

Diagram of the future METOP satellite. 4250 kg and 17 m long in orbital configuration

With the METOP (Meteorological Operational) satellites developed within the framework of the EPS (Eumetsat Polar System) programme by the European Eumetsat organisation in co-operation with ESA, Europe will equip itself, from late 2005, with its first polar orbiting weather observation satellites. Describing a heliosynchronous polar orbit at 840 km altitude, the METOP satellite will cover the entire planet each day. Low orbit satellites such as METOP are particularly useful for their capacity to vertically sound the atmosphere for temperature and humidity. The EPS programme is pursued within the context of international co-operation between Eumetsat and the NOAA, aiming for the global optimisation of the collection of weather data by distributing the satellites in complementary orbits (with METOP providing the "morning" orbit and the NOAA satellites the "afternoon" orbit), and also by the use of certain common instruments. The programme, managed by EUMETSAT, should enable three satellites to be launched and the mission to be covered for at least 14 years. The launch of the first satellite is planned for 2005 from the Baïkonour space centre in Kazakhstan using Soyuz rockets. The satellites will be controlled in orbit by Eumetsat from a station located in the Norwegian archipelago of Svalbard (Spitzberg) whose north latitude (78°) means that the satellite is visible at each orbit.

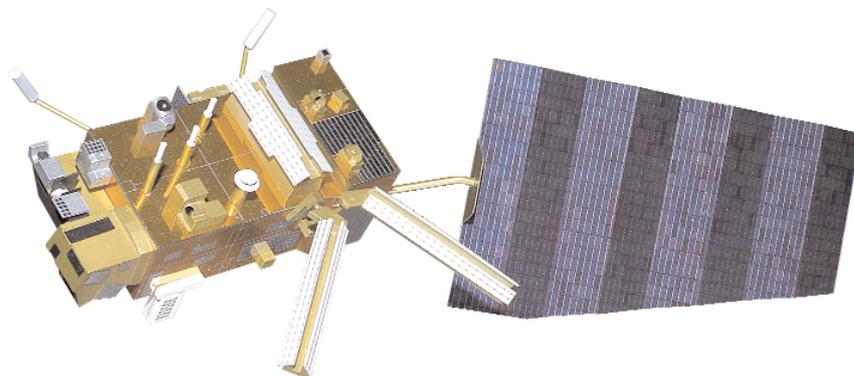
The METOP satellite series will carry a payload of eight instruments for observing the planet, together with a range of communication and support services. The core set of instruments for atmospheric sounding and earth imagery will be identical to those onboard the NOAA satellites of the United States. This set includes the Advanced Very High Resolution Radiometer (AVHRR) for the images of the clouds and the earth's surface. The sounding package on the two series of satellites will include the High Resolution Infrared Sounder (HIRS), Advanced Microwave Sounding Unit - A (AMSU-A) and the Microwave Humidity Sounder (MHS). Additional instruments will improve atmospheric soundings as well as measurements of atmospheric ozone and near-surface winds over the ocean.

METOP will gather essential global information day and

night on the atmosphere and the land and sea surfaces. Its primary mission will be to measure the temperature and humidity using instruments capable of sounding the atmosphere throughout its depth. The second important mission is to obtain images of the clouds and meteorological systems and information concerning the land and sea surfaces, with particular emphasis on the winds over the surface of the oceans. Atmospheric ozone will also be monitored. In addition to these instruments, METOP will carry a data collection system to gather the information from ground-based platforms, support the Search and Rescue services and take measurements in the local space environment.

The EPS ground segment will enable AVHRR imaging data at full resolution to be recovered for the entire planet.

Instrument	Full name	Primary function
AVHRR/3	Advanced Very High Resolution Radiometer	Imagery of clouds, ocean and land surface
HIRS/4	High Resolution Infrared Sounder	Temperature and humidity of the atmosphere in cloud-free conditions
AMSU-A	Advanced Microwave Sounding Unit - A	Temperature of the atmosphere in all weather conditions
MHS	Microwave Humidity Sounder	Humidity of the atmosphere
IASI	Infrared Atmospheric Sounding Interferometer	Enhanced atmospheric soundings
GRAS	Global Navigation Satellite System Receiver for Atmospheric Sounding	Temperature of the upper atmosphere and in the stratosphere with high vertical resolution
ASCAT	Advanced Scatterometer	Near-surface wind speeds over the oceans
GOME-2	Global Ozone Monitoring Experiment-2	Profiles of ozone and other atmospheric constituents
A-DCS	Advanced-Data Collection System	System for collecting the data transmitted by over 5000 observation platforms spread out over the surface of the continents and oceans



View of the future European METOP satellite