

## Global dissemination of meteorological information, EUMETCast or GEONETCast

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**Abstract.** As the fortunate consequence of an anomaly in one of the satellite transponders on board of Meteosat-8, an alternative to the direct dissemination of data for the users was found in the EUMETCast. Beyond purely remote sensing data, EUMETCast is now an advanced system that ensures immediate transfer of any sort of meteorological information, as supplied by numerical prediction centres, meteorological offices or any environmental data supplier. As EUMETCast progresses towards covering the globe, it has changed its name into GEONETCast. The conceptual idea of a global GEONETCast implementation is that several regional centres take on the responsibilities for establishing a satellite-based regional dissemination system, based on the EUMETCast general framework, and provide the same services to the common user community. The concept of interconnected regional GEONETCast Network Centres (GNC) would allow in the near future such an implementation for the whole world.

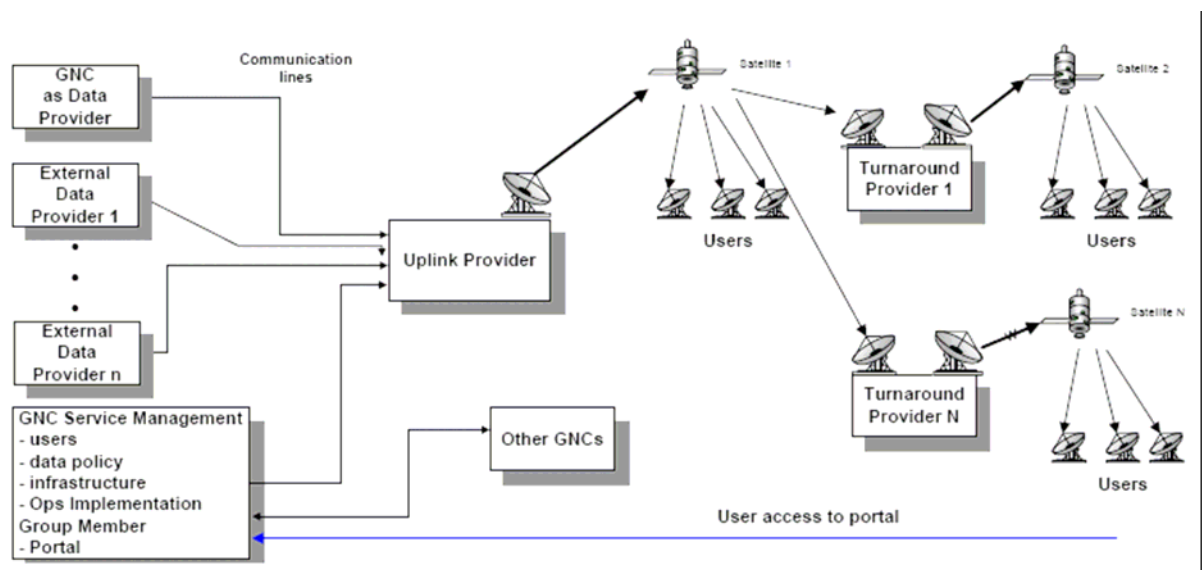
**Keywords:** Meteosat-8, EUMETCast, GEONETCast

### 1. Introduction

EUMETCast is an advanced system that ensures immediate transfer of any sort of meteorological information, as supplied by numerical prediction centres, meteorological offices or any environmental data supplier. The key features of the current EUMETCast system are:

- Secure delivery allows multicasts to be targeted to a specific user or group of users thus supporting any required data policy;
- Handling of any file format, allowing the dissemination of a broad range of products;
- Use of DVB turnarounds allows the easy extension of geographical coverage;
- One-stop-shop delivery mechanism allows Users to receive many data streams via one reception station;
- An installed User base of over 1700 User stations;
- Use of off-the-shelf, commercially available, DVB reception equipment;
- Highly scalable system architecture.

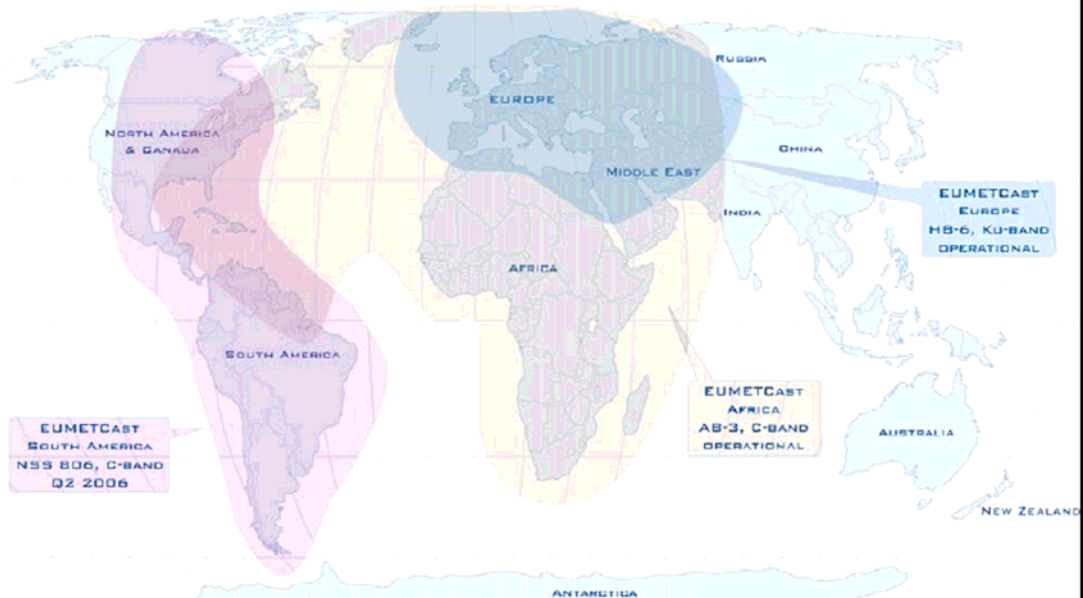
The telecommunications providers supply the DVB multicast distribution. Encoded data/product files are transferred via a dedicated communications line from EUMETSAT to the uplink facility where they are transmitted to a geostationary communications satellite for broadcast to user receiving stations. Each receiving station decodes the signal and recreates the user data/products according to a defined directory and file name structure. In its current configuration, EUMETCast operates two turn around systems. The turn around service provider receives the DVB signal from one satellite and retransmits it, without unpacking the DVB packets, to another satellite. Telespazio S.p.a. provides the C-band turnaround service for EUMETCast Africa from its uplink site in Fucino, Italy and Globecast provides the C-band turnaround service for EUMETCast Americas from its uplink facility in Paris, France. Figure 1 illustrates how EUMETCast fits within the overall EUMETSAT Ground Segment architecture.



**Figure 1** – EUMETCast within the overall EUMETSAT Ground Segment architecture.

## 2. EUMETCast Coverage

EUMETSAT operates three EUMETCast broadcasts: EUMETCast Europe, in Ku-band via Hotbird-6; EUMETCast Africa in C-band via AtlanticBird-3 and EUMETCast Americas in Cband via NewSkies-806. The geographic coverage of a DVB is determined by the characteristics of the spacecraft and its associated antenna beams. The coverage zones of these broadcasts are shown in the Figure 2 below.



**Figure 2** – EUMETCast Coverage.

For coverage in EUMETCast-Americas, the spacecraft selected by the telecommunications provider, Globecast, is the NewSkies-806. The core coverage zone of the satellite is South and parts of North America and the Caribbean region.

### 3. Current EUMETCast Services (December 2006)

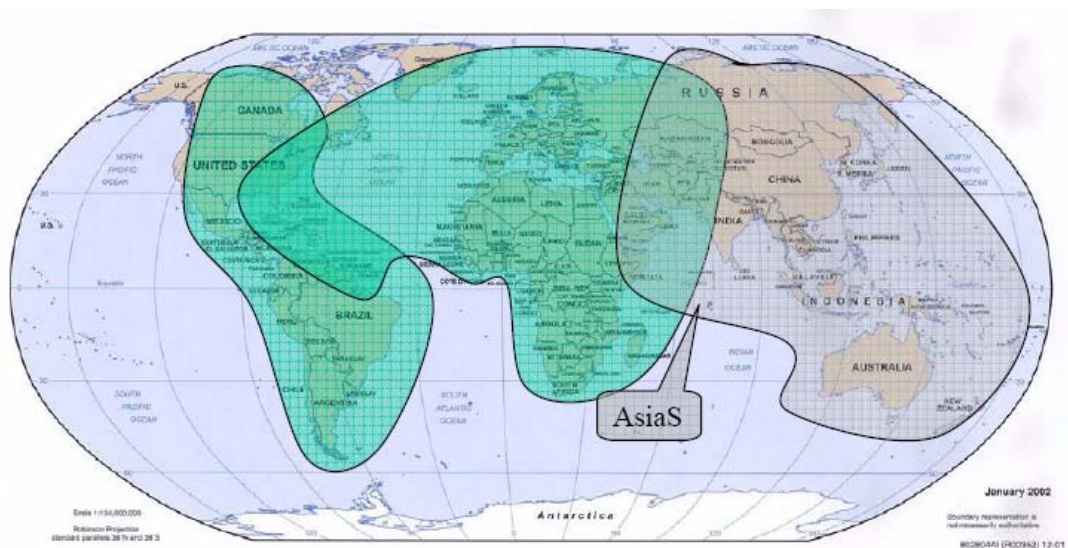
EUMETCast supports the dissemination of the following environmental data streams and products:

- Meteosat first generation image data;
- Meteosat second generation image data;
- GOES East and West image data;
- MTSAT image data;
- DCP and MDD in-situ forecast data;
- EUMETSAT meteorological products;
- Land and Ocean Sea Ice SAF products;
- NOAA/NESDIS meteorological products;
- NOAA/NESIS 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.

The receiving station for EUMETCast is economical. The most expensive item, for areas with C-band reception, is the dish, typically 2 meters in diameter. The reception card for the Digital Video Broadcast is the same as used by millions of TV-SAT receivers, therefore cheap. A standard PC completes the station setup. In addition, EUMETSAT data policy for the Meteosat and Metop (the European satellite contribution to the Joint Polar System with NOAA) grants full free access to the users for amateur or educational purposes. For commercial use of the data, a tariff applies, dependent on the size of the audience.

### 4. Future Perspective

Taking as inputs the current EUMETCast system and the NOAA vision on a GEONETCast contribution, a decisive evolution is foreseen for the concept of a global distribution of meteorological data. The key base areas in the global GEONETCast design are:



**Figure 3** – GEONETCast Global Coverage.

- The regional Multicast implementation;
- The data exchange between the GEONETCast Regional Network Centres (GNC);
- The data discovery and user management functionalities via a distributed portal.

Currently the GEONETCast system is technically based on EUMETCast with an additional KU-Band local turnaround in North-America to cover a limited area for demonstration purposes. The Figure 3 above shows an almost global coverage under the evolved system.

## **5. Acknowledgements**

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## **References**

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