PRODUCT OVERVIEW

2met!® System

Ready for COPERNICUS Data via High Volume Service

2met!® EUMETCast / GEONETCast DVB User Station
Reception, Dissemination, Processing and Visualization

Release 1.5

The ***2met!***® Concept is fully supporting the family of DVB based satellite receiving systems for the meteorological user community. EUMETCast, GEONETCast and CMACast all are DVB based services using commercial telecommunication satellites like EUTELSAT™ 10A and 5 West A, SES-6 East and West coverage and AsiaSat 4C. The SCISYS solution is completely based on Commercial-Off-The-Shelf (COTS) products that can be easily procured in many places world-wide. The low procurement costs together with a highly reliable system architecture and concept is the key factor for the success of the ***2met!***® **EUMETCast / GEONETCast DVB User Station** supplied by SCISYS.

Highlights	
▪ Full support of EUMETCast Europe DVB-S2 Basic and High Volume Service	▪ Special antennas available (high wind antennas, anti-ice kits, etc.)
▪ Complete system solution capable to work with communication satellites all over the world	▪ System concept allows hot redundant HW and SW setups
▪ Support of Ku- and C-band communication satellites	▪ Use of standard HW
▪ Reception of all EUMETCast and SAF data	▪ SW includes all ***2met!***® SW applications
▪ Easy installation procedures	▪ Support for Windows and LINUX platforms
▪ Installation base of more than 140 systems	▪ Support of server based installations
▪ Automatic processing of products in batch mode	▪ COPERNICUS data will be available via High Volume Service

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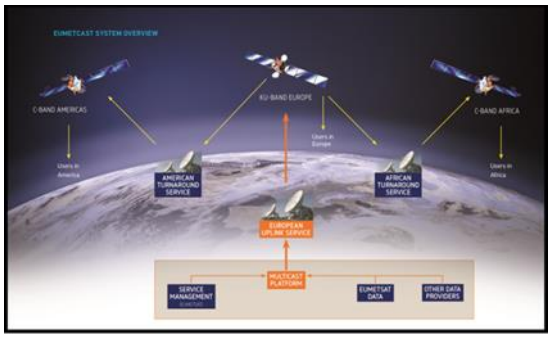
Understanding of EUMETCast

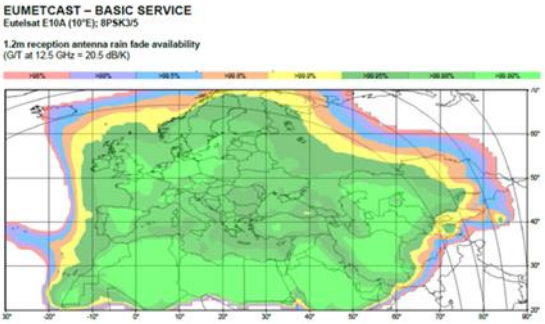
EUMETCast is a multi-service dissemination system based on standard Digital Video Broadcast (DVB) technology. It uses commercial telecommunication geostationary satellites to multi-cast files (data and products) to a wide user community. EUMETCast also delivers a range of third-party products. EUMETCast is the EUMETSAT contribution to GEONETCast, a milestone in the Global Earth Observation System of Systems (GEOSS).

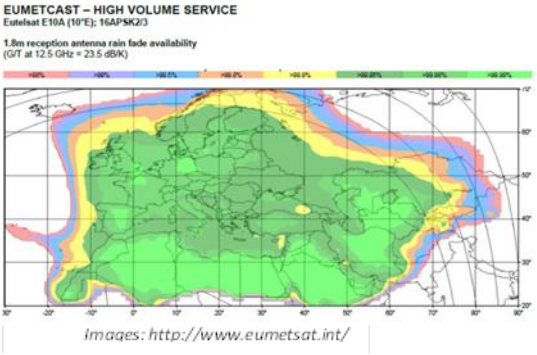


EUMETCast Features

EUMETCast is available to users in Europe, Africa and parts of the Americas having an installed user base of more than 4200 user reception stations. The key system features 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 more than 4,000 user stations.
- Use of off-the-shelf, commercially available, DVB reception equipment.
- Highly scalable system architecture.
- Three EUMETCast services are available covering Europe, Africa and South America.





images: http://www.eumetsat.int/

Services available via EUMETCast

- Level 1 satellite data: space-based observations from the Meteosat, Metop, Jason and Sentinel-3 satellites. At their most frequent, these data are delivered to users within five minutes of processing;
- Weather monitoring: products to support nowcasting and short-range weather forecasting applications;
- Ocean monitoring: global and regional marine meteorological and ocean surface products;
- Atmospheric composition: specific observational products to support operational monitoring and forecasting of atmospheric composition including air quality;
- Land applications: vegetation, surface radiation, wild fire and snow cover products.
- In addition, a wide range of third-party meteorological and environmental products are available on EUMETCast, including:

Level 1 satellite data and derived products from a range of atmospheric, marine and land monitoring satellites (e.g. GOES, S-NPP, MTSAT, FY2, Saral, Aqua/Terra, SMOS and GPM);

- European Commission Copernicus and FP7 funded data and products;
- In-situ observational data;
- Numerical weather forecasts.

A comprehensive list of all products available can be found via the Product Navigator at EUMETSAT's Web page.

System Architecture Overview

SCISYS offers a COTS system based on a sound experience of various mission specific implementations for the various XRIT DVB systems (GOES, MSG, MTSAT). The design is based on existing HW and SW components:

- Technical requirements as specified within the EUMETSAT TD-15 document
- EUMETSAT's recommendation on the migration to DVB-S2 reception stations
- The ***2met!***® Products Suite software consisting of a set of software modules and hardware components for meteorological and EO satellites – approved and selected by EUMETSAT

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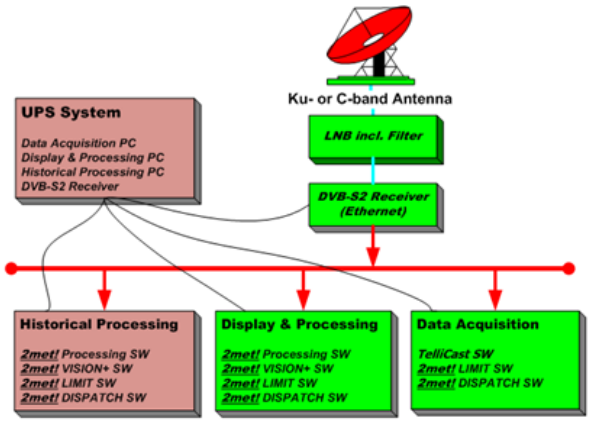
The overall system is sub-divided into the:

- EUMETCast DVB-S2 Front-end system including the Data Acquisition Workstation (Windows/Linux)
- Data Processing and Display Workstation (Windows/Linux)
- Optional components shown in red colour:
  - Optional additional Workstation for historical data processing (archived data) and/or visualisation (Windows/Linux)
  - Optional UPS system for operation in critical environments



System Functionality

Data Reception

All data are received via a Front-end system. The receiver card is installed in the DVB-PC system or an external DVB box is attached to it. The data are assembled to files and are decrypted. For this purpose, EKU will be used. The files are transferred via FTP to the Acquisition and Processing Server/Workstation.

DVB Multicast Software (Tellicast)

The tq®-TELLICAST client SW will be installed for data acquisition. As the current EUMETCast operates a tq®-TELLICAST server, the tq®-TELLICAST client SW is mandatory and a license is required for each user.

Near Real-time (NRT) Processing

The near real-time processing and handling of all data received by the DVB workstation is performed on the Near-Real-time Workstation. The Raw data files are forwarded to ***2met!***® **PROCESSING** for further processing, incl. calibration, projection, etc. All processing steps are automatically performed according to a product description table which is user configurable. This concept allows having processed image data within typically less than a few minutes after the completion of reception. All products can be distributed via LAN/WAN to various workstations or file servers (e.g. NAS)

Production and Visualization Functions

All imagery data can be displayed using ***2met!***® **VISION+**. A variety of functions are implemented such as image enhancement functions, analysis tools as well as interactive processing functions.

Housekeeping and Data Transfer

Two software modules allows users to configure the storage of the data according to time or count basis to avoid disk overflow, the ***2met!***® **DISPATCH** module allows the automatic distribution of data via LAN/WAN. The ***2met!***® **LIMIT** module is responsible for preventing data overflow effects on hard disks.

C-Band Front-end

For reception in C-band a 2.4m antenna reflector is recommended.

Ku-Band Front-end

For reception in Ku-band a 1.2m antenna reflector is sufficient for the Basic service in most European areas. The

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reception of the High-Volume Service might introduce needs for larger antenna reflectors.

Pre-LNB C-Band Filter

A high performance pre-LNB filter provides additional rejection of unwanted out-of-Band interference signals, while the low in-Band insertion loss preserves system's noise figure.

DVB Receiver

SCISYS offers various DVB receivers – pending on the DVB-S2 streaming protocols. Receiver information or recommendations are available on request.

DVB Acquisition Workstation

Central component for acquisition of al EUMETCast data is a DVB acquisition workstation. The acquisition SW receives the data files and provides some additional processing such as decompression. Furthermore monitoring is provided by the Tellicast SW, which allows the operator to verify the functionality of the system easily.

All data received by the DVB acquisition PC are forwarded to the Processing and Display workstation by means of the ***2met!***® DISPATCH SW. The raw data are stored on the data disk. ***2met!***® DISPATCH is furthermore used to transfer the data to other destinations within the LAN/WAN network. ***2met!***® LIMIT takes care of the deletion of the various data according to individual time or count setups in the Limit table.

The EKU is used for the decryption of the DVB data stream. Depending on the license agreement, the EKU determines which data can be received.

Processing and Display Workstation

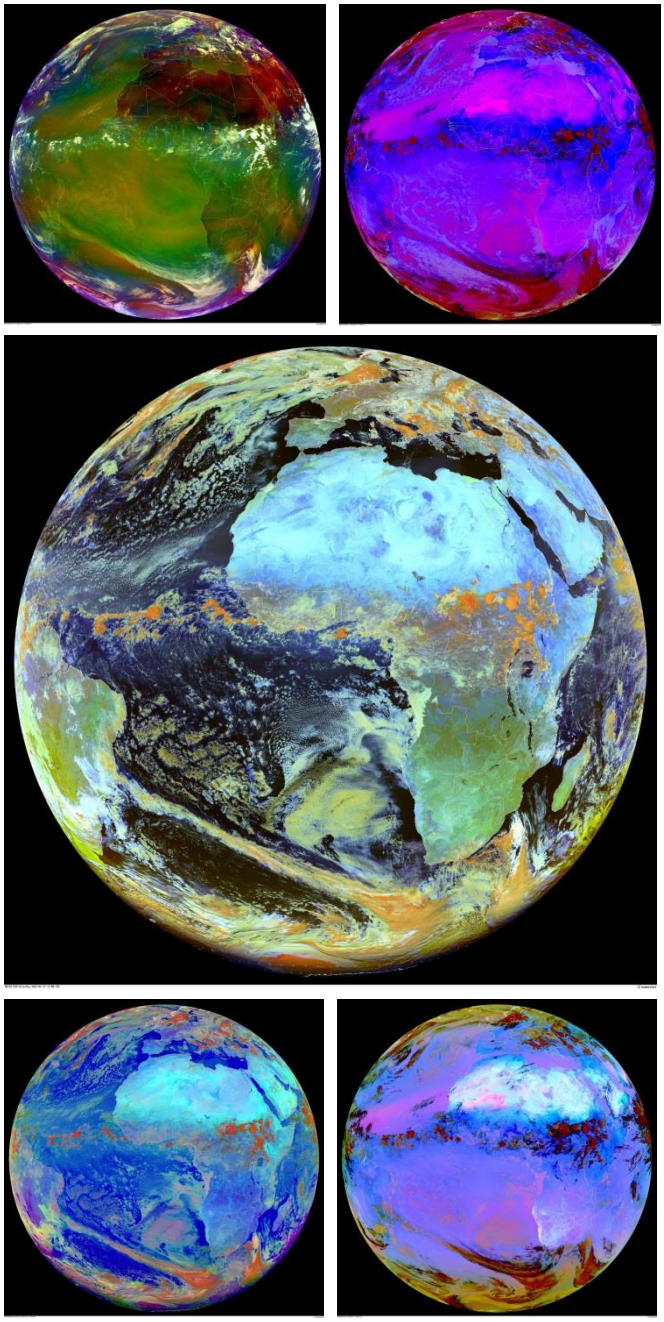
Central component for processing and visualization of all real-time imagery data is a powerful workstation or server. Together with Windows/Linux, this host offers a maximum of performance and reliability as it is required for an automated system for mainly operational use.

All-in-One Workstation

For training and presentation, the data acquisition, processing and visualization can be performed by one workstation. The system performance depends on the number of products to be processed.

Virtual machines in Linux

The entire DVB user station can also be supplied as virtual machines running with Linux operation systems.



Satellite Images showing Airmass, Fog, Snow, Microphysics and Dust

Contacts

If you have any questions, please contact our Marketing and Sales Department at 2met@scisys.de