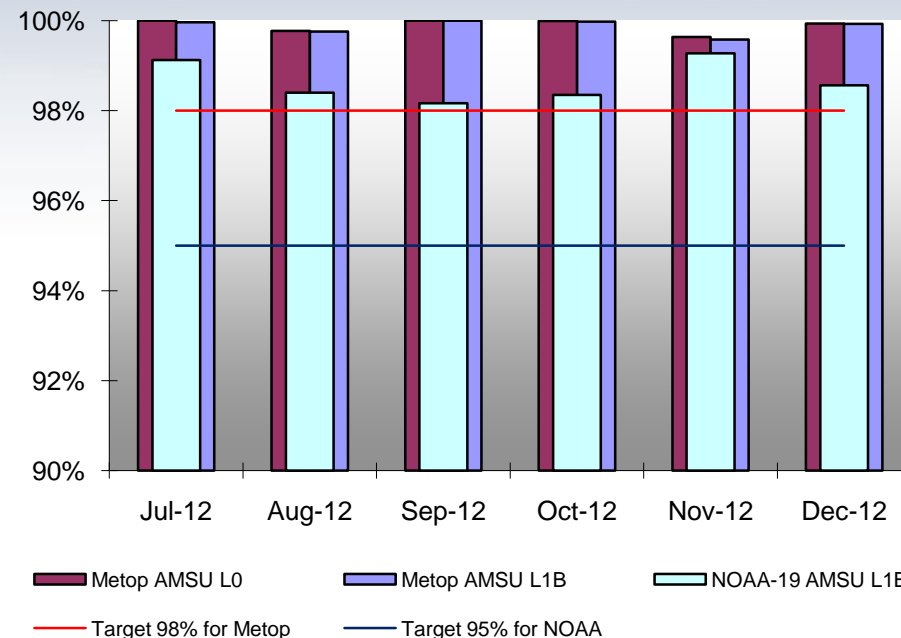
Metop/NOAA Global Data Service → AMSU Level 1B BUFR Products

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-19 satellites.

Events Which Impacted Availability:

None significant for either Metop or NOAA products.



- Notes:**
- (1) Metop-A's AMSU channel 3: A steady increase in noise is being observed, however the channel is still currently fully usable
 - (2) Metop-A's AMSU channel 7: Degraded beyond specification and is no longer used for product processing
 - (3) NOAA-19's AMSU channel 8: Degradation has not worsened in 2012/H2 - the data is still considered usable for the time-being



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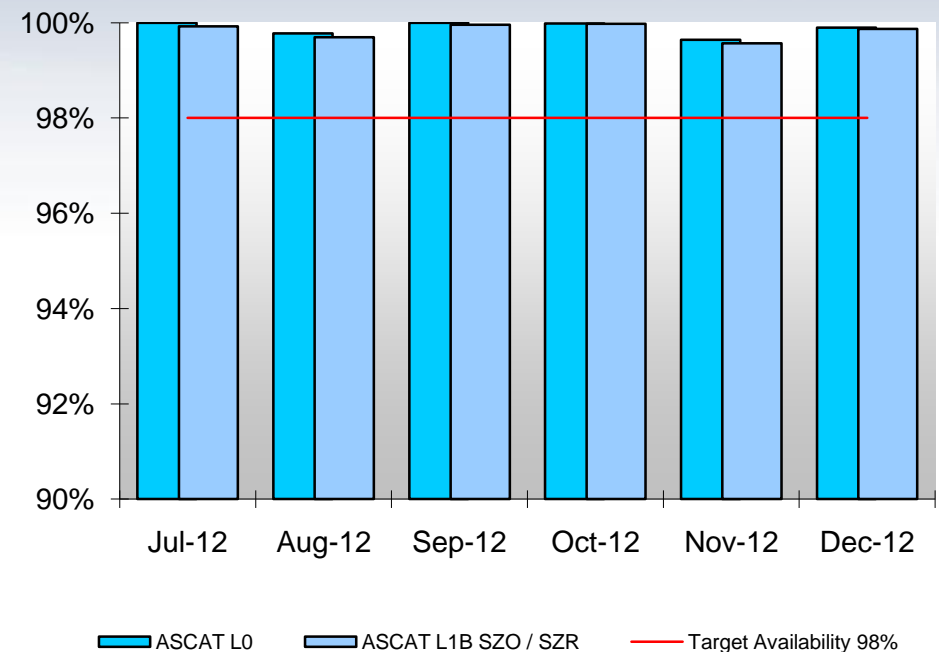
Metop Global Data Service → ASCAT Level 1B (SZO & SZR) Products

The Advanced Scatterometer (ASCAT) is a C-band radar which measures normalised backscatter from the Earth's surface. The prime objective of ASCAT is to measure wind speed and direction over the oceans, these ocean winds serving as an input to NWP models. ASCAT data is also used for applications such as sea-ice extent, permafrost boundary and desertification. EUMETSAT disseminates sampled Level 1B data over EUMETCast and full resolution is available from the Data Centre on request.

Performance of the Level 1B service is measured in terms of the timely availability of the 'SZO' and 'SZR' products (swath grid sampling resolutions of 25 and 12.5 km respectively) on the EUMETCast reference user station.

Events Which Impacted Availability:

None significant.





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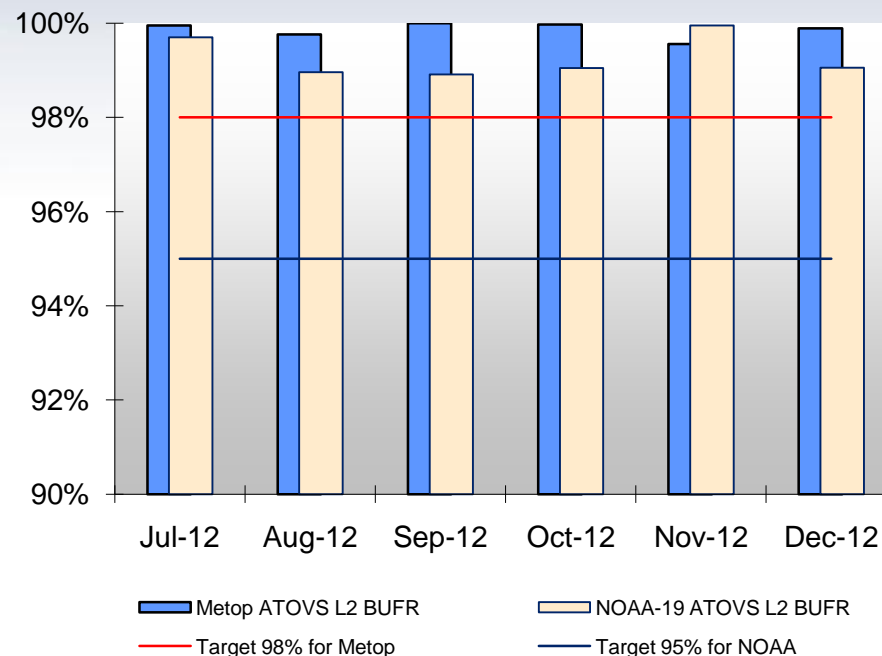
Metop/NOAA Global Data Service → ATOVS Level 2 Products

ATOVS Level 2 product processing transforms the calibrated radiance measurements from the AMSU-A, MHS and HIRS instruments (onboard Metop and NOAA-19 satellites) 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 sounding product for each satellite.

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

Events Which Impacted Availability:

None significant for either Metop or NOAA products.



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



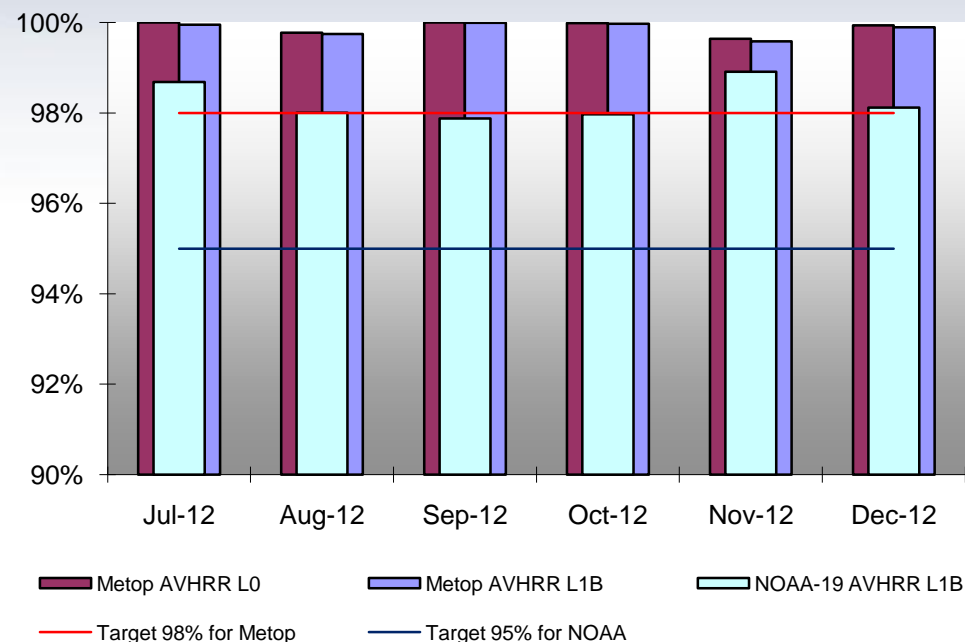
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Metop/NOAA Global Data Service → AVHRR Level 1B Products

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-19 satellites.

Events Which Impacted Availability:

None significant for either Metop or NOAA products.





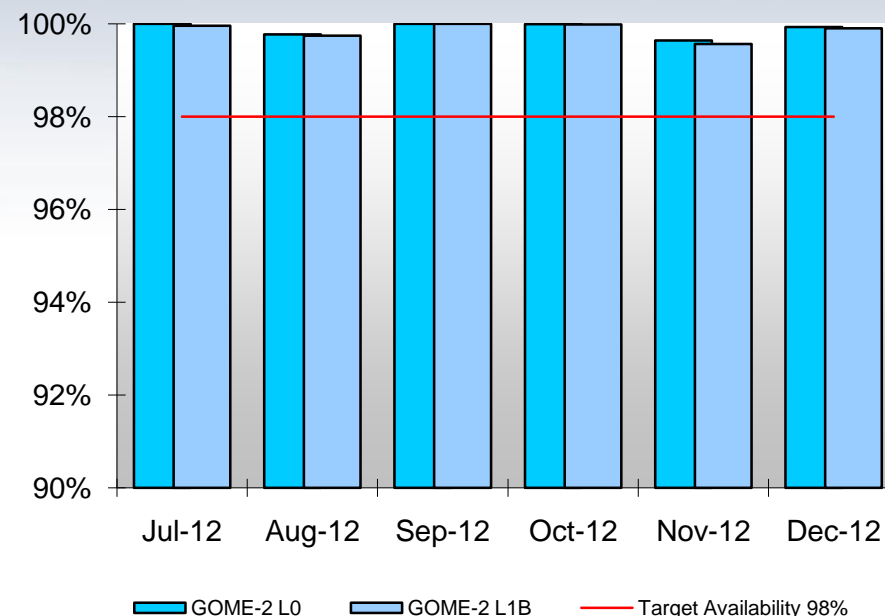
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Metop Global Data Service → GOME-2 Level 1B Products

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

Events Which Impacted Availability:

None significant.



The degradation of the GOME-2 instrument on Metop-A remains unexplained but performance has remained stable since September 2009. Further information on the long-term performance of GOME-2 is available under 'Product Quality Monitoring' on the webpage:

www.eumetsat.int > Home > Service Status

The GOME-2 Newsletter can be found on the same page. See also 'www.eumetsat.int > Data & Products > Resources' for further information on instrument performance and product quality.

Reprocessing of 5-years' worth of GOME-2 L1B products in EUMETSAT's Data Centre has been performed – see [slide 54](#) for further details.



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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 from typically between 28 and 30 GPS navigation satellites in operational use.

The chart shows:

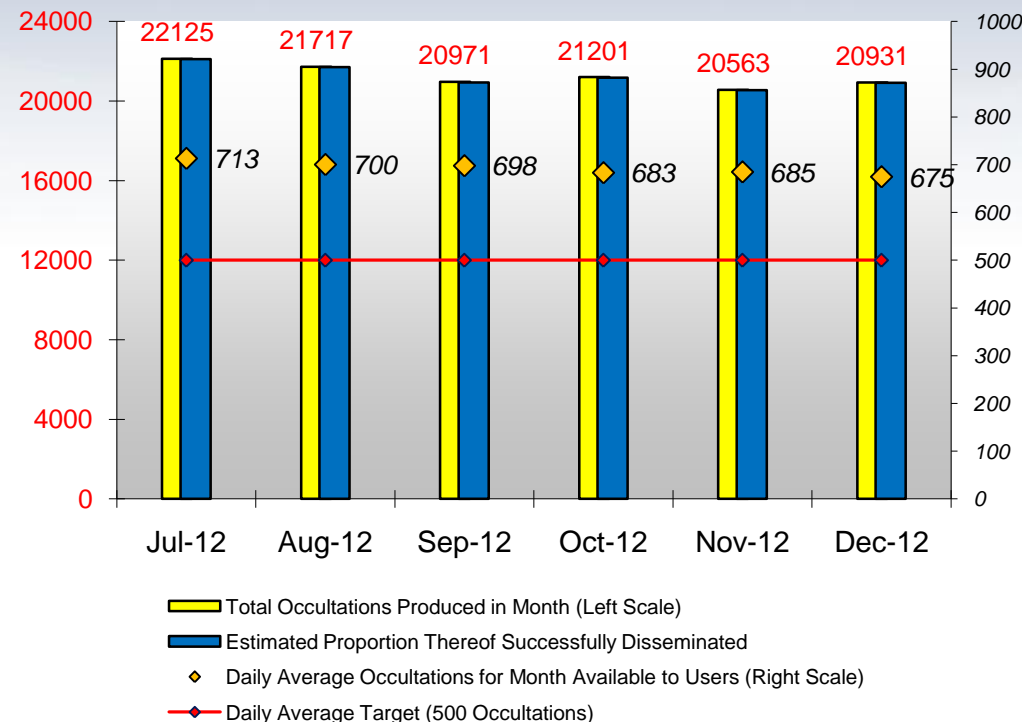
- (1) the total numbers of GRAS Level 1B occultations produced per month (plus geolocation and quality flags)
- (2) the proportion of them successfully disseminated
- (3) the daily average number of occultations for each month provided to users (in *italics*)

Note that all occultations produced are disseminated (with appropriate quality flags, including those produced during manoeuvres and recovery from anomalies).

Events Which Impacted Availability:

None significant.

Note: The number of active satellites in the GPS constellation dropped from 31 during the first half to 30 during the second half of the reporting period. This explains the small, but noticeable decrease in the number of daily occultations available from GRAS on Metop-A.



In addition to the outages associated with Metop-A manoeuvres, GRAS L1B data is flagged 'degraded quality' for a fixed 4 hours following any anomaly, regardless of the actual level.



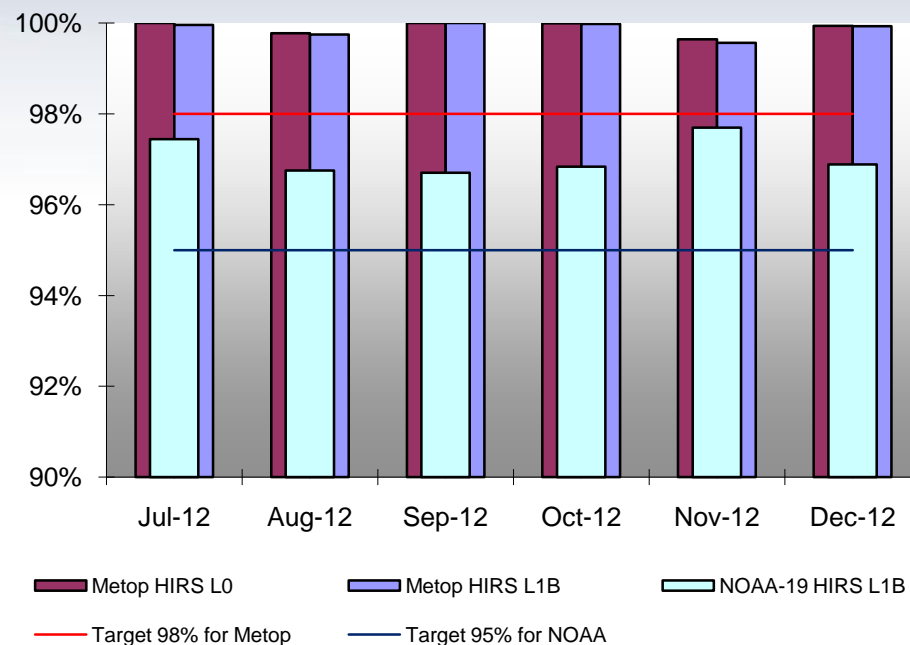
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Metop/NOAA Global Data Service → HIRS Level 1B BUFR Products

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-19 satellites.

Events Which Impacted Availability:

None significant for either Metop or NOAA products.





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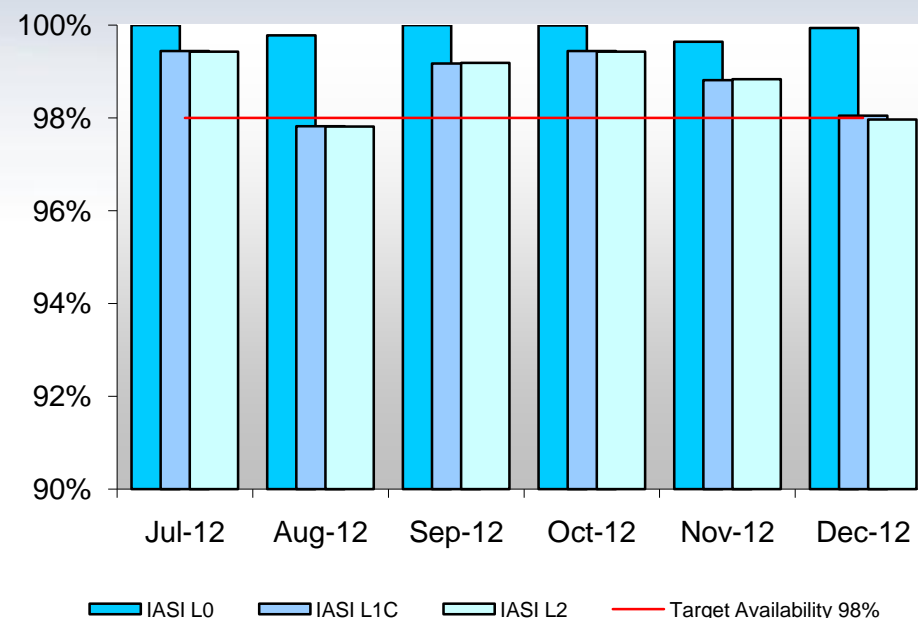
Metop Global Data Service → IASI Level 1C & Level 2 BUFR Products

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:

6-7 August: Moon intrusion avoidance impacted L1C and L2 data

3-4 December: Moon intrusion avoidance impacted L1C and L2 data



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



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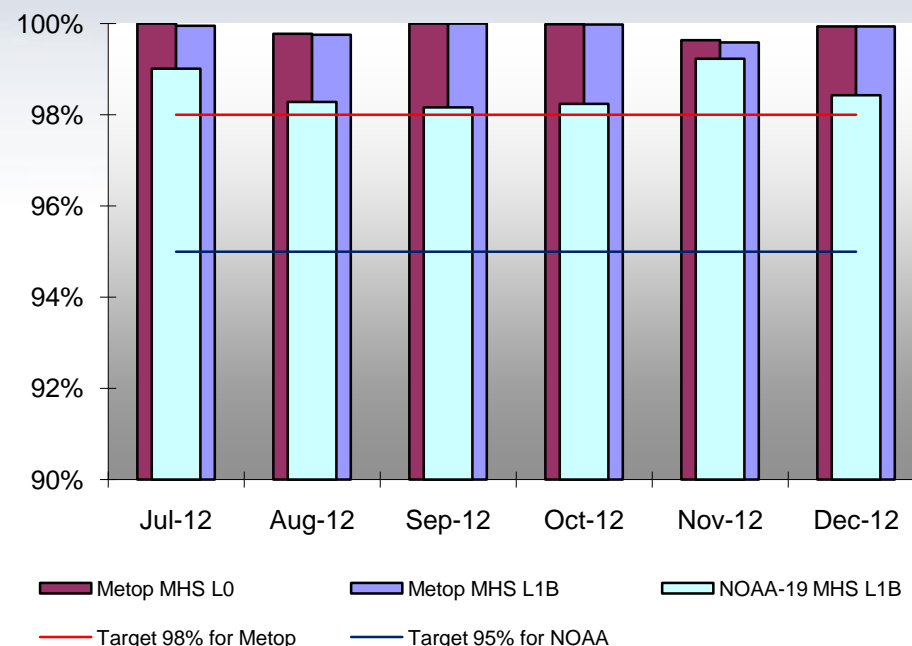
Metop/NOAA Global Data Service → MHS Level 1B BUFR Products

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-19 satellites.

Events Which Impacted Availability:

None significant for either Metop or NOAA products.



Notes:

- NOAA-19's MHS instrument's channel 3 remains out of spec
- A local oscillator swap on Metop-A's MHS instrument performed 6-Dec-2011 decreased noise on channels 3 & 4 to pre-launch levels



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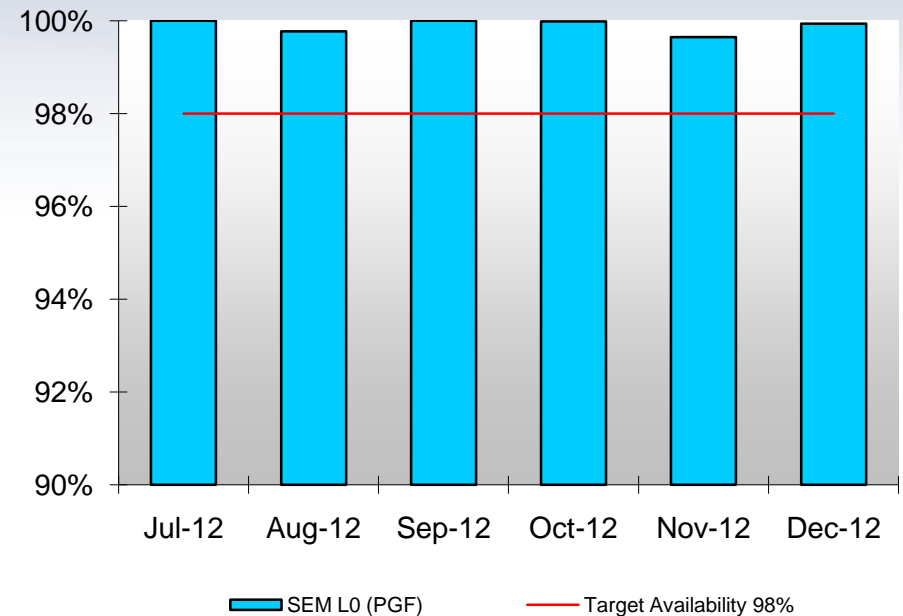
Metop/NOAA Global Data Service → SEM Level 0 Data

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, EARS-AVHRR, EARS-ASCAT and EARS-IASI services.

Metop-A Level 0 data is provided by the Fast Dump Extract System (FDES) at Svalbard and also from a subset of the HRPT stations (Athens, Lannion, Maspalomas, Moscow, Muscat and St. Denis). FDES 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, as do the HRPT stations.

ATOVS Level 0 data is acquired by the EARS network of HRPT stations, Level 1 products are generated at those locations and forwarded to EUMETSAT for distribution.

For **EARS-ASCAT**, HRPT stations and FDES transfer 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.

AVHRR data is also acquired from both Metop-A and NOAA satellites and processed by the EARS network

As of 26-April-2012, **IASI** data from the Metop-A satellite is also being acquired, processed and forwarded to EUMETCast for distribution.

Performance of the EARS services is measured in terms of the availability of the data on the user reception stations being within 30 minutes of the instrument's observations, with the exception of the Ewa Beach, Miami and Monterey stations, for which a less-stringent timeliness of 45 minutes for data availability is allowed.



EUMETSAT Central Operations Report for July - December 2012

Metop/NOAA Regional Data Service → EARS-ATOVS

This service provides ATOVS products covering data-sparse areas, derived from data received from the following satellites (listed in order of priority): Metop-A, NOAA's N19, N16, N18 and N15 (Metop's AHRPT partial coverage data is used).

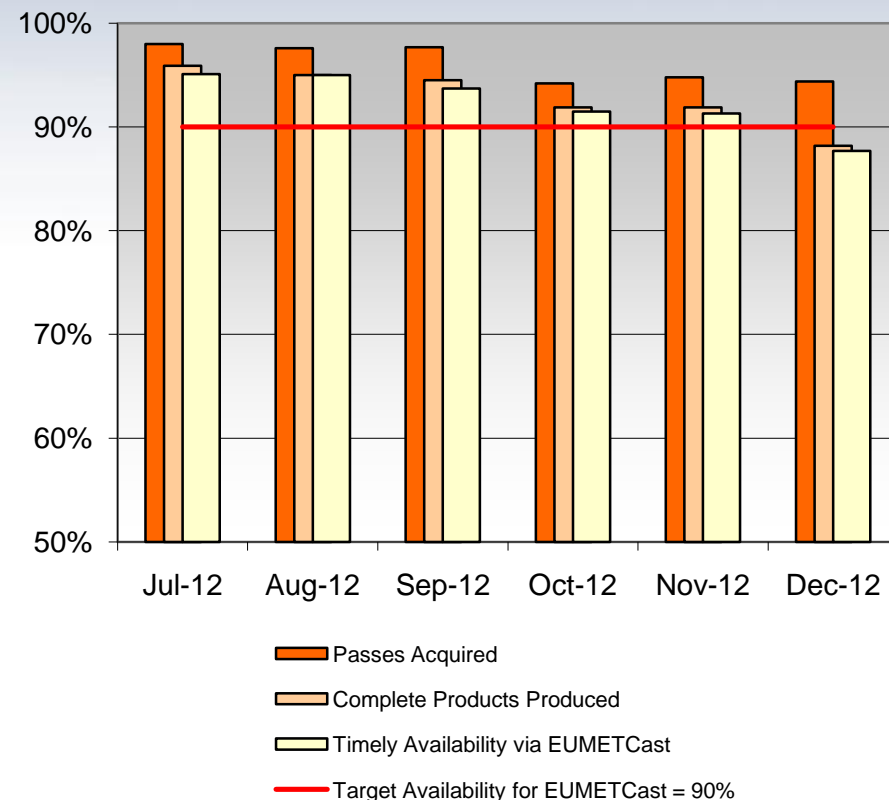
The availability target shown in red on the chart is that for the products received by users (relative to scheduled ground station passes) and covers Levels 1A, 1C in BUFR, and Level 1D products.

Events Which Impacted Availability:

Oct – Dec: Athens & Muscat station outages impacted data acquisition

December: Gander and Edmonton L1A products incomplete

General Issue: Problems with the HRPT transponder onboard NOAA's N15 satellite impacts the operation of the ATOVS service generally, resulting in fewer products overall.





EUMETSAT Central Operations Report for July - December 2012

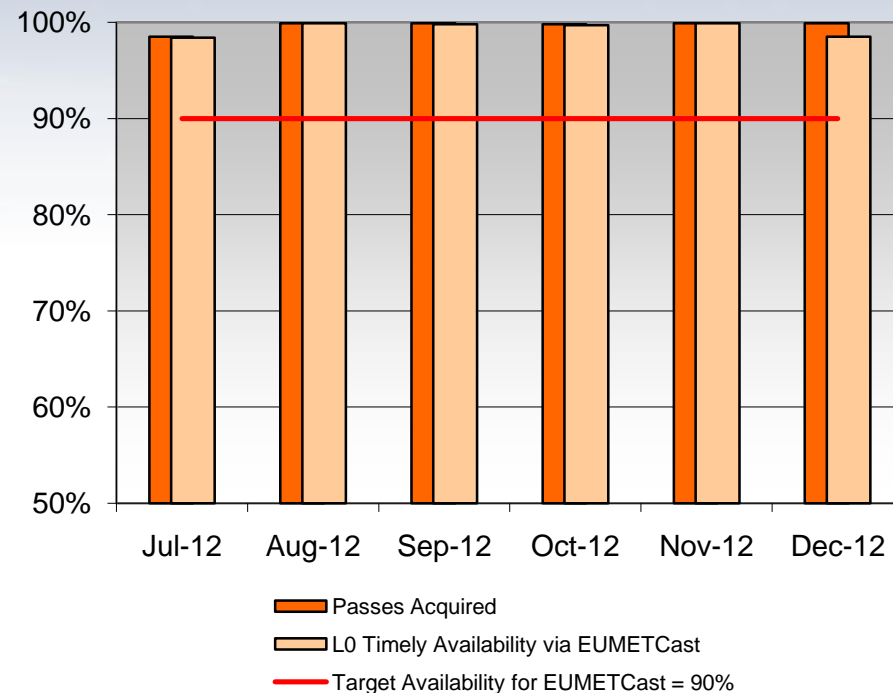
Metop/NOAA Regional Data Service → EARS-AVHRR

This service provides data from the AVHRR instrument onboard the NOAA satellite N19 and from the instrument on Metop-A (AHRPT partial coverage data and FDES).

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 2012

Metop/NOAA Regional Data Service → EARS-ASCAT

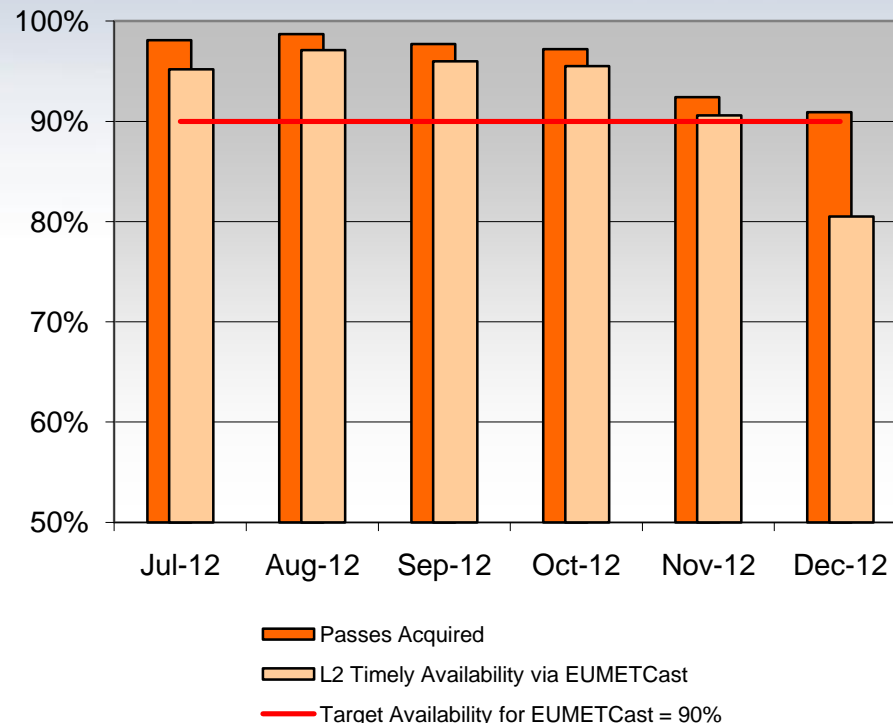
This service provides products derived from the data produced by the ASCAT instrument onboard the Metop-A satellite.

As explained on [slide 32](#), Level 1 data is produced by the EARS system, and then forwarded to KNMI (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:

November: Athens & Muscat station outages impacted data acquisition

December: (1) Continued/further Athens & Muscat station outages impacted data acquisition; (2) A time-handling software problem in the Processing Facility impacted the availability of Level 1 & Level 2 data





EUMETSAT Central Operations Report for July - December 2012

Metop/NOAA Regional Data Service → EARS-IASI

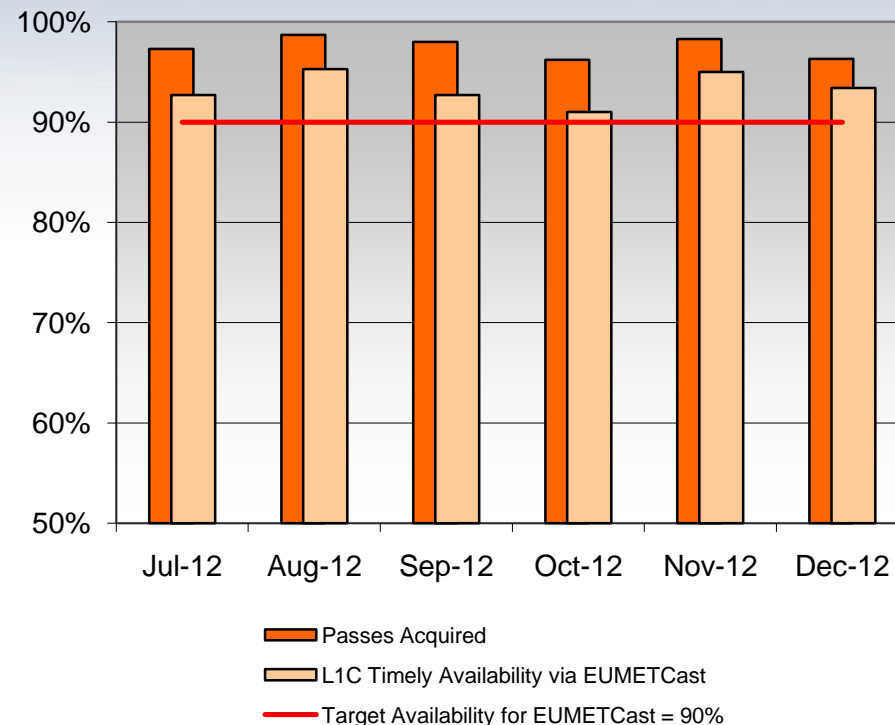
This service provides products derived from the data produced by the IASI instrument onboard the Metop-A satellite.

Availability shown on the chart is that of the Level 1C data received by users (relative to scheduled passes). The products comprise calibrated and geolocated IASI observations containing both 300 Principle Component Scores and 366 original IASI channels, cloud/scene analysis information, BUFR formatted, suitable for nowcasting applications. The initial subset of HRPT stations supporting the service includes Athens, Lannion, Maspalomas and Svalbard.

Events Which Impacted Availability:

None significant.

General Issue: Incomplete passes in the HRPT zone cannot be processed, hence the marginally lower availability of products compared to the passes.





EUMETSAT Central Operations Report for July - December 2012

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, Meteosat-10 and Metop-A (Metop-B currently undergoing commissioning).

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.

For the reporting period July – December 2012, the availability of the transponders on the indicated satellites was as follows:

Meteosat-8: 100%

Meteosat-9: 100%

Meteosat-10: 99.5% (since activation on 30-July-2012)

Metop-A: 99.99 % (18 cases of a known recurring software-reset limitation impacted the availability marginally)



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 EUMETSAT, NOAA, CNES and NASA.

EUMETSAT and NOAA process the data from the Jason-2 satellite in near real-time and 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 2012

Jason-2 OGDR Service

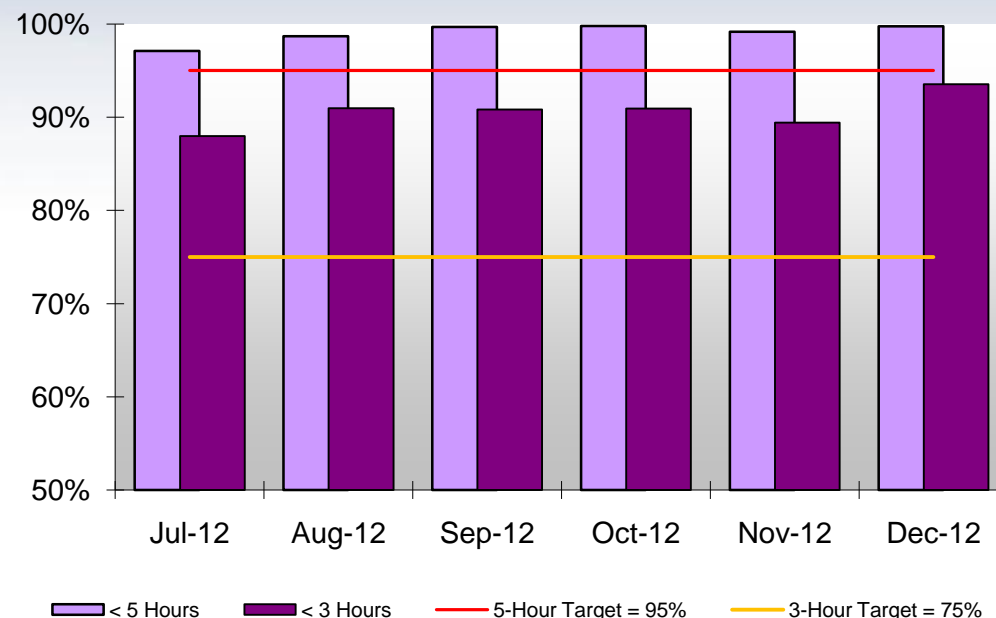
The chart shows the availability of the Jason-2 near real-time Operational Geophysical Data Record products disseminated via EUMETCast.

The target figure of 95% applies to the availability of data received on EUMETCast reception stations with a timeliness of 5 hours. The further target of 75% is for the more demanding objective of 3-hour timeliness.

Events Which Impacted Availability:

None significant.

(In general, redumps are taken at next visibility (or by other ground station) in cases of problematic passes and connection problems – this ensures minimisation of data loss, although some impact on timeliness occurs)





EUMETSAT Central Operations Report for July - December 2012

Third-Party Data Services

In addition to its own satellite data and meteorological products, EUMETSAT also distributes data and products from partner organisations as part of an international cooperation.

Image data from the following [geostationary satellites](#) is made available via EUMETCast, Direct Dissemination and the Internet:

- NOAA's GOES-13 ('GOES-East'), at 75°W, and GOES-15 ('GOES-West'), at 135°W
- JMA's MTSAT-2, at 145°E
- CMA's FY-2D, at 86.5°E, and FY-2E, at 105°E (also selected meteorological products)

Meteorological products based on [LEO satellite data](#) are also disseminated:

- Microwave Sounder products from CMA's FY-3A and FY-3B (only provided to National Met. Services)
- Level 1, 2 and 3 products derived from data of the MODIS instrument on NASA's Terra & Aqua satellites
- Level 2A and 2B OSCAT products derived from SCAT instrument data of ISRO's Oceansat-2 satellite
- EUMETSAT SSMIS products derived from sounder data of the DoD's DMSP satellites F16 and F17
- Sensor Data Records from NOAA's Suomi NPP satellite

The charts on the following slides show the availability of the data via EUMETCast.



EUMETSAT Central Operations Report for July - December 2012

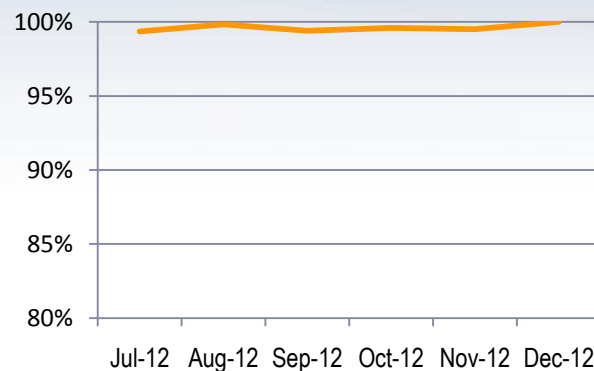
Third-Party Data Services → Geostationary Satellite Data & Products

The charts on this slide show the timely availability (as a percentage of expected) of image data originating from geostationary satellites operated by NOAA and JMA (Japan Meteorological Agency), as disseminated via EUMETCast.

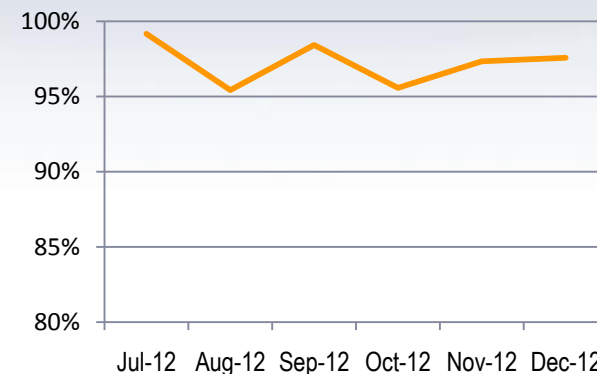
Events Which Impacted Availability:

None significant.

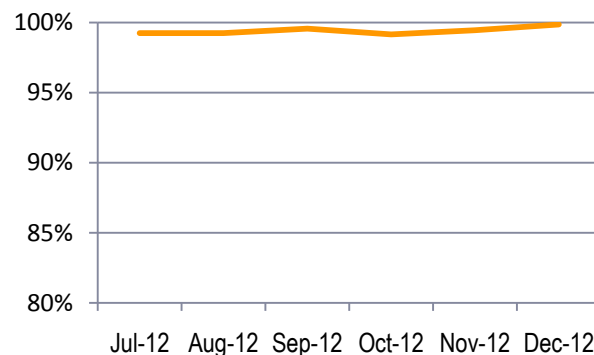
GOES-East (75°W)



GOES-West (135°W)



MTSAT-2 (145°E)





EUMETSAT Central Operations Report for July - December 2012

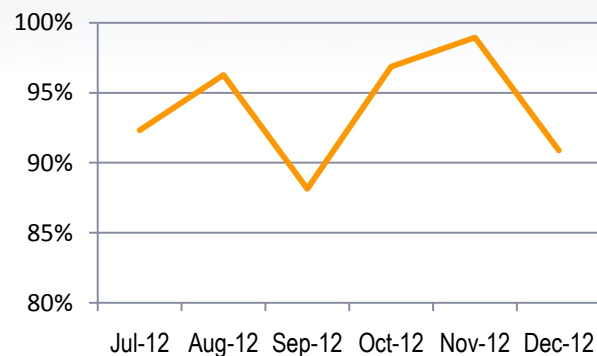
Third-Party Data Services → Geostationary Satellite Data & Products (cont.)

The charts here show the timely availability (as percentage of expected) of selected meteorological products generated from the data acquired by the Fengyun geostationary satellites operated by the China Meteorological Agency (CMA), as disseminated via EUMETCast.

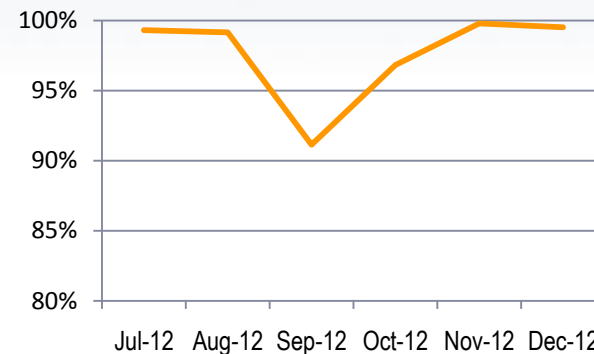
Events Which Impacted Availability:

September: For both FY-2D & FY-2E satellites: fewer products due to eclipse-season. Data transfer outage between CMA and EUMETSAT also impacted availability.

FY-2D (86.5°E)



FY-2E (105°E)





EUMETSAT Central Operations Report for July - December 2012

Third-Party Data Services → LEO Satellite Data & Products

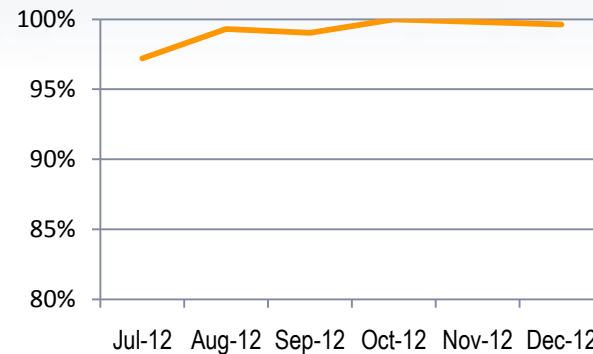
This slide presents charts which show the availability of data & products for **LEO satellites** operated by partner organisations, as disseminated via EUMETCast.

FY-3A and FY-3B: Level 1 data from microwave sounder instruments (currently only available for National Met. Services) onboard Fengyun LEO satellites. Availability shown as percentage of expected.

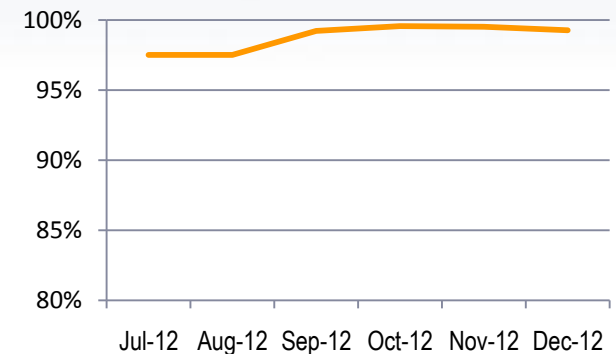
Events Which Impacted Availability:

None significant.

FY-3A Level 1 Data



FY-3B Level 1 Data





EUMETSAT Central Operations Report for July - December 2012

Third-Party Data Services → LEO Satellite Data & Products (cont.)

This slide presents further charts showing the availability of certain LEO satellite products from partner organisations, as disseminated via EUMETCast. Availability shown in terms of total products disseminated /month and equivalent daily average/month.

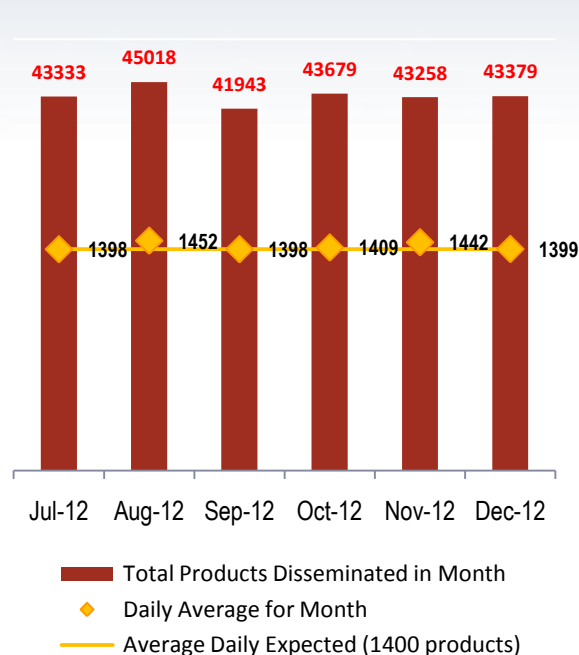
MODIS: Level 1, 2 and 3 regional products derived from the MODIS instrument hosted on NASA's Terra and Aqua LEO satellites.

OSCAT Products: Level 2A and 2B products are generated from data from ISRO's (The Indian Space Research Organisation) Oceansat-2 satellite. Products have been officially available on EUMETCast since 25 October 2012, although delivered as a trial service since 2011.

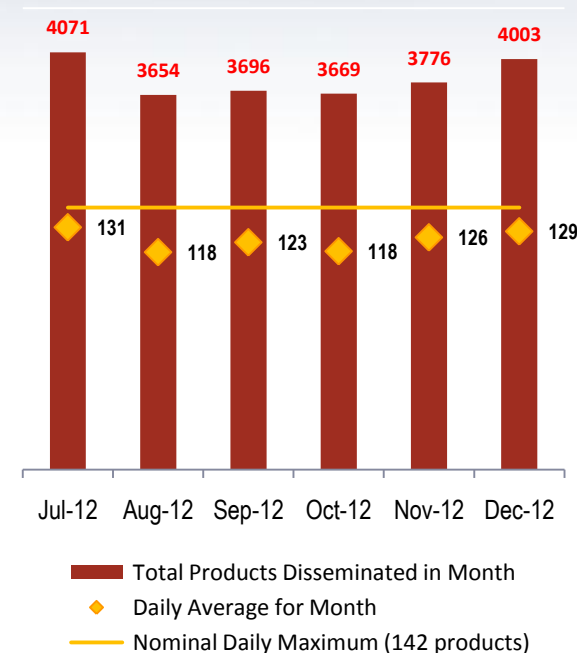
Events Which Impacted Availability:

None significant.

MODIS Products



OSCAT Products





EUMETSAT Central Operations Report for July - December 2012

Third-Party Data Services → LEO Satellite Data & Products (cont.)

This slide presents two more charts showing the availability of two further types of LEO satellite product, as disseminated via EUMETCast. Availability again shown in terms of total products disseminated /month and equivalent daily average/month.

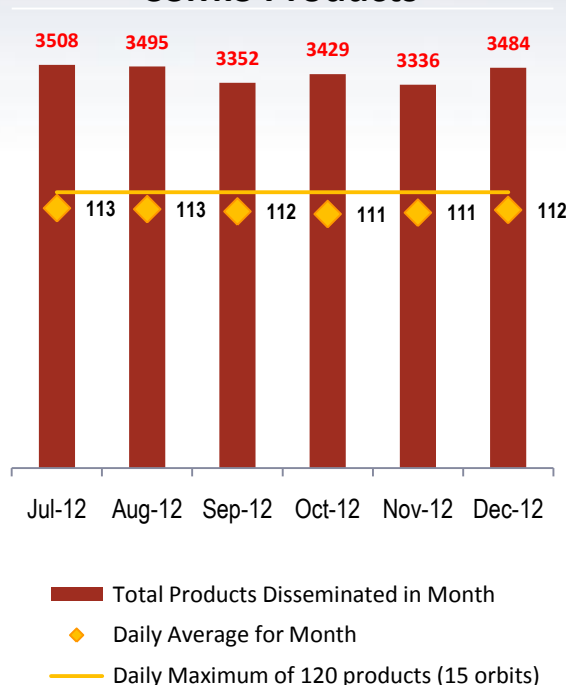
SSMIS Products: Extracted from SDR data from the 'Special Sensor Microwave Imager Sounder' microwave radiometer onboard the near-polar-orbiting, sun-synchronised DMSP satellites F16 and F17. Each product contains one orbit of data, comprising 4 BUFR component products: IMA, ENV, LAS and UAS. SSMIS Products have been available on EUMETCast since February 2012.

Suomi NPP Sensor Data Records: These 'SDRs' are from the CrIS and ATMS instruments onboard NOAA's Suomi NPP satellite. The SDRs have been available on EUMETCast since 20 July 2012.

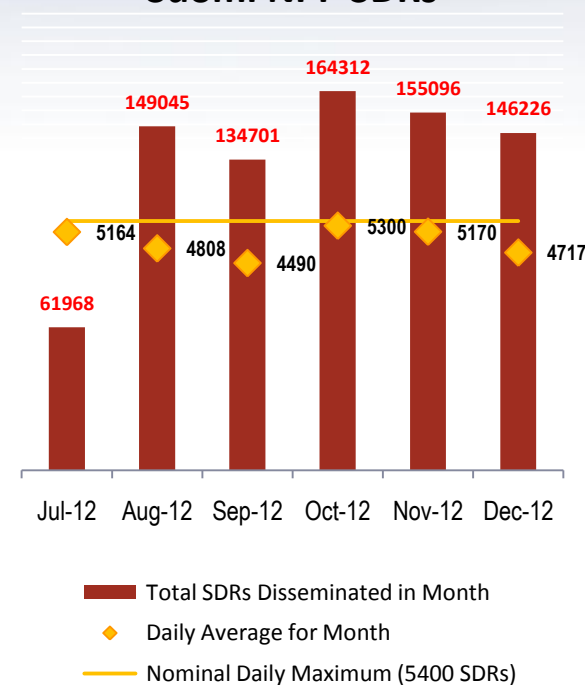
Events Which Impacted Availability:

None significant.

SSMIS Products



Suomi NPP SDRs





EUMETSAT Central Operations Report for July - December 2012

EUMETCast

EUMETCast is EUMETSAT's primary dissemination mechanism for the near real-time delivery of satellite data and products generated by the EUMETSAT Application Ground Segment. Third-party data and products from partner organisations are also delivered by the system, which is based on Digital Video Broadcast (DVB) technology.

For more information about EUMETCast and the services which it supports, please visit the 'Data Access' section of www.eumetsat.int.

The chart on the following slide shows the availability of the system for the reporting period.



EUMETSAT Central Operations Report for July - December 2012

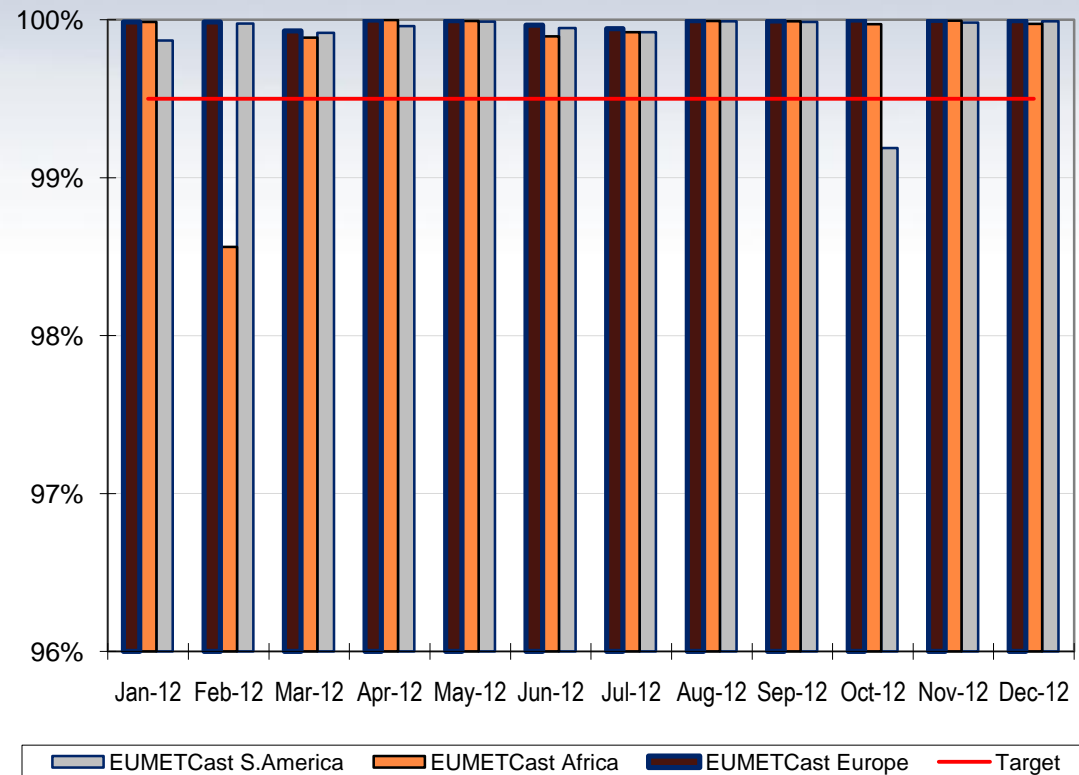
EUMETCast → System Availability for the Year-To-Date

The chart here shows the monthly system availability for the 3 EUMETCast services covering Europe, Africa and South America respectively. Both EUMETCast Africa and EUMETCast South America systems are, in effect, extensions of EUMETCast Europe and thus the system availability of each is calculated as a combination of each of their systems and the European one.

Events Which Impacted Availability:

February: Severe weather conditions impacted the uplink of the EUMETCast Africa service at the Fucino ground station in Italy during the first week of the month, but most significantly on the 2nd and 3rd of February. The event was classified as OPS Incident #48.

30 October: Service provider bandwidth problem impacted the EUMETCast South America service.





EUMETSAT Central Operations Report for July - December 2012

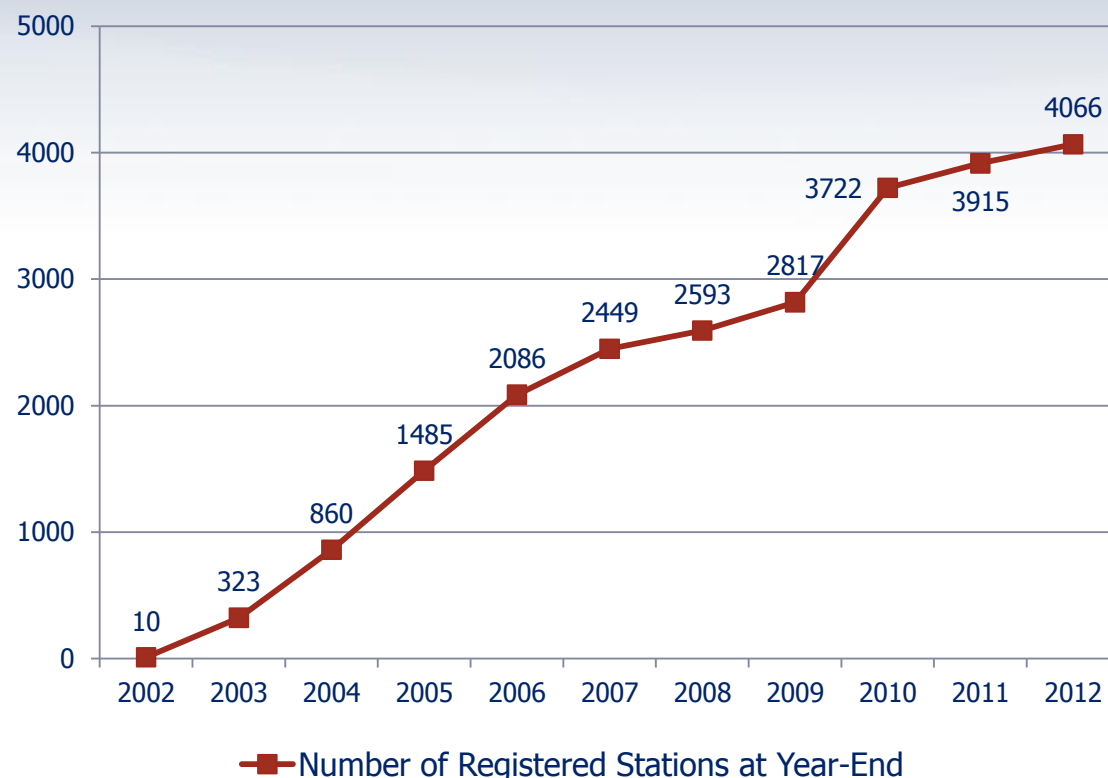
EUMETCast → Registered User Stations

The chart shows the trend of registrations of EUMETCast user stations.

The EUMETCast system was first conceived to disseminate EARS data. It evolved into a means of dissemination for the MSG programme, and was extended to provide Metop and Jason-2 data in more recent years. Products of partner organisations such as NOAA, DWD and CMA have also been added to the system.

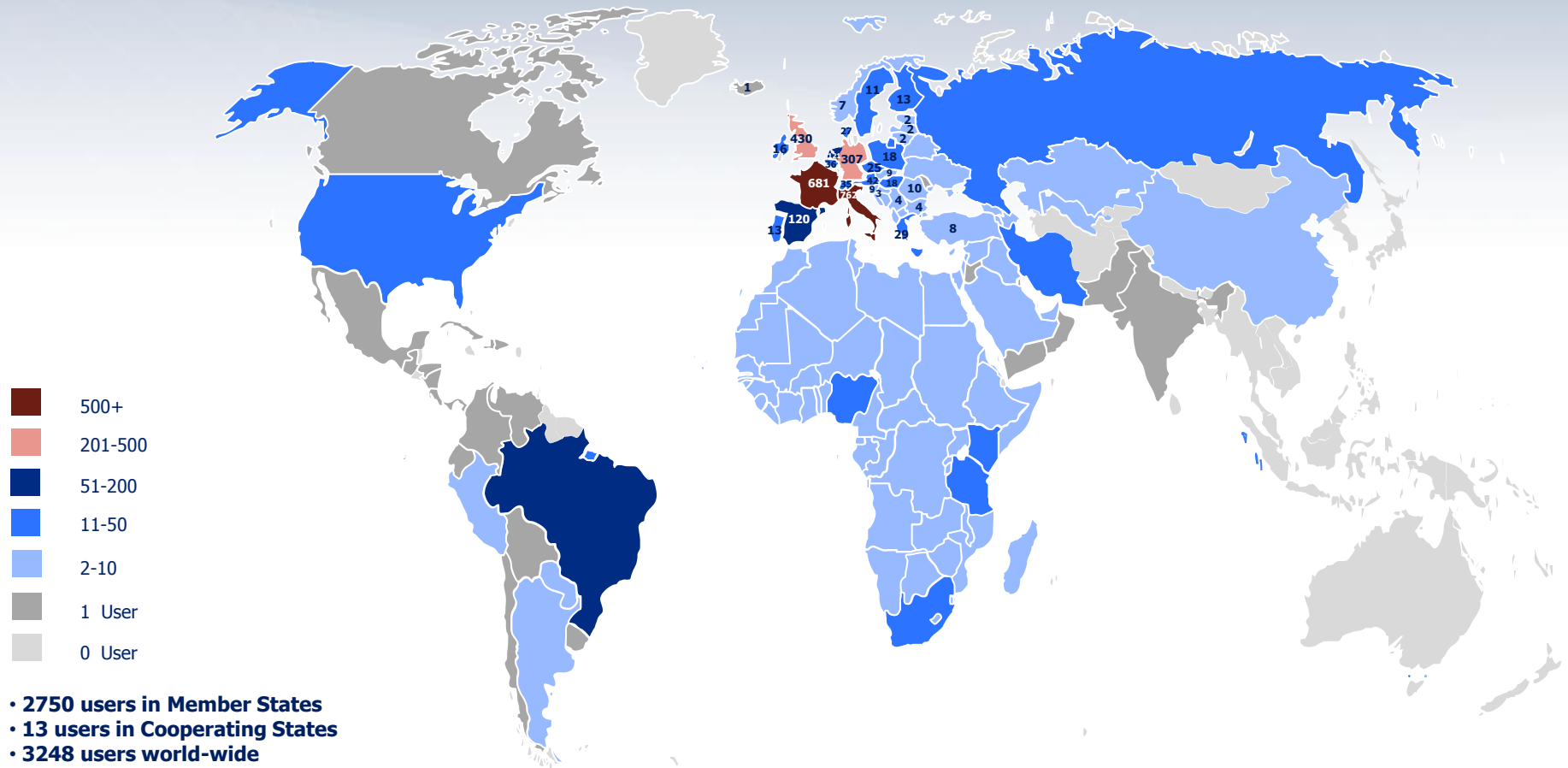
The significant increase in stations in 2010 was largely a result of the migration of the users of Météo-France's RETIM system to EUMETCast.

Note that the number of user stations is larger than the number of users (see next slide) due to some organisations possessing several user stations.



EUMETSAT Central Operations Report for July - December 2012

EUMETCast → Users Worldwide as of 31 December 2012



Use Adobe Reader's 'Zoom' function to view numbers of users in European countries



EUMETSAT Central Operations Report for July - December 2012

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. It also allows 'bulk orders' for long time-periods of data and 'standing orders' for repeated delivery of data / products over specified time periods to be requested for special needs.

Charts on the following themes appear on the next 3 slides:

- Data Delivered: Total Volume versus Items**
- Archive Orders versus Data To Be Retrieved**
- Archive Order Delivery-Time Trends**



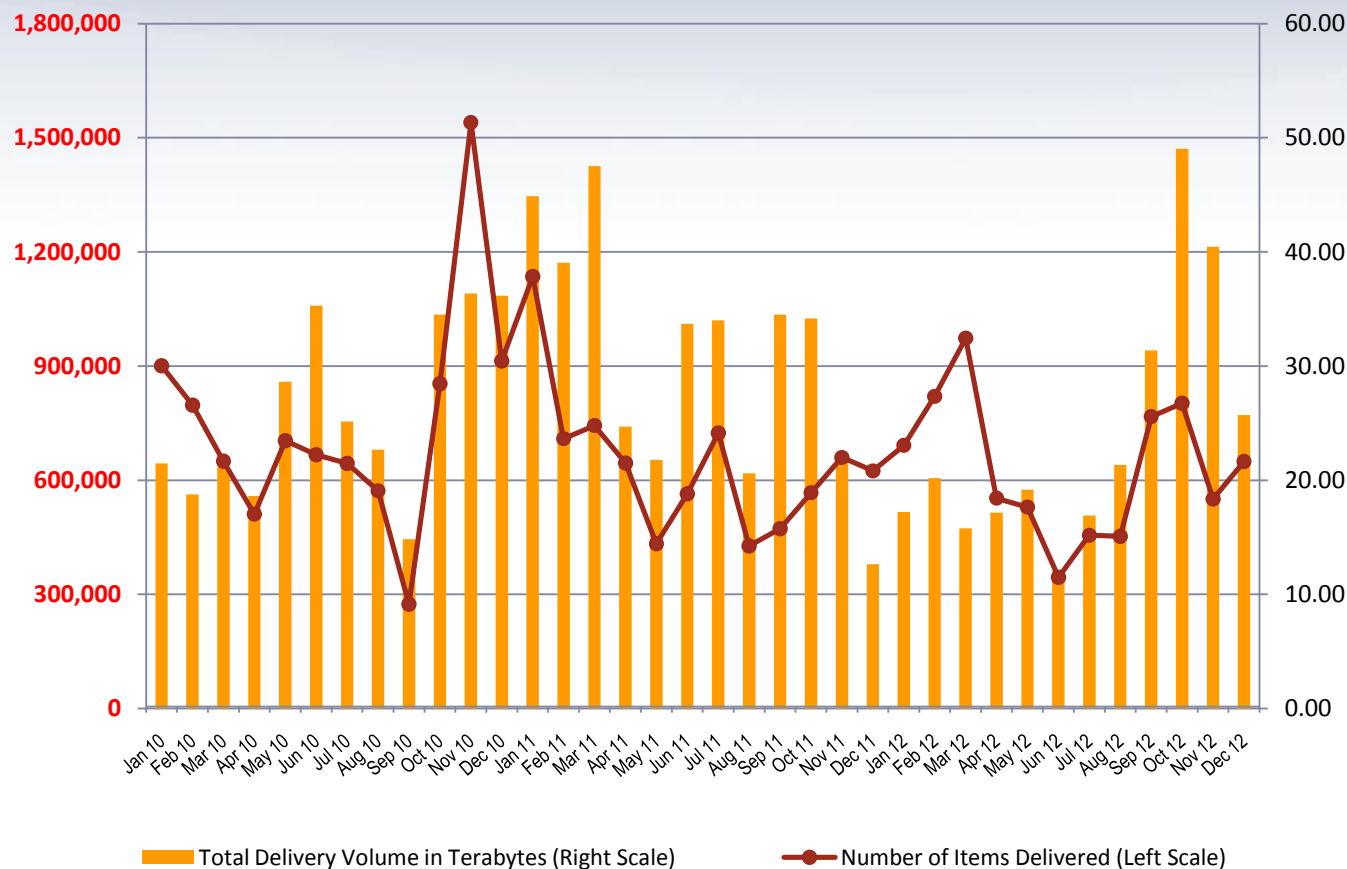
EUMETSAT Central Operations Report for July - December 2012

The EUMETSAT Data Centre → Data Delivered: Total Volume versus Items

The chart here shows the number of items delivered monthly to the users by the Data Centre, and the corresponding monthly total volumes of data delivered, in the 3 years up to and including December 2012. All types of orders - regular, bulk and standing - are included in the statistics.

In contrast to the chart in the previous issue of the report, the chart here now shows the number of items delivered to Data Centre users, rather than the number of orders processed.

A closer correlation can thus be seen, after eliminating the factor of variability of orders containing between 1 and many items.





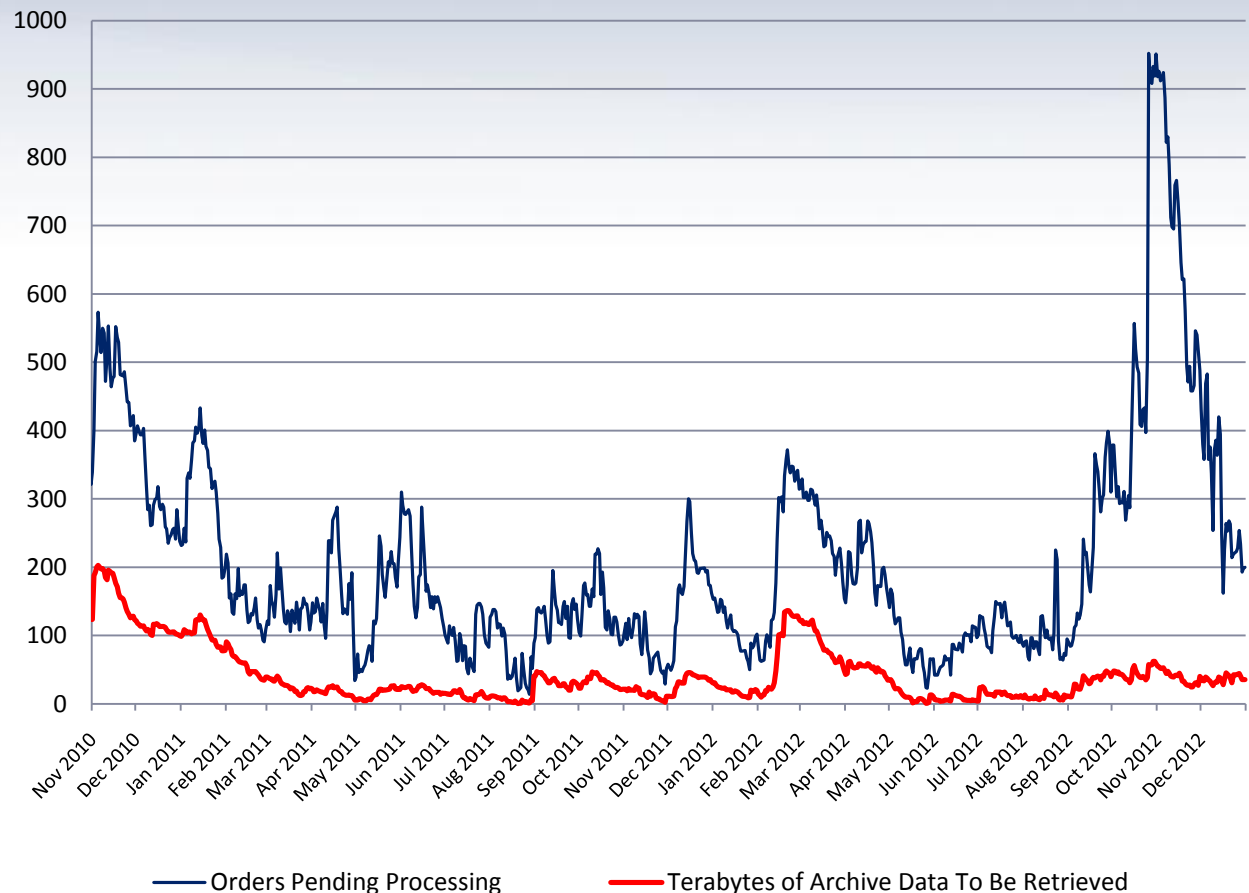
EUMETSAT Central Operations Report for July - December 2012

The EUMETSAT Data Centre → Archive Orders versus Data To Be Retrieved

The chart shows the day-by-day profile of archive orders awaiting processing, against the related volume of data needing to be retrieved from the archive and processed to satisfy the queued orders.

In contrast to the chart in the previous issue of the report, the chart here is now based on observed daily maximum orders and estimated retrieval volumes that are now automatically recorded for each day of the year.

Note: The exceptional peak seen in October/November 2012 was due to a large number of orders of few items being placed, many requiring media delivery, competing for system resources.



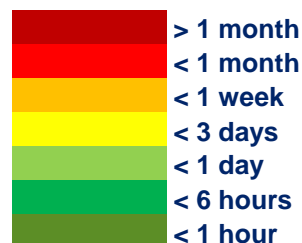


EUMETSAT Central Operations Report for July - December 2012

The EUMETSAT Data Centre → Archive Order Delivery-Time Trends

The 3 charts show delivery-time ranges for Data Centre orders according to 3 categories of order size (Small, Medium & Large), for each of the half-year periods shown on the horizontal axis. The left-hand scales help to show the proportions of the total orders delivered in the indicated time ranges (note: standing orders not included).

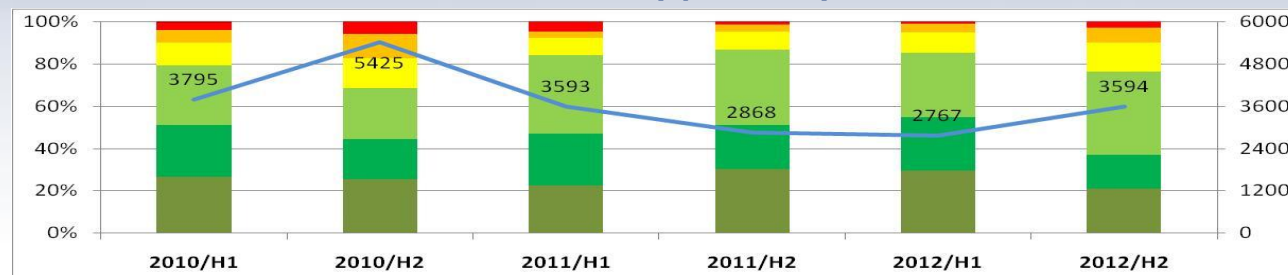
The colour-coding for the delivery-time bands on each of vertical bars on each chart is as follows:



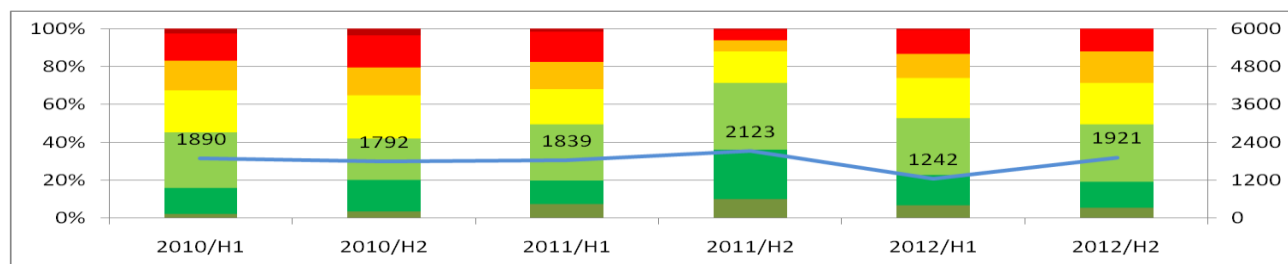
The blue lines indicate the total orders per half year for each category (right-hand scales apply). Total orders across all 3 categories were:

2010/H1: 6550	2010/H2: 8106
2011/H1: 6319	2011/H2: 6013
2012/H1: 4720	2012/H2: 6488

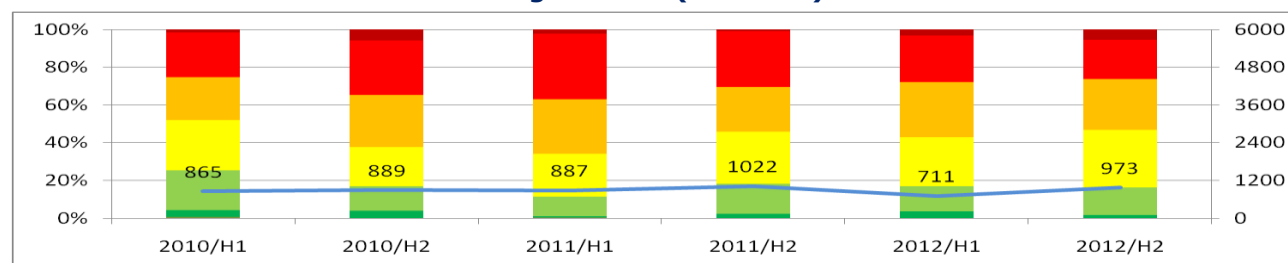
Small Orders (up to 10 GB)



Medium Orders (10 – 100 GB)



Large Orders (> 100 GB)





EUMETSAT Central Operations Report for July - December 2012

EUMETSAT Climate Services

EUMETSAT contributes to climate monitoring and climate change analysis by reprocessing sensor data and products from Meteosat and Metop satellites held in its archive. Improved processing algorithms are applied to the data collected since the 1980's, producing data records with improved overall consistency, with artefacts introduced during past satellite lifetimes corrected.

The following slide gives a brief overview of reprocessing activities past and foreseen.



EUMETSAT Central Operations Report for July - December 2012

EUMETSAT Climate Services → Climate Data Record (CDR) Generation

This slide provides information on data records produced in the past year and those planned for the current year.

Reprocessed data released in 2012:

Metop-A GOME-2 FM3 Level 1B, Release 2

Period: 25 January 2007 - 25 January 2012

Date volume: 32 TB (uncompressed)

Released 6 June 2012, available from the Data Centre from August 2012 onwards.

Planned for release in 2013:

Meteosat 3 Surface Albedo

Periods: August 1991 - January 1993 (ADC, 50°W) and February 1993 - May 1995 (XADC, 75°W)

Release planned for May 2013

Meteosat 7 Surface Albedo

Periods: November 2006 - December 2010 (IODC, 57 deg E)

Release planned for May 2013

Metop-A AVHRR Polar AMVs

Period 1 March 2007 - 31 December 2012

Release planned for June 2013



EUMETSAT Central Operations Report for July - December 2012

Helpdesk Service

EUMETSAT's User Helpdesk provides support to the users of its services, handling enquiries, registrations, user feedback comments, problems experienced and enhancement requests.

This section includes charts on the following subjects:

- User interaction history from 2002 onwards
- The countries and groups that gave rise to the largest numbers of user interactions in the reporting period
- Breakdown of those user interactions by category



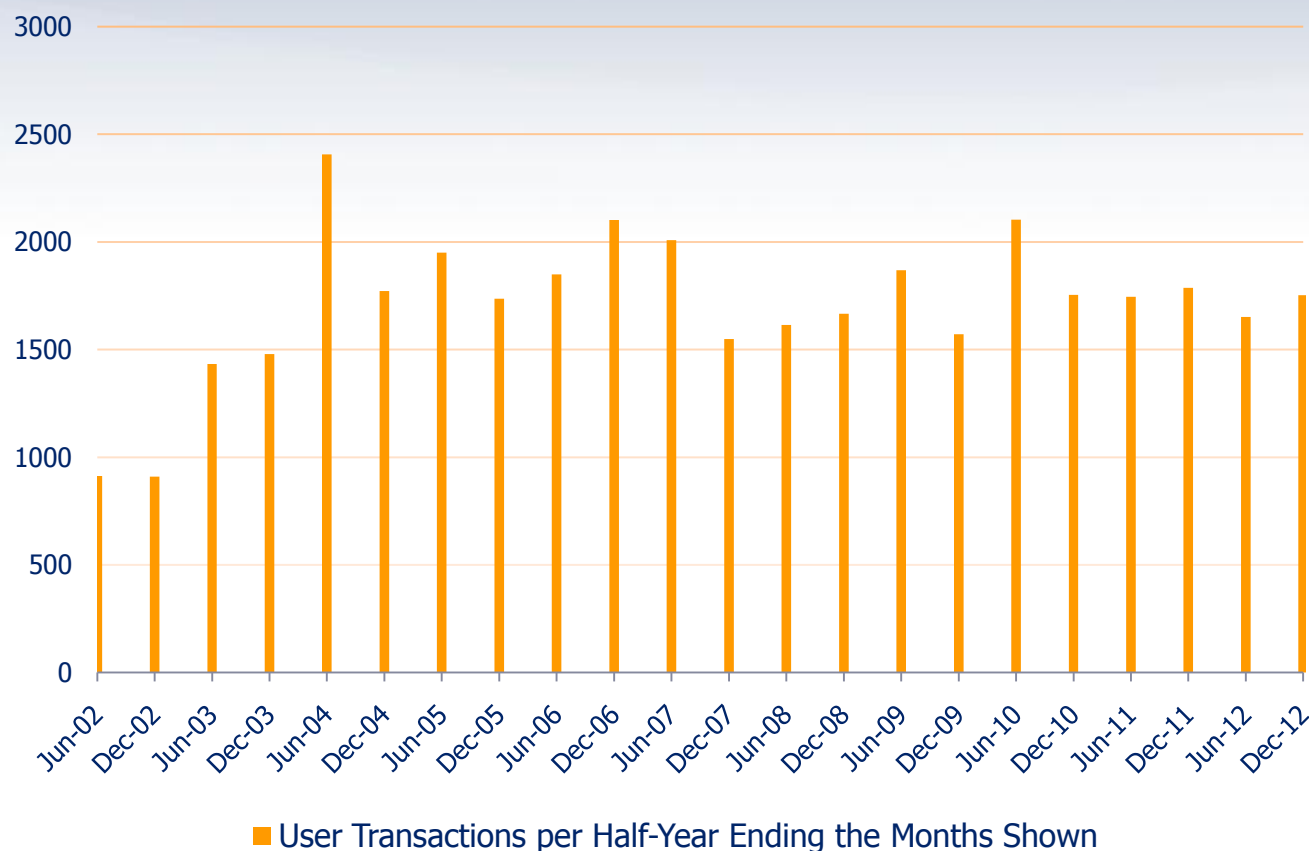
EUMETSAT Central Operations Report for July - December 2012

Helpdesk Service → User Interaction History

The chart here shows the number of user interactions handled by EUMETSAT's User Helpdesk in each half-year since the beginning of 2002.

The all-time high in half-yearly levels of interactions seen in the first half of 2004 correlated with Meteosat-8 (the first of the second generation satellites) going into operational use and the users registering for EUMETCast to receive its data and derived products.

The next 2 slides focus on the user interactions for the current reporting period, in which a total of 1753 interactions were handled.





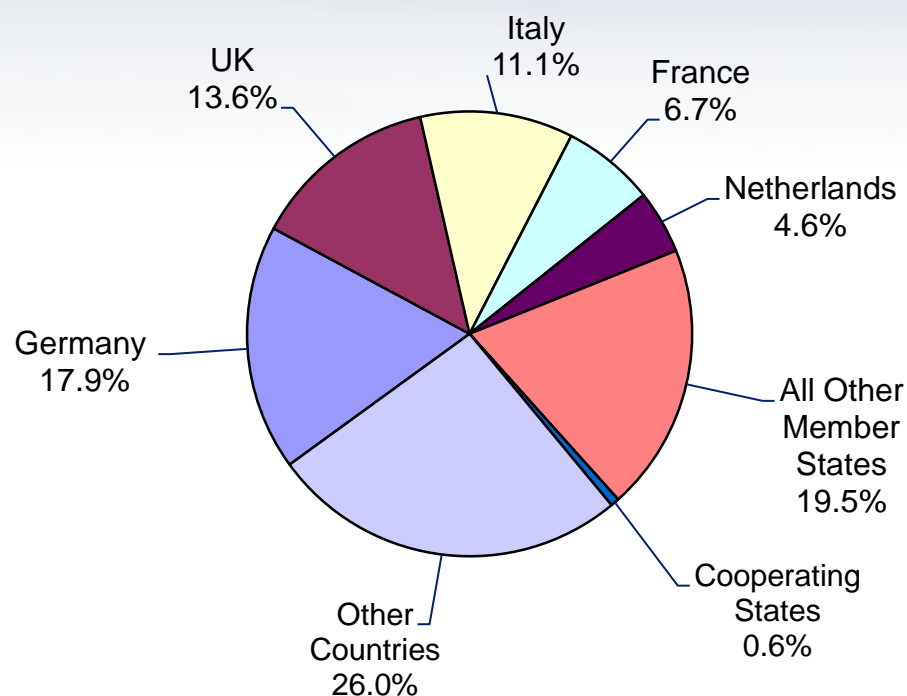
EUMETSAT Central Operations Report for July - December 2012

Helpdesk Service → User Interactions 2012/H2 by Country of Origin

The chart shows the interactions in the second half of 2012 from:

(1) the 5 EUMETSAT Member States that gave rise to the largest numbers of interactions, and

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





EUMETSAT Central Operations Report for July - December 2012

Helpdesk Service → User Interactions 2012/H2 by Category

The chart shows the numbers of user interactions in the second half of 2012 for:

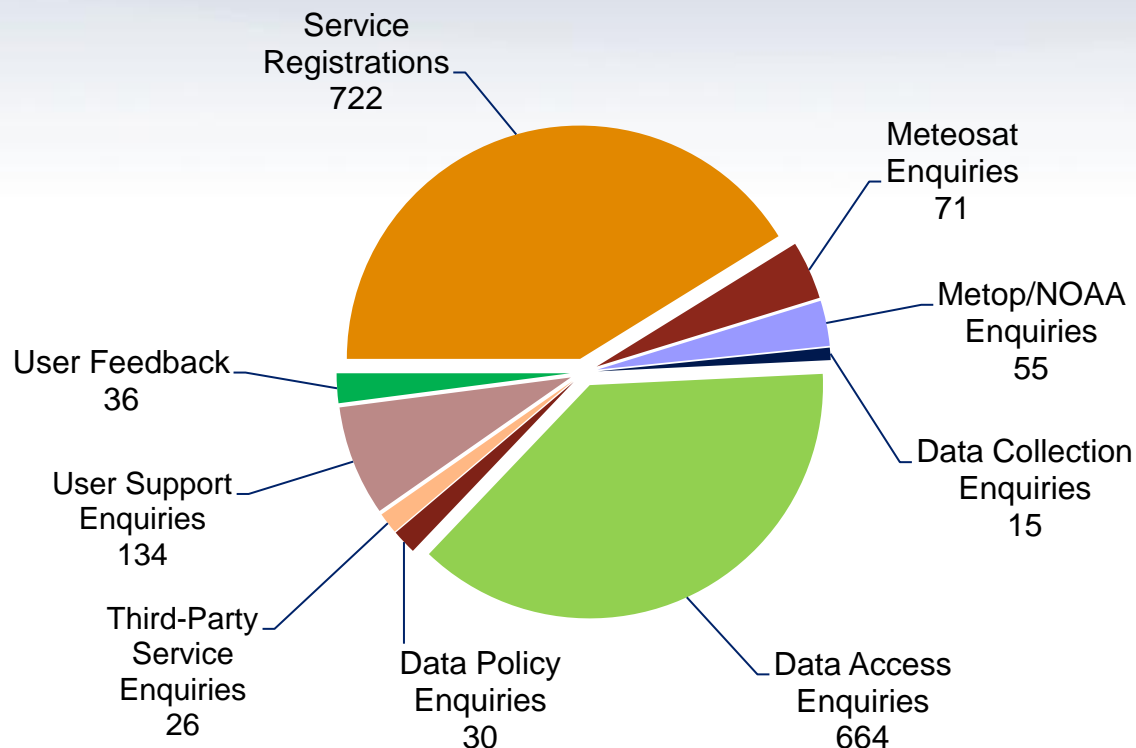
- Service Enquiries (7 categories)
- Service Registrations
- User Feedback

Total interactions for the half-year came to 1753.

Notes:

(1) 'User Support Enquiries' on the chart refer to those enquiries related to service messages, web information and training.

(2) 'User Feedback' includes comments on our services and suggestions for improvement





EUMETSAT Central Operations Report for July - December 2012

Changes to EUMETSAT's Services

Please see the 'Product Update History' and 'Product & Service News' sections on the [Service Status](#) page of the EUMETSAT website, www.eumetsat.int, using the 'View All' links at the feet of the sections to go back in time.

Note that details of all products can be found in EUMETSAT's Product Navigator, accessible via the homepage of the website.



EUMETSAT Central Operations Report for July - December 2012

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 'Advanced TIROS Operational Vertical Sounders', namely 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.
CMA	Third-Party Data	China Meteorological Administration (http://2011.cma.gov.cn/en/aboutcma/)
Colinearity	Meteosat	Sun, satellite and ground station come into alignment twice a year, giving rise to disruption of uplink and downlink signals, resulting in partial loss of some images.
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.



EUMETSAT Central Operations Report for July - December 2012

Glossary (continued)

Term	Context in which used	Description
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'.
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.
JMA	Third-Party Data	Japan Meteorological Agency (http://www.jma.go.jp/jma/indexe.html)



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Glossary (continued)

Term	Context in which used	Description
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.
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.



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Glossary (continued)

Term	Context in which used	Description
MHS	Metop/NOAA Global Data	The 'Microwave Humidity Sounder' is a 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-18 and NOAA-19.
NOAA	Third-Party Data	National Oceanic and Atmospheric Administration (http://www.noaa.gov/)
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.
OOP	Metop	'Out-Of-Plane' manoeuvre, i.e. one conducted with a Metop satellite in order to adjust the inclination of its orbit.
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.



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Glossary (continued)

(end of report)

Term	Context in which used	Description
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).
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°N.
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 charged particles (e.g. solar), possibly resulting in a switch-off of an electronic system.
SEVIRI	Meteosat Second Generation (MSG)	Spinning Enhanced Visible and Infra-Red Imager