EUMETSAT Network of Satellite Application Facilities

SAF

The EUMETSAT
SAF Network

EUMETSAT

That's me....

Lothar Schüller

- working for EUMETSAT since 2004
- SAF Network Manager
- Remote sensing expert
- Managing SAF Network activities at the EUMETSAT Secretariat

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The EUMETSAT SAF Network

Who are you?

a remote sensing expert, developing retrievals and applications

a user of satellite products

a newcomer in the field, trying to get some insights

a user of SAF products

a part of a SAF team

None of the above,
but: _____

I am here:

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Where are you?

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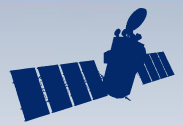
What can you expect after this lecture.....?

Better knowledge about:

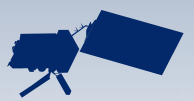
- the nature of SAF products and activities
- what distinguishes SAF products from other types of satellite products
- which services and tools are available to support my applications
- what the programmatic framework of the SAFs is
- which SAFs exist, who they are, what they do
- how SAFs work
- how I can get more information on the SAFs and its services
- how I can influence the evolution of the SAF products
- Some recent news

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

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Why SAFs ? Facts and Objectives

Facts:

- New generation of Meteorological Satellites (like MSG and Metop) have much wider areas of application
- specific expertise available in EUMETSAT's Member and Cooperating States

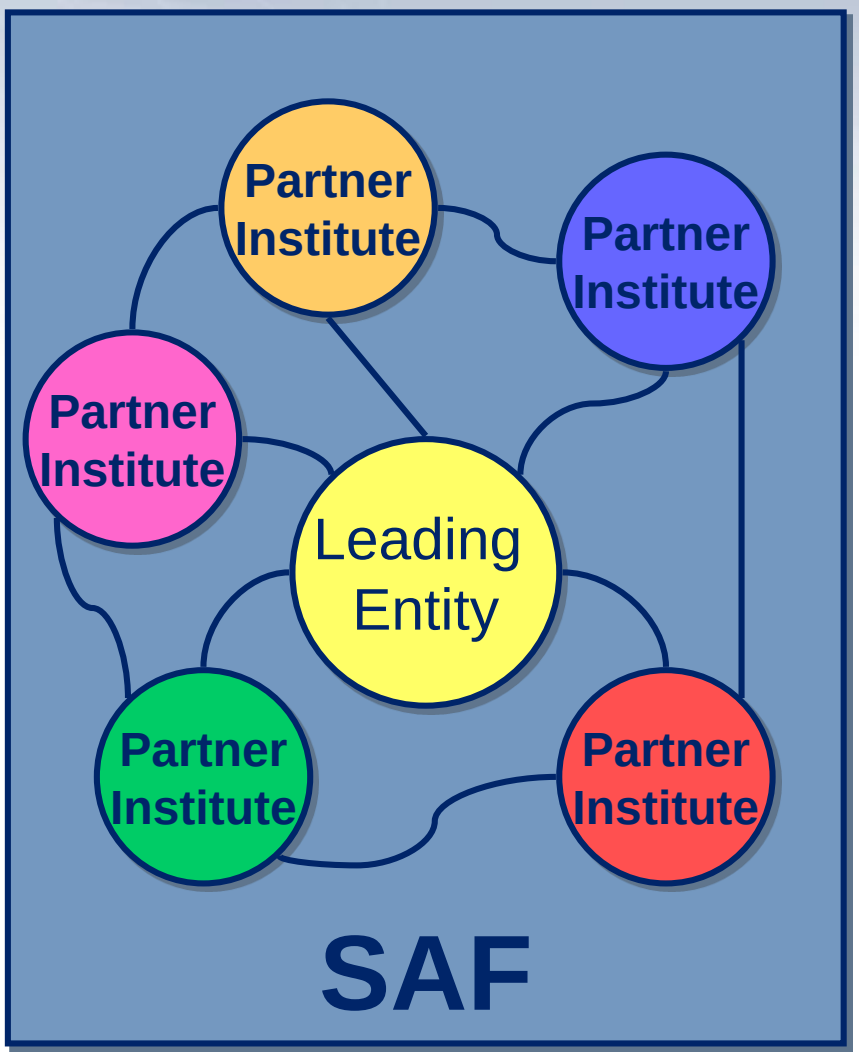
Objectives:

- SAF concept encourage the utilisation of existing skills and infrastructure in Member- and Cooperating States for developing geophysical data products and services
- Facilitating cost-effective exploitation by ensuring services are distributed in the most appropriate way
- SAFs improve the ability of EUMETSAT Member States to exploit satellite data
- Fostering development of cooperation with non-Member States and other organisations

What is a SAF?

- SAF = **Satellite Application Facility**
- part of the EUMETSAT application ground segment
- complement production of standard meteorological products at EUMETSAT central facility
- providing products and services to users
- specialised on topics and themes
- located at Weather Services in EUMETSAT Member and Co-operating States
- developed and operated by consortium of partners

What is a SAF?



- SAF is developed and operated in a consortium
- lead by a **Leading Entity** (a National Meteorological Service)
- involving partners in EUMETSAT Member and Co-operating states
  - National Meteorological Services
  - Other operational organisations
  - Universities and Research Institutes

How do SAFs work? Providing data products

Some SAFs provide **data products**

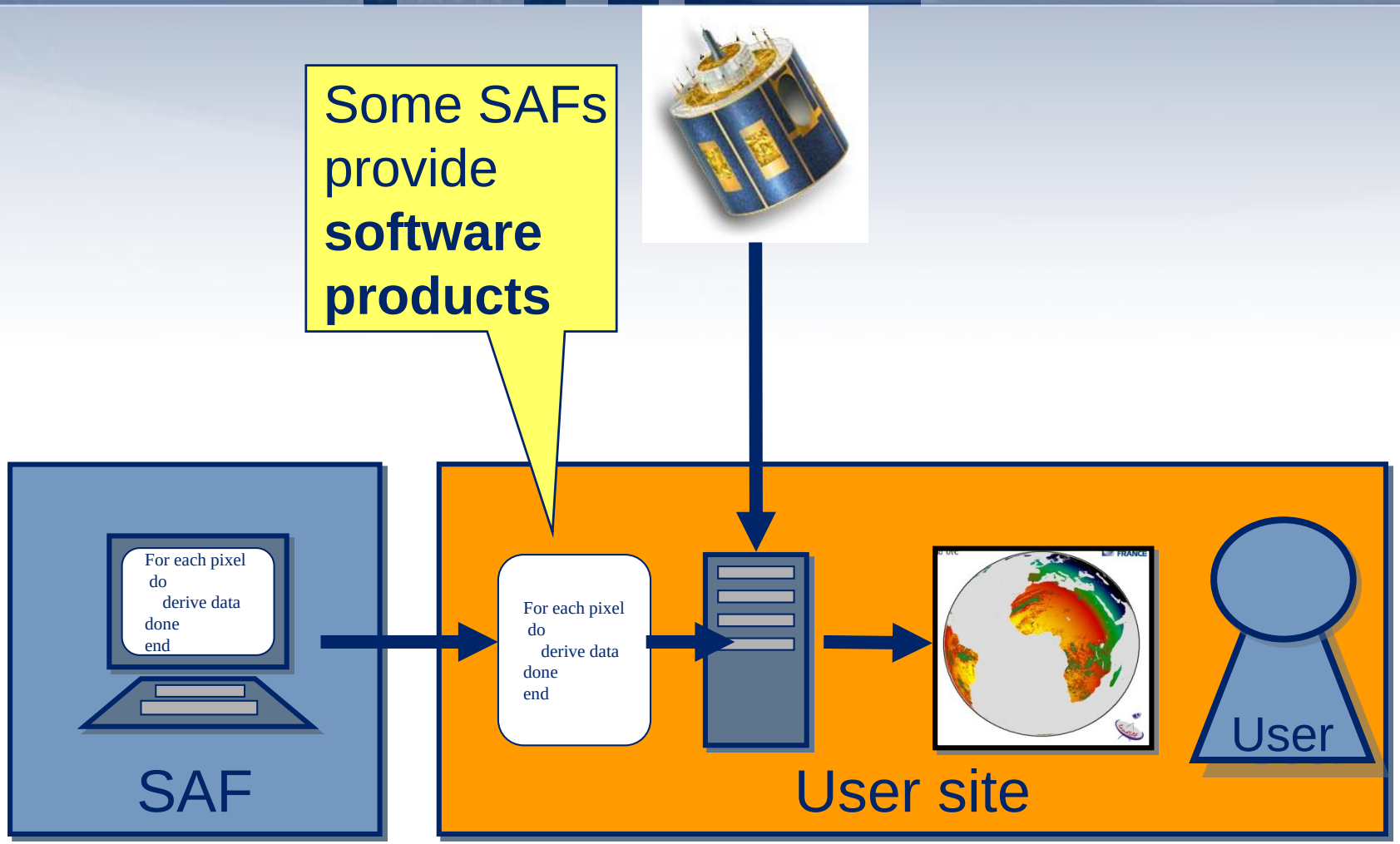
For each pixel
do
derive data
done
end

SAF

User

User site

How do SAFs work? Providing Software products



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Which SAFs do you know?

There are 8 EUMETSAT SAFs existing today.

Which ones do you know?

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Nature of SAF products

The goal of SAFs is to provide "operational" products.

What do we mean with operational?

- Continuity of product provision
- Continuity of product improvements
- Continuous quality monitoring
- Committed user services
- Validation and review before official release/launch
- Complete Documentation of Products, Algorithms, Validation Results
- …

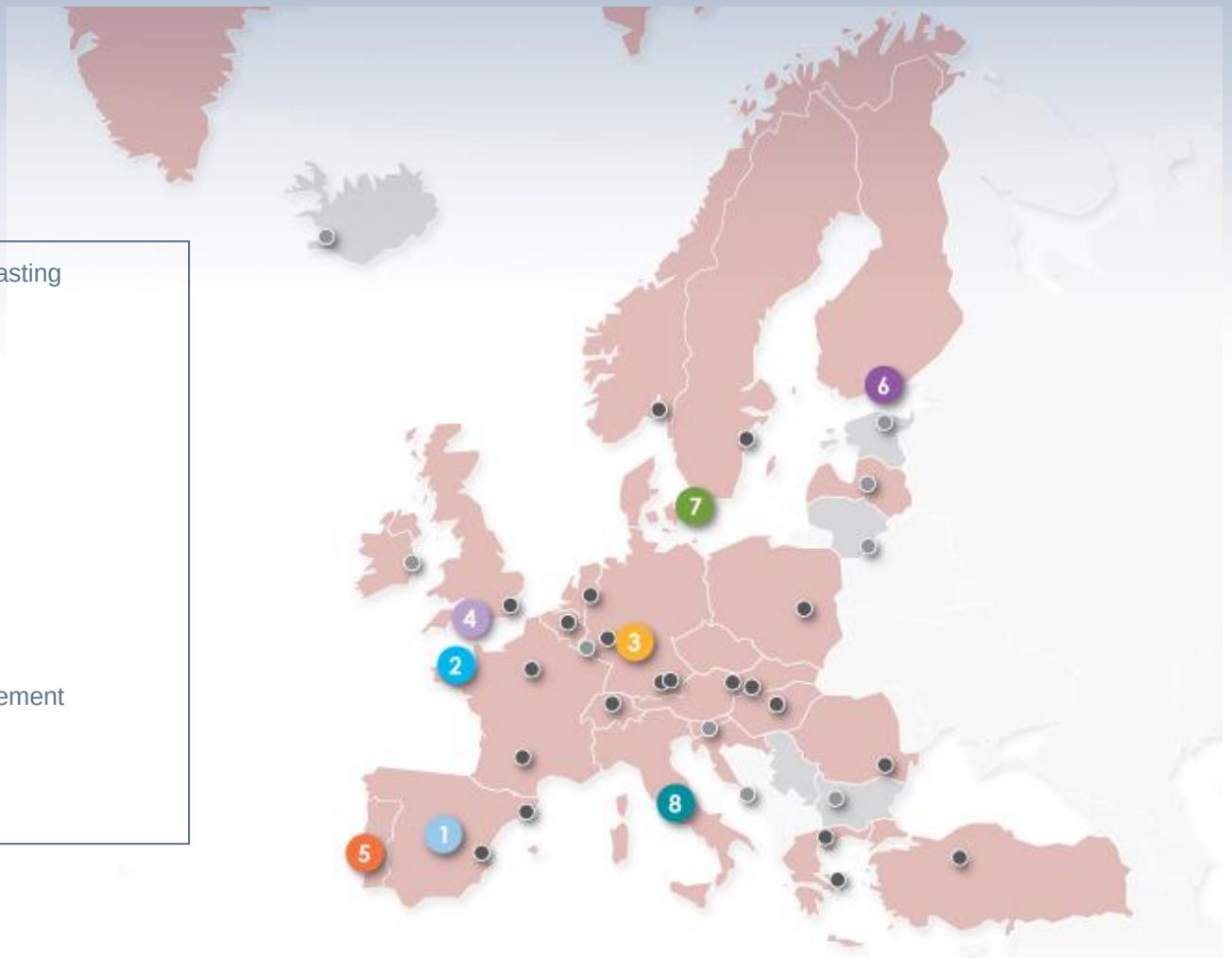
Where are the SAFs?

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



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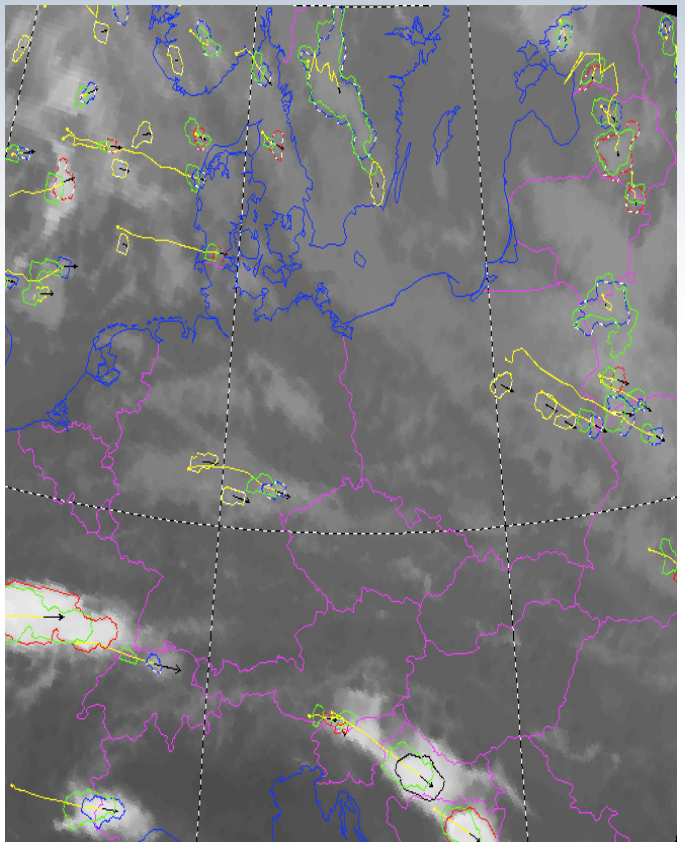
Nowcasting SAF

"Support to Nowcasting and Very Short Range Forecasting" (NWC SAF)

- established to utilise the new data from MSG and the polar platforms (Metop and NOAA) for enhancing Nowcasting
- Development of Software packages for the operational extraction of products relevant to Nowcasting and for local installation
- Leading Entity is the Spanish Meteorological Agency AEMET in Madrid
- NWC SAF is in its Continuous Development and Operations Phase (CDOP) since March 2007
- Regular updated software packages since October 2004

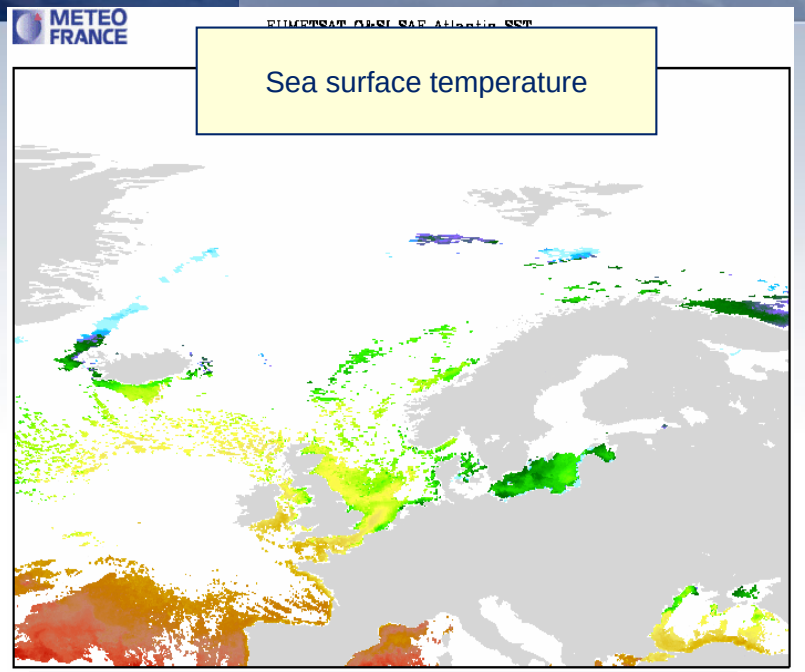


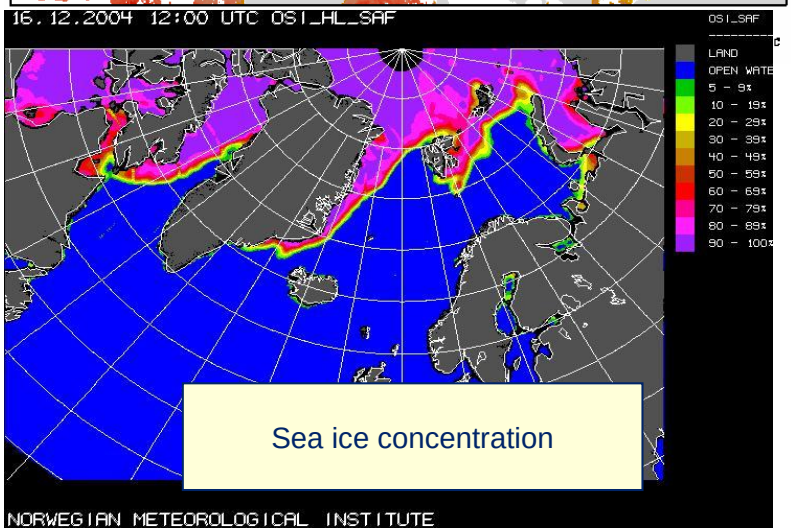
Rapidly developing Thunderstorm Product

Ocean and Sea Ice SAF

OSI SAF

- Ocean and Sea Ice (OSI) SAF routinely produces and disseminates products characterising the ocean surface and the energy fluxes across the sea surface
- Operationally produces information on the sea ice characteristics (extend, concentration, …)
- Leading Entity is Météo-France in Lannion
- OSI SAF distributes near real-time products based on NOAA, MSG, Metop, SeaWinds, DMSP and GOES data
- OSI SAF is in its Continuous Development and Operations Phase (CDOP) since March 2007





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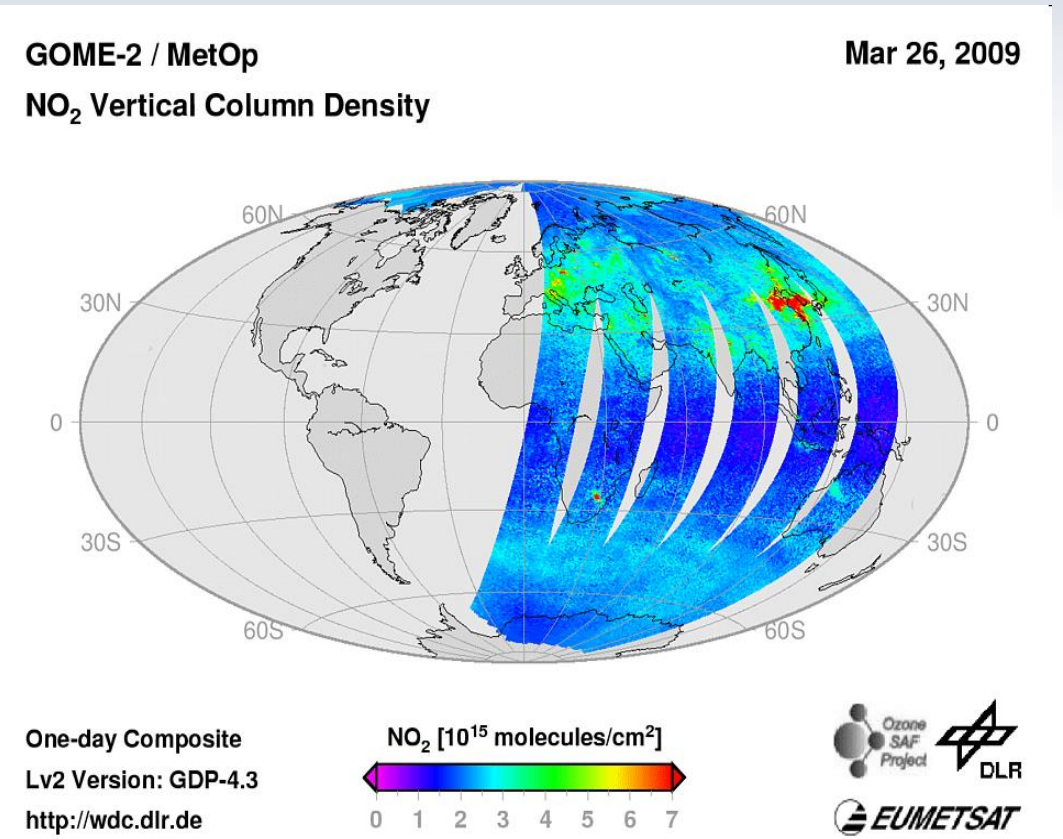
Ozone SAF

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) on EPS (Metop)
- Leading Entity is the Finnish Meteorological Institute FMI, Helsinki
- The O3M SAF is in its Continuous Development and Operations Phase (CDOP) since March 2007
- First release of products in Summer 2007



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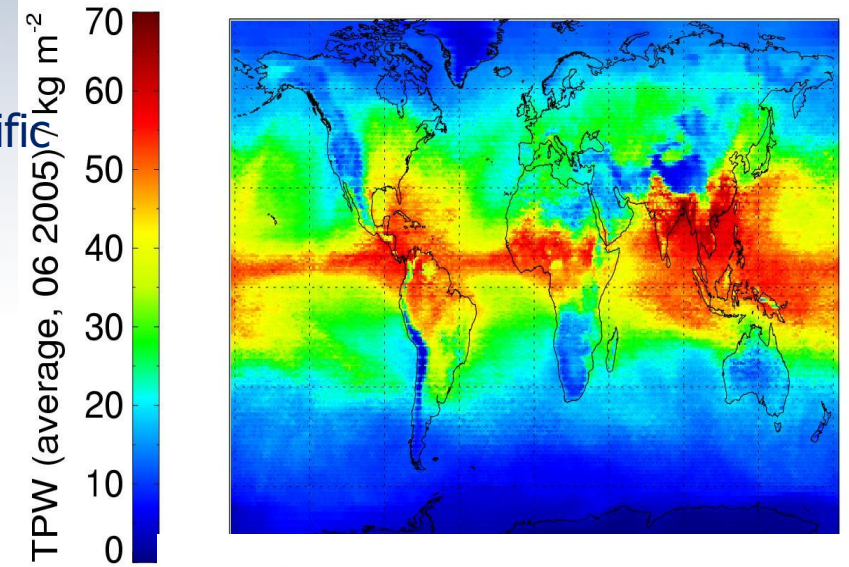
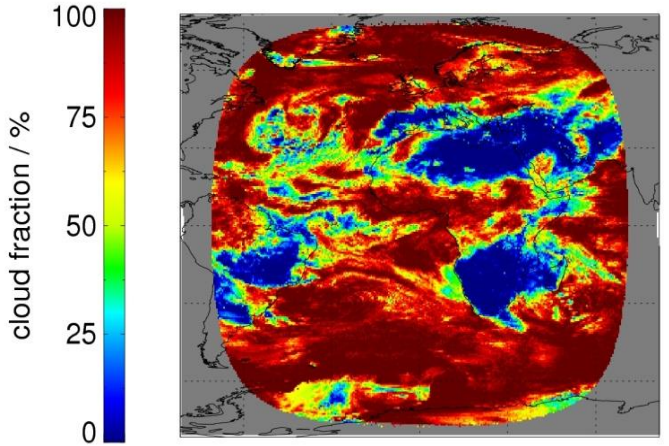
Climate Monitoring SAF

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
- In Continuous Development and Operations Phase (CDOP) since March 2007
- 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.





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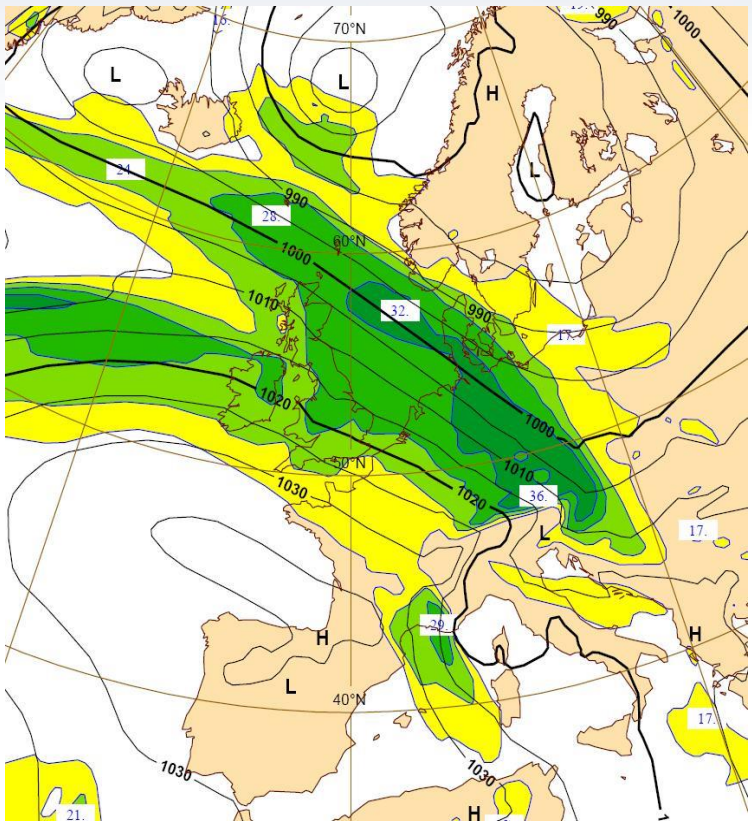
NWP SAF

- SAF on Numerical Weather Prediction (NWP SAF)
- aims at increasing the benefits to Met.-Services from Numerical Weather Prediction (NWP)
- develops advanced techniques for the effective use of satellite data
- Leading Entity is the UK MetOffice, Exeter
- The NWP SAF is in its Continuous Development and Operations Phase since March 2007



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ROM SAF

ROM SAF

- SAF on Radio Occultation Meteorology
- GRAS: Global Positioning System (GPS) Receiver for Atmospheric Sounding flown on EPS/Metop satellites
- near real-time and offline:
  - sounding data (temperature, pressure, humidity)
  - corresponding validation products, and
  - assimilation software
- The Leading Entity is the Danish Meteorological Institute DMI, Copenhagen
- Software packages released since 2007, first NRT product dissemination in October 2008

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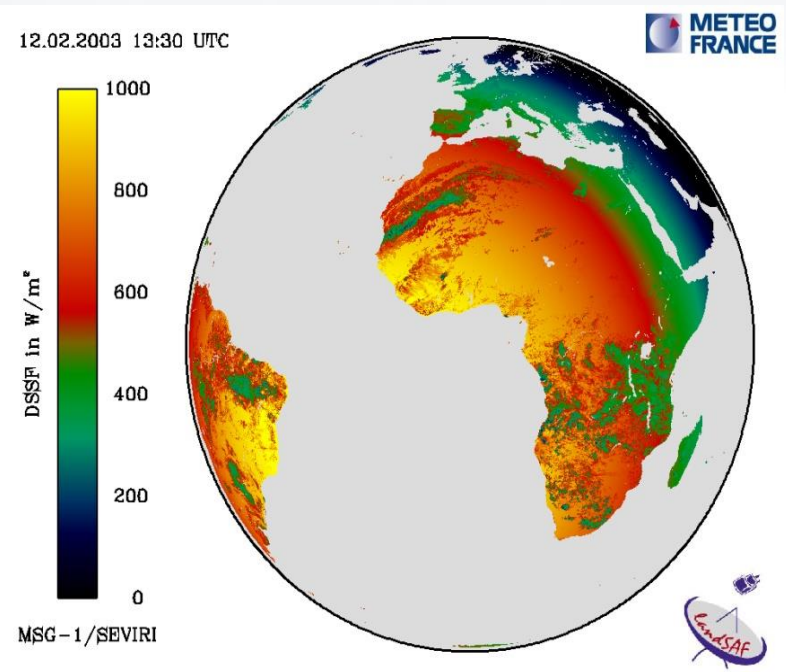
Land Surface Analysis SAF

LSA SAF

- SAF on Land Surface Analysis (LSA SAF)
- established to increase the benefit from MSG and EPS data related to land, land-atmosphere interaction and biospheric applications
- Generates operationally data services related to Surface Radiation, Vegetation and Soil Moisture
- Leading entity is the Portuguese Institute for Meteorology IM, Lisbon
- The Continuous Development and Operations Phase (CDOP) started in March 2007



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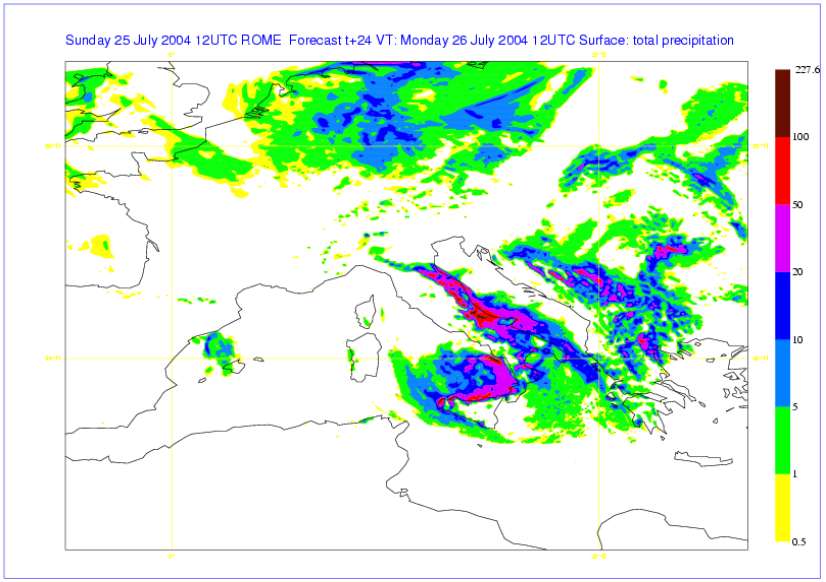
Hydrology SAF

- SAF on Support to Operational Hydrology and Water Management
- Leading Entity: Italian Meteorological Service (USAM)
- SAF products focuses on
  - precipitation
  - soil moisture
  - snow parameters
  - utilisation of these parameters in hydrological models and NWP
- The H-SAF started CDOP in September 2010



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Interaction with Users: Services provided to users

Documents
- ATBD
- Product User Manual
- Validation Report

Near-Real-Time Products

EUMETCast

SAF

Software and

off-line products

Internet
(FTP, WEB)

User

EUMETSAT
Data Centre

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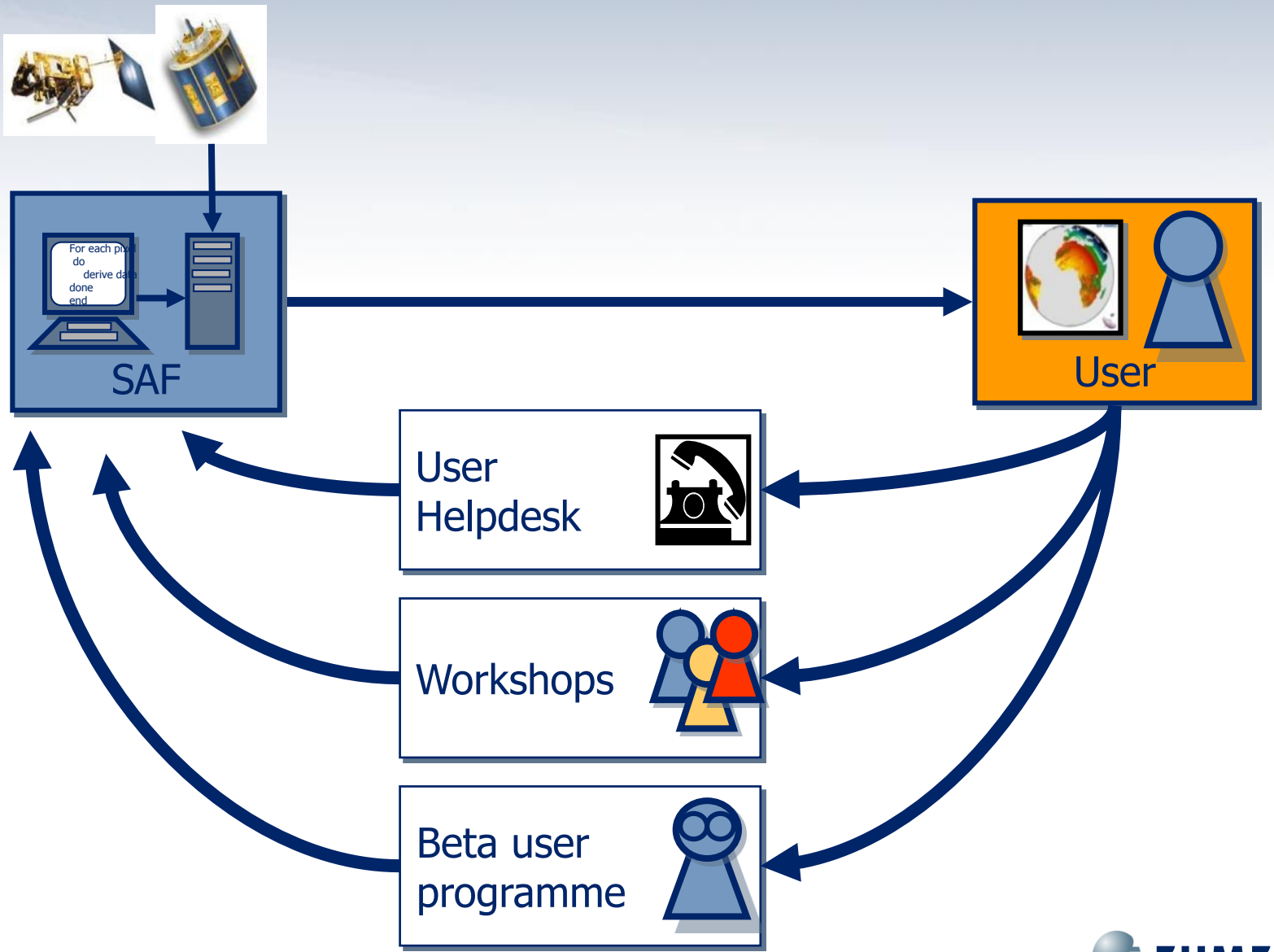
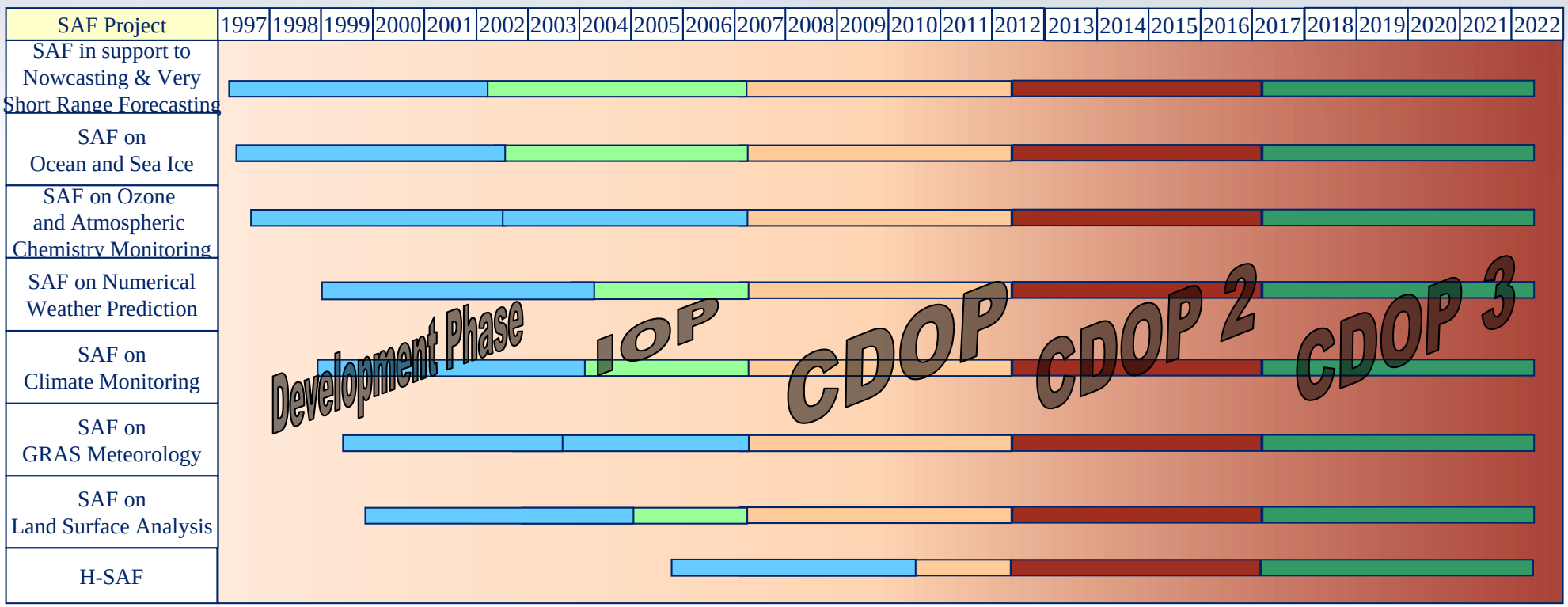
Interaction with Users: Feedback provided to SAFs



Past and future of the SAF Network



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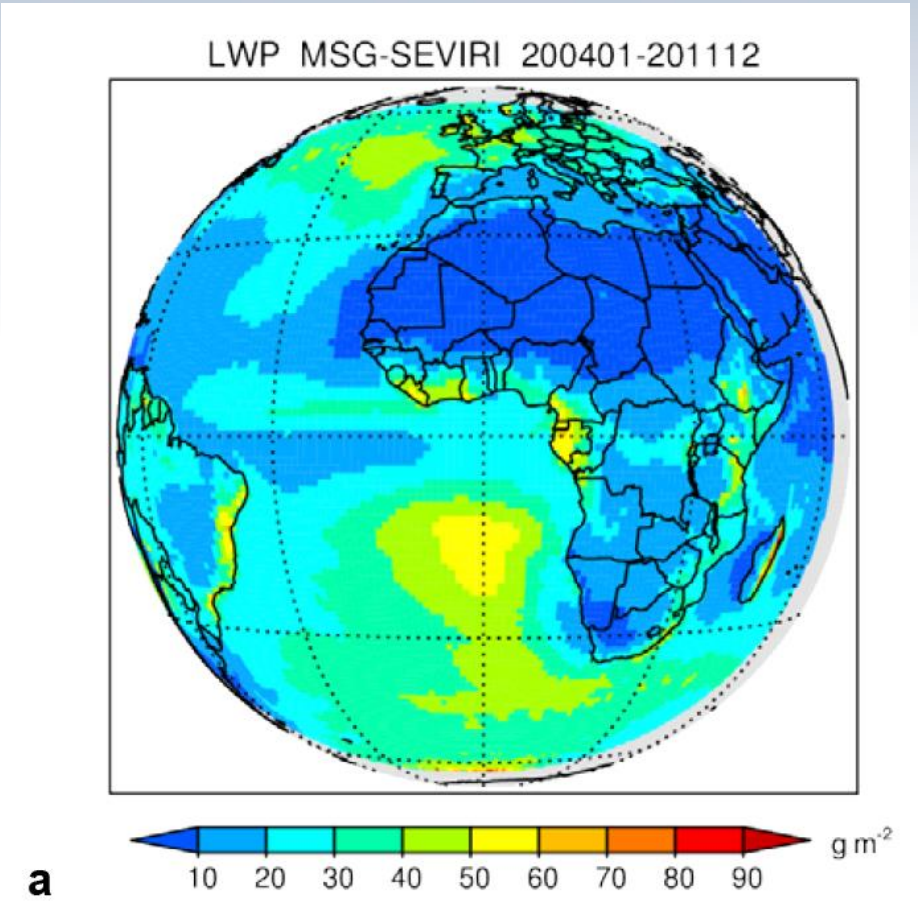
Examples for new Developments in CDOP-2

Long-term satellite data records:

- CM SAF: Meteosat since 1982
- O3M SAF: GOME-2 since 2006
- OSI SAF: Sea Ice since 1978, Sea Surface Temperature since 2002
- ROM SAF: Reprocessing of all GNSS-RO missions (since 1995)
- LSA SAF: reprocessing of SEVIRI products (since 2002)



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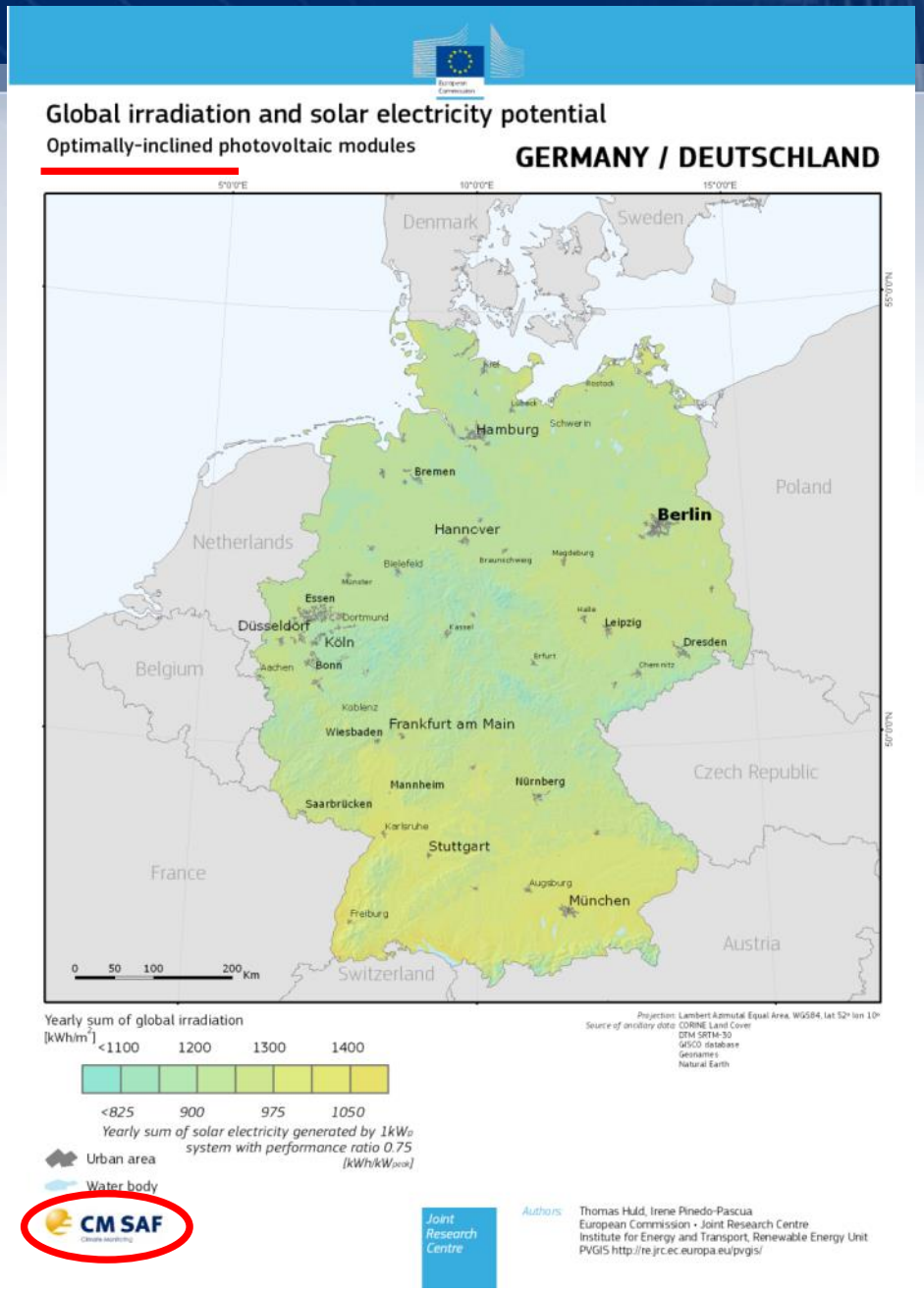
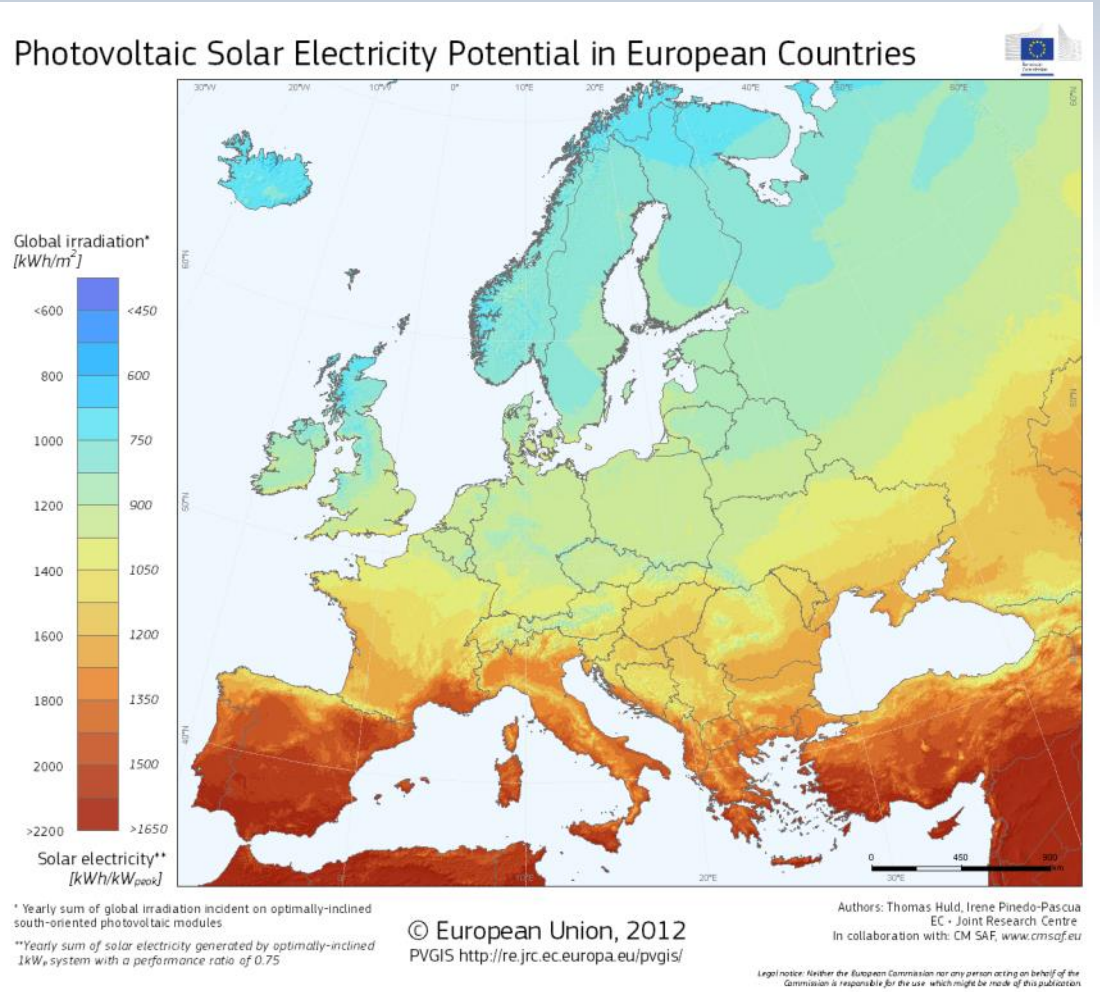
Application: PV GIS

Country-scale and Europe / Africa Maps





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Application: SMA Solar Checker

SOLARCHECKER

Is It Worth Installing Solar Power on My Roof?

Available on the App Store

ENERGY THAT CHANGES SMA

www.sma.de
→ Products
→ Plant Planning

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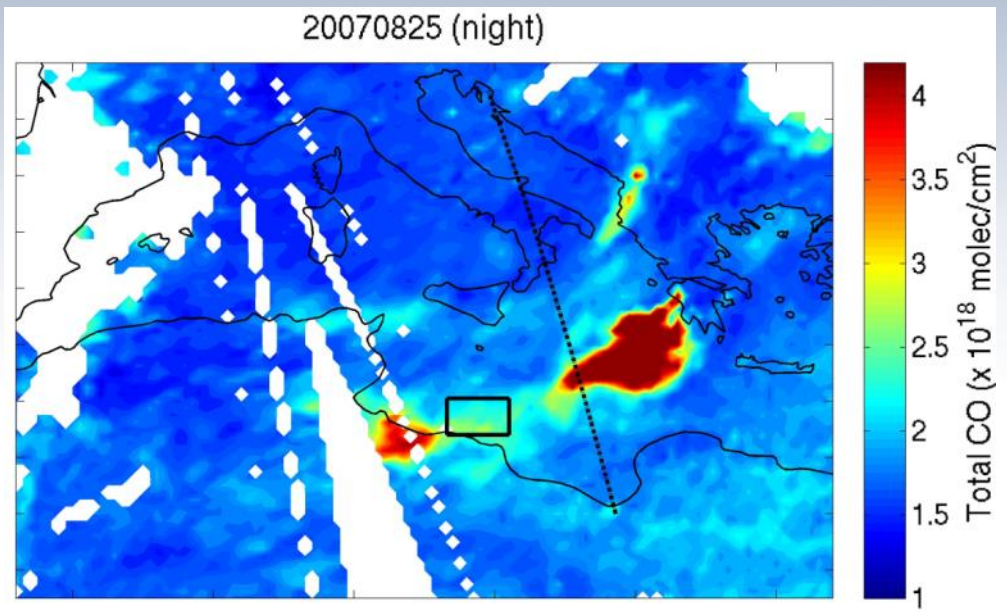
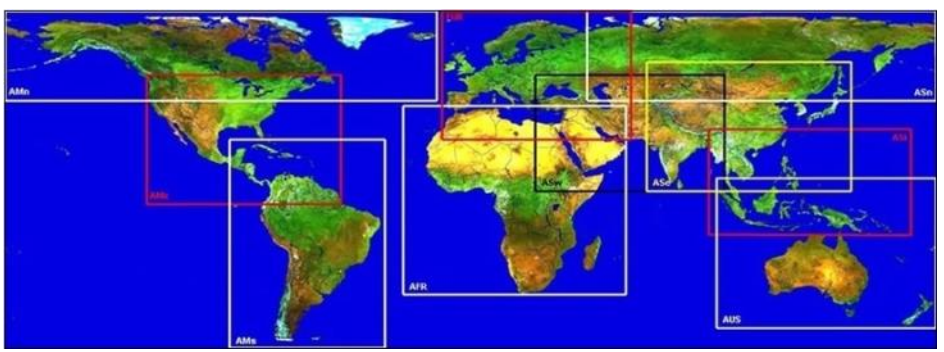
Examples for new Developments in CDOP-2

Bringing external developments into operations:

- O3M SAF: IASI products developed at LATMOS
- LSA SAF: NDVI (vegetation index from VITO, Belgium)
- NWC SAF: Precipitation based on cloud microphysics (KNMI)





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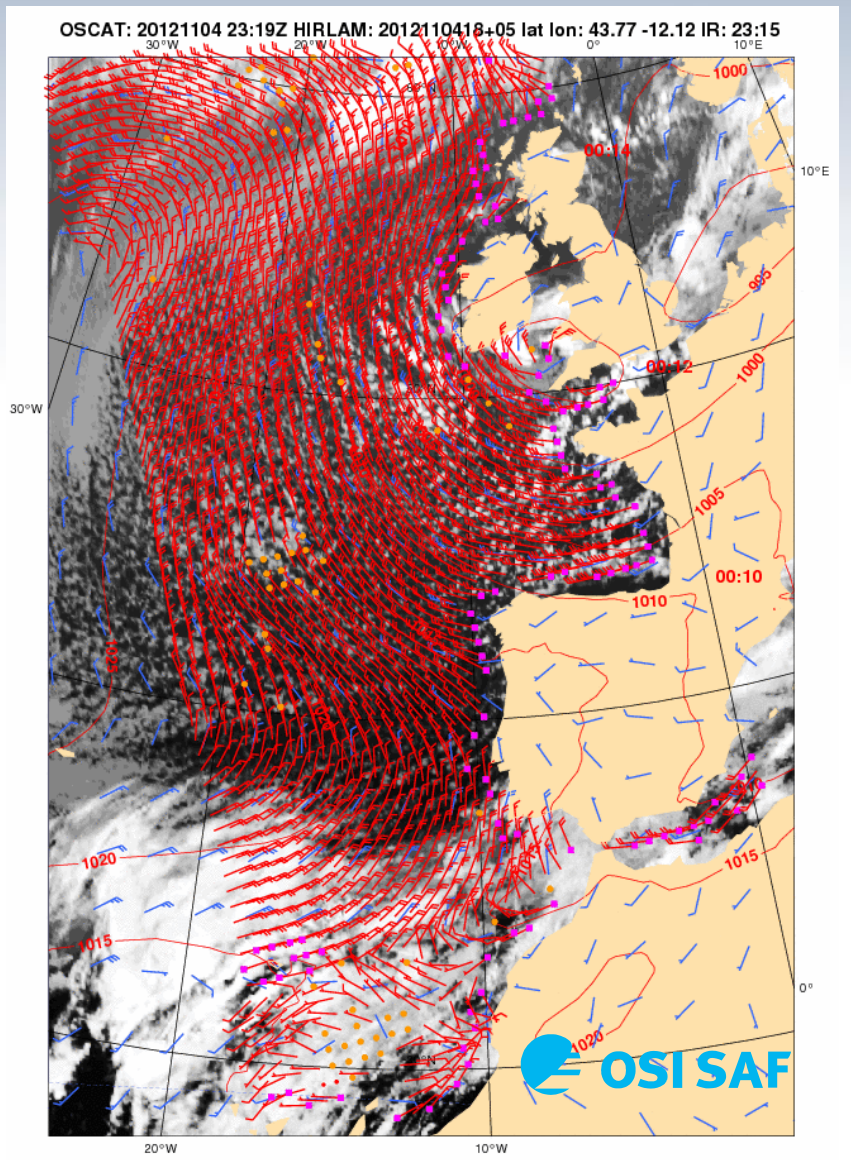
Examples for new Developments in CDOP-2

New satellite sensors:

- OSI SAF: NPP VIIRS Sea Surface Temperature, OSCAT based wind products
- H SAF: GPM data
- NWC SAF: Soumi NPP VIIRS, additional GEO imager
- ROM SAF: cosmic
- Preparation for MTG and EPS-SG



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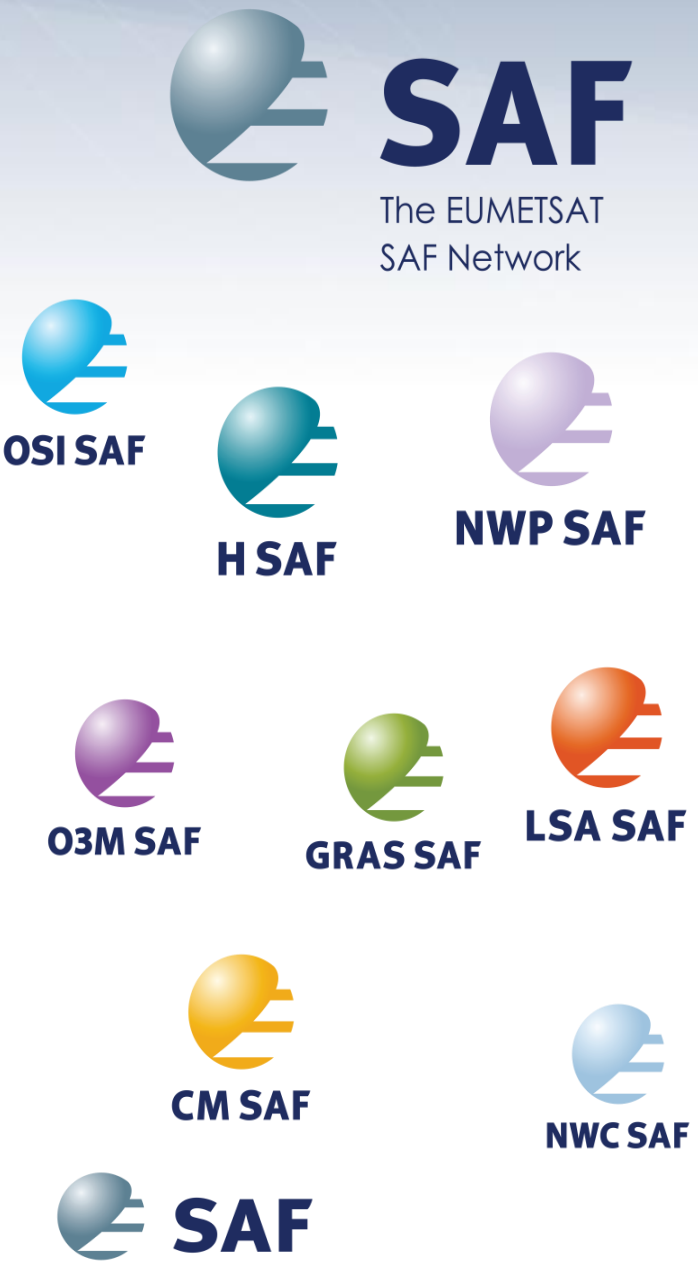
Two much information for today? Here are the essentials:



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- specialised on topics and themes
- located at Weather Services in EUMETSAT Member and Co-operating States
- developed and operated by consortium of partners
- part of the EUMETSAT application ground segment
- complement production of standard meteorological products at EUMETSAT central facility in Darmstadt
- Data and software are usable free of charge

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