



CGMS-35 EUM-WP-12
v1, 8 October 2007
Prepared by EUMETSAT
Agenda Item: G.1
Discussed in Plenary

EUMETSAT TRAINING ACTIVITIES

The document describes the status and future plans for training in satellite meteorology provided by EUMETSAT and the Centres of Excellence (CoE) in Africa, the Middle East and Europe.

CGMS XXXV is invited to note the current status and future activities for satellite training provided by EUMETSAT and Centres of Excellence in WMO RA I, RA II and RA VI.

EUMETSAT Training Activities

1 INTRODUCTION

This paper reviews the current status and future plans concerning EUMETSAT's training activities in support of the WMO/CGMS Virtual Laboratory (VL) for Satellite Meteorology. As a global satellite operator, EUMETSAT has supported the Virtual Laboratory from its beginning and utilises the cooperation network to provide outreach training, especially for RA I. In recent months EUMETSAT has also started to align training activities for its Member and Cooperating States in RA VI, especially in the context of the EUMETCAL project.

In addition, some training support activities are provided in RA II, at the Centre of Excellence in Muscat, Oman and, in a very limited manner, to South America, in conjunction with EUMETSAT Member States Spain and Portugal.

In its support to the VL the EUMETSAT training approach follows the recommendations of WMO Space Programme Implementation Plan.

2 EUMETSAT's TRAINING APPROACH

As EUMETSAT's resources are relatively limited the training provided and facilitated by EUMETSAT has to concentrate primarily on training operational forecasters from Meteorological Services in Europe and Africa. In its Member and Cooperating States EUMETSAT is supporting their training programmes and making use, where possible, of existing training infrastructures. Of special importance in this regard is the European Virtual Organisation for Meteorological Training, EUMETCAL.

In recent years the level of training has expanded somewhat to train professional meteorological personnel in the Middle East and occasionally in South America. The training in South America is provided to help NMSs in that region to make more effective use of Meteosat data disseminated through EUMETSAT's EUMETCast system to Southern and Central America.

Since October 2006, EUMETSAT has operated geostationary (Meteosat) satellites and a polar orbiting system (Metop-A). The variety of instruments provides valuable datasets which have benefits going far beyond the classical meteorological application areas of Nowcasting, Numerical Weather Prediction and Climatology. Other application areas, like Oceanography, Land Surface use, Hydrology and Environmental Monitoring/Air Quality are expected to make more and more use of the EUMETSAT data. Furthermore, from 2008 onwards EUMETSAT will be an active operational partner in the ocean altimetry mission of Jason-2 and its follow on programmes. Therefore, more and more training in these application areas will be included in the EUMETSAT's future training delivery schemes.

To date, much emphasis has been placed upon EUMETSAT's training activities devoted to the introduction of data and products from the new satellite systems MSG and Metop and, increasingly, for Jason.

To deliver training for developing countries EUMETSAT follows the WMO strategy, which has as its key elements:

- To build on the existing infrastructure in a way which ensures that the timescale and manner in which initiatives for improving the use of satellite data are consistent with the users' capabilities to absorb the information and is sustainable in the future.
- To focus on the developing countries, directing particular attention to systematically improving the level of expertise of instructors at all RTCs in the utilisation of satellite data.
- To anticipate future trends in the applications of satellite data and in education and training techniques, so that developments can pass into operational use quickly and efficiently.

The development and use of new training techniques for the provision of distant learning and the delivery of blended learning courses has a high priority for EUMETSAT. Therefore, upgrades of suitable tools such as VisitView are seen as important, as is the introduction to the RTCs of the Moodle training course management system.

2.1 International Cooperation

Since the new satellite systems are providing global datasets, it is evident that training tools and methods have to be applied that will train more user communities, in larger geographical areas, yet with limited resources. Therefore, the methods developed within the framework of the WMO VL, and those made available in Europe through the training coordination elements of the EUMTCAL project are a vital contribution to achieve these goals.

In Europe EUMETSAT is closely coordinating its training activities with EUMETCAL, a EUMETNET project, hosted by the Finish Meteorological Institute. The provision of a European training network with associated resources, such as a Web Site and a resource library are key assets of EUMETCAL. EUMETCAL is facilitating the delivery of blended learning courses, a model now being adopted by EUMETSAT for its own training events.

In Europe EUMETSAT is also sponsoring a multi-national training project called EUMeTrain, hosted by the Austrian Meteorological Institute, ZAMG. The aim of EUMeTrain is to *create* training material for satellite meteorology training and to facilitate the delivery of training through distance learning techniques.

On the global scale, EUMETSAT is a contributing partner of the Virtual Laboratory and currently sponsors the RTCs in Niamey, Nairobi and Muscat. It

is expected that Pretoria will be integrated into the RTC network in the near future. In this regard, EUMETSAT has initiated discussions with the South African Weather Service (SAWS) with the aim of formally integrating Pretoria (SAWS and University of Pretoria) as another centre of Excellence within the VL network. The support of EUMETCAL is made available for the VL through EUMETSAT's common involvement in both projects.

Furthermore, EUMETSAT is bilaterally working together with several other CGMS satellite operators where cooperation agreements exist. The closest cooperation on training is currently with NOAA/COMET, but cooperation in training is also planned with China and Russia.

In order to promote the use of Meteosat data in South America EUMETSAT occasionally participates in training events held in that continent. As an example a training course was recently held with EUMETSAT participation in Alagoas Brazil (August 2007) and another in Cartagena, Columbia, in October 2007.

2.2 Thematic Training

From 2008 onwards, EUMETSAT will participate in the JASON-2 program and this is expected continue well into the future, alongside the continuation of the Meteosat and Metop programmes. The wide range of data from the multitude of instruments onboard these satellites means that EUMETSAT satellite data can be used for several GEO/GEOSS Societal Benefit Areas (SBAs). In order to achieve this SBA-themed training will become a more regular feature of EUMETSAT's training programme in the future.

A natural consequence of this development is a wider range of training topics, beyond classical meteorological training in areas such as Nowcasting and NWP applications. Future training areas will be climate, land surface applications, oceanography, air quality monitoring and hydrology. It is not a coincidence that these application areas are themes of EUMETSAT's SAF network.

Concerning climate training a first workshop was held, together with the Climate SAF and the Croatian Met, Service, in Zagreb in December 2006. At least two more courses will follow, one later in in 2007 and another in 2008.

2.3 Distance Learning

In order to optimize training methods in times of limited resources, more and more distance learning elements are being introduced within EUMETSAT's training activities. EUMETSAT has started to regularly provide distance learning lectures using VisitView. These lectures are announced on the EUMETSAT Web Site and initially it the aim to provide approximately one lecture a month. It is anticipated that other organisations and Met. Services will complement these distance learning activities, under the overall coordination of EUMETCAL and the VL.

A key objective of the WMO Virtual Laboratory for Education and Training is the facilitation of regular Regional Focus Group discussions, organised by the RTCs.

In order to facilitate the establishment of regular focus group discussions in the Centres of Excellence, EUMETSAT supported dedicated training events have already been scheduled for Nairobi, Muscat, Niamey and Pretoria. In September 2007 parallel courses were run in Nairobi and Muscat to train participants in the creation of distance learning material and in the delivery of live discussions (from/to Muscat/Nairobi). A similar parallel event, between Niamey and Pretoria, is planned for early 2008. Thus, the CoEs are being prepared to regularly run Regional Focus Group discussions and it is now necessary:

- To prepare the necessary infrastructure for delivering distance learning lectures.
- To organise blended learning courses.
- To have the possibility to discuss real time weather situations.
- To present and discuss case studies.

EUMETSAT also plans to enhance distance learning by offering more and more blended learning courses in cooperation with the RTCs, in their fields of responsibility.

For the administration of the blended learning courses EUMETSAT will be using a learning management system (LMS) called Moodle. It is anticipated that the EUMETSAT sponsored RTCs will become familiar with the use of Moodle as a tool to help them with the organisation of training and the delivery of blended learning courses. With this in mind, a dedicated Moodle training event for the RTC trainers will take place at EUMETSAT in spring 2008.

2.4 Regional Training Events

A major highlight in EUMETSAT's distance learning activities falling under the umbrella of the VL and involving all the RTCs will be a Regional VL Training Event to take place in spring 2009, for which the aforementioned training courses will be a prerequisite.

It will be recalled that in October 2006 EUMETSAT strongly supported the High Profile Training Event (HPTE). During the event EUMETSAT organised four parallel classroom events in Niamey, Nairobi, Muscat and Pretoria so that participants could take part in the HPTE. Lecture C was prepared by EUMETSAT. In total, EUMETSAT was involved in 19 HPTE lectures:

- 7 core lectures (1 xA, 1xB, 3xC, 2xD)
- 6 regional lectures
- 1 special topic from INPE (Brazil) on MSG data reception and processing
- 5 weather briefings

Concerning HPTE participation:

- There were about 100 participants in five regional courses (Niamey, Nairobi, Oman, Lisbon, Pretoria).
- There was participation from weather service in UAE (Adel + unknown number of participants).
- 150 participants in the Maputo Africa User Forum
- about 60 participants from 15 countries in Europe, including Russia.
- about 80 participants from 20 countries in Central and South America (for lecture C in Spanish).

2.5 Concerns for the future

Progress over the last 10 years has been enormous; however there are still areas of concern which require special attention:

1. In Africa, in particular, the Internet bandwidth is still not sufficient to ensure adequate participation in distance learning activities and there is a real danger that the information gap between developed and less developed countries will actually increase.
2. For efficient training delivery, especially on new satellite systems and new application areas, adequate and effective training material has to be produced.
3. Despite all the advances in distance learning tools and technologies, the human component is essential to make training and outreach successful. The success of any distance learning scheme will depend totally on the availability of a sufficient and sustainable number of trained tutors and mentors who are available for student monitoring, tracking and the proper handling of user feedback.

3 CONCLUSIONS

CGMS XXXV is invited to note the current status and future plans of EUMETSAT training in satellite meteorology plans and how they will both benefit and make use of the infrastructures provided by the Centres of Excellence in Satellite Meteorology in WMO RA I, RA II and RA VI.