Issue 30 May 2009

EUMETSAT

image

News from Europe's Weather Satellite Organisation

MTG on track

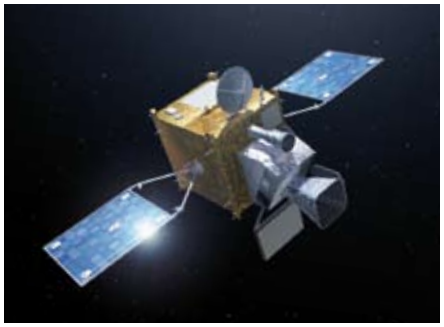
Meteosat Third Generation (MTG) is on track following two important meetings during the fourth quarter of 2008. A special EUMETSAT Council meeting in Darmstadt on 9 October approved the MTG payload complement as the baseline for the preparation of the full EUMETSAT MTG Programme Proposal, while European Space Agency (ESA) Member States meeting in The Hague on 25-26 November established and approved the MTG Space Segment Development Programme.

"This is important for Europe and EUMETSAT in view of the approval of the full MTG programme by EUMETSAT Member States planned in the 2010 timeframe," said Dr. Lars Prahm, Director-General of EUMETSAT.

> " This is important for Europe and EUMETSAT."

The baseline MTG payload complement approved by EUMETSAT's special Council consists of a Flexible Combined Imager and Lightening Imager on the MTG-I imaging satellite and an Infrared Sounder and Sentinel-4 Visible Near-infrared Sounder provided by ESA under the European Global Monitoring for Environment and Security (GMES) programme on the MTG-S sounding satellite. The Council tasked the EUMETSAT Director-General to carry out the MTG Phase B (preliminary design) activities covered under the MTG Preparatory Programme aimed at defining a baseline system to cover up to 20 years of operational service for the imagery mission, including four MTG-I and two MTG-S satellites. The cost of MTG per year of operational services is expected to be comparable to that of the current Meteosat Second Generation (MSG).

The special Council also invited ESA Member States to establish and approve the corresponding ESA MTG Space Segment Development Programme for the MTG-I-1 and MTG-S-1 satellites. The subscription to the ESA programme reached almost 110 per cent, showing a very high interest by its Member States in EUMETSAT's future geostationary programme.



Artist's impression of MTG (courtesy of ESA)

MTG-I-1 and MTG-S-1 will be ready for launch in the timeframe 2015 and 2017, however this planning may be revisited in view of the phase B results. They will be preceded by the last two MSG satellites, MSG-3 and MSG-4, whose launches are currently planned for 2011 and 2013, respectively. Both of these satellites will be launched from the Guiana Space Centre in Kourou using an Ariane 5 or Soyuz launch vehicle. In view of the in orbit status, EUMETSAT will propose to Council postponement of the dates by one year.

MSG-3 was placed in pre-launch storage in December 2008. Major work must still be performed on MSG-4 before it is placed in pre-launch storage in 2011. Destorage notification will be given about 18 months before launch.

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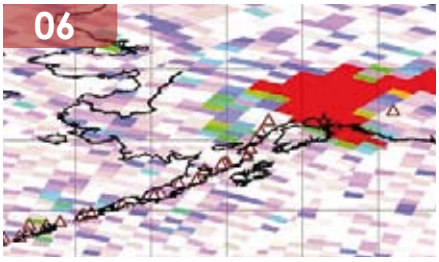


Director-General's Desk

I am very pleased with the successes EUMETSAT has experienced since our last newsletter. This is owed to some very important decisions regarding EUMETSAT's core activity of monitoring weather and our continued progress towards greater involvement in climate monitoring.

As far as our core activities are concerned, Meteosat Third Generation (MTG) is on track for approval of the full programme by our Member States in 2010. A special Council in October 2008 approved the MTG payload complement as the baseline for the preparation of the full EUMETSAT MTG Development and Operations Programme Proposal. This was followed in November 2008 by the European Space Agency (ESA) ministerial in which Member States oversubscribed to the MTG space segment development programme by eight per cent.

EUMETSAT's relations with its partners and third parties are also bearing fruit. The launch of NOAA N', now renamed NOAA-19, the third satellite with our Microwave Humidity Sounder on board, marks another milestone in the transatlantic cooperation between EUMETSAT and the US National Oceanic and Atmospheric Administration (NOAA) on the Initial Joint Polar System. The December 2008 EUMETSAT Council endorsed the concept for cooperation with NOAA on the Joint Polar System to follow the current generation of polar satellites.

Now that Jason-2 near-real-time data are being disseminated to users on a regular basis, a decision on the follow-on is needed if Europe wants to secure continuity of essential data for climate monitoring and for the Global Monitoring for Environment and Security (GMES) Marine Core Service. A meeting of potential participants in Jason-3 in February made good progress in that direction.

The December Council's approval of a Preliminary Programme Proposal on the Sentinel-3 Third Party Programme allowed EUMETSAT to begin activities in anticipation of the later approval of GMES Sentinel-3 as a Third Party Programme in EUMETSAT under the responsibility of ESA.

Finally, I am looking forward to welcoming Latvia and Poland as the 23rd and 24th EUMETSAT Member States. As EUMETSAT grows, so does its workload.

Dr. Lars Prahm
Director-General of EUMETSAT

EUMETSAT-ESA partnership progresses

Relations between EUMETSAT and the European Space Agency (ESA) have developed further, with new cooperation in various areas. The partnership between the two organisations is currently centred on joint activities for the development of the Meteosat Third Generation (MTG) programme but also includes the European Global Monitoring for Environment and Security (GMES) programme.

Funding for the MTG satellite development programme, for which ESA is responsible, was secured during the ESA Council at ministerial level in The Hague on 25-26 November 2008 (see front page story), during which European ministers responsible for space activities strongly supported programmes involving EUMETSAT.

ESA Member States subscribed to Segment 2 of the ESA GMES programme. This programme includes important activities involving EUMETSAT: two Sentinel-4 instruments, which are planned to be embarked on the MTG-S sounding satellites, Sentinel-5 pre-development for the Post-EUMETSAT Polar System and the preparation of the Jason-CS mission to be decided at the next ESA ministerial in 2011. It also clearly foresees activities related to the joint development of ground segment facilities for the operations of the oceanographic mission of GMES Sentinel-3 satellites by EUMETSAT.

For its part, the EUMETSAT Council meeting in Darmstadt on 9-10 December 2008 approved a Preliminary Programme Proposal on the Sentinel-3 Third Party Programme, planned to be fully approved by mid-2009. EUMETSAT will be the operator of Sentinel-3 and -3B, serving the marine user community with routine and off-line products.

The Council also approved the organisation of a meeting of potential participants in the Jason-2 ocean altimetry satellite follow-on programme in early 2009, which is essential for securing data continuity for climate monitoring and for the GMES Marine Core Service.

At its ministerial in The Hague, ESA obtained significant contributions to its climate initiative programme. EUMETSAT intends to contribute proactively to this initiative.

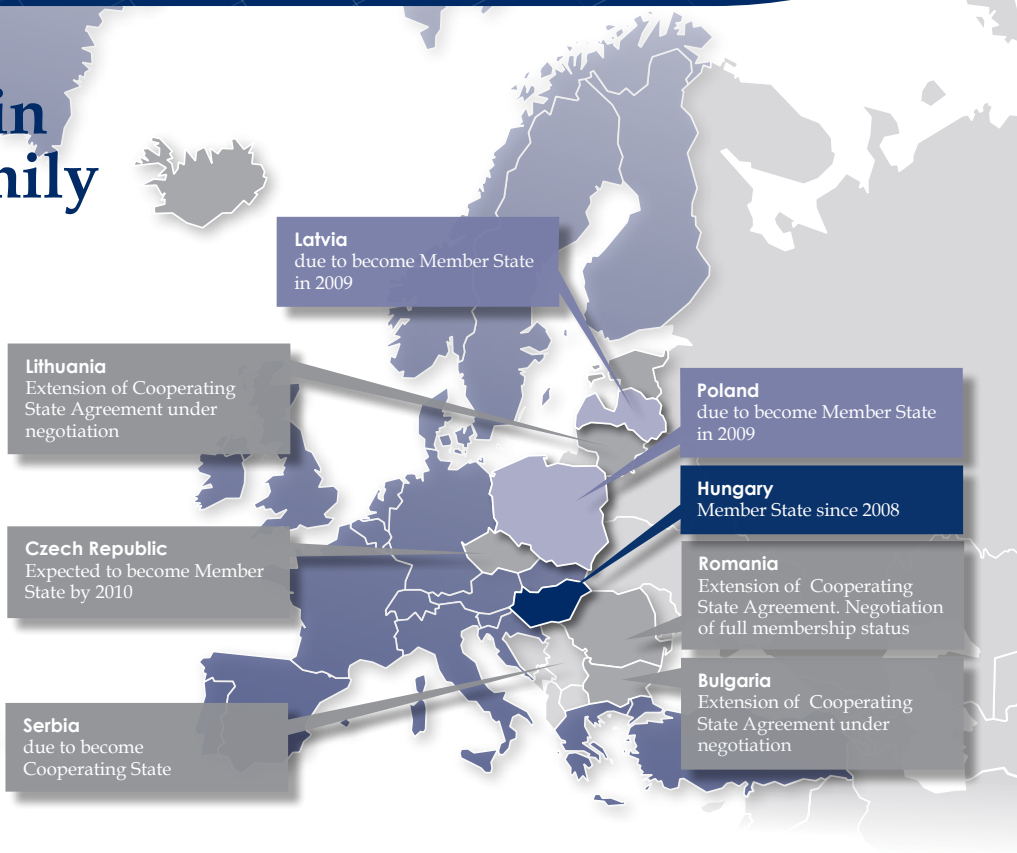
Initial Joint Polar System becoming mature

The Initial Joint Polar System (IJPS) is becoming mature, with the launch of the system's third satellite at the beginning of the year. On 6 February at 5:22 EST (11:22 CET), the US National Oceanic and Atmospheric Administration (NOAA) launched its NOAA N' polar-orbiting satellite from Vandenberg Air Force Base, California.

After achieving proper orbit, NOAA N' was renamed NOAA-19 and joined EUMETSAT's Metop-A, launched on 19 October 2006, and NOAA's NOAA-18, launched on 20 May 2005. NOAA-18 and NOAA-19 cover the afternoon orbit, while Metop covers the mid-morning orbit. Metop-A will be joined by Metop-B during the second quarter of 2012, when it is scheduled for launch with a Soyuz-1A rocket from the Baikonur Cosmodrome, followed by Metop-C in 2016. →

Launch of NOAA N' from Vandenberg Air Force Base
(source: U.S. Air Force photo, Andrew Lee)

More nations join EUMETSAT family



More EUMETSAT Cooperating States have become full members of the organisation and others are in the process of doing so. This is in line with EUMETSAT's aim, set by its 1-2 July 2008 Council, to match the membership of the European Union as soon as possible.

On 9 October 2008, Hungary deposited its instrument of accession to the EUMETSAT Convention, completing the procedures for becoming the 22nd Member State. In December 2008, the EUMETSAT Council also approved resolutions on the accession of Poland and Latvia with a view to them becoming full Member States in 2009.

On 16 December 2008, Stanisław Gawłowski, Polish Secretary of State of the Ministry of the Environment, and Mieczysław Ostojski, Director of Poland's Institute of Meteorology and Water Management, met senior EUMETSAT officials in Darmstadt to finalise their country's accession to the organisation. This was followed the next day by the signature of the Latvian accession agreement by Raimonds Vējonis, Latvian Environment Minister, and the EUMETSAT Director-General, Dr. Lars Prahm.

Latvia and Poland will be the 23rd and 24th EUMETSAT Member States once they have completed their national approval procedures. They will contribute to the EUMETSAT budget as full Member States from 1 January 2009 and will participate fully in its decision-making process. Furthermore, their industry will be able to bid for EUMETSAT contracts and their nationals will be able to compete for EUMETSAT staff positions. Both countries will participate in EUMETSAT mandatory programmes and Latvia will also be part of the Jason-2 optional programme.

The December 2008 Council extended the Cooperating State Agreement with Romania until the end of 2010. Negotiations on Romania becoming a full Member State began in early 2009. The Czech Republic is also expected to become a EUMETSAT Member State by 2010. Also under negotiation are the extension of the Cooperating State Agreements with Lithuania and Bulgaria.

Finally, the December 2008 Council approved an amendment to the Cooperating State Agreement with Serbia, paving the way for the ratification of this agreement. Serbia signed a Stabilisation and Accession Agreement with the EU in April 2008.

→ Metop-A is Europe's first polar-orbiting meteorological satellite and constitutes the EUMETSAT Polar System (EPS), the European component of the IJPS.

Dieter Klaes, EPS Programme Scientist, said, "Metop-A is running like clockwork with data availability well above target levels and a positive impact on Numerical Weather Prediction." The three Metop satellites will provide coverage of the polar orbit until at least 2020.

All five satellites forming the IJPS carry EUMETSAT's Microwave Humidity Sounder (MHS), which measures atmospheric water vapour.

Under the IJPS, NOAA-18 operations and mission data processing are supported by the EPS Ground Segment, and this support will transfer to NOAA-19 when it becomes operational.

Meanwhile, EUMETSAT is working on Post-EPS and with its partners in the Joint Polar System (JPS). Initial discussions are underway with the United States, the European Space Agency, and European national agencies on Post-EPS. The 9-10 December 2008 Council endorsed the concept for cooperation with NOAA on the JPS to follow the current generation of polar satellites.

Jason-2 oceanographic products and applications Part 2

The Jason-2 mission has been disseminating near-real-time Operational Geophysical Data Record (OGDR) data to all users on a regular basis since the end of 2008.

This feature describes the products and applications of the Jason-2 mission.

Jason-2 products are now available and distributed to operational meteorology users in near-real time (around three hours) and climate users will have access to high-precision data in the second part of this year. National meteorological services and the European Centre for Medium-Range Weather Forecasts (ECMWF) are integrating Jason-2 data into their wave models.

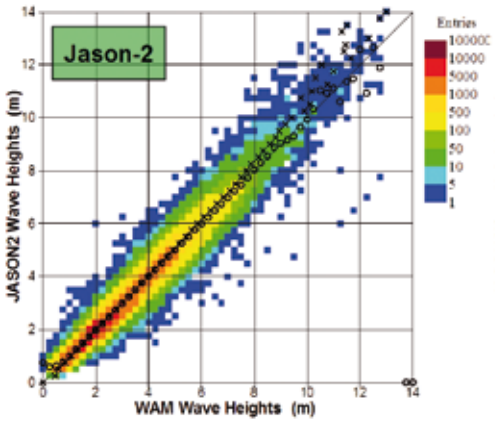
At ECMWF, Jason-2 wave height data assimilation became operational on 10 March. Moreover Collecte Localisation Satellites (CLS) data on mean sea level anomalies are routinely being assimilated in the ECMWF seasonal forecasting system and in the monthly forecasting ststem. Dr. Peter Janssen, Head of the Ocean Waves Section of the ECMWF, said, "We have tested the quality of the Jason-2 data in a data assimilation experiment and found a beneficial impact on forecast scores compared to assimilation with Jason-1 data." The Jason-2 data were found to have a favourable impact on wave analysis and forecasting: "There are even improvements in the surface pressure forecast skill."

Another user integrating Jason-2 data into its wave and ocean models is the Met Office (UK). Dr. Adrian Hines of the Ocean Forecasting Research and Development group at the Met Office said work required to set up use of Jason-2 data "is underway but will take a little time to complete as we have to get the data routed and preprocessed and storage jobs set up." The Met Office has two possible sources of Jason-2 products, according to Hines: EUMETCast, EUMETSAT's data dissemination system, for fast delivery so that it can be used in wave model validation, and via CLS for consistency with other altimetry data sets and ease of set-up for assimilation into its ocean forecasting system.

Jason-2 near-real-time and offline products

PRODUCT	DESCRIPTION	USES	USERS
Operational Geophysical Data Record (OGDR)	A first estimate of sea surface height, surface wind speed, significant wave-height, available after three hours	Assimilation of data in operational wave and ocean models	ECMWF Météo-France NOAA Met Office (UK) Met.no Mercator Ocean
Interim Geophysical Data Record (IGDR)	Includes analysed sea surface data on sea surface height, absolute dynamic topography, ocean geostrophic velocities	Produced within 1-1.5 days of being recorded, for medium-range weather forecasting, seasonal forecasting, ocean weather applications	ECMWF GMAO-NOAA AOML-NOAA DMI Dutch clients for storm surge modelling
Geophysical Data Record (GDR)	Covers sea surface height, fully-validated, produced within three or four weeks of event	Principally for climate monitoring and modelling (verifying climate models), routine validation of sea level observations from in-situ stations, International Panel for Climate Change Assessment Reporting on Sea Level Rise	Climate research community

Global comparison between Ku-Band and ECMWF WAve prediction Model (WAM) first-guess Significant Wave Height (SWH) values, *1 August to 31 October 2008 (source: ECMWF)*



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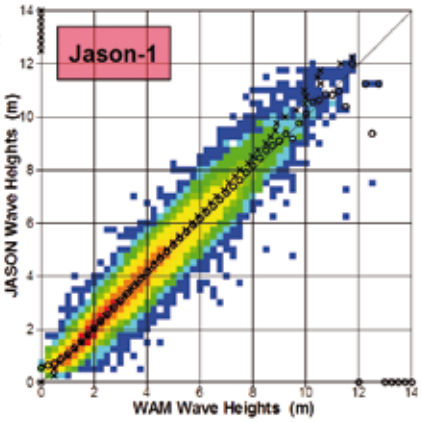
St.Dev. Difference = 27.4 cm
Scatter Index = 10.16%



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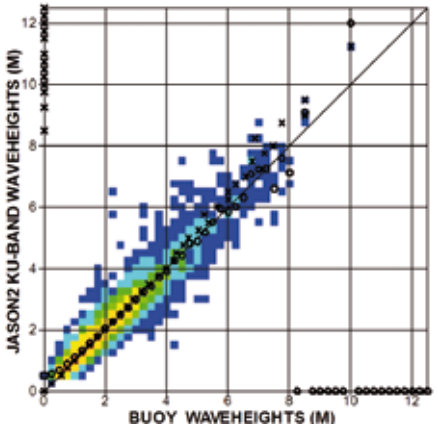
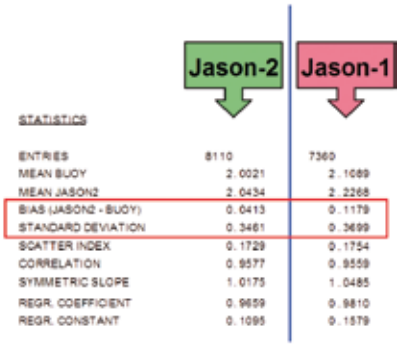
Scatter Index = 10.76%

Global comparison between Ku-Band and in-situ (buoy) SWH values, *1 August to 31 October 2008 (source: ECMWF)*





The Met Office's new third generation wave model, WaveWatch III, is now operational and is being updated to include the use of Jason-2 in validation, while CLS data are now being routinely assimilated into the ocean forecasting models.

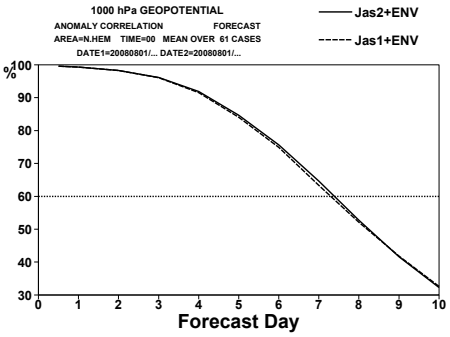
Others are using Jason-2 data to create improved products of their own. CLS has developed the Prototype Innovant de Système de Traitement pour les Applications Côtières et l'Hydrologie (Innovative Prototype Processing System for Coastal and Hydrology Applications, abbreviated PISTACH) to improve altimeter products in coastal areas and inland waters.

PISTACH was developed as an initiative by the Centre National d'Etudes Spatiales (CNES), the French space agency, one of the partners in the Jason-2 programme.

The prototype consists of new algorithms for processing altimeter data over coastal areas and continental waters. This makes it possible to exploit the greater wealth of data provided by Jason-2 of coastal and hydrological zones.

Franck Mercier of CLS said the first PISTACH prototype is starting to create products like Jason-2's Geophysical Data Record (GDR) so users of both PISTACH and GDR can use it. PISTACH products include several state-of-the-art geophysical corrections, as well as high-resolution/local models, in addition to the content of the Jason-2 Interim Geophysical Data Record (IGDR). "Integrating Jason-2 data results in much better coverage", said Mercier. PISTACH coastal products cover the entire ocean, plus 25 kilometres inland. PISTACH products will have full coverage thanks to Jason-2, according to Mercier.

Impact of Jason-2 SWH assimilation on the model 1000 hPa geopotential height forecast errors in the Northern Hemisphere, *with respect to operational analysis, 1 August – 30 September 2008 (source: ECMWF)*



PISTACH hydrology products cover all emerged lands, plus a 25-kilometre fringe over oceans. A PISTACH algorithm has for example been used to reconstruct the height of the reflecting surface of the Rio Negro and Rio Solimoes in the Amazon over a period when the levels of the two rivers decrease by two or three metres, distinguishing the emergence of banks and islands which are usually submerged during the high-water season.

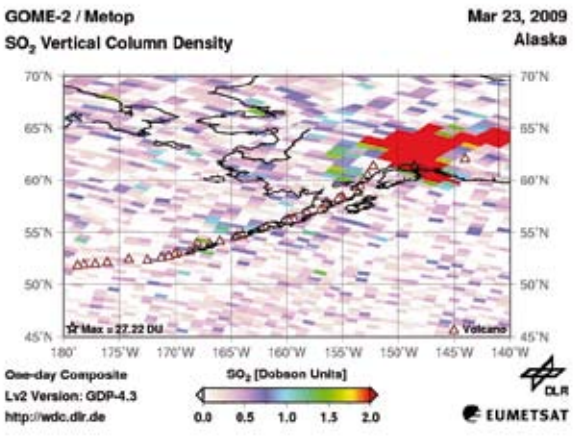
PISTACH products have been available since early November 2008. Mercier said PISTACH products are GDR-level products: "They are not more complex than classical GDR products, [which] are more suitable for users already familiar with altimetry. Moreover, the NetCDF format chosen for Jason-2 GDR products should make these products more accessible for newcomers."

PISTACH users include laboratories like the Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (Laboratory for Space Geophysical and Oceanographic Studies, abbreviated LEGOS) in Toulouse, hydrology users, and the Chinese.

The fact that users like the ECMWF, Met Office and CLS are already using Jason-2 near-real-time products is testimony to their high quality.

In the next issue...

In the next issue of IMAGE, this series on satellite applications will continue with an examination of Numerical Weather Prediction.



From the

archive

This image from the Global Ozone Monitoring Experiment-2 (GOME-2) instrument on board EUMETSAT's Metop polar-orbiting satellite shows sulphur dioxide (SO_2) being emitted from the Mount Redoubt volcano in Alaska in March. The Deutsches Zentrum für Luft- und Raumfahrt (DLR), the German Aerospace Center, DLR, a member of EUMETSAT's Ozone Monitoring and Atmospheric Chemistry Satellite Application Facility, used the data to determine SO_2 column density.

User Platform

Jason-2 begins routine oceanography mission

In mid-December, the Jason-2 mission began disseminating the first near-real-time Operational Geophysical Data Record (OGDR) data to all users on a regular basis, marking the beginning of the routine oceanography mission of the altimetry satellite.

Metop-A satellite resumes Fast Data Service

The Advanced High Resolution Picture Transmission (AHRPT) system on EUMETSAT's Metop-A polar-orbiting satellite is operational again following a successful two-month trial in October-November 2008. Operational service has resumed over a limited area over the North Atlantic and Europe following the on-board failure of the system in July 2007, whose cause has been identified and for which

Coverage of the AHRPT services from Metop-A

corrective measures have been taken. This is good news for users who have invested in antennas to receive the data via AHRPT, who can therefore benefit from their investment. It also enables Metop data and products to be delivered as part of the EUMETSAT Advanced Retransmission Service (EARS), as originally planned, and allows the use of existing HRPT stations located around the North Atlantic and in Europe. It is planned to extend the coverage of the service during 2009.

EUMETCast-Europe: Successful transition from HOTBIRD™ to EUROBIRD™

The successful transfer of the EUMETCast-Europe service from HOTBIRD™ 6 to EUROBIRD™ 9 took place on 17 December 2008. The last file sent via HOTBIRD™ 6 was a high-resolution visible (HRV) segment from Meteosat-9 covering northern Africa.

In February 2009, EUROBIRD™ 9A was deployed to nine degrees East. Formerly HOTBIRD™ 7A, the rebranded satellite carries the EUMETCast-Europe service with coverage in the Ku-band across Europe, North Africa and the Middle East. The EUMETCast-Europe service, supplied under contract by T-Systems, will operate up to 31 December 2015, with an optional three-year extension.

EO Portal user management and service subscription

Following the release of the upgraded Product Navigator in October 2008, the next stage in the two-year Earth Observation Portal project will be the introduction in July 2009 of the user management and service subscription components. With this new functionality registered, users will be able to log in via the Portal to modify their address details, subscribe to new EUMETCast services or modify their existing subscriptions, and update their User Notification Service subscriptions. Later in the year, users will be able to monitor the status of archive orders via the Portal.

Customer Satisfaction Survey results

The results of the 2008 Customer Satisfaction Survey were analysed during the course of 2008. The results and recommendations arising from National Meteorological Services (NMSs) of EUMETSAT Member and Cooperating States are currently being addressed directly with the NMSs.

The results from other user communities have been consolidated into a report available from the EUMETSAT website. The valuable feedback received from the user community will assist EUMETSAT to improve and enhance operational services.

For further information, contact the User Service Helpdesk:

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Profile:
General Dr. Massimo Capaldo

Steering the course of Council

As Chairman of the EUMETSAT Council, General Dr. Massimo Capaldo directs the discussions of the highest decision-making body of the European Meteorological Satellite Organisation. Capaldo hit the ground running, already chairing his first Council three months after he was elected Chairman in July 2008.

He chaired a special Council on 9 October 2008 which approved the Meteosat Third Generation (MTG) payload complement as the baseline for the preparation of the full EUMETSAT MTG Programme Proposal.

> " The role of the Chairman is to facilitate discussions. "

His efficient chairing of the special Council earned the praise of EUMETSAT's Director-General, Dr. Lars Prahm, but Capaldo gave credit to Member State delegates. "Obviously the fact that MTG is a programme of paramount importance to ensure the data continuity of Meteosat prompted us all to make sure the next phase begins on time," he said.

As Head of the Italian Delegation to the Council before becoming Chairman, Capaldo knows the functioning of the body well. "The role of the Chairman is to facilitate discussions and to help reach general agreement. Now I am trusted to be above national interests and promote the interests of the entire organisation as perceived by its members," he explained.

Capaldo is not worried that EUMETSAT's growing membership will make it more difficult to chair the Council. On the contrary, he is "happy to welcome new principle delegates" and believes "more Member States will give Council decisions more scope and possibly greater resources to EUMETSAT. This is reinforced by the growing number of partners outside Europe."

Capaldo stresses the importance of both mandatory and non-mandatory EUMETSAT programmes. "In addition to Meteosat and Metop, it is vital that a Jason-2 follow-on be approved and funded to provide continuity in sea level measurements and to help us better understand oceans. Coming from a country surrounded by seas, I am especially aware of the serious threat posed by rising sea levels, which are irrefutable evidence of climate variability and change. However, it is clear that the difficult economic situation requires unprecedented efforts to achieve maximum cost/benefit out of observations from space."

"I see EUMETSAT capabilities being fully recognised as playing a fundamental and increasingly important role in monitoring the environment, using the infrastructure it developed over the last two decades to observe weather and climate from space. Perhaps the most important indication of this is that much of the data for GMES/Kopernikus will be provided by EUMETSAT." During his two years as Council Chairman, Capaldo will steer EUMETSAT's course in this direction.

Career path

- **2008:** became Chairman of EUMETSAT Council
- **2007:** became Head of the Meteorological Department (Chief of the Staff Office – Ufficio Generale Spazio Aereo e Meteorologia)
- **2005:** became Director of the Italian Meteorological Service (Ufficio Generale per la Meteorologia)
- **2003:** became Director of the National Centre for Meteorology and Aeronautical Climatology (CNMCA)
- **2002:** became Deputy Director of the CNMCA
- **2000:** became Head of the Plans and Development Division of the Ufficio Generale per la Meteorologia
- **1999:** became Head of the Climate Division of the CNMCA
- **1995:** became Head of the Operations Department at the European Centre for Medium-range Weather Forecasts (ECMWF)
- **1992:** became Head of the Meteorological Section in the Italian Air Force Chief of Staff Office
- **1990:** became Head of R&D Section of the Plans and Development Division of the Italian Meteorological Service
- **1986:** became Head of Satellite Data Acquisition of the CNMCA
- **1983:** became Head of R&D Section of the CNMCA
- **1980:** reassigned as Scientist in the R&D section of the CNMCA
- **1977:** became Scientist in the Diagnostic Section of the Data Division in the Research Department of the ECMWF
- **1975:** became Scientist of R&D section of the Central Forecasting Division of the Italian Meteorological Service
- **1974:** became Shift forecaster in the Central Forecasting Division of the Italian Meteorological Service
- **1973:** won public competition for post of Lieutenant in Italian Air Force - Meteorological Branch
- **1973:** began one-year training course on Meteorology and Atmospheric Physics at the Italian Meteorological Service for Class I World Meteorological Organization Meteorologist
- **1972:** graduated in Physics from University of Rome

Private life

- interested in history, music and sailing

Global meteorological satellite update

Europe	
Meteosat-6	located at 67.5°E and acts as a standby spacecraft, providing data collection platform acquisition support during Meteosat-7 eclipses
Meteosat-7	located at 57.5°E and will provide Indian Ocean Data Coverage services until at least the end of 2010
Meteosat-8	provides the Rapid Scanning Service and the backup service for Meteosat-9 from 9.5°E
Meteosat-9	provides the primary operational service from 0° Longitude
MSG-3 and -4	scheduled to be launched in 2011 and 2013, respectively
Metop-A	primary mid-morning satellite of the Initial Joint Polar System (IJPS)
Metop-B and -C	scheduled to be launched in 2012 and 2016, respectively
Jason-2	operational in a non-sun-synchronous orbit at 66° inclination
USA	
GOES-10	operating at 60°W to support the South America mission
GOES-11 (West)	operating at 135°W as the GOES West operational satellite
GOES-12 (East)	operating at 75°W as the GOES East operational satellite
GOES-13	stored in orbit at 105°W
GOES-O, -P, -R, - S	scheduled to be launched in 2009, 2010, 2015, and 2016, respectively
NOAA-15	secondary polar-orbiting early morning satellite for Metop-A
NOAA-16	secondary afternoon polar-orbiting satellite for NOAA-18
NOAA-17	secondary mid-morning polar-orbiting satellite for Metop-A
NOAA-18	primary afternoon polar-orbiting satellite and first spacecraft of IJPS
NOAA-19	launched on 6 February 2009 and spacecraft of IJPS
NPP	scheduled for launch in 2010
NPOESS-1 and -3	planned for launch in 2013 and 2020, respectively (afternoon orbits)
NPOESS-2 and -4	planned for launch in 2016 and 2022, respectively (early morning orbits)
Russia	
Meteor-M N1, N2, N3	planned for launch in 2009 and the latter two in 2010, respectively (morning orbit satellites)
Electro-L N1	planned for launch in 2009 and will be positioned at 76°E
Electro-L N2	planned for launch in 2010 and planned to be positioned at 4.5°E
Electro-M N1	planned for launch in 2015
China	
Fengyun-1D (FY-1D)	the primary polar-orbiting meteorological satellite operating in a sun-synchronous early morning orbit
FY-2C	operating at 105°E as the primary geostationary satellite
FY-2D	acts as backup for FY-2C at 86.5°E
FY-2E	launched on 23 December 2008 and will be positioned at 123°E.
FY-2F and -2G	planned for launch in late 2011 and 2013, respectively
FY-3A	first of the second generation of Chinese polar-orbiting meteorological satellites, launched on 27 May 2008
FY-3B	planned for launch in 2010
FY-3C to **-3G**	planned for biennial launches in the 2013-2021 timeframe
Japan	
MTSAT-1R	stationed at 140°E
MTSAT-2	acts as backup for MTSAT-1R at 145°E
MTSAT follow-on	planned for launch in 2014
India	
KALPANA-1	(formerly METSAT) India's first exclusively meteorological satellite, positioned at 74°E
INSAT-3A	operating at 93.5°E
INSAT-3D	planned for launch in 2009, to have 19-channel sounder
OCEANSAT-1	in orbit
OCEANSAT-2	planned for launch in 2009
SARAL	planned for launch in 2010
Megha-Tropiques	planned for launch in 2009
Republic of Korea	
COMS-1 and **-2**	(Communication, Ocean and Meteorological Satellites) planned for launch in 2009 and 2016, respectively, and will be positioned at 116.2°E or 128.2°E

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Mediterranean Weather Training Week

EUMETSAT organised a special online training event on 10-12 February. Mediterranean Weather Training Week highlighted the importance of EUMETSAT satellite data for Mediterranean countries.

Specifically tailored for Mediterranean weather forecasters, the event consisted of six online sessions on nowcasting weather phenomena in the Mediterranean area with the help of observations from EUMETSAT satellites. Some 65 participants from 13 counties attended the online sessions and contributed actively to the discussions. The topics included Mediterranean storms, regional wind systems such as the Mistral and the Bora, severe convective storms, fires and smoke, dust outbreaks, and volcanic ash. EUMETCAL, the European Virtual Organisation for Meteorological Training, provided the event with the technical support for the online lectures. The lecturers were training officers from EUMETSAT's User Service Division.

Events Diary

- **33rd International Symposium on Remote Sensing of Environment**
  4-8 May 2009, Stresa, Italy
- **2nd EPS/Metop RAO Workshop**
  20-22 May 2009, Barcelona, Spain
- **World Climate Conference-3**
  31 August-4 September 2009, Geneva, Switzerland
- **2009 EUMETSAT Meteorological Satellite Conference**
  21-25 September 2009, Bath, UK
- **OceanObs 09**
  21-25 September 2009, Venice, Italy
- **Coordination Group for Meteorological Satellites**
  26-30 October 2009, Jeju Island, South Korea
- **Committee on Earth Observation Satellites Plenary Meeting**
  2-4 November 2009, Phuket, Thailand

For further information about these events, please visit: *www.eumetsat.int*