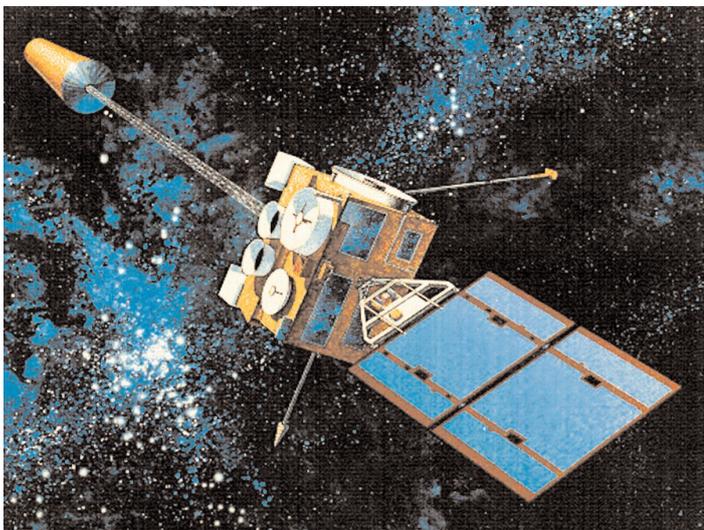
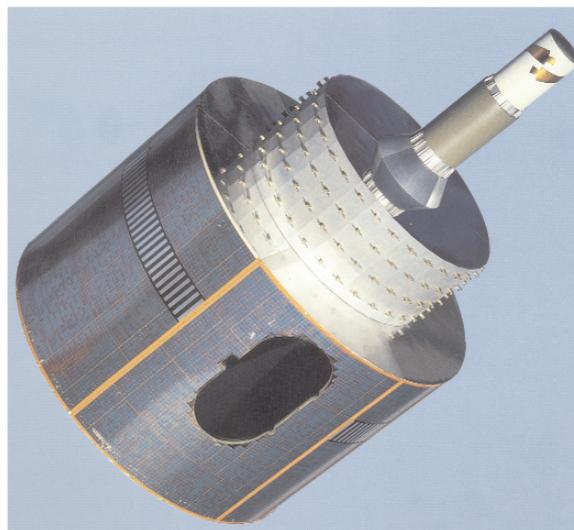


GOES, Meteosat, MTSAT and NOAA satellites



Artist's impression of the GOES American satellite



First generation Meteosat

GOES

The first satellites of a new generation of operational GOES, GOES-8 and -9, were launched in 1994 and 1995 respectively. Each satellite is three axis stabilised and weighs 2,105 kg. This design brings improvements to the availability of data and the resolution. The most notable are the independence between the imaging and sounding operations with increased resolution, more accurate atmospheric soundings, and more frequent images. The design lifetime for these satellites is five years.

NOAA maintains two operational geostationary satellites that provide continuous observations from their position over the equator at 75°West (GOES-12) and 135°West (GOES-10). Routine images of the United States are taken every 15 minutes. The satellite can scan the regions of the earth more frequently (e.g. five minutes, or even at one minute intervals) to support NOAA's warning missions.

The GOES-9 and GOES-10 satellites have five channels for imaging: one visible channel (0.55-0.75 μm) with a sub-satellite point resolution of 1 km; one channel in the mid infrared (3.80-4.00 μm) at a resolution of 4 km; one water vapour channel (6.50-7.00 μm) at 8 km resolution; and two IR 4 km channels at 10.2-11.20 μm and 11.50-12.50 μm , respectively. GOES-12 is a new upgrade of the GOES series with resolution of 4 km for the water vapour channel and a 12.3 μm channel that replaces the 12 μm channel in the infrared of the former series. GOES-8, -9, -10, -11 and -12 have independent imaging and sounding subsystems. The 19-channel sounder includes 14 channels in absorption bands (8 for carbon dioxide, 4 for water vapour, 1 for ozone and 1 for nitrogen) and 5 channels in atmospheric windows (1 visible and 4 infrared). Soundings are carried out every hour mainly on the United States and neighbouring oceans. The horizontal resolution of the radiances for the soundings is 10 km.

Meteosat

Seven first generation satellites of the Meteosat system have all been launched successfully. The first was launched in November 1977 and the seventh in September 1997.

The main objective of the Meteosat system is to supply satellite data and related services corresponding to the requirements of the 18 Member States of EUMETSAT.

The data and services are chiefly dedicated to meet the requirements of operational meteorology, with emphasis on the support to daily weather forecasting. However, the data is useful for all the sectors of meteorology, including marine meteorology, agrometeorology and aviation meteorology, together with many other disciplines, particularly climatology and monitoring of the planet Earth.

The overall size of the satellite is 2.1 metres in diameter and 3.195 metres high. Its initial mass in orbit is 322 kg.

The spinning motion provides the radiometer with a stable reference for imaging and enables it to scan one line of earth image during each rotation period. At the completion of each line scan, a stepping motor moves the telescope the equivalent of one line to the north, enabling the image to be constructed using successive scans over a period of 25 minutes. The telescope is then reset to its starting position to scan a new full disk image. The images are therefore generated at intervals of 30 minutes in 3 different channels (visible 0.5 to 0.9 μm , water vapour infrared 5.7 to 7.1 μm and thermal infrared 10.5 to 12.5 μm).

MTSAT

The first satellite of the "Multifunctional Transport Satellite" (MTSAT) series was to be launched in 1999 on an H-II rocket from the Tanegashima Space Centre at Kagoshima, Japan, to replace GMS-5 on the geostationary orbital slot at 140°East. Following the loss of MTSAT at its launch, a MTSAT-1R satellite is planned to replace it as soon as possible. Pending MTSAT-1R, a contingency plan was implemented for the coverage of the Pacific using the American satellite GOES-9, which was moved to 155°East.



Artist's impression of MTSAT in space

The specifications of the meteorological mission of MTSAT are described below. This mission basically prolongs that of the GMS-5, with the addition of an infrared sensor operating at a wavelength of 3.5 - 4.0 μm . A High and a Low Rate Information Transmission (HRIT and LRIT) function were also added to support the dissemination of certain digital images and other meteorological information. The DCP relay function of MTSAT remains overall the same as that of GMS-5.

MTSAT specifications

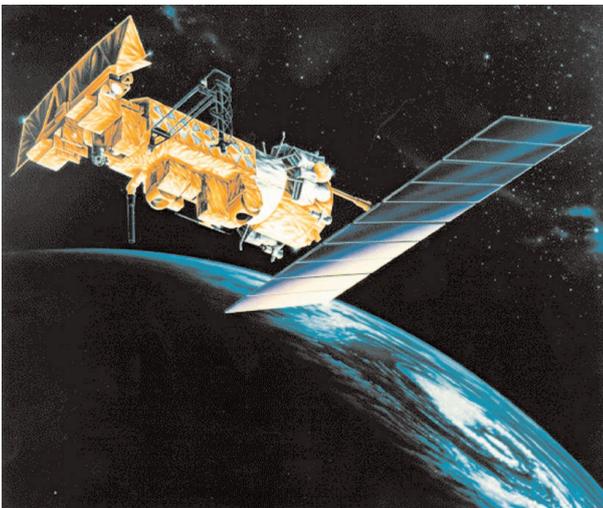
Orbital position +/- 0.1 degrees North-South and East-West from its nominal position at longitude 140°East.

Period of full disk image scan in 27.5 minutes.

Resolution 1 km for visible, 4 km for IR (at the sub-satellite point).

Imager characteristics:

- visible 0.55 - 0.80 μm
- IR1 10.3 - 11.3 μm
- IR2 11.5 - 12.5 μm
- IR3 6.5 - 7.0 μm
- IR4 3.5 - 4.0 μm



Artist's impression of NOAA in orbit

NOAA / POES

The NOAA-15, 16 & 17 are a series of new polar orbiting satellites developed for the National Oceanic and Atmospheric Administration (NOAA) of the United States. They are the successors of the series of NOAA satellites that ended with NOAA-14 (launched in December 1994) and they carry an advanced instrument including new versions of current devices as well as new instruments designed for measuring temperature and humidity with unequalled accuracy. The payload of these new satellites thus comprises AVHRR/3, HIRS/3, AMSU-A, AMSU-B, SBUV/2, SEM-2 together with an improved Data Collection System (DCS) and a Search And Rescue Processor (SARP-2).

The AVHRR/3 imager channels are:

1. (Visible) at 0.580 - 0.68 μm
2. (Near IR) at 0.725 - 1.00 μm
- 3A. (Near IR) at 1.580 - 1.64 μm
- 3B. (Window IR) at 3.550 - 3.93 μm
4. (Window IR) at 10.300 - 11.3 μm
5. (Window IR) at 11.500 - 12.5 μm