**CGMS**

REPORT ON EUMETCAST INCLUDING GEONETCAST
In response to CGMS action 33.24

The paper presents the evolution and the actual status of the system architecture, services actually supported, and registration figures for EUMETCast. Additionally, the concept, actual status and intended evolution of GEONETCast are described, highlighting the role of EUMETCast in this system.

1   INTRODUCTION

The failure of a power amplifier for direct dissemination onboard MSG-1, occurring in autumn 2002 during MSG-1 commissioning, was the date of birth for EUMETCast. Implemented in less than six months, dissemination of SEVIRI images started in April 2003, followed by the successive integration of additional services, constituting EUMETCast as EUMETSAT's broadcast system for environmental data.

Figure 1: EUMETCast System Architecture
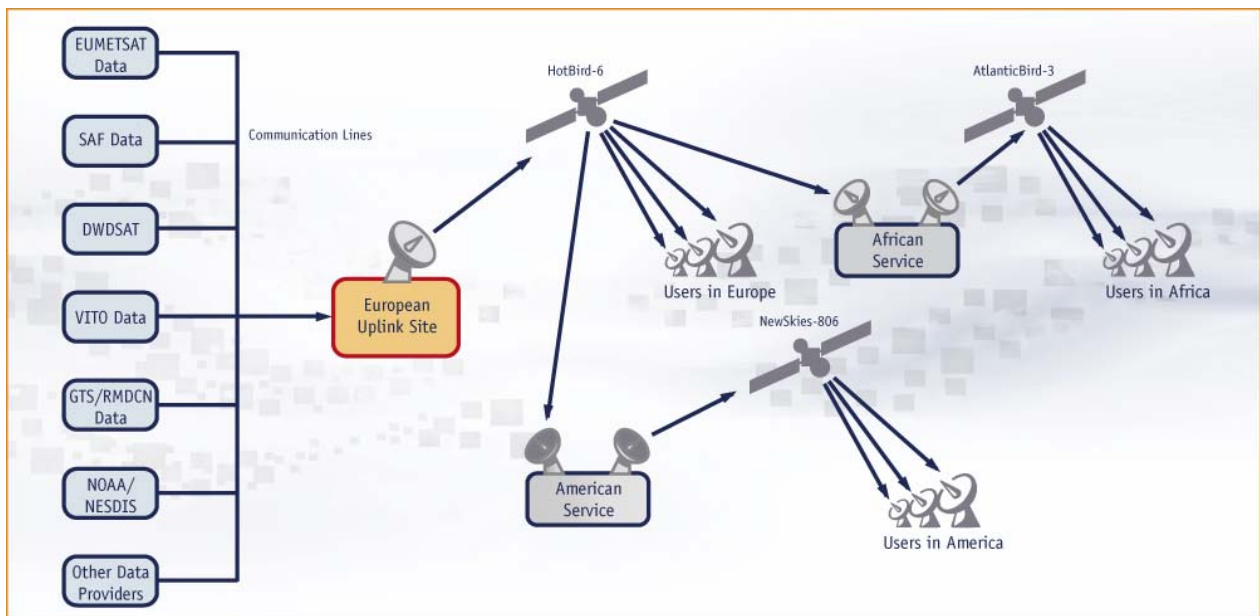
2   System Architecture

The EUMETCast system – from an architecture view – consists of three elements: data providers, dissemination infrastructure, and the user community.   The initial dissemination infrastructure was (and still is) a Ku-Band system, with an up-link station co-located with the Meteosat Second Generation Primary Ground Station in Usingen/Germany, using a transponder onboard the satellite HotBird-6. For coverage of Africa (which is mainly not in the footprint of the Ku-band service), a turn-around dissemination service was implemented in the second half of 2003.

The up-link station of this Africa service is located in Fucino/Italy, using a C-band transponder onboard the satellite Atlantic Bird 3.

Finally, for coverage of the Americas, a second turn-around service was implemented beginning of 2006, with an uplink station near Paris, using a C-band transponder onboard the satellite NSS-806. This service is conceived as a trial, currently limited until end of 2008.

The resulting system architecture is depicted in Figure 1, showing also the actual data sources and data providers.

The geographic coverage (footprint) of the Ku-Band Europe Service, the C-Band Africa Service, and the C-Band Americas Service is shown in Figure 2.
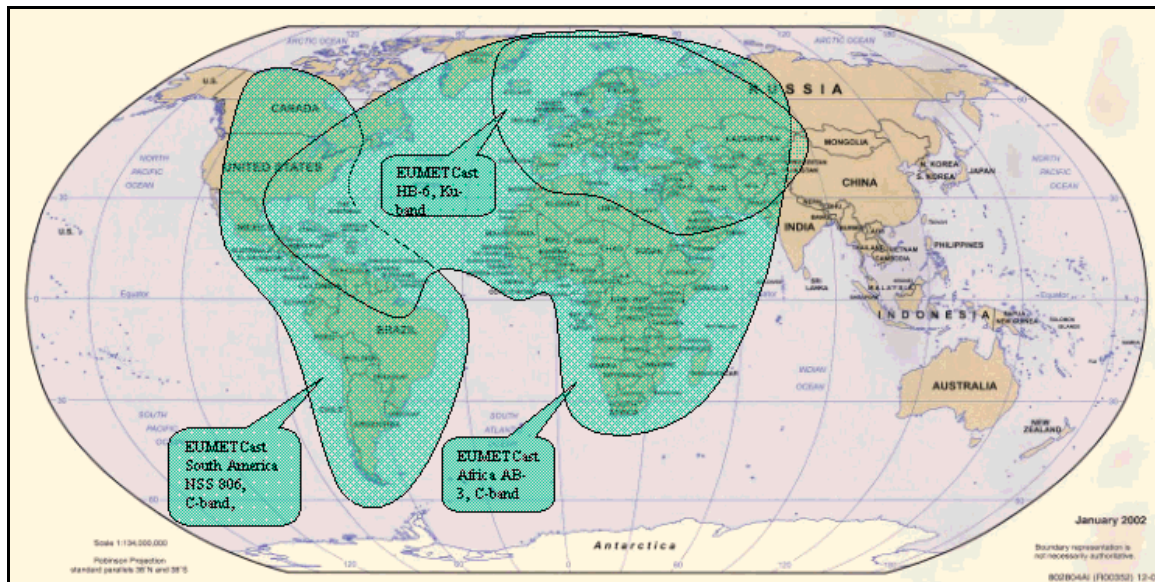

Figure 2: Geographic Coverage of all EUMETCast Services

3 Services

EUMETCast supports the dissemination of the following environmental data streams and products:

- Meteosat first generation image data
- Meteosat second generation image data
- GOES East and West image data
- MTSAT image data
- ATOVS and AVHRR data from four NOAA S/C, as elements of the EUMETSAT Advanced Retransmission Service (EARS)
- DCP and MDD in-situ forecast data

- EUMETSAT meteorological products
- Land and Ocean Sea Ice SAF products
- NOAA/NESDIS meteorological and ocean colour products
- DWDSAT products from DWD
- SPOT VEGETATION products from VITO
- Basic Meteorological Data (BMD) for WMO RA VI
- ERS SCAT and QuikSCAT products from KNMI
- EPS Global Data – METOP products
- EPS Global Data – NOAA products

The Ku-Band Europe Service has a total bandwidth of 12 Megabit/second (Mbps). 8 Mbps are allocated for the EPS Global Data Service, the remaining 4 Mbps for all other services.

The C-Band Africa Service has a bandwidth of 2.7 Mbps, supporting the dissemination of image data from all spectral channels of Meteosat Second Generation SEVIRI, and additionally the data grouped in a Multi Service Channel (comprising Meteosat first generation image data, GOES East and West image data, MTSAT image data, EUMETSAT meteorological and SAF products, DCP and MDD data, and vegetation products)

The C-Band Americas Service has an allocated bandwidth of 2 Mbps, supporting mainly the dissemination of image data from all spectral channels of Meteosat Second Generation SEVIRI. In the context of GEONETCast – described in Section 5 – an additional data set is distributed (NOAA/NESDIS products, SAF products for South America, and part of the Multi Service Channel products).

4   Service Registrations

Since start of the EUMETCast services in 2003, the number of registered EUMETCast Reception Stations has grown steadily, initially exponentially, since 2005 in a linear way. End of August 2006, around 1900 EUMETCast Reception Stations were registered, of which around 1500 had a subscription for the Meteosat Second Generation 15 minutes SEVIRI service (all spectral channels of all repeat cycles).

5   GEONETCast

Ministers agreed at the third Earth Observation Summit in February 2005 to develop the Global Earth Observation System of Systems (GEOSS) to meet the need for timely, quality, long-term global environmental information as a basis for sound decision making and to enhance delivery of the benefits to society. GEONETCast is a dissemination system under development by which GEOSS environmental satellite and *in situ* data and products from participating Data Providers will be transmitted to users through satellites using a multicast, access-controlled, broadband capability.

This capability would be especially useful in parts of the world where high speed land lines and/or internet are not available. Participation in GEONETCast as a data provider, end user, or dissemination infrastructure provider is voluntary. The intergovernmental Group on Earth Observations (GEO) have defined the GEONETCast task as Capacity Building Task (#CB-06-04) with oversight by the GEO Architecture and Data Committee.

GEONETCast consists of a number of major components:

- Existing dissemination infrastructure;
- Data Providers/Sources;
- The global environmental User community.

In terms of existing dissemination infrastructure, EUMETCast currently provides the dissemination infrastructure that hosts GEONETCast. This provides geographic coverage of Europe, the Middle East, Africa, and South, Central and most of North America.

NOAA has a stated intention to establish a dissemination system providing comprehensive coverage of the Americas known as NOAACast. If implemented, users in the region will be provided with a long-term perspective for access to GEONETCast.

Discussions are at quite an early stage with the Chinese Meteorological Agency (CMA) to integrate FengYunCast into GEONETCast. This would provide geographic coverage of the Asia/Pacific region. FengYunCast is planned as an evolution of an existing CMA-operated dissemination system which provides geographic coverage of China and a number of neighbouring countries.

A regular flow of NOAA data (from Washington/DC) to the EUMETCast Ku-Band Up-link System in Usingen/Germany has been implemented, which has been used together with EUMETSAT provided data in support of demonstrations performed from May to July 2006.

This first release of the GEONETCast demonstration service is mainly focusing on new services for the EUMETCast-Americas user community. In addition to the MSG SEVIRI image data service, EUMETCast-Americas users receive NOAA image data and products and a sub-set of the EUMETSAT meteorological and Satellite Application Facility (SAF) products.

The GEONETCast demonstration service is planned to run until end 2008, with additional data sets progressively introduced

6   CONCLUSIONS

CGMS is invited to take note of the current status of the EUMETSAT system for data service provision, EUMETCast and its contribution to the GEONETCast system.