



EUMETSAT Satellite Programmes

Use of McIDAS at EUMETSAT

Sauli Joro – Remote Sensing Expert
Peter Miu – Data Services Operations Engineer

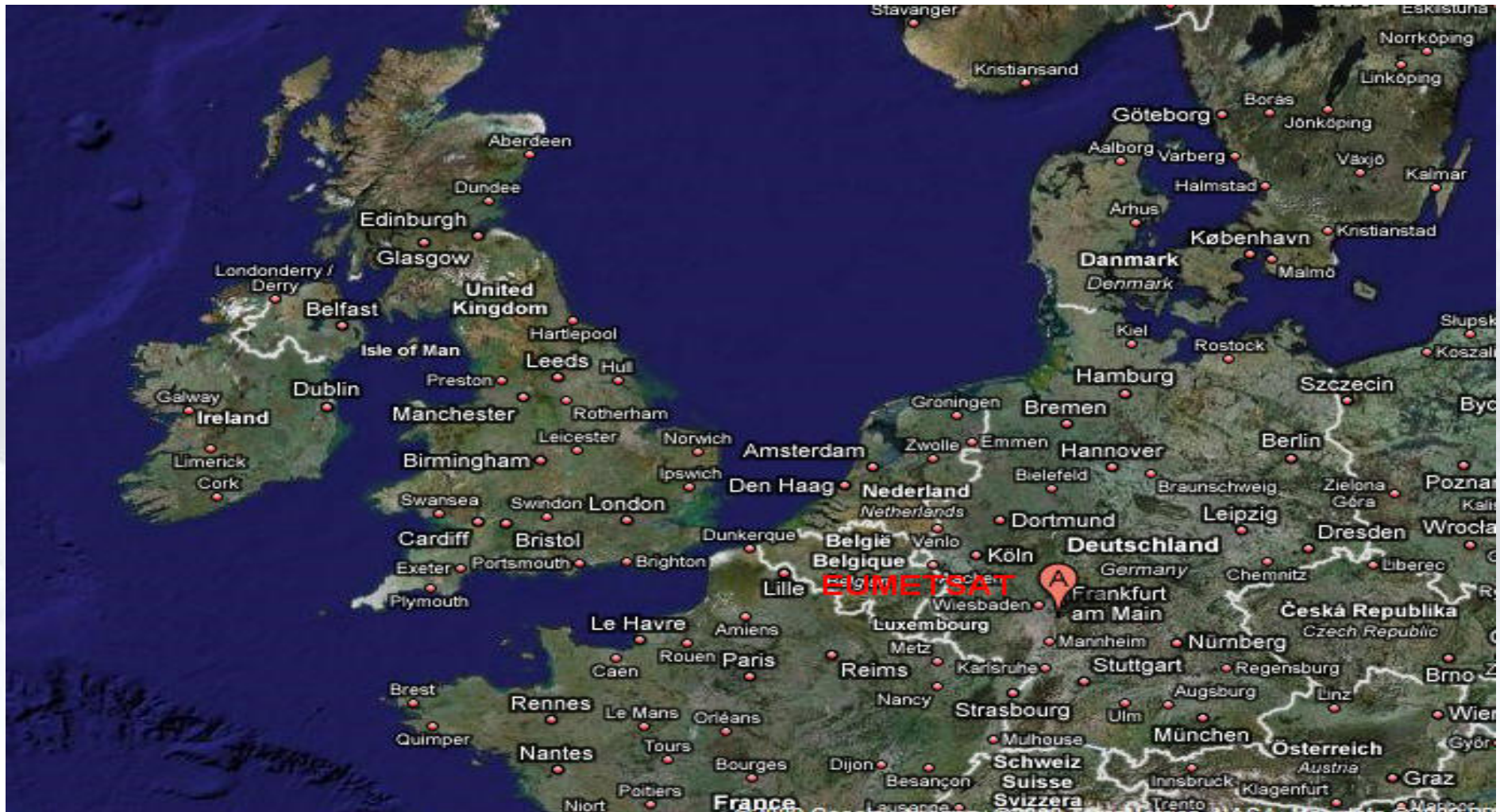


EUMETSAT Headquarters – Darmstadt





Location of EUMETSAT - Germany





Google Map View





27 Member States & 4 Cooperating States

Member States

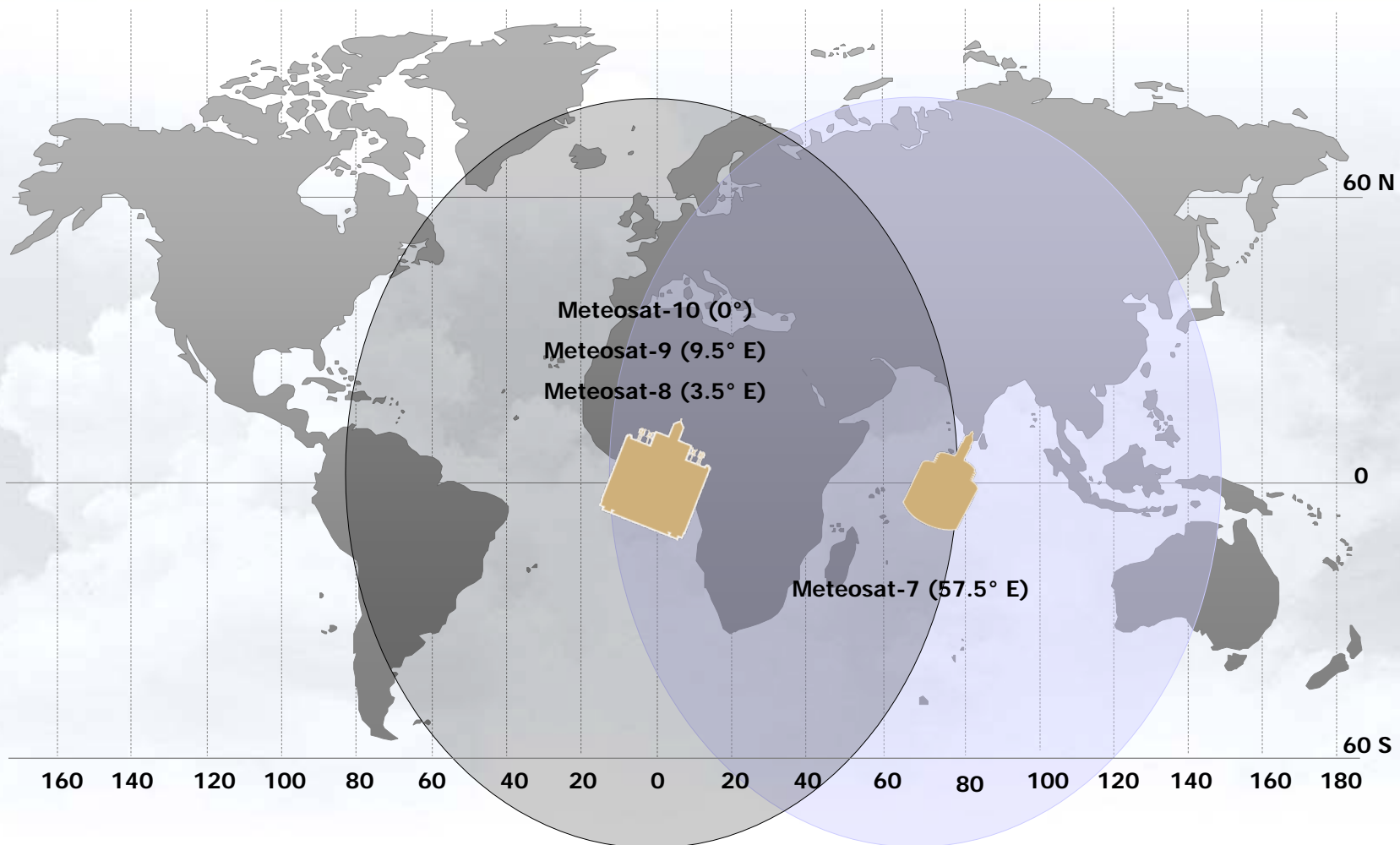


Cooperating States





EUMETSAT Geostationary Satellites' Coverage





MSG: Meteosat Second Generation

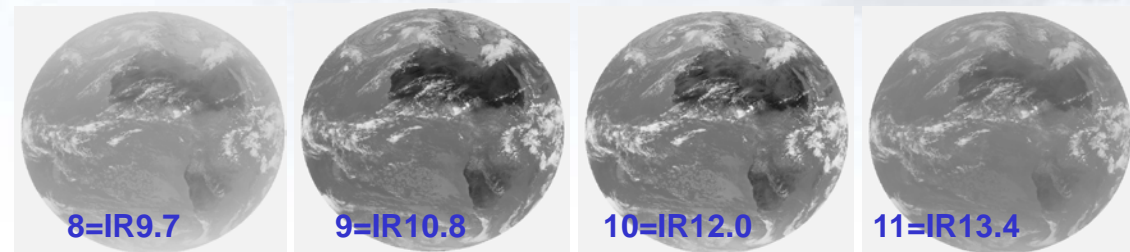
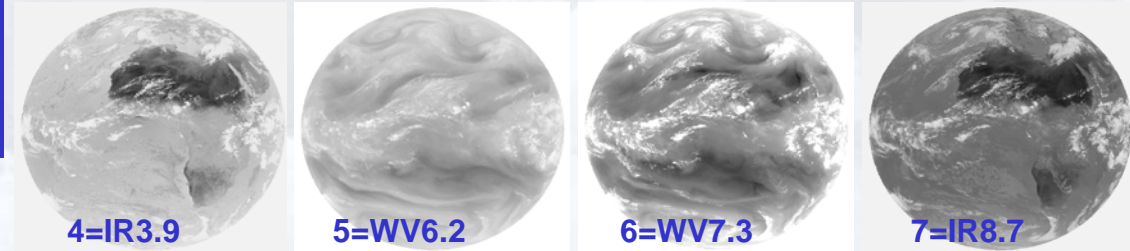
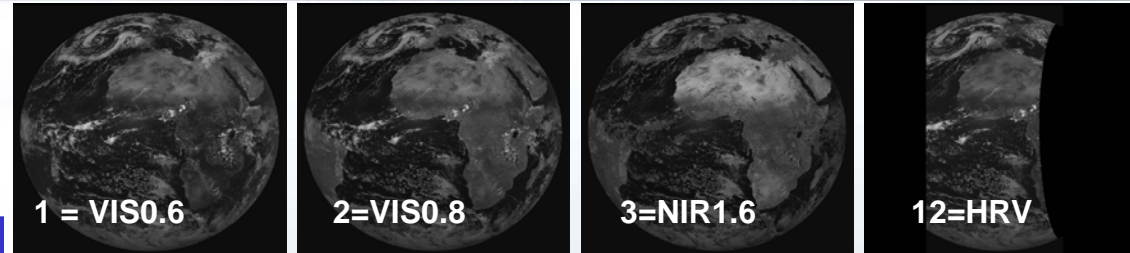
MSG SEVIRI*:

12 Channels

3 km pixel size, 1 km HRV

15 min repeat cycle, 5 min "rapid scan service"

*: SEVIRI :
Spinning Enhanced Visible and InfraRed Imager





Launch of MSG-3 on 19 June 2012

Operational since 12 Dec 2012 -> Meteosat-10

Recent events on Meteosat-8: Loss of onboard sun sensors due to a solar panel damage, i.e. compromised image quality

MSG-4 launch foreseen late 2015, in orbit storage



Metop News

Launch of Metop-B in in July 2012
Operational since 24 April 2013

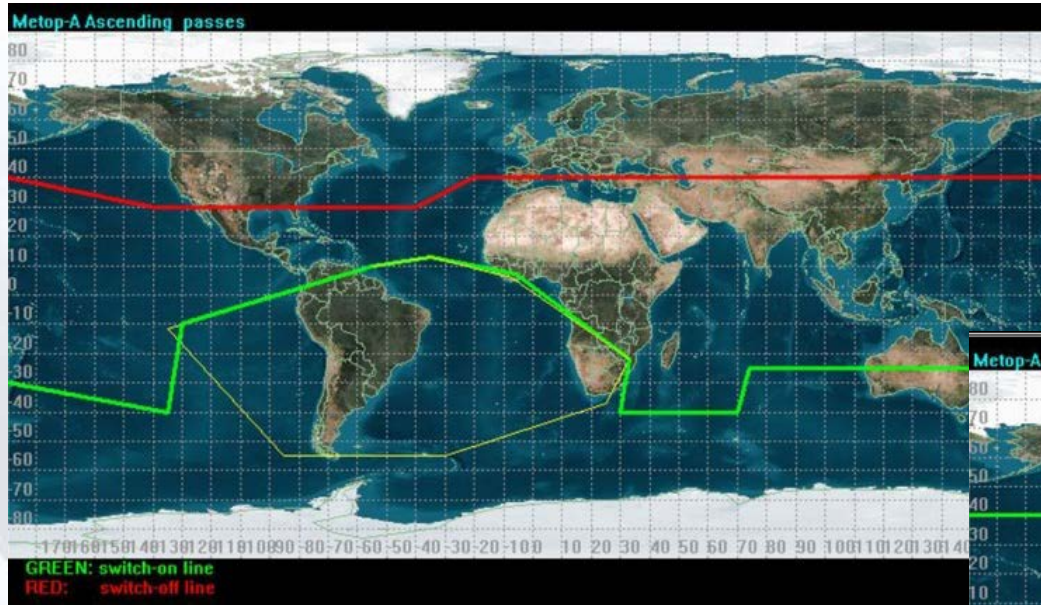
09:30 orbit maintained,
however with a 90 deg
difference to Metop-A orbit

Two global dumps, data delivery via
EUMETCast

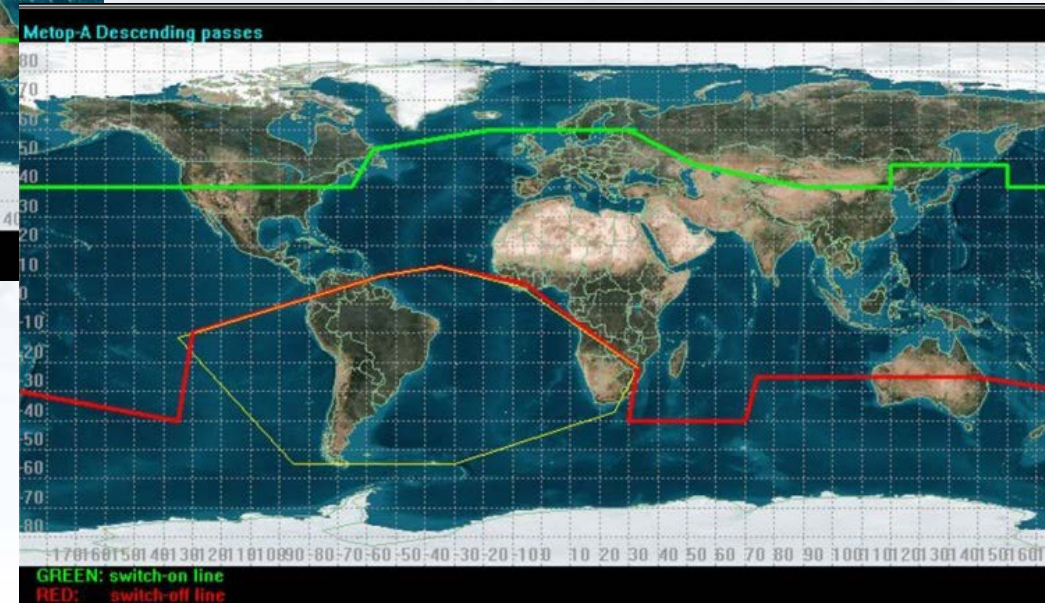




Metop HRPT direct dissemination



Metop-A: HRPT dissemination affected by heavy ion radiation
Metop-B: full, global Direct Readout Service



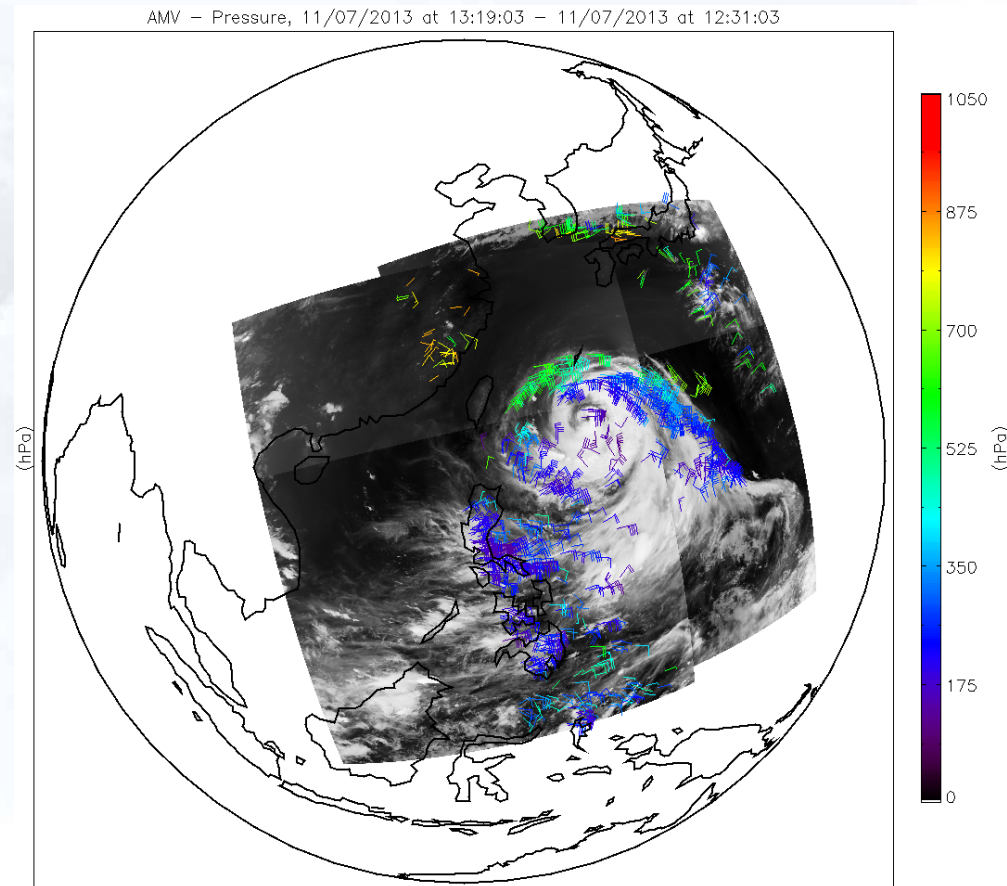
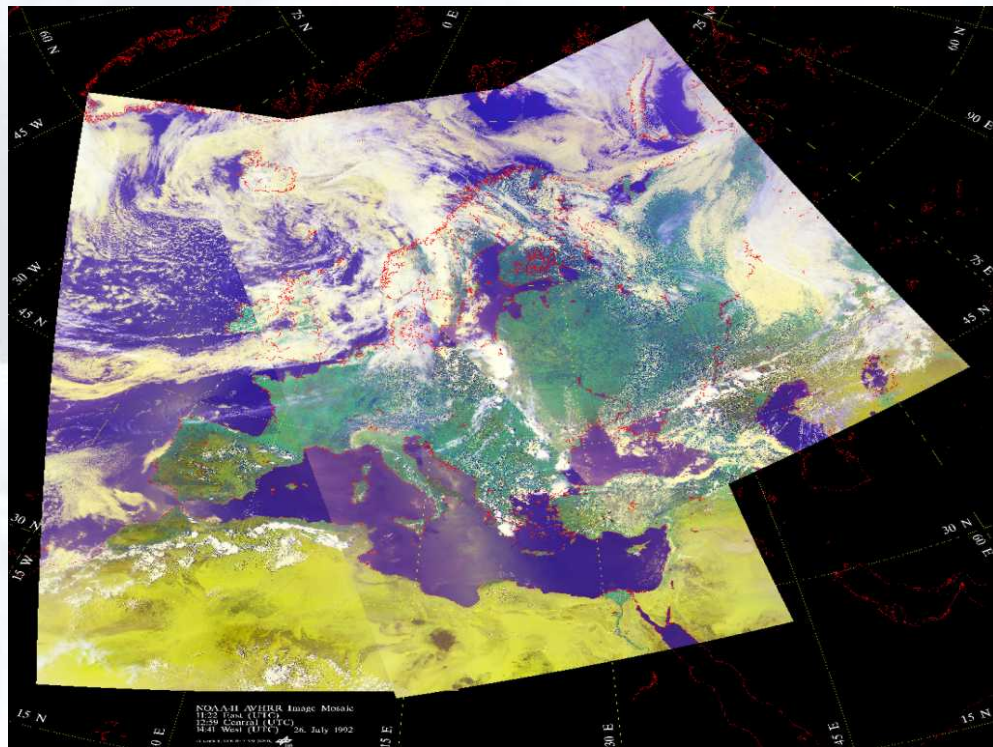
<http://www.eumetsat.int/website/home/Satellites/CurrentSatellites/Metop/DirectReadoutService/index.html?lang=EN>



Reasons for Specific Metop Orbit Configuration

(a) Technical reasons (ground station, data communication)

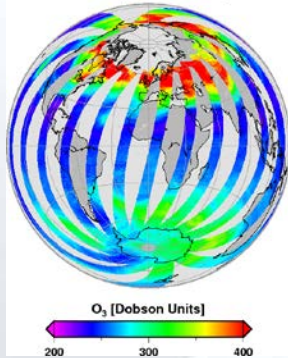
(b) NWP requirements



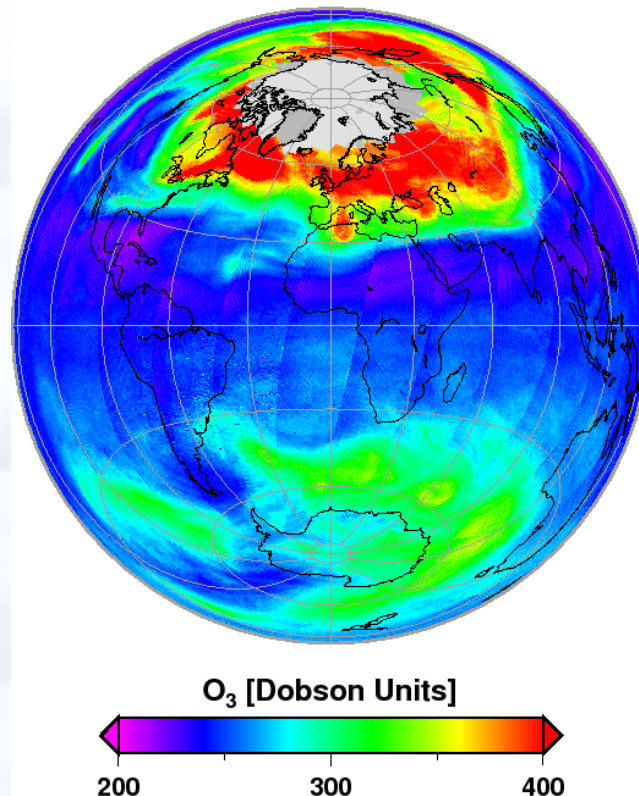


GOME-2 on Metop-A & Metop-B Tandem Operations #7

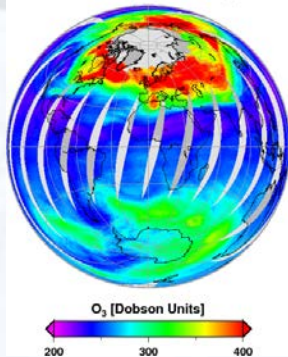
GOME-2 Metop-A
960 km (2013-JAN-20)



GOME-2 Metop-A & Metop-B
960km & 1920km (2013-JAN-20)



GOME-2 Metop-B
1920 km (2013-JAN-20)



Recommendation:

- Special GSAG + O3MSAF Project Team convened on 25th April 2013
- Recommendation to operate GOME-2 on Metop-A with a swath of 960km and GOME-2 on Metop-B with a swath of 1920km
- To be re-evaluated in autumn.
- Total ozone coverage pattern for GOME-2 Metop-A and Metop-B with GOME-2 on Metop-A in simulated 960km and GOME-2 on Metop-B the other in nominal 1920km swath mode using data from the current wide swath observations (no spatial resolution increase) taken on the 20th of January 2013 (courtesy of O3MSAF/DLR).



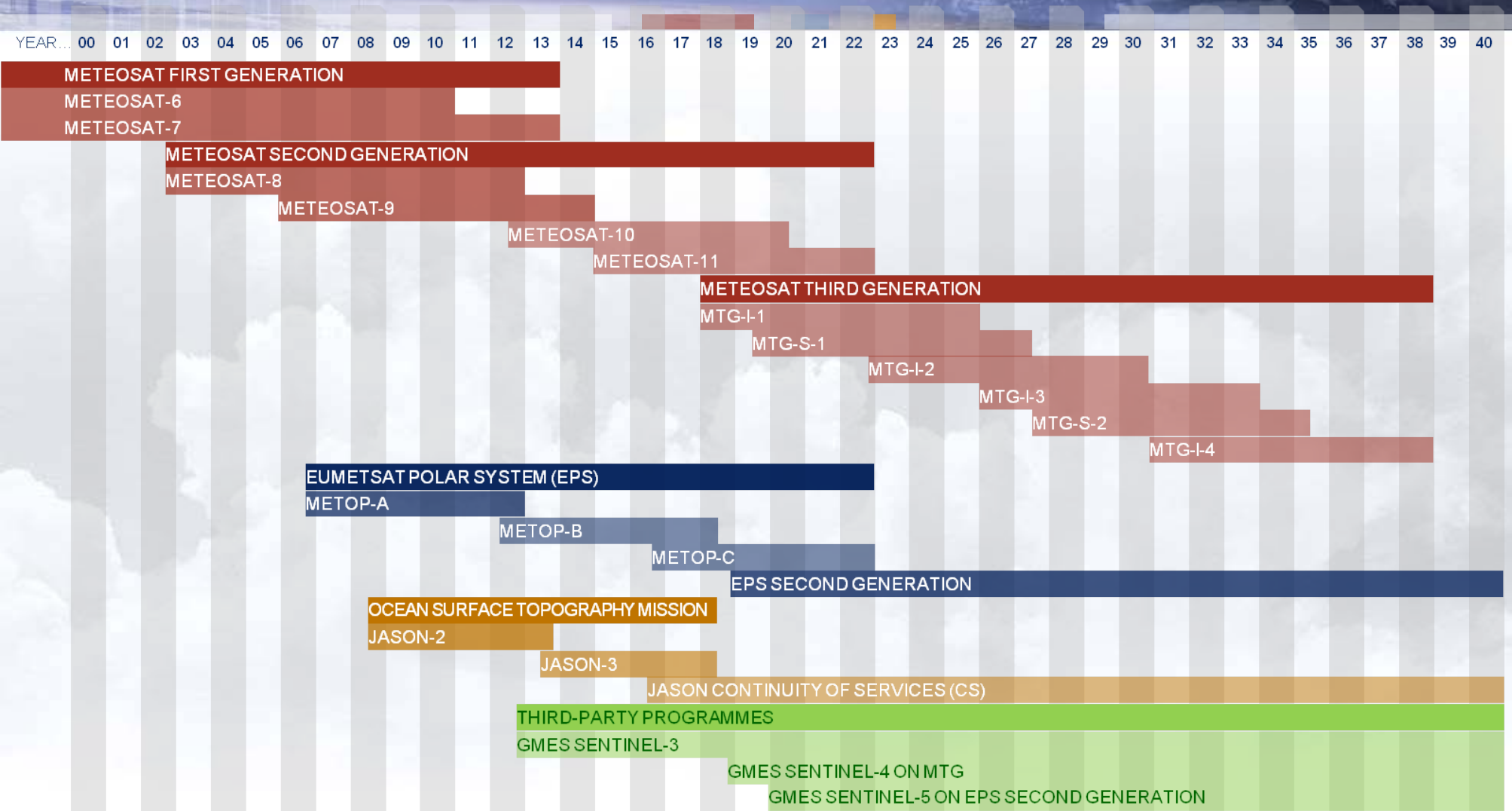
Future EUMETSAT Satellite Programmes

Eumetsat is preparing/developing the following satellites programmes:

- **Sentinel-3 (2013):** Low Earth Orbiting mission to support services relating to the marine and global land environment, with capability to serve further atmospheric- and cryospheric-based application areas.
 - <http://www.eumetsat.int/website/home/Satellites/FutureSatellites/Sentinel3/index.html>
- **MTG: Meteosat Third Generation (2018),** EUMETSAT is preparing for the next European operational geostationary meteorological satellite system. MTG will revolutionise weather forecasting and environmental monitoring by providing significant improvement over the capabilities of the current Meteosat generation.
 - <http://www.eumetsat.int/website/home/Satellites/FutureSatellites/MeteosatThirdGeneration/index.html>
- **EPS-SG: EUMETSAT Polar System – Second Generation (2020),** The EPS follow-on system to EPS will provide continuity of polar orbiting observations for the user community.
 - <http://www.eumetsat.int/website/home/Satellites/FutureSatellites/EUMETSATPolarSystemSecondGeneration/index.html>



EUMETSAT Programmes Timeline





MTG Space Segment – Twin Satellite Concept



MTG-I; 4 satellites

MTG-S; 2 satellites

Courtesy of
ThalesAlenia
Space
A Thales / Finmeccanica Company

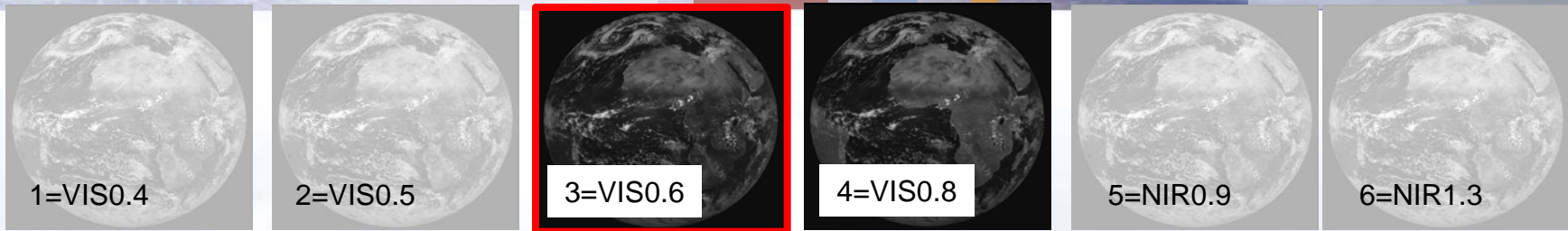


MTG Space Segment Configuration

- Twin Satellite Concept, based on 3-axis platforms
 - 4 Imaging Satellites (MTG-I) (20 years of operational services)
 - 2 Sounding Satellites (MTG-S) (15.5 years of operational services)
- Payload complement of the MTG-I satellites
 - The Flexible Combined Imager (FCI)
 - The Lightning Imager (LI)
 - The Data Collection System (DCS) and Search and Rescue (GEOSAR)
- Payload complement of the MTG-S satellites
 - The Infrared Sounder (IRS)
 - The Ultra-violet, Visible and Near-infrared Sounder (UVN)



Meteosat Evolution: 1977 – 2002 - 2019



1=VIS0.4

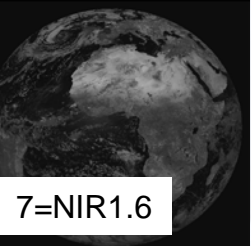
2=VIS0.5

3=VIS0.6

4=VIS0.8

5=NIR0.9

6=NIR1.3



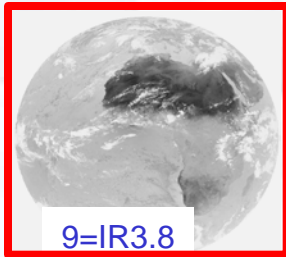
7=NIR1.6



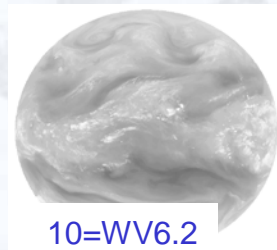
8=NIR2.2

FCI-FDSS:
8 solar channels at 1km
8 thermal channels at 2km

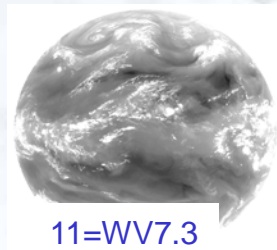
FCI-RSS:
2 solar/thermal
channels
at
0.5 km/1.0 km



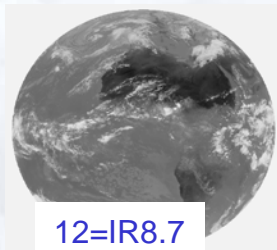
9=IR3.8



10=WV6.2



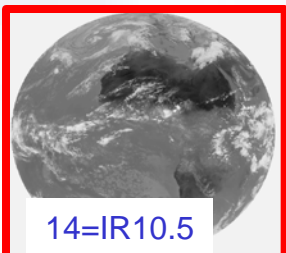
11=WV7.3



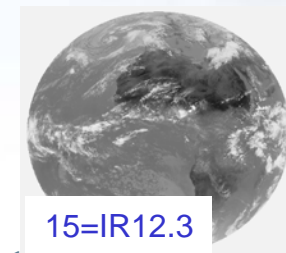
12=IR8.7



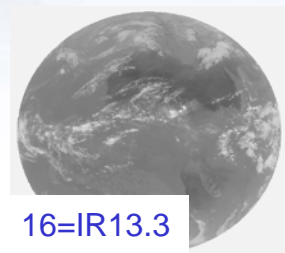
13=IR9.7



14=IR10.5



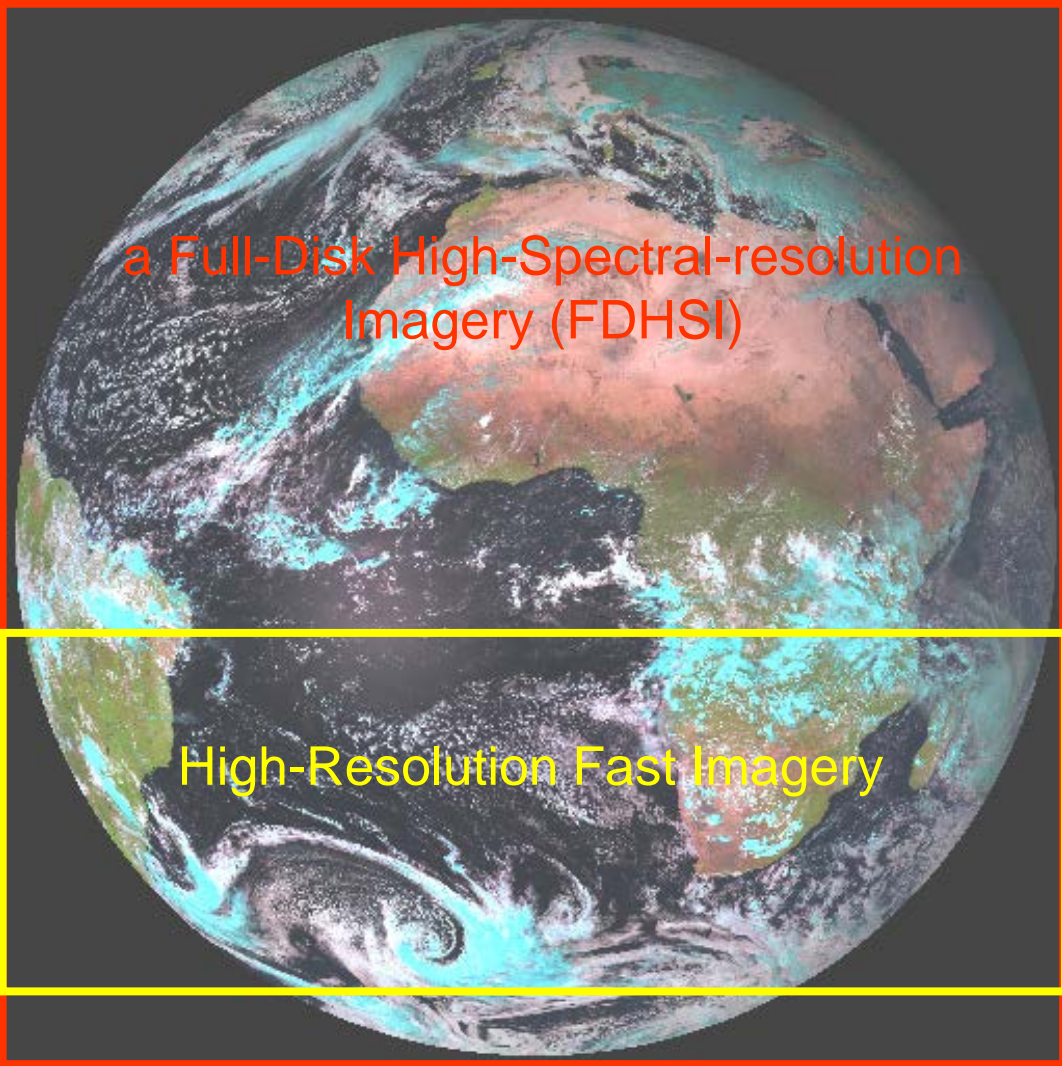
15=IR12.3



16=IR13.3



From MSG-SEVIRI to MTG-FCI



MTG FCI outbids MSG SEVIRI observations on cloud, aerosol, moisture and fire:

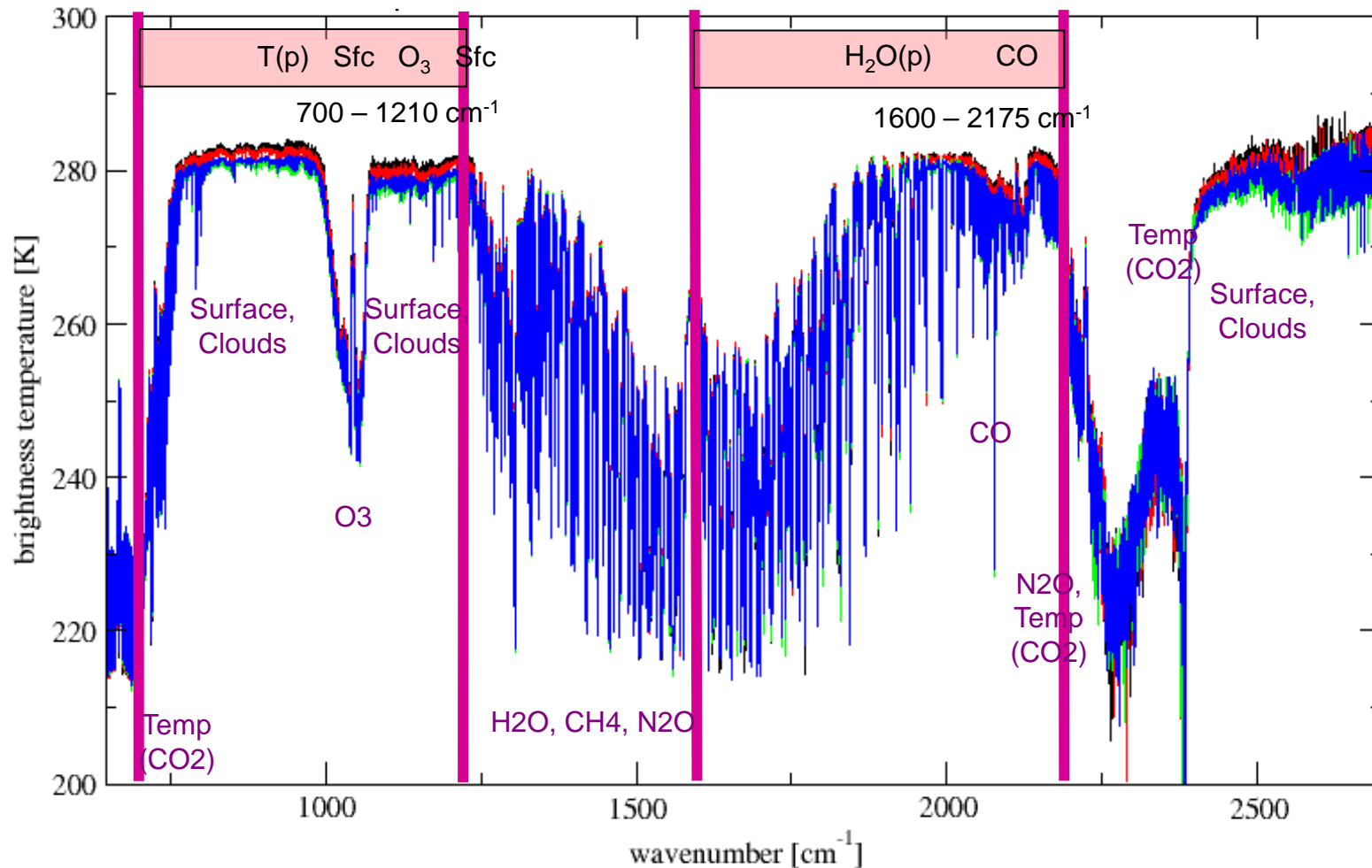
- by adding new channels
- by improving temporal-, spatial-, and radiometric resolution

	Coverage	Repeat cycle
FDHSI mission	18°x18°	10 min
HRFI mission	1/4 FD	2.5 min



MTG-IRS: High Spectral/Spatial/Temporal Sampling

MTG-IRS will deliver unprecedented information on horizontal and vertical gradients of moisture, wind and temperature.





MTG Lightning Imager Requirements

The LI on MTG measures Total Lightning:
Cloud-to-Cloud Lightning (IC) and Cloud-to-Ground Lightning (CG)

Main benefit from GEO observations:
homogeneous and continuous
observations delivering information
on location and strength of
lightning flashes to the users with
high timeliness of 30 seconds

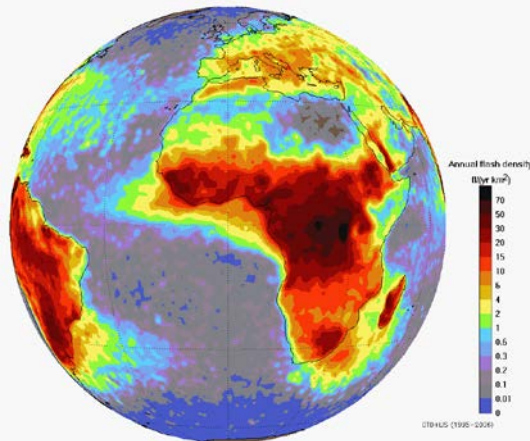


detect, monitor, track, and
extrapolate in time
occurrence of strokes:

- Warnings
- Development
(Intensity/Movement) of active
convective areas
- Lifecycle of storms

As well as...

- Lightning climatology
- Chemistry (NO_x production)

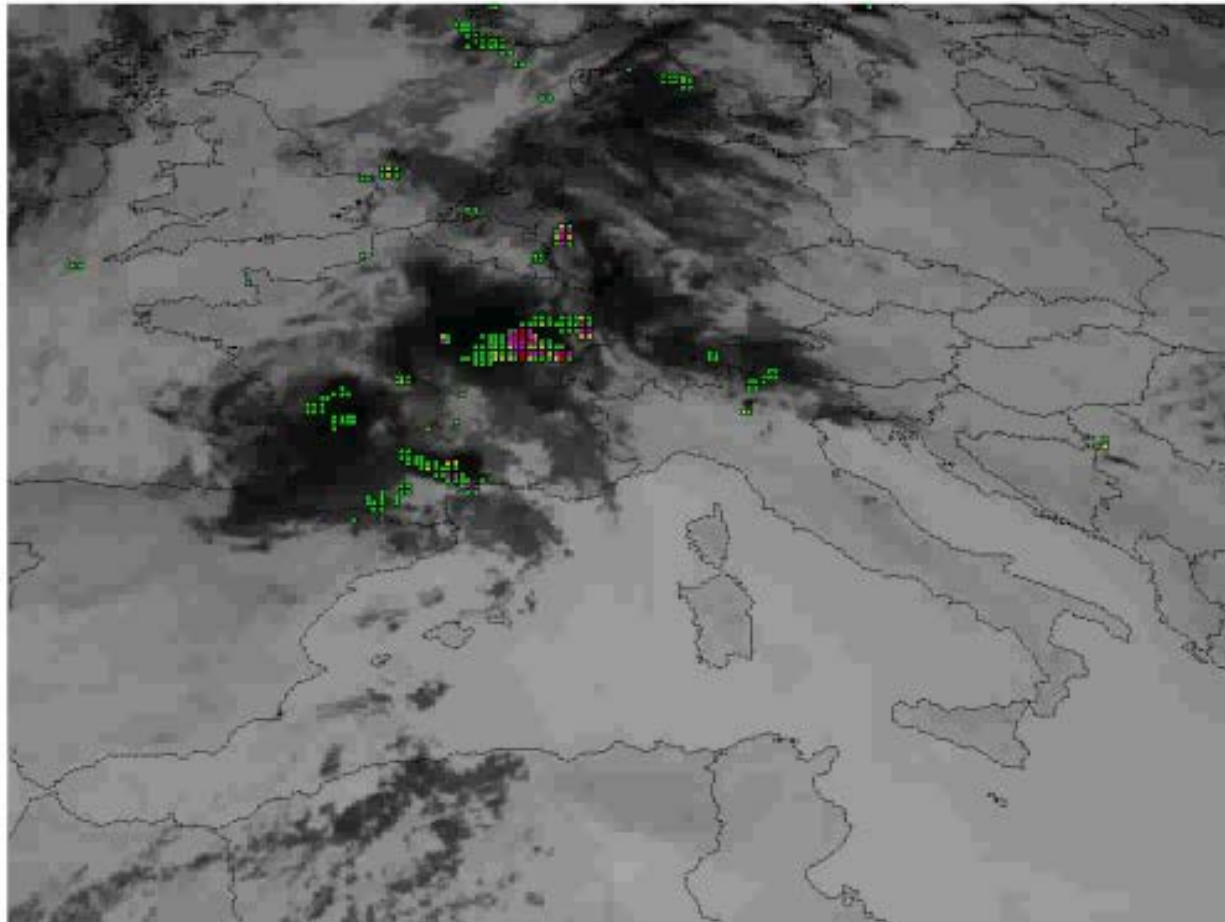


LIS/OTD flash
density in
the MTG LI
field of view



Proxy Data Development – Example

Simulation of MTG LI events on 29 July 2006 at 0 h 15 min



Based on LINET
ground-based
data over Europe

Colour code indicates
the
MTG-LI “event” density



The EUMETSAT Data Centre





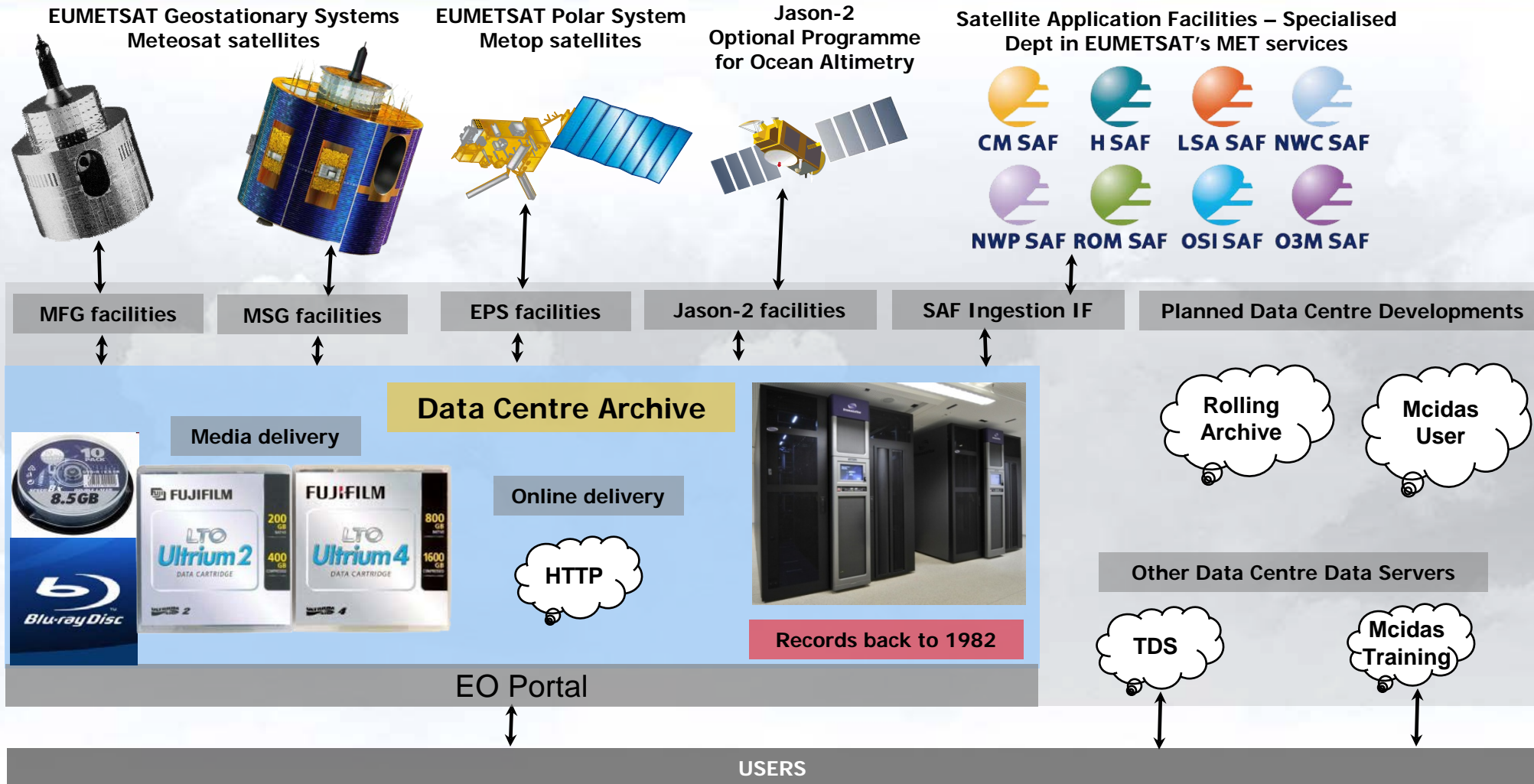
The EUMETSAT Data Centre

The Data Centre aims to:

- Guarantee a long-term preservation of data and generated products from EUMETSAT's meteorological satellites.
- Enable users to browse, make automated orders, and retrieve data from EUMETSAT's catalogue of products.
- Set up in 1995, the Data Centre has developed to become a state-of-the-art archive serving all EUMETSAT satellite programmes. With more than 150 meteorological satellite products available — in the case of Meteosat spanning a record of more than 30 years — the Data Centre offers one of Europe's largest and most comprehensive collections in this field.



The EUMETSAT Data Centre





How to find EUMETSAT Products: use the EUMETSAT Product Navigator

The Product Navigator is the central online access to all of EUMETSAT's products' information.

New users should use this web application to find out what EUMETSAT products are available.

The Navigator complies with ISO 19115/19139 meta-data standards and conforms to the EU INSPIRE directive.

EUMETSAT products can be ordered either in 'real time' or from the Data Centre Archive.

The 'real time' ordering service is called EUMETCAST and this service requires the installation of a EUMETCAST reception station and service subscription license. Costs are incurred by the subscriber for the hardware and the license.

The Data Centre Archive does not offer 'real time' data and there is no guaranteed delivery times...but the ordering of data is free.

Using the Product Navigator

The screenshot shows the EUMETSAT Product Navigator interface. The browser address bar displays the URL: `navigator.eumetsat.int/discovery/Start/Explore/Quick.do`. The page title is "PRODUCT NAVIGATOR Collection Discovery Service".

The main content area is titled "Metadata details" and includes a "Back to result page" link. The dataset information is as follows:

- Dataset:** High Rate SEVIRI Level 1.5 Image Data - MSG - 0 degree
- Description:** Rectified (level 1.5) Meteosat SEVIRI image data. The data is transmitted as High Rate transmissions in 12 spectral channels. Level 1.5 image data corresponds to the geolocated and radiometrically pre-processed image data, ready for further processing, ...

The "Distribution" tab is selected, showing the following information:

EUMETSAT Data Centre	
Data Access:	EUMETSAT Data Centre
Available Format:	NATIVE
Version:	-
Typical File Name:	MSG3-SEVI-MSG15-0100-NA-20130208102743.243000000Z-1051616.net
Average File Size:	272.0 MB
Frequency:	96 (per day)
B1SIG_10, B1SIG_8, B2SIG_10, B2SIG_8	
Version:	-
Typical File Name:	ISCCRB1.0.MSG-3.2013.02.14.0742.EUM ISCCRB1FTPLOG.0.MSG-3.2013.02.14.0742.EUM
Average File Size:	38.0 MB
Frequency:	96 (per day)
BSQ	

A red arrow points to the "EUMETSAT Data Centre" text in the "Data Access" row.

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European Organisation for the Exploitation of Meteorological Satellites



How to Order EUMETSAT Products: Use the EO Portal

- Anyone can register using the EO Portal to become a Data Centre user.
- EO Portal URL - <http://eoportal.eumetsat.int> into your browser.
- User should subscribe to the Data Centre Service subscription.
- This service offers an Online Ordering Application where EUMETSAT data can be queried and ordered.
- The Data is free but there is no guarantee on delivery times.
- User guides, training slides and general information about the Data Centre can be founded under:

<http://www.eumetsat.int/website/home/Data/DataDelivery/EUMETSATDataCentre/index.html>



EO Portal: User Registration and Subscription

The Data Centre Ordering Application can be found here:

EUMETSAT EARTH OBSERVATION PORTAL My Account

PRODUCT NAVIGATOR | DATA CENTRE | HELP

HOME [AJACOB]

- ▶ User Profile
- ▶ Service Subscriptions
- ▶ Licences
- ▶ Logout

2.15

Earth Observation Portal

Welcome to the EUMETSAT Earth Observation Portal. Select from the available options to view/modify your profile, subscribe/unsubscribe to services, request decryption hardware and software, view your licence details and request new or view existing Data Centre orders.

If you are registering for data and products for the first time, go to Edit/View Service Subscriptions to select your preferred service/s.

AVAILABLE OPTIONS

	▶ Edit/View Service Subscriptions Select the near real-time data and products you wish to receive, your preferred delivery mechanism and update your data usage profile.		▶ Edit/View User Profile Modify your contact details, including address details for delivery and invoicing purposes, phone, fax and email, etc.
	▶ View/Extend Licences View existing licence arrangements, request a licence renewal.		▶ Data Centre Application Request new archive data and view status of current and previous Data Centre orders.

Print | Contact us | Privacy Policy

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Ordering McIDAS Data Sets from the Data Centre Archive

Help Product Navigator About...

EUMETSAT petermiu logged in

Query and Order Shopping Trolley Specific Product Order Order Follow-Up

Orders

- ORDERS
 - Standard Orders
 - SUBMITTED
 - 1027264_2012-04-10 07:29:46.0Z
 - DELIVERED
 - ERROR

Details

ID: 1027264
Submission Date: 2012-04-10 07:29:46.0Z
Price (Euro): 0.00
Size (MB): 2.084.00

Archive Facility: UMARF

Granule Name	Product Type	Media Type	Compression Method	Product Format
20120408120010-MSG2-MSG15	High Rate SEVIRI Level 1.5 Image Data	On line delivery	BZIP2	Mcdas AREA files
20120408121510-MSG2-MSG15	High Rate SEVIRI Level 1.5 Image Data	On line delivery	BZIP2	Mcdas AREA files
20120408123010-MSG2-MSG15	High Rate SEVIRI Level 1.5 Image Data	On line delivery	BZIP2	Mcdas AREA files
20120408124510-MSG2-MSG15	High Rate SEVIRI Level 1.5 Image Data	On line delivery	BZIP2	Mcdas AREA files

Cancel selected orders Open the online delivery page...

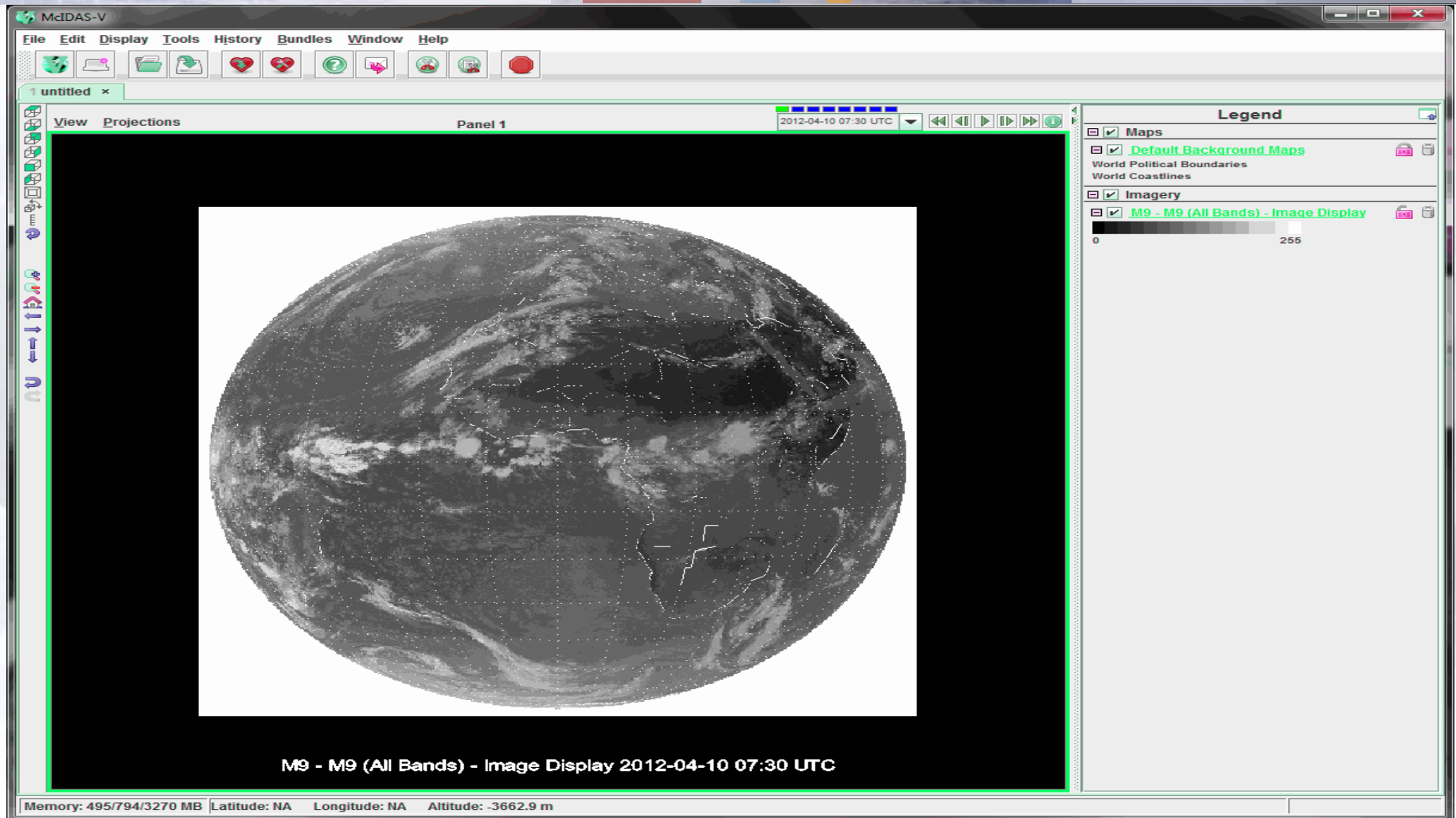


Ordering McIDAS Data Sets from EUMETSAT

1027264-1of1 WinRAR archive			460,130 KB
MSG2-SEVI-MSG15-0100-NA-20120408121240.849000000Z-1027264.tar	WinRAR archive	115,435 KB	
MSG2-SEVI-MSG15-0100-NA-20120408122740.901000000Z-1027264.tar	WinRAR archive	115,280 KB	
MSG2-SEVI-MSG15-0100-NA-20120408124240.955000000Z-1027264.tar	WinRAR archive	114,905 KB	
MSG2-SEVI-MSG15-0100-NA-20120408125741.010000000Z-1027264.tar	WinRAR archive	114,507 KB	
Mcidas_MSG2-SEVI-MSG15-0100-NA-20120408121240.HRV	HRV File	242,210 KB	
Mcidas_MSG2-SEVI-MSG15-0100-NA-20120408121240.IR16	IR16 File	26,914 KB	
Mcidas_MSG2-SEVI-MSG15-0100-NA-20120408121240.IR39	IR39 File	26,914 KB	
Mcidas_MSG2-SEVI-MSG15-0100-NA-20120408121240.IR87	IR87 File	26,914 KB	
Mcidas_MSG2-SEVI-MSG15-0100-NA-20120408121240.IR97	IR97 File	26,914 KB	
Mcidas_MSG2-SEVI-MSG15-0100-NA-20120408121240.IR108	IR108 File	26,914 KB	
Mcidas_MSG2-SEVI-MSG15-0100-NA-20120408121240.IR120	IR120 File	26,914 KB	
Mcidas_MSG2-SEVI-MSG15-0100-NA-20120408121240.IR134	IR134 File	26,914 KB	
Mcidas_MSG2-SEVI-MSG15-0100-NA-20120408121240.VIS6	VIS6 File	26,914 KB	
Mcidas_MSG2-SEVI-MSG15-0100-NA-20120408121240.VIS8	VIS8 File	26,914 KB	
Mcidas_MSG2-SEVI-MSG15-0100-NA-20120408121240.WV62	WV62 File	26,914 KB	
Mcidas_MSG2-SEVI-MSG15-0100-NA-20120408121240.WV73	WV73 File	26,914 KB	
README			



The EUMETSAT McIDAS ADDE Server (used for training)





Planned Future EUMETSAT Developments related to McIDAS

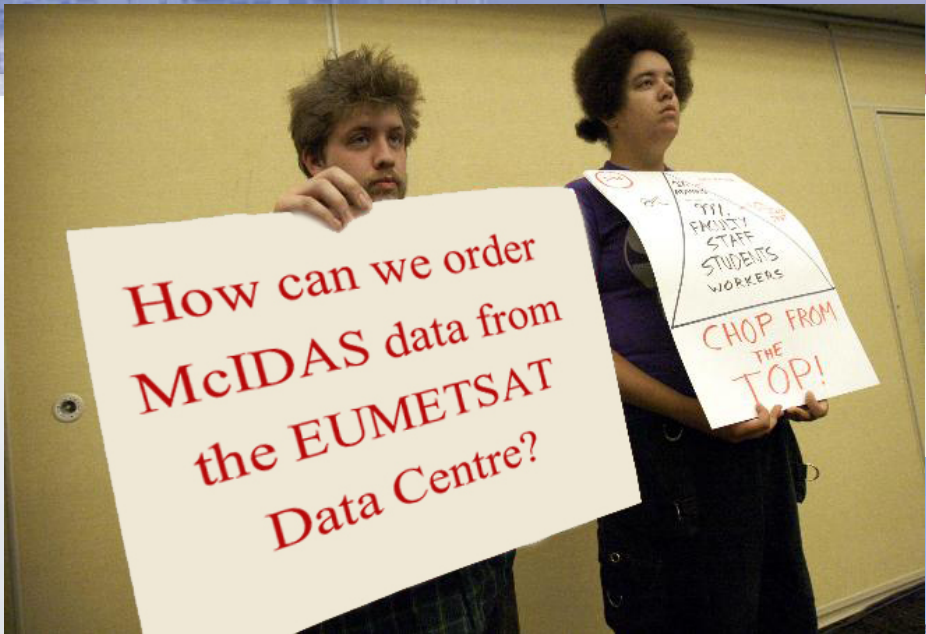
Implement new secondary ADDE servers to support more EUMETSAT products.

Develop the EUMETSAT ADDE Service for use by the wider user community (currently, this is limited for training).

EUMETSAT has implemented NetCDF as a common delivery format for nearly all the polar orbiting products. These formats following CF conventions and Unidata guideline to support visualisation of the products. Investigate the possibility of developing a 'Generic' secondary ADDE server to serve these types of products.



EUMETSAT User Service Helpdesk: first point of contract for all enquires. Email: ops@eumetsat.int





End of Presentation

Thank you for your Attention, questions ?

EUMETSAT URLs:

<http://www.eumetsat.int>

<http://eoportal.eumetsat.int>

<http://navigator.eumetsat.int>

<http://adde.eumetsat.int>