EUMETSAT SAF Network Committed Aerosol products

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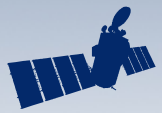
SAF
The EUMETSAT Network of Satellite Application Facilities

EUMETSAT

EUMETSAT ground segment overview

EUMETSAT geostationary systems
Meteosat satellites



Jason-2
Optional programme for ocean altimetry

EUMETSAT Polar System
Metop satellites NOAA satellites

Data acquisition and control | Flight Operations

Pre-processing
EUMETSAT HQ

Third-party data sources

Data Centre
EUMETSAT HQ Darmstadt

Meteorological product 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

Applications
Ground
Segment

Users

EUMETSAT

SAF Network Aerosol products overview

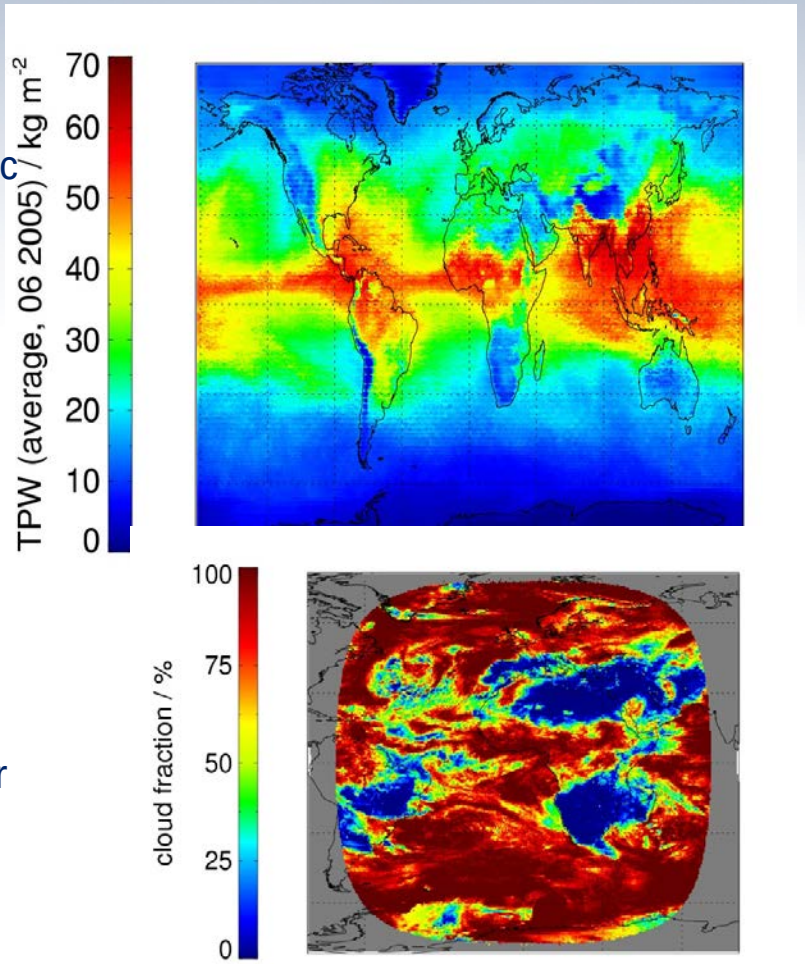
- Climate Monitoring SAF:
  - Climate data records from Meteosat
    - Aerosol optical depth
    - Direct aerosol forcing

- Ozone and Atmospheric Chemistry Monitoring SAF:
  - Aerosol information from GOME-2 on Metop, Near Real Time
    - Absorbing aerosol index
    - Scattering aerosol index
    - Absorbing aerosol height

Climate Monitoring SAF

CM SAF

- SAF on Climate Monitoring
- generates and archives high-quality data-set for specific climate application areas
- Currently concentrates on:
  - cloud parameters
  - radiation budget parameters
  - atmospheric humidity
- Leading Entity is the German Weather Service DWD, Offenbach
- NOAA-AVHRR based data operationally produced since November 2004, MSG based data from October 2005, Metop data used since 2009.
- Climate Data Records: 20 years of SSM/I Water Vapour information released in 2009.
- NOAA-AVHRR based 20 years of homogeneous data record (clouds, surface radiation) released 2012
- Upcoming Climate Data Records based on SEVIRI, ATOVS, SSM/I



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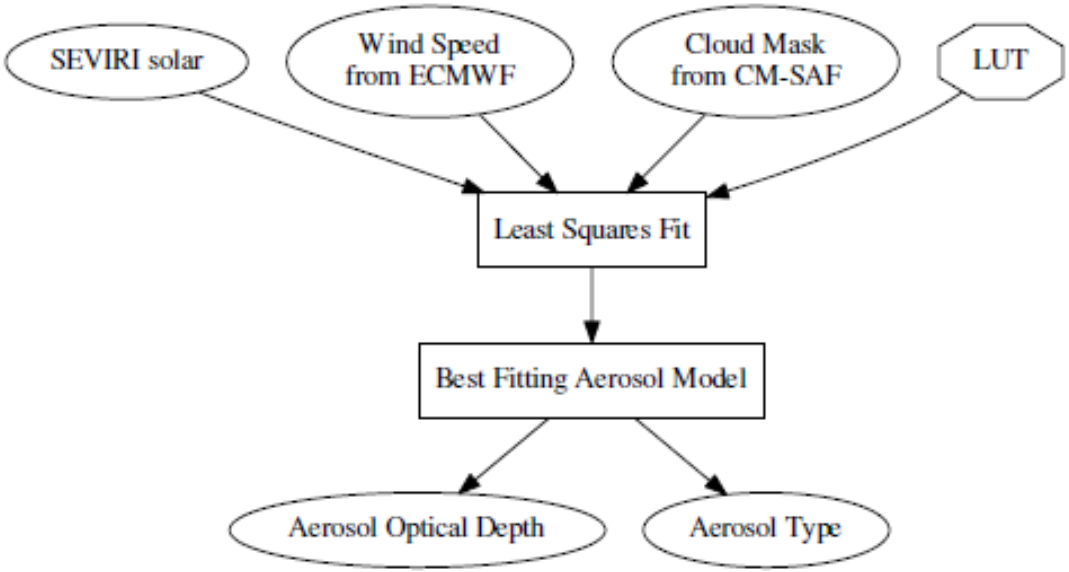
Committed Aerosol products from CM SAF:

- Aerosol optical depth from SEVIRI (2004-2011) land and ocean planned release 2014
- Direct Aerosol forcing (SEVIRI, GERB 2004-2011) planned release 2014
- Aerosol optical depth from SEVIRI (2004-2014), planned release 2015
- Aerosol optical depth from MVIRI/SEVIRI 1982-2014 monthly means based on GSA (Govaerts) algorithm (planned release 2017)

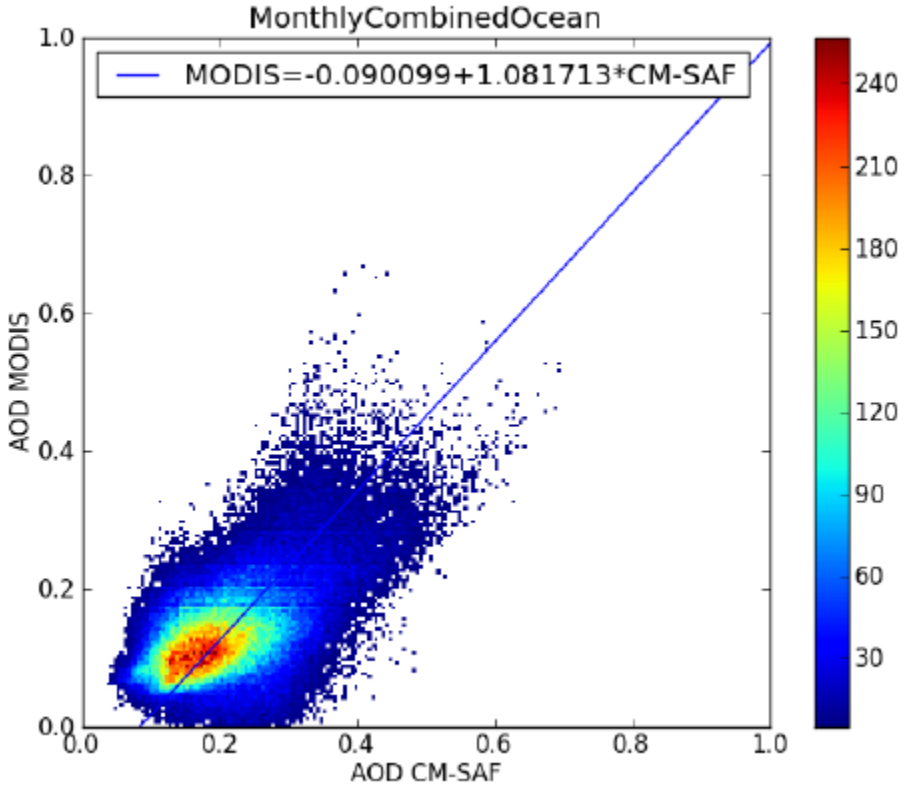
CM-117: Aerosol optical depth

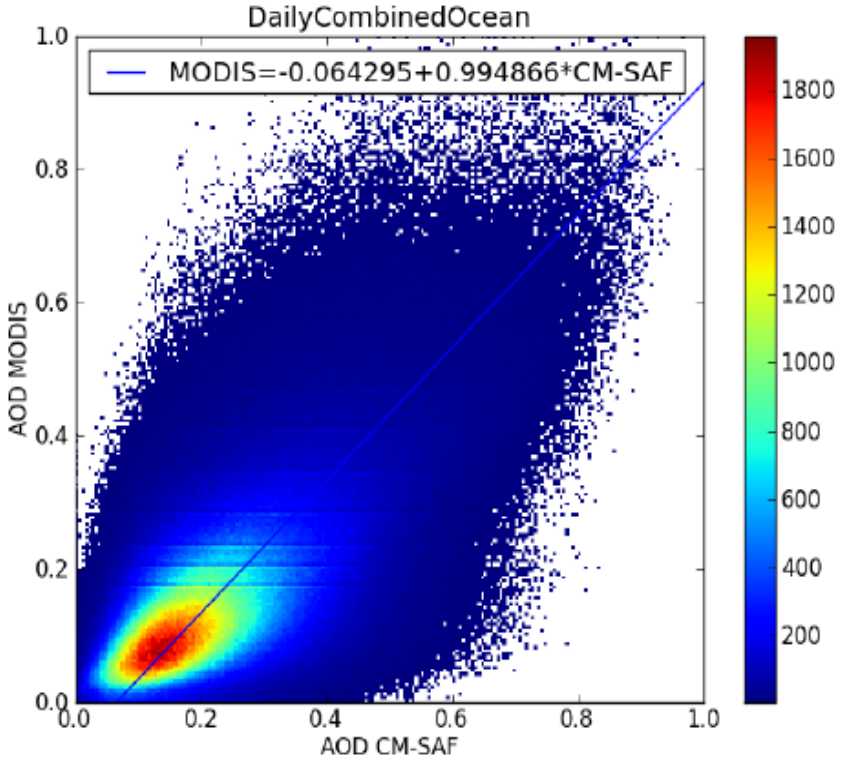
- Aerosol over ocean
  - SEVIRI observations at 600, 800 and 1600nm
  - CM SAF Cloud mask (NWC SAF software)
  - ECMWF wind speed



CM-117: Aerosol optical depth

Aerosol over ocean: MODIS intercomparison (2009)





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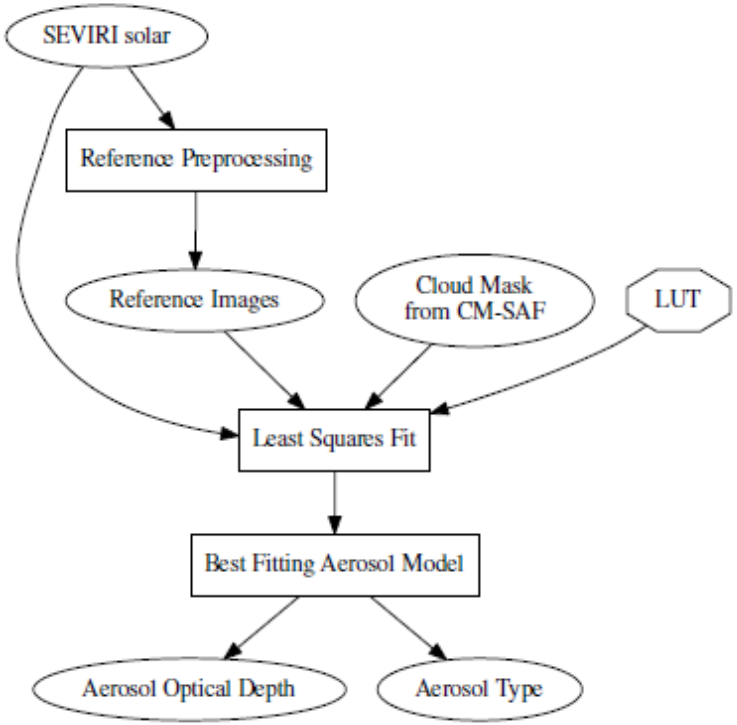
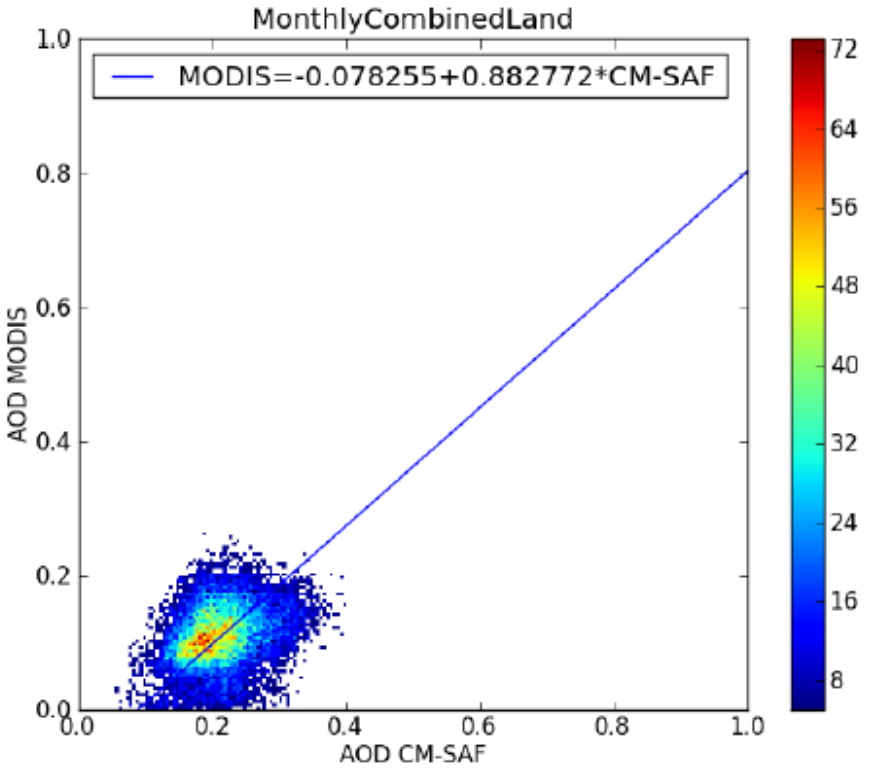
CM-117: Aerosol optical depth

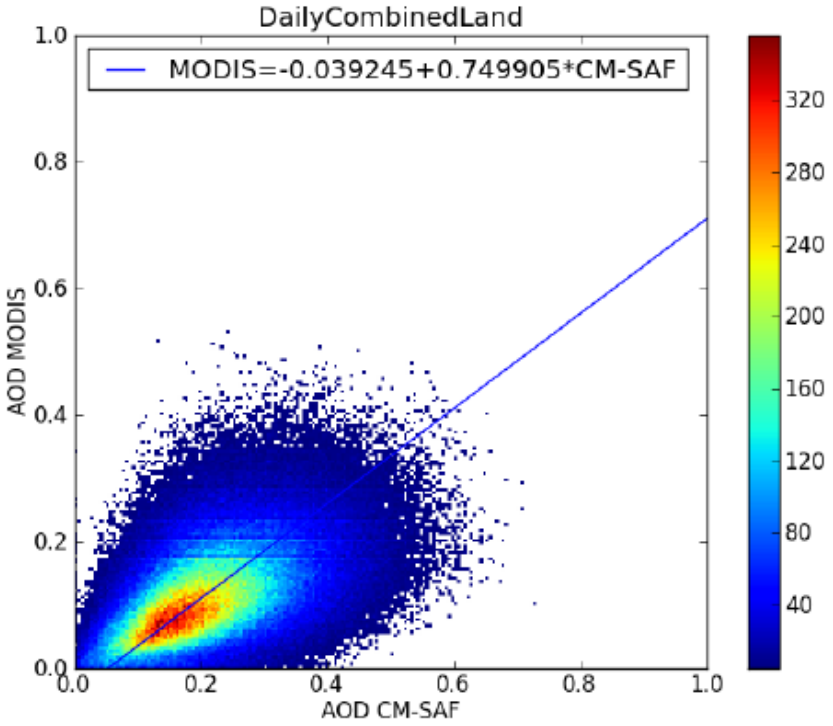
- Aerosol over land: Application of retrieval based on E.B. Bernard et al. (2011) Hygeos
  - SEVIRI level 1.5 images at wavelengths 600, 800 and 1600 nm.
  - CM SAF cloud mask, based on NWC SAF software



CM-117: Aerosol optical depth

CM SAF





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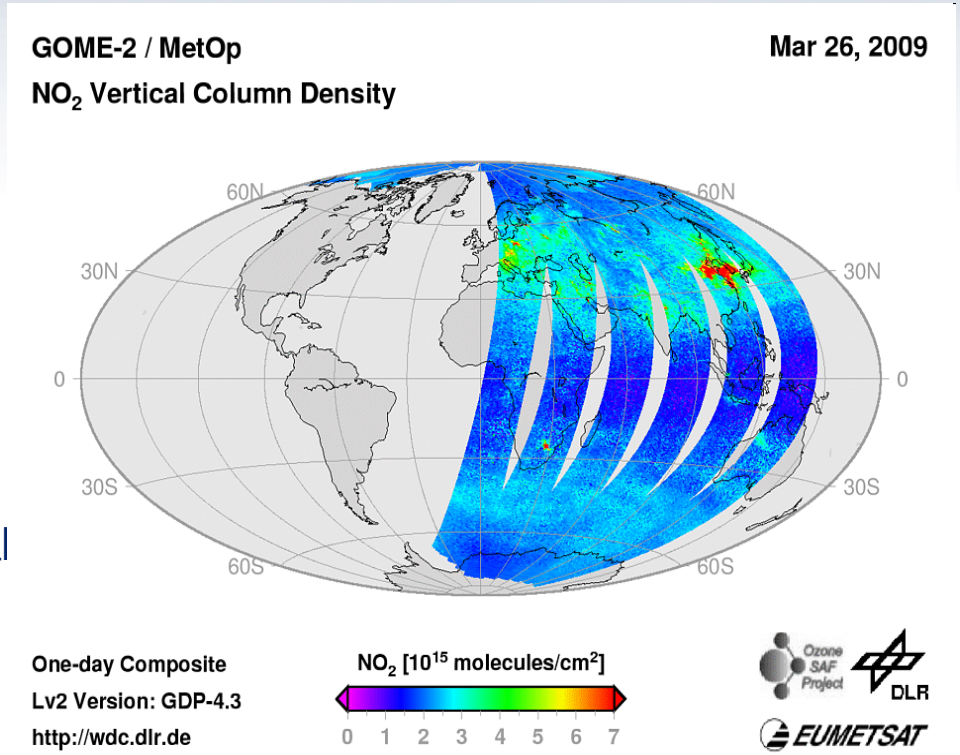
Ozone SAF

O3M SAF

- SAF on Ozone and Atmospheric Chemistry Monitoring (O3M SAF)
- developed for the processing of data on ozone, other trace gases, aerosols and ultraviolet radiation
- Emphasis on the Global Ozone Monitoring Experiment (GOME-2) and IASI on EPS (Metop)
- Leading Entity is the Finnish Meteorological Institute FMI, Helsinki
- First release of products in Summer 2007



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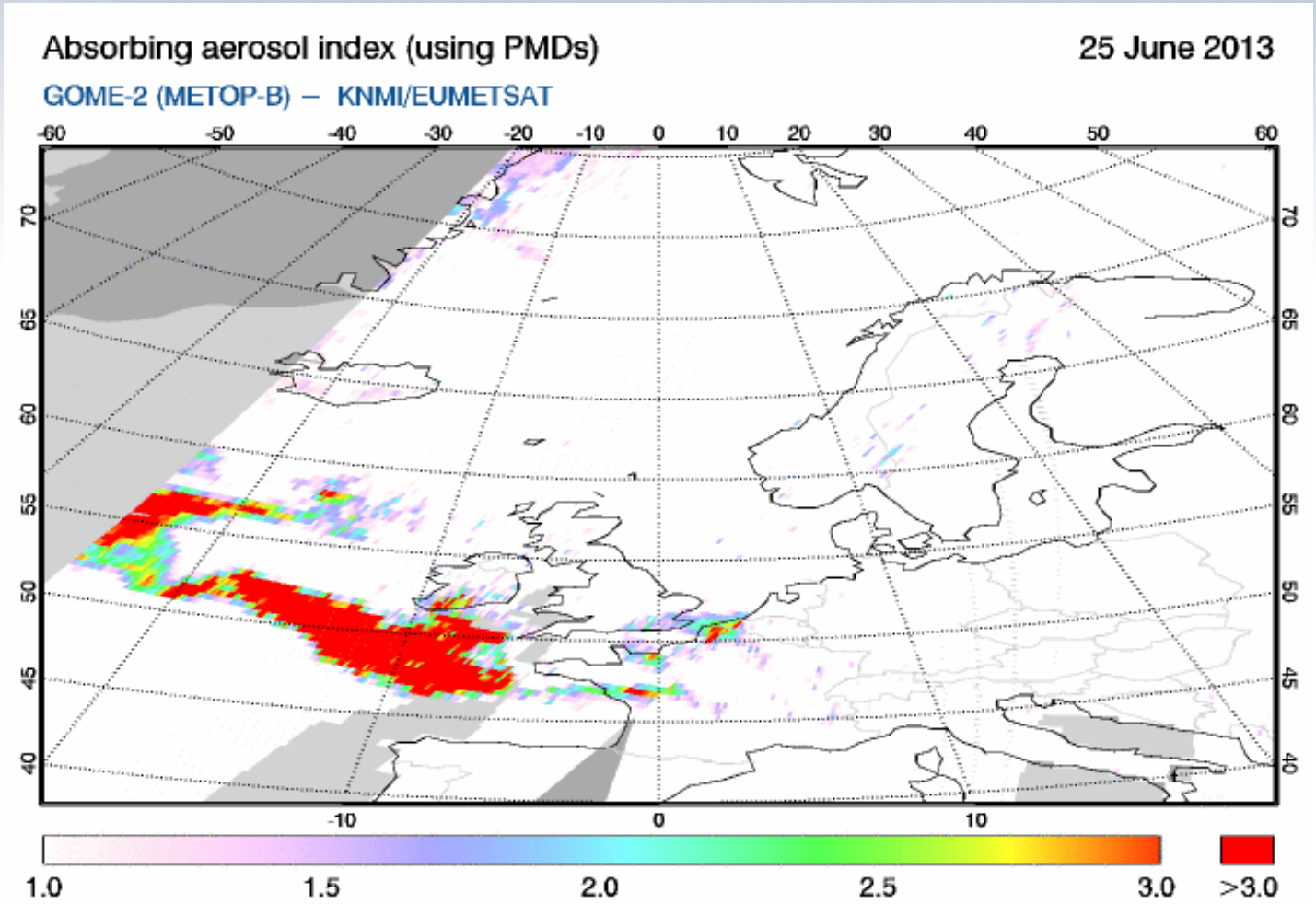
Committed O3M SAF aerosol products based on GOME-2:

- Absorbing Aerosol Index
- Scattering Aerosol Index
- Absorbing Aerosol Height

O3M SAF: Absorbing Aerosol Index

- Near Real Time and offline both for Metop-A and Metop-B operations
- Both science channels (80 x 40 km resolution) as well as 10 x 40 km resolution (PMD)
- derived from the reflectances measured by GOME-2 at 340 and 380 nm, differential absorption methodology
- Sensitive to desert dust, biomass burning aerosol, wild fire smoke and volcanic ashes
- Pre-operational since April 2009
- Operational 9 December 2009
- Generation of data set of entire Metop GOME-2 series , release planned 2017

O3M SAF: Absorbing Aerosol Index



O3M SAF:
Scattering Aerosol Index

- Near Real Time and offline both for Metop-A and Metop-B operations
- Both science channels (80 x 40 km resolution) as well as 10 x 40 km resolution (PMD)
- derived from the reflectances measured by GOME-2 at 340 and 380 nm, differential scattering methodology
- Indicated scattering natural and anthropogenic aerosols screened for clouds presence.
- Release planned for 2014
- Generation of data set of entire Metop GOME-2 series , release planned 2017

O3M SAF:
Absorbing Aerosol Height

- Near Real Time and offline both for Metop-A and Metop-B operations
- Derived from a modified O2 A-band retrieval (FRESCO) to assign effective reflecting layer height
- Release planned 2015
- Generation of data set of entire Metop GOME-2 series, release planned 2017

O3M SAF:
Absorbing Aerosol Height

- Near Real Time and offline both for Metop-A and Metop-B operations
- Derived from a modified O2 A-band retrieval (FRESCO) to assign effective reflecting layer height
- Release planned 2015
- Generation of data set of entire Metop GOME-2 series, release planned 2017

O3M SAF: Future

O3M SAF aerosols products for EPS-SG instruments:

- 3MI Aerosol effective radius
- 3MI Aerosol height
- 3MI Aerosol optical depth
- 3MI Aerosol refractive index
- 3MI Aerosol single scattering albedo
- 3MI Aerosol type