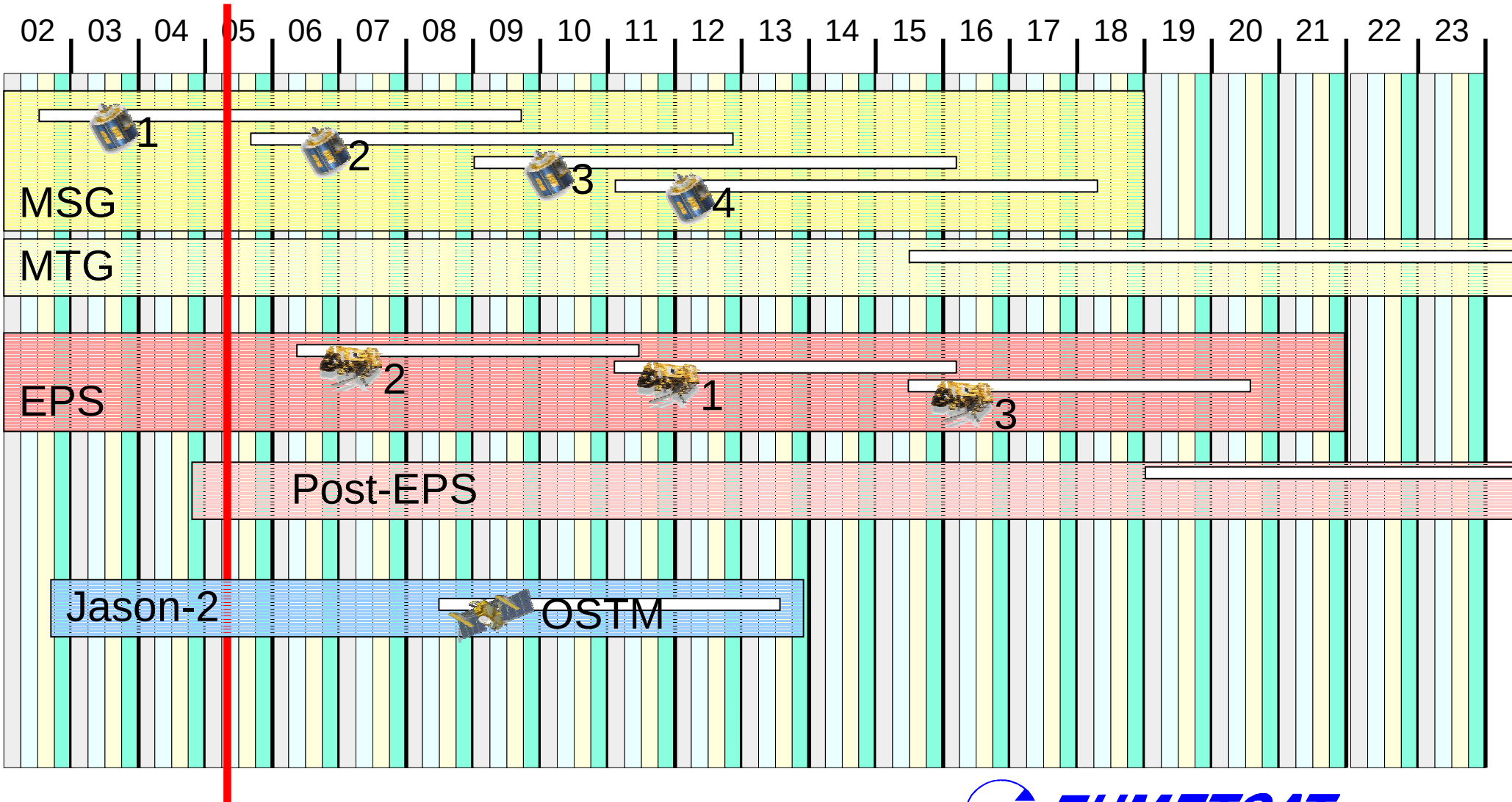
EUMETSAT PLANS

K. Dieter Klaes

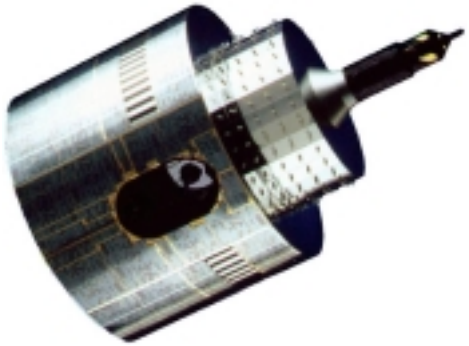
EPS Programme Scientist

Content & Scope

Programme Schedules



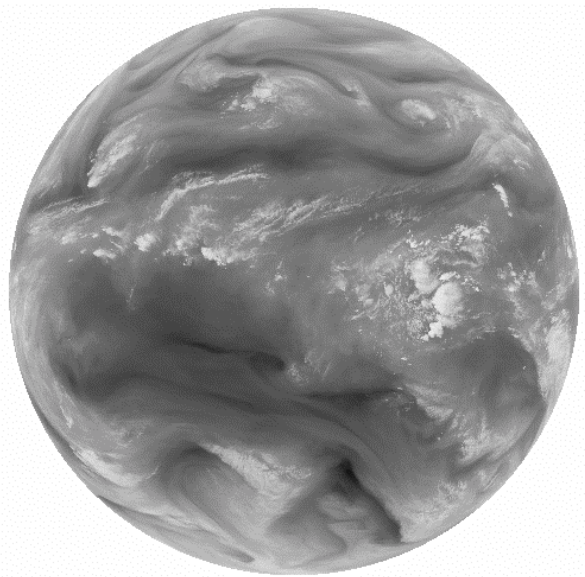
EUMETSAT Plans



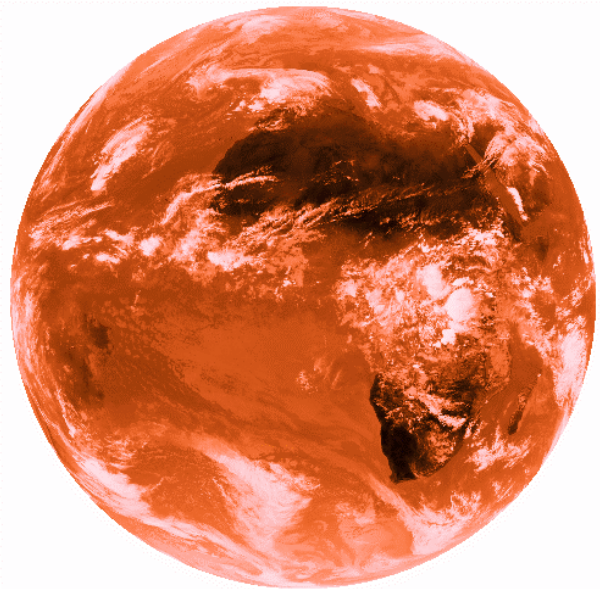
METEOSAT

Meteosat Operational Programme (MOP)
and
Meteosat Transition Programme (MTP)

Visible (VIS)
0.4 - 1.0 µm
5000 x 5000



Infrared (IR)
10.5 - 12.5 µm
2500 x 2500



Water Vapour (WV)
5.7 - 7.1 µm
2500 x 2500

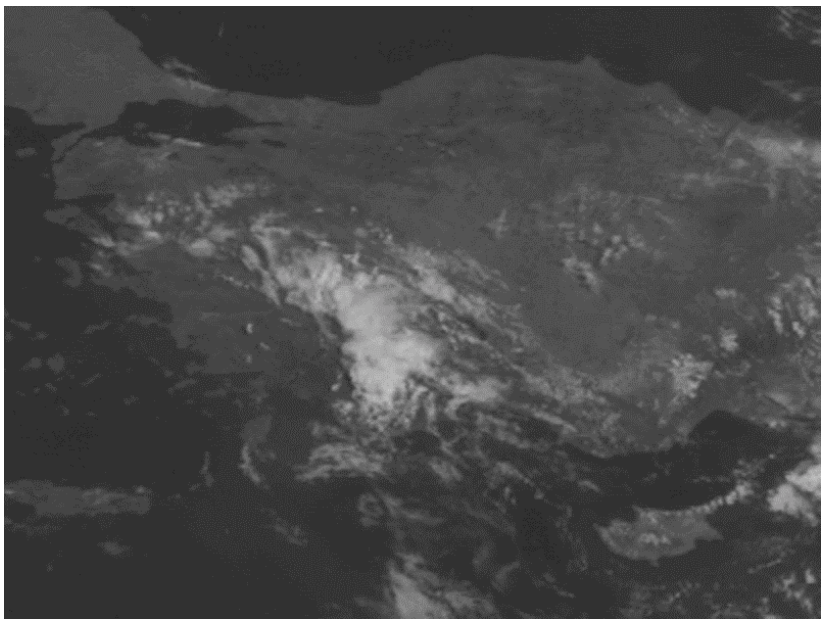
EUMETSAT

EUMETSAT Indian Ocean Data Coverage (IODC)

From end of May1998 Meteosat-5 has been located at 63°E where it supported INDOEX until the end of 1999 and will continue as IODC until 2006, will be replaced by Meteosat-7 (after commissioning of MSG-2) through the end of 2008

EUMETSAT
Rapid Scanning Service (RSS)

• Resulting from a request to support the Mesoscale Alpine Project (MAP) in September 1999 the backup spacecraft Meteosat-6 was configured to conduct a series of rapid scan operations



•Initially the rapid scan area covered the Alpine region at 5 minute intervals

⇒ In 2000 the scanned area was increased significantly and the repeat cycle fixed to 10 minute intervals. From mid 2001 the Rapid Scanning Service became operational

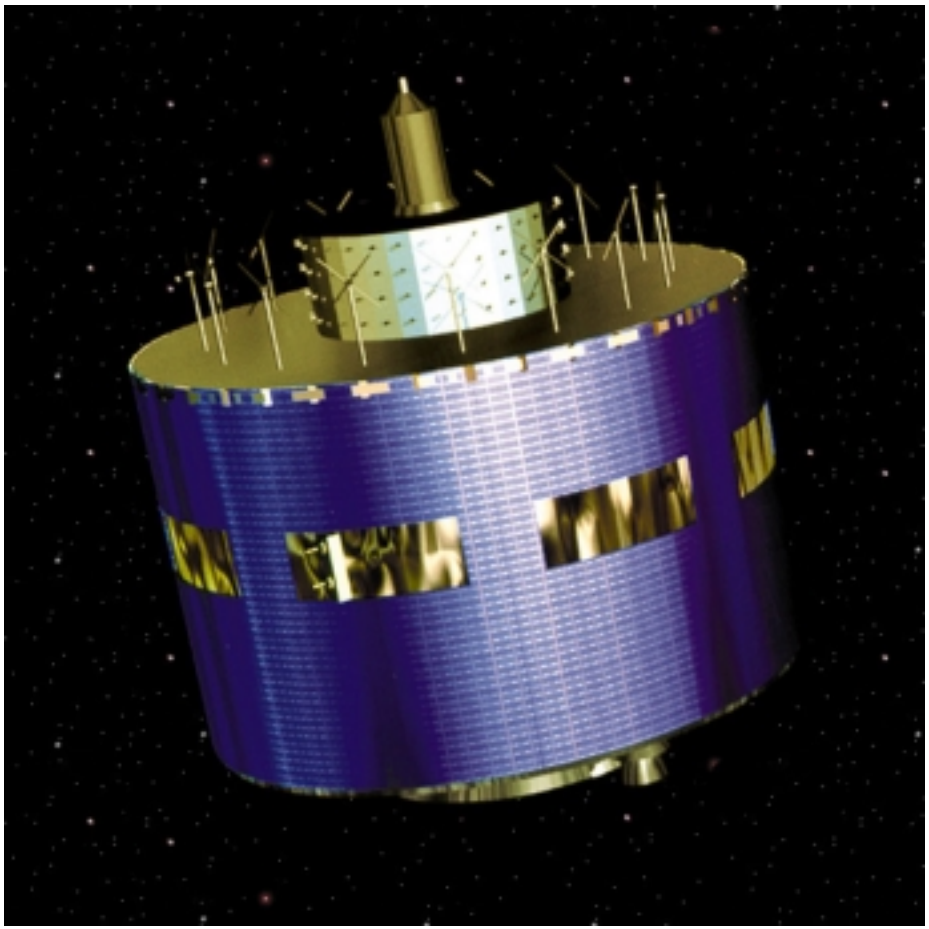
METEOSAT SECOND GENERATION - MSG

- **MSG-1:**
  - launched August 2002
  - Routine Operations started Jan 2004
  - **MSG-1 ➡ Meteosat-8**

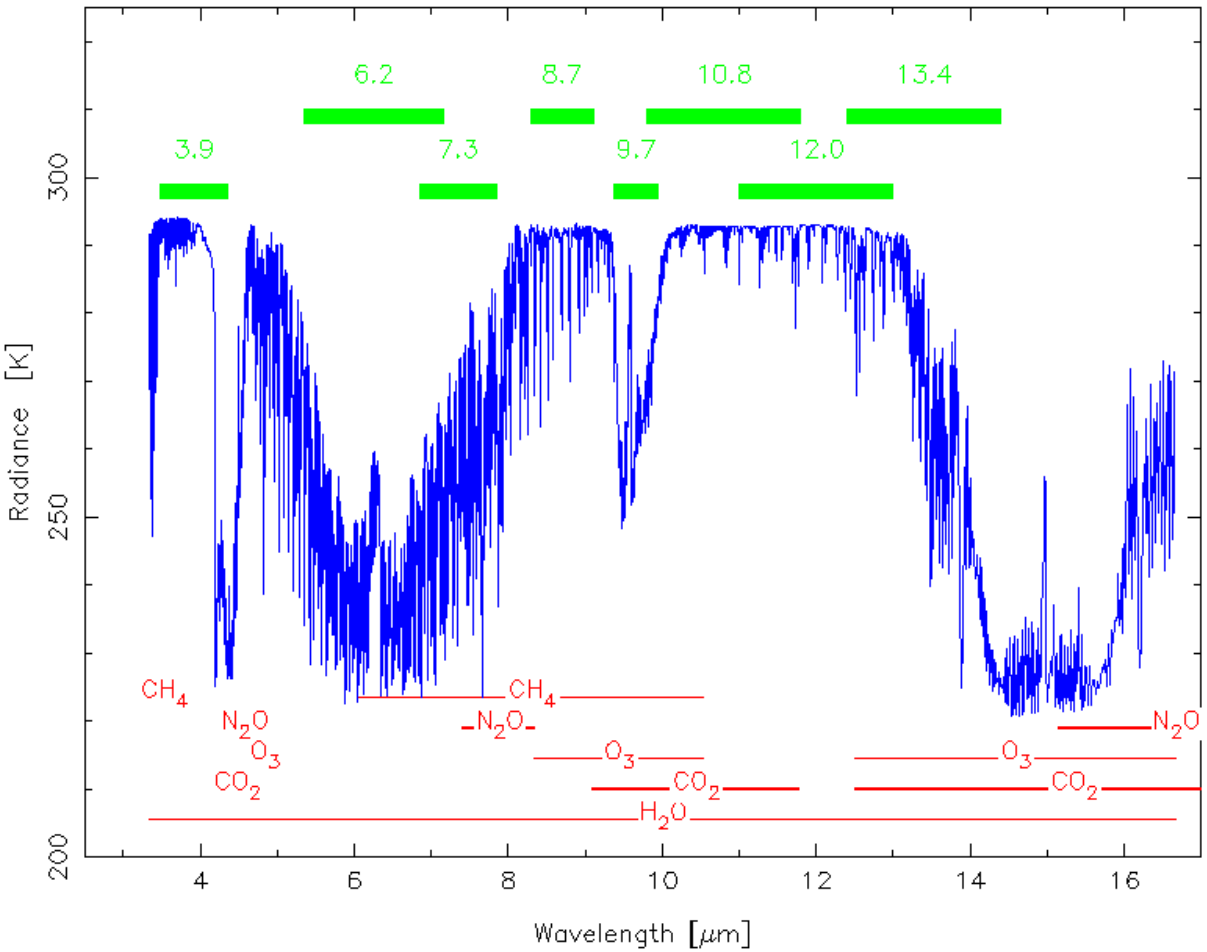
- **MSG-2:**
  - launch planned 23 August 2005

- **MSG-3:**
  - in storage, launch early 2009 (TBC)

- **MSG-4:**
  - under production
  - in storage from spring 2007
  - launch 2011 - 2012



SEVIRI Channels

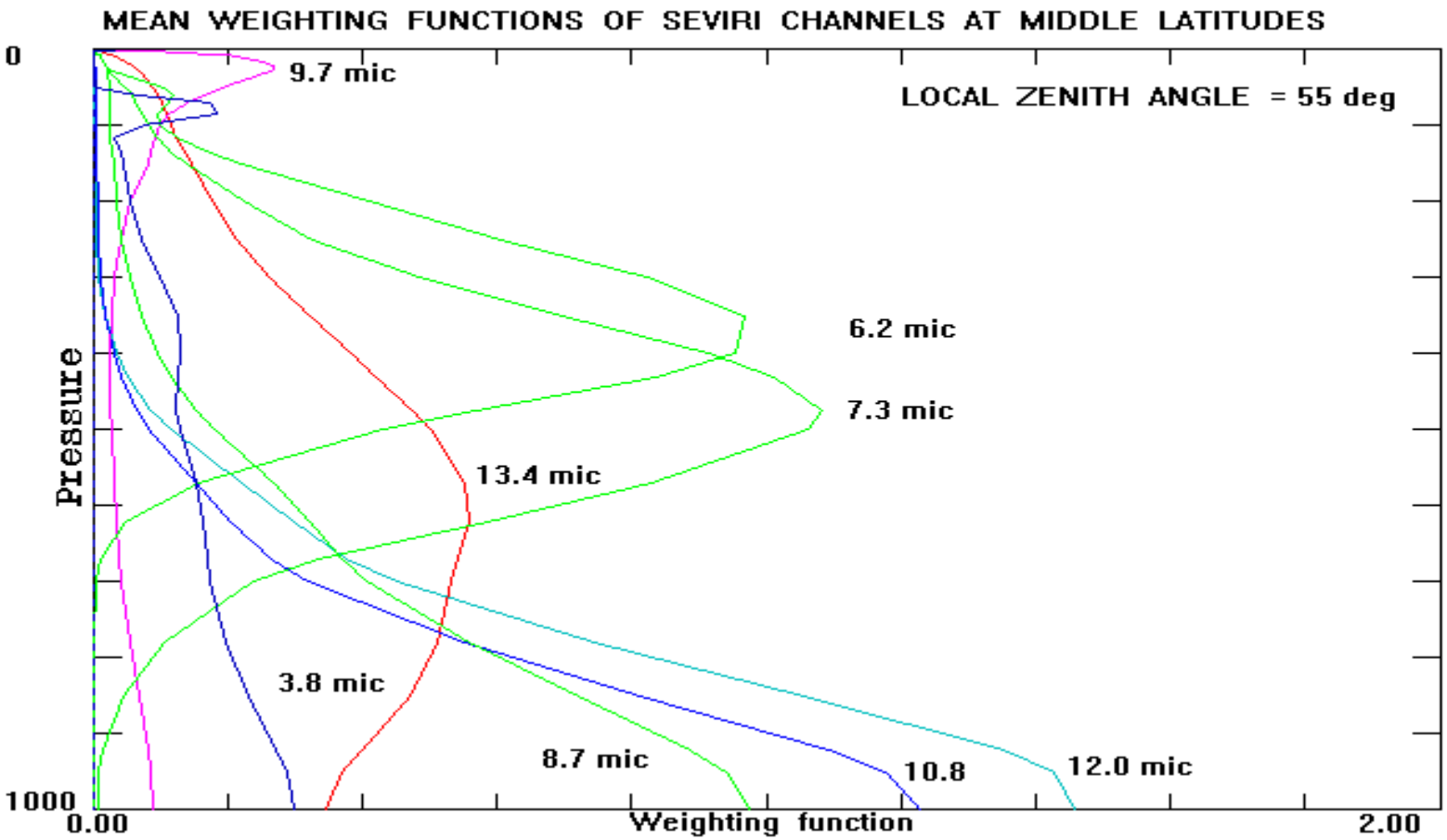


and the solar channels:

VIS0.6
VIS0.8
NIR1.6

HRV

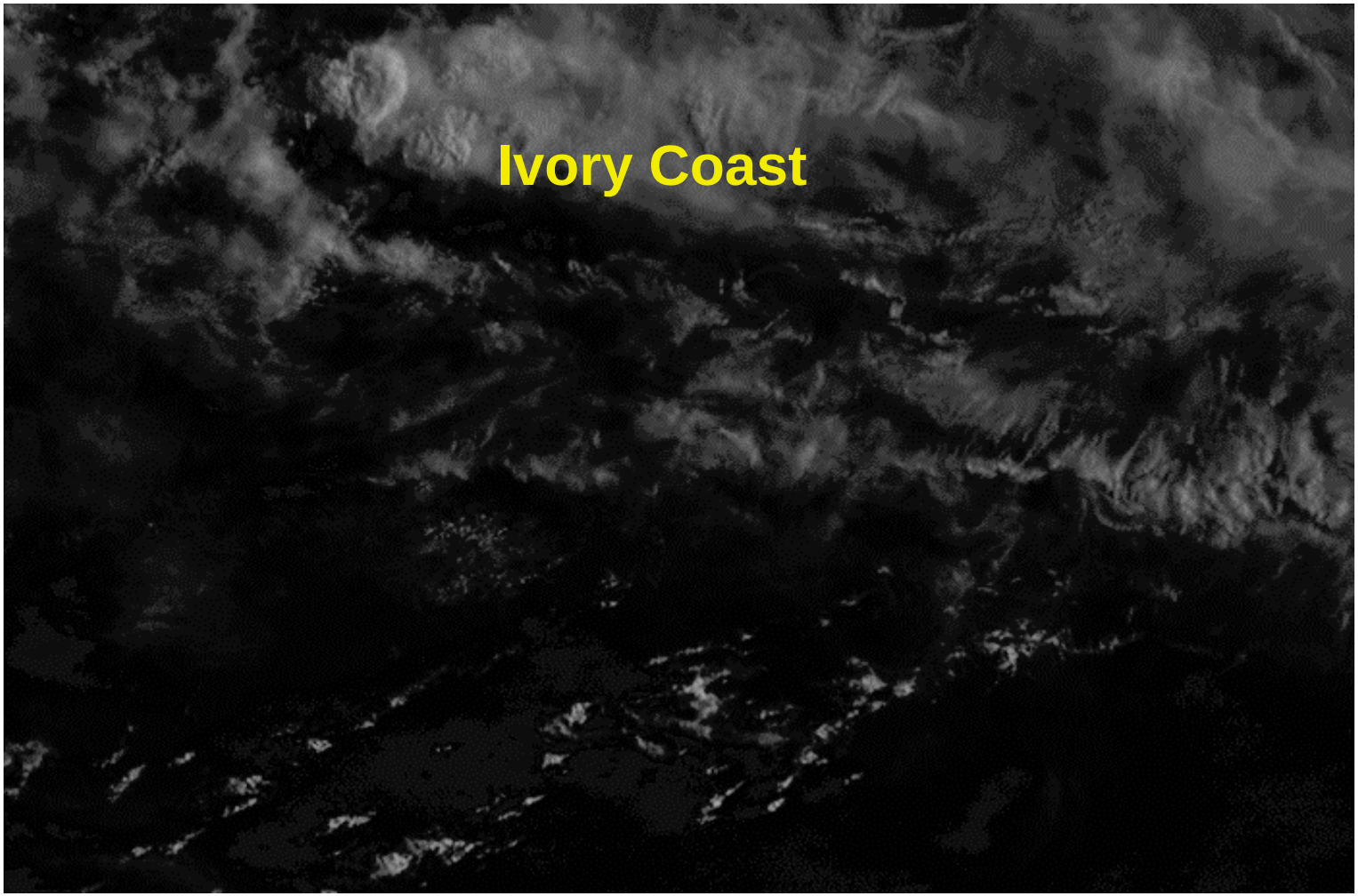
SEVIRI Channel Weighting Functions



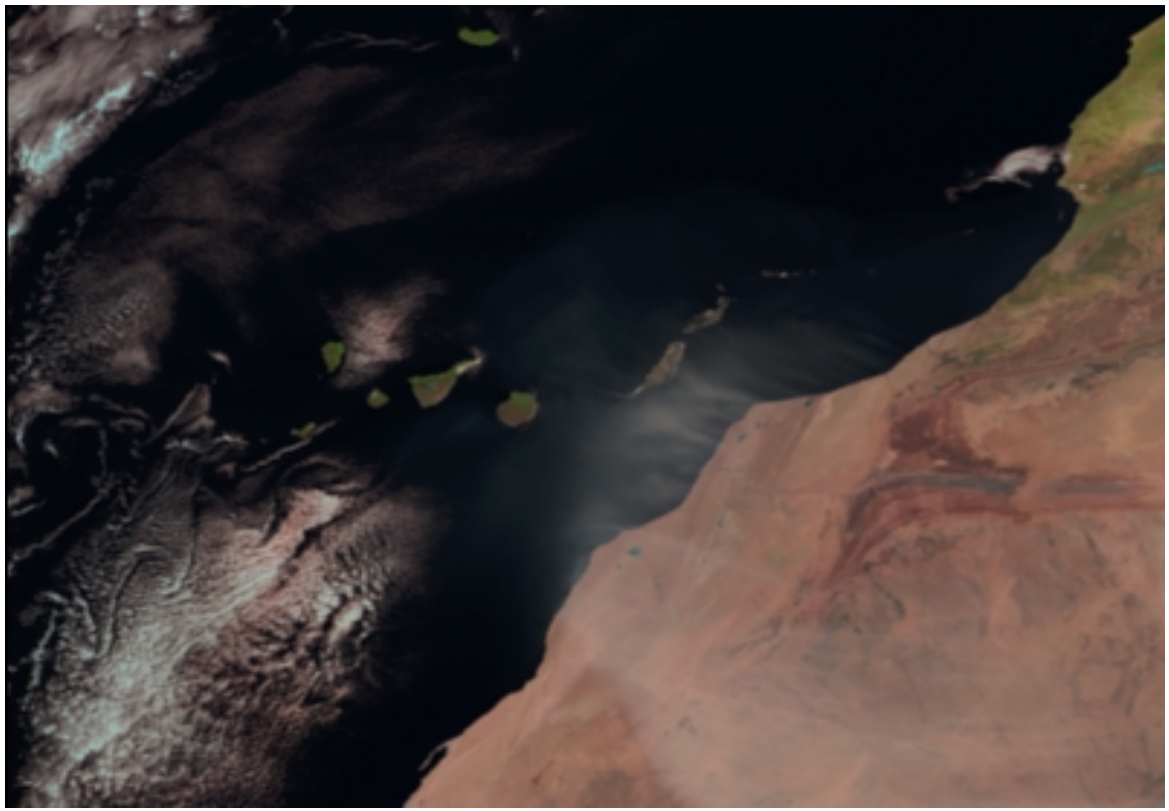
Meteosat-8 Baseline Products

Products	Acronym	UMARF	GTS	EUMETCast
Atmospheric Motion Vectors	AMV	Yes	Yes	Yes
Cloud Analysis	CLA	Yes	Yes	Yes
Cloud Analysis Image	CLAI	Yes		Yes
Cloud Mask	CLM	Yes		Yes
Cloud Top Height	CTH	Yes		Yes
Clear Sky Radiance	CSR	Yes	Yes	
Climate Data Set	CDS	Yes		
High Resolution Precipitation Index	HPI	Yes		
ISCCP Data Set AC, B1 & B2	IDS	Yes		
Tropospheric Humidity new	TH	Yes	Yes	Yes
Total Ozone new	TOZ	Yes	Yes	Yes
Sea Surface Temperature (1)	SST			
Scenes Analysis (1)	SCE			
Radiative Transfer Model (1)	RTM			
Calibration Support	CAL	Yes		
Global Instability new	GII	Yes		Yes
Clear-sky Reflectance Map (2) new	CRM	Yes		Yes

Table 2: The status of the meteorological products extracted centrally with Meteosat-8.
1) Internal products only, 2) Not fully operational

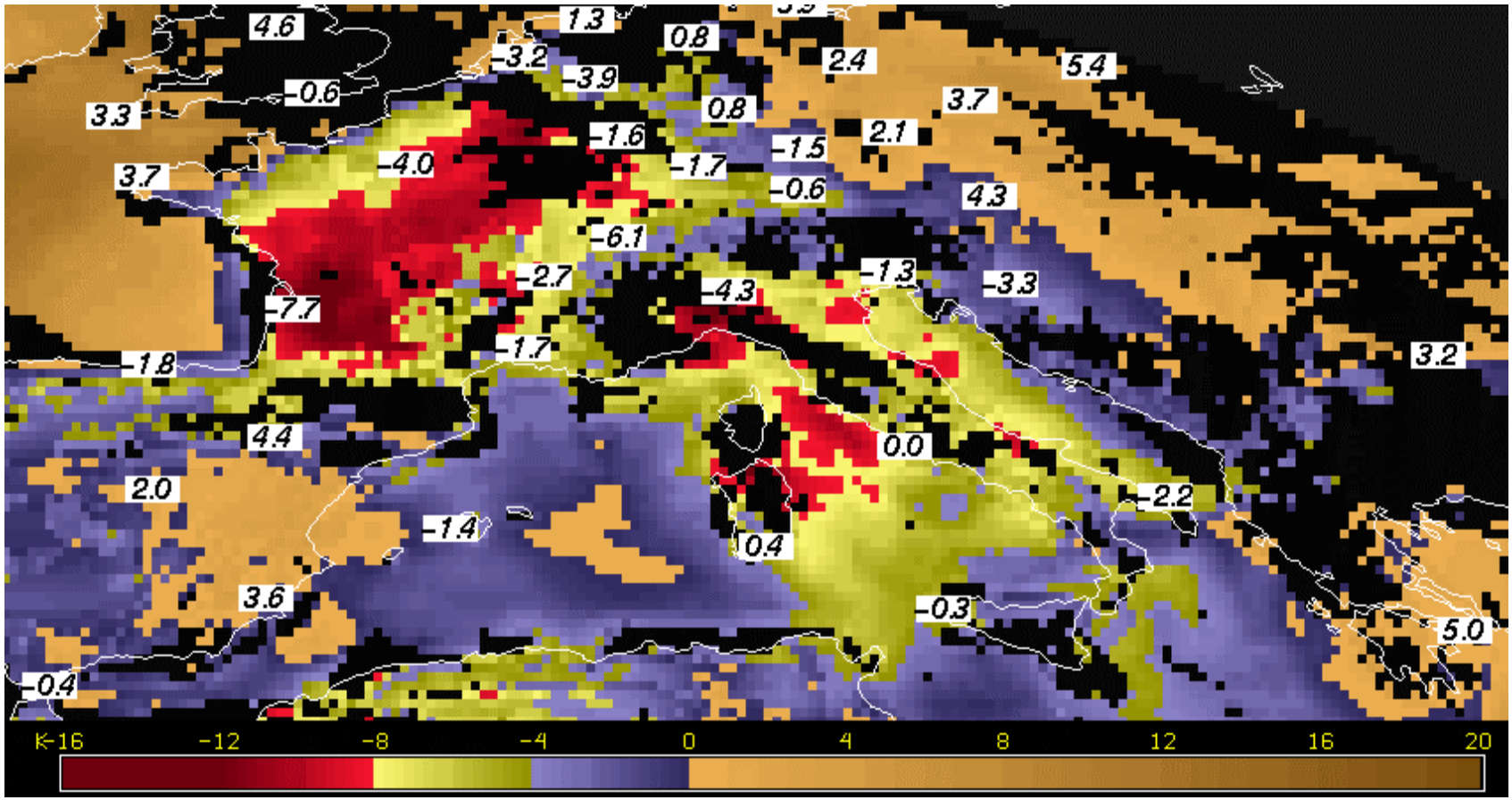

Ivory Coast

Aerosol Information



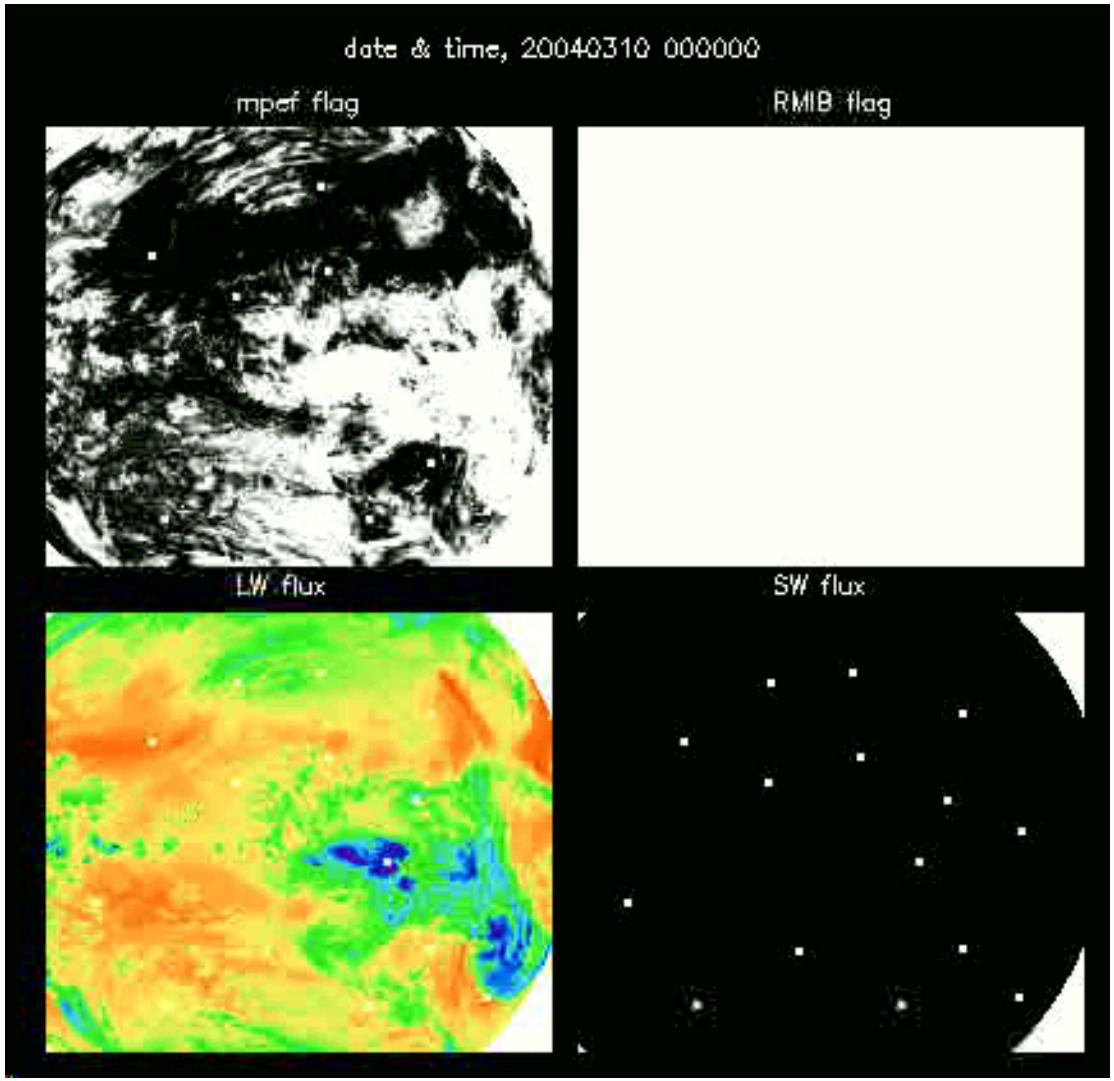
03 March 2004, 1245 - 1900 UTC,
RGB NIR1.6 / VIS0.8 / VIS0.6

Global Instability Index Product: still experimental



Lifted Index (Europe), compared to colocated radiosondes

Geostationary Earth Radiation Budget Experiment (GERB)



On Meteosat-8, MSG-2, MSG-3 and MSG-4

EUMETSAT Plans

1 Introduction

2 Satellite Programmes

2.1 Geostationary Systems

2.2 EUMETSAT Polar System

3 EARS

4 OSTM Contribution

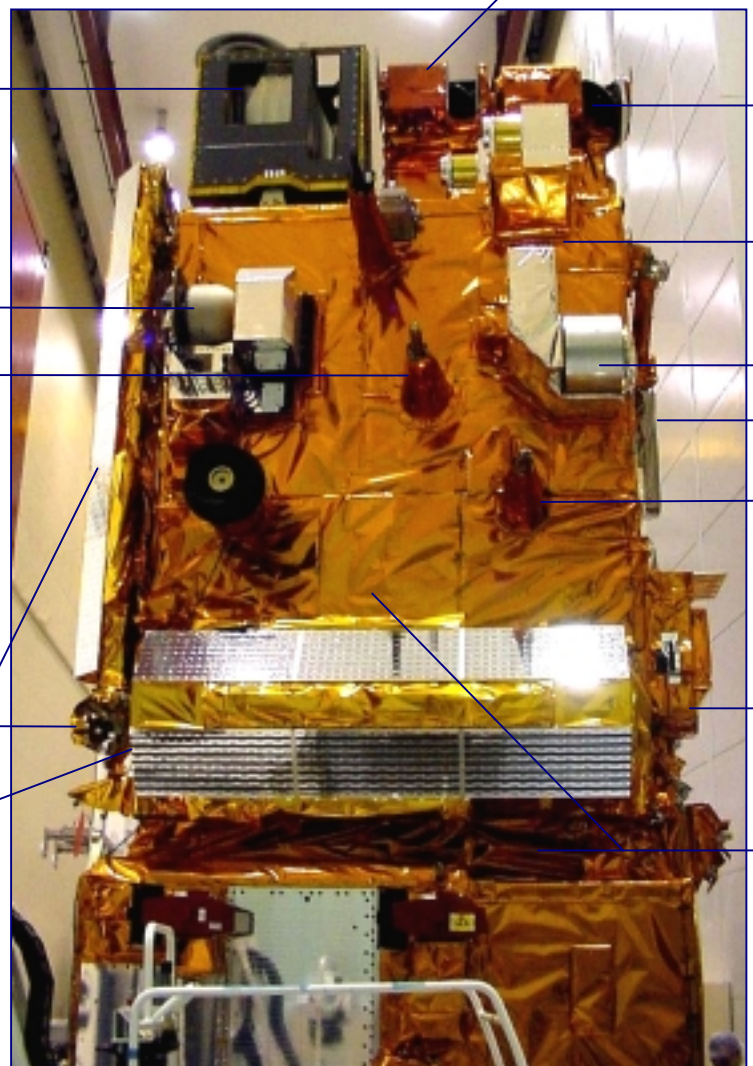
5 Outlook

EUMETSAT POLAR SYSTEM

- Metop-2 Scheduled launch April 2006
- Metop-2 renamed Metop-A after launch
- Sun Synchronous orbit 820 km, 9h30 LST
- 14 years of operation
- Central and distributed Ground Segment components

- Metop-B and Metop-C recurrent models

Metop Instrument Accommodation



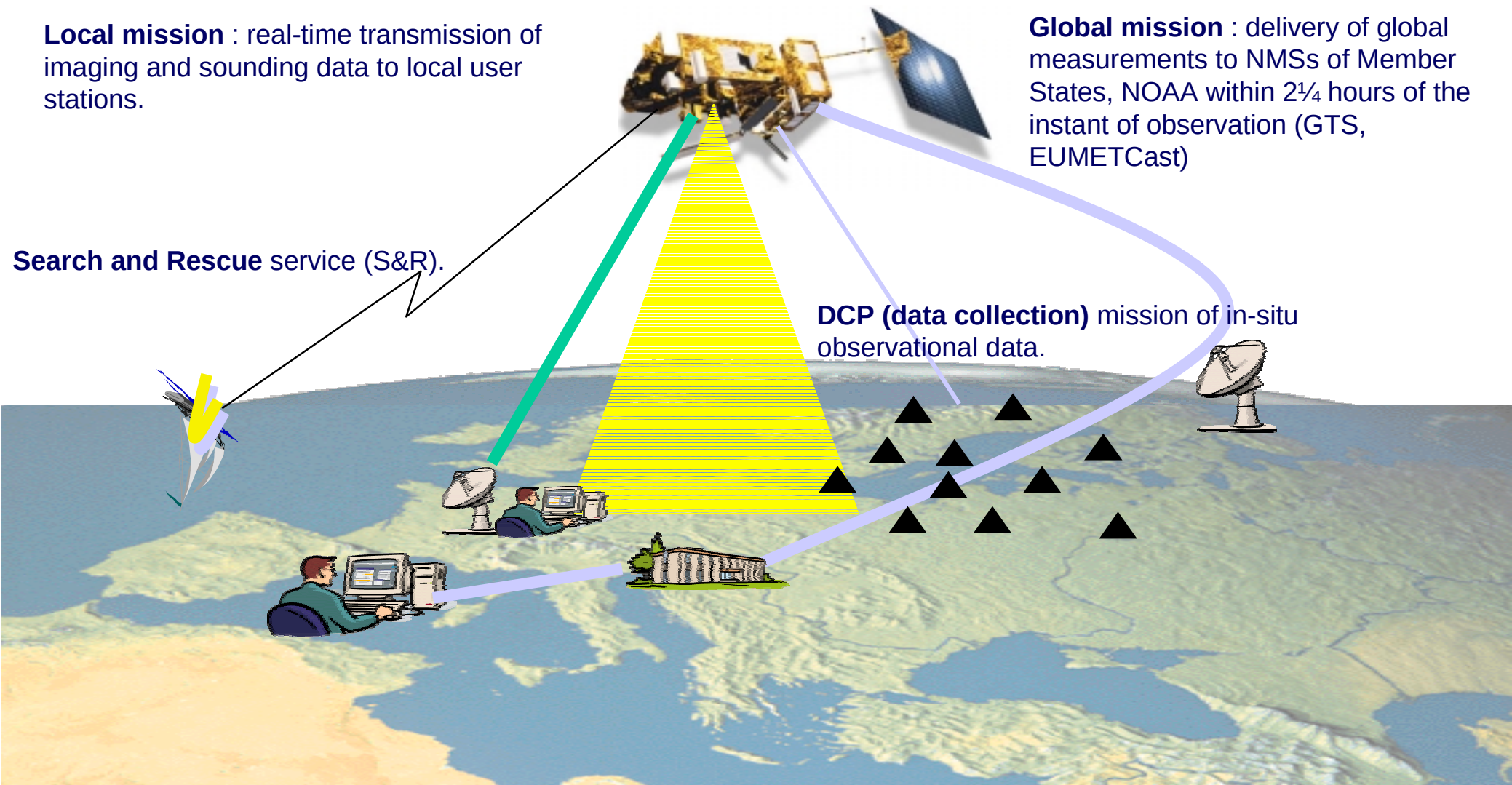
EPS Services

Local mission : real-time transmission of imaging and sounding data to local user stations.

Global mission : delivery of global measurements to NMSs of Member States, NOAA within 2¼ hours of the instant of observation (GTS, EUMETCast)

Search and Rescue service (S&R).

DCP (data collection) mission of in-situ observational data.



Core Ground Segment

METOP

X

S

Polar Site, Svalbard

4 Mbps

PSF

FEP

Polar Site Facility

Front End Processor

Back up Control Center, Madrid

MPF

MCS

FDF

Darmstadt

Mission Planning Facility

MPF

Monitoring & Control System

MCS

Flight Dynamics Facility

FDF

Dissemination Facility

DIF

Product Generation Facility

PGF

ISP

Products

QCF

Quality Control Facility

PPF

IASI GRAS ATOVS ASCAT GOME

Product Processing Facility

NRT Users

8 Mbps

EUMETCAST

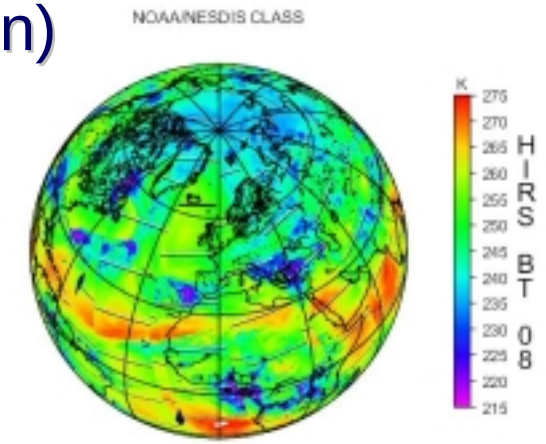
NOAA
U-MARF
SAF 's
C-KMC
IASI TEC
GRAS GSN
TTC
network
LEOP

EUMETSAT

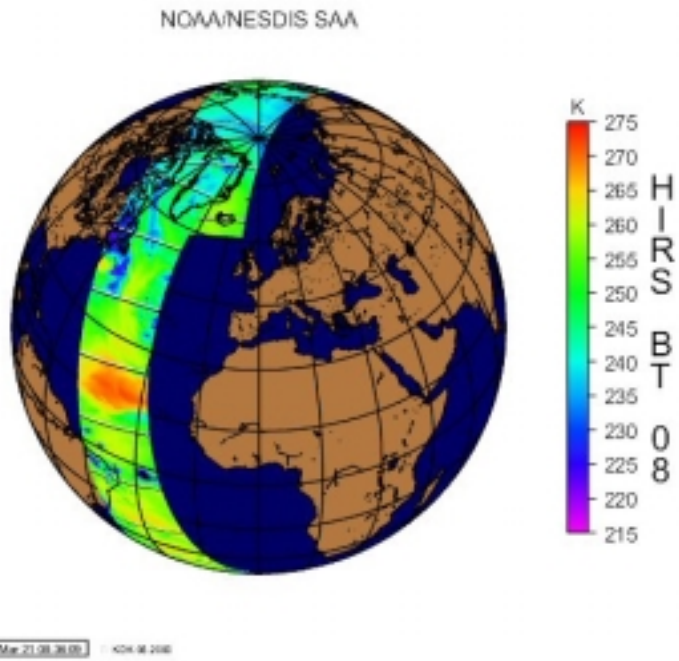
EPS Products (1)

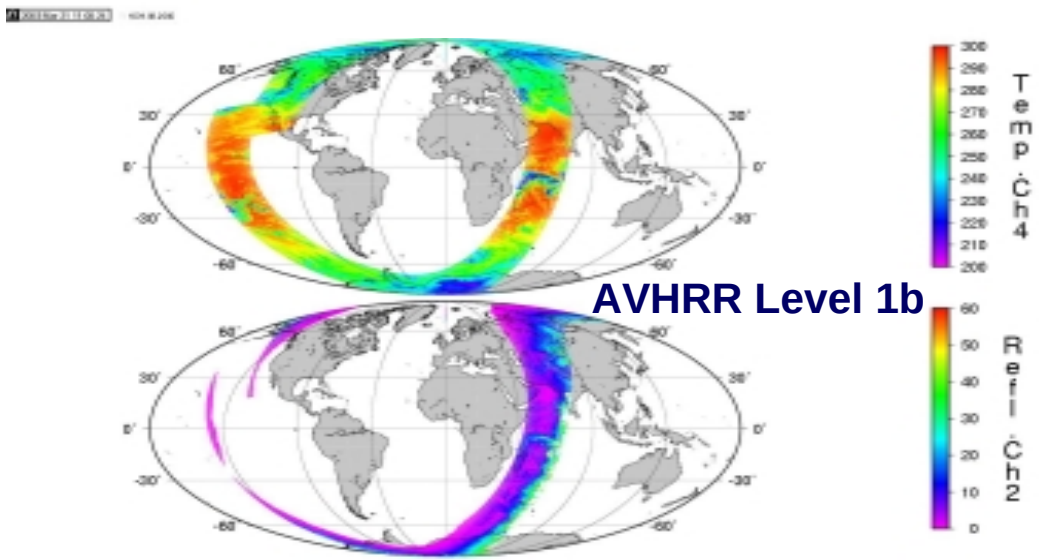
Level 1 NRT Products (2h15min)
Level 2 NRT Products (3h)
Global Sounding:

Global Products are dump-based



Composite of
14 level-1b products
of one day
from HIRS covering
the Earth twice



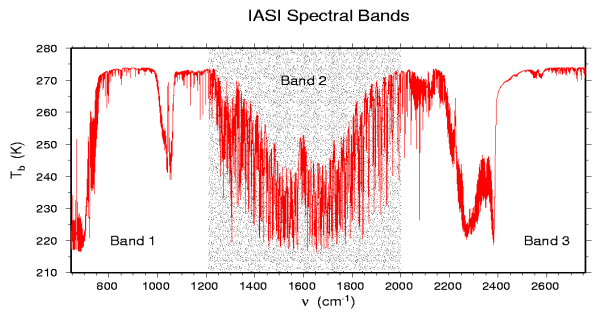


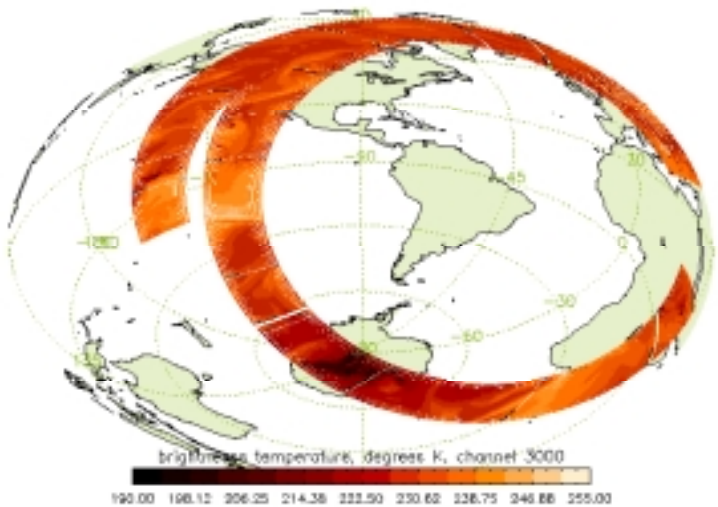
AVHRR Level 1b

Continuity: ATOVS and AVHRR Level 1b and Level 2 products

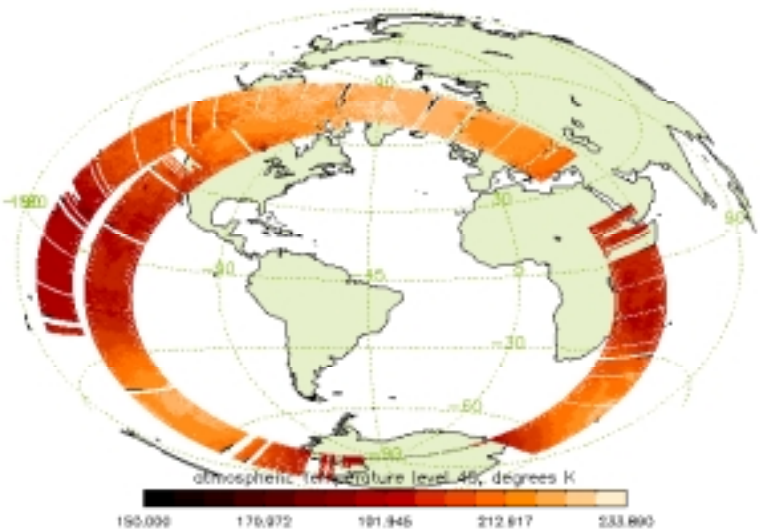
EPS Products (2)

Level 1 NRT Products (2h15min)
Level 2 NRT Products (3h)
Global Sounding:





Brightness temperature as measured by channel 3000 (1394.75 cm^{-1})

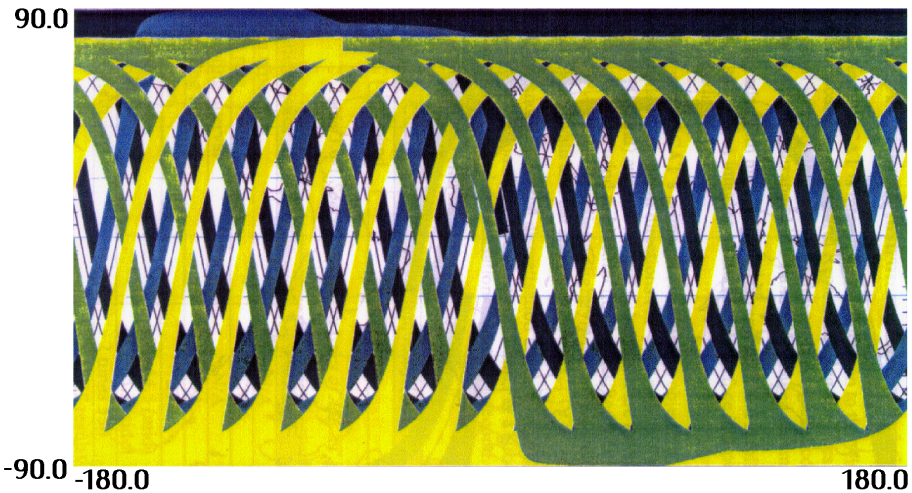


Schematic illustration of the global variation in retrieved atmospheric temperature, degrees K, at pressure level 45 (93.2 hPa).

New technology with IASI: IASI Level 1c and Level 2 products

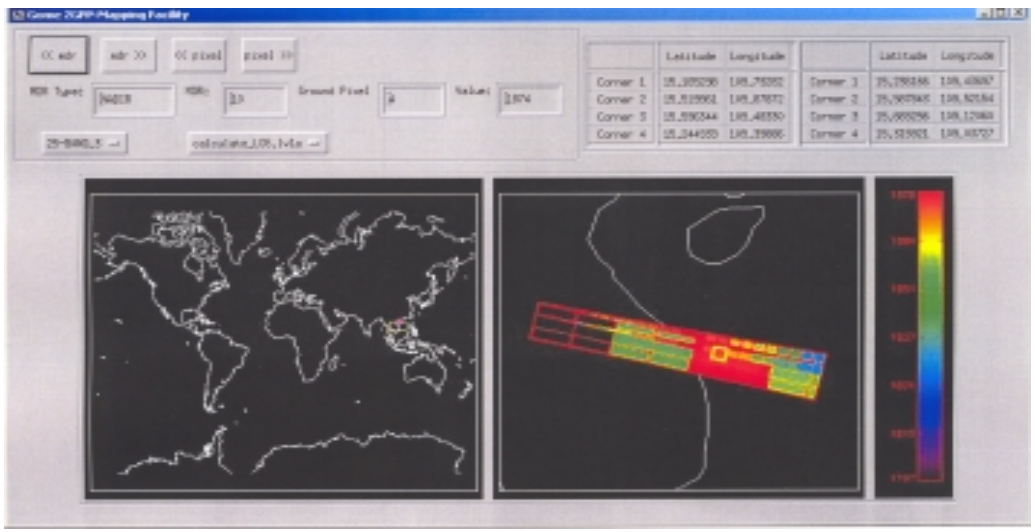
EPS Products (3)

Level 1 NRT Products (2h15min)
Wind and Ozone Monitoring:



Improved Earth Coverage with ASCAT during one day due to dual swath measurement

GOME-2 Level 1 Ground Processor Prototype Output Example for CGS product (1granule)



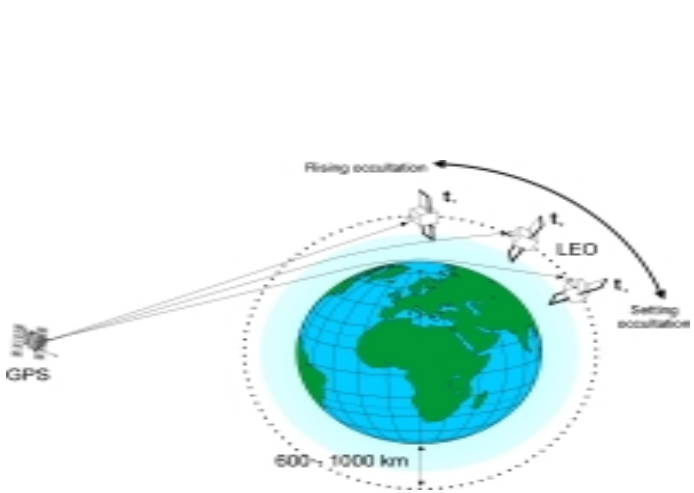
Proven Research Instruments become operational: ASCAT and GOME

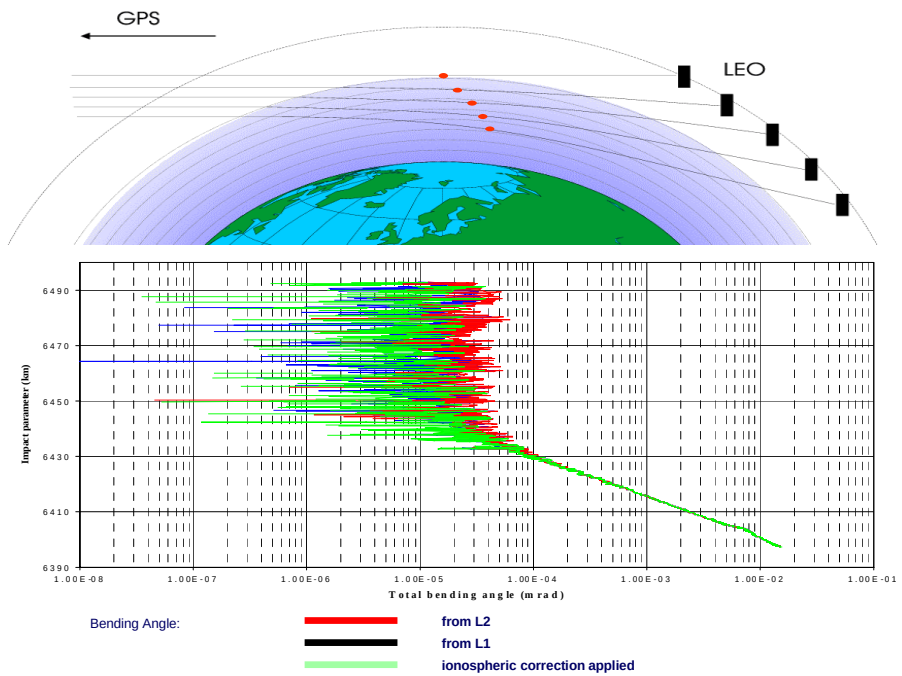
EPS Products (4)

Level 1 NRT Products (2h15min)

Sounding again:

GRAS: limb sounding by occultation of GPS signals





From Luntama (2000)

Level 1 b product: Bending angle.

First use of Radio Occultation technique in operations requires development of a whole system

EPS Products (5)

Level 2 and higher Products:

5 SAFs in the
Initial Operations Phase
(until February 2007)

- *SAF on Nowcasting and Very Short-Range Forecasting*
- *SAF on Ocean and Sea Ice*
- *SAF on Climate Monitoring*
- *SAF on NWP*
- *SAF on Land Surface Analysis*

2 SAFs completing developments
(until February 2007)

- *SAF on Ozone Monitoring*
- *SAF on GRAS Meteorology*

SAF Network

Use of EUMETCast for dissemination of OSI SAF and Land SAF (planned) products.

Proposal for a SAF on Support to Operational Hydrology and Water Management delivered to EUMETSAT in January 2005, evaluated, and submitted to EUMETSAT Delegate Bodies for recommendation/decision.

SAF funding for continuous Development and Operations (2007-2012) approved by Council in June 2004.

EPS Product Formats

Summary of EUMETCast level-1 and level–2 EPS distribution formats for global products

	EUMETCast		GTS	
	Level 1	Level 2	Level 1	Level 2
ASCAT	BUFR and PFS	BUFR from SAF	BUFR	BUFR from SAF
ATOVS	BUFR	BUFR	BUFR	BUFR
AVHRR	PFS	-	-	-
GOME	PFS	BUFR from SAF (TBC)	-	BUFR from SAF
GRAS	BUFR and PFS	BUFR from SAF (TBC)	-	BUFR from SAF
IASI	BUFR	BUFR	BUFR	BUFR

Unified Meteorological Archive / Retrieval Facility (UMARF)

- U-MARF provides the product archiving and retrieval functionality for Meteosat MTP, MSG (U-MARF V1) and EPS (U-MARF V2).

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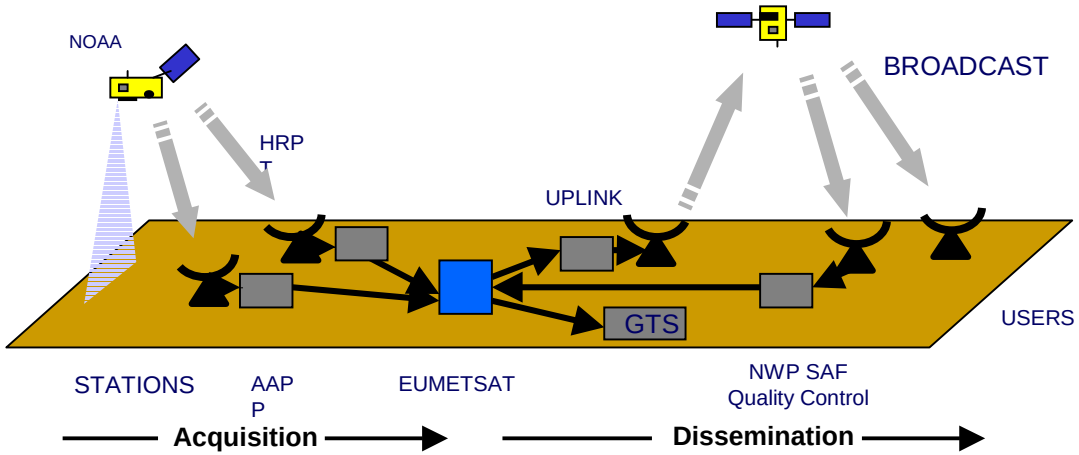
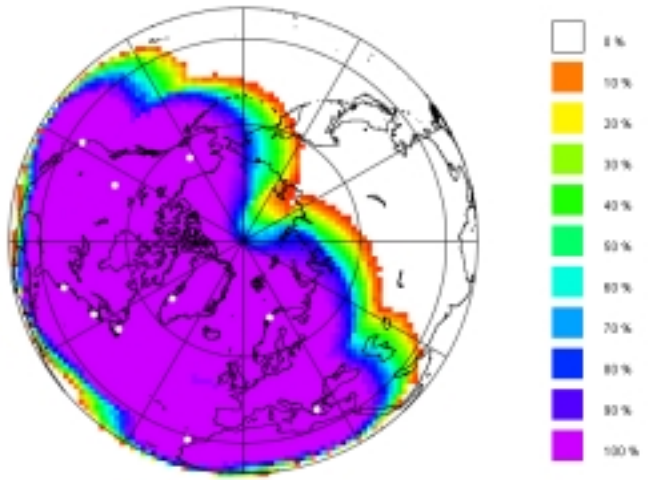
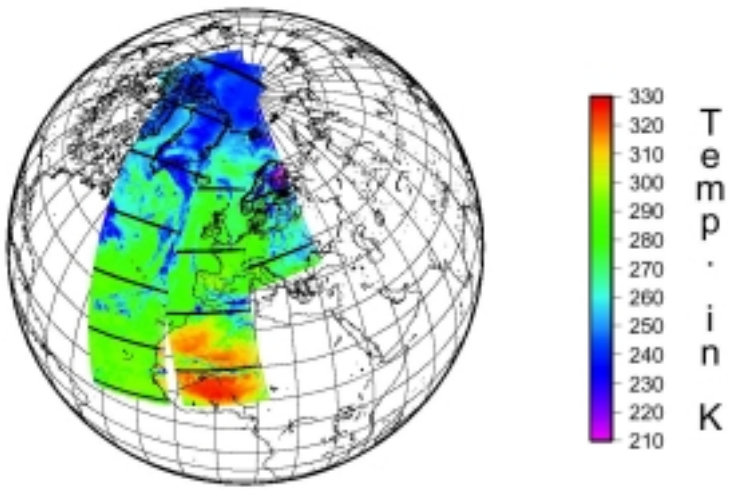
EUMETSAT ATOVS Retransmission Service (EARS)







- **Demonstrates potential future dissemination concepts to meet shorter timeliness requirements**

- **Planned to be extended for NOAA-N,N', Metop**
  - **MHS, IASI**
  - **ASCAT**
  - **AVHRR**

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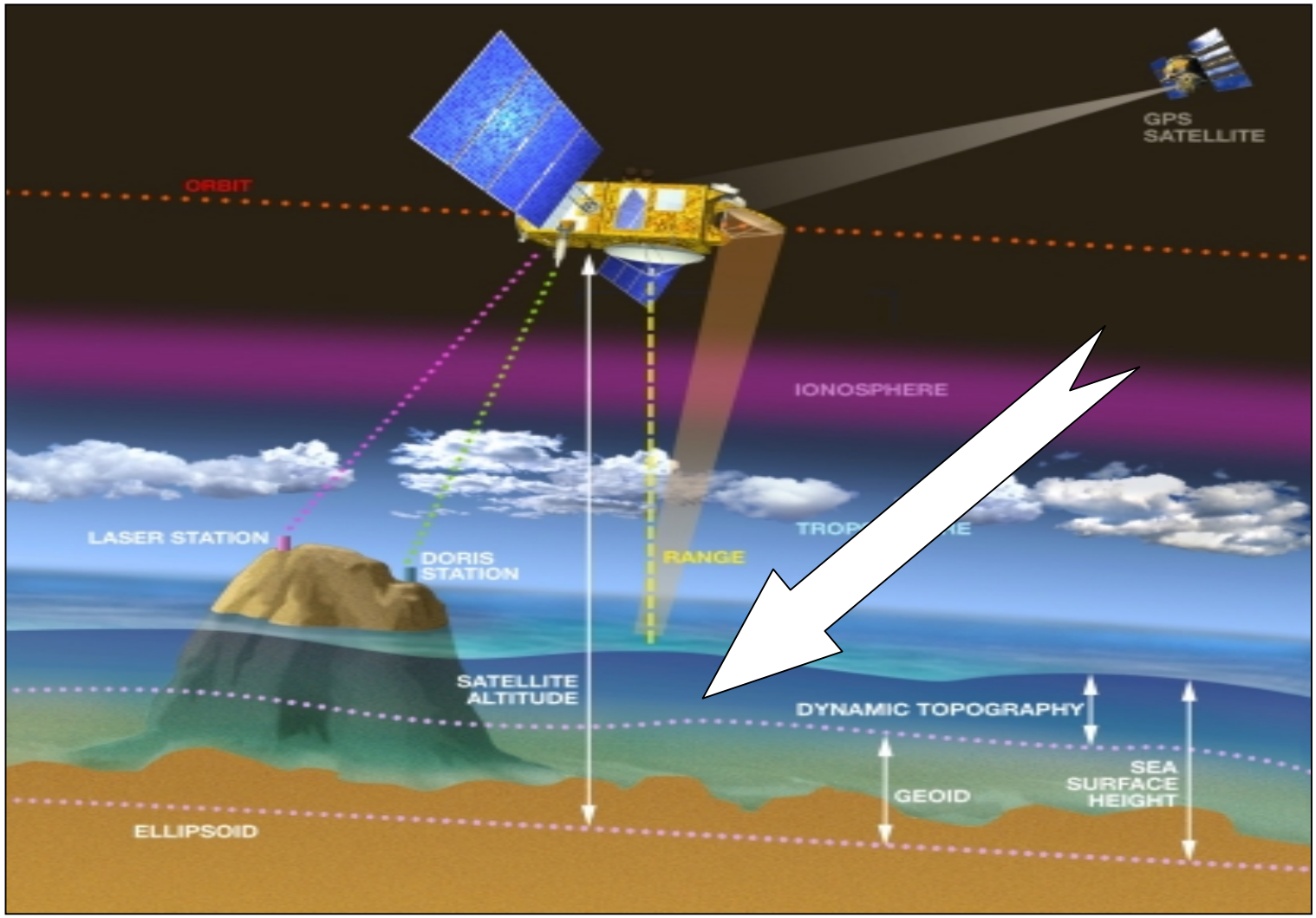
Jason-2: Altimetry

OSTM



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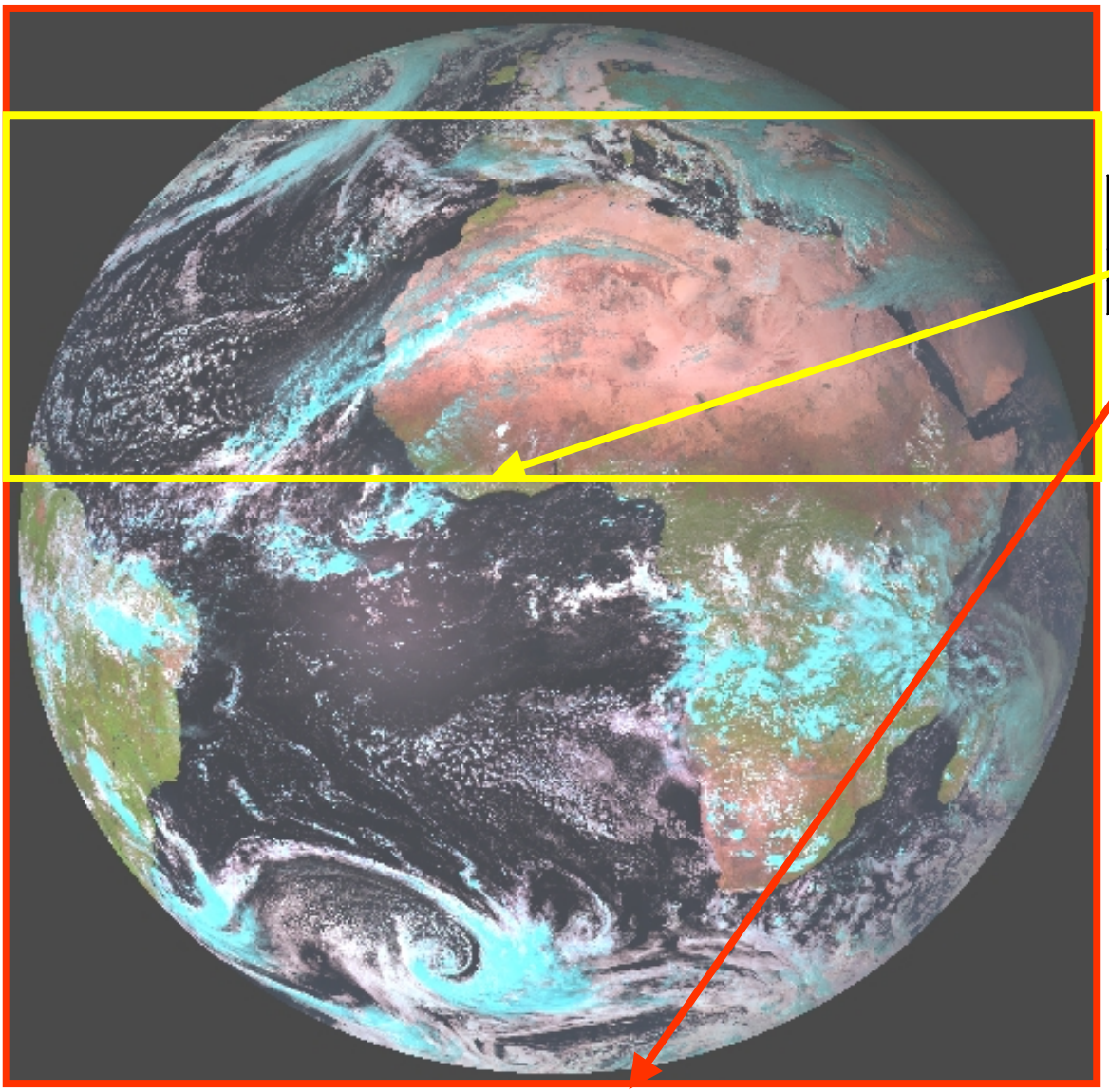
IR Sounding (IRS) Mission



Observation Area Name	Coverage (degrees)	Repeat Cycle (min)
LAC	18°x6°	10
FDC	Φ18°	30

Mission Band	Frequency range	Threshold Task
IRS-0	667 cm^{-1} to 700 cm^{-1}	Temperature profile
IRS-1	700 cm^{-1} to 770 cm^{-1}	Temperature profile
IRS-2	770 cm^{-1} to 980 cm^{-1}	Window observation
IRS-3	980 cm^{-1} to 1070 cm^{-1}	Tracer profile/Chemistry
IRS-4	1070 cm^{-1} to 1210 cm^{-1}	Window observation
IRS-5	1210 cm^{-1} to 1600 cm^{-1}	Humidity/tracer profile *
IRS-6	1600 cm^{-1} to 2000 cm^{-1}	Humidity/tracer profile *
IRS-7	2000 cm^{-1} to 2250 cm^{-1}	Chemistry
IRS-8	2250 cm^{-1} to 2400 cm^{-1}	Temperature profile
IRS-9	2400 cm^{-1} to 2500 cm^{-1}	Window observation

*: Only one of the two band is required

Post-EPS
Need Date and Overall Planning