

# EUMETSAT Headquarters, Darmstadt, Germany

Central Operations Report for the period January to June 2010





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**SPECIAL NOTE:** The Central Operations Reports are now to be found under 'Service Status' (they were previously under 'Documentation') on <u>www.eumetsat.int</u>



## Introduction

Welcome to the report on EUMETSAT Central Operations for the first half of 2010.

This half-year saw good service availability in general, with few major problems.

One significant milestone achieved at the end of March was the operational start of EUMETCast dissemination of meteorological data on behalf of Météo-France, the French National Meteorological Service. The joint Météo-France – EUMETSAT project to implement the RETIM dataflow began in early 2009 and effectively culminates with the transition of Météo-France's user community from the RETIM2000 dissemination system used up until now to EUMETCast. RETIM 2000 transmissions are due to end in August 2010.

In March, a major operational anomaly on the Metop-A services occurred which had significant service impact. Unintended de-pointing of the Svalbard Ground Station antenna caused loss of payload data for several orbits. Specific actions have been taken to avoid recurrence of this anomaly.

Service enhancements in the period included several new products on EUMETCast and the addition of Moscow to the network of HRPT stations processing and relaying ATOVS and AVHRR data for the EARS service. More details on these topics can be found in the 'Changes to EUMETSAT's Services' section near the end of this report.



## Introduction (continued)

Metop-A operations have matured since their start in 2007 and have now achieved a very stable level. As of this report we are therefore reporting service performance against the real performance targets, and no longer against the minimum figures reflected in the system requirements.

Finally, the EUMETSAT Data Centre and User Support Service sections of this report have received something of a facelift for this issue and also a change in content, to reflect a user perspective more closely. Please take a look at slides 39 to 48 and we hope you will find the changes are welcome ones.

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
- The EUMETSAT Data Centre
- EUMETSAT's User Support Service

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



**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

None in this reporting period.



# Meteosat Services → SEVIRI 0° Image Data

Performance measured in terms of:

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

#### **Events Which Impacted Availability:**

- 18 March 2010: EUMETCast Dissemination impacted by a comms network problem.
- April June 2010: Nominal RCs impacted by reduced geometric quality resulting from manoeuvres and from satellite tank heaterswitching.





# Meteosat Services → IODC 57°E Image Data

Performance measured in terms of:

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

#### **Events Which Impacted Availability:**

#### None significant.

Note: the slight downwards trend in performance for the period April – June was caused by an increase in the recurrence of momentary satellite downlink interruptions and radiometer-position jumps, which are under investigation (both thought to be attributable to the ageing of the satellite).





### 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°N, using all 12 SEVIRI spectral channels.

Performance is measured in terms of the number of <u>nominal</u> 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 <u>www.eumetsat.int</u> under 'Access to Data'.

Events Which Impacted Availability:

None significant.





## Meteosat Services $\rightarrow$ 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:**

27 February – March 4: A problem with the statistical data generation mechanism reduced the performance statistics for the two months– actual product generation is believed to have been nominal for the days concerned, and the monthly performance actually above target for the 2 months in question.



- 0° Met Product Target Availability 98.5%



## 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%



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

Meteorological products derived from the 5minute 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:**

May 2010: A problem with the statistical data generation mechanism impacted the performance statistic for the month. Actual product generation is believed to have been nominal for the days concerned and the monthly performance actually above target.





# Meteosat Services $\rightarrow$ 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 2010, there were 590 active Data Collection Platforms (DCPs) out of a total of 1051 registered units, belonging to 125 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 DCP channels supported by Meteosat-6 as part of the Indian Ocean Tsunami Warning System (IOTWS) is not included)

#### **Events Which Impacted Availability:**

January: Problems with the Reference DCP transponder at the Ground Station impacted the calculation of the channel availability statistics (actual channel availability believed to have been higher).





# 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.

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



# 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.

<u>Special Note:</u> As of the 2010/H1 issue of the report, target availability for AMSU, ASCAT, ATOVS, AVHRR, GOME-2, HIRS, IASI, MHS and SEM services has been raised from 95 to 98%. This is now considered the appropriate level at this stage of maturation of the EPS system.





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

The following event impacted the Metop/NOAA Global Data Service to the extent described:

<u>20 March 2010</u>: A combination of ground segment testing activities and unforeseen network configuration settings resulted in incorrect pointing data being ingested by the Svalbard ground station antenna system, which in turn resulted in the loss of Metop-A payload data for 5 orbits (approx. 8 hours). This event was classified as OPS Incident No. 40.

# 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.

#### **Events Which Impacted Availability:**

20-March: Metop-A payload data not acquired for 5 orbits (see slide 18).





## Metop/NOAA Global Data Service $\rightarrow$ 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:**

20-March: Metop-A payload data not acquired for 5 orbits (see slide 18).

Notes: Metop-A's AMSU channel 7 has degraded beyond specification and is thus no longer used for product processing. Degradation of NOAA-19's AMSU channel 8 has not degraded further in this reporting period and so the data is still considered usable for the time-being.



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



# 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:**

18-February: An instrument switch-off, believed to have been triggered by an SEU, resulted in approx. 5½ hours of data outage.

20-March: Metop-A payload data not acquired for 5 orbits (see slide 18).





# 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 BUFRencoded product received on the EUMETCast reference user station (US).

#### **Events Which Impacted Availability:**

20-March: Metop-A payload data not acquired for 5 orbits (see slide 18).

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





# 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:**

20-March: Metop-A payload data not acquired for 5 orbits (see slide 18).



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



# 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:**

20-March: Metop-A payload data not acquired for 5 orbits (see slide 18).

Notes: The test campaigns in January and September 2009 did not give a clear understanding of the throughput loss problem and investigation continues into the issue. The study of the impact on Level 2 product quality continues and first results are expected in October 2010.



The degradation of instrument throughput, which varies in accordance with wavelength and angle of scan, has an affect on products. Since the second test campaign, the rate of degradation appears to have slowed - see the long-term monitoring report under 'documentation' on the webpage 'gome.eumetsat.int'. Also see the long-term in-orbit degradation status reports under: <u>www.eumetsat.int</u> → Data & Products → Resources, sub-heading 'EPS Product Validation Reports'.



# 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:**

20-March: Metop-A payload data not acquired for 5 orbits (see slide 18).

13 April: An instrument stoppage due to memory corruption resulted in unavailability / degradation of data for approx. 13 hours

20-21 May: Modification of the instrument's onboard software was performed, in order to improve the software's handling of unhealthy GPS satellites. Instrument data was not available for approx. 20 hours.



Monthly packet totals
Daily Average for Month

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.



# 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:**

20-March: Metop-A payload data not acquired for 5 orbits (see slide 18).



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



# 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:**

20-March: Metop-A payload data not acquired for 5 orbits (see slide 18).



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.



## 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:**

20-March: Metop-A payload data not acquired for 5 orbits (see slide 18).

Note: NOAA-19's MHS instrument's channel 3 remains out of spec and users are recommended to use channel 4 instead.



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



# 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:**

20-March: Metop-A payload data not acquired for 5 orbits (see slide 18).





# Metop/NOAA Regional Data Service

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

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

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. As of 9<sup>th</sup> March, ATOVS data from FDES is available in addition.

AVHRR data is also acquired and processed by the EARS network. Since 16<sup>th</sup> March, the network is handling AVHRR data from Metop-A in addition to that from NOAA satellites.

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 Edmonton, Gander and Monterey stations, for which a less-stringent timeliness of 45 minutes for data availability is allowed.

See the 'Changes To EUMETSAT's Services' slides near the end of this Central Operations Report for further information related to the Metop/NOAA Regional Data Service in 2010/H1.





## Metop/NOAA Regional Data Service $\rightarrow$ EARS-ATOVS

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

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:**

- February and March: A worsening problem with the AVHRR instrument onboard NOAA's N17 satellite also impacted the operation of the ATOVS instruments and thus resulted in fewer products overall.
- General Issue: Ongoing low data quality from Ewa Beach and Miami stations, especially due to N16 reception using incorrect polarisation (station upgrade being planned).





# Metop/NOAA Regional Data Service → EARS-AVHRR

This service provides data from the AVHRR instruments onboard the two contributing NOAA satellites (N17 and N19) and as of 16<sup>th</sup> March, additionally 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.





# 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:**

20-March: Metop-A payload data not acquired for 5 orbits (see slide 18).





# **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 <u>www.cospas-sarsat.org</u>.

The availability of the transponders onboard Meteosat-8, Meteosat-9 and Metop-A was 100% for the reporting period January – June 2010.



# 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.







### Jason-2 OGDR Service

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

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

#### **Events Which Impacted Availability:**

May: Maintenance of the Earth Terminal in Usingen and connection problems impacted the timeliness of data ('redumps' were required because of connection problems between NOAA SOCC and Fairbanks preventing nominal data reception).

June: Redumps following some further connection problems impacted the 3-hour timeliness figure.





# **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



## Other Geostationary Satellite Services → GOES and MTSAT Image Data

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

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

#### **Events Which Impacted Availability:**

June: Thunderstorms marginally disrupted Meteo-France's reception of the foreign satellite operators' dissemination and also EUMETSAT's reference reception of EUMETCast dissemination.





# 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.

With this issue, the report presents a new set of charts on the following themes:

- Orders Processed and Data Delivered
- Top 10 Products Delivered



### The EUMETSAT Data Centre → Orders Processed and Data Delivered

The chart here shows the orders processed monthly by the Data Centre and the resulting volumes of data delivered to the users, in the 12 months leading up to the end of the half-yearly reporting period. All types of orders (regular, bulk and standing) are included in the statistics. In the case of the latter, each day and each repeat cycle is counted as an order by the system.

There can be significant variation in the amount of data delivered per order, which thus gives rise to only a loose correlation between the numbers of orders processed in a month and the total volume of data delivered.

Events Which Influenced Deliveries: None significant.





## The EUMETSAT Data Centre → Top 10 Products Delivered in 2009/H2

The relative quantities of the 10 mostdelivered products in the second half of 2009 are shown by the chart here. The relative amount of the remaining products delivered is also shown for comparison.

The chart includes all products delivered in response to all types of order (regular, bulk and standing).

See the next slide for the Top 10 Products delivered in the first half of 2010.





# The EUMETSAT Data Centre → Top 10 Products Delivered in 2010/H1

Similar to that on the previous slide, this chart shows the relative quantities of the 10 most-delivered products in the first half of 2010.

Note that, unless otherwise indicated (by 'Level 1.0'), all categories of image data shown imply rectified (i.e. geolocated and radiometrically preprocessed) Level 1.5 data.





# **User Support Service**

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

The contents of this section have also been reorganised and now include 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
- Breakdown of user interactions by category
- Distribution of EUMETCast Users Worldwide
- EUMETCast Growth Over the Years



User Support Service → User interaction History



User Transactions in the Half-Year Ending the Month Shown



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 second generation satellite) 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 2103 interactions were handled.

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# User Support Service → User interactions 2010/H1 by Country of Origin





# User Support Service $\rightarrow$ User interactions 2010/H1 by Category

The chart shows the numbers of interactions in the first half of 2010 in terms of the main categories of Enquiries (3 different types), Registrations and 'Compliments, Problems and Enhancement Requests'.

The number of interactions for the halfyear totalled 2103.





# User Support Service → EUMETCast Users Worldwide as of June 2010





# User Support Service → EUMETCast Growth Over the Years

A suitable method of showing the growth of the EUMETCast community is by means of charting 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 (a solution to MSG-1's HRIT failure), and was extended to provide Metop and Jason-2 data in more recent years.

Over time, products of partner organisations such as NOAA and DWD have been added to the system. The significant increase in stations in the first half of 2010 is largely a result of the migration of the community of users of Météo-France's RETIM system to EUMETCast.



(Figure given for 2010 is the number of stations as of 30-June-2010)



# **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
12 January	Metop/NOAA Regional Data	Distribution of EARS-ASCAT L2 wind products in BUFR edition 4 format by KNMI commenced.
19 January	DevCoCast Products	EUMETCast dissemination of new Level 3 MODIS and MERIS Ocean Colour products from PML (Plymouth Marine Laboratory) commenced, covering Ghana and Mauritania
2 February	SAF Products	All existing OSI SAF products moved to the SAF-Global channel on EUMETCast
11 February	Metop/NOAA Regional Data	EUMETCast and GTS dissemination of ATOVS products from the Moscow HRPT station commenced
9 March	Metop/NOAA Regional Data	EUMETCast and GTS dissemination of Metop-A ATOVS products from Svalbard FDES commenced.
16 March	Metop/NOAA Regional Data	EUMETCast dissemination of Metop-A AVHRR products commenced from HRPT stations in Maspalomas, Lannion and Athens

Section continued on next slide...



# Changes to EUMETSAT's Services (continued)

Date	Service / Product(s)	Description
18 March	ASCAT Products	Existing ASCAT Level 2 Surface Soil Moisture (SOMO) products moved to the new EPS-Africa channel on EUMETCast
18 March	ATOVS Products	Existing ATOVS Level 2 Sounding products (Metop and NOAA) moved to the new EPS-Global channel on EUMETCast
30 March		EUMETCast dissemination of 3 new products from INPE (Brazilian National Institute for Space Research) commenced: NDV (Vegetation Index, 15-day composite), NVI (Vegetation Index, 30-day composite) and RFS (Rainfall Satellite Image)
	DevCoCast Products	EUMETCast dissemination of 4 new products from INTA commenced: Fire Risk, NOAA Vegetation Index Anomalies, NOAA AVHRR Evapotranspiration and NOAA AVHRR Vegetation Index
		EUMETCast dissemination of a new product from VITO commenced: Spot-VGT NDVI (Vegetation Index)

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# Changes to EUMETSAT's Services (continued)

Date	Service / Product(s)	Description
	EUMETCast Support for Partner Organisation	EUMETCast dissemination of RETIM data and products for Météo-France (French National Meteorological Service) commenced.
31 March	DevCoCast Products	EUMETCast dissemination of a further new product from INPE commenced: CHC (CBERS CCD and HRC Composite)
	MODIS Products	EUMETCast dissemination of 2 new products from NOAA commenced: MOD02 (Aqua Level 1B radiances) and MOD03 (Geolocation data)
8 April	SAF Products	EUMETCast dissemination of a new product from the OSI (Ocean & Sea Ice) SAF commenced: Low Resolution Sea Ice Drift (North Hemisphere)
14 April	Metop/NOAA Regional Data	EUMETCast dissemination of AVHRR products from the Moscow HRPT station commenced
29 April SAF Products		EUMETCast dissemination of a new product from the LSA (Land Surface Analysis ) SAF commenced: FRPGRID (Fire Radiative Power - GRID)

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# Changes to EUMETSAT's Services (continued)

Date	Service / Product(s)	Description
11 Mov	TAMSAT (Tropical Applications of Meteorology using Satellite Data) Products	EUMETCast dissemination of a new product from the University of Reading commenced: RFE (Rainfall Estimate)
Ттиау	DevCoCast Products	EUMETCast dissemination of a new product from INPE (Brazilian National Institute for Space Research) commenced: CHC (CBERS CCD and HRC Composite)
8 June	Meteosat Meteorological Products	EUMETCast dissemination frequency for the MSG CTH (Cloud Top Height) product increased from 3-hourly to every hour
21 June DevCoCast Products		EUMETCast dissemination of 2 new products for South America commenced: NDWI (Normalised Difference Water Index) and DMP (Dry Matter Productivity)
23 June Metop/NOAA Regional Data		EUMETCast dissemination of AVHRR products from Svalbard FDES commenced.

Note that details of all products can be found in EUMETSAT's Product Navigator, accessible via www.eumetsat.int



# 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.



## **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'.



## **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.

## **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'.

## **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'	AII	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).



## **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°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 solar particles, possibly resulting in a switch-off of an electronic system.