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STATUS OF THE METEOSAT SYSTEM

This Working Paper reports on the more recent operations and changes affecting the system of Meteosat satellites.

The main operations and changes concern:

- Relocation of Met-8 from 3.4°W to 9.5°E in April 08;
- Effective Radiance becoming operational for the MSG Level 1.5 image product on 5 and 6 May 08;
- Start of Met-8 Rapid Scanning Service on 13 May 2008;
- Met-9 Safe Mode on 13-5-08
- Long term planning for the EUMETSAT geostationary satellites

More detailed information is provided by EUMETSAT to CGMS Members on a regular basis via its half-yearly (from 2006) Operations Reports.

CGMS Members are invited to take note.

Status of the Meteosat System

1 INTRODUCTION

This paper summarises the status of more recent operations, services performance and the status of the of EUMETSAT Geostationary satellite systems to July 2008. CGMS Members will recall that more detailed information, and covering the whole year, is provided by EUMETSAT to CGMS Members on a regular basis via the half yearly Operations Reports.

2 OPERATIONS STATUS

2.1 Overview

During the period to July 08 the operations of the MTP system have been smooth, including the spring eclipse season during which both Met-6 and Met-7 have shown a fully nominal behaviour.

On the MSG system there have been several changes in service and events, with the main one being the start of Met-8 RSS on 13 May 2008 and the new MSG Level 1.5 image product radiance definition going operational both on Met-8 and Met-9 in early May 08.

For both Met-9 and Met-8 the spring eclipse season was crossed without any major issue. This includes the Met-8 thermal behaviour that was under special observation after the second event on 1-2-08 of Incident #27 (Unexpected Orbit Change). The Met-8 thermal subsystem has confirmed its ability to properly control the satellite temperatures also in eclipse although some minor local effects have confirmed that the satellite periphery is damaged in the radial thrusters areas.

GERB on Met-9 (GERB on Met-8 is normally left in Safe mode) was operated just for few hours after the eclipse exit during the sun avoidance season due to its repeated glitches on the de-spin mirror mechanism that could have led to the loss of several detectors due to direct sun illumination if the instrument was used more extensively.

The Met-8 relocation from 3.4°W to 9.5°E was started on 2-4-08 and the satellite was successfully stopped in position on 28 April 2008.

Meteosat-8 RSS Trial dissemination (access limited to Member State NMS and registered manufacturers) of the High Rate SEVIRI Image Data was started on 6 May 2008 and the Met-8 RSS operational service for High Rate SEVIRI Image data was started on 13 May 2008 (the RSS Meteorological Product service will commence at a later date in 2008).

Regarding the MSG Level 1.5 Radiance Definition Change, an additional period of parallel dissemination (i.e. Meteosat-9 Level 1.5 images with the “old” – spectral – radiance definition and Meteosat-9 Level 1.5 images with the “new” – effective – radiance definition) was started on 29 April 2008 and finished on 5 May 2008. The

access to this parallel stream was provided to all Member State NMS, registered manufacturers and to other users upon request.

The effective radiance definition became operational on Meteosat-9 on 5 May 2008 and on Met-8 on 6 May 2008, respectively.

The following outages were observed on the period between February and July 08:

- On 20 May 08, due to a hardware problem on the IMPF, the MSG-2 operational IMPF was interrupted resulting in an outage of about 1.5 hours. After recovery and very likely still related to the previous outage, there was another 2 repeat cycle outage on the same day.
- On 2 July 2008, between 08:30 to 11:00 UTC, the Meteosat-7/-6 IODC services were unavailable due to an anomaly on the communication switches. During the outage period all services, including the DCP service, were interrupted. The imaging and DCP services resumed at 11.00 UTC, followed by the meteorological product service at 13.00 UTC.

Met-9 Safe Mode on 13-5-08

On 13 May 08 at 21:06UTC Met-9 experienced its first safe mode transition since launch. The main onboard computer switched to its redundant unit. In the same reconfiguration all other subsystems controlling the satellite vital functions switched to their redundant units and the payload switched off. During the same night all operational services at 0° (with the exception of LRIT due to a limitation of Met-8) were swapped to Meteosat-8 and the total service outage was less than 4 hours. As a consequence Rapid Scanning Service was interrupted

After anomaly investigation the conclusion was reached with the support of Thales Alenia Space that the event was likely to be caused by a bit flipping in the memory that is used to control the status of the main on board computer. The main facts leading to this conclusion were that no other signs of abnormal behaviour were detected before the reconfiguration and that the sign of such a bit flip were contained in the Buffer of Anomalies stored on board and retrievable from ground. In addition, neither EUMETSAT nor Thales Alenia Space identified any risk that would prevent the recovery to start.

Based on the above considerations, the recovery procedures for Meteosat-9 started in the morning of 15 May 2008 and SEVIRI resumed imaging in the morning of 16 May 2008 and parallel dissemination of Meteosat-9 High Rate SEVIRI image data for Member/Cooperating State NMS was provided between Friday 16 May 2008 and Monday 19 May 2008.

The mission swap from Meteosat-8 back to Meteosat-9 took place at 10.00 UTC on Monday 19 May 2008 and the Rapid Scanning Service with Met-8 took place at around 14:00 UTC on Monday 19 May 2008.

The investigation on the root cause has confirmed the initial conclusion that is a Single Event on one of the electronic components in the interface between the main on board computer and the module that monitors the health of the main computer itself. An Incident Review Board (Incident #32) has been established to manage the investigation and define corrective actions. Focus is given to identify any operational change that may reduce the probability of re-occurrence and also to optimise the recovery procedure to be faster without compromising the safety of the recovery.

3 SYSTEM STATUS

3.1 Space Segments

3.1.1 Meteosat-9

The satellite was launched on 21 December 2005.

Meteosat-9 is on station at 0° and provides all 0° services.

At the end of July 2008 it is estimated that 144.84 kg of fuel are available. At least 29 kg of fuel need to be reserved for re-orbiting at end of life. Assuming that only an additional longitude relocation is performed, the last orbit inclination manoeuvre is estimated to take place in 2014. The satellite will then finish its inclination controlled lifetime in 2015. Assuming that the other vital functions are still working as specified, it is estimated that the fuel currently available should allow nominal longitude and attitude control till beyond the year 2019.

It should be noted that the fuel availability is just one element affecting the satellite lifetime, but not the only one. In this respect the Secretariat has undertaken to perform availability analyses to determine the planned launch dates of MSG-3/4, based on the mission availability targets agreed with Delegates. Among other factors, these analyses take into account the fuel budget lifetime, the failures experienced on board and the satellite reliability models. An update of the analyses will be made available to the autumn session of STG this year.

The spacecraft is in imaging mode, fully configured including DCP and Search & Rescue transponder and no changes to the on board configuration have occurred during the reporting period. An anomaly occurred on 13 May 08 leading Met-9 in Safe Mode, as described in the above paragraph. However, the anomaly was of a transient nature and the full satellite functionality was recovered without issues.

3.1.2 Meteosat-8

The satellite was launched on 28 August 2002.

Meteosat-8 is located at 9.5°E and it is the backup spacecraft for the 0° services. In addition, from 13 May 2008 onwards, Met-8 supports RSS.

At the end of July 2008 it is estimated that 92.19 kg of fuel are available. At least 29 kg of fuel need to be reserved for re-orbiting at end of life. Assuming that no additional longitude relocations are performed, the last orbit inclination manoeuvre is estimated to take place in 2010. The satellite will then finish its inclination controlled lifetime in 2011. Assuming that the other vital functions are still working as specified, it is estimated that the fuel currently available should allow nominal longitude and attitude control till beyond the year 2015.

The spacecraft is in imaging mode, but without DCP and Search & Rescue (this last could be switched on in the near future following a request from COSPAS-SARSAT). No changes to the on board configuration have occurred during the reporting period. A second event of the Incident #27 occurred on 1 Feb 08 as described here below.

2nd Unexpected Orbit Change Event on 1-2-08

As mentioned above, a new event quite similar to the one on 22-5-07 (subject of Incident #27) was observed on Friday 1/2/08 at about 0405 UTC. Again, Meteosat-8 experienced an orbit change which was not the result of a commanded manoeuvre. This orbit change event, similarly to the one on 22-5-07, included a decrease in spin rate, some nutation, and a temperature change on the R3/R4 thrusters and fuel lines.

As said above, this event has very similar characteristics to that which occurred on 22/5/07 with the main differences being that a different thruster pair seems to be involved, no drop in Solar Array power has occurred, and a different thermal behaviour is observed.

After the incident of May last year, extensive investigation took place with Thales Alenia Space (TAS) and ESA/ESTEC to determine the most likely cause of the event. The outcome of this analysis was that the most likely cause was a collision, with either a micro-meteorite or some space debris. However, the occurrence of a second, very similar event puts this conclusion in doubt. It now seems that this event somehow may be connected to the first one and may put in question the initial conclusions.

In cooperation with TAS and ESA/ESTEC, a course of action has been developed. It aims at establishing the current status of the on-board propulsion system and thermal control, and, in parallel, the possible root cause of these events.

As a result of recent testing, it appears that the redundant thruster pair R2/R4 (i.e. the pair that is in use for the standard East West station keeping manoeuvres) is functional and , following a routine East-West station Keeping manoeuvre, it can now be confirmed that also the performance of the thruster pair is as expected.

On the thermal control side, the several contingency measures were prepared to cope with potential new thermal gradients and to avoid impacts on the fuel lines and thrusters in case of low temperatures. However, the eclipse season has passed without any thermal issue and the thermal control subsystem appears able to adequately protect the satellite also during eclipse.

After the event on 1-2-08 the Meteosat-8 satellite has developed a spurious attitude disturbance (i.e. wobble) that affects the geometric quality of the rectified images. Two solutions for this issue are intensively investigated, one at satellite level (e.g. modify the thermal control) and one at ground segment level (i.e. introduce a correction in the image processing chain). To correct the thermal configuration imbalances caused by the event on 1-2-08, a new thermal configuration has been commanded on board Met-8. This new thermal configuration is still under careful evaluation in terms of stability and as the solar input varies with the season, however, the first result is very encouraging as the wobble seems removed and the image processing accuracy is now restored within specification.

Due to the positive evolution of the above issues, no impact on either the actual start date of the RSS or on the quality of the RSS images could be identified. In more

general terms, it has been discussed in the frame of the Incident Review Board with TAS and ESA/ESTEC and in view of the on going investigation related with the incident whether the relocation of Meteosat-8 satellite to 9.5° East could take place as planned. At the Incident Review Board (IRB) meeting on 12th March the following was noted: ".....EUMETSAT requested the assessment of Thales Alenia Space and ESA on the safety of this move, in view of the IRB incident considerations. Both ESA and Thales Alenia Space noted they saw no problems with proceeding with the EUMETSAT stated intention to re-locate Met-8 to 9.5° East." The relocation was successfully performed from 2-4-08 till 28-4-08 and the RSS with Met-8 has become operational on 13-5-08 as planned.

On the root cause analysis, the theory of the collision with an external object has now been discarded by the review board due to its very low probability and other causes are under investigation. Only two root causes are still under investigation by the IRB and they are:
- a spontaneous mass release from the satellite,
- an uncontrolled combustion due to a slow leakage in the propulsion system,

The spontaneous mass release hypothesis is actively investigated by reviewing all qualification tests, design documents and scrutinising the mounting details and materials (with respect to their usage in space and under the spin force) with the available spare hardware in Thales Alenia Space.

The hypothesis of uncontrolled combustion has been already partly analysed by the IRB, however, an expert from the University Of Munich has started to support the IRB in June to better analyse and possibly test the credibility of an uncontrolled combustion of the two propellant types used in MSG.

As it appears very unlikely that any operational change may reduce the probability of re-occurrence on the flying satellites (i.e. on Met-8 and Met-9) the focus of the investigation is now changing and aims at defining which corrective actions could be implemented on MSG3 and 4 before they are launched.

After a few on-board anomalies suffered by Met-8 and in particular after the two events of Incident #27, the probability to successfully re-orbit Met-8 as a function of its in orbit time is monitored by EUMETSAT, ESA and Thales Alenia Space. A recent assessment has shown that the probability to successfully re-orbit the satellite is still above 90% (that is the target recommended by a space debris mitigation group) at least till late 2011.

MDU chain error anomaly

The MDU chain error anomaly is an intermittent anomaly in SEVIRI that affects channels 9.7, 12.0 and 13.4 and its impact is that, when the anomaly occurs, the same image line is repeated twice in the image as SEVIRI. The investigation with Thales Alenia Space and ESA to find the root cause is on going. Although the impact of the anomaly is currently minor, there is a concern about its potential evolution as an increasing trend in the occurrence frequency is noticeable. In this respect, after a test performed in March 08 before the Met-8 relocation for RSS, it has been observed that there were no errors with the redundant MDU and that, even after swapping back

to the nominal MDU, the frequency of errors was drastically reduced. This result is under investigation and may help to find the root cause of the anomaly and to define a repair (if any) for the models on ground.

3.1.3 Meteosat-7

The satellite was launched on 2 September 1997.

Met-7 is providing the 57°E Operational Service from 5 Dec 06.

At the end of July 2008 it is estimated that 8.09 kg of fuel are available. At least 3.9 kg of fuel are reserved for re-orbiting at end of life. Due to the limited amount of fuel left no orbit inclination manoeuvres can be performed. Assuming that the other vital functions are still working as specified, it is estimated that the fuel currently available should allow nominal longitude and attitude control till well beyond the year 2013.

The spacecraft configuration remained stable. There has been no evolution of the spacecraft anomaly affecting the MST telecommand and ranging (i.e. no MST ranging is possible and only one MST receiver can lock on the carrier with marginal performance while the other receiver cannot lock at all). All possible measures are already in place to limit the operational risks due to this anomaly.

3.1.4 Meteosat-6

The satellite was launched on 20 November 1993.

Meteosat-6 is located at 67.5°E and it is now used for IODC DCP acquisition. It also provides an imaging backup function to Met-7. Typically once per week the satellite is used to acquire few images for proper maintenance of the scan mechanism on board.

At the end of July 2008 it is estimated that 4.28 kg of fuel are available. At least 3.9 kg of fuel are reserved for re-orbiting at end of life. Due to the limited amount of fuel left no orbit inclination manoeuvres can be performed. Assuming that the other vital functions are still working as specified, it is estimated that the fuel currently available should allow nominal longitude and attitude control till early 2011.

The spacecraft configuration status remained stable. No significant spacecraft anomalies occurred on Meteosat-6 during this reporting period.

3.2 Ground Segments

3.2.1 MSG Ground Segment

The availability of the MSG ground segment has been nominal for the reporting period.

MSG Control Centre: The upgrade of the MSG Central Facility (CF) from Windows NT to Windows 2003 is now completed for all environments.

The IMPF has been successfully modified to implement the new – effective - radiance definition of the MSG Level 1.5 Image Product. Operational use of the effective radiance definition started beginning of May 08 for both Met-8 and Met-9.

Primary & Backup Ground Stations: Routine operations at the Primary Ground Station (PGS) in Usingen, Germany include the weekly activation of the Backup Satellite Control Centre (BSCC). TTC and Ranging alternate between Met-8 and Met-9 the PGS and the Back-up & Ranging Ground Station (BRGS) in Maspalomas.

The **Secondary Backup Ground Station** (SBGS) located in Cheia is activated routinely to support Met-8 and 9.

The **Meteorological Product Extraction Facility** generated products over 0^{o} with Meteosat-9, except during the period in May 2008 where Meteosat-9 went into safe-mode. During this period products generated using Meteosat-8 imagery were distributed to the user community.

During the reporting period the following algorithms have been updated:

The Cloud Detection (SCE) and the Global Instability Index have been updated due to the implementation of the new MSG L1.5 Radiance Definition. This version became operational on 5 May 2008.

The RII product was made operational in the MPEF on 9 April 2008. The trial dissemination on EUMETCast to the NMS's started on 21 May 2008. The product has not been made fully operational yet due to a dissemination problem on the terrestrial line.

The ASR product was made operational in the MPEF on 9 April 2008. The trial dissemination on EUMETCast to the NMS's started on 21 May 2008 and became fully operational on 26 June 2008. The ASR product is disseminated via the GTS and EUMETCast

The Cloud Detection (SCE) has been updated on 9 April 2008. Pixels in the Sunglint Area were originally marked as "unidentified" when the VIS tests failed. Now these pixels are analysed via the "IR-Only" detection algorithm.

The area for which the Regional Instability Index is generated has been moved on 6 March 2008 from Southern Africa to Europe.

In January 2008 new SUN hardware has been received and the porting of the software to the new SUN servers has started.

The **Meteorological Product Extraction Facility** intends to generate the following products over 9.5° East with Meteosat-8 Rapid Scan Service:

Atmospheric Motion Vector (AMV) Product every 20 minutes
Clear Sky Radiance (CSR) Product every 15 minutes
Global Instability Index (GII) Product every 5 minutes
Multi-Sensor Precipitation Estimate (MPE) Product every 5 minutes
Active Fire Monitoring (FIR) Product every 5 minutes

The GII product shall be generated as a segmented product but on a 3x3 pixel basis. This implicitly covers the Request from 23rd STG-OPSWG to investigate the ways how to achieve a 3x3 pixel RII product, as now the users shall receive a Meteosat-9 pixel based RII product on a limited area and a Meteosat-8 3x3 pixel segmented product over Europe. However, due to the increased CPU load, and the limited CPU resources the following restrictions had to be put in place for the time until MPEF operations has moved to the new hardware:

The product generation area has been limited, and starts just South of Spain, at about 34 Degree latitude.
The AMV Product generation for the WV channels (7.3 and 6.2 µm) and the HRV channel has been stopped.

The trial dissemination of the RSS meteorological products started on 29 July 2008

3.2.2 MTP Ground Segment

The availability of the MTP ground segment has been nominal for the reporting period.

MTP Control Centre: Operations have been nominal for the reporting period.

Communication Links: The terrestrial E1 link is used as prime link for all traffic between Darmstadt and Fucino. Operations have been nominal for the reporting period.

Primary & Backup Ground Stations: Routine weekly activation of the Backup Ground Station (BGS) in Cheia, Romania and the Backup Satellite Control Centre (BSCC) in Fucino, Italy continues. The BGS also continues to routinely support the monthly ranging campaigns for Meteosat-6.

In May 2008, the routine half-yearly activation of the **Backup Mission Control Centre** (BMCC) in Fucino was performed successfully.

The **Meteorological Product Extraction Facility** for the IODC service used Meteosat-7 at 57° E as the operational source of image data.

No significant change to the product generation for MTP has taken place.

The generation of Meteosat Surface Albedo products within the reprocessing project has continued. The following datasets have up to now been archived in BUFR Format.

Spacecraft	Service	Period	Completion
Meteosat-7	0^0 Service	1998-2006	100 %
Meteosat-6	0^0 Service	1997-1998	100 %
Meteosat-5	0^0 Service	1994-1997	100 %
Meteosat-4	0^0 Service	1989-1994	100 %
Meteosat-3	0^0 Service	1988-1989	100 %
Meteosat-2	0^0 Service	1981-1988	50 %
Meteosat-5	IODC Service	1998-2006	0 %
Meteosat-3	ADC Service	1991-1993	0 %
Meteosat-3	XADC Service	1993-1995	0 %

The following implementation and validation activities are being performed:

The Cloud Detection Algorithm based on the MSG Scene detection algorithm has been implemented. Status: Impact on vicarious calibration verified, Impact on AMV outstanding.
The Multi-Sensor Precipitation Estimate (MPE) product generation has been implemented and validated.
The impact of using different sets of input data (e.g. ERA-40, ERA-15, Analysis) is being assessed. The impact on vicarious calibration in the present system is negligible.

4 SERVICES PERFORMANCE

The following paragraphs report the salient points for each Meteosat service. CGMS Members will recall that more detailed information, and covering the whole year, is provided by EUMETSAT to CGMS Members on a regular basis via the half yearly Operations Reports

4.1 0° Met-9 Service Performance

The 0° operational services continued nominally throughout the reporting period.

The Mission Swap from Meteosat-9 to Meteosat-8 and back in May had only a minor effect on the service performance comparable to the usually occurring losses.

Dissemination interruptions or delays on EUMETCast affecting more than one repeat cycle occurred in February, March and June. For the details on the problems see section 3.4. The IMPF caused interruptions in May and June. DADF related problems and maintenance affected the dissemination in July.

At end of June 2008 there are 943 DCPs allocated and 547 of them are active. The number of registered DCPs dropped due to removal of unused DCPs. The acquisition and dissemination of 0° DCP was carried out by Meteosat-9 and it was nominal during the reporting period.

4.2 IODC Service Performance

The IODC service performance was nominal for the reporting period apart from one incident in July. The ground communications problem recorded in the Incident Report #30 affected the IODC service (image, product generation and DCP dissemination) for a duration of 3 hours.

The IODC DCP acquisition and dissemination service over the Indian Ocean was carried out by Met-6. It is planned to continue the IODC DCP acquisition and dissemination with Met-6 to ensure availability also during the eclipse crossing.

In July 2008 there are 41 DCPs allocated and 36 of them are active. The acquisition and dissemination of IODC DCPs was nominal during the reporting period.

4.3 EUMETCast Performance

For the Ku-Band service
Despite the problems described below, during the reporting period the EUMETCast KU-Band service provided very good performance that remained in general between 99.9% and 100%.

The EUMETCast uplink server software was updated in February, correcting the channel degradation problem which occasionally caused delays and interruptions on one or more multicast channels.

In the uplink facility a power related problem caused a 1 hour interruption in February, maintenance activities a 45 min interruption in March. Other short interruptions were related to bad weather at the uplink site.

Occasional hardware failures in the uplink chain were immediately corrected by an automatic swap to the redundant equipment, mostly without any impact. In one case however occurring in July, configuration information necessary for the C-band turnarounds was missing in the KU band uplink stream after the switchover. Manual interaction restored the nominal configuration and the C-band services after one hour.

For C-band Africa,

The C-Band Africa turnaround continued to perform excellently in the 99.9 to 100% range, except for two interruptions. One was caused by the Ku band uplink (see above). A second interruption beginning of June was also triggered by a Ku band uplink interruption due to a thunderstorm over the uplink station. An equipment failure at the turnaround site occurred simultaneously, but the investigation was initially focussed on Ku band, such that the recovery of the C-band service took several hours.

For C-band Americas,
The C-Band Americas turnaround continued to perform excellently in the 99.9 to 100% range, except for the outage caused by the missing Ku band configuration information (see above).

4.4 EUMETSAT ATOVS Retransmission Service Performance

During this period EARS-ATOVS provided good operational service with high availability.
The significant outages during the period were:

11/04/2008 till 14/04/2008 at Svalbard due to Tromsoe link failure

29/04/2008 till 02/05/2008 Gander suffered a station outage

29/04/2008 till 04/05/2008 Monterey suffered a station outage

15/05/2008 till 30/05/2008 Gander suffered a station outage due to damaged antenna.

On 14 February 2008 NOAA 17 spacecraft suffered an HRPT anomaly meaning there were no HRPT transmissions. Shortly after HRPT transmissions were resumed, but on a new frequency. On 26 FebruaryN17/N18 changed their transmission frequencies. The anomaly and changes required that the HRPT stations had retune to the new frequencies.

4.5 Unified Archive and Retrieval Service Performance

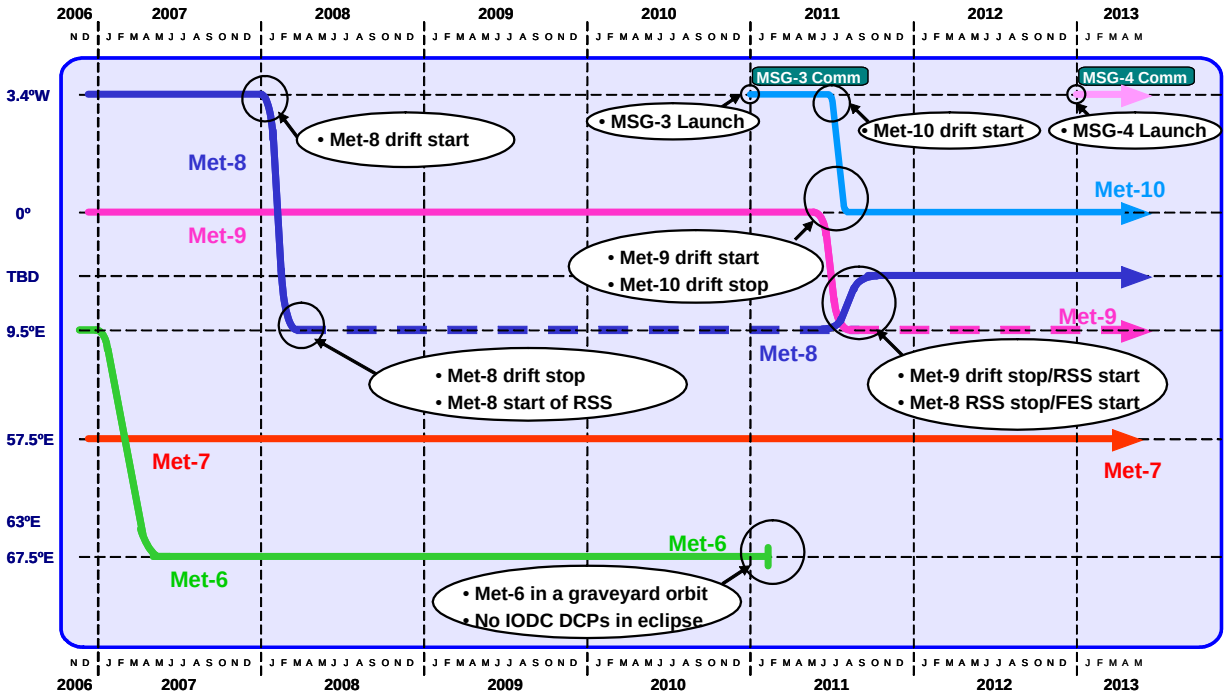
A brief summary of the most interesting operational figures are that the U-MARF archives between 180 to 240 Giga-Bytes of data per day depending on the configuration of the satellites. There are currently over 1,973 registered users (previous reported figure was 1,600) increasing on average of 60 users per month. Over the last months, the monthly retrieval average has increased to 32 Tera-Bytes (from 28 Tera-Bytes in the last report). The increase is accounted for by the increase in the number of registered users. Based on the current planned activities and enhancements, we expect this figure to increase substantially in the future.

4.6 User Helpdesk

The EUMETSAT User Helpdesk responded to a total of 1614 requests from the user community during the reporting period January to June 2008, of which approximately 80% were from Member and Cooperating state countries.

5 LONG TERM PLANNING FOR THE GEOSTATIONARY SATELLITES

The following figure shows the long term planning for the EUMETSAT geostationary satellites.



The operational scenario of the above figure is built on the following main facts and assumptions:

a. Met-6 needs to be re-orbited early in 2011 as, by that time, the fuel level will reach the minimum threshold for a safe re-orbiting as per the space debris mitigation rules;

b. It is assumed that Met-7 operations are extended at least till end of 2013. This is pending approval by the Delegate Bodies in 2010;

c. Met-8 is at 9.5°E and provides Rapid Scanning Service till end of MSG-3 commissioning in July 2011;

d. It is assumed that, after successful commissioning of MSG-3 (Meteosat-10), Meteosat-9 takes over RSS from Meteosat-8 in July 2011.

6 PROJECTS

6.1 EARS Continuation and Extension Project

In December 2004, the EUMETSAT Council decided to continue and extend the existing EARS service for a period of four years. In addition to continuation of the

ATOVS Retransmission Service, two new services will be added: the pilot ASCAT Retransmission Service and the pilot AVHRR Retransmission Service. In addition to the support of the current NOAA KLM satellites, the continuation of EARS will also support the NOAA N and N' and Metop satellites.
The purpose of the project is to develop and commission the new additions to the service.

The upgrades of the HRPT stations for reception of Metop-A HRPT transmissions have been completed at INTA, DMI, CMS, KSAT, HNMS and NOAA. Metop-A products via EARS are currently not available due to the 4 July failure of Metop-A HRPT.

EARS-AVHRR trial service continues to disseminate AVHRR segment files from Svalbard, Lannion, Maspalomas and Gander HRPT stations via EUMETCast-Europe (Ku-band). The EARS-AVHRR data consist of one-minute segments of NOAA17 and NOAA18 satellite data received at these EARS HRPT stations.

The upgraded Internet bandwidth at Greenland has failed to provide the required network performance to support timely AVHRR data transfers. To resolve this issue EUMETSAT has proposed a new network configuration utilising a higher priority TeleGreenland VPN service and Equant IP-VPN network connection to be established in Copenhagen. Technical and contractual issues are currently being discussed.

The new station at Athens is expected to be included the EARS-AVHRR service once station validation testing has been completed (late August 2008).

Dissemination of ERS-SCAT value-added Wind Product via EUMETCast continues to operate normal providing these data to users and also as a demonstration of the EARS ASCAT Pilot service.

Due to the non-availability of Metop-A HRPT the EARS system has been configured to use the X-band dump at the EPS CDA with the objective of establishing a Metop-A European regional data service with timeliness similar of the originally planned EARS services. The X-band dump is provided to EARS Svalbard receiver system. The data is then transferred to EUMETSAT for level 1 processing and further to KNMI for level 2 processing. The EUMETSAT and KNMI processors are currently receiving and processing data and the products are being validated with the first indications being very positive. Once validation has been completed and contractual issues with KSAT for support of this service have been finalised, then EARS-ASCAT data will be disseminated to users.

The above approach will be extended for Metop-A ATOVS, AVHRR and potentially IASI.

6.2 MSG Rapid Scanning Service Project

A Meteosat-8 RSS Trial dissemination (access limited to Member State NMS and registered manufacturers) of the High Rate SEVIRI Image Data was started on 6 May 2008 and the Met-8 RSS operational service for High Rate SEVIRI Image data was

started on 13 May 2008. A trial dissemination of the RSS meteorological products started on 29 July 08.

6.3 GEONETCast Project

In the GEONETCast project, the main activity has been the setting up of the data exchange with CMA in Beijing, and the start of the dissemination of some of the exchanged data.

A list of products to be exchanged has been developed in bilateral discussions with CMA - and a technical design for the exchange mechanism agreed. The data exchange itself has been running since mid-March, with the test dissemination of the CMA datastream and products on EUMETCast starting in April.

Discussions regarding the dissemination of EUMETSAT products on CMA's dissemination system, called FENGYUNCast, have started with CMA, with agreement being reached on the system set up required. Dissemination is due to start in the second half of 2008.

NOAA have set up GEONETCast Americas and procured a service from a USA service provider. They have a C-band footprint covering north, central and south America similar to the EUMETCast Americas footprint. The capacity of GEONETCast Americas is 2 Mbps.

Work on a generic scheme for data exchange between EUMETCast and GEONETCast Americas is in progress.

6.4 Earth Observation Portal Project

The purpose of this project is:

- To implement a central service point to provide EUMETSAT users a single point of online access to all EUMETSAT data and dissemination services.
- To expand the above to allow EUMETSAT users to discover, search, order/subscribe earth observation data from partner agencies, in particular CNES Altimetry products, NOAA data, ECMWF data, GMES and others as relevant;
- To allow partner agencies to discover, search, order and subscribe to EUMETSAT data and dissemination services via a set of programmatic, interoperable services.

The essential requirements have been agreed and an interoperable prototype, in the frame of the ESA Heterogeneous Mission Access (HMA) project was successfully implemented.

A technology study has now been completed. It has evaluated available solutions ready to be used or customise in order to implement the system. The outcome of this study has been used to select the tools to use and to design the system architecture.

A metadata mapping to the ISO 1995-2 standard has been performed. The mapping has been done to ensure full compliance with the INSPIRE (EC) regulations.

The preliminary design review was successfully performed in May 2008 and permission to carry on with the implementation was given.

The first milestone of the project is the collections discovery service, which is expected to go operational in September 2008. This will replace the Product Navigator and will incorporate all EUMETSAT collections descriptions, with the metadata being ISO 19115-2 compliant.

A name for the portal is being selected.

6.5 Establishment of a Reprocessing Environment Project

The project has initiated the creation of a requirements document. This document shall gather all the essential requirements for the project. It is expected that this document shall be completed in the Autumn 08.

Otherwise the project is providing support to the on-going reprocessing activities. The MTP MPEF reprocessing server has been procured. The new software framework that provides support to the MTP MPEF algorithms is in the final stages of development and is being tested on the reprocessing server. The next stage will be the porting of the algorithms to the new platform and their integration into the framework.

The MSG IMPF reprocessing server has been procured. The server is currently undergoing installation in the headquarters building. The necessary improvements to the MSG IMPF software such that it can take advantage of this more powerful server are under investigation. It is expected that these changes will be implemented through the maintenance contractor as part of an engineering change to the baseline IMPF software. The system will be used to reprocess the UMARF archive of level 1.5 images from spectral to effective radiance.

The EPS reprocessing system is being procured. Currently the reprocessing activities take place on the technical computing environment. It is foreseen to provide the reprocessing activities for EPS instruments with a dedicated IBM platform. The procurement is scheduled for September 08.