

THE TRANSITION OF THE MDD SERVICE FROM FIRST TO SECOND GENERATION METEOSAT

This paper describes arrangements for the transition of the MDD Service from Meteosat-7 to MSG, and highlights the impact upon users wishing to make use of the Service. On the basis of current plans, it has to be recalled that all users wishing to continue making operational use of the MDD Service in the future, will have to have made the transition to MSG **by the end of 2005.**

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1 INTRODUCTION

A primary service supported by the present generation of Meteosat is the Meteorological Data Dissemination (MDD) Service. The main objective of this Service is the dissemination of basic meteorological information to National Meteorological Centres and other meteorological centres of excellence in Africa and surrounding regions. Building on the success of the MDD Service since the early 1990s, it has been agreed that it will continue to be supported by Meteosat Second Generation (MSG). Following the launch of MSG-1 on 28 August 2002, and a period of around 6 months of system commissioning, all operational services supported by this satellite, namely imaging, foreign satellite data relay, relay of DCP messages, MDD, etc. will commence during 2003.

Since new data distribution mechanisms, called Low Rate Information Transmission (LRIT) and High Rate Information Transmission (HRIT) will be used to disseminate information provided by these services from the MSG satellites, it will be necessary for users to procure new MSG data reception stations. However, since all the MDD data, together with a reduced set of MSG imagery, Foreign Satellite Data and DCP messages will be combined within the LRIT broadcast, there will no longer be a requirement for users to have a separate reception facility for MDD.

In order to allow sufficient time for users of the current MDD Service to procure the necessary equipment to receive data from MSG, the Service will continue to be supported by Meteosat-7, from its re-located position at 10°W. It has been agreed by the EUMETSAT Council that, subject to continuing satisfactory performance of the satellite, the operation of Meteosat-7 will continue until at least the end of 2005. This means that there will be a period of parallel operation of the Meteosat-7 and MSG satellites of around three years.

This paper describes arrangements for the transition of the MDD Service from Meteosat-7 to MSG, and highlights the impact upon users wishing to make use of the Service. On the basis of current plans, it has to be recalled that all users wishing to continue making operational use of the MDD Service in the future, will have to have made the transition to MSG **by the end of 2005**.

2 CONTENT OF THE MDD SERVICE

A wide variety of meteorological products, either in the form of WMO coded alphanumeric bulletins, binary data or in T4 coded pictorial format, are disseminated via the MDD Service (see Attachment 1). These products are supplied by several major data processing centres in Europe to three MDD uplink sites in Bracknell, Rome and Toulouse. Thus, there are currently three discrete channels, all operating at 2400 b/sec, used to broadcast information. Bracknell uplinks mainly pictorial and GRID/GRIB coded products, likewise Toulouse, but its broadcast also includes a set of alphanumeric bulletins. Rome broadcasts alphanumeric bulletins and binary data. Currently there are around 103 MDD user stations located in 71 countries.

In line with EUMETSAT Data Policy, the MDD Service is encrypted, and in order to receive MDD data, reception stations have to be fitted with a decryption device called either a Meteosat Key Unit (for first generation Meteosat) or a Station Key Unit (for the MSG LRIT data

reception stations. The MKU and SKU are obtained from EUMETSAT, and whilst MDD data are encrypted, access to the data is free of charge (apart from the initial cost of procuring either the MKU or the SKU). MDD data can only be used by National Meteorological Services (NMS) and other authorised Centres in WMO Member states, for official duty use.

3 THE MDD SERVICE AND WMO

Since the beginning of the MDD Service, WMO has strongly supported the role it plays in bringing valuable meteorological information to the NMS and meteorological centres of excellence in countries within Africa and surrounding regions and which, over the years, may not have always had access to reliable high speed communications. Because of the proven value of the Service in contributing to the World Weather Watch system, the MDD service is considered by WMO as an essential element of both regional and national components of the GTS, in particular, in Regions I, II and VI. Furthermore, for many years MDD has acted as a recognised satellite-based element of the Regional Meteorological Telecommunication Networks (RMTN) of Region I (Africa) and VI (Europe). Regional Association II (Asia) also recently decided to integrate the MDD into the RMTN as an inter-regional component. For some NMS, particularly in Regions I and II, MDD remains the main source of World Weather Watch data and products.

4 TRANSITION OF THE MDD SERVICE FROM METEOSAT-7 to MSG

The MDD data that is currently disseminated via Meteosat-7 will also be disseminated via MSG. However there will be some differences from the user point of view.

As mentioned above, to ease the transition of users from Meteosat-7 to MSG the Meteosat-7 Services will continue until the end of 2005. At the start of MSG routine operations the Meteosat-7 satellite will have to be moved to a new orbital position close to 10°W in order to prevent interference with the MSG Services. Therefore, users who wish to continue to receive the MDD Service from Meteosat-7 will need to re-point their MDD user-station antennas in order to continue reception. Assistance with re-pointing can be obtained from EUMETSAT or equipment manufacturers.

The EUMETSAT User Service is undertaking a number of steps to inform users of these changes. A series of Technical Documents describe the new services in detail. Newsletters and the EUMETSAT Web Site also provide up-to-date information to keep users informed of the changes and their timetables.

5 PRODUCTS DISSEMINATED BY MDD

An overview of products disseminated via the MDD Service can be found in Attachment 1 to this document. This list should be regarded as indicative of the content of the three MDD channels, since at any one time, some products and bulletins are seasonal and others may not have been supplied by the source. Whilst the content of MDD has been relatively stable in recent years, in response to a request from the WMO in April 2000, the ECMWF Council agreed that the range of ECMWF products made available for dissemination via the GTS could be increased and consequently additional ECMWF GRIB-coded products have been distributed via the GTS since May 2001. These products include wind information, temperature and humidity for several standard atmospheric levels and forecast times.

EUMETSAT agreed to include these ECMWF products within the MDD broadcasts, however, whilst the ECMWF products cover the whole globe, it was decided that only data relating to those octants of the globe surrounding the Meteosat sub-satellite point (but including the African continent and surrounding land and ocean regions) were to be included in the MDD Service. The following octants have been selected:

Northern hemisphere products, from 0 to 90 degrees North:

Area A, from 0 to 90 degrees West, Area D, from 0 to 90 degrees East

Southern hemisphere products, from 0 to 90 degrees South:

- Area I, from 0 to 90 degrees West, Area L, from 0 to 90 degrees East

Tropical Belt wind products from 35 degrees North to 35 degrees South:

- Area E, from 0 to 90 degrees West, Area H, from 0 to 90 degrees East

As these products have been distributed for over a year now, EUMETSAT would like to know how many users can, in fact, process the GRIB-coded data, or whether there remains a strong desire for products as T4 pictorial format.

However, it would seem sensible to increase the number of BUFR, GRIB and GRID-coded bulletins on MDD, at the expense of T4 coded products, to make more efficient use of available dissemination bandwidth, since at the present time MDD Channel 2 - Bracknell and MDD Channel 3 - Toulouse, are close to saturation.

Since the new MSG LRUS reception stations will be able to accept, process and display such coded information, it is expected that users will very quickly become familiar with the new charts produced locally by their LRUS workstations. Additionally, some saving in system capacity and, indeed, local resources, might also be possible by presenting, e.g. two half-size charts on one page, if this format is acceptable to forecasters and their customers.

There are, therefore, several proposals under consideration to improve the MDD Service. EUMETSAT is very interested to learn how much use is being made of data provided by this Service, and how it could be improved to meet your requirements.

In the meantime, it has to be recalled that, for the period of parallel Meteosat and MSG operations, *identical data sets* will be broadcast by the Meteosat and MSG supported MDD Services.

6 PROCEDURE TO FOLLOW WHEN REQUESTING MODIFICATION TO THE MDD SERVICE

Based on the above request for information it is clear that there is a need for co-ordination of changes to the MDD product list. It is proposed that this will be done with the assistance of the WMO. In the past an MDD Products Working Group was established to coordinate Service changes requested by users in WMO Region I, but such a Group no longer exists.

Each WMO region has established a Working Group on Planning and Implementation of the WWW, which is entrusted with the coordination of operation and development of the regional WWW components. With respect to satellite-based data distribution systems, the WMO Commission for Basic Systems (CBS) recommended that a co-ordination mechanism, working by correspondence, should be developed to ensure the representation of the user countries in the

review of the programme of transmission of each corresponding satellite distribution system. It is therefore suggested the following mechanism should be established in Regions I, II and VI:

An ad-hoc MDD schedule group be entrusted to compile data and products requirements of the WWW centres receiving MDD in the region, to prepare proposals for changes to the MDD transmission programmes with indications of priorities and to submit the proposals to the chairman of the respective Working Group on Planning and Implementation of the WWW.

The chairman of the Working Group on Planning and Implementation of the WWW will review and submit the proposals for changes to the MDD transmission schedules to a focal point designated by EUMETSAT, through the WMO Secretariat.

The membership of the regional MDD schedule groups would include:

The regional co-ordinator of the Sub-Group on Regional Aspects of Information Systems and Services (GTS and Data Management) (chairman)

Two experts designated by Member countries receiving MDD in the region (preferably one operating an RTH and the other an NMC)

One representative of EUMETSAT

One representative of the WMO Secretariat (Secretary).

The regional MDD schedule groups would work by correspondence (E-mail).

The above mechanism is being established for Region II. With respect to Regions I and VI, requests for changes are currently handled on a case-by-case basis through the WMO Secretariat, with the involvement of the relevant Working Group on Planning and Implementation of the WWW.

**Indicative List of Graphical Products and Bulletins disseminated via
the MDD Service.**

Graphical Products	Source
	EGRR
1.5m Temp T+24/48	
10m Wind & 2m Temp T+00 to 120, in 12 hr steps	ECMF
10M Wind/Surface Temp., T+0/24/48/72	EGRR
12 & 24 Hours Convective Rainfall, T+24/36/48/72	LFPW
12 Hours Ppn. Accumulation + 850 hPa WBPT	EGRR
200 hPa Contours+obs T+00	EDZW
200 hPa Geopotential & Divergence, T+0/24/48/72	LFPW
200 hPa Geopotential & Divergence, T+0/24/48/72/96/120	ECMF
200 hPa Ht./Div. of wind	EGRR
200 hPa Contours T+00/24/48/72	EGRR
200 hPa Winds T+00/24/48/72	ECMF
24 Hours Ppn. Accumulation + 850 hPa WBPT, T+36/48/60	EGRR
300 hPa Contours+obs T+00	EDZW
500 hPa Contours+obs T+00	EDZW
500 hPa Vertical Motion, T+0/24/48/72	EGRR
500 hPa GEOP + TEMP	EGRR
500 hPa Geopotential & Temp., T+0/24/48/72/96/120/144	ECMF
500 hPa Geopotential & Wind, T+0/24/48/72	LFPW
500 hPa, Temperatures, T+0/24/48/72	EGRR
500 hPa Wind, T+0/24/48/72	EGRR
500 hPa Wind, T+0/24/48/72	LFPW
500 hPa Wind, T+0/24/48/72/96/120	ECMF
500hPa Heights, T+0/24/48/72/96/120	ECMF
700 hPa Humidity T+12/24/36/48	LFPW
700 hPa T+00/24/48 Indian Ocean	LFPW
700 hPa Divergence, T+0/24/48/72	EGRR
700 hPa Divergence, T+0/24/48/72/96/120	ECMF
700 hPa Geopotential & Wind, T+0/24/48/72	LFPW
700 hPa Geopotential & Wind, T+0/24/48/72/96/120	ECMF
700 hPa Humidity, T+0/24/48/72	EGRR
700 hPa Vorticity, T+0/24/48/72	EGRR
700 hPa Vorticity, T+0/24/48/72/96/120	ECMF
700 hPa Wind, T+0/24/48/72	LFPW
700 hPa Wind, T+0/24/48/72/96/120	ECMF
700 hPa Wind/Isotherm T+00/24/48/72	LFPW
850 hPa Ht./Temp., T+0/24/48/72	EGRR
850 hPa HT/WIND	EGRR
850 hPa Humidity, T+0/24/48/72	EGRR
850 hPa Vorticity, T+0/24/48/72	EGRR
850 hPa Wind, T+0/24/48/72	LFPW
850 hPa Wind, T+0/24/48/72	EGRR
850 hPa Wind, T+0/24/48/72/96/120	ECMF
850hPa Wind/Isotherm, T+00/24/48/72	LFPW
850hPa Winds, T+00 to 120, in steps of 12 hrs	ECMF
925 hPa Divergence of Wind, T+0/24/48/72	EGRR

925 hPa Divergence, T+0/24/48/72/96/120	ECMF
925 hPa Wind, T+0/24/48/72	LFPW
925 hPa Wind, T+0/24/48/72/96/120	ECMF
ACMAD Climate Forecast	CMAD
ACMAD Climate Summary	CMAD
ACMAD Climate Summary	CMAD
Africa SIG WX	GOOY
Analysed Surface Pressure & fronts	EDZW
Decade climate summary - test	HKNC
Decade cold cloud occurrence	LFPW
Decade thermal field	LFPW
ensemble mean rainfall from 1st month	ECMF
mean temp (per month), Africa, Hadley Centre	EGRR
mean temp anomaly, Africa, Hadley Centre	EGRR
MLSP/Wind, T+12/24/36/48	LFPW
monthly rainfall, % of normal, Africa, Hadley Centre	EGRR
monthly rainfall, Africa, Hadley Centre	EGRR
MSLP & 850 hPa Temp T+0/24/48/72/96/120	ECMF
MSLP & 850 hPa Temp. T+24/48/72/96/120	ECMF
MSLP, Africa, T+24	DRRN
MSLP ensemble mean from 1st month	ECMF
MSLP probability from 1st month	ECMF
MSLP, T+0/24/48/72	EGRR
MSLP, T+0/24/48/72	LFPW
MSLP/Rain Rate, T+24/48/72	EGRR
Near Sea Surface Winds	LFPW
Precipitation, T+12 to T+120	EGRR
Rain accumulation, T+00/24/48	EGRR
Rain probability from 1st month	ECMF
SAHEL, 10 Day Accumulated precipitation	DRRN
SAHEL, 10 Day mean pest situation	DRRN
SAHEL, 1st date of millet sowing	DRRN
SAHEL, NDVI 10-Day change	DRRN
SAHEL, NDVI 10-Day maximum	DRRN
SAHEL, Total Accumulated precipitation	DRRN
SE Africa, 3-month weather outlook	HKNC
SE Africa, Decade weather outlook	HKNC
SE Africa, Drought severity index	HKNC
sea level anomaly	ECMF
Service Messages	EGRR/LFPW
Surface, T+00, Indian Ocean	LFPW
Surface Analysis+obs for 00, 06, 12, 18	EDZW
Sourthen Atlantic MSLP analysis with fronts	FAPR
SST Anomalies (per month), Africa, Hadly Centre	EGRR
SST Anomalies (per month), E Africa, Hadley Centre	EGRR
SST Anomalies (per month), Far East, Hadly Centre	EGRR
SST Anomalies (per month), Pacific region, Hadley Centre	EGRR
SST Anomalies (per month), S America, Hadly Centre	EGRR
SST Anomalies (per month), W Africa, Hadley Centre	EGRR
SST anomaly	ECMF
SST ensemble mean from 1st month	ECMF
SST Means (per month), Africa, Hadley Centre	EGRR

SST Means (per month), Far East, Hadley Centre	EGRR
SST means (per month), Pacific region, Hadley Centre	EGRR
SST Means (per month), S America, Hadley Centre	EGRR
Surface, Africa, T+24/48/72	EDZW
T2M ensemble mean from 1st month	ECMF
T2M probability from 1st month	ECMF
Temperature anomaly along equator	ECMF
TEST	EGRR/LFPW
Trajectories	EDZW
Turbulence, T+0/24/48/72	LFPW
W.B.P.T Difference, 500-850 hPa, T+0/24/48/72	EGRR
WAFS, SigWx, AFI, T+18/24	EGRR
WAFS, SigWx, EUR, T+18/24	EGRR
WAFS, SigWx, EURSAM, T+18/24	EGRR
WAFS, FL 050/100/180/240/300/340/390, EUR, T+18/24	EGRR
WAFS, FL 050/100/180/240/300/340/390, LFAFI, T+18/24	EGRR
WAFS, FL 300/340/390, AFI/SAM, T+18/24	EGRR
WAFS, FL 300/340/390, MID, T+18/24	EGRR
WAFS, FL300/340/390, NAT, T+18/24	EGRR
WAFS, SigWx, MID, T+18/24	EGRR
WAFS, SigWx, NAT, T+18/24	EGRR
Wind @ 10M	LFPW
Wind @ 10M + Temp. @ 2M	ECMF
Winds for Africa	GOOY
Wx Bulletin T+72 in English	CMAD
Wx Bulletin T+72 in French	CMAD

Bulletin Type**Content**

	Miscellaneous
Admin message	
Analyses	Ice
Analyses	Surface
Analyses	Upper Air
Analyses	Weather Summary
Analyses	Miscellaneous
Climatic Data	Monthly Means (ocean mass)
Climatic Data	Monthly Means (Surface)
Climatic Data	Monthly Means (Upper Air)
Forecast	Aviation data
Forecast	Upper wind a tempreature
Forecast	Tropical cyclone advisories
Forecast	Local area
Forecast	Tempreature extremes
Forecast	Public
Forecast	Other Shipping
Forecast	Aviation route
Forecast	Surface
Forecast	Aerodrome (VT <= 12 hours)
Forecast	Volcanic ash advisories
Forecast	Misc
Grid Point Information (GRID)	Height

Grid Point Information (GRID)	Pressure
Grid Point Information (GRID)	Temperature
Grid Point Information (GRID)	Wind
Grid Point Information (GRIB)	Thickness
Grid Point Information (GRIB)	Height
Grid Point Information (GRIB)	Relative humidity
Grid Point Information (GRIB)	Temperature
Grid Point Information (GRIB)	Eastward wind component
Grid Point Information (GRIB)	Northward wind component
Surface Data	Miscellaneous
Satellite Data	Cloud interpretations
Satellite Data	Observations
Satellite Data	Remote upper air soundings
Upper Air Data	Miscellaneous
Warnings	Miscellaneous