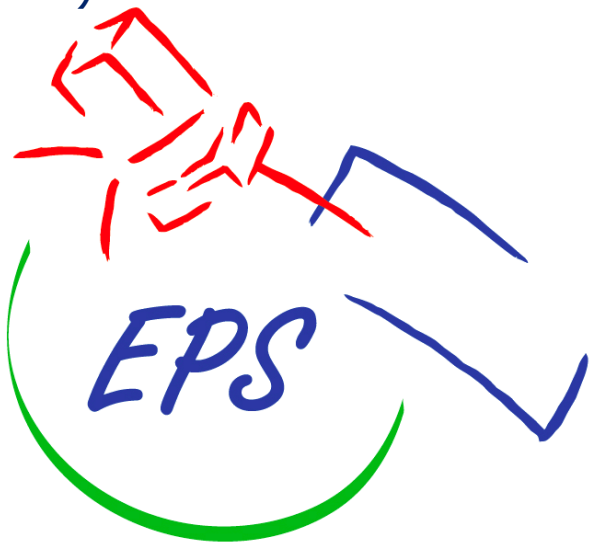
The EPS/Metop System

Marc Cohen
EPS Programme Manager

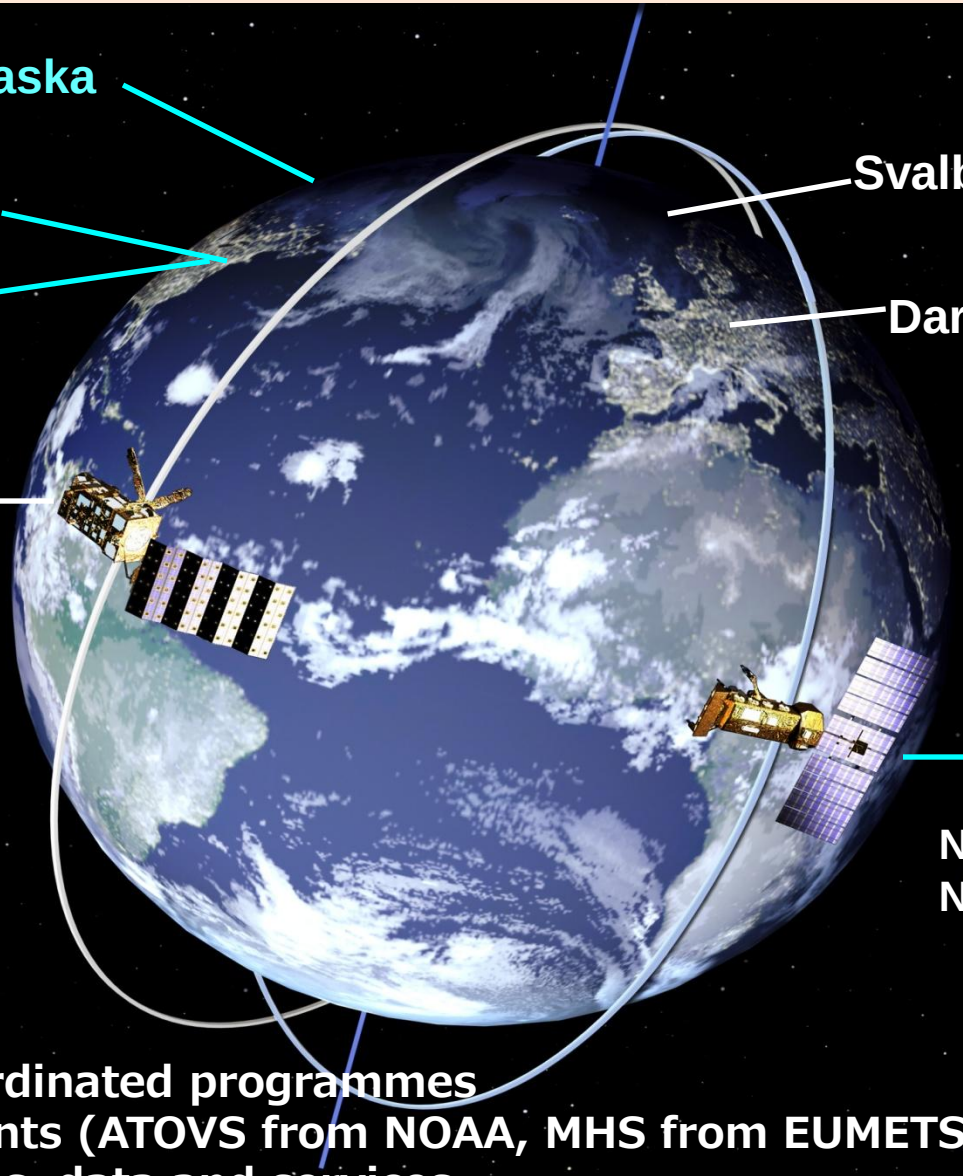
EUMETSAT

Outlook

- Introduction to the EPS system:
  - The IJPS (Initial Joint Polar System)
  - The EPS space segment – Metop
  - The EPS system services and elements:
    - EPS Ground Segment and Central Data Acquisition (CDA)
    - Unified Archive and Retrieval Facility (UMARF)
    - Dissemination System (EUMETCAST)
    - EUMETSAT's Satellite Application Facilities (SAFs)
- Status of Metop-A and EPS products
- Milestones for the EPS Program



EPS/Metop is part of the Initial Joint Polar System (IJPS)



Fairbanks, Alaska

Wallops Island, MD

Suitland, MD

Svalbard, Norway

Darmstadt, Germany

Metop

Metop-A (in orbit)
Metop-B (2012)
Metop-C (2016)

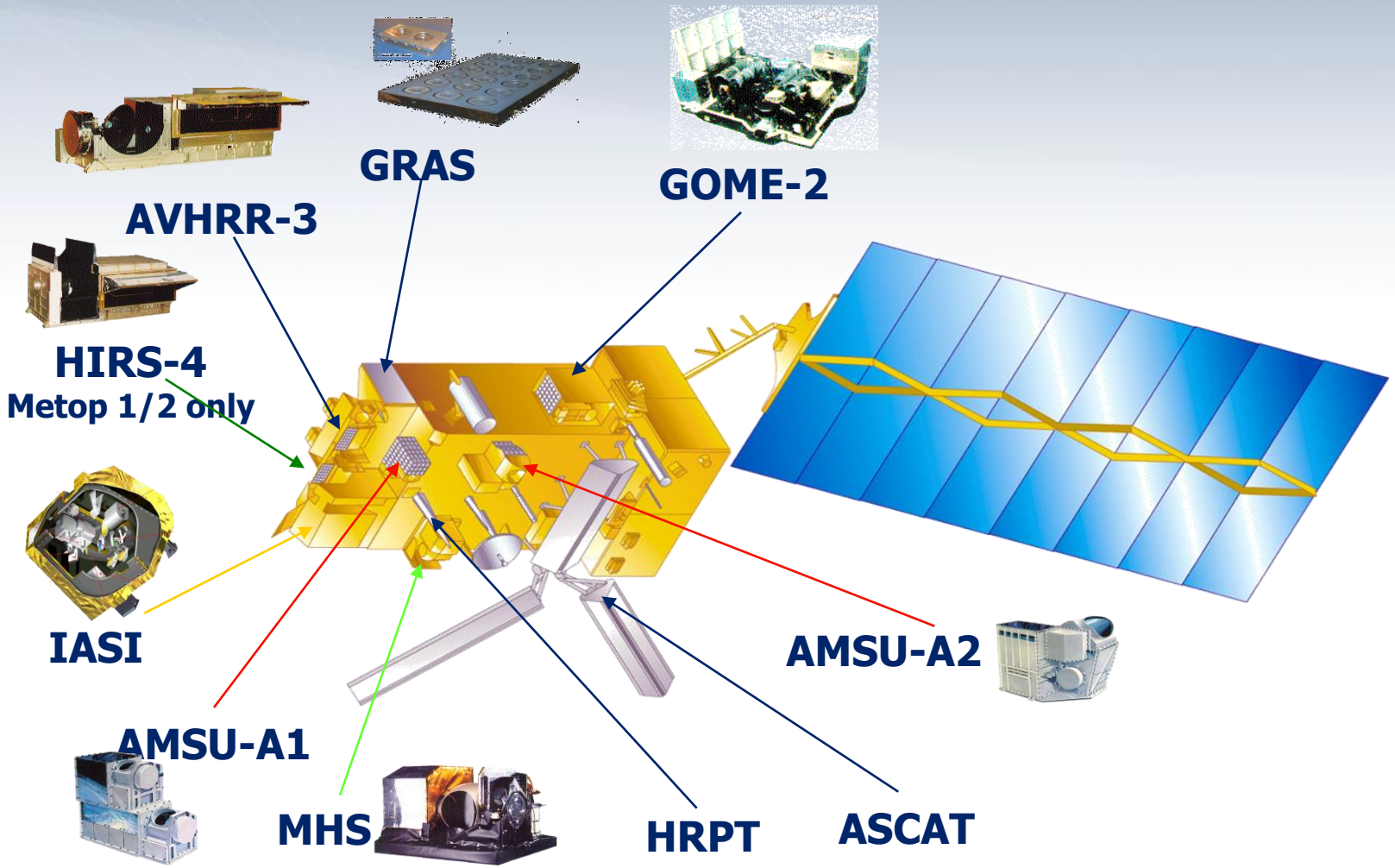
POES

NOAA-18 (in orbit)
NOAA-19 (in orbit)

- EUMETSAT-NOAA coordinated programmes
- Exchange of instruments (ATOVS from NOAA, MHS from EUMETSAT)
- Coordinated operations, data and services
- Extended agreement in 2003 to include Metop-C

Sun-synchronous
Orbit of 102 minutes
14.1 orbits per day

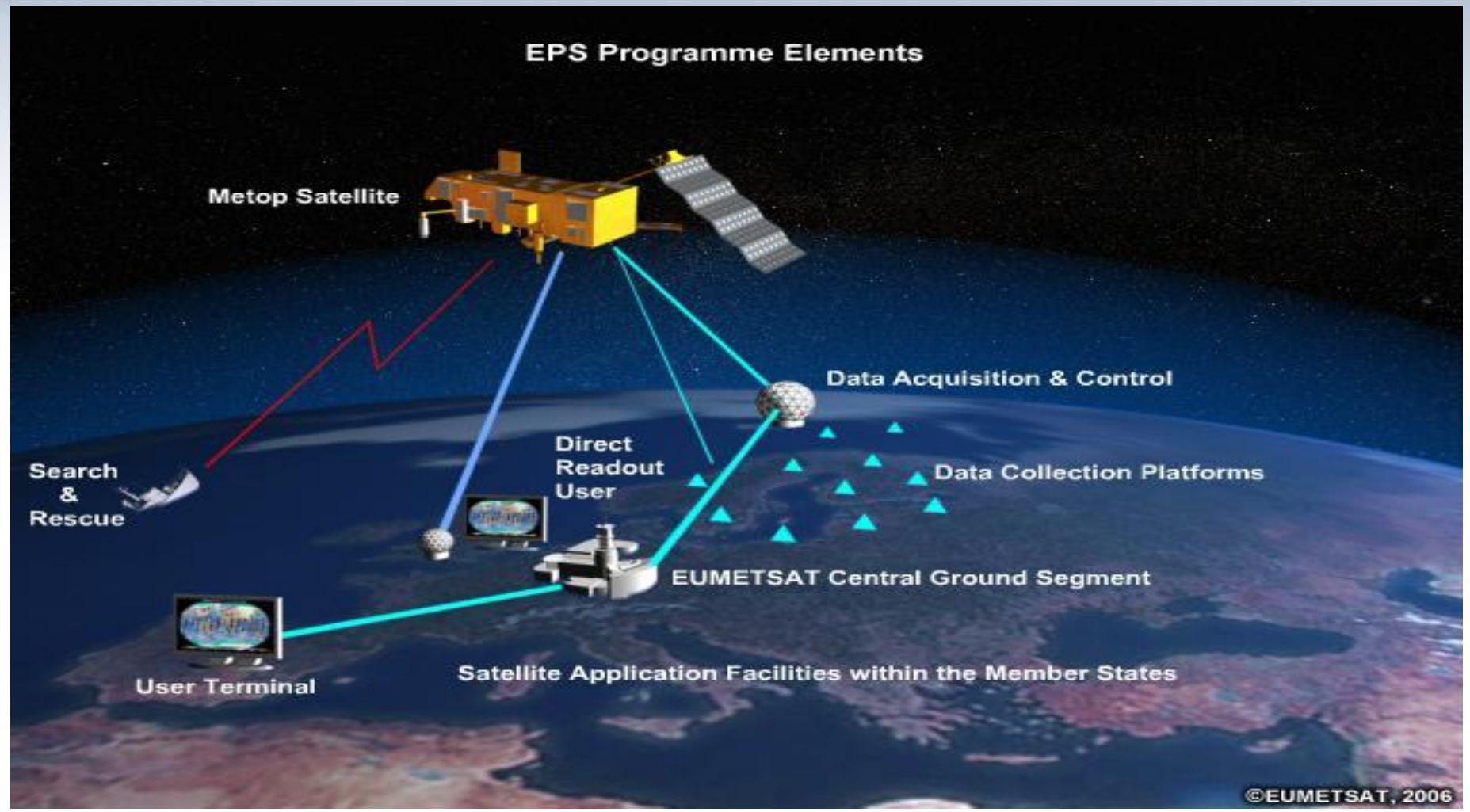
The EPS space segment: Metop



The instrument payload of Metop: A joint effort

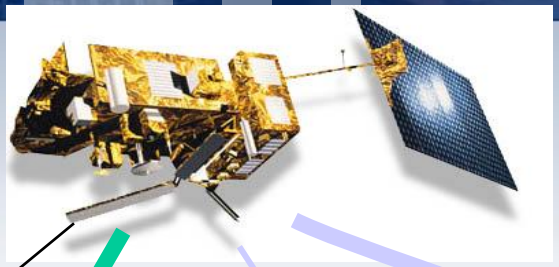
Instrument	Primary Partner	Primary Function
A-DCS	CNES	Receives signals from transmitters on buoys, ships and land sites
AMSU-A	NOAA	Measures sea ice and the temperature and humidity of the atmosphere in all weather conditions
ASCAT	EUMETSAT/ESA	Measures near-surface wind speed and direction over the global oceans
AVHRR/3	NOAA	Takes global visible, near-infrared and infrared imagery of clouds, oceans and land surfaces
GOME-2	EUMETSAT/ESA	Provides profiles of ozone and other atmospheric constituents
GRAS	EUMETSAT/ESA	Measures the temperature of the upper troposphere and in the stratosphere with high vertical resolution
HIRS/4	NOAA	Measures the temperature and humidity of the global atmosphere in cloud free and partly cloudy conditions
IASI	EUMETSAT/CNES	Provides enhanced atmospheric soundings of temperature, humidity, ozone and other trace gases, as well as sea surface temperature and cloud characteristics
MHS	EUMETSAT	Measures the humidity of the global atmosphere
S&R	CNES/NOAA	Transmits the location of emergency beacons from ships, aircraft and people in distress to the ground stations
SEM	NOAA	Monitors the local space plasma and radiation environment

The EPS Programme Elements



EUMETSAT

The EPS Services



Global mission :
delivery of global measurements within 2¼ hours of observation (GTS, EUMETCast)

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

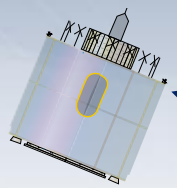
Search & Rescue

ARGOS mission: in-situ data.

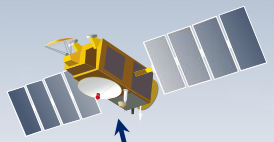
Data Dissemination
EUMETCast: Full NRT stream
GTS: Subset

Archiving & Retrieval
All data and products are archived in the UMARF

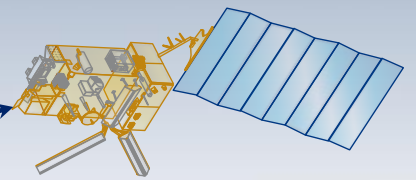
Overview of the EUMETSAT Ground Segment



EUMETSAT Geostationary Systems
Meteosat satellites



Jason-2
Optional Programme
for Ocean Altimetry



EUMETSAT Polar System
Metop satellites

Data acquisition
and Control

Pre-processing
EUMETSAT HQ

Other Data Sources

Applications Ground Segment

Unified Meteorological
Archive and Retrieval
Facility (U-MARF)
EUMETSAT HQ
Darmstadt

Meteorological Products
Extraction
EUMETSAT HQ
Darmstadt

SATELLITE APPLICATION
FACILITIES
within the Member States

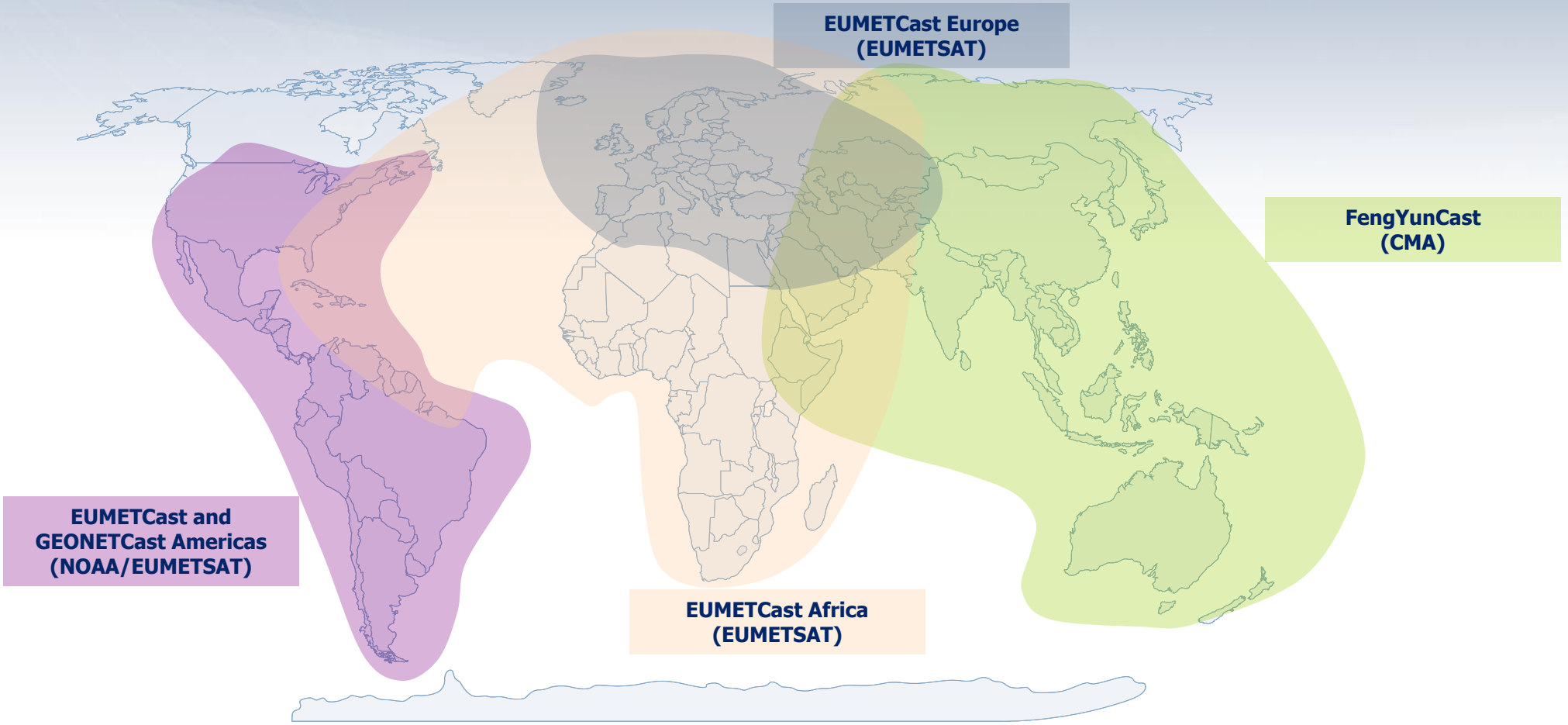
Centralised processing
and generation of products

Decentralised processing
and generation of products

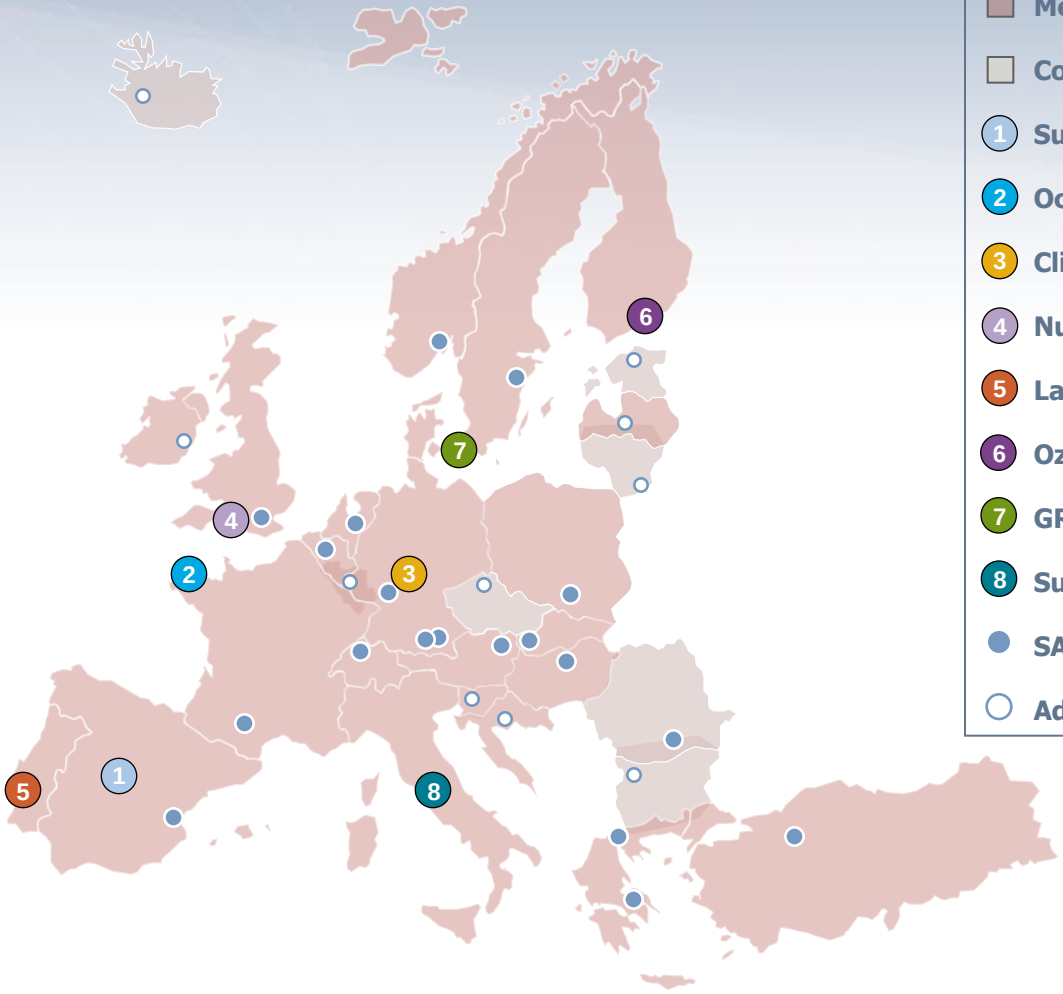
Data Dissemination via EUMETCast

USERS

EUMETCast Coverage – Worldwide extension via GEONETCast



Satellite Application Facilities (SAFs) in Europe



- Member State
- Cooperating State
- 1 Support to Nowcasting and Very Short Range Forecasting
- 2 Ocean and Sea Ice
- 3 Climate Monitoring
- 4 Numerical Weather Prediction
- 5 Land Surface Analysis
- 6 Ozone and Atmospheric Chemistry Monitoring
- 7 GRAS Meteorology
- 8 Support to Operational Hydrology and Water Management
- SAF Consortium Member
- Additional Met Service Users

Status of Metop-A

Service Module:
CCU IO: board using B-side

Payload Module:

- **HRPT**: operation over a limited zone,
  LRPT OFF

Instruments

A-DCS : lost of A-side due to failure in register. B-side running.

AMSU A1: Since the beginning of 2009, the noise on Channel 7 has been exceeding its specified value of 0.25K. Investigation on the root cause on going with NOAA

SVM	AOCS	POWER	DHSA
	COMMS	Housekeeping	
	Thermal	PMCIF	
PLM	PMC	TCU	PCU
	PDU	RTU	FMU
	SSR	XBS	
	HRPT	LRPT	
INST	ASCAT	MHS	ADCS
	AMSUA1	GRAS	SARR
	AMSUA2	GOME	SARP
	HIRS	IASI	
	AVHRR	SEM	

Metop-A: Status of products generated in EPS-CGS

Instrument	Product	Operational status since
AMSU-A	AMSU-A Level 1	June 2007
AVHRR/3	AVHRR/3 Level 1	June 2007
HIRS/4	HIRS/4 Level 1	June 2007
MHS	MHS Level 1	June 2007
IASI	IASI Level 1	July 2007
ASCAT	ASCAT Level 1	April 2008
GOME-2	GOME-2 Level 1	April 2008
GRAS	GRAS Level 1	April 2008
IASI	IASI Level 2	June 2008
AVHRR/3 **AMSU-A** **HIRS/4** **MHS**	ATOVS Level 2	June 2008

Operational near-real-time SAF products from Metop-A

Ocean and Sea Ice SAF:

Products	Date of operational delivery	Instrument
ASCAT 25 km Winds	October 2007	Metop: **ASCAT**
ASCAT 12.5 km Winds	March 2009	Metop: **ASCAT**
GLB Metop Sea Surface Temperature	January 2009	NOAA: AVHRR Metop: **AVHRR**
NAR Sea Surface Temperature	January 2009	NOAA: AVHRR Metop: **AVHRR**
Global Sea Ice Edge	June 2009 - ASCAT added	DMSP: SSM/I Metop: **ASCAT** Aqua: AMSR-E DMSP: SSMIS
Global Sea Ice Type	June 2009 - ASCAT added	DMSP: SSM/I Metop: **ASCAT** Aqua: AMSR-E DMSP: SSMIS

Operational near-real-time SAF products from Metop-A

Ozone SAF:

Products	Date of operational delivery	Instrument
NRT Total Ozone	December 2007 - HDF 5 May 2008 - BUFR	Metop: GOME-2
NRT NO2	December 2007 - HDF 5 May 2008 - BUFR	Metop: GOME-2
NRT Ozone Profile	March 2008 - HDF 5 8 July 2008 - BUFR	Metop: GOME-2

GRAS SAF:

Products	Date of operational delivery	Instrument
Refractivity Profile	April 2009	Metop: GRAS

EPS Milestones

2010-2012:

- Metop-B TV-test and launch preparations
- Preparation of the EPS ground segment to support 2 Metop satellites in parallel
- Launch of Metop-B in March 2012 from Baikonour

2016

- Launch of Metop-C