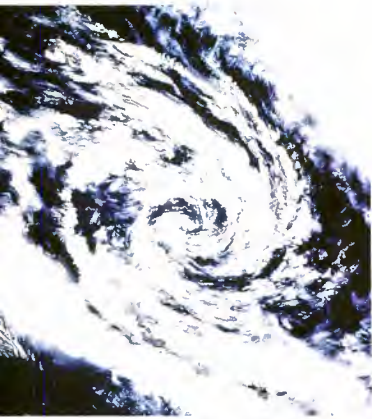


METEOSAT SECOND GENERATION



Tracking the world's weather

Billions of people throughout Europe, Africa, Asia and the Americas have benefited from Europe's Meteosat weather satellite system since the first spacecraft was launched by ESA in 1977.

From geostationary orbit 36,000 km above the surface, Meteosat satellites transmit regularly updated pictures of the Earth's disk and its cloud cover, relaying them to user stations after processing on the ground. The satellites also collect weather-related data from platforms and buoys in remote locations

Meteosat's images of weather patterns are an everyday feature of European television and are used by national meteorological services to provide increasingly more accurate weather forecasting.

Seven Meteosat spacecraft have been launched in the two decades between 1977 and 1997. Now ESA and EUMETSAT, which took over the responsibility of the daily operation and data distribution from the Meteosat satellites in 1995, are preparing the Meteosat Second Generation (MSG)

The MSG satellite system will further expand Europe's capability to collect environmental data in support of weather forecasting and related services. The first of three MSG spacecraft will be launched late in the year 2000.

A feat of advanced technology

Benefiting from the Meteosat pedigree of over 20 years, the MSG satellites represent a significant leap in technological capability and will provide meteorologists with much improved imagery and data.

Like their predecessors, the satellites will be spin-stabilised and operate from geostationary orbit. MSG will generate multi-spectral imagery of the Earth's surface and cloud systems at double the rate of the current Meteosat (every 15 minutes instead of every half an hour) for a much larger number of channels (12 spectral channels compared to three for Meteosat). There will also be vastly improved geometrical resolution (1 km for the high resolution visible channel and 3 km for the others).

Eight of the channels will be thermal infrared, providing permanent temperature data of clouds, land and sea surfaces. Using channels which absorb ozone, water vapour and carbon dioxide, MSG will also allow meteorologists to analyse the characteristics of atmospheric air masses - making it possible to reconstruct a three dimensional view of the atmosphere

ESA is responsible for the development and procurement of the MSG satellites, to be operated by EUMETSAT. Funding of the second and third satellites, procurement of launch services and the development of the ground segment are the responsibility of EUMETSAT.

Facts

Launch	2000 (MSG-1)
Mass	2000 kg
Instruments	Three (on MSG-1)
Orbit	Geostationary
Location	Equatorial plane above 0° longitude
Lifetime	Seven years



METEOSAT SECOND GENERATION



Payload

The increased performance of the MSG satellites will place Europe at the forefront of global geostationary meteorological observation until at least the year 2012.

As well as the main imaging instrument, communications support and propulsion systems, MSG will carry a scientific payload and a transponder for picking up distress signals and alerting rescue services. The latter will enable Europe to play a key role in supporting the international search and rescue service.

A satellite with purpose

More frequent and comprehensive data will aid weather forecasters in the swift recognition and prediction of dangerous weather systems.

The purposes of the MSG system are:

- Multi-spectral Imagery – images of clouds and land/sea surfaces
- Air Mass Analysis – monitoring air mass properties in the lower 15 km of atmosphere
- Product Extraction – deriving meteorological products, such as winds, the sea and land surface temperatures, from image data
- Dissemination – providing image data and meteorological products to the user community
- Data Collection and Relay – collecting and relaying environmental data from automated platforms in remote areas.

The key payload components are:

Spinning Enhanced Visible and Infrared Imager (SEVIRI)

The main element of the MSG payload, SEVIRI will take repeated images of the Earth every 15 minutes and have the capability to produce high resolution images.

Geostationary Earth Radiation Budget (GERB) experiment

Designed to monitor the Earth radiation budget at the top of the atmosphere, allowing calculations of shortwave and longwave radiation, essential for understanding the Earth's climate balance. It will be included on MSG-1 and is a candidate for MSG-2 and MSG-3.

Search and Rescue (S&R) transponder

Will receive distress signals from any mobile unit in difficulty within the Meteosat coverage zone - Europe, Africa and the Atlantic Ocean.

Mission Communication Package (MCP)

Designed to meet the specific communications demands of the mission.

From first to second generation Meteosat – a comparison of capabilities

Meteosat	MSG
3 channels imaging radiometer	12 channels enhanced imaging and pseudo sounding radiometer
100 rpm spin stabilised body	100 rpm spin stabilised body
200W power demand	500W power demand
solid apogee boost motor	bi-propellant unified propulsion system
720 kg	2000 kg

European Space Agency
Agence spatiale européenne

ESA Public Relations Division

8-10 rue Mario Nikis, F-75738 Paris Cedex 15, France

Tel: +33 1 53 69 71 55 Fax: +33 1 53 69 76 90

E-mail: mailcom@hq.esa.fr

Web site - <http://www.esa.int>

Coordination: Stefano Bruzzi. February 1999