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Perfect day for weather satellite

Europe has launched the latest spacecraft in its next-generation series of meteorological satellites.



The weather satellite has a lifetime of about seven years

The two-tonne, cylinder-shaped MSG-2 will observe the changing weather over Europe, Africa and the Middle East.

The spacecraft represents a step-change in performance over the early Meteosat platforms first designed in the 1970s.

MSG-2 was blasted into space as part of a double payload with an Indian telecoms satellite, riding atop an Ariane 5 rocket from French Guiana.

The launch from the Kourou spaceport took place at 1933 local time (2233GMT) on Wednesday.

Data flow

The MSG-2 (Meteosat Second Generation 2) satellite is, as the name suggests, the

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second in the new series to be placed in orbit; MSG-1 was launched back in 2002.

The new spacecraft was sent to a geostationary orbit at an altitude of 35,800km above the Gulf of Guinea off the west coast of equatorial Africa.

The new satellite would bring huge benefits, said Dr Lars Prahm, director general of Eumetsat, the organisation that operates MSG-2.

"Five hundred million Europeans will be using this satellite every day," he commented just after the successful launch.

MSG-2 will occupy a position which until now has been taken by Meteosat-7, an older platform that is coming to the end of its service life.



MSG images have higher resolution

MSG-2 will beam back detailed images to Europe's national weather services - one every 15 minutes. Many of these will be infrared (heat) images that tell the forecasters about the temperatures of clouds, land and sea surfaces.

Using channels that absorb ozone, water vapour and carbon dioxide, the imager will also allow meteorologists to analyse the characteristics of air masses, making it possible to reconstruct a three-dimensional view of the atmosphere.

MSG-2 sends back 20 times the amount of

data at twice the speed of the old Meteosats. Because of this, it should give much better shorter-term forecasts of hazardous weather such as snow, fog, and thunderstorms.

"MSG has a much higher resolution and the updates come through to us very frequently," UK Met Office spokesman John Hammond said.

"This means we are able to monitor rapidly changing situations more closely than has previously been possible."

Climate test

MSG-2 also carries a Geostationary Earth Radiation Budget (Gerb) instrument, which was designed and built by a UK consortium.

It measures with high accuracy the total solar energy absorbed by the Earth and the total energy emitted by the planet.



Added to ground-gathered data, satellite images make for improved forecasting

It has two channels - one sensitive to outgoing long-wave radiation from the surface, the clouds and gases in the atmosphere; and one that measures short-wave radiation reflected from clouds, snow and the surface in general, as well as radiation scattered by gases in the atmosphere.

The Gerb instrument's data will be vital to test theories about global warming.

"If we're changing the atmosphere's properties such that it is absorbing more solar energy and reflecting less then clearly that's going to cause the Earth to get hotter," explained Nigel Morris, the Gerb project manager at the UK's CCLRC-Rutherford Appleton Laboratory.

"The MSG series gives us continuity of data and allows us to see long-term trends rather than just short-term variations," he told the BBC News website.



India TV satellite 'milestone'

Included in MSG-2's payload is a communications package which relays signals from aircraft and ships in distress.

Once in orbit, MSG-2 will be renamed Meteosat-9. It will become Europe's main weather eye, with MSG-1 (now known as Meteosat-8) offset by a few degrees and ready to take over if there is an instrument or other payload failure.

The Insat-4A satellite that flew with MSG-2 is remarkable for being three tonnes at launch, making it the biggest telecoms satellite so far to be built by the Indian Space Research Organization in Bangalore.

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