EUMETSAT Products and Services in support of Regional NWP

F. Montagner, EUMETSAT,

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EUMETSAT

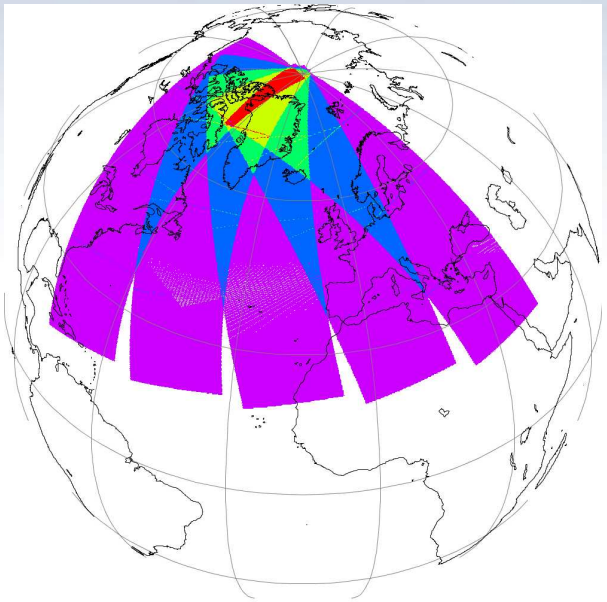
EUMETSAT Developments supporting regional NWP

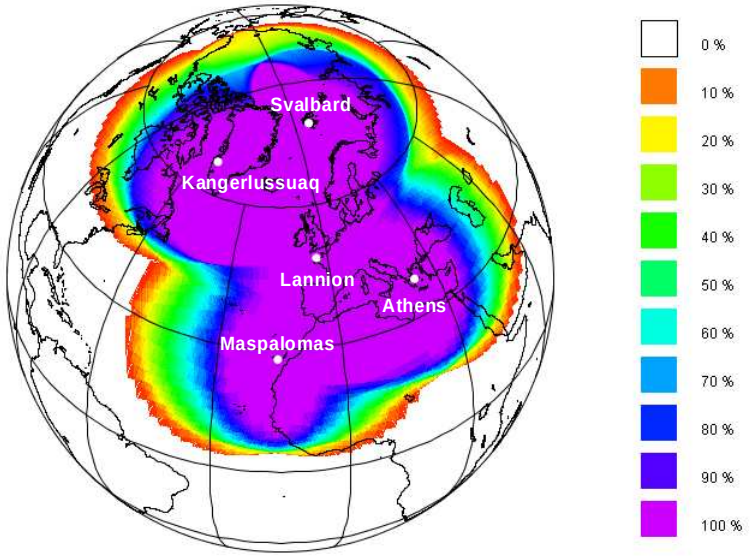
- EARS Services
- EUMETSAT Polar System
- Meteosat Second Generation
- Third Party Products

EARS Services

- Metop-A Data: Fast Dump Extract Service (FDES) and AHRPT
  - FDES introduced in March 2010

Most recent data from the routine X-band dump at Svalbard are extracted and processed.
Ascending (night) passes over any northern regions can achieve timeliness in order of 20 minutes

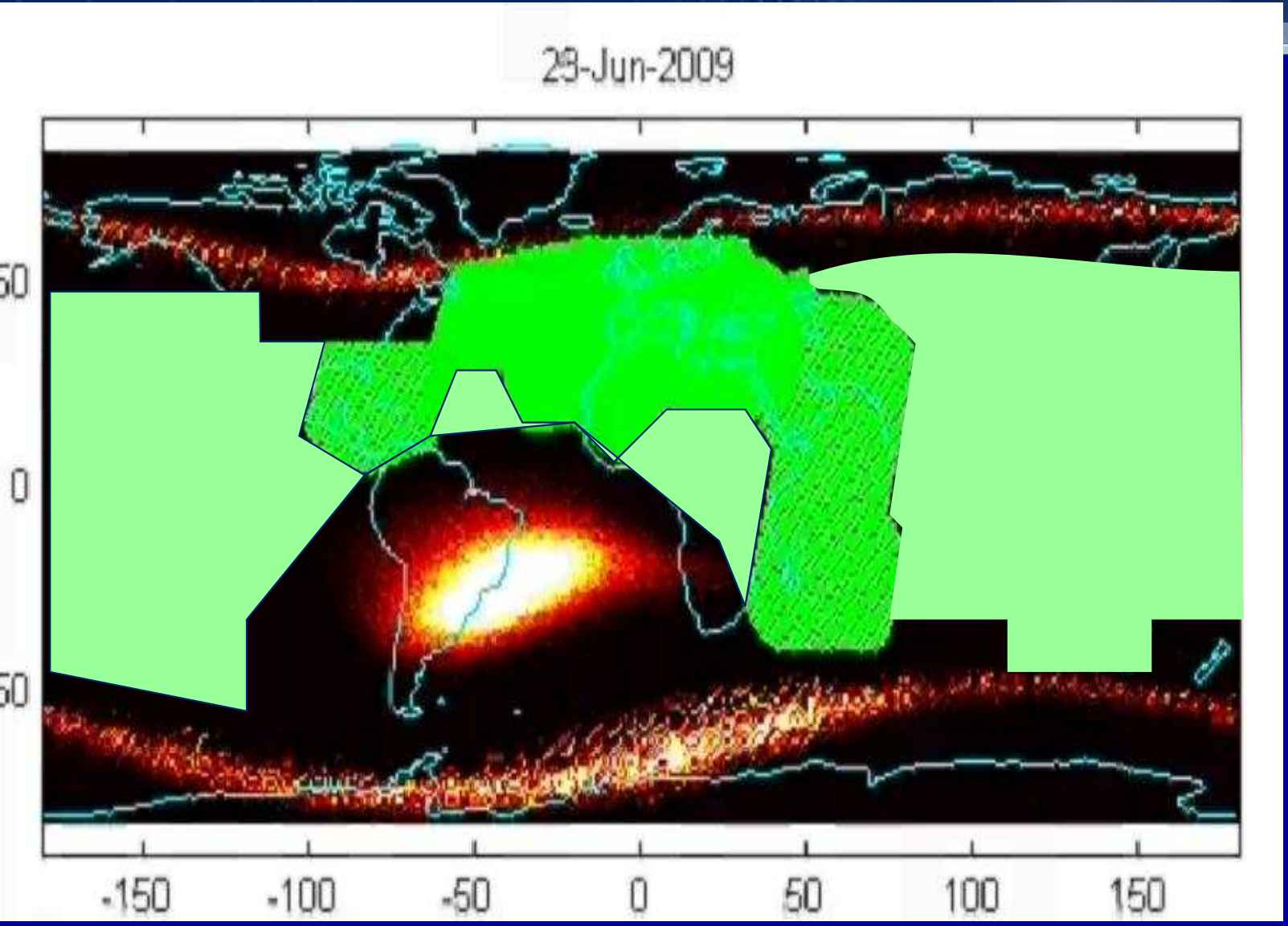




- Introduction of EARS IASI

366 channels + ca. 300 principal component scores
Processing by AAPP OPS-LRS
Start planned for 2011 time frame

AHRPT: Current and future switch-on scenarios



AHRPT reactivation from 29th Sept 08

Zone extension from May 25th 09

Under investigation: Globalisation of AHRPT service…

EARS Services: Threshold requirements for a nowcasting product service as part of EARS network

Products	Cloud Mask, Cloud Type, Cloud Top Height/Temperature (including semi-transparency correction)
Coverage	EARS data from Kangerlussuaq, Svålbard, Lannion, and Moscow
Processing mode	Swath processing
Resolution	Full AVHRR pixel resolution
Latency	30 min
Satellites	IJPS satellites
File format	PPS
Geo-location	not corrected by landmarks
Archiving	None

EARS-NWC: Coverage

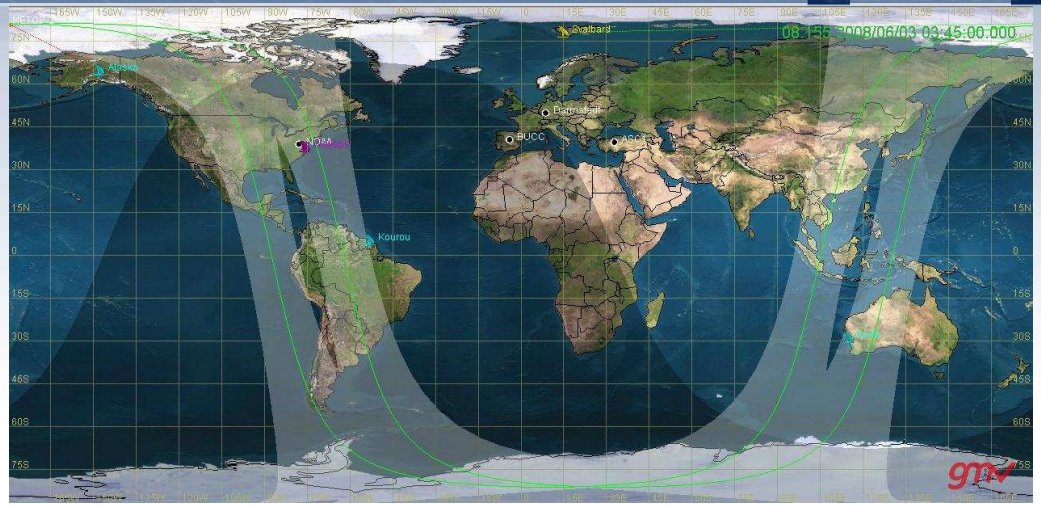
- **Satellites**: one operational satellite in the Morning Orbit and one operational satellite in the Afternoon Orbit. Currently Metop-A and NOAA-19.

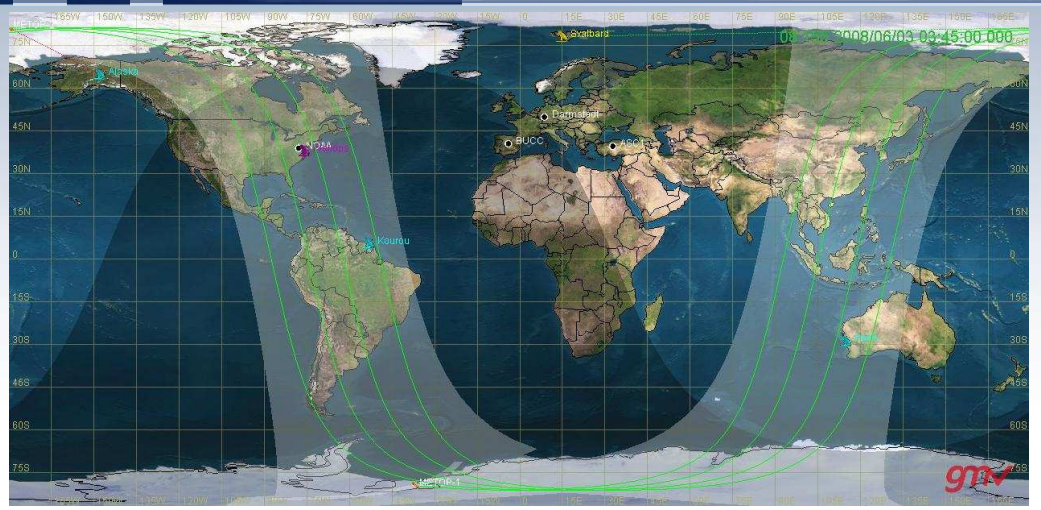
- **Area**: All stations involved in EARS-AVHRR, namely Athens, Maspalomas, Lannion, Kangerlussuaq, Svalbard, Moscow and Gander.

EUMETSAT Polar System

- Atmospheric Motion Vectors from AVHRR in Polar Regions
  - Demonstration product dissemination since 11/08/2010
  - Developments: use AVHRR triplets; use IASI cloud top height product to improve height assignment
- Metop-B satellite (Metop-1 while not lauched)
  - Launch planned for April 2012, commissioning over 6 months
  - Operational Concept :
    - *Metop-B operational & Payload active,*
    - *Metop-A backup & Payload active,*
    - *both Metop-B and Metop-A products produced/ archived,*
    - *Flexible Ground Segment architecture allowing parallel dissemination of Metop-B and Metop-A*
      - Our target is to fit all backup satellite data to be disseminated via EUMETCAST within the existing bandwidth allocation.
  - Both satellites on the **same orbit plane,** phasing of 48.93 minutes

EUMETSAT Polar System (2)





Coverage by two subsequent orbits per satellite, for AMSU-A with:
- one Metop –left

- two Metops, phased by 49 min. – right

Track overlap at all latitudes makes possible *i.a.* an extension of the resolution and coverage of AVHRR-based AMVs

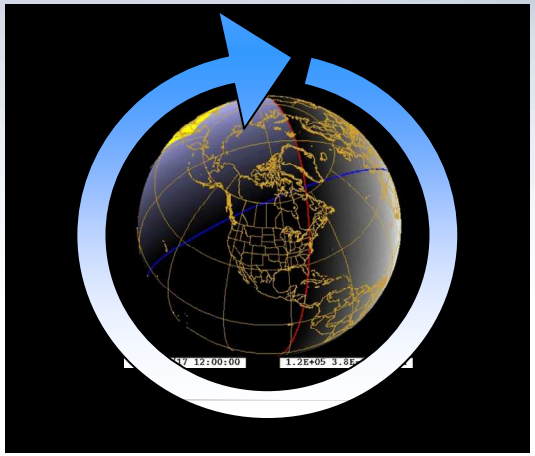
EUMETSAT Polar System (3)

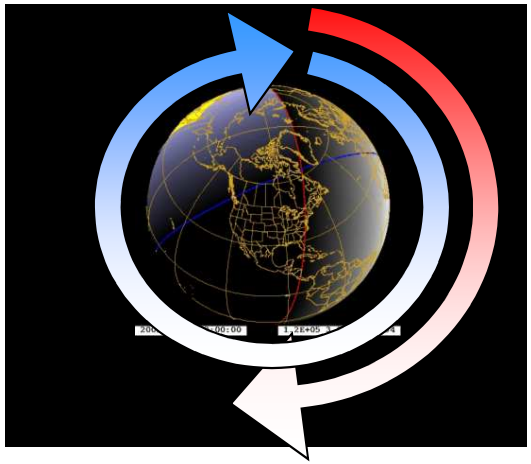
- Antarctic Data Acquisition (ADA)

The purpose of ADA is to improve the timeliness of data from Metop satellites.

- The ADA station in McMurdo station, provided by NOAA, will be able to receive and transmit data from a minimum of 9 daily Metop passes from Q2 2011 to 2014, and a minimum of 14 daily Metop passes from 2014 onwards. ADA operations will therefore start with Metop-A, before the launch of Metop-B.
  - ➢ Before 2014, the ADA service is a demonstration service, not an operational service
- The Metop satellite will be configured to dump the most recent half orbit of data to ADA (in addition to the normal full orbit dumps to Svalbard).
- This data will be transmitted to Darmstadt, and can replace the same data which would arrive from Svalbard with a half orbit delay, i.e. the data timeliness can be improved by a half orbit.
- The EPS Ground Segment has to be able to cope with situations where ADA passes are not available (due to limited pre-operational service or failure); and to "catch up" the timeliness of disseminated data when the ADA passes become available once again. In these cases, the reduced timeliness will be re-achieved within 2 – 3 orbits, assuming the intervening ADA passes are available.
  - ➢ Delivery time of data from Metop satellites will be varying continuously – but will never be worse than the existing (Svalbard) system

ADA Half Orbits and Timelines



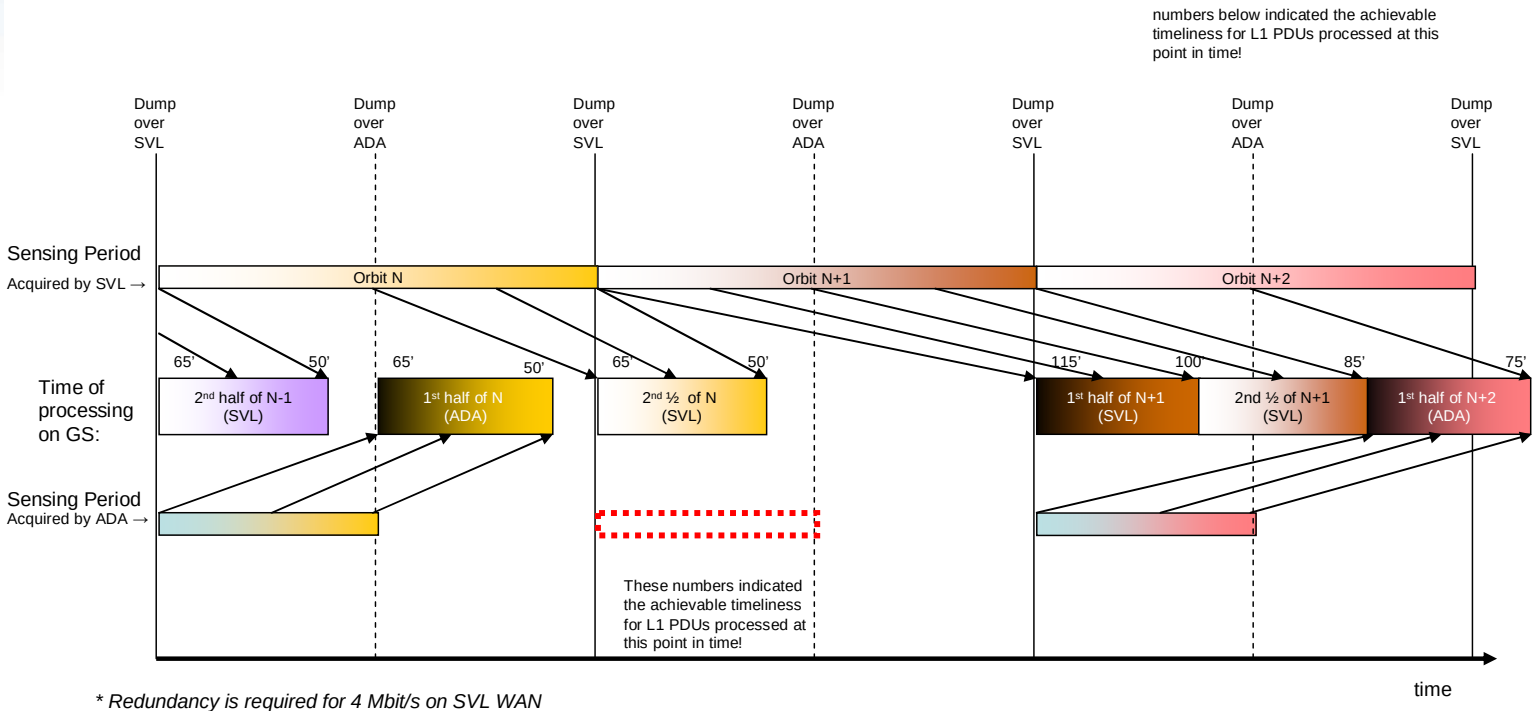


Processing Flow

Required Link Capacity:

	SVL	*ADA*
Total:	*8 Mbit/s*	*4 Mbit/s*

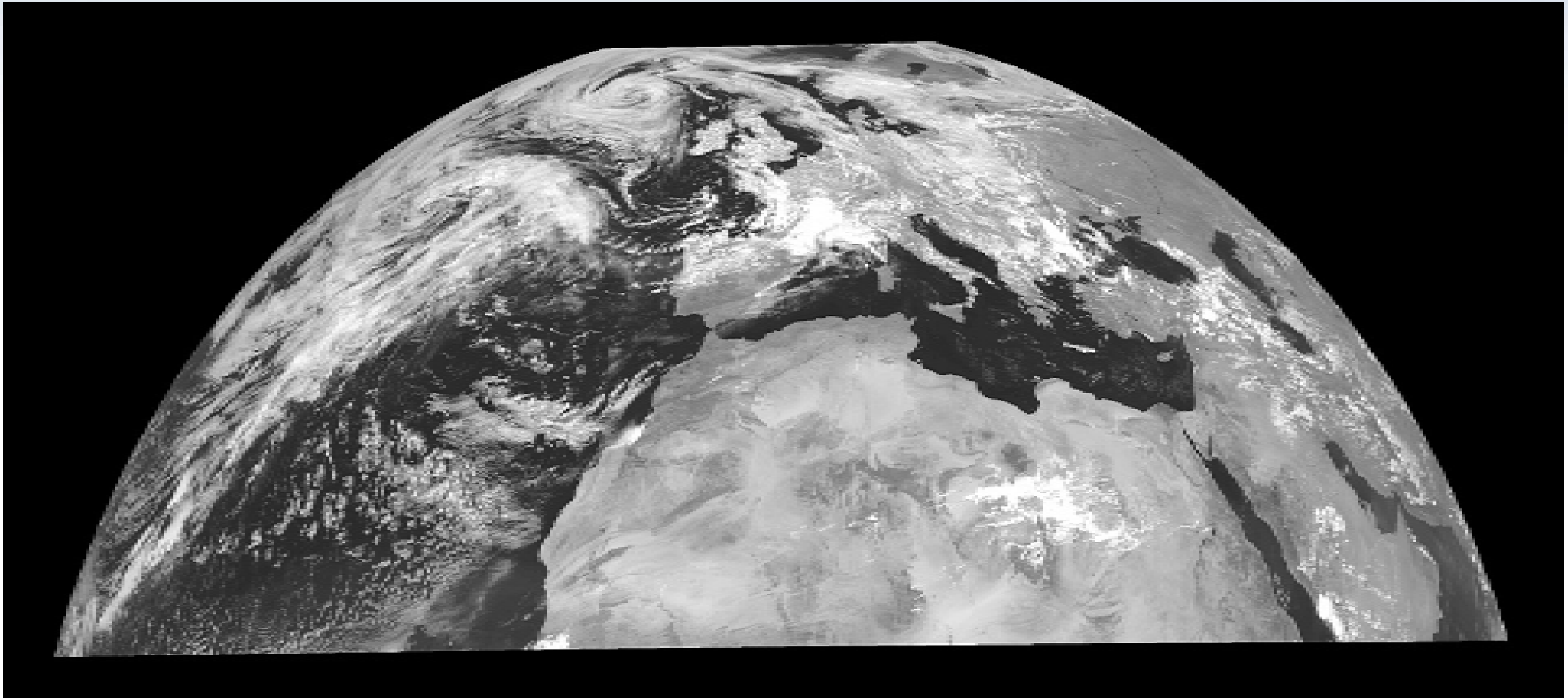
In the absence of missed dumps all data processed will achieve a timeliness of less than 65' for L1.



** Redundancy is required for 4 Mbit/s on SVL WAN*

Meteosat Second Generation

- Rapid Scan Service supported by Meteosat-8



Rapid Scan Service : main characteristics

- Rapid Scanning Service (RSS) from Meteosat-8 started on 13/05/2008.
- Provides images of about one third of the full Earth disc every five minutes – between latitudes 15ºN to 70ºN .
- RSS is periodically interrupted for short periods of time in order to exercise the instrument mechanics in Full-Earth Scanning (FES) mode: 2 days every 28 days and one full month (Dec-Jan period).
- RSS may be interrupted in favour of backup to Meteosat-9

Product	Format	Periodicity
Atmospheric Motion Vectors (AMV)	BUFR	20 mn
Clear Sky Radiances (CSR)	BUFR	15 mn
Multi-sensor Precipitation Estimate (MPE)	BUFR	5 mn
Active Fire Monitoring (FIRG /FIRA)	GRIB /ASCII	5 mn
Global Instability Index (GII)	BUFR	5 mn

High resolution AMVs from RSS

- Winds are difficult to derive from RSS images, because cloud systems do not travel far in 5 minutes.
- There is a limitation in the minimum wind speed that can be derived (6.7m/s for HRV at 60N)

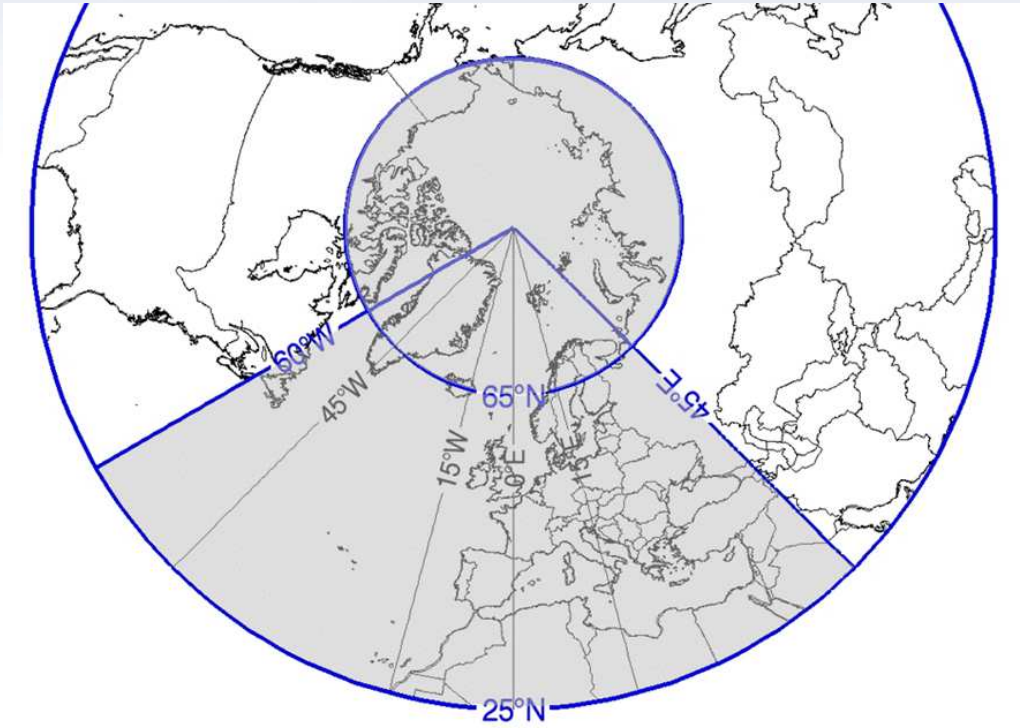
However

- RSS has a large positive impact for HRVIS winds, specially for fast winds. The impact is only slightly positive for slow and very fast winds with QI > 80%.
- RSS winds yield many more collocations than FES winds.

High resolution AMVs will be produced operationally after the commissioning of new product processing H/W

Third Party Products

- Re-distribution of MODIS products on EUMETCast:
  - Selected Level 1 calibrated radiances
  - Higher Level products:
    - Fire
    - Chlorophyll-α
- Re-distribution of NOAA Direct
  - MODIS-based introduced
  - NOAA-based AMVs to be ad



Thank You