Metop Second Generation

EUMETSAT's Metop Second Generation (Metop-SG) satellites will bring global meteorological observations from a low-Earth orbit to a new standard from the mid 2020s.

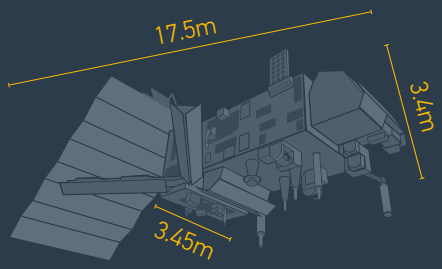
The Metop-SG spacecraft will continue and enhance the provision of critical data for weather forecasts, nowcasting, climate monitoring, and a multitude of other essential services. The mission will consist of three successive pairs of dual satellites – Metop-SGA and Metop-SGB – working in tandem in a sun-synchronous polar orbit and at an altitude of 823-848km. They will expand the legacy of Metop observations to at least 2040.

Metop vs Metop Second Generation

Metop heritage	Metop Second Generation A
Infrared Atmospheric Sounding Interferometer (IASI)	**IASI – New Generation** Double the spectral sampling and spectral resolution, and half the radiometric noise, providing roughly 75% more information on temperature profiles, 30% more data on water vapour profiles, and observation of a greater number of trace gases.
Advanced Microwave Sounding Unit-A (AMSU-A) Microwave Humidity Sounder (MHS)	**Microwave Sounder** Combines AMSU-A and MHS in a single antenna instrument, with new channels for temperature, humidity sounding and ice cloud detection. The horizontal resolution of the temperature sounding channels has improved from ~48km to ~20km at nadir.
Advanced Very High-Resolution Radiometer	**Visible and Infrared Imager (METimage)** Increased number of spectral bands from five to 20, and enhanced radiometric and spatial resolution, ensuring that far more geophysical parameters can be estimated with higher accuracy.
NEW INSTRUMENT	**Multi-Viewing, Multi-Channel, Multi-Polarisation Imager** The first dedicated multiangle polarimetric instrument in an operational mission. Measures aerosol parameters in 12 spectral channels in the visible, ultraviolet, and shortwave infrared spectrums, viewing the same target area from 14 different angles.
The Global Ozone Monitoring Experiment-2	**Copernicus Sentinel-5/Ultraviolet, Visible, Near-Infrared and Short Wave Infrared Sounder** Spectral range expanded to include near-and shortwave infrared regions, enabling measurements of additional trace gases. Increases spatial resolution from ~40km to ~7km.
Global Navigation Satellite System (GNSS) Receiver for Atmospheric Sounding	**Radio Occultation Sounder** Triples the number of occultation measurements to more than 1600 per day per Metop-SG satellite, providing atmospheric profiles for the troposphere and ionosphere. The extension of vertical coverage enables more complete atmosphere monitoring, contributing to space weather applications.

Metop heritage	Metop Second Generation B
NEW INSTRUMENT	**Ice Cloud Imager** Short microwave imager taking measurements from millimetre to submillimetre wavelengths, spanning 183-664 GHz, for observing ice clouds and understanding ice cloud microphysics.
NEW INSTRUMENT	**Microwave Imager** Eighteen spectral microwave channels ranging from 18.7-183 GHz, enabling comprehensive observations of precipitation, cloud and surface parameters.
Advanced Scatterometer	**Scatterometer** Better coverage due to wider swath and higher spatial resolution. Addition of cross-polarisation channels improves the capability to retrieve higher wind speeds.
GNSS Receiver for Atmospheric Sounding	**Radio Occultation Sounder** (see above)

Metop



Dimensions when deployed

Length: 17.5m
Height: 3.4m
Width: 3.45m

Mass in orbit

4,085kg

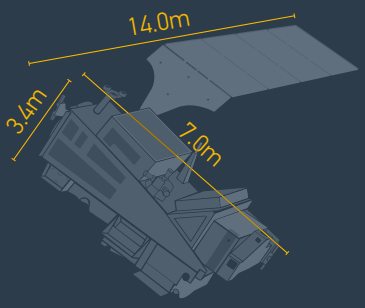
Max Power

1,812W

Payload instruments

- Infrared Atmospheric Sounding Interferometer
- High-Resolution Infrared Radiation Sounder
- Advanced Microwave Sounding Unit-A
- Microwave Humidity Sounder
- GNSS Receiver for Atmospheric Sounding
- Advanced Very High Resolution Radiometer
- Global Ozone Monitoring Experiment-2
- Advanced Scatterometer
- Argos (ADCS)
- Search and Rescue Terminal
- Space Environment Monitor

Metop Second Generation A



Dimensions when deployed

Length: 14.0m
Height: 7.0m
Width: 3.4m

Mass in orbit

4,040kg

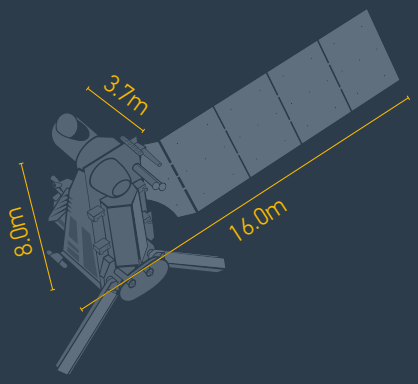
Max Power

2,900W

Payload instruments

- Infrared Atmospheric Sounding Interferometer – New Generation
- Microwave Sounder
- Visible and Infrared Imager (METimage)
- Radio Occultation Sounder
- Multi-Viewing, Multi-Channel, Multi-Polarisation Imager
- Copernicus Sentinel-5

Metop Second Generation B



Dimensions when deployed

Length: 16.0m
Height: 8.0m
Width: 3.7m

Mass in orbit

3,840kg

Max Power

2,100W

Payload instruments

- Ice Cloud Imager
- Microwave Imager
- Scatterometer
- Radio Occultation Sounder
- Argos-4 (Advanced Data Collection System)

Find out more

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