Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Home Affairs FDHA
Federal Office of Meteorology and Climatology MeteoSwiss

MeteoSwiss

Factsheet

Meteosat Third Generation (MTG)

Third-generation geostationary weather satellites

The first meteorological satellite was launched into orbit in April 1960. Since then, Earth's atmosphere has also been monitored from space. Weather satellites provide valuable information (on cloud cover, for example), which is important for weather forecasts and severe weather warnings as well as for studying climate change. In 2022, the first satellite in the series of third-generation geostationary weather satellites – Meteosat Third Generation (MTG) – will come on stream. 'Geostationary' means that a satellite at a fixed location above the equator (synchronous with Earth's rotation) at an altitude of 36,000 km monitors the development of the weather in the same section of the planet (in the case of MTG, this includes Europe). The MTG satellites will continue this observation until the 2040s.

What is different about the new MTG satellites?

- Refresh rate: data on the state of the atmosphere will be available at intervals of up to 2.5 minutes
- Higher spatial resolution: up to 500m
- New types of data available: e.g. information about lightning strikes
- Two different types of satellites: four satellites for optical analysis (MTG Imaging) and two for passive measurement of temperature and humidity profiles in the atmosphere (MTG Sounding); the latter in particular are a new development.

In order to harness all these benefits, the capacity for receiving and processing data needs to be significantly enhanced: it is estimated that the volume of available data will be more than 10 times today's levels. Located in the heart of the Alps, the **ground station in Leuk with its three 6.5-metre antennas** is one of the two stations that will receive the data.

Specific benefits of more precise and frequently available MTG satellite data for Switzerland:

- **Short-term thunderstorm monitoring and forecasting:** Satellite images enable the development and movement of thunderstorm cells to be tracked from an early stage, further enhancing the reliability of short-term thunderstorm warnings.

- **Fog distribution:** Fog is fairly common in Switzerland, especially in winter. Satellites make it possible to better monitor its spatial extent and development over time, benefiting, for example, the aviation sector.

- **Potential for using solar energy:** Satellite data improve calculations of the spatial distribution of solar radiation in Switzerland. On this basis, a map of Switzerland has been compiled that provides information about the solar radiation at any given location across the country. This helps with the planning and design of solar installations (sonnendach.ch).

- **Large-scale analysis of the weather situation:** Most weather disturbances in the Alps originate in the Atlantic. Thanks to weather satellites, meteorologists can track the development of these disturbances long before they reach Switzerland. This means that pilots flying across the Atlantic, for example, know what kind of weather to expect during their flight.

- **Reviewing the quality of numerical weather prediction models:** MeteoSwiss uses satellite data to validate and improve local weather prediction models. This is especially true for low cloud (stratus) which cannot be described accurately yet by current numerical models.

Further information

- Meteosat Third Generation – The case for preparing national users
- Meteosat Third Generation – Facts and figures
- Meteosat Third Generation – Weather and climate monitoring like never before

Image on front page: MTG in orbit (artist's impression); EUMETSAT