

Figure 1. The launch of MSG on 28 August 2002



MSG-1 Safely in Orbit

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Initially, the first of the next generation of European weather satellite's, MSG-1, was slated for launch in October 2000, but delays incurred in the ground segment's development resulted in the launch being postponed until August 2002. As a consequence, MSG-1 was put into storage from early 2001 until August 2001. During this storage period, work proceeded in industry on the two recurrent satellite models MSG-2 and MSG-3, and the meteorological services continued to use data from two of the Meteosat first-generation satellites, which are still performing satisfactorily and are planned to be operational for a few more years yet.

Almost exactly 25 years after the launch of the very first ESA-developed Meteosat spacecraft in November 1977, the first representative of the next generation of European weather satellites has been successfully placed in orbit by Europe's own Ariane launcher and is currently being made ready to add new dimensions to the monitoring of our planet's fragile climate.

In the meantime, the August 2002 launch date was confirmed, and an Ariane-5 launcher selected (with a co-passenger), after a shock-qualification problem had been resolved by the inclusion of three shock-absorbing devices in the launcher/spacecraft interface. Consent to ship MSG-1 to the Ariane launch site in French Guiana was subsequently given by both ESA and Eumetsat, and on 14 May 2002 the satellite was on its way. Figure 2 shows the satellite container emerging from the Antonov transport aircraft in Rochambeau, close to Cayenne in French Guiana, the following day.

After transport by truck from Rochambeau to the Guiana Space Centre (CSG) in Kourou, the spacecraft was put into the launch site's clean room (S1) for final assembly and checkout, which was completed at the end of June. The spacecraft was subsequently transported to one of the fuel filling areas, before being combined with its co-passenger Atlantic Bird-1, an Alenia-built spacecraft that will be operated



Figure 2. The MSG satellite container emerging from the Antonov transport aircraft in French Guiana

Figure 3. The arrival of MSG in the clean room at the Guiana Space Centre (CSG)



by Eutelsat, prior to being lifted onto the top of the Ariane-5 launcher.

At the same time as the spacecraft's arrival (Fig. 3), the ESA team responsible for supervising the pre-launch activities, a team from Alcatel Space the contractor who built the spacecraft and would conduct the final pre-launch testing, and a Eumetsat team responsible for the provision of the launch services, also arrived at CSG to prepare for the launch.

In parallel, ESA's European Space Operations Centre (ESOC) in Darmstadt (D), which is responsible for the mission's Launch and Early Orbit Phase (LEOP) under a contract from Eumetsat, began an extensive simulation programme in preparation for operating the spacecraft after its separation from the launcher.

After a one-day delay due to a minor ground-control problem, at 19.45 h local time (22.45 h GMT) on 28 August the Ariane-5 launcher carrying MSG-1 lifted-off from the Guiana Space Centre and successfully delivered this improved Meteosat, and its payload companion Atlantic Bird-1, into Geostationary Transfer Orbit (GTO), with a flawless launch. Under ESOC's control, MSG-1 will now make a series of manoeuvres using its onboard propulsion system, which will carry it onwards to its definitive geostationary operating orbit in a few weeks' time.

Eumetsat, as the satellite's commercial operator, will be taking over MSG-1 at the end

of September, following the in-orbit check-out of its systems, and will then proceed with acceptance of the payload. The first image from the satellite is expected by the end of October. About a year after launch, MSG-1 will commence operational service above the equator, at 0° longitude, taking over from Meteosat-7 as the main weather- and climate-monitoring satellite for Europe.

MSG-1 is to be followed by two other identical satellites, for which Eumetsat will be fully responsible. MSG-2 is currently scheduled for launch in early 2005, and MSG-3 in spring 2009. Since each satellite has a nominal operational lifetime of seven years (two more than the current Meteosats), the new family of spacecraft will provide a cost-effective system that will allow Europe to maintain its leading role in gathering global weather data until at least 2012. Consideration is being given to building a fourth satellite to maintain continuity of the programme beyond 2014.

Following the success of the launch from Kourou, José Achache, ESA Director of Earth Observation, told the Press: *"With the World's political leaders gathered in Johannesburg to discuss the requirements for sustainable global development of our planet, ESA is proud to have deployed this satellite on behalf of Eumetsat and for the benefit of countless users. It is going to improve weather forecasting, our understanding of climate change and the issue of the planet's water resources".*