



EUMETSAT updates since CGMS-50 and report on medium to long-term plans

CGMS-51 plenary

EUMETSAT satellite systems



EUMETSAT
Satellite systems

Current satellites operated by EUMETSAT

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SENTINEL-3A & -3B (98.7° incl)

Low Earth, sun-synchronous orbit
Copernicus satellites delivering marine data services from 814km altitude

JASON-3 (63° incl)

Low Earth, non-synchronous orbit
Copernicus ocean surface topography mission (shared with CNES, NOAA, NASA and Copernicus)

Sentinel-6 Michael Freilich (66° incl)

Low Earth, non-synchronous orbit
Copernicus ocean surface topography mission (shared with NASA, NOAA, ESA and Copernicus with support from CNES)

METEOSAT-10, -11

Geostationary orbit

Meteosat Second Generation

Two-satellite system

Full disc imagery mission (15 mins)
(Meteosat-11 (0°))

Rapid scan service over Europe (5 mins)
(Meteosat-10 (9.5° E))

Sentinel-3B

METEOSAT-9 (45.5° E)

Geostationary orbit

Meteosat Second Generation
providing Indian Ocean data coverage

METOP-B & -C (98.7° incl)

Low Earth, sun-synchronous orbit
EUMETSAT Polar System (EPS)/
Initial Joint Polar System

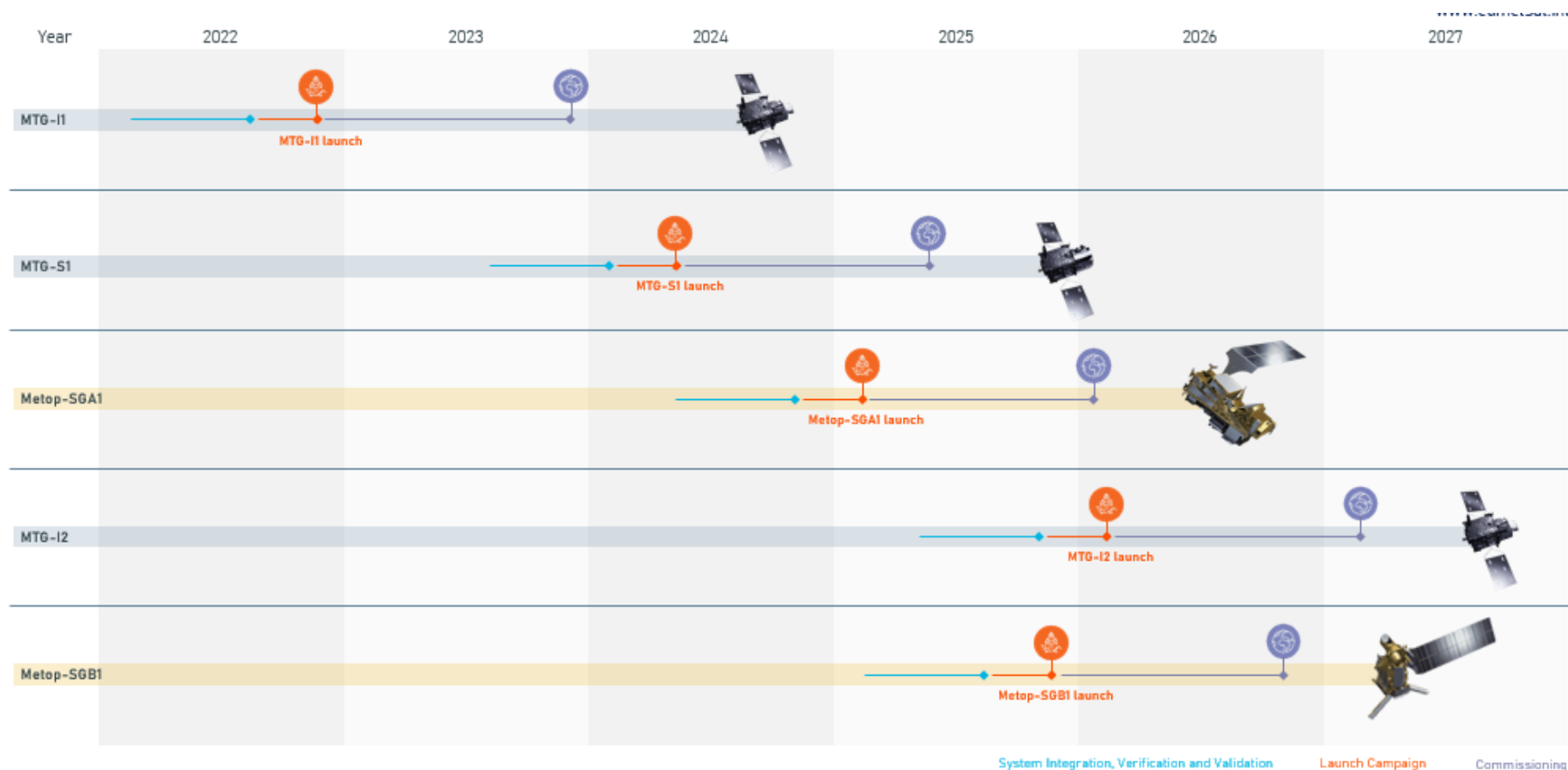
MTG-II

Geostationary orbit

Meteosat Third Generation imaging mission,
currently in commissioning phase



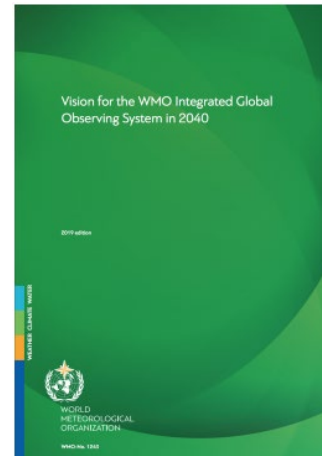
Launch of next generation systems up to 2025



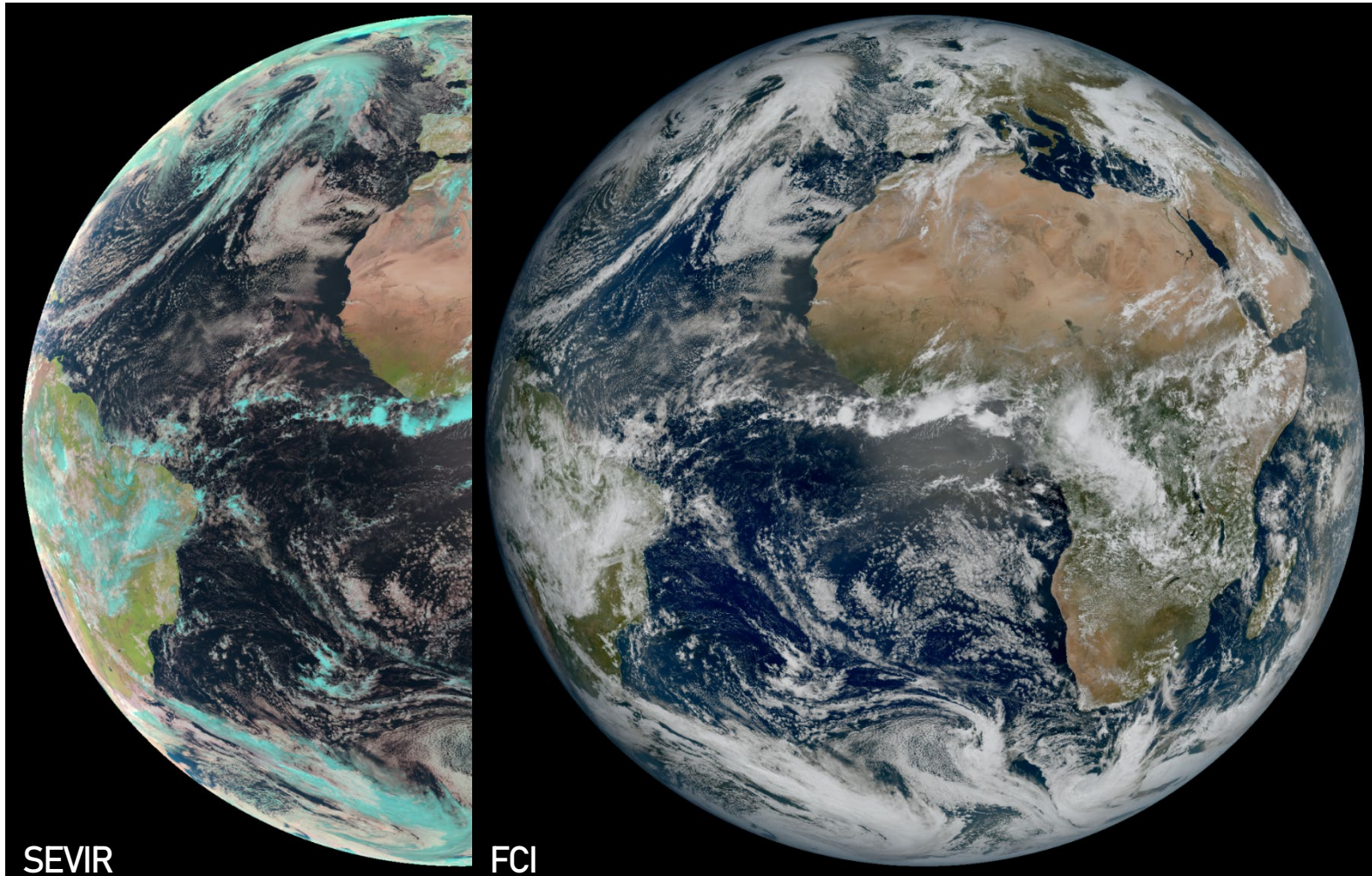
Meteosat Third Generation (MTG) – Contribution to WIGOS Vision 2040

**Successful launch of
MTG-I1 on 13 Dec
2022, *commissioning
ongoing***

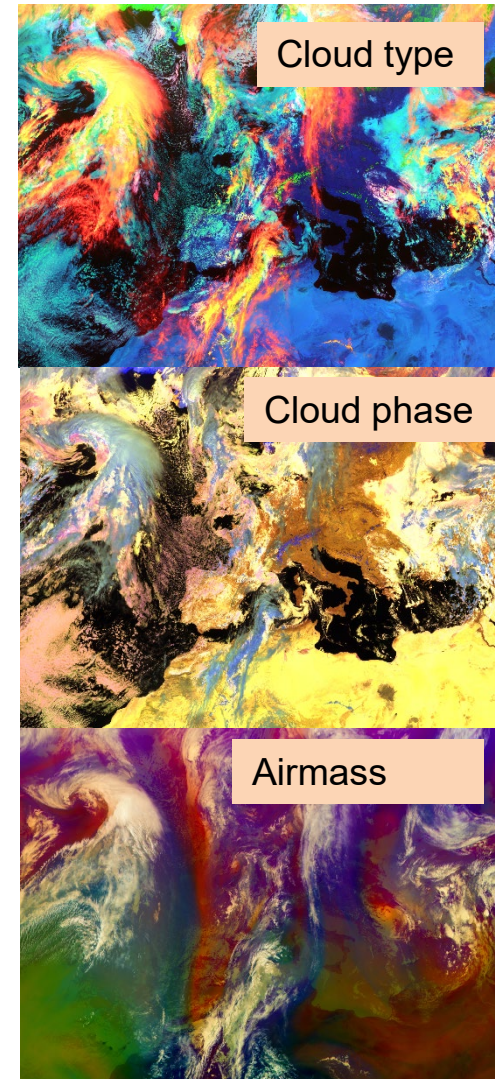
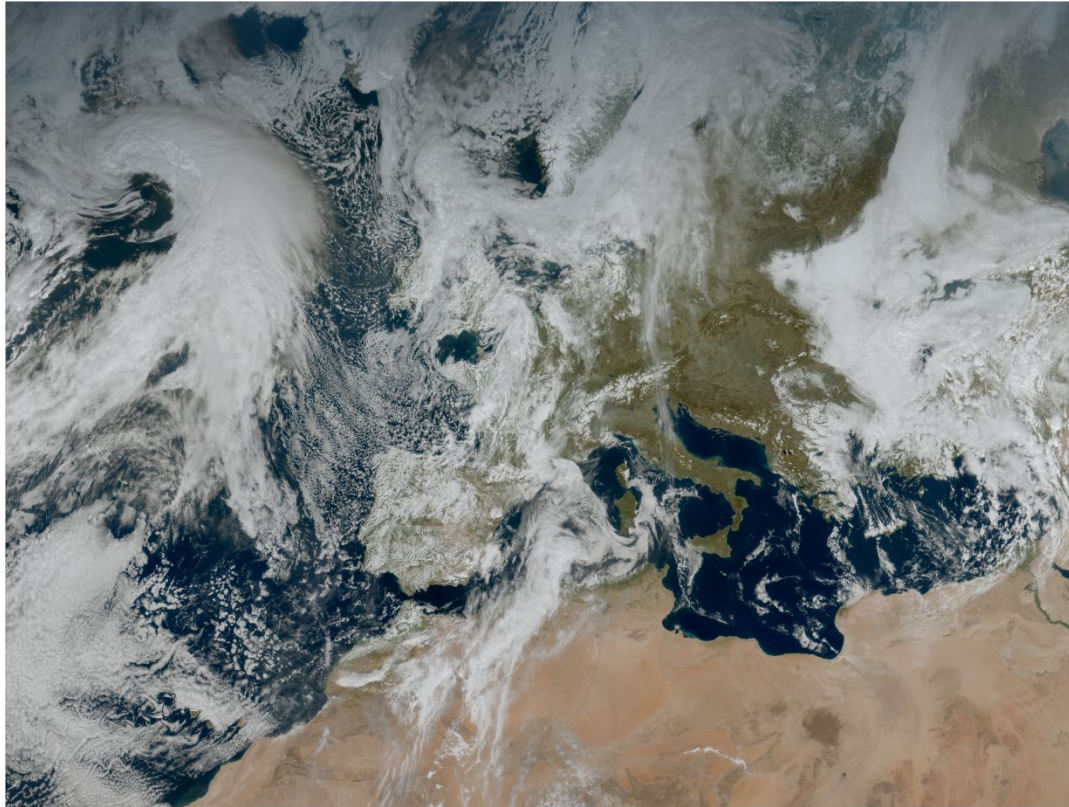
**In response to the
WMO Integrated
Global Observing
System 2040**



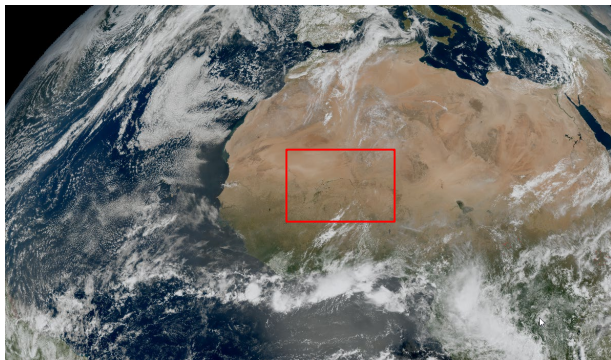
MSG versus MTG imagery



MTG – FCI over Europe and RGB products



Fires over Africa



- 18.03.2023
15:40 UTC
- Fire temperature
visualised using
IR3.8 + NIR2.2 signal



Data access - EUMETSAT Big Data Services

NEW DATA SERVICES



EUMETView
Viewing your data



EUMETSAT data store
Improving data access



Pull services
Data tailor
Customising your data

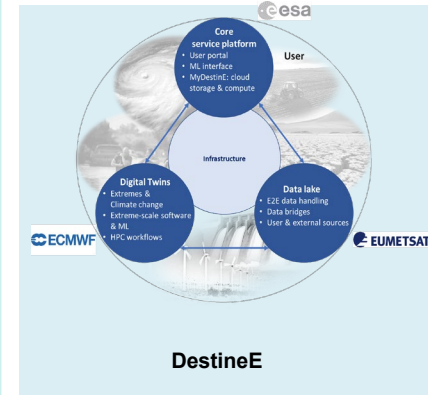


Push services
EUMETCast Terrestrial
Near-real-time data delivery via terrestrial networks



Shared services
European Weather Cloud
Hosted data processing

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EXISTING SERVICES



EUMETCast satellite



Data centre



WEKEO



WIS

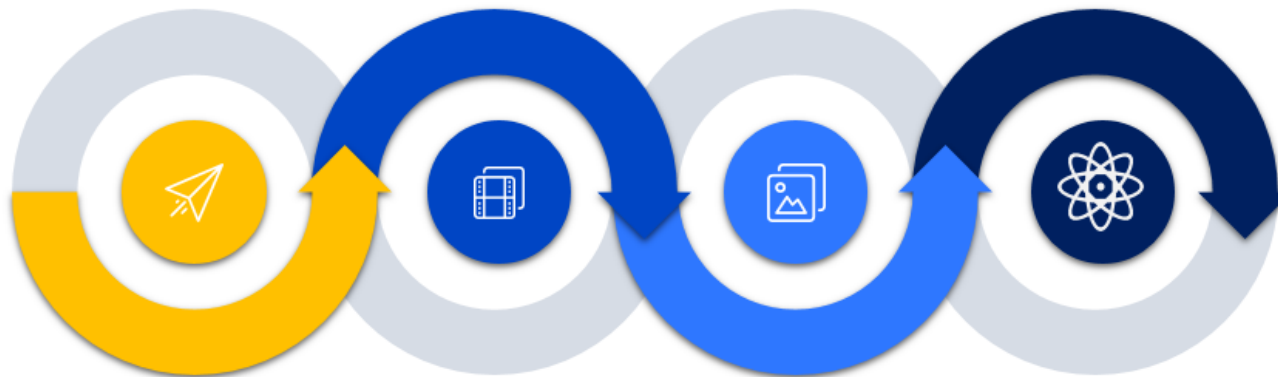


Direct dissemination

Three implementing agencies:
ECMWF, ESA and EUMETSAT

EUMETSAT has end-to-end responsibility for the Destination Earth Data Lake

EUMETSAT AI/ML roadmap



2022/23

- M1 - Establishment of a dedicated AI/ML call for joint project (supported through fellowships)
- M2 - Building EUMETSAT AI/ML coordination team
- M3 - Explorative workshops for new action areas

2023/24

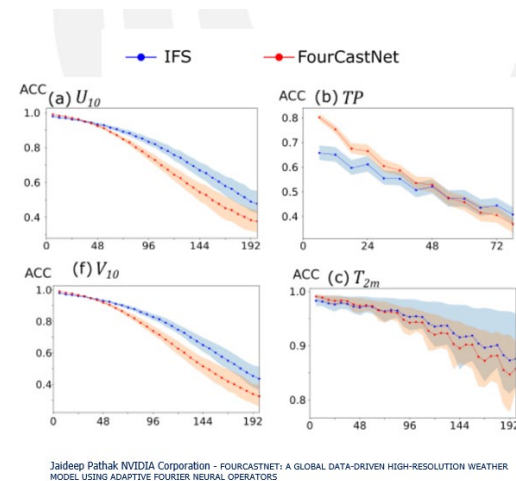
- M4 - Running initial projects as Pathfinders for AI/ML
- M5 - Tailoring EWC software for AI/ML
- M6 - Developing training data set for Pathfinders

2024/25

- M7 - Workshop on AI/ML EUMETSAT applications
- M8 - Large AI/ML context (i.e., MOOC)
- M9 - Evaluation from STG and SWG

2025/26

- M10 - Evaluation of AI/ML roadmap by PAC
- M11 - Approving and establishing Phase 2



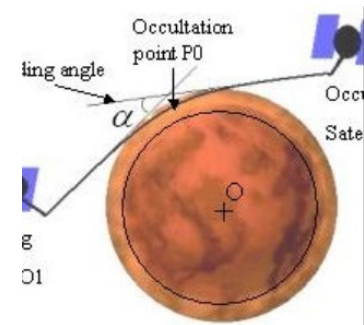
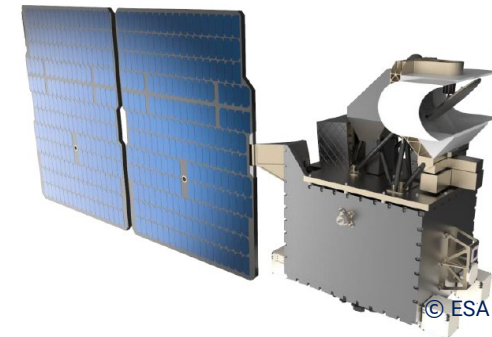
New opportunities to complement MTG and EPS-SG in 2025-2040

The enhanced EUMETSAT response to the implementation of **WIGOS 2040**

Under consideration:

- **EPS-Aeolus**, unique European technological expertise to improve Numerical Weather Forecasts
- **EPS-Sterna**, a constellation of micro satellites for testing new space in an operational environment
- **Ocean altimetry follow-on programme** highly relevant for the detection of global sea level rise and of climate change
- Procurement of **commercial RO** data

Decisions expected in the 2025 timeframe



EUMETSAT procurement of commercial RO data

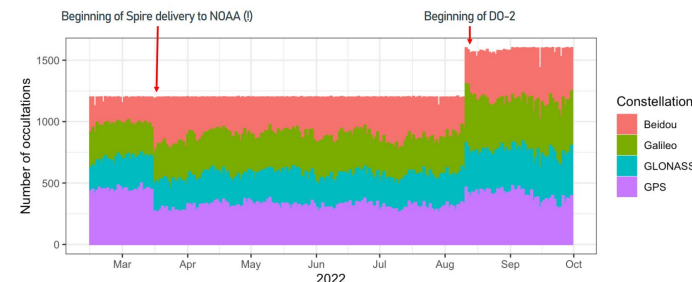
Procurement of RO data from Spire with global redistribution licence.

Pilot programme until August 2024.

Excellent results so far, with data assimilated by main NWP centres and sharing of data.

Discussion to build a permanent mechanism to procure commercial data in complement of baseline infrastructure.

International assessment of optimal number of RO data needed for NWP through ROMEX experiment.



ROMEX Experiment

COSMIC-2	6,000
GRAS	1,000
GNOS (FengYun 3)	2,000
Tandem-X, TerraSAR-X, KOMPSAT-5, Sentinel 6 Paz.....	2,000
Spire	20,000
PlanetIQ	3,000
China Yunyao Aerospace	9,000
China FY-3	2,000
Total	45,000

EUMETSAT involvement in space weather activities

EUMETSAT potential role in the provision of operational space weather data services – currently under discussion with Member States

Short-Term

- Data hub for global data exchange

Medium Term

- Processing and NRT delivery of data from sensors on EUMETSAT satellites
- Role in operational transition of ESA Space Weather Service Network

Longer-Term

- Possible support to ESA L5 mission (“Vigil” launch 2027)
- Consideration of SW observations as part of M4G and EPS-TG user requirement process

New opportunities



EUMETSAT and EU's Copernicus programme

EUMETSAT in EU Copernicus programme

- Operations of EU Copernicus satellites dealing with the observations of the oceans, the atmosphere and relevant for the detection of climate change – Largest operators of Copernicus Sentinels with Sentinels-3, -4, -5 and -6
- Two Copernicus instruments are hosted on EUMETSAT satellites and one satellite is developed as an international partnership with the US
- Operations, together with Copernicus service entities (i.e. ECMWF,...), of a big Data Information and Access Service (DIAS) : WEkEO
- Plan to operate, as of 2026, the future Copernicus CO₂ monitoring satellites (CO2M), the European response to the monitoring of the implementation of the Paris Agreement
- Future operated Sentinels : S3-NG Topo, S3-NG Opt, S6-NG, CO2M plus involvement in global products for CIMR and Cristal

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Issues of relevance to EUMETSAT which might deserve discussions in a CGMS context

- Preparation of future programmes and need for international coordination in their implementation, new architecture concepts, ...
 - internationally coordinated response to WMO WIGOS 2040
- Roadmap towards evolution of data services using cloud technologies, AI/ML, ...
 - exploitation and opportunities for coordination in order to enhance accessibility and usability of satellite data by users
- Assessment of evolution of requirements from users in preparing for the processing of vast amounts of new data, support to preparation of users, ...
 - presentation in a future CGMS plenary
- Evolution of relationships with commercial meteorological data providers complementary to the “CGMS backbone”
 - Secure free and open data access as per the WMO data policy Res. 1

Questions?



Thank you for your attention