CGMS

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STATUS OF EUMETSAT TRAINING ACTIVITIES

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

CGMS 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. CGMS is invited to make recommendation for a continued support of the VLab technical officer.

Status on EUMETSAT training activities

1 INTRODUCTION

The mandate of the training activities of EUMETSAT is described in the EUMETSAT 5 years training plan, which covers the period 2014-2018. Further guidance on EUMETSAT long term training is given in the EUMETSAT training framework document, which was approved in 2012 by the EUMETSAT Council. In these documents also the scope of the EUMETSAT contribution to the WMO Virtual Laboratory (VLab) is described. The User Service Training Team is responsible for conducting and implementing the training activities and plans.

2 EUMETSAT COURSES AND WORKSHOPS

EUMETSAT continued with the organisation of courses, workshops and seminars at the Centres of Excellence and increasingly also at other locations. EUMETSAT supports management and instructors of the training partners to participate at meetings and conferences. The number of training events is increasing, including the on-line and distance learning activities. Many of these events were organised in cooperation with the EUMETSAT Member States.

The e-learning and blended learning activities are facilitated by the Internet making use of the Moodle course management software which has been completely re-designed and upgraded to version 2.2. Most of the satellite courses organised by EUMETSAT are hosted on the Moodle server (training.eumetsat.int). Students are now able to self-register to courses. However, access to the internet in the developing countries is still an area of concern. Traditionally courses outside EUMETSAT Member- and Cooperating States are organised at the Centres of Excellence (CoE), but not exclusively.

3 THE CENTRES OF EXCELLENCE

3.1 Institute for Meteorological Training and Research (IMTR), Nairobi, Kenya

In 2013 the IMTR-EUMETSAT Satellite Applications Course was re-designed to take into account the evolving needs of the participants, feedback from previous participants and to apply learning technologies. The course was in two phases:

1. A 5 week online phase covering the fundamentals of remote sensing applications for meteorological forecasting. This was an asynchronous course utilised a refreshed version of “ASMET-1”, discussion forums, tests and assignments.
2. A 1 week class room course held at IMTR, covering the use of RGB imargy in the context of forecasting. This course also explored importance of conceptual models and usefulness of an integrated display system.

Feedback from the participants noted that the online phase was very useful, one participant described it as "*a really useful on the job training*". The classroom course was also praised for its practical nature.

The policy of EUMETSAT is to optimise the training efforts as much as possible. Often this can be achieved through bundling of efforts with other partners such as was done with the European Union (EU) funded AMESD project. One of the objectives of the AMESD project was to replace the PUMA receiving stations in the African countries. Synergie, developed by Météo France, was selected as the tool visualisation of data disseminated through the EUMETCast service. This required training for the beneficiary partners, which is in principle the same target group as for the EUMETSAT training activities in Africa (RA I). AMESD has now come to an end, there is a follow on EU project (MESA) which will include the refurbishment of reception stations and an upgrade to the Meteorological visualisation system. At the end of MESA NMHSs should be in a position to assess the benefits of integrated display systems and argue for the resources required to meet the national need. A follow up continental wide project with similar objectives is not envisaged. MESA addresses wider environmental themes (as did AMESD) and specifically aims to increase the use of EO data for analysis in national regional and continental policy making within sub-Saharan Africa.

The courses held with IMTR, Nairobi, have been instrumental in enabling forecasters in the Anglophone countries to understand how the Synergie system is used, and how satellite data can be used in the forecasting process. This will carry one under the MESA project. In 2013 IMTR and EUMETSAT hosted an online course on the principles of Remote Sensing. This was followed up with a face to face course held at IMTR in July 2013.

Another major achievement is the installation of training laboratories at the Centers of Excellence, including IMTR, in the context of the MESA project. These laboratories will be used also for the regular EUMETSAT courses in the future.

3.2 Ecole Africaine de la Météorologie et de l'Aviation Civile (EAMAC), Niamey, Niger

The eleventh EUMETSAT Satellite Application Course (ESAC) course for the French African community was organised in November 2013. Parallel to the approach used in Nairobi IMTR, the course was organised in a four week online phase in October 2013, followed by a classroom part on the last week of November. During these two phases exercising on satellite meteorology was performed, and applications were explained to the participants of the 17 countries attending. In addition to the participants of the countries also participants from local organisations were invited. The feedback of the course was excellent, and the participants appreciated the concise and shorter classroom phase in comparison with the previous year. In addition, the online phase had prepared them for the discussions and clarification during in Niamey. This course will continue on the same format with the twelfth edition in October-November 2014.

Also at EAMAC the recently installed AMESD training laboratory continues to provide superb capacity building in the region. As in previous courses, this laboratory is essential for the exercises during the classroom phase.

Two trainers from this Centre of Excellence participated in June 2013 in the preparation meeting for a new phase of the ASMET project.

3.3 Centre of Excellence in Muscat, Oman

A two week EUMETSAT Application Course (ESAC) was organised at the Sultan Qaboos University (SQU) in February 2014 for the benefit of meteorologists of the Middle East, and Egypt. Participants from countries with low incomes per capita were fully supported by EUMETSAT. Those from more wealthy countries in the region were invited, free of charge. Mission costs for participants from these countries were funded by their home services. It is encouraging that all countries from the region were represented.

3.4 Support to the WMO SDS-WAS project

In December 2013 EUMETSAT also supported a new edition of the training courses in support of the WMO SDS-WAS project for northern Africa-Middle East-Europe regional Centres (sand and dust storms monitoring). This course in Oman had more were represented.

3.5 Centre of Excellence in Pretoria, South Africa

The CoE in Pretoria continues to organise monthly online weather briefings (similar to what the Caribbean group is doing). During the briefings, a short presentation on a small satellite topic is given by an expert. This is followed by the detailed weather discussion of the actual weather situation. The EUMeTrain ePort tool proves to be an essential tool for the preparation of such briefings.

The third satellite course of the CoE in Pretoria took place at SAWS facilities during the week 2-6 December 2013. This time, special focus was given to cloud and precipitation products from MSG. The concept of a mixture of repeated lectures (as refreshers) and new material on specific topics proved again to be very successful. Also, the post-course test was well received. The results of the test (self evaluation) indicate an average of 60% correct answers.

2013 also saw the first marine applications of scatterometers and altimeters for forecasting course. This course is the follow on from previous NOAA-EUMETSAT joint courses on scatterometer and altimeter applications. This course is recognised as part of the JCOMM capacity building activity. Feedback from teh participants suggests that there is strong need for continued capacity development in this area.

3.6 Centre of Excellence at DNM in Casablanca

DMN held a successful an online aviation course in late 2013 and is extending its online work hosting online sessions on NWP and marine forecasting.DMN is also gathering the training requirements for a North Africa extension to the MESA work.

4 COURSES ELSEWHERE

The SALGEE group initiative to develop soil applications through satellites had its third major workshop convened in March in Ericeira, Portugal. It was coordinated with the EUMETSAT Land-SAF training activities and attracted the participation of world experts on the matter of fire and drought from satellites.

As in previous years EUMETSAT continues to also support the user community in South America. The fourth EUMETCast User Training meeting was organised on line in 2013, with interactive sessions provided by local experts, especially from the UFAL in Brazil and in cooperation with the National Institute for Space Research (INPE). More than 200 users attended the remote lectures and information sessions.

The Ibero-American course took place in Montevideo, Uruguay, from 16 to 27 September 2013. This was the 10th edition of the Latin American workshop on Satellite Meteorology that EUMETSAT has sponsored and co organised together with AEMET. Participants from the countries with mid-latitude climate participated in the course, with a syllabus focusing on meteorology from satellites.

EUMETSAT also contributed to the Nordic Forecaster course NOMEK, which was held in Vilnius, Lithuania 15-19 April 2013. In addition to the five Nordic countries, the course had also participants from each Baltic State.

A new course on agro-meteorological applications of satellites was held in Accra, Ghana in June 2013. The participants came from 12 English-speaking countries belonging to the Metagri initiative of WMO. The aim was to prepare field managers in establishing a network of measuring instruments for precipitation and temperature.

EUMETSAT contributed to the WMO Train the Trainers course for RA V, held in BMKG Training centre in Citeko, Indonesia, 26 February – 8 March 2013. This course is held every year in one of the WMO Regional Associations, and is intended for national meteorological and hydrological trainers for improving their competencies in planning and delivering training.

EUMETSAT experts participated in the biennial CALMET workshop in August 2013 in Toulouse.

In cooperation with the Climate Monitoring SAF a workshop for experts was held in Helsinki, Finland, from 7-11 September 2013. At this workshop interactive software packages were used to produce climate products for the participating countries.

From 30 September to 4 October, the training course on the “Use of satellite data and products in studying and forecasting extreme weather events” was organised in cooperation with the Aristotle University of Thessaloniki, in Greece. The workshop focused on the use of processes, principles and practices, tools and products for studying and forecasting extreme weather events based on satellite data. The workshop was very successful and paved the way for continuous cooperation with EUMETSAT in training activities covering the eastern Mediterranean countries.

The Satellite Data for Central Asia Countries (SADCA)- End User training course took place from 7-11 October in Ankara, Turkey. The training course was held at WMO Ankara Regional Training Centre facilities. This training for Central Asian countries was quite challenging for the trainers. There are not enough case studies available and weather and climate in these countries is very different from European weather and climate. Also, the high satellite viewing angle makes MSG interpretation quite difficult.

End of October 2013 a workshop to introduce meteorological satellites for environmental applications took place in Palma de Mallorca, Spain. The participants understood the power and limitations in the generation of products which they use in other context without an understanding of its generation process.

Last but not least, EUMETSAT in cooperation with CNMCA (Italy) and the University of Madison and the SSEC (Wisconsin) continue to organise the international remote sensing summer school in Italy (September 2011, June 2012, June 2013 and June 2014). The objective of this 7-day course is the in depth explanation of methods and techniques used to extract information from environmental satellite data, with emphasis on the latest measuring technologies.

5 DISTANCE LEARNING ACTIVITIES

Distance learning and e-learning activities are becoming a regular training activity and are becoming much more mature as experience is building. A good example is the **Precipitation event week** in February 2013 – an online training event to highlight the importance of EUMETSAT satellite data for the monitoring and estimation of precipitation. This training week consisted of eight online sessions dealing with the monitoring precipitation from space. The event consisted of three topics: VIS/IR Precipitation Estimates, Microwave Precipitation Estimates and Multi-sensor Precipitation Estimates. During the training event week, 150 individuals and groups attended the live online sessions and contributed actively to the discussions or played back the recordings shortly after the live sessions. The sessions have been converted into webcasts and added into EUMETSAT Training Library, so the resources are available for everyone.

6 EUMETRAIN

In 2014, the second phase of EUMETSAT’s training project – **EUMeTrain** - will end and the next phase will begin for another five year period in October 2014. EUMeTrain’s second phase placed special emphasis upon nowcasting and high

impact weather. Learning material was produced by experts in the field of satellite meteorology taking into account technical developments (e.g. sensors and satellites) or circumstances imposed by a changing natural environment with socio-economic impacts (e.g. natural disasters, severe weather events).

High priority was attributed to training activities which facilitate the effective and beneficial exploitation of data from MSG, Metop-A/B, and Jason-2.

Phase 2 of EUMeTrain consisted of activities to make the project known to an interested public across the borders of Europe. Though primarily focussed on European meteorologists, some activities have involved the participation of remote sensing specialists from Asia, Australia, and the Americas. The use of present-day internet technologies reduces geographical distances and allows virtual meetings for the exchange of knowledge. Many of the performed activities in the past years took advantage of internet based communication technologies in the form of virtual class-rooms and online presentations.

EUMeTrain also provides a web based visualisation tool called “ePort” for displaying satellite data (images and products) together with NWP data. An image and data archive makes ePort ideal for training purposes.

Apart from being a meeting place for professionals in meteorology, students and experts in the use of satellite images, EUMeTrain also offers a library of online training resources (training modules, case studies, webcasts, manuals, etc) for interactive use. These training resources have been elaborated by remote sensing specialists from the consortium, i.e. the Project Team and Associate Members, or by cooperating NMSs.

During the second phase, 6 courses, 12 event weeks, 153 web-casts, 9 training modules, 15 case studies, 60 weather briefings, 4 conceptual model guides and 2 product tutorials have been elaborated and most of them have been integrated into the EUMeTrain resources library. See link at: **www.eumetrain.org**.

7 MANAGEMENT SUPPORT TO THE CGMS/WMO VLAB

The progress of the VLab of the reporting period is considerable (see WMO VLab Web site at: vlab.wmo.int). This could only be achieved by the active financial support for the VLab Technical Officer and the secretarial support from EUMETSAT (VLab Co-Chair). It is essential that a modus will be found to secure this support for the years to come.

8 TRAINING MATERIAL DEVELOPMENT AND DISTRIBUTION

The ASMET7 project was completed at the end of 2013. Training modules are available through dedicated ASMET section at the COMET website. ASMET7 covers three topics related to aviation meteorology: 1) Forecasting Fog For Aviation: Kenya Case Study, 2) Convective Weather and Aviation in West and Central Africa and 3) Detecting Clear Air Turbulence: South African Case Study. In July 2013 a project

meeting was held at IMTR, Nairobi. ASMET8 project is beginning, and the topics will cover for example marine applications in Africa. It will be completed in 2015. ASMET modules are developed in cooperation with COMET, which results in the fast production of training modules for the African community.

The main part of EUMETSAT training material is distributed online (Moodle Learning Management System, external training library). On case to case basis training material is also distributed as hard-discs or USB sticks at training events in Europe, Africa and the Middle East.

EUMETSAT together with WMO funded a project on developing Conceptual Models for Southern Hemisphere. The project was completed in March 2014. This joint project was between four southern hemispheric Centres of Excellence: Argentina, Australia, Brazil and South Africa, and the deliverables of the project contain online documentation and examples of several Conceptual Models on Southern Hemisphere The purpose of the project is to improve warnings and awareness of weather risks through the use of conceptual models within the regions of respective Centres of Excellence. It is expected that a new project will start later in 2014 in order to develop more conceptual models.

9 CONCLUSION

CGMS 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. CGMS is invited to make recommendation for a continued support of the VLab technical officer.