User Preparation for EUMETSAT's next generation sounding missions on MTG-S and EPS-SG

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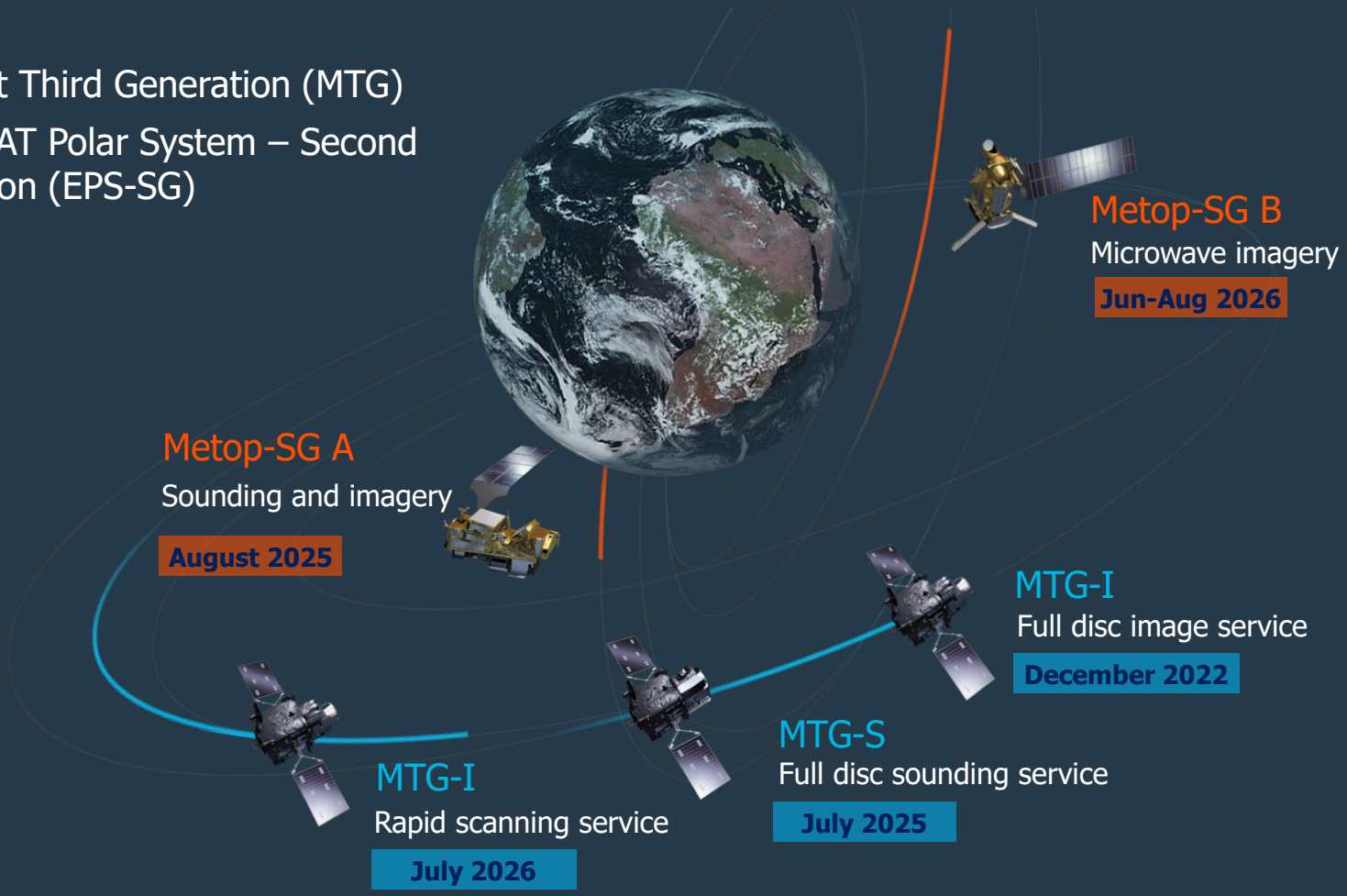
Outline

- MTG-S and EPS-SG A missions
- User Preparation
  - Test data
  - Science support
  - Training
  - Communication and outreach
  - Data Access

Future focus: two highly innovative programmes

- Meteosat Third Generation (MTG)
- EUMETSAT Polar System – Second Generation (EPS-SG)

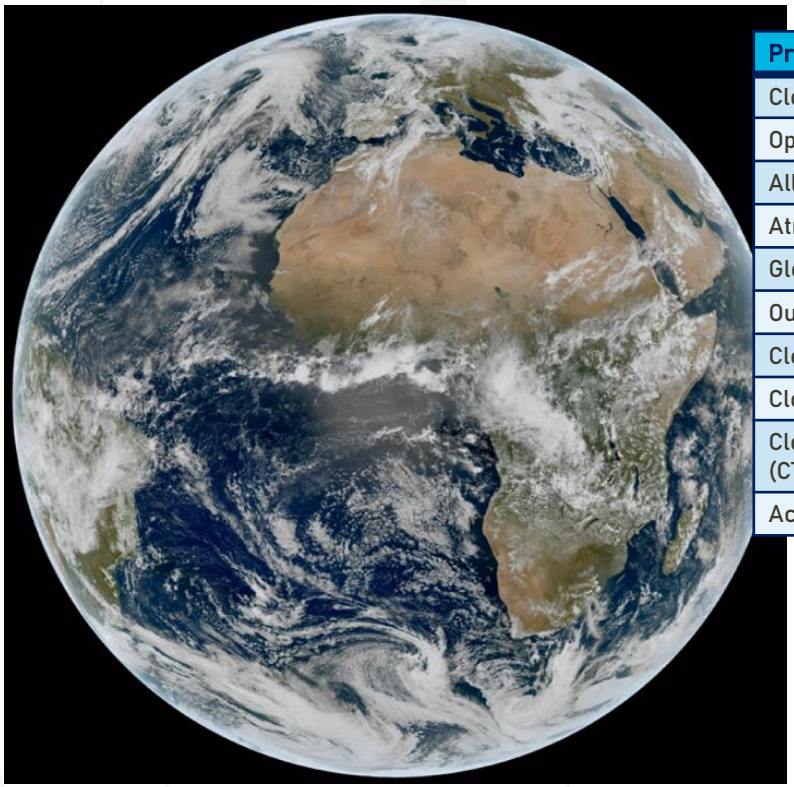


Planned launches | EUMETSAT

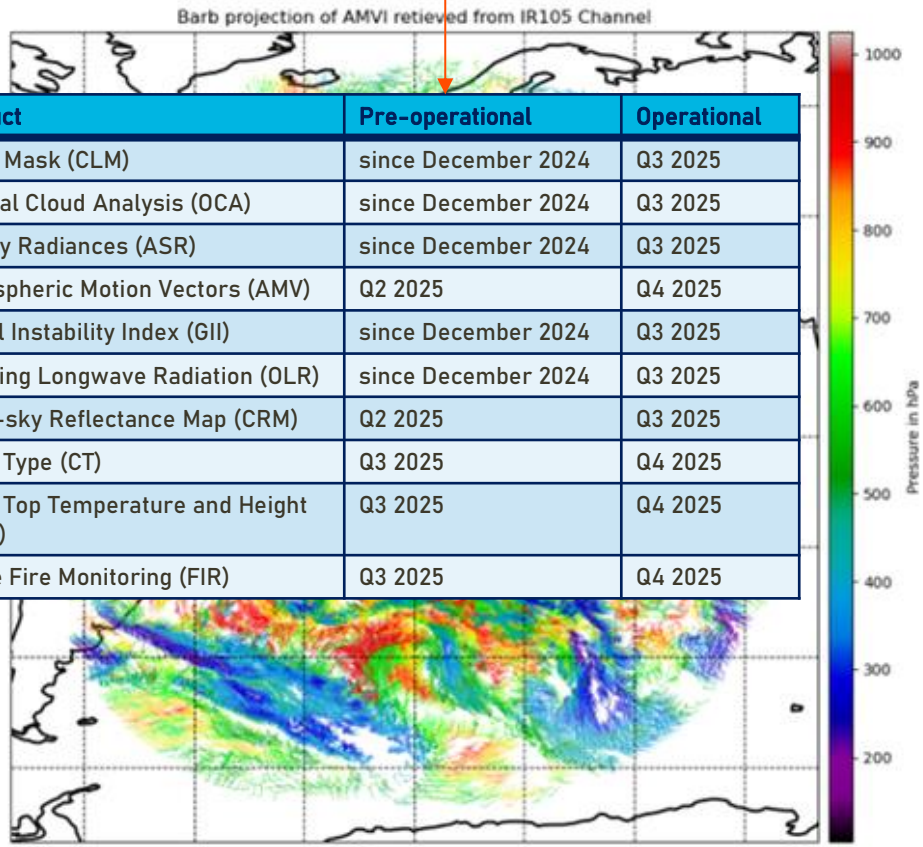
Launch dates: status as of May 2025

MTG-I1 → Meteosat-12

www.eumetsat.int



Product	Pre-operational	Operational
Cloud Mask (CLM)	since December 2024	Q3 2025
Optimal Cloud Analysis (OCA)	since December 2024	Q3 2025
All Sky Radiances (ASR)	since December 2024	Q3 2025
Atmospheric Motion Vectors (AMV)	Q2 2025	Q4 2025
Global Instability Index (GII)	since December 2024	Q3 2025
Outgoing Longwave Radiation (OLR)	since December 2024	Q3 2025
Clear-sky Reflectance Map (CRM)	Q2 2025	Q3 2025
Cloud Type (CT)	Q3 2025	Q4 2025
Cloud Top Temperature and Height (CTTH)	Q3 2025	Q4 2025
Active Fire Monitoring (FIR)	Q3 2025	Q4 2025

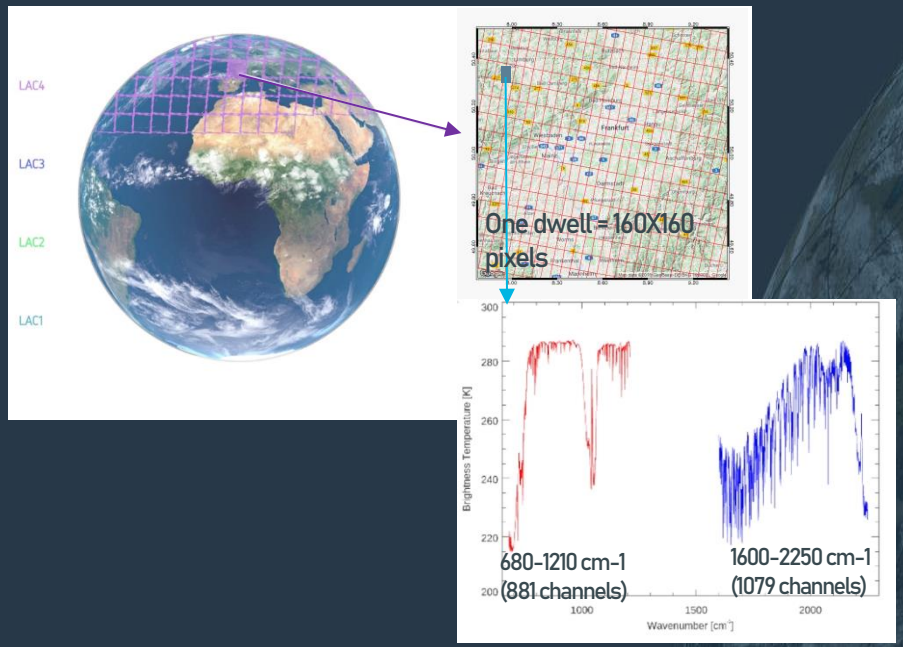


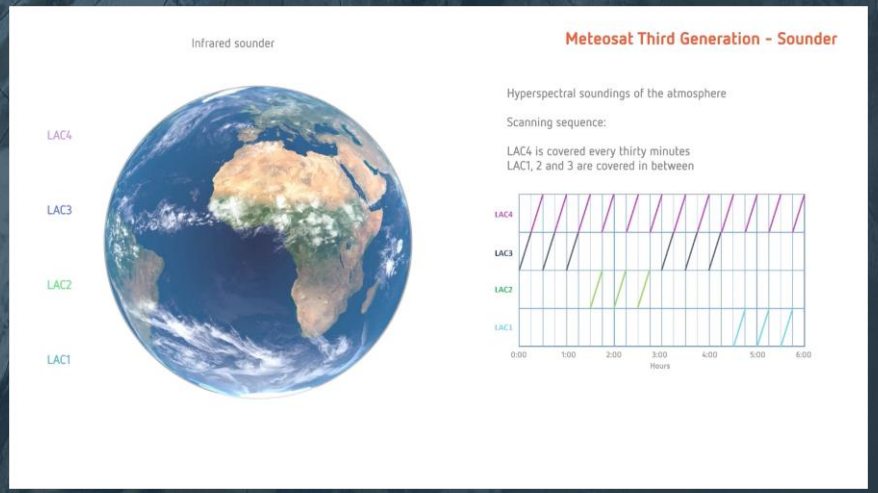
Preparation towards MTG-S and EPS-SG

MTG- IRS: hyperspectral InfraRed Sounder (IRS)

- High spatial and temporal information on atmospheric temperature and humidity, supporting NWP and nowcasting

Launch in July 2025





One dwell thus generating 25600 spectra. each spectra having, 1953 channels

Note: NRT IRS data will be disseminated only in Principal Components sc

MTG IRS level 1 data guide | EUMETSAT - User Portal

MTG IRS Test Data: Format Familiarisation and System Testing

IRS L1 Test Dataset (TD-528)

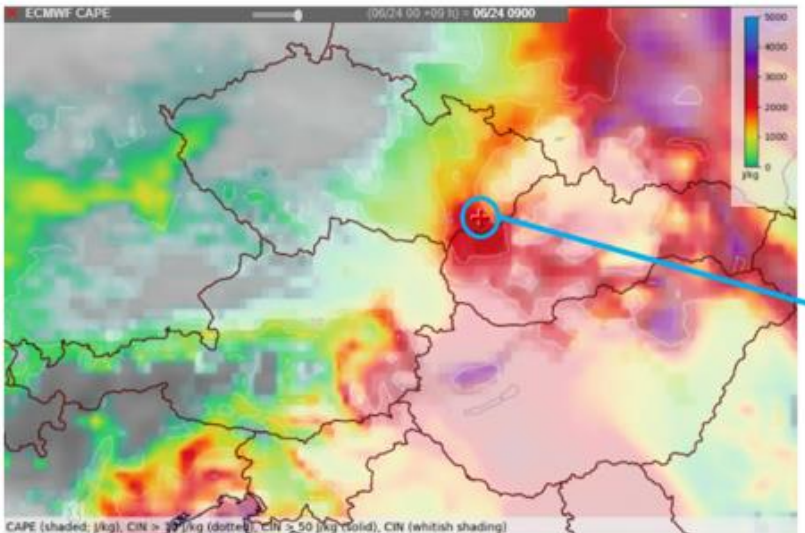
- Based on updated ("new") spectral grid
- Compatible with latest RTTOV coefficients
- Updated eigenvector file aligned with the simulation characteristics and baselined to on the operational format and naming convention

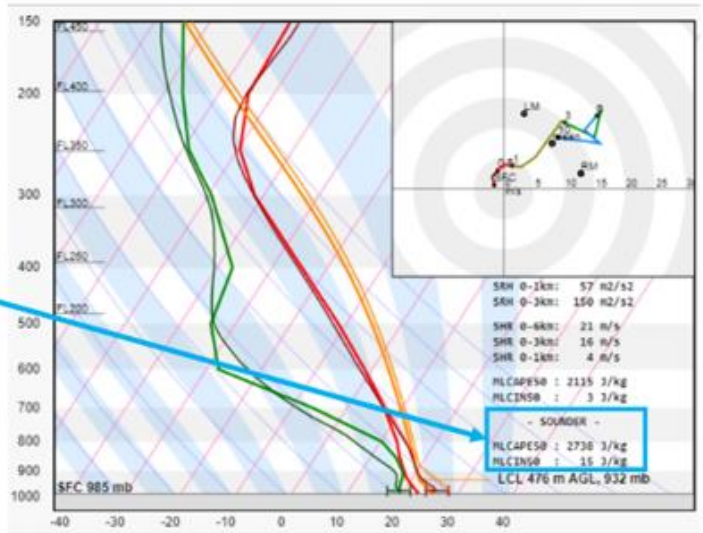
Band	Start WN (m^{-1})	End WN (m^{-1})	Grid size	WN step (m^{-1})
LWIR	0.67949573 10^5	1.2100111 10^5	877	60.561117
MWIR	1.5999082 10^5	2.2504004 10^5	1076	60.510901

IRS L2 Test Dataset for Nowcasting

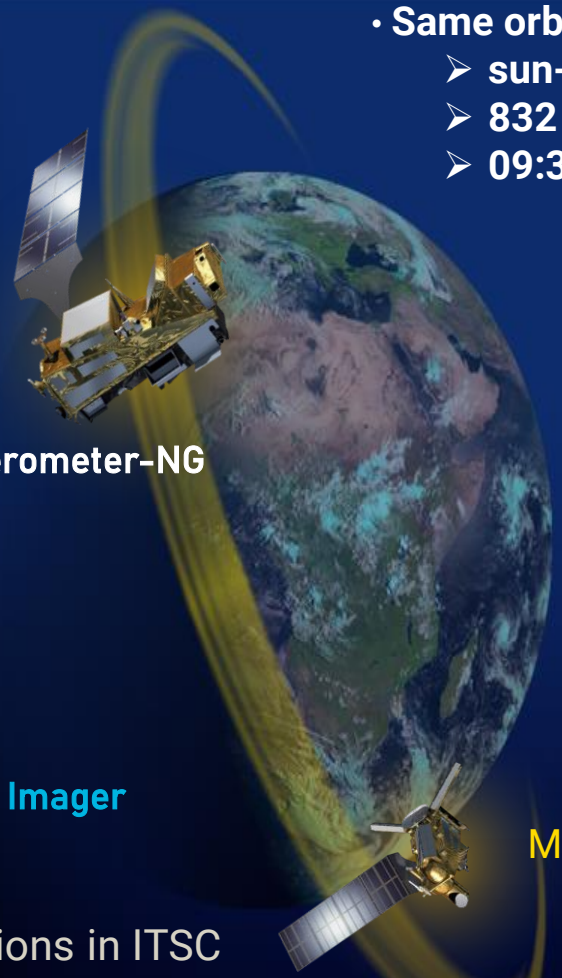
- Published on 27 Sep 2024
- IRS L2 State Vector Product:
  - Profiles (temperature, humidity, ozone)
  - Surface parameters
  - Instability indices and total vertical column
  - Cloud products
- 6 hours of test data, at 30 mins interval over LAC4 corresponding to the severe convection case in Poland, Czech Republic on 24 September 2021

MTG test data | EUMETSAT - User Portal





EPS-SG full operational configuration



- Same orbit as Metop
  - sun-synchronous
  - 832 km mean altitude
  - 09:30 local equator crossing time

Metop-SG A
Sounding & Optical Imaging

- Infrared Atmospheric Sounding Interferometer-NG
- Microwave Sounder
- Radio Occultation
- METimage
- Copernicus Sentinel-5 UVNS
- Multi-viewing, -channel, - polarisation Imager

- Overall mission lifetime ~24 years
- Tandem flight between EPS-SGA1 and Metop-C for 1 month to enable cross-calibration activities

Other presentations in ITSC
1.02, 3p.06, 11p.02, 6.03,..

Metop-SG B
Microwave Imaging and Sounding

- Scatterometer
- Radio Occultation
- Microwave Imager
- Ice Cloud Imager

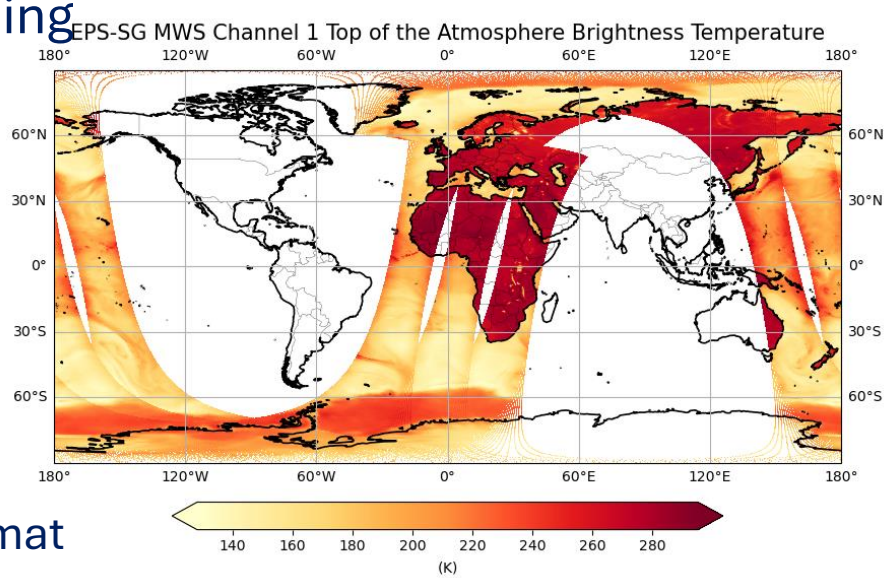
EPS-SG Test Data

- Two versions of EPS-SG test data covering all L1 and L2 products released to users
  - Three orbits of data; same orbits for all observation missions
  - Exception: 3MI L2 aerosol and cloud (Day 2)

EPS-SG Products	Test Data v3
MWS L1 and L2 MWI and ICI L1B	Released
RO L1; METimage L1 and L2; 3MI L1B and L1C; IASI-NG L1C; MWI and ICI L2 and SCA L1 B	Q2 2025

- An updated test data release (V3) complying with the most recent processing will be released in Q2 2025 - same three orbits as the earlier version

- An initial version of test data in BUFR format also released to users with the same granularity as for the operational data
  - An updated version of test data in BUFR format to be released in Q2 2025



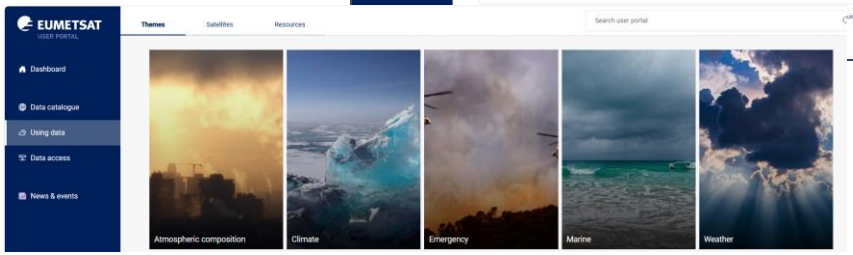
Metop-SG test data | EUMETSAT - User Portal

MTG & EPS-SG: Training/User information & communication

www.eumetsat.int

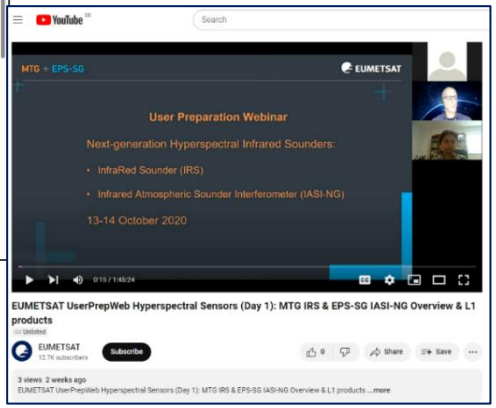
User Portal: data access, application guides, training materials

EUMETSAT - User Portal



Videos: Satellites, Missions, Applications

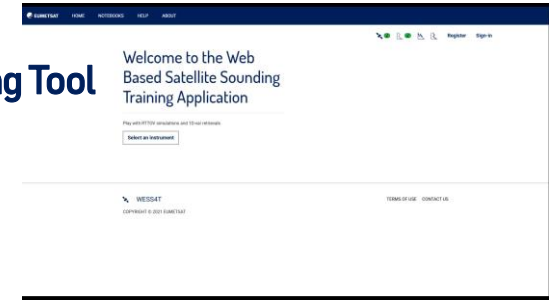
EPS-SG Youtube playlist
MTG Youtube playlist



User Preparation Webinars on all MTG and EPS-SG missions

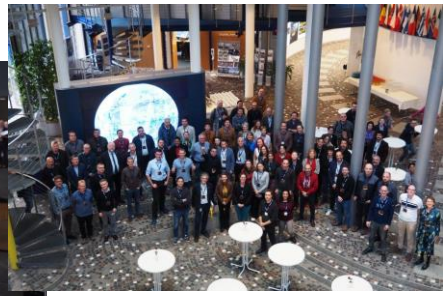
NWPSAF Satellite Sounding Tool RT and 1Dvar

WESS4T home



Info Packages & Brochures

Brochures | EUMETSAT



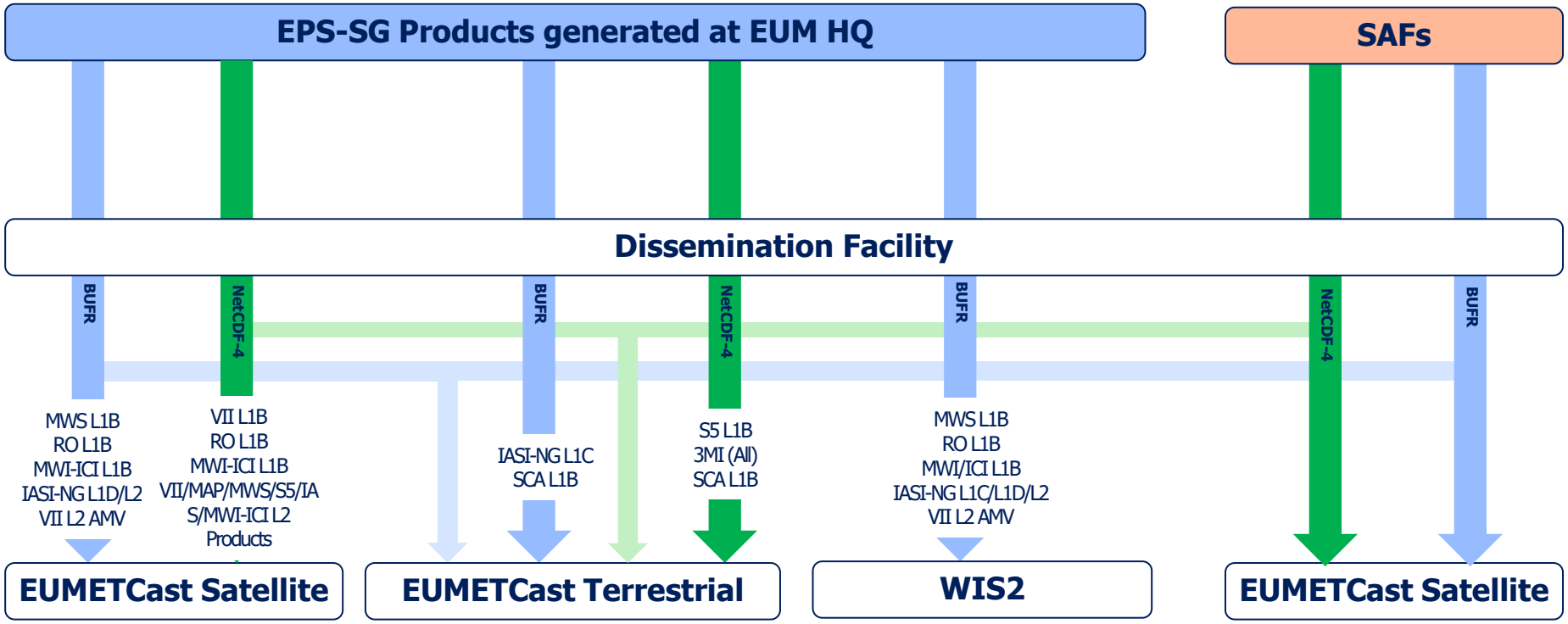
User Days (~every 2 years)

Workshops focussing on products and applications

Interaction with NWP users

- Core NWP User Group
  - Members comprising of representatives from the Global NWP centres and Regional NWP consortia in Europe, and NWPSAF
    - Global NWP centres: DWD Germany, ECMWF, Meteo France, UK Met Office
    - Regional NWP consortia: ACCORD (ALADIN, HIRLAM, LACE), COSMO, SEECOP, UK Met Office
  - Members have been meeting twice a year since 2020
    - Updates from NWPSAF on the software development (pre-processing, RTTOV radiative transfer model, EPS-SG local processor, ..);
    - EUMETSAT updating the members on the activities along the core themes of MTGUP and EPS-SG UP
    - Members presenting and exchanging their research idea related to the uptake of MTG and EPS-SG missions.
  - One to one meetings with the members to understand their readiness towards the assimilation of MTG and EPS-SG data
- Representation in Science/Mission Advisory groups and Cal/Val activities
- Engagement with NWP users globally through GODEX-NWP, ITWG, DBNet groups.

EPS-SG dissemination baseline



- ✓ Archived products will be retrievable in the same formats (NetCDF-4 and/or BUFR), as they were generated and disseminated over EUMETCast

EPS-SG direct broadcast software

Development and Distribution

- Local Processing software to be made available for the generation of the following products
  - L0 products: all instruments
  - L1 products:
    - Infra-red Atmospheric Sounding Interferometer-NG (IASI-NG)
    - Microwave Sounder (MWS) ▪ METimage ▪ Microwave Imager (MWI)
    - Ice Cloud Imager (ICI) ▪ Scatterometer (SCA)
  - L2 products: METimage Cloud Mask
- The NWP SAF is responsible for:
  - Testing and packaging the SW
  - Distributing the SW to users, subject to the acceptance of applicable license terms
  - Providing user support and maintenance of the SW
- Anticipated Release Schedule of the SW:
  - Launch + 6 months: first version of the SW and relevant documentation
  - Launch + 18 months: final version of the SW and relevant documentation
- Due to export control regulations, the METimage local processor software is subject to specific restrictions that affect its distribution.
  - All users will have access to the binary of the code from the NWPSAF webpage on the acceptance of the SW licence.
  - EUMETSAT is exploring the best way to provide access to EU Dual-Use classified source code and documentation, prioritising users in EUMETSAT Member States, while ensuring the process is well-coordinated, compliant with the EU Dual-Use Regulation, and user-friendly.

Metop-SG Direct Readout guide | EUMETSAT - User Portal

Thank you!

Questions are welcome

MTG: Using Meteosat Third Generation data | EUMETSAT - User Portal

EPS-SG: Using Metop-SG data | EUMETSAT - User Portal

Access EUMETSAT data at:
Data Catalogue | EUMETSAT - User Portal

EUMETSAT helpdesk: ops@eumetsat.int