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EUMETSAT

Europe's Weather Satellite Organisation

EUMETSAT contributes to enhanced ocean and climate monitoring

A new mission to improve the accuracy and coverage of ocean observation data has been launched by EUMETSAT: the optional Jason-2 Programme, bringing high precision altimetry into full operational status. This new endeavour will be vital for marine meteorology and operational oceanography as well as for the development of seasonal forecasting and climate monitoring.

The programme builds on the success of two research and demonstration missions carried out under a French-US cooperation – TOPEX/Poseidon, launched in 1992, and Jason-1, launched in December 2001.

Like its predecessor, Jason-2 will deliver a range of observations, including wave height and wind speed over the ocean, the topography of the ocean surface, the mean sea level and its evolution in time and space.

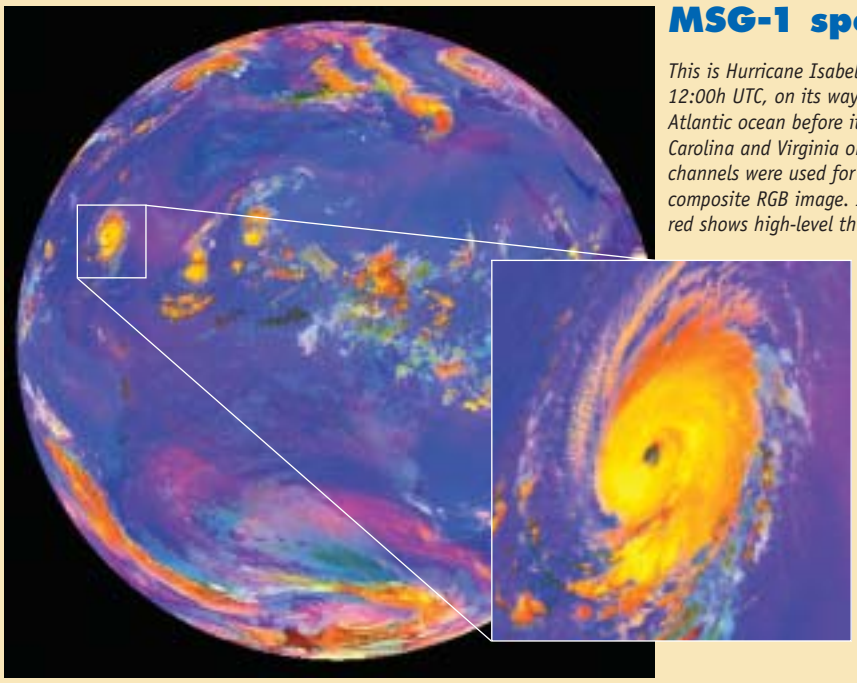
EUMETSAT will provide operational support within Europe for the near-real-time products and services, ensuring that the European user community receives operational data with the accuracy, timeliness and coverage of the previous research and demonstration missions.

The observations will provide unique global information on ocean current systems and on changes in the climate in response to global warming. They will also be used to support operational activities such as offshore operations and ship routing in real-time.

EUMETSAT will team up with the French Centre National d'Etudes Spatiales (CNES), the US National Oceanic and Atmospheric Administration (NOAA) and the US National Aeronautics and Space Administration (NASA) to contribute to the implementation and operations of the Ocean Surface Topography Mission (OSTM).

The Jason-2 Altimetry Programme is the first EUMETSAT optional programme to be implemented under EUMETSAT's amended Convention of November 2000. This Convention expands the mandate given to EUMETSAT by its Member States in operational climate monitoring and the detection of global climatic changes.

Jason-2 was given the go-ahead following EUMETSAT's 53rd Council Meeting on 24-25 June 2003 when 13 Member States confirmed their subscription covering 90 percent of the 30 million euro financial envelope. Three other Member States are expected to join the programme within one year. Launch is planned for 2007.



MSG-1 special report

This is Hurricane Isabel on 8 September 2003, 12:00h UTC, on its way westwards across the Atlantic ocean before it violently struck North Carolina and Virginia on 18 September. Six MSG-1 channels were used for the production of this composite RGB image. In the picture, orange to red shows high-level thin ice clouds, while yellow represents thick, high ice clouds. The most active parts of the hurricane with the most severe weather are visible in the intense yellow colour to the south-west of the eye of the storm, and in the spiral band further to the south of the centre. ***See more startling images and read the latest news on the status of MSG-1 in the MSG Special on pages 5-8.***

index *page*

Progress for flood observation project

Flood forecasting and monitoring stands to benefit from space-based observation – thanks to an idea originally proposed in 2000 by the EUMETSAT Cooperating States Hungary, Poland and Slovakia for a Satellite Application Facility (SAF) to support operational hydrology.

Following a preliminary assessment by EPFL (Ecole Polytechnique Fédérale de Lausanne) of the potential of space-based observations for water management applications, a working group involving EUMETSAT Member and Cooperating States was tasked in 2001-2002 to look into the possibility of creating a SAF in support of flood forecasting and monitoring. A proposal for key objectives resulted, together with a list of products and software packages for consideration as SAF deliverables.

Recognising the potential, the EUMETSAT Council approved a new SAF theme on 'Support to Operational Hydrology and Water Management' in November 2002.

An initial five-year operational phase beginning in 2009 is the target now set by leading scientists of the "SAF Hydrology Framework Working Group" formed earlier this year. At the group's first meeting in Rome in July 2003, hosted by the Italian Meteorological Service (Ufficio Generale per la Meteorologia), a roadmap outlining the scientific framework was agreed. The members of the working group will establish a vision on how operational catchment hydrology and its relationship to numerical weather prediction models will evolve in the next five to ten years and will address how ground-based and satellite observations should develop accordingly. Also to be determined are the types of services and products expected from this potential new SAF, as well as the expertise required.

The Austrian Central Institute of Meteorology and Geodynamics, ZAMG, will host the working group's second meeting in Vienna in November 2003, with the aim of delivering a report to EUMETSAT delegate bodies by spring 2004.

Polar satellites - the future

Detailed observations made by polar-orbiting satellites flying at a height of around 800 km provide an important complement to the full Earth disc data and images delivered by geostationary satellites at 36 000 km above the Earth.

When EUMETSAT and the USA's National Oceanic and Atmospheric Administration (NOAA) signed the Initial Joint Polar System (IJPS) Agreement in 1998, Europe's participation in the worldwide monitoring of our planet's environment and climate was assured. On 24 June 2003 the two organisations expanded their cooperation with the signature of the Joint Transition Activities (JTA) Agreement securing polar satellite observations well into the next decade and beyond. This covers the supply of NOAA instruments for Metop-3 and the exchange of data from the EUMETSAT Metop-3 satellite as well as the NOAA Polar Orbiting Environmental Satellite System (NPOESS).

EUMETSAT is responsible for provision and maintenance of a fully operational mid-morning system, timely delivery of data, and also for early launch contingency plans in the case of satellite failure.

NOAA provides imagery from all three orbits covered (early morning, mid-morning and afternoon) and sounding data from the early morning and afternoon orbits, while it relies on EUMETSAT for the supply of advanced sounding data from the mid-morning orbit. EUMETSAT will also have access to data from the NPOESS early morning mission that was previously not openly available to civilian users.

The JTA Agreement paves the way for the definition of a Joint Polar System that will be addressed by a new agreement planned for 2008. EUMETSAT looks forward to continued cooperation with the US, on the basis of an equal partnership in terms of responsibilities and decision making; a partnership that will - in conjunction with other international partners - be an important link in the overall World Weather Watch Global Observing System.

Although EUMETSAT and the US will maintain independent management structures for their programmes, the implementation of the JTA agreement will be coordinated by a group co-chaired by Dr. Tillmann Mohr, EUMETSAT Director-General, and Mr. Gregory Withee, NOAA Assistant Administrator for Satellite and Information Services.

Vice Admiral Conrad C. Lautenbacher Jr., U.S. Navy (Ret.) Undersecretary of Commerce for Oceans and Atmosphere and NOAA Administrator, and EUMETSAT Director-General Dr. Tillmann Mohr (from left) after signature of the Joint Transition Activities Agreement

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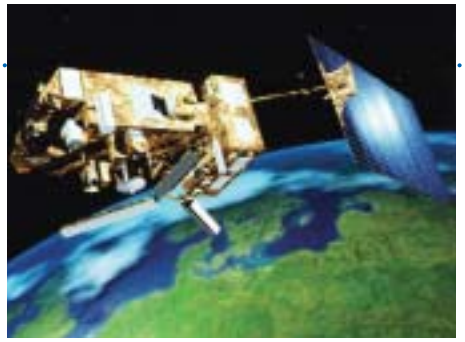


Polar system - the status

Work on the EUMETSAT Polar System (EPS) advanced in several key areas over the summer months, starting in July when the polar site infrastructure on Spitsbergen, one of the Svalbard islands within the Arctic Circle, was completed with the antenna installation and the construction of site accommodation.

Since then, tests performed with an orbiting NOAA satellite established successful communication links between ground and the satellite, demonstrating accurate transmission of telecommand and telemetry signals.

At the end of July, the Centre National d'Etudes Spatiales (the French Space Agency CNES) and Alcatel Space delivered the prototype flight model of the IASI instrument (Infrared Atmospheric Sounding Interferometer), which was then sent to Astrium GmbH for integration on the Metop satellite. Mechanical and electrical integration was successfully performed in August and the first functional tests have meanwhile been carried out.

Alcatel delivered the main part of the future EPS Core Ground Segment, the Monitoring and Control System version 3 (MCS V3), to EUMETSAT headquarters in Darmstadt at the beginning of August, and a month later also dispatched the network data interface unit to Astrium in Toulouse. The unit will ultimately be used for compatibility tests to ensure communication links between the EUMETSAT-based MCS V3 and the Metop satellite located at Astrium's premises in Toulouse.

Worldwide EARS - benefits

A considerable number of National Meteorological Services (NMS) have started to apply the advanced data on atmospheric temperature and humidity available through EARS (EUMETSAT ATOVS Retransmission Service). Faster and more precise, those data are expected to provide a significant contribution to short-range forecasting.

Almost halfway into the two-year pilot phase, EARS has been progressing well after its start in November 2002, when the first data were transmitted from the High Resolution Picture Transmission (HRPT) stations in Tromsø (Norway), Maspalomas (Spain) and Kangerlussuaq (Greenland).

Accessing the data is uncomplicated - each user registers for the service, a EUMETCast reception station is installed, and the user can then start establishing the required data streams between the reception station and the Numerical Weather Prediction (NWP) system.

However, it is essential that users familiarise themselves with the detailed layout and error characteristics of the data products and prepare the NWP system for the assimilation of the new EARS data. Once this is accomplished, a series of test runs, usually lasting for several months, is undertaken on a parallel or offline NWP system.

During this stage meteorologists are able to validate the new data stream and to adapt the NWP system to the characteristics of the data. Users who have been through the process have confirmed that the assimilation of the data has indeed a positive impact on the quality of weather prediction.

In Copenhagen, the Danish Meteorological Institute (DMI) recently concluded the offline runs and impact analysis, and on 2 September began assimilating the EARS data for use in its operational regional NWP system, HIRLAM.

Meanwhile, the EARS network of HRPT stations around the Atlantic and Arctic oceans is now fully operational and successfully distributing data to users via EUMETCast and the Global Telecommunication System (GTS). And it is growing steadily - in addition to the "pioneering" HRPT stations in Norway, Spain and Denmark which were already operational by the end of last year, the summer of 2003 saw more stations joining. In June and July the American continent went online with the Canadian Meteorological Center in Montreal and NOAA in Washington starting to distribute data, followed by the Mediterranean region which is being supplied from the Hellenic National Meteorological Service in Athens.

Director-General's Desk

Dark clouds scudding across the late-autumn skies above EUMETSAT headquarters are just one sign that another challenging year is drawing to a close. However, just like its brightly-lit headquarters building standing out like a beacon, the organisation is about to lead the way into a new era of satellite meteorology.

MSG-1 is to be declared operational at the end of 2003, and while past issues of IMAGE have already provided an introduction to our newest 'baby', this special edition of IMAGE aims at enlightening you even further.

Our users are eagerly awaiting the 20-fold increase in the information gathered by the satellite, and from the preliminary data sets available since spring some innovative applications for this new stream of information have been developed - as demonstrated at the EUMETSAT Meteorological Satellite Conference.

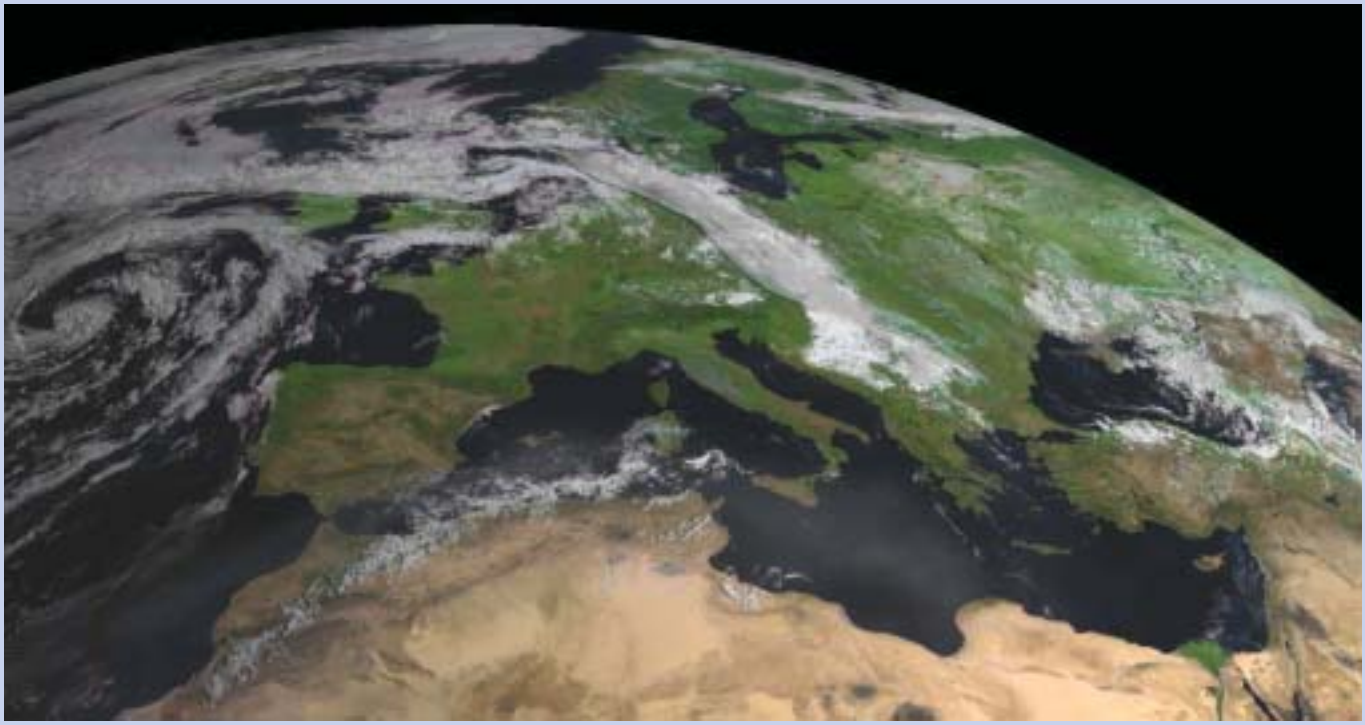
MSG-1 will not only bring changes to the way we observe the weather, but its data will also serve the climate monitoring user community in the detection of global climatic changes. Monitoring our planet requires a global system of satellites to provide the essential coverage, and this can only be reached through a truly international commitment.

In this context I represented EUMETSAT at the World Summit on Earth Observation during the summer, pledging the organisation's commitment, through the provision of data, products and services to the planned Integrated Global Observing System.

And speaking of networks, earlier this year our meteorological affiliations were extended even further east when we signed Cooperation Agreements with Slovenia and Romania.

So, even if the actual weather looks to be rather gloomy, we in EUMETSAT are optimistic that there are clear skies ahead for 2004.

From the archive



Europe's new MSG-1 satellite recorded this stunning composite image of the Northern Hemisphere on 18 July 2003 at 10:00 UTC.

As a fine example of combined imagery, this satellite image uses the two visible (0.6μm and 0.8μm) channels and the one near-infrared (1.6μm) channel. The possibility to combine (or subtract) channels allows a clearer depiction of land surface features.

The remarkable clarity of features in the Sahara desert, the greener areas of Central and Eastern Europe, the Nile delta and along the river Nile itself are all due to the high resolution of the visible channels. The light green areas in the Po valley in northern Italy are rice fields.

The clear appearance of sand streaming across the southern Mediterranean, having being lifted off the desert a day or so earlier in central Algeria, can be credited to the 0.6μm visible channel which is also sensitive to aerosols.

Another outstanding feature is the shadow cast by the long cloud system lying north-south over Eastern Europe, which had caused heavy thunderstorms over Germany the previous evening and night. A relatively low sun angle has made the shadow even more prominent and also resulted in the lower level of illumination over the Atlantic.

New group to aid global observation

The future of global Earth observation was the focus of an international summit this summer, where delegates agreed on the need for better long-term coordination and integration of the different Earth Observation Systems.

The US-led initiative, hosted in Washington D.C. at the end of July, was opened by US Secretary of State Colin Powell and attended by delegates from some 30 nations and 22 international organisations.

An ad-hoc intergovernmental group, the Group on Earth Observation (GEO), was set up at the meeting and will oversee a range of follow-on activities, starting with a long-term development strategy for the definition, purpose and scope as well as the limitations of an integrated Earth Observing System architecture. Consideration will also be given to improving data utilisation by identifying how the barriers to data accessibility and utility can be minimised, and whether the use of common data standards and formats and consistent calibration methodologies would help. Another activity in the group's focus is capacity building: empowering developing countries to make better use of environmental observations and to contribute to the systems – especially to in-situ observations. Further, the establishment of user requirements will be addressed as a basis for defining the priorities for current and future Earth observations.

The group will make use of the outputs of existing activities, such as the Integrated Global Observing Partnership (IGOS-P), the Global Climate Observing System (GCOS) Adequacy Report presented to UNFCC, and the World Climate Research Programme (WCRP).

EUMETSAT will play an active role in the whole programme, with a specific interest in activities concerning the architecture of an integrated Earth Observation System and by ensuring that existing international bodies are fully involved.

METEOSAT SECOND GENERATION

SPECIAL REPORT

The MSG-1 satellite has come a long way since its launch on 29 August 2002. Read in this 4-page special what happened since and what is going on, and see first impressive examples of what the satellite can deliver

MSG-1 has come a long way since its launch on 28 August 2002 and users are eagerly awaiting the start of operational image dissemination early next year. The following is an overview of MSG-1 events so far.

September 2002 – EUMETSAT takes control of MSG-1 operations and begins commissioning Phase-A, a period of intense testing for both the spacecraft and the supporting ground systems.

Mid-October 2002 – a Solid State Power Amplifier (SSPA) on the satellite switches off unexpectedly causing EUMETSAT to put the commissioning phase on hold. In the following months it becomes clear that the SSPA has failed.

Late November 2002 – commissioning activities resume and, on 28 November, the first live SEVIRI image is transmitted to EUMETSAT.

December 2002 – the first processed images are produced on 12 December and fine-tuning of the system continues.

February 2003 – after implementing additional ground equipment, routine imaging begins as part of the commissioning phase.

End of April 2003 – following the eight-week spring eclipse season, MSG system commissioning continues with intense imaging operations using the SEVIRI and GERB instruments. Through dedicated tests designed for calibration of the instruments and for demonstration of the geometric and radiometric performance, the MSG system characteristics are further established.

May 2003 – EUMETSAT begins the regular dissemination of quarter-hourly MSG-1 SEVIRI image data to users via EUMETCast, representing another milestone on the path of the MSG system towards a fully operational service. The existing EUMETCast service was further developed into an alternative dissemination system after the SSPA onboard MSG-1 required for High Rate Information Transfer (HRIT) and Low Rate Information Transfer (LRIT) transmission to users had failed. The EUMETCast system uses Digital Video Broadcasting (DVB) technology via a commercial telecommunication satellite.

June 2003 – commissioning Phase-B begins, which includes efforts to fine-tune the data processing system and leads the way for the MSG system to start the routine operations phase.

July 2003 – the final Satellite Commissioning Result Review concludes that the MSG-1 images are of excellent quality and that the radiometric and geometric performance, as specified in the Satellite Requirements Document, are met with margin to spare. The MSG-1 image data are an essential input to nowcasting applications and numerical weather prediction systems, in addition to providing important information for climate monitoring and research. Also the Search & Rescue secondary payload is tested successfully, and the GERB instrument shows nominal behaviour.

The remaining parts of the commissioning will be fully devoted to test activities for the validation of the image and meteorological products, and these activities will initially be performed using two different image-processing systems in parallel.

2 September to 19 October 2003 – MSG-1 successfully experiences its first eclipse season with the SEVIRI imager switched on throughout the period. Every 24 hours the spacecraft passes through the Earth shadow and during this time has to rely on battery power.

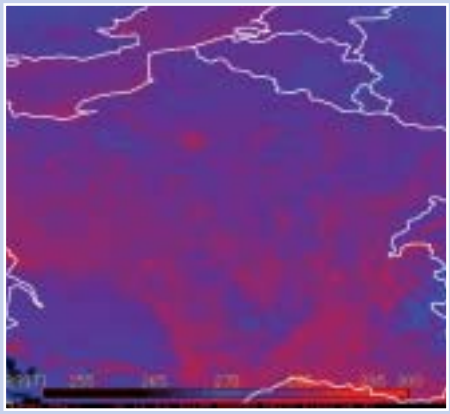
November 2003 – the EUMETCast system is extended to also allow regular imagery dissemination outside Europe. The dissemination of a selection of the meteorological products derived from the MSG-1 images is taken up at the same time, including near-real-time products needed for numerical weather prediction and nowcasting.

Despite minor anomalies experienced during satellite operation – as is to be expected for the first in a new series of satellites - the commissioning proceeds smoothly and at its present pace will be completed in the course of December.

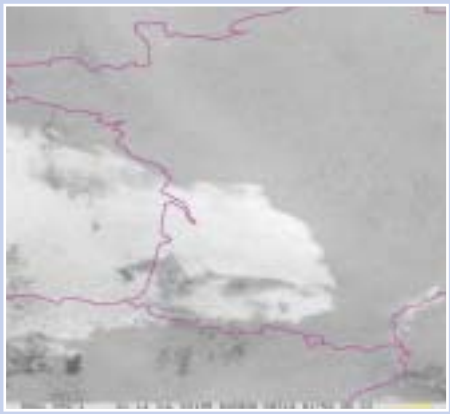
The Routine Operation Readiness Review, which is foreseen for mid-December, will mark the final milestone of MSG-1 commissioning, verifying that MSG-1 is fully ready to take over operational service from Meteosat-7. At this point, the MSG system will commence its routine service, providing high quality imagery and meteorological products to the user community.

MSG-1 becomes Meteosat-8

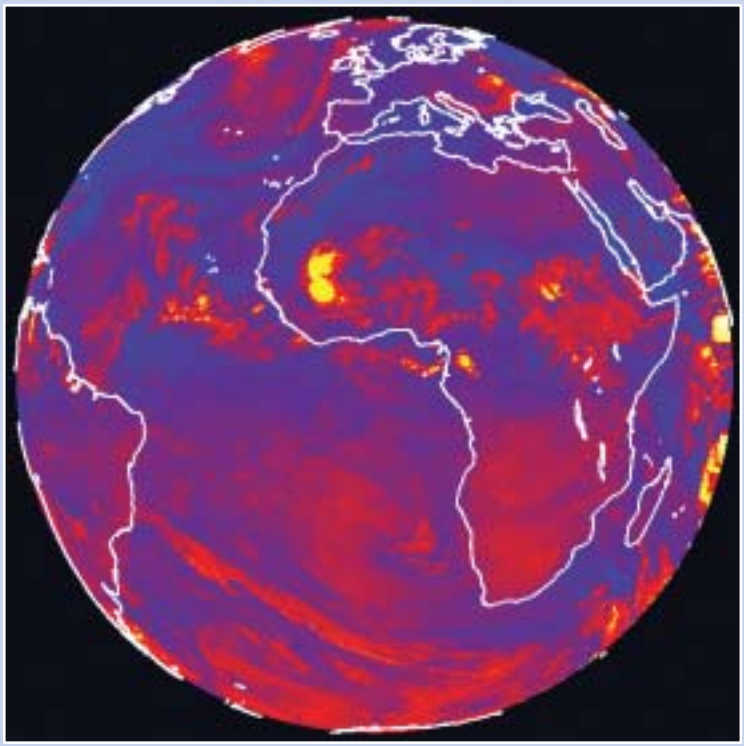
Once the satellite we currently know as MSG-1 has become operational, its name will change from MSG-1 to Meteosat-8 in order to demonstrate the continuation of what has been a very successful service. At the same time the new and enhanced imaging capacities as well as the vastly improved design developed in the context of the Meteosat Second Generation (MSG) Programme will ensure that the new Meteosat-8 will deliver more than a continuation of the service. It will in fact bring about the start of a new era in satellite meteorology.



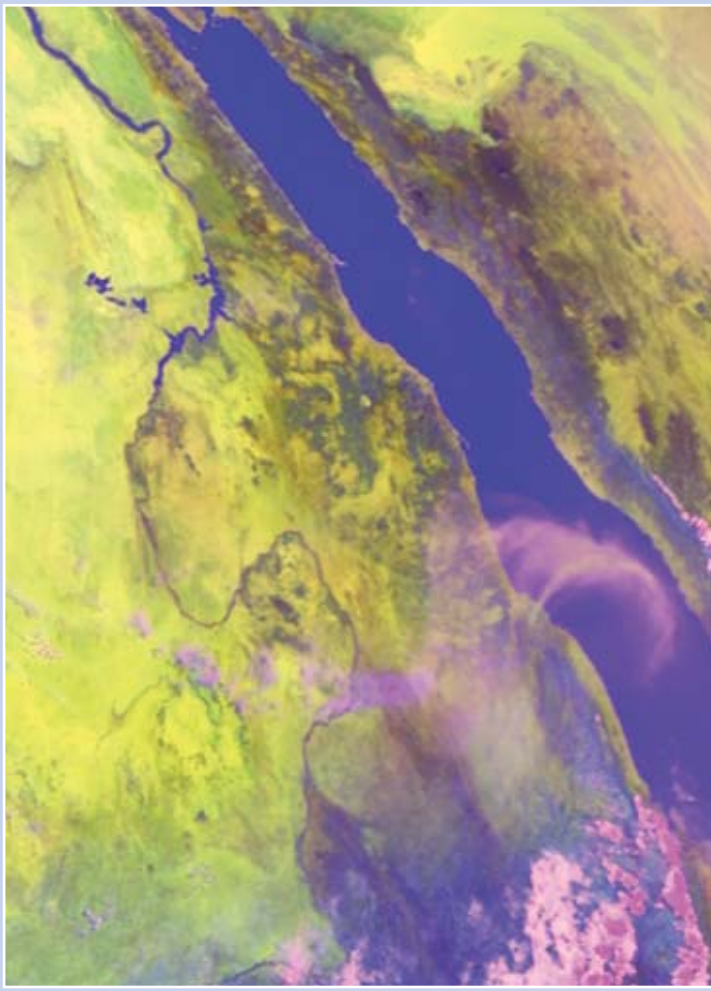
14 Jul 03, 02:00 UTC *Image of a clear summer night in northern France. Paris clearly appears as urban heat island. This image shows the equivalent brightness temperature of channel IR 3.9*



14 Jul 03, 02:00 UTC *Fog at night – this type of picture is a new feature of the Meteosat Second Generation satellite; the previous satellites were able only to detect fog during the daytime period. Difference image created by subtracting IR 3.9 and IR 10.8*



14 Jul 03, 02:00 UTC *Full disc image showing - in yellow - very high thunderstorm clouds "overshooting" through the troposphere into the stratosphere. Difference image produced by subtracting channels WV 7.3 and IR 10.8. This type of image is used to monitor hazardous weather*



25 Jun 03, 10:00 UTC *Major dust storm over the Red Sea. Composite image create*

Earth, wind and water

Meteosat Second Generation (MSG) multispectral channels provide excellent tools for observing the atmosphere, the oceans and land, providing the impressive images given here. They are further examples of the combined imagery method mentioned in "From the archive": an overlay of datasets from several spectral

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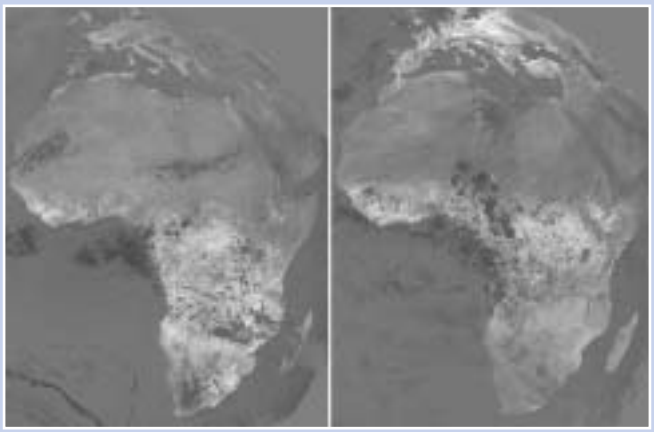
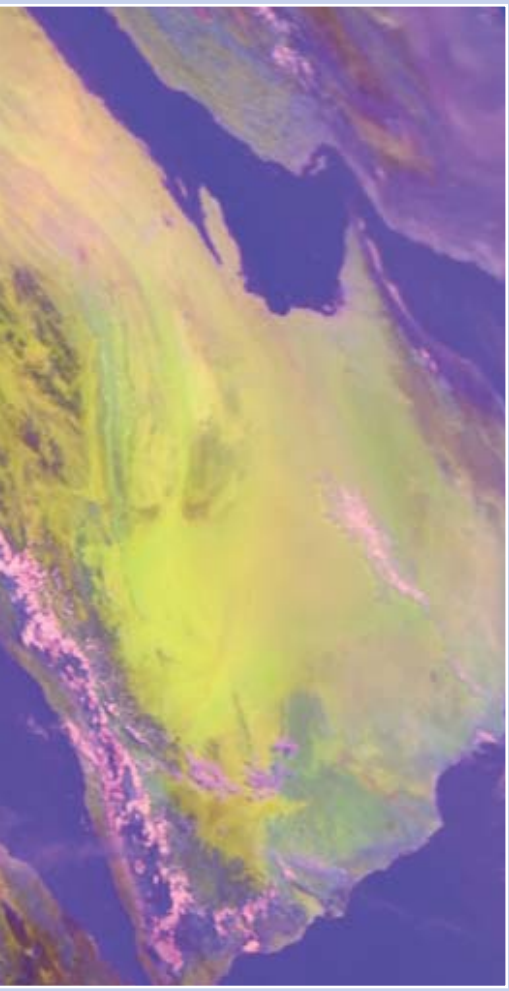


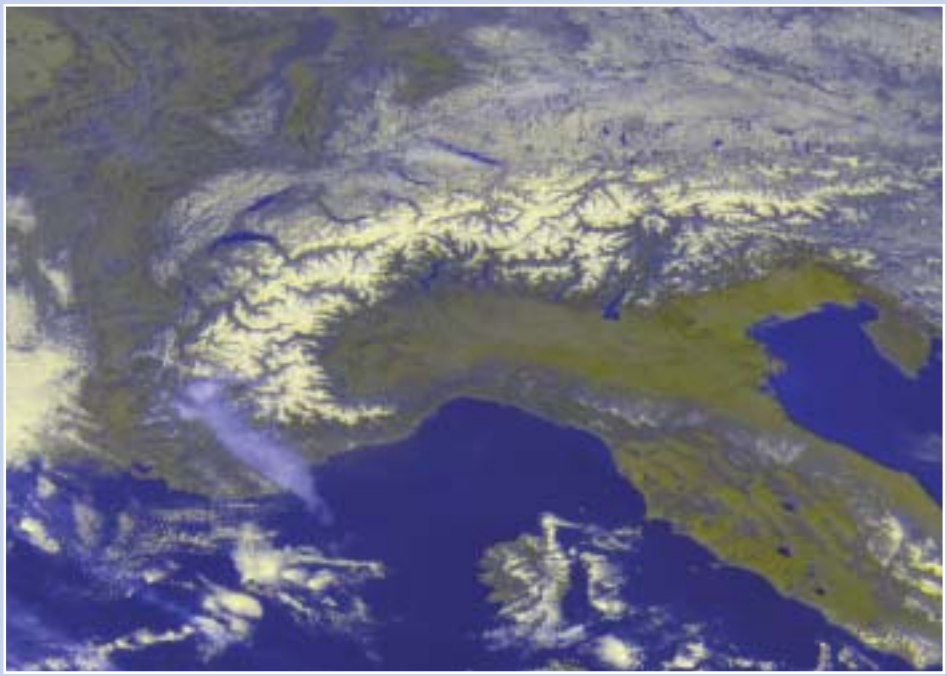
24 Feb/03 June, 12:00 UTC *Two images demonstrating very clearly the development of vegetation both in Africa and Europe over the course of the seasons, with the left showing winter time and the right summer in the northern hemisphere. Difference Images produced by subtracting VIS 0.8 and VIS 0.6*



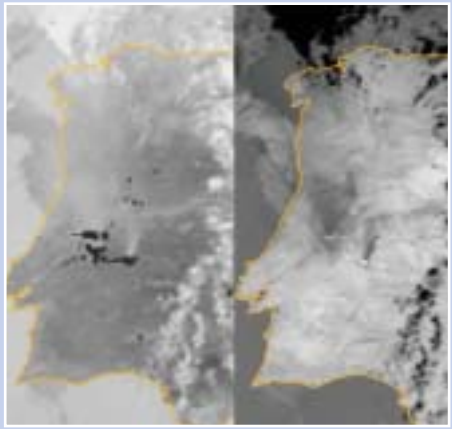
by using three channels (VIS 0.6, NIR 1.6, IR 3.9)

– MSG-1 images

els, either combined with or substracted each other, is used to produce "working" s for specific meteorological requirements. mages on these two pages are derived from lowing channels: VIS - Visible, HRVIS - High ution Visible, IR - InfraRed, NIR - Near- ed and WV - Water Vapour.

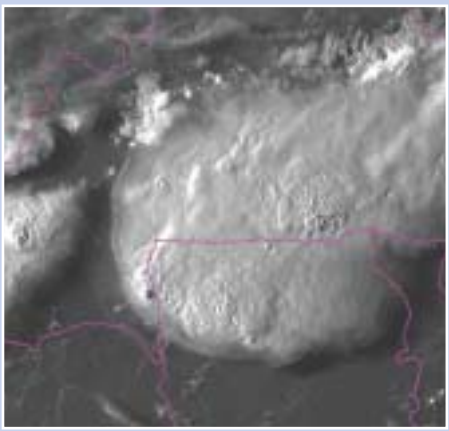


24 Feb 03, 12:00 UTC *Snow over the Alps, displaying the magnificent Alpine valleys in absolute clarity. Composite image using the high resolution visible channel (HRVIS) and IR 10.8*

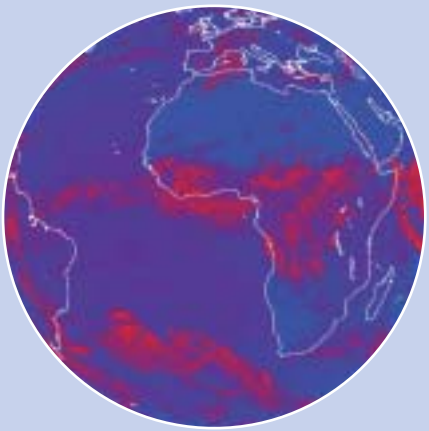


both 03 Aug 03, 12:00 UTC *On the left: Fires, or "hot spots," and smoke over Portugal, as seen in a single channel IR 3.9 image. On the right: the smoke from these fires drifting northwards, driven by a strong southerly wind. The second image is created by subtracting channels NIR 1.6 and VIS 0.6*

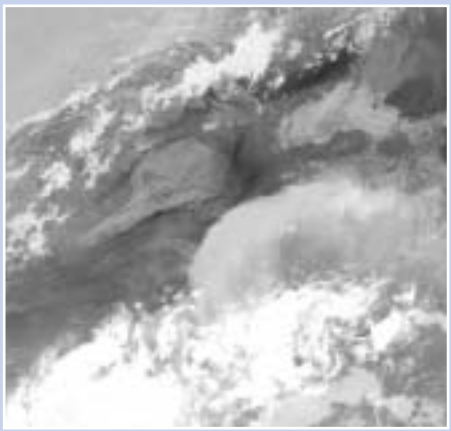
14 Jul 03, 10:00 UTC *Details of vegetation in Europe – grassland shows up as bright green areas, the forests are dark green. Also noteworthy is the dense fog over the Po area and the poor snow cover over the Central Alps (small cyan-colored areas). Composite image using NIR 1.6, VIS 0.8 and VIS 0.6*



23 Apr 03, 17:00 UTC *Thunderstorm system over Ghana and Burkina Faso. The shadows thrown by the afternoon sun outline very clearly the details of the cloud top structure. This image was produced using the HRVIS channel*



05 Jun 03, 12:00 UTC *Full Earth disc image showing details of ice cloud coverage. Difference image produced by subtracting channel IR 8.7 and IR 10.8. This type of image is used to detect ice clouds, in particular thin cirrus ice clouds*



14 Jul 03, 02:00 UTC *Major Dust Storm at night over Algeria in north-western Africa. The storm was triggered by the squall line which is visible in the bottom left corner of the image. Difference image created by subtracting channels IR 8.7 and IR 10.8*

METEOSAT SECOND GENERATION

SPECIAL REPORT

EUMETCast comes of age

Since the decision to disseminate MSG-1 data via Ku-band EUMETCast was taken in spring this year, the system has been evolving at a surprising rate.

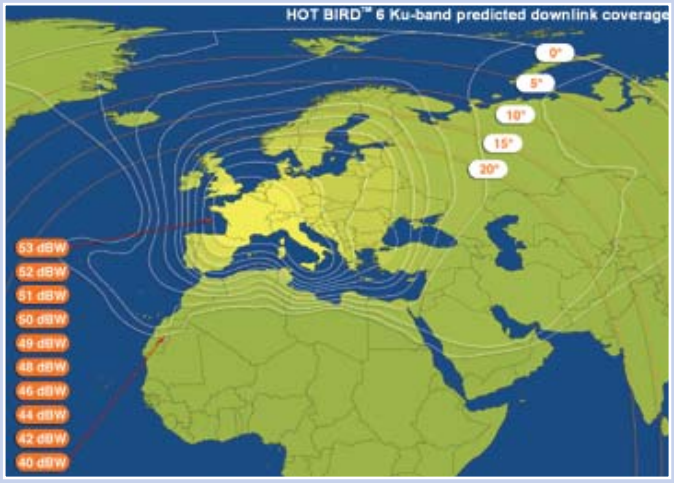
Adding MSG-1 products to EUMETCast was a big engineering task in itself, which was achieved by 22 October. In parallel, the development team is setting up and developing C-band EUMETCast link transmissions to considerably extend the geographic coverage of the system. Priority will obviously be given to the African continent in order to meet the requirements generated by the PUMA project.

Dissemination via the Ku- and C-band networks will involve two spacecraft, Hot Bird 6 at 18°E and Atlantic Bird 3 at 5°W, both operated by EUTELSAT.

C-band coverage was added to EUMETCast using a novel application of a TV industry standard – the 'DVB turnaround'. With this technique, the C-band uplink site simply packet filters and retransmits the Ku-band EUMETCast stream it receives.

The EUMETCast system offers great flexibility, including the option for expansion of the services offered through the addition of other meteorological data streams such as DWDSAT from Deutscher Wetterdienst. With this in mind, EUMETCast has the potential of developing into a meteorological data distribution system for Europe.

One of the system's strengths is that all the data available can be received with a single EUMETCast reception system, thus greatly simplifying the required user infrastructure, while the user station itself utilises purely off-the-shelf components and is significantly cheaper than the specially-developed systems traditionally used.



EUTELSAT

EUTELSAT

MSG-1 data dissemination: areas of coverage

Beyond MSG

Preparations for the future of Europe's weather and climate monitoring are well under way following a series of recent agreements and workshops focused on the development of a third generation of Meteosat satellites.

In 2000, the EUMETSAT Council decided to initiate a User Consultation Process to support the definition of the future 'Post-MSG' geostationary programme, as part of an overall plan for the development of a Meteosat Third Generation (MTG). The process started with – still ongoing – user consultation in 2001 and will be finalised with the actual MTG system development from 2009-2014.

In 2001, two application expert groups – for medium and short range Numerical Weather Prediction (NWP) and nowcasting and very short term forecasting - discussed how they envisaged their disciplines evolving between 2015 and 2025, and the related observational needs and priorities.

Remote sensing experts have also identified and assessed observing techniques that could in principle meet user needs from the geostationary orbit. The results were tabled at a Post-MSG User Consultation Workshop on 13-15 November 2000.

This workshop concluded that flying advanced imagery and infrared sounding missions on post-MSG satellites would contribute to achieving breakthroughs in nowcasting and numerical weather prediction. A lightning imager and a sub-millimeter-wave radiometer to enhance nowcasting also received support.

The EUMETSAT Council endorsed the workshop recommendations and agreed that climate monitoring and atmospheric chemistry user requirements should be consolidated. Also agreed was that the potential of some observing techniques, such as cloud observations in the Oxygen-A band, lightning imaging and microwave sub-mm imagery, should be assessed in greater depth.

The European Space Agency (ESA) and EUMETSAT have defined requirements for a 'High resolution fast imagery mission', a 'Full Earth disc high spectral imagery mission', an 'IR sounding mission' and a 'Lightning imaging mission', along with other inputs required for instrument and pre-Phase-A studies. Requirements for a possible 'UV-VIS hyperspectral imagery mission' for operational chemistry application are also under study.

Earlier this year, ESA initiated industrial studies on 'Observation techniques and sensor concepts for post-MSG missions'. The way is now paved towards system-level studies planned for 2004, leading to the establishment of functional requirements and the subsequent evaluation of proposed mission concepts and architectures.

Romania and Slovenia join up

EUMETSAT will soon be welcoming two new Cooperating States following the signatures by the respective authorities of the Republic of Slovenia and Romania this summer.

Slovenia signed a Cooperating State Agreement on 9 July and Romania was next on 17 July. Both countries have thus marked the first step towards EUMETSAT membership, as they became the sixth and seventh Cooperating State respectively.

The official signing of the Cooperation Agreement in Slovenia took place in Ljubljana between Mag. Janez Kopač, Slovenian Minister of Environment, Spatial Planning and Energy, and EUMETSAT's Director-General, Dr. Tillmann Mohr.

The Romanian Agreement was signed in Cheia by the country's Secretary of State for Water Management and Environmental Protection, Florin Stadiu, and EUMETSAT's Director-General Dr. Tillmann Mohr.

The two new Cooperating States join Hungary, Croatia, Poland and Slovakia. Last year, Serbia and Montenegro signed the Cooperating State Agreement but is still required to ratify the Agreement in order to officially become EUMETSAT's fifth Cooperating State.

Hungary's and Slovakia's current Cooperating State Agreements come to an end in July 2004, and discussions with EUMETSAT about their accession as full Member States on 1 January 2005 are under way.

Cooperating State Agreements, which are signed for a period of five years, formalise and strengthen the existing cooperation between Central and Eastern European countries and EUMETSAT.

Signature of the Cooperating State agreement in Ljubljana (Republic of Slovenia) between EUMETSAT Director-General, Dr Tillmann Mohr (second from left), and Mag. Kopač, Slovenian Minister of Environment, Spatial Planning and Energy (second from right) on 9 July 2003

Romania's Secretary of State for Water Management and Environmental Protection Florin Stadiu (second from right) and EUMETSAT's Director-General Dr. Tillmann Mohr (second from left) signing the Cooperation Agreement in Cheia (Romania) on 17 July 2003

Croatia hosts User Forum

Marking the end of the International Weather Festival, the 5th EUMETSAT Central and Eastern European User Forum took place from 2-4 April 2003 in Zagreb, Croatia. It gave the 12 countries represented an opportunity to update attendees on the status of EUMETSAT activities in the last two years.

Over 31 participants from Bosnia & Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Republic of Macedonia, Poland, Romania, Serbia & Montenegro, Slovakia and Slovenia met at the Forum.

Hosted by the Croatian Meteorological and Hydrological Service and EUMETSAT, the Forum's round table talks highlighted the rapid changes currently occurring in the National Meteorological Services in Central and Eastern Europe.

In 2003, the emphasis was on Meteosat Second Generation (MSG) and on its new data dissemination system EUMETCast. EUMETSAT has supported the Central and Eastern European countries in defining their requirements in terms of MSG data receiving equipment, and all participants indicated their willingness to very quickly equip their meteorological services for reception of MSG data and products.

EUMETSAT contributes to space 'roadmap'

European citizens will soon have the benefit of a revised space policy which will specifically address the issue of sustainability more thoroughly, in particular the areas of climate and environment monitoring.

The European Space Policy, prepared by the European Commission (EC) and the European Space Agency (ESA), is being prepared in two stages - a 'Green Paper' for consultation and a final 'White Paper' that is approved by the EC Council and European Parliament.

The 'Green Paper' was agreed in January this year and, following the period of public consultation that concluded in Paris in June, the 'White Paper' has been prepared for approval by European Union member states in November 2003. This is considered a 'roadmap' for European space activities over the coming decades.

EUMETSAT has actively participated throughout the consultation process and brought realism and impartiality into the debate, which covers not just Earth Observation but the whole spectrum of space activity. With its experience and proven capability, the organisation is well qualified to make a significant and extended contribution to Europe's space future.

From a EUMETSAT perspective, a key challenge for the space policy will be to address the significant gap in the long-term financial support needed to ensure continuity of observations for climate and environment monitoring, so that support for the analysis of the data at both a regional and global level will develop and reach maturity.

Support for PUMA activities

In July, the PUMA (Preparation for the Use of MSG in Africa) Steering Committee gave its backing for MSG data to be distributed through C-band EUMETCast to the receiving stations linked to the project.

The distribution via C-band EUMETCast meant a deviation from the direct dissemination process originally planned, and a new technical baseline had to be agreed with the provider of the receiving stations, the Alcatel-VCS consortium.

4th meeting of the PUMA Project Steering Committee, Nairobi, 23-24 July 2003

First to be implemented, in Autumn 2003, were the European PUMA stations. Tests of the PUMA stations in six centres in Africa (Dakar, Douala, Harare, Mauritius, Nairobi and Niamey) will follow from March to July 2004 and the future trainers will be schooled. Installation of the PUMA stations in all African National Meteorological Services as well as all necessary training should be completed by April 2005.

Among the six pilot projects for MSG data applications identified by the Steering Committee for funding under the PUMA Outlook Activities is a METELSAT project addressing health monitoring in the Kasai river basin in the Democratic Republic of Congo. AGRHYMET will deal with early warning and crop monitoring in the Niger sub-regions. A Kenyan project will focus on extending the knowledge of climatic events through a national user network. Fishery monitoring will be at the core of two other projects conducted by Kenyan and Mauritian authorities in the Indian Ocean, as well as in the Atlantic Ocean coordinated by the relevant Senegalese authority. These two projects will be coordinated to ensure an optimal sharing of expertise. The South African Weather Bureau project will develop integrated projects together with a basic infrastructure for large near-real-time dissemination to end-users.

Environment project advances

A new project aimed at helping African countries to improve the management of their natural resources is a step closer to realisation following the European Commission's decision to initiate a feasibility study.

The African Monitoring of the Environment for Sustainable Development (AMESD) programme is planned as a follow-up to the PUMA project and, once given the go-ahead, will assist African communities through the provision of environmental information obtained by state-of-the-art technologies.

AMESD will aim to enhance the management of the African environment and to support a sustainable development of the African continent by means of new satellite-supported applications and other ancillary technologies. It is Africa's response to the European Union initiative on the Global Monitoring of the Environment and Security (GMES).

Following an early November kick-off, a detailed report is expected to emerge which will be put forward for European Union financing under the Cotonou Agreements.

For more information on PUMA and AMESD:

- **www.msgafrica.net**
- **www.eumetsat.de/en/area1/international_cooperation.html**

Meteorologists take up e-learning

Virtual training in the global science of meteorology was one of the highlights of the 3rd EUMETSAT Satellite Application Course (ESAC), which played host to EUMETSAT's African colleagues.

The course was held at the Institute for Meteorological Training and Research (IMTR) in Nairobi, Kenya, from 25 August to 5 September, and at the Ecole Africaine de la Météorologie et de l'Aviation Civile (EAMAC) in Niamey, Niger on 14-25 July.

For the first time colleagues from the Middle East were invited to the course in Nairobi, where the Meteosat Second Generation (MSG) Programme was in focus and a demonstration of MSG imagery included.

The aim of the course was to prepare the African user community for the transition from the Meteosat Transition Programme (MTP) to the MSG Programme.

A revolutionary step in meteorology training was announced with the development of Virtual Laboratory centres, a concept which will allow meteorologists worldwide to log in at one of the six Centres of Excellence and download training material.

The two selected African centres are EAMAC in Niamey and the IMTR in Nairobi, both World Meteorological Organization (WMO) recognised training centres; the four others are located in Nanking, Melbourne, Barbados and Costa Rica.

At the Niamey course in July, Jeff Wilson, co-chair of the CGMS/WMO Virtual Laboratory Focus Group, gave attendees a real-time lecture from the fully operational training centre in Melbourne, Australia.

The EUMETSAT-conceived software for developing Computer Aided Learning modules, MeteoCAL, will be used to create a new, the fourth, module in its successful 'e-learning' portfolio by the end of this year, focusing on tropical cyclones of the south-western part of the Indian Ocean.

Reflecting EUMETSAT's continued commitment to assist satellite meteorologists in the understanding and interpretation of satellite imagery, the EUMETSAT User Service will be expanding later this year with a third training officer joining.

image profile

Claudia Ritsert-Clark

Head of Conferences and Publications Services

Claudia Ritsert-Clark, Head of Conferences and Publications Services

Translating visions into action is one of the strengths of Claudia Ritsert-Clark, who joined EUMETSAT in July 2003 as head of the newly founded Conferences and Publications Services (CPS) Division.

It makes her well equipped for addressing the major tasks of developing a new approach towards publications and the distribution of EUMETSAT information and publicity material, as well as ensuring that the various and varied strands of activity within the division are fully integrated.

Projects encompass an increasing remit of conferences and events to be organised as well as translations and the scientific library; all requiring a solution for enhancing efficiency without jeopardising its high quality of service.

Having lived in the United Kingdom for some time, Claudia graduated from Frankfurt University in political science and English language in 1986. She went on to join the British Tourist Authority's (BTA) overseas office in Frankfurt, embarking on a successful career in marketing and public relations.

Additional training in Management and Business Administration led Claudia to become Deputy Director for the BTA in Germany and Austria, while occasionally working as a freelance travel journalist. In 2000, Claudia became Managing Director of the German Sales and Marketing office of Enlight AB, a Swedish e-learning company.

But the lure and scope of the tasks offered by EUMETSAT was strong and thus Claudia is already enjoying the challenge of leading her highly competent and pleasant team on a new and exciting mission.

When not professionally engaged, Claudia enjoys hiking, jogging and dancing, in order to balance her penchant for fine cuisine and historic novels.

EUMETSAT in public eye

Communication was in the limelight at EUMETSAT's second workshop for press officers aimed at strenghtening the dialogue with Member and Cooperating States.

EUMETSAT's Strategy and International Relations Divisions, which is also responsible for public relations, coordinated this event. The working meeting, held on 21-22 October at EUMETSAT headquarters, was attended by press officers from 15 Member and six Cooperating States as well as from WMO.

Key topics discussed in three working groups included mutual support for media databases and other working tools used in PR, areas of common editorial support, the exchange of texts and potential cross support when creating texts of common interest and information material needed for Intranet and Internet. The organisation of specific PR events was another important issue.

The annual workshop is part of EUMETSAT's Communication Plan 2003-2005, and is expected to set up a plan of activities paving the way for a mutually beneficial reinforced relationship between EUMETSAT, its European partners and WMO.

Space students 'learn' at EUMETSAT

Students from across the globe visited EUMETSAT on 11 August 2003 during a one-day visit by the International Space University (ISU) as part of its summer learning programme.

Dr. Tillmann Mohr, EUMETSAT Director-General, presented a general overview of EUMETSAT, which was followed by a lively dialogue on the Jason Programme, EUMETSAT's commitment to climatology, and the Satellite Application Facilities (SAFs). The visit ended with the traditional tour of the EUMETSAT Control Centres.

ISU students are no strangers to EUMETSAT, one of the University's official sponsors, and have already benefited from its expertise in the past when staff members have given seminars on Meteosat and MSG applications.

August 2003 saw even more young faces on EUMETSAT grounds: Only two weeks after the ISU visit, a group of 16 highly gifted high school students took part in a 5-day seminar on space-based Earth observation methods, organised by EUMETSAT to foster awareness of the importance of Earth observation in the future academic generation (second from left: Karin Wolff, minister for education of the land of Hesse)

First MSG-1 results

The delightful German city of Weimar with its plentiful cultural and intellectual associations provided fertile ground for inspiration among the 220 participants at the 2003 EUMETSAT Meteorological Satellite Conference.

EUMETSAT's satellite partners from across the globe set the scene in the first session, introducing the status of current and future programmes and systems within their respective countries. Particular focus this year was placed on sounding instrumentation.

Perhaps though the highlight of the Conference, and the cause of some degree of anticipation amongst the audience, was the second day's session dedicated to first results from MSG-1.

VIPs at the conference : The two most famous figures in Geman literature, Johann Wolfgang von Goethe (1749-1832, left) and Friedrich von Schiller (1759-1805, right) once lived and penned a major part of their works in the city of Weimar

Since the start of dissemination of preliminary data sets to trial user sites earlier this year experts have been busy assessing the value of the imagery. Promises finally turned to reality with the demonstration of some startling initial developments and innovative use of the data.

Within the international community efforts are being increasingly focused towards monitoring of the environment, and a wealth of new instruments are being proposed in this context. It is for this reason that the 2004 EUMETSAT Meteorological Satellite Conference will address weather and the atmosphere as part of its week-long programme, including a specific session on 'chemical' weather.

The Czech Hydrometeorological Institute will host next year's Conference from 31 May to 4 June in Prague. More details on the programme content, together with the online registration form can be found at:

- www.eumetsat.de/en/area2/topic3.html

Wind focus in Finland

Scientists and meteorologists with an interest in wind - one of the key meteorological parameters for weather forecasting – are urged to make a date for Finland next summer.

The seventh biennial International Winds Workshop is being hosted by the Finnish Meteorological Institute in Helsinki from 14-17 June and co-organised by EUMETSAT.

By tracking observed cloud and moisture features from geostationary satellite imagery data, scientists can derive the valuable Atmospheric Motion Vectors (AMVs), and past workshops have proven to be a driving force in contributing to the improvement in the quality of derived wind fields. Further information can be found on the EUMETSAT website.

Global satellite update

Europe: Meteosat-7 supports the primary service at 0° Longitude. Meteosat-6 performs the operational Rapid Scanning Service (and is the primary service backup at 10°E). Meteosat-5 continues the Indian Ocean Data Coverage Service at 63°E. MSG-1, launched on 28 August 2002, is currently undergoing commissioning and expected to become operational at the end of 2003 or beginning of 2004 when it will also be renamed Meteosat-8. After a Solid State Power Amplifier (SSPA) had failed in October 2002, an alternative dissemination mechanism was developed: MSG SEVIRI HRIT and LRIT data is now transmitted via EUMETCast, a satellite DVB broadcast system, providing coverage over Europe, Africa, the Middle East and parts of North and South America. MSG-2 is currently planned for launch in January 2005 and Metop-1 in September 2005.

USA: GOES-12 (East) is functioning at 75°W as the GOES East operational spacecraft. GOES-8 (formally GOES East) was relocated to 165°E on 24 August 2003 as a backup for GOES-9 currently operating at 155°E in place of the Japanese GMS-5. GOES-10 (West) is functioning at 135°W. GOES-11 at 112°W is on standby as a backup for both GOES East and GOES West. On 1 October 2002, NOAA-17 was declared the primary polar orbiting morning satellite. NOAA-15 is the backup morning satellite and NOAA-12 acts as a standby morning satellite. NOAA-16 is the primary polar orbiting afternoon satellite with NOAA-14 as its backup. NOAA-11 is being used as an engineering test platform.

Russia: Meteor-3M-N1, launched on 10 December 2001, continues to operate in a polar sun-synchronous morning orbit, inclined at 99.7°. Meteor-3M-N2 is planned to be launched in 2006. GOMS-Electro-N2, which will be positioned at 76°E, is planned for launch in 2005-2006. The oceanographical satellite SICH-1M (Russia/Ukraine), as well as two R&D satellites, RESURS-DK and MONITOR-E, are planned for launch in 2004.

China: Launched on 15 May, Fengyun-1D (FY-1D), a polar-orbiting meteorological satellite to replace FY-1C, is fully operational. FY-2B is stationed at 105°E. FY-2A continues to act as backup satellite at 86.5°E. FY-2C is planned for launch in 2004 and will replace FY-2B. FY-3A, the first of the second generation of Chinese polar orbiting meteorological satellites, is planned for launch in 2006.

Japan: GMS-5, Japan's current operational geostationary meteorological satellite, continues to operate at 140°E. The US satellite GOES-9 acts as backup for GMS-5 at 155°E since Spring 2003 until MTSAT-1R becomes operational towards Spring 2004. MTSAT-1R is scheduled to be launched at the beginning of 2004. MTSAT-2 will be launched in 2004 JFY (Japanese Fiscal Year).

India: METSAT, India's first exclusive meteorological satellite, launched on 12 September 2002, has now been renamed KALPANA-1 and is positioned at 74°E, collocated with INSAT-3C. INSAT-2B and INSAT-2C are located at 111.5°E and 48.0°E respectively. INSAT-2DT is positioned at 55°E and INSAT-2E at 83°E. INSAT-3A was successfully launched in April 2003. It was declared operational on 24th April 2003 and is positioned at 93.5°E. INSAT-3D and -3E are planned to be launched in the 2003-2005 time-frame.