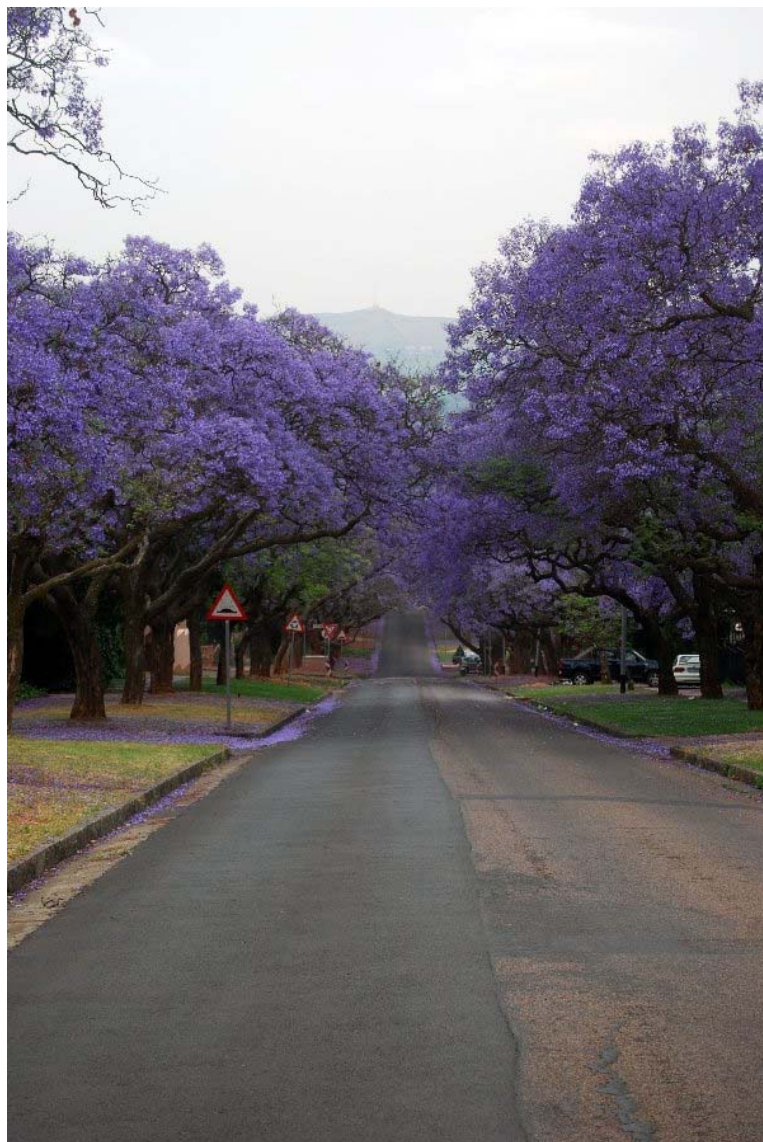


CALMet IX

3-8 October 2011

Pretoria

South Africa



Cover Page Photo: Jacarandas in Pretoria. Photo: Liesl Dyson.

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A. Foreword

Welcome to CALMet IX!

Dear friends and colleagues,

It is a great pleasure to welcome you all to the CALMet IX Conference, being held at the University Pretoria, South Africa. We hope this will be a rewarding and enjoyable professional experience for everyone.

This year's conference promises to offer many presentations and workshops about innovative learning activities, learning and instructional theory, educational resources, collaborative projects and virtual teams, competency-based training, new instructional technologies, and training program management. The conference will also examine the role of training and education and the necessary knowledge and skills for professionals in the field.

CALMet is an excellent opportunity to meet fellow colleagues for sharing experiences and best practices, and to develop the professional relationships that can improve your work.

This conference programme will introduce you to the content and people of the conference.

Sincerely,

The CALMet Conference Organizing Committee

B. Presenters at CALMet IX

Presenters

Akintayo Adedoyin, University of Botswana, BOTSWANA
Humberto Barbosa, Instituto de Ciências Atmosféricas – ICAT, BRAZIL
Ian Bell, retired, AUSTRALIA
Laurent Borrel, Meteo France/ENM, FRANCE
Ross Bunn, Australian Government Bureau of Meteorology Training Centre, AUSTRALIA
Kathy-Ann Caesar, Caribbean Institute for Meteorology and Hydrology, BARBADOS
Claudia Competella, Departamento de Ciencias de la Atmósfera y los Océanos - UBA, ARGENTINA
Iracema Cavalcanti, National Institute for Space Research, BRAZIL
Colleen Rae, South African Weather Service, SOUTH AFRICA
Bernadette Connell, Cooperative Institute for Research in the Atmosphere at Colorado State University, USA
Linda De Wet, University of the Free State, SOUTH AFRICA
Patrick Dujardin, Meteo France / ENM, FRANCE
Ignatius Gitonga Gichoni, ASMET, KENYA
Hendar Gunawan, The Indonesia Agency for Meteorology Climatology and Geophysics (BMKG), INDONESIA
Erik Hagemark, Norwegian Meteorological Institute, NORWAY
Han Fei, CMATC, CHINA
Goama Ilboudo, Agency for the safety of Air Navigation in Africa and Madagascar (ASECNA), SENEGAL
Jannie Jannie Stander, South African Weather Service, SOUTH AFRICA
Nesru Kemal, Ethiopian national meteorology agency, ETHIOPIA
Vibeke Kristensen, Norwegian Meteorological Institute, NORWAY
Izolda Marcinonienė, Lithuanian Hydrometeorological Service, LITHUANIA
Charlotte McBride, South African Weather Service, SOUTH AFRICA
Ian Mills, Met Office, UNITED KINGDOM
Vesa Nietosvaara, Finnish Meteorological Institute, FINLAND
Patrick Parrish, The COMET Program, USA
Heleen ter Pelkwijk, KNMI, THE NETHERLANDS
Obed Phahlane, Agricultural Research Council, SOUTH AFRICA
Eduard Podgayskiy, RSHU, RUSSIA
HansPeter Roesli, EUMETSAT, GERMANY
Ednaldo Santos, Studios National Union of Meteorology - UNEMET, BRAZIL
Jarno Schipper, ZAMG, AUSTRIA
Peter Schmitt, Deutscher Wetterdienst, GERMANY
Tero Siili, Finnish Meteorological Institute, FINLAND
Lee-ann Simpson, South African Weather Service, SOUTH AFRICA
Stephan Steyn, University of the Free State, SOUTH AFRICA

Christopher Webster, Meteorological Service of New Zealand Limited, NEW ZEALAND

Luciane Veeck, CIRA/VLab, UNITED KINGDOM

Henk Verschuur, EUMETSAT, GERMANY

Wang Yong, WMO Regional Training Centre, Nanjing University of Information Science and Technology, CHINA

Marianne Weingroff, UCAR/COMET, USA

Jeff Wilson, WMO, SWITZERLAND

Veronika Zwatz-Meise, ZAMG (Austrian Weather Service (in retirement), AUSTRIA

C. CALMet IX Detailed Schedule

Monday, 3 October

(Workshop Day)

08:00-09:20 Registration

09:20-09:30 Workshop Day Welcome

09:30-11:00 Concurrent Workshops:

- Workshop A (09:30-11:00): Wake Up Your CALMet Audience! (VSR Board room) Ian Bell, meteorologist (retired)
- Workshop B1 (09:30-10:15): A Practical Approach to Instructing Dynamic Meteorology (Conference Hall 100) Stephan Steyn, University of the Free State, South Africa
- Workshop B2 (10:15-11:00): The Use of Concept-maps in Meteorological Education (Conference Hall 100) Christopher Webster, Meteorological Service of New Zealand Limited

11:00-12:30 Workshop C (VSR Board room): Project work - A tool for increasing the student's competencies? Peter Schmitt, Deutscher Wetterdienst, Germany

12:30-13:30 Lunch Break

13:30- 15:00 Concurrent Workshops:

- Workshop D: How to use a simulator in practice (VSR Board room) Heleen ter Pelkwijk, KNMI, The Netherlands
- Workshop E: What do you love about teaching and training?: An appreciative inquiry (Conference Hall 100) Patrick Parrish, The COMET Program, USA

15:00-15:30 Coffee Break

15:30-17:00 Workshop F (VSR Board room) Knowledge, skills and behaviours: How do they describe a trainer? Jeff Wilson, WMO, Switzerland

17:00-18:30 Ice Breaker/Reception (Serengeti function room @UPLocation TBD)

Tuesday, 4 October

08:00-09:00 Registration

09:00-09:40 Opening Ceremonies (Various Speakers)

Session 1 (Plenary Hall, VSR Board room) Chairperson: Pat Parrish

09:40-10:10 Jeff Wilson, The WMO Education and Training Programme 2012 to 2015, how will it help me deliver education and training activities?

10:10-10:30 Lee-ann Simpson, Forecaster Training at the South African Weather Service

10:30-11:00 Coffee Break

11:00-11:20 Conference Photo

11:20-11:40 Akintayo Adedoyin, Challenges of teaching meteorology in a developing economy

11:40-12:00 Eduard Podgayskiy, Development of the Distance Learning System for Continuous Professional Development at Roshydromet

12:00- 12:30 Veronika Zwatz-Meise, An overview of CAL developments and their impact within weather services: history, outcome and outlook

12:30- 13:30 Lunch Break

Session 2 (Plenary Hall, VSR Board room) Chairperson: Vesa Nietosvaara

13:30-13:50 Izolda Marcinonienė, WMO „Train the Trainers“ seminar – challenge or necessity?

13:50-14:10 Iracema Cavalcanti, A lecture on climate variability and teleconnection patterns in the Southern Hemisphere –Motivation and interaction between teacher and students

14:10-14:30 Vibeke Kristensen, Sharing resources and creating flow: an approach to managing and developing courses. The (2010) NOMEK-course as an example.

14:30-15:00 Linda De Wet, Learning through Problem-based Classes: How do students feel?

15:00-15:30 Coffee Break

15:30-16:10 Workshop, Towards a holistic training programme for forecasters at the Finnish Meteorological Institute, Tero Siili, FMI, Finland

16:10-17:00 Workshop, Issues with Initiating an On-line Training/ E-Learning Program at BMKG – Indonesia, Hendar Gunawan, BMKG, Indonesia

Wednesday, 5 October

07:30-18:00 Conference Excursion
Rhino & Lion Nature Reserve

Thursday, 6 October

08:45-09:00 Announcements and Daily Schedule

Session 3 (VSR Board room) Chairperson: Liesl Dyson

09:00-09:30 Prof Johan Engelbrecht, University Mathematics – where is the transition to advanced thinking?

09:30-10:10 Ross Bunn, Geographically Dispersed Forecasters - New Training Approaches

10:10-10:30 Erik Hagemark, Themed refresher modules in Moodle

10:30-11:00 Coffee Break

11:00-11:30 Lee-ann Simpson, South African Satrep Online

11:30-11:50 Jarno Schipper, EUMeTrain / EUMETCAL Satellite Courses

11:50-12:10 Bernadette Connell, What drives online participation patterns for a focus group?

12:10-12:30 Luciane Veeck, Benefits and problems of Online Learning Communities: the case of VLab Regional Focus Groups

12:30-13:30 Lunch Break**Session 4 (Plenary Hall, VSR Board room) Chairperson: Jeff Wilson**

13:30-13:50 Wang Yong, International Meteorological and Hydrological Training and Its Evaluation at WMO RTC Nanjing

13:50-14:10 Claudia Competella, Update of meteorology education programs in Argentina

14:10-14:30 Henk Verschuur, EUMETSAT Training on Climatology and Oceanography

14:30-15:00 Vesa Nietosvaara, Eumetcal Programme after 2012

15:00-15:30 Coffee Break

15:30-16:00 Pat Parrish, The COMET Program: New Products and Initiatives

16:00-16:20 Humberto Barbosa, Training Experiences from the EUMETCast Network Operator Group in Brazil

16:20-16:40 Vesa Nietosvaara, Pat Parrish, CALMet Online and CALMet 2013

17:45-Late Conference Dinner (Pretoria Zoological Gardens) (Departure from UP promptly at 1745)

Friday, 7 October

08:45-09:00 Announcements and Daily Schedule

Session 5 (Plenary Hall, VSR Board room) Chairperson: Vibeke Kristensen

09:00-09:30 Henk Verschuur, Overview of 15 years of training on satellite meteorology

09:30-09:50 Lee-ann Simpson, Using Satellite Information to Assist Hydrological Management During Extensive Precipitation Events

09:50-10:10 Ignatius Gitonga Gichoni, Drought Detection over Eastern Africa using Satellite and NWP data

10:10-10:30 Charlotte McBride, Climate Zone Tunnel

10:30-11:00 Coffee Break

11:00-11:20 Chris Webster, Teaching Generously

11:20-11:40 Obed Phahlane, Weather Forecast information Dissemination at Three Selected Towns in Mpumalanga Province South Africa

11:40-12:00 Ednaldo dos Santos, The challenges of meteorology teaching in agricultural sciences

12:00-12:30 Colleen Rae, Streamlining facilitation and assessment processes

12:30-13:30 Lunch Break

Session 6 (Plenary Hall, VSR Board room) Chairperson: Eduard Podgaisky

13:30-13:50 Humberto Barbosa, Strengthening regional capacities for providing remote sensing and hydrological modeling-based water and land management decision support in semi-arid Latin-America, in the context of climate variability & change

13:50-14:10 Jannie Stander, Aeronautical Forecaster Training at the South African Weather Service

14:10-14:30 Goama Ilboudo, Aeronautical Meteorological Personnel's competency development and assessment in ASECNA

14:30-15:00 Kathy-Ann Caesar, CMO Continuing Professional Development Program

15:00-15:30 Coffee Break

15:30-15:50 Nesru Kemal, Survey of Meteorological Services in Ethiopia's Aviation Industry The Case of Addis Ababa Bole International Airport

15:50-16:10 Marianne Weingroff, Satellite Meteorology Education Resources from COMET: What's New?

16:10-17:30 Working Group Meetings (Free time for others)

Saturday, 8 October

08:45-09:00 Announcements and Daily Schedule

Session 7 (Plenary Hall VSR Board room) Chairperson: Winifred Jordaan

09:00-09:20 Ian Mills, Using Articulate in the rapid development of online learning

09:20-09:40 HansPeter Roesli, Preparing current-weather discussions on-the-fly when limited to a notebook with internet access

09:40-10:00 Patrick Dujardin, Two examples of distance training in Meteo-France

10:00-10:30 Coffee Break

10:30-10:50 Ednaldo dos Santos, Webedumet: the wikipedia of the brazilian education meteorology

10:50-11:10 Han Fei, Appraisal of application effect of Web2.0 on Distance education

11:10-11:30 Laurent Borrel, IT technologies for training

11:30-12:20 Demonstrations, Technology and Product Showcase

12:20-12:50 Closing Activities

Monday 3 October 2011



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A. Workshop A: Ian Bell - Wake Up Your CALMet Audience!

meteorologist (retired)

Australia

iandbell@fastmail.fm

Why do some presentations engage the audience whereas others don't connect? This workshop is designed to help you to improve your CALMet presentation. We will look at some of the common mistakes and how to avoid or fix them at each stage of the presentation. Topics we will cover include:

- Setting objectives – what's in it for your audience? The Think-Do table
- What to tell them - mental models plus information
- Structuring your presentation
- Strategies to engage your audience
- Your conclusion – is it memorable?
- Designing your slides
- Handouts – do you need one?

Examples will be given from this and past CALMet conferences. This will be an online workshop. If you would like feedback on your presentation please email it to iandbell@fastmail.fm¹ before the conference.

B. Workshop B:Stephan Steyn - A Practical Approach to Instructing Dynamic Meteorology

University of the Free State

South Africas

steynas@ufs.ac.za

In terms of popularity amongst undergraduate students, Dynamic Meteorology often struggles to compete with other Meteorological subjects such as Physical or Synoptic Meteorology to name but a few. At conferences catering for a broad variety of Atmospheric Sciences, oral presentations within this subject field seldom draw the largest audiences. The author's personal experience is that most negative perceptions stem from an inadequate level of understanding and previous experiences where learners failed to engage successfully with similar subject matter. Lecturers therefore face the challenge of presenting the subject matter in such a way as to facilitate deeper learning by emphasizing practical applications. It is also necessary to cater for various experiential learning styles in order to maintain an acceptable success rate.

This paper addresses the particularly challenging task of instructing a target audience consisting of undergraduate students that have little or no background knowledge of Dynamic Meteorology. An Outcomes-Based Education (OBE) approach is used to plan, deliver and evaluate instruction by focusing attention on the desired results. Using atmospheric forces as a worked example, a series of practical assignments were designed to help students grapple with the significance behind each of the derived equations. These weekly practical assignments facilitate the use of a part-task approach to avoid early exposure to tasks that are too complex. They also provide a means for continuous assessment which helps the lecturer to evaluate the students' progress. The practicals culminate in an assignment based on the scaled version of the Equations of Motion which is designed to highlight its forecasting implications and to provide insight in the workings of Numerical Weather Prediction models. This approach provides students with the opportunity to learn through practical applications. The use of relatively simple Excel worksheets provides the lecturer with multiple opportunities for varying the examples.

C. Workshop C: Christopher Webster - The Use of Concept-maps in Meteorological Education

Meteorological Service of New Zealand

New Zealand

webster@metSERVICE.com

The method described by Hoffman et al (Weather & Forecasting, 2005) has been used at the Meteorological Service of New Zealand Ltd to capture and retain some of the knowledge of experienced expert operational staff pre-retirement.

The method is first outlined based on the Hoffman paper. Then examples are

1 - <mailto:iandbell@fastmail.fm>

provided in the New Zealand context, describing the knowledge elicitation procedure used, showing how the method effectively retains the knowledge that would otherwise be lost, and showing how the concept-maps can be structured to assist users.

D. Workshop D: Peter Schmitt - Project work - A tool for increasing the student's competencies?

Deutscher Wetterdienst

Germany

peter.schmitt@dwd.de

At the beginning of the workshop, an example will be presented about the student project "Polarstern" at DWD. An applied sciences class virtually went on board of the German research ship "Polarstern" and accompanied it online on its journey from Bremerhaven (Germany) to Cape Town (South Africa). The students could improve their professional and also social competencies if they report about the weather and climate along this passage from 25-10-10 to 26-11-10.

In the second part the phases of the project "Polarstern" will be used as an example of success and problems that happened during this project.

This can be used as an input for the third part of the workshop. We will split into groups in order to share common ideas and interests for student projects.

E. Workshop E: Heleen ter Pelkwijk -How to use a simulator in practice.

Co-author(s): Roger Deslandes, Bureau of Meteorology, Australia.

KNMI

The Netherlands

pelkwijk@knmi.nl

During this workshop you will get a more complete view of how you can use a simulator in your training, practice and certification process at home. Items like what do you want to achieve with your training and practice phase and how are you going to make this to a success, the DO's and DON'Ts and simulators and certification will come along. We will dive into the philosophy behind simulator training and give you the opportunity to make a plan for a simulator training for your own organisation.

F. Workshop F: Pat Parrish - What do you love about teaching and training?: An appreciative inquiry

The COMET Program

USA

pparrish@comet.ucar.edu

This workshop or roundtable will be a sort of group interview/discussion/brainstorm, following the Appreciative Inquiry model to

creating change (http://en.wikipedia.org/wiki/Appreciative_inquiry). We will spend a little more than half the time going around the room and talking about those things we most love about our work as teachers, educators, and trainers, and how those align with our values as professionals. During the final portion, after noting all these positive aspects of our work, we will discuss how we can increase the opportunities for amplifying these aspects in our practice. In other words, we will look for strategies and tactics that will allow us to do more of what we love in our work.

G. Workshop G: Jeff Wilson - Knowledge, skills and behaviours: How do they describe a trainer?

Co-author(s): Ian Bell, Australian Bureau of Meteorology Training Centre (retired), WMO Education and Training Consultant

WMO

Switzerland

jwilson@wmo.int

WMO's requirement of competency based assessment for aeronautical meteorological personnel by the end of November 2013 suggests that competency based education and training of trainers also needs to be introduced to ensure that the actual trainers are competent and can support their meteorological services with the assessment of the aeronautical meteorological personnel.

What are the knowledge, skills and behaviours required for meteorological and hydrological educators and trainers, are they substantially different to those of educators and trainers in other fields, how have fields such as medicine coped with the introduction of competency based education and training. This presentation explores these questions, summarises the existing actions underway within the WMO Education and Training Programme to support the development of competencies and encourages the workshop participants to reflect upon their own practices.

Tuesday 4 October 2011



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A. Jeff Wilson: The WMO Education and Training Programme 2012 to 2015, how will it help me deliver education and training activities?

WMO

Switzerland

jwilson@wmo.int

The first of January 2012 marks the start of the next four year financial period for the WMO Education and Training Programme.

Across WMO this four year period will see the introduction of : the Global Framework for Climate Services; the start of competency based assessment for aeronautical meteorological personnel; actions to streamline and continue the improvement of meteorological data and its associated meta-data; and, further emphasis on capacity development, particularly for developing and least developed countries. The WMO Education and Training Programme will support these activities through specific initiatives plus greater focus on training of trainers (development of trainer competencies), human resource development (capability frameworks), support for training activities (working with Regional Training Centres and distance learning activities) and fellowship activities.

This paper will provide further details of these activities and look for mechanisms to allow the activities of individual institutions to contribute to the achievement of the wider WMO goals by the end of 2015.

B. Lee-ann Simpson:Forecaster Training at the South African Weather Service

S A Weather Service

South Africa

lee-ann.simpson@weathersa.co.za

The training of weather forecasters is an ever evolving task that requires trainers to remain up to date with the latest forecasting tools being used in the operational forecasting offices. Various techniques are used by trainers at the South African Weather Service, in order to teach students how to integrate large amounts of real time data and Numerical weather prediction data into a single weather forecast. The weather forecast will include Precipitation probabilities, Severe weather warnings as well as wind and cloud information. Students are provided with archived case studies of various weather systems, in order to simulate the operational environment and teach them how to approach their forecast during various weather events.

C. Akintayo Adedoyin: Challenges of teaching meteorology in a developing economy

Co-author(s): Dr. K. Mphale, Physics Department, University Of Botswana, Gaborone, Botswana

University of Botswana

Botswana

adedoyin@mopipi.ub.bw

The science of Meteorology is both fascinating and interesting largely because there is no individual on the planet who is not affected one way or the other by meteorological parameters. Vagaries of weather affect our socio-economic well-being and hence the desire to "peep" into the future to know what it has in store for us. This generates interest in meteorological forecast; which has now been extended to climate predictability. This predictability is usually premised on a thorough understanding of contemporary scenarios, which are based on the laws of Physics. These laws are necessarily articulated using concepts of mathematics namely, differential equations. These differential equations are non-linear and so analytic solutions are almost impossible.

The next stage in the development of this scenario is to translate these equations into their numerical analysis equivalents, which are necessarily approximations; leading to the first stage of errors in numerical weather prediction and climate models. In order to solve translated equations using tools like computers, it is necessary to understand computer-machine languages (e.g. FORTRAN etc.). Interpretation of simulated results from computers enforce the reversal of the cycle of computer-machine languages, numerical analysis, differential equations. and laws of Physics. Building competency in Meteorology therefore translates as expertise in each of these four basic areas.

This reality deters prospective students. Even with the best computer software models, it is necessary for any training programme in Meteorology to incorporate the four stated basic areas. This is the curriculum that is proposed for developing countries to bring meteorologists to the same level of competence that is available in advanced economies. This is more so in the sense that most countries that are vulnerable to climate change belong to the category of economies in transition and the local knowledge of climate, reinforced by an understanding of the basics of Meteorology will enhance national policies geared toward adaptation to and mitigation against climate change.

D. Eduard Podgayskiy: Development of the Distance Learning System for Continuous Professional Development at Roshydromet

Co-author(s): Prof. Grigory Chichasov, Roshydromet Advanced Training Institute

RSHU

Russia

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Economic crisis in Russia in late XX century brought the national weather observation network to substantial deterioration. 11% of weather stations were closed due to lack of funding, and 85% of meteorological equipment was in use beyond its service life. Reliability of weather observations in the country was under threat. To tackle the problem, in 2005 Russian Government has started Roshydromet Modernization project, aimed at upgrading the observation network, modernization of computing, archiving and telecommunication facilities, and institutional capacity building. Overall project funding was 133 mln USD, with 80 mln USD provided by IBRD as a loan, and 53 mln USD funded by the Russian Government.

Meanwhile, current system of Roshydromet specialists' corporate training and professional development was based on single institution, Roshydromet Advanced Training Institute (ATI). ATI annual training capacity was about 800 specialists per year. With Roshydromet Modernization project, the need for re-trained specialists grew up dramatically, and it became clear that the existing professional development system needed to be changed.

In early 2011, Roshydromet distance learning system implementation strategy was adopted. It involves creation of 5 Regional Training Centres (RTCs) working under ATI supervision, development of a centralized system for human resources management and sharing training materials across the network of RTCs. The proprietary learning management system is now being customized for Roshydromet by LearnWare Ltd based on the company's eLearning 3000 product line. The system includes a server solution for distance and blended learning management; content management system with course authoring tool and assessment templates; information system to develop common corporate information space; communication and resource sharing tools to run webinars and software demonstrations. The company is also in charge of developing sample training materials on the use of equipment purchased under Roshydromet Modernization project, and training courses for RTC staff on the use of the LMS system and its sub-systems. Together with the training materials of the RF Virtual Laboratory for satellite meteorology education and training, the newly developed materials on the use of modern meteorological equipment will form a core for future RTC pool of shareable training resources.

E. Veronika Zwatz-Meise: A overview of CAL developments and their impact within weather services: history, outcome and outlook

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The rapid and exciting development of electronic information and communication science has not only revolutionised most of the business lives - it has also conquered the fields of education and training in form of what was abbreviated with „CAL“. There was a fast developing history from „electronic books “ via „e-learning, testing and practising“ to international „learn communication“ with online courses and presentations. Examples will be given in the presentation and their success but also failures discussed.

As the development of this area was initiated from IT technology in the first phase many CAL elements were developed from the possibilities in computer sciences. At this time nobody asked much about the usefulness in respect to pedagogical knowledge. Only later this viewpoint came up more and more and is still an important topic so that CAL material is also questioned from its pedagogical usefulness nowadays. This was also the time when questionnaires and surveys became more importance and their outcome which has to go beyond basic statistics has to be incorporated. Also for this some example will be shown in the presentation.

Education is much connected with universities, training rather more with weather services. The modern learn communication methods had also a strong impact on training and practising in weather services especially in smaller ones not running own training schools. This will be shown with examples of the Austrian weather service ZAMG and other co-operating weather services. There are three main topics: the education and practising of the single employees, the continuous information and education of groups of employees within a service and the widening of knowledge within international communication.

The possibilities but also the problems like still existing organisational and psychological obstacles are discussed and an outlook into the needs and possibilities within weather services in future is given.

F. Izolda Marcinonienė: WMO „Train the Trainers“ seminar – challenge or necessity?

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During the Regional Training Seminar for National Trainers of RA VI, which was held in Sibiu (Romania) in the period 17–28 May, 2010, meteorologists from National services and universities from different European countries have got the answers to the main questions, which appear in stage of preparation and showing presentations. WMO experts from Switzerland, Australia, Finland, USA, UK opened ways and divided their experience in teaching, provoked the situations and made

creative and friendly atmosphere during those two weeks. Participants were involved in both learning and teaching process and these activities showed the importance of good presentation and competent teacher.

We should never forget-training is always less or more challenge. The main result of this seminar- getting more intelligence and self-confidence in teaching and also implementation of main ideas into reality. Presentations about teaching of specialists were made at HNMS and LHMS. We suggest to organize similar workshop in Eumetcal frames and could add new topics depending on meteorologists needs.

Finally, this presentation also shows evident feature of overpast training – meteorologists from different countries still keep their relationship, colloquy their opinion on forums, ask experts help (and get it!) and even make joint presentations.

G. Iracema Cavalcanti: A lecture on climate variability and teleconnection patterns in the Southern Hemisphere – Motivation and interaction between teacher and students

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In this presentation a general lecture about teleconnections and climate variability in the Southern Hemisphere (SH) is shown, including a video of motivation and exercises. It can be applied to graduation or pos graduation. The lecture starts with the video which contains figures, graphs, schemes and movies of satellite images, atmospheric circulation, Sea Surface Temperature, precipitation, and relations to weather and climate. Questions about the relations among meteorological variables and how the teleconnections can occur are presented during the video, such as: Why teleconnection studies are important? What is teleconnection? How anomalies in one place can be connected to anomalies in a distant place?

After the video presentation, there is time for questions which are numbered and saved in a notebook connected to the screen, which can be seen by the students. They will be asked about these questions later. Then, there is the teacher's talk about the subject. In the presentation a summary of this talk is shown. During the talk there is interaction between the teacher and the students through questions from both sides.

The main teleconnection patterns of Southern Hemisphere such as the Antarctic Oscillation or southern annular mode, the Pacific South Atlantic (PSA) pattern, the zonal wave number three and four around the SH are shown, with examples of influences over the Southern Hemisphere continents. The lecture includes El Nino-Southern Oscillation and Madden and Julian Oscillation influences on climate variability.

After the teacher's talk, the students are asked to answer and discuss with the teacher the questions they did in the beginning and also to do an activity related to the subject. This activity includes several exercises to test what was learned. The students are evaluated after this activity.

H. Vibeke Kristensen: Sharing resources and creating flow: an approach to managing and developing courses. The (2010) NOMEK-course as an example.

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In my presentation I would like to emphasize:

* $1+1+1+1+1$ =more than 5 – sharing resources creates value

*course management is more than just administration

*the importance of building a whole out of smaller elements; creating a "red thread"

*facilitating the learning process by trying to mirror the forecasters working process

*the importance of being adjustable and having access to different tools (e.g. when the volcanic ashes hits your course!)

NOMEK is a course intended for operational forecasters, and the course has been developed jointly by the Nordic meteorological services. The main subjects of NOMEK has traditionally been satellite and radar meteorology, numerical weather prediction and products, but other subjects included according to changing training needs. Course consists of lessons and practical sessions (real-time weather room exercises, demonstrations and case studies) EUMETSAT supports the course, which means that we can also include participants from the Baltic countries.

The way we think around management and development of the course may well serve as a template for other courses

Cooperation is a key to success, so I will also tell how we managed to "turn around" when the volcanic ashes from Iceland threatened the 2010 course. The actions were in many ways thanks to the experience we have learned through Eumetcal.

I. Linda De Wet: Learning through Problem-based Classes: How do students feel?

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Students often struggle to take theoretical information and apply it to practical problems in the real world. Problem-based learning is one method in which this gap in the learning process can be filled and when applied it can stimulate deep learning and provide students with lifelong learning skills.

The objective of this ongoing study was to investigate how students felt about learning through problem-based teaching. This type of teaching requires that students attend the theory classes and then apply their knowledge coupled with real-life weather data to solve a problem during the practical classes. The students

are oriented at the beginning of each year on what to expect from this module. They are encouraged to think for themselves, but are allowed to work in groups or individually. They are expected to hand in a neatly printed copy of their own (not copied) work exactly one week after each practical class. Feedback is always given to each student according to an assessment form set up by one of the three lecturers presenting the module for that week. Extra feedback sessions are also given to the whole class in a general session when required.

The students were given a questionnaire to fill in at a practical class in the middle of the semester. They were expected to answer all the questions honestly, relating their answers to all previous classes in this module thus far and not only on one specific practical. Of the 30 students who completed the questionnaire, 25 felt they had benefited from the practicals and all but two gave their reasons; 20 students said they preferred this type of problem-based practical, giving their reasons, while six students said they did not prefer it, mostly because it was hard work! On the question of whether the practical had improved their knowledge and better prepared them for the workplace, 23 answered "yes" and three answered "no", both groups providing reasons, while three students answered "yes" and only one answered "no" without providing any reason.

The results in general, show that the students in this class were confident that they had benefited through the problem-based learning method, because they had acquired both new skills and a deeper understanding of the module content. It is concluded that this alternative problem-based learning method was well accepted by the third-year UFS Agrometeorology students and promoted deep learning and application of theory to practical real-world problems.

J. Tero Siili: Towards a holistic training programme for forecasters at the Finnish Meteorological Institute

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The Finnish Meteorological Institute (FMI) will be starting a training programme aiming at further improving meteorological services provided by the institute. Such a need has risen from several concerns, the primary one being to ensure and refine the quality and accuracy of the products and information delivered to our various customers, be they single instances or wider audiences. In this programme, we will focus on the competences of operational meteorologists in line with the upcoming WMO regulations.

We aim to apply a holistic approach including

- 1) requirements arising from new and emerging observing and other technologies
- 2) changes in the work flow that have already taken place in the form of new services and duties
- 3) anticipated future changes in work specification,
- 4) enhancing collaboration between operational work and related research at FMI for better tailored benefits to the customers,
- 5) raising work satisfaction and the well-being of operational forecasters.

The decision to launch the programme has just been made, and we are in the phase of specifying the content and identifying the means and methods of learning and training to be used in the programme. This presentation will hence describe in some detail the goals and the approaches planned for the programme. Therefore, the open forum of the CALMet conference will be timely to further integrate new suggestions and experiences, e.g., through discussions or a dedicated workshop.

FMI has also a close partnership with the University of Helsinki (UH) as we are partly sharing the same premises and several FMI scientists deliver lectures from first to last year of master degree in the atmospheric sciences curriculum of the UH. Our programme will also use FMI's long experience in training meteorology professionals for both developed (e.g. Eumetcal) and developing countries.

K. Hendar Gunawan: Issues with Initiating an On-line Training/ E-Learning Program at BMKG - Indonesia

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Indonesia is an archipelagic country, which has thousands small islands scattered around. This characteristic is a real challenge for BMKG, as the government institution, to improve its service on weather – climate – earthquake – tsunami information services, through effective capacity building.

Basically BMKG has 2 levels of education. Firstly, the three-years Diploma of the Academy for Meteorology – Climatology and Geophysics, as the basic education for weather forecaster and seismological analysts. Secondly, the continuation training through the thematic trainings, workshops, seminars, and on the job trainings. BMKG training activities are managed by BMKG Education and Training Centre at regular basis. The main objective of the trainings is to strengthen the capacity of its personnel both in technical - operational and in management skills. Regarding the training venue, most of them are held in BMKG Headquarter – Jakarta or in BMKG Multipurpose Building in Citeko – West Java. Due to limited budget, most of the trainings are conducted with a limited number of participants.

Currently BMKG has 178 stations with more than 4000 personnels widely spread all over Indonesia, where mostly are located in remote areas. As BMKG now hold the important role in decision and policy making in Indonesia on weather, climate, and geophysics, the quality of the BMKG products shall be improved by completing its operational system with the high-technology facilities and upgrading the performance of personnels by the appropriate capacity building program.

The emergence and improvement of the computer technology (particularly in meteorology, climatology and seismology) offers many enlighten ideas, such as doing activities in the "on-line" format. In this case, initiative of the distance/e-learning program should be considered as one of the solution, because the program is effective and a good way to optimize the limited communication and budget. The program also could reach more wide audiences/participants, especially people with limited access. This learning method enable BMKG personel to maintain their jobs while adjust their time to upgrade their knowlegde and skills remotely.

Having considered these justifications, BMKG currently in the stage of preparation

initiative for e-learning system to be applied in internal community at a first step, and being planned to reach the education and training activities in external community worldwide. The aspects should be considered are human resources aspect, preparation and maintenance of the curriculum, the supporting facilities, and the readiness of students and teachers/instructors deal with the new technology in their learning process.

With this brand new system, more lessons should be engaged from other countries, particularly the developing countries where this system has already been implemented. We also had a high expectations on advise, feed-back and support from other international organizations (i.e WMO under the program of ETR) and communities (i.e COMET) especially in program and materials preparation. We do hope this will increase our level of preparation to rise a successful e-learning method implementation.

L. Hendar Gunawan: Managing a better training using training need analysis (TNA) method - Case Study : TNA implementation at the Center for Education and Training of BMKG – Indonesia

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The Indonesia Agency for Meteorology, Climatology and Geophysics (BMKG) has task and function to cope with public services on meteorology, climatology and geophysical information. At least 4836 BMKG staff are located all around Indonesia at stations, 5 Regional Centers and BMKG Headquarter. Presently, BMKG personel could be divided into two groups : First Group consists of the technical staff (deal with the operational activities) and, Second Group consist of the management/administration staff as the part of supporting system of the institutions. They have various educational backgrounds (i.e. meteorology – climatology – geophysics – instrumentation – IT – computer – management and administration), from Bachelor Degree to Doctoral Degree. The effective training is required in order to enhance their capacities to achieve their best performance.

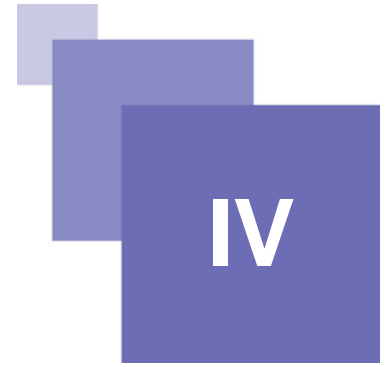
To design the effective training, an analysis of training need is an essential precondition. The purpose of Training Need Analysis (TNA) is to determine whether there is a gap between “what is required for effective performance ” and “present level of performance”, as well as “whether resources required are available or not”. TNA has been used as the tools in assist BMKG to make an assessment about education and training under the supervision of The National Institute of Public Administration (LAN). The main objectives of TNA are to identify areas where training is required, to plan the budget in the capacity building activities, to recognize the field where the training might not be appropriate but requires alternate action, and also as an input to the organization on defining the priority programs. Since now BMKG is amidst the reorganization process, the Performance Based Analysis is not fully applied and TNA is only implemented based on Forum Group Discussion (FGD).

As the TNA has been held, present conditions are identified. Number of training is very limited compare to the number of staff. The training curriculum do not yet fully

meet the need of the personnel and organization. The topic needs to be more specific, more practice less theory. The assessment result also shown that training is not the only solution to improve the performance of the staff.

Considering the above-mentioned situation and to find the best applicable solutions of TNA implementation in BMKG, we encourage advise, comment and sharing of experiences from the conference participants.

Wednesday 5 October 2011



A. Wednesday conference activity: the Excursion

Rhino & Lion Nature Reserve. More information about the excursion will be given at the conference.

Thursday 6 October 2011



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A. Prof Johan Engelbrecht: University Mathematics - where is the transition to advanced thinking?

B. Ross Bunn: Geographically Dispersed Forecasters - New Training Approaches

Co-author(s): Merrin Bennett - Australian Government Bureau of Meteorology Training Centre; Ian Bell - Australian Government Bureau of Meteorology Training Centre and WMO-CGMS VIRTUAL LABORATORY

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Each year the Australian Bureau of Meteorology Training Centre conducts a two week Advanced Forecasters Course in Melbourne. This year the first week was undertaken online. GoToWebinar software was used for the delivery and recording of sessions, whilst the course site was built with Moodle. Presentations in the first week were also available to international participants as part of our V-Lab (Virtual Laboratory for Satellite Training) commitment.

Participants enjoyed the online sessions and were enthusiastic about repeating it for future courses. Whilst face to face delivery is still the norm within the meteorological sector, this new medium offers a number of advantages. This was an innovative undertaking within our virtual world, where new benefits and challenges were identified and addressed. eg. social, technical.

This online presentation will demonstrate the systems used and discuss our lessons learned and options for the future.

C. Erik Hagemark: Themed refresher modules in Moodle

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At Met.no, Moodle has been established as a platform for our online learning activities. This presentation will show how we have devised themed modules for specific topics to be done on forecasters own time. A module consists of a non-interactive, presentation of a topic (eg aircraft icing), an online forum for discussion and a quiz or assignment that must be completed.

D. Lee-ann Simpson: South African Satrep Online

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The South African Satrep Online Presentation for October, will be presented live from the CALMET conference. The presentation will include a weather briefing for that day, as well as a summary of the weather for the previous month. There will also be a short presentation on a weather forecasting subject of interest. The session will be open to discussions from the audience as well.

E. Jarno Schipper: EUMeTrain / EUMETCAL Satellite Courses

Co-author(s): Luciane Veeck (WMO V-Lab), Vesa Nietosvaara (FMI / EUMETCAL)

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In 2011 the training project EUMeTrain and EUMETCAL organise three satellite courses to train the European forecasters on the use of EUMETSAT satellite data.

Already from the beginning the WMO V-Lab was invited to the discussion and the planning of these courses with the clear emphasis to gather, collect and share all course material. The idea is simple since most of the material that is developed in these courses were already developed and applicable to also other satellite programs.

With this in light it is also proposed that for future courses the WMO V-Lab will play a major role for coordinating satellite courses where the V-Lab partners can collaborate more effectively to achieve and produce their courses.

In this presentation the contents of the satellite courses will be presented, as well as the experiences gathered thus far.

The audience is invited to discuss these joint efforts and come with ideas to further strengthen and guarantee future collaborations.

F. Bernadette Connell: What drives online participation patterns for a focus group?

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The Focus Group of the Americas and the Caribbean was started in March of 2004 and has had essentially continuous monthly virtual sessions since. Passing the seven year mark and still having the drive to conduct sessions has led to the questions: What are we doing right? Who has participated? What motivates participation? What can we do to encourage continued participation and involvement? Does the technology matter? We will attempt to answer these questions in this paper, but before we do, we will provide context for our Focus Group. The concept of the Focus Group was developed by the Virtual Laboratory for Education and Training in Satellite Meteorology (VLab). The VLab was established under the World Meteorological Organizations (WMO) Coordination Group for Meteorological Satellite (CGMS) in 2000 to promote effective use of satellite meteorology by WMO members located in all parts of the world.

G. Luciane Veeck: Benefits and problems of Online Learning Communities: the case of VLab Regional Focus Groups.

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Communities are often associated with geographical places, where people interact with neighbours and may be involved with local societies. But in the modern world, some people interact with others online more than they do locally or face to face. Based on this, the concept of community has been broadened to encompass the online world. Like in local offline communities, the connection between members of an online community still emphasises the sense of shared purposes, values and practices. In this context, the potential for mutual support and shared understanding is clear, and the sense of belonging to a community lends the social dimension that is so important for learning.

One example of a successful Online Learning Community is the WMO Virtual Laboratory (VLab). This community is kept together by their shared needs, such as training and the improved use of satellite data and products. These shared needs within their practices are the driving force for collaboration between VLab training centres around the world, and also for collaborative learning within members of this community. Collaborative learning involves interaction and dialogue. It is the exploration of ideas with other people, asking and answering questions, and solving problems with others. The VLab Regional Focus Groups (RFGs) are good examples of how online communication can be used to foster collaborative learning and a sense of community. RFGs are online sessions organised by VLab training centres, where participants (e.g. students, trainers, researchers, practitioners) get together on a regular basis to discuss a chosen topic. Topics are usually presented by a trainer and then discussed with the participants who have the opportunity to ask questions and add comments, new ideas and suggestions.

The benefits of this kind of events are numerous, but maybe the most important is that the activity provided for learning is representative of a practice-based culture. This offers the opportunity for students to be challenged in a supported environment, where they interact with professionals and work on developing their own practices. It is not only the acquisition of memories, habits and skills, but also the formation of their professional identities.

The use of online communication in education and training is not without difficulties. Learners and trainers can feel overwhelmed by the technology used and the time involved in organising such activities. Synchronous events involving large numbers of participants may hinder the kind of support that is needed to build up learner's confidence to voice their participation. A challenge posed now is to increase the benefits and reduce the problems that Online Learning Communities experience. A good starting point may be making the online activities welcoming and well structured, so to encourage students and professionals to interact regularly and informally.

H. Wang Yong: International Meteorological and Hydrological Training and Its Evaluation at WMO RTC Nanjing

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This paper deals with the international meteorological and hydrological training issue and its evaluation approach based on the teaching practice and experience during last twenty years at World Meteorological Organization Regional Training Centre (WMO RTC) in Nanjing.

The success of the training courses which are organized by the RTC Nanjing in the framework of Guidelines for the Education and Training of Personnel in Meteorology and Operational Hydrology (WMO- No. 258) has been widely recognized by those countries which benefit from the training programs as well as the WMO and other related international organizations. The design of the training syllabuses fulfils the Member's training requirements of WMO. Some new training courses which reflect the advances in meteorology and hydrology have also been offered in order to enhance the capabilities of trainees in the use of the up-to-date numerical products.

In addition to face-to-face teaching, blended learning has been introduced for some training courses to enhance the training efficiency. Based on the "CIPP model" and "Kirkpatrick Four Levels Model", a more efficient evaluation system for the international meteorological and hydrological training has been established. Results show that this evaluation system is capable of assessing the training target, the training results as well as training itself.

The evaluation index system consists of six indices which focus on the training subjects and trainees, respectively. The application of this evaluation system in the international meteorological and hydrological training has significantly improved the training efficiency and training itself at RTC Nanjing.

I. Henk Verschuur: EUMETSAT Training on Climatology and Oceanography

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EUMETSAT started training on climate subjects in Zagreb, Croatia, in 2006 in cooperation with DHMZ. DWD provided the key presenters from the Climate SAF, located in Offenbach, Germany. In 2010 this event was held for the first time and Germany, the 2011 event will be conducted in Langen, at the DWD training institute. Over the years there was a recommendation from the participants to have more hands-on training with software that allows to process satellite data interactively. CDO and R software were selected and used for analysis and visualisation respectively of the data available at the Climate SAF. Every participant needs to make a presentation at the end of course on their own area of interest. Since 2010 the course is managed with Moodle, including the selection procedure. Participants have to show their motivation and level of knowledge acceptable to a

joint Climate SAF and EUMETSAT selection committee. This selection procedure is very effective, only candidates with the correct background are selected for participation. My general comment is that this selection procedure together with the concept of interactive hands-on is effective. After each course an evaluation will be performed, which results are used for the organisation of the next course. This concept is mature and well developed and is applied for participants at beginners and advanced level. The Climate SAF, with its experts, plays a key role in the whole process. We would like to apply this concept also to training on the other EUMETSAT Satellite Application facilities.

Oceanography is a relative new area for training activities for EUMETSAT. The ASCAT is the main instrument onboard METOP-A, launched in 2006, providing ocean wind vector data for the community and Jason-2 data is used for the production of wave height data. METOP-A was launched in 2006, Jason-2 in 2008. The data is very valuable for NWP, however the use in operational forecasting and for oceanographers need to be further developed. The ocean community is less defined as the meteorological one, which make the organisation of training activities more complex. Cooperation is sought with the International Ocean Commission, with its IODE training institute in Ostend. NOAA and EUMETSAT conducted its first course on Ocean Vector Winds and Wave Heights in December 2009. Also the Ocean and Sea Ice SAF was invited to present their products. Target group was forecasters from the marine forecasting centres in the Southern Hemisphere. Similar Training needs exist for European and African countries. Visualisation and access to the data is an open issue. Training on ocean subjects is still in an early phase, but the target group is very big. The importance of the ocean community is very well expressed by the European Union initiative on MyOcean, which is a component of the Global Monitoring for Environment and Security program (GMES).

A comparison will be made between the advanced level on training on Climatology and training on Oceanography, which is still in a very early phase.

J. Vesa Nietosvaara: Eumetcal Programme after 2012

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Eumetcal is a EUMETNET (Network of European Meteorological Institutions) funded Meteorological Training Program.

One of EUMETNET high level goals in Forecasting is to support the members in ensuring that they always have highly skilled forecasters through shared training and shared best practice. Eumetcal as the only specialized training programme within EUMETNET wishes to help EUMETNET in achieving this challenging goal.

The current Eumetcal programme phase III will finish end of 2012. EUMetcal Phase IV would begin early 2013. The new programme phase would ideally not cover only the forecasting and forecaster needs, but more generally also support other capacity areas (Climate and Observations) within EUMETNET. We believe that the well established trainer network, our training experiences (courses, workshops) and the cooperation with other training institutions will help us in achieving these goals.

The key areas of Eumetcal beyond 2012 would consist of:

- Trainer Support to enhance the NMS training capacity
- Training Support for the whole forecasting capability area

- Provision of courses and modules for advanced training aimed to improve the meteorological staff skill over specialized services (marine, aviation, warning and emergency services, etc)
- Courses dedicated to acquire a meteorological certified background compliant with the WMO Competency standards
- Skills for Interoperability (European-wide training courses for improving the competencies in understanding the regional variations in weather, conceptual models, user needs and requirements)
- Cooperation with other training institutions (EUMETSAT, The COMET Program, BoM, MSC, RSHU, WMO, etc) for increasing our training capacity, for improving the visibility of EUMETNET, for reviewing our training strategies, and for increasing the opportunities for additional funding through collaborative projects.

This paper will outline these future activities within Eumetcal. It will also demonstrate the efforts across the 28 member institutions and 5 cooperation partners for enhancing capabilities beyond what any individual organization could achieve alone.

K. Claudia Campetella: Update of meteorology education programs in Argentina

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One of the greatest challenges of university training centers is to keep updated their training programs to produce graduates that meet the needs of each country. The Department of Atmospheric and Oceanic Sciences (DAOS) of the University of Buenos Aires is so far the only training center of meteorologists in Argentina and therefore must continually review their undergraduate and graduate programs.

Since two years the DAOS is working in the update of the undergraduate curriculum.

To realize the update of the curriculum, the following elements were taken into consideration:

- an evaluation of the current curriculum
- a survey to all graduates of the DAOS
- a survey to professors and teacher assistant of the DAOS
- the requirements of the publication WMO – 258 (BIP-Met)

The presentation will summarize the work done to design the new curriculum. It will also presented the main differences to the current curriculum and the skills that the new graduates are expected to acquire.

L. Pat Parrish - The COMET Program: New Products and Initiatives

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This presentation will provide a brief overview of the many new products from COMET in the last 2 years of interest to the CALMet audience. It will focus on those of particular interest to an international audience. The new features of the Meted website will also be mentioned.

M. Humberto Barbosa: Training Experiences from the EUMETCast Network Operator Group in Brazil

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Beginning in 2007, the Brazilian Network Operator Group of EUMETCast (BNOGE) experienced with recent developments with respect to the EUMETCast data dissemination and ground receiving system, freeware toolbox to import the data. The strategic objective of the network is to strengthen educational and research activities and applying Meteosat Second Generation (MSG) level 1.5 data disseminated via EUMETCast system. This system is a component of GEONETCast, a near real time, global network of satellite-based data dissemination systems designed to distribute space-based, air-borne and in situ data, metadata and products to diverse communities.

Building upon the experiences of the courses provided by the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) in Brazil, the BNOGE has rapidly grown over recent years. There are an estimated 33 to 36 institutes in the domain of meteorological and environmental monitoring. The joint initiative between the EUMETSAT and the University Federal of Alagoas (UFAL) attempt to give new users enough exposure and familiarity to the whole process of obtaining, understanding, and using MSG 1.5 data so that they can proceed to work with this data independently.

Three characteristics of the BNOGE appear to be contributing to its success, which are: (1) to bring together the EUMETCast network operators to identify areas for regional cooperation; (2) to provide a technical and scientific exchange in environmental and atmospheric sciences between various Brazilian research institutes, while they broaden the knowledge about their applications; and 3) tools used are freeware and are at disposal of the group. These three cornerstones of the BNOGE have successfully met or surpassed all of its important goals for the 4 year period. In 2010 there was a major step forward through the accessibility of the essential-learning tutorials on the Internet for anyone to use. The success of the BNOGE and its activities are well recognized by XV Brazilian Remote Sensing Symposium (SBSR) 2011.

N. Vesa Nietosvaara and Pat Parrish: CALMet Online and CALMet 2013

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In 2010, we decided to expand the reach of CALMet beyond a once-every-two-years conference by offering "CALMet Online 2010". This online offering of presentations and workshops was planned to:

- Provide a way to explore the use of new distance learning methods
- Allow more flexibility for participation
- Help us stay connected with colleagues for ongoing sharing
- Provide a proving ground for ideas for presentations and workshops that might be offered at CALMet 2011.

This presentation will discuss the experiences of this online event and potential ideas for a CALMet Online 2012.

We will also discuss the upcoming conference CALMet 2013.

Friday 7 October 2011

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A. Henk Verschuur: Overview of 15 years of training on satellite meteorology

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At the time I started as training officer at EUMETSAT, in 1994, this organisation operated two geostationary satellites of the first generation with three spectral channels. In the mid-nineties overhead projectors were commonly used for presentations supported by hand written transparencies and graphs. The use of electronic beamers and the Internet were still very limited. The EUMETSAT training activities were and still are approved by Council decisions based on 5 years training plans. At a global scale training activities were approved and encouraged through the Committee of Global Meteorological Satellites (CGMS) a group of the major satellite operators, including WMO as important member.

A description will be given of initial important training activities such as the European Euromet project and the follow-up activities of EUMETCal. On another activity German funds were made available to WMO, which resulted in the ASMET project, a key project for African training, which resulted in the joining of efforts and expertise of COMET and EUMETSAT. In Europe the main training institutes for meteorological training are in France, Germany and the UK. However training activities of the smaller European countries had also an important impact such as the SATMANU activities initiated and managed by the Austrian ZAMG. The current EUMETrain project is an outcome of these earlier SATMANU activities. EUMETCal and EUMETrain are instrumental to current on-line learning in Europe.

The availability of MSG data since 2004, gave an enormous push to the use of satellite data and a need for additional training. The usage of this data goes far beyond meteorology and many new applications were developed and made operational. The training objectives and needs cannot be satisfied anymore by the traditional class room courses. A major milestone was also the decision to join efforts of NOAA and EUMETSAT on the operations of polar orbiting satellites. The first European polar orbiter, METOP, was launched in 2006. These events resulted in a tightening of the training efforts such as the production of training modules.

A very successful global activity is the WMO/CGMS Virtual Laboratory activity, which brings all the major institutes on training on satellite meteorology together. Satellite operators are supporting Centres of Excellence in the developing countries in their training programmes. This concept is successful and can be applied to other disciplines.

In summary: an overview will be given of the last 15 years on the training on satellite meteorology and some ideas for the near future.

B. Lee-ann Simpson: Using Satellite Information to Assist Hydrological Management During Extensive Precipitation Events

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ASMET 6 is the next phase in a long history of ASMET modules. This latest phase is still in the format of a Computer Aided Learning Module, which can be run off of a CD from any desk top or laptop computer. The ASMET modules are designed by African Meteorologists, for the African Continent. ASMET 6 is in the format of case studies, focusing on flooding and drought across the continent. The South African participants of the working group are focusing on the flooding event of January 2010, where the Vaal River burst its banks after many weeks of persistent rainfall.

The latest satellite technology has been incorporated into the case study, in the form of ASCAT soil moisture data. Other satellite derived products such as the South African Hydro-Estimator products are also being used. The case study focuses on the Meteorological and non-meteorological products which are available to forecasters, in order to give them a better understanding of the impact that persistent and heavy rainfall has on hydrological management systems, and how these products can help in disseminating accurate information in a timely manner.

C. Ignatius Gitonga Gichoni: Drought detection in the Great Horn of Africa using satellite derived data

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Drought detection in the Great Horn of Africa using satellite derived data.

In the Great Horn of African countries, drought is one of the most frequent climate-related disasters which often occur with devastating consequences on the already poor economies of the region and more so on food security of agricultural households. This short case study meant for CAL purposes focuses on the comparison of two contrasting years: a wet year 2006 and a drought year 2009 in Eastern Africa. Lack of adequate observational data in Africa makes the use of satellite derived and model data indispensable in weather monitoring. The study highlights on the application of spatial satellite and NWP data for early drought detection focusing mainly on the short rains period of October November and December.

In collaboration with EUMETSAT, the Institute for Meteorological Training and Research (IMTR) at Kenya Meteorological Department offers annual satellite-related meteorology courses for the Anglophone countries in Africa. Besides offering the courses, EUMETSAT through the ASMET project has produced 5 CAL training modules in collaboration with COMET, featuring various weather related issues in Africa. On the same note, in this module, besides the use of the satellite derived

and ECMWF model data, the study incorporates seasonal weather forecasts made by Kenya Meteorological Department enabling meteorologists to make use of the data at hand to forecast drought. The design and production of the module will be based on COMET's CAL modules and will be disseminated via DVDs/CDs and internet to users.

D. Charlotte McBride: Climate Zone Tunnel

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The South African Weather Service (SAWS) participates each year at the National Festival of Science, Technology and Engineering affectionately known as SciFest Africa. The event attract over 70 000 visitors a year mainly school going learners. The idea behind the festival is to present science in an interactive and fun way. Over the last few years SAWS has developed a walk-in tunnel whereby visitors can as they move from one section to the next experience different climatic zones. One year this walk was linked to an imaginary walk from the South Pole over the ocean through Southern Africa ending at the Equator. The next year the same idea was used but the focus was on how different climatic zones affect the human body. Members of the SAWS team would take groups of about 5 people at a time through the tunnel to experience the different climate zones as well as conduct various experiments to highlight features of the different climatic zones.

The first compartment of the tunnel focused on colder climatic zones like Antarctica. An air conditioner was used to drop the temperature to around 16°C inside this compartment. Blue light was used with a continuous sound bite of wind, seals and other marine life was used.

The second compartment focused on an "unmodified climate" were visitors could feel an increase in temperature as they moved out of the colder compartment. A yellow light was used with sounds of African wild animals such as elephant etc.

Visitors then moved to the desert climatic compartment where a fan heater kept the temperature of this zone at around 35°C and dry. A red light was used to help create the desert light atmosphere.

The fourth compartment showcased what it would feel like to be in a tropical rainforest. This chamber was filled with plants representing a tropical jungle with humidifiers which kept the compartment very humid and shrouded in mist (steam). The temperature was only about 25°C but because of the humidity it felt much warmer.

Visitors could feel the change in air temperature and humidity as they moved from one zone to the next making the experience was very interactive. The walk could also be adapted to the different ages and educational levels of the groups being taken through the tunnel. Small children could enjoy it just as much as adults. Visually challenged and handicapped visitors were also taken through the tunnel and benefited from the learning experience.

The tunnel is relatively easy to construct and can be adapted to contain between two to four chambers. Other equipment and props needed for the tunnel included large plastic sheeting, piping, air conditioner, heater, humidifiers and plants. The tunnel can be modified to highlight different aspects of climate zones and a swopping of ideas around the different modifications of this idea as an interactive learning tool will be encouraged.

E. Christopher Webster: Teaching Generously

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Different styles of face-to-face instruction are examined in the context of meteorological education. An instructor-centred approach, typically found in a university lecture-theatre, is contrasted with a student-centred approach, more often found in schools and where there are small numbers of students. The merits of both approaches are demonstrated and analysed in a meteorological setting.

The student-centred approach is then further examined, with various instructional techniques described and discussed. It is found that this approach requires considerably more time and effort from the instructor, in effect she/he has to "teach generously" to become a student-centred instructor.

F. Obed Phahlane: Weather Forecast information Dissemination at Three Selected Towns in Mpumalanga Province South Africa

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The demand for agrometeorological services and weather information is growing because of the increasing desire by the farming community to cope more efficiently with climate variability and the increasing frequency of extreme meteorological events. In an attempt to counter the increasing demand, quarterly farmers workshops were held in three selected towns in Mpumalanga Province, namely Belfast, Middelburg and Witbank. The workshops were held from 2007 to 2009, during which farmers were taught about weather forecasts and practical examples of farmer's decision making were also demonstrated.

A total of 38 farmers from the three towns participated in the quarterly farmers workshops. In June 2009 an evaluation on the impact of the workshops was conducted through a questionnaire completed by the participating farmers. The results indicated that the farmers benefited from the workshops with most indicating that the agrometeorological information received had a positive impact on their production during the 2008/2009 season.

There is a lack of adequate interaction between the meteorological scientists and the farming communities, especially farmers from the rural communities. Increased interaction and communication can enhance the value of agrometeorological information and services.

G. Ednaldo Santos: The challenges of meteorology teaching in agricultural sciences

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In recent years there has been a major concern of environmental issues, both as a matter of awareness or to meet market demands, and as an immediate consequence of greater demand, higher education, by the Meteorology and similar areas for students from careers in agricultural sciences, such as Agricultural Engineering, Forestry Engineering, Surveying and Cartography Engineering, Agricultural Sciences and Zoology.

Nowadays, the curriculums of these careers have as one of its main features a better understanding of spatial and temporal relationships involved in the production process, whether in farming, forestry or animal. Moreover, this process is crucial that future professionals have solid training in disciplines that address the issue of spatial elements and phenomena of nature, and its variation over time.

In this context, the knowledge of Meteorology become prime to the agricultural and environmental sciences, because the meteorological and climate phenomena may influence agricultural performance, water use efficiency, the phenology, thermal comfort, risk of forest fires and energy balance of artificial or natural ecosystems. Thus, the knowledge acquired in Meteorology by careers of agricultural sciences in Brazil are essential due to current discussions linked to agribusiness, preservation, restoration and appropriate use of forests and by discussions on climate change.

However, no one has an overview of how the meteorology teaching is taught in the agricultural sciences courses in Brazil. Therefore, the main goal of this paper is to present a case study of students enrolled in the Basic Meteorology class, taught by the Department of Environmental Sciences, Federal Rural University of Rio de Janeiro, in the last 10 years using data statistical tools, and thus indicate the actual scenario of Meteorology teaching in agricultural sciences and the challenges to be overcome.

H. Colleen Rae: Streamlining facilitation and assessment processes

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The Weather Observation course that is registered through the South African Qualification Authority (SAQA) specifies Specific Outcomes and associated Assessment Criteria to guide facilitators during the facilitation and finally in the assessment phases.

However, facilitators should not be bound by working through these Assessment Criteria in a formulated step-by-step manner.

This presentation sets out to explain how facilitators may design a learning

programme that integrates similar or linked Assessment Criteria in order to streamline the facilitation and assessment processes.

I. Humberto Barbosa: Strengthening regional capacities for providing remote sensing and hydrological modeling-based water and land management decision support in semi-arid Latin-America, in the context of climate variability & change

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Current management practices in the Latin-American region (LA) in the fields of meteorological, agricultural and integrated water resources management are still very often based upon outdated knowledge and technology. Similarly to what happens in many other regions of the world, frequently scientists plan and develop their methods in isolation, not grasping what was really required by relevant stakeholders. On the other hand, stakeholders are often unaware of what science or knowledge-based alternatives are available. Scientific research is further isolated by lack of proven utility and inadequate representation of results, whilst water policy and management is isolated by legal and professional precedence.

The main objective of this collaborative project via workshop, through an integration of research and education activities, is to bring specialists up to speed with recent developments with respect to the EUMETCast-GEONETCast data dissemination and ground receiving system, freeware toolbox to import the data, associated (multi-temporal) modelling and GIS applications within the context of meteorological, hydrological and crop modeling applications, on a series of selected case study areas in LA, Africa and Europe.

The general objective of the project is to address the following tasks:

The workshop is build on the EUMETCast and GEONETCast systems and utilizes the various data sources provided which will contribute to a better understanding of the natural processes going on in relation to meteorology, water and natural resources conditions (e.g. flood and drought phenomena) at a basin and continental scale. EUMETCast and GEONETCast systems are a near real time global network of satellite-based data dissemination systems designed to distribute space-based, airborne and in situ data, metadata and products to diverse communities.

The workshop will analyze the feasibility to better address the real needs of stakeholders in the meteorology, water and agricultural sectors in Latin-America (i) a manual with various applications that demonstrate the usefulness of combining local data with those disseminated through EUMETCast-GEONETCast, using open source and freeware software utilities, and (iii) some promotion and publicity of their specialists work (with due credit), at for instance different scientific forum(s) and the project website.

Planned activities are further indicated below in the context of the description of the case study sites. Although specific activities may be different at the different sites, they will be centered around the following 5 main themes:

- theme 1: Remote sensing applications for advanced drought services: linking models with in-situ crop and range land conditions;
- theme 2: Seasonal monitoring of vegetation condition (crops, grassland, woodland), fires (in grasslands and in the forested regions) and flooding/ heavy rain-related damages forecast and monitoring;
- theme 3: Data streams, ground receiving station setup, data processing operations and processing tools;
- theme 4: Water management and early warning system;
- theme 5: Development of tools for real time monitoring of insect populations.

As part of the start-up phase of the workshop, a more detailed plan will be prepared which will aim at maximizing the exchange of experience and skills among the invited specialist of the network (case studies) during the course of the workshop.

Collaborative themes (case studies) are from Brazil, Africa, Europe, Brazil–Argentina, Europe –Africa.

J. Jannie Stander: Aeronautical Forecaster Training at the South African Weather Service

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The South African Weather Service presents Aeronautical Meteorology as part of its Forecaster training course to University graduates. The main focus of the course is to provide the South African Weather Service with qualified competent Aeronautical forecasters.

The training methods used are elaborated upon with the focus on the training of forecasters being able to be competent on the job instead of just meeting the required knowledge base. The theoretical part of the course provides the necessary knowledge base while extensive practical interactions are there to test the competency part of the forecaster course.

With this training it is envisaged that a forecaster needs only 2 weeks on the forecasting bench after the required training to be able to do the required job of an aeronautical forecaster.

However training content and curricular changes are becoming necessary. Aviation training needs to be aligned with the aviation competency standards so that we focus on training competent forecasters as opposed to knowledgeable forecasters.

K. Goama Ilboudo: Aeronautical Meteorological Personnel's competency development and assessment in ASECNA

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The basic training and the system development and assessment of Meteorological Aviation personal in ASECNA is the issue of this proposal

ASECNA is the Agency for the Safety of Air Navigation in Africa and Madagascar having the main mission of ensuring safety of civil aviation in Africa.

It is made up of seventeen (17) member States whom 9 are from west Africa (Benin, Burkina Faso, Ivory Coast, Guinea Bissau, Mali, Mauritania, Niger, Senegal, Togo), 6 from the Centre of Africa (Cameroon, Central African Republic, Congo, Gabon, Guinea Equatorial, Chad) and 2 form the Indian Ocean (Comoro, Madagascar).

ASECNA employs around hundred meteorological forecasters, more than 135 aeronautical meteorological observers and around 300 synoptic observers.

The Forecasters and Observers, before they be enrolled as operational aviation Met personnel, they have to successfully complete the basic training in meteorology (according to WMO n°258 provisions) as Engineer of Meteorology (WMO Class I) and Meteorological Technician, and then to complete a 30-week training and qualification programme. This training aims to provide trainees with knowledge, work attitude and know how required to acquire competencies to operate at an aeronautical meteorological working position.

The training process is coupled with a system of competency assessment using some tools including experimental questions, direct observation, case study, and simulation. This system contains mechanism of controlling competency periodically in order to bring up (in case of need) necessary corrective actions.

Up to date, 85% of Engineer in Meteorology are qualified as operational forecasters and more than 60% are qualified as competent aeronautical meteorological Observers.

L. Kathy-ann Caesar: CMO Continuing Professional Development Program

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The establishment of competency based standards for operational aeronautical forecasters by WMO has initiated the need for meteorological services to seek immediate and effective training for their forecasters. Implementation of this critical training for the National Meteorological Services of the Caribbean Meteorological Organization (CMO) will necessitate virtual training methods as their small staff numbers precludes extensive residence training. The Caribbean Institute for

Meteorology and Hydrology (CIMH), the regional meteorological (and hydrological) training centre (RMTTC) in collaboration with the UCAR/COMET® Program is in the process of formulating an online Continuing Professional Development (CPD) course specifically for the CMO Member States National Weather Services. The course will immediately address the competency issues and enhance continuing on-the-job-training in new technologies critical to operational forecasting.

The approach has been to build an extensive online course to be led by CIMH instructors. The course content will consist of existing training material from MetEd and related sites as well as new material especially designed for the region. The main areas to be covered will be: Satellite Analysis in Operational Forecasting; Radar Meteorology; Numerical Weather Prediction using mesoscale models; and Aeronautical Meteorology. These readily address most of the WMO first and second level competencies. The participants will need to review the meteorological basics and build towards the operational techniques. There will be a very practical competent to the sessions and attempts will be made to draw from the experiences of the participants. It is recognized that CMO personnel are trained professional who are seeking to improved and enhance their competency in the field of aeronautical forecasting. Thus, the project will utilize various online teaching methodologies such online discussion, peer collaboration, simulation exercises, student-led discussions and weather briefings. The goal will build the competency levels and at the same time keep the participants invested in the course.

While the final goal will be to build the competencies of operational aeronautical forecasters for the Caribbean region, the long term objectives are to develop a course that could be modified to used various WMO Regional training Centers. This will eventually be self paced, unsupervised courses which can be continually updated to ensure that the aeronautical services are able to maintain compliance the given WMO competencies.

M. Nesru Kemal: Survey of Meteorological Services in Ethiopia's Aviation Industry - The Case of Addis Ababa Bole International Airport

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Aeronautical meteorological services play a key role in mitigating the impact of adverse weather on flight operation. Adverse weather remains one of the leading causes of aviation accidents and a primary factor responsible for reduced capacity in the air transportation system. Aeronautical meteorological services contribute to minimizing loss of life and property, passenger delay and inconvenience, traffic controller work load, air line schedule disruption and environmental impact of extra fuel burn. Thus In order to improve aviation meteorological services level it is important to understand the possible constraints thoroughly. This study is aimed to assess aeronautical meteorological services user's satisfaction level on Addis Ababa Bole International Air port and to discover how to improve it. It has employed descriptive research design and non probability sampling method. In this study both primary and secondary data are used. The main instrument used in this study was questionnaire and personal observation.

Based on the findings of the study the level of aeronautical meteorological service on Addis Ababa Bole International Airport is poor and most of the users dissatisfied with the services; besides a wider demand for meteorological services. Thus a coordinated effort should be made to improve the service level and to cop up with the demand of the increasing users and the required national and international

demand.

N. Marianne Weingroff: Satellite Meteorology Education Resources from COMET: What's New?

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The COMET Program receives funding from NOAA NESDIS with contributions from EUMETSAT and the Meteorological Service of Canada (MSC) to develop educational training modules and other resources that focus on satellite meteorology and its use in a variety of environmental monitoring applications. These partnerships enable COMET to create educational materials of global interest on the operational application of satellite products.

For much of the last decade, COMET's satellite education programs have focused on the capabilities of both current and future polar-orbiting and geostationary satellite systems and their relevance to operational forecasters and other user communities. By partnering with experts from various national and international organizations, COMET stimulates greater utilization of satellite data observations and products and prepares users for new capabilities. Many of our 60+ satellite-specific training materials are available in Spanish and French.

This presentation provides an overview of COMET's most recent satellite education efforts and publications, highlighting new materials. It will also demonstrate some of the new design features of the newly enhanced MetEd site published in 2011. In addition to being available via the MetEd Web site (www.meted.ucar.edu), COMET's satellite modules can also be found amongst a growing body of satellite information and training resources in the Environmental Satellite Resource Center (ESRC) Web site (www.meted.ucar.edu/esrc). The ESRC, developed and supported by COMET, provides search capabilities and free access to low Earth orbiting and geostationary satellite information and education from multiple trusted sources. The ESRC site is a community-driven resource and is sponsored by the NPOESS IPO, NOAA, and NESDIS. It is also an official resource of the WMO Virtual Laboratory.

Saturday 8 October 2011

VII

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A. Ian Mills: Using Articulate in the rapid development of online learning.

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The Met Office College is using Articulate to rapidly develop training. Increasingly customers are demanding online learning to deliver training. Costs of travel are ever increasing. Decreasing staff numbers at Fronline stations mean it is hard to release staff to attend training. Elearning is seen as a way of saving these costs and yet allowing staff to continue with their learning.

Using Articulate and existing training material and adding voice, video quizzes and activities to the material means that training material can be produced quickly.

This material is being deployed via Moodle at the Met Office so it is easy to track usage and also to track scores on quizzes and tests in the material.

B. HansPeter Roesli: Preparing current-weather discussions on-the-fly when limited to a notebook with internet access

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During EUMETSAT's training courses on the use of satellite imagery for weather forecasting brief daily discussions of current weather are a welcome complement. These briefings create the link from theory and case studies presented during the event to the weather outside the classroom.

For the preparation of imagery and weather charts for such a discussion access to (near-)real-time data streams and a versatile software tool is needed. As the courses rarely take place at NMHS premises no forecasting environment is available that would produce the necessary material prior to the weather briefing, i.e. a notebook and decent access to internet have to do the job.

EUMETSAT has gained some experience in the use of McIDAS-V (and IDV in the beginning) on a notebook and linked to real-time data streams available via internet. The presentation will demonstrate the power of this tool by creating briefing material on-the-fly.

There is a caveat however, when covering areas outside US. Free data offers on internet still are very much US-focused and only slowly spreading elsewhere. EUMETSAT has a small server for training purposes providing geostationary imagery at 0° longitude. Services (ADDE servers) for training purposes for other meteorological data types over areas outside the US would be very welcome and should get the support. Such data servers also assist near-real-time operational training, one of the foundations of the WMO/CGMS Virtual Laboratory.

C. Patrick Dujardin: Two examples of distance training in Meteo-France

Co-author(s): Lydie Audonnet, Sylvie Paniaugua, Béatrice Pouponneau, Jean-Paul Billerot, Laurent Borrel, Pierrick Cebron, Gilles Perret, David Pollack, Didier Reboux, Hugo Vandeputte, Vincent Terol. All from ENM.

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Météo-France (Ecole Nationale de la Météorologie) delivered in 2007 and 2008 2 distance learning sessions about Aviation Meteorology.

ENM has now decided to extend the using of distance learning for internal continuous training. The two first themes identified are Climate Change and Java language.

The targets are :

- to reduce the number of travels : actually, if the main part of Meteo-France staff

takes place in 2 main locations (Paris and Toulouse), the rest is spread on other locations on the continent and overseas territories. Reducing travels is an important issue, both for economical reasons and in order to reduce greenhouse gas emissions. Distance learning is a good help to reach this goal,

- to improve training efficiency : training sessions dealing with Java and Climate change have already been delivered for several years. But, in order to reduce the number of travels, the whole training is concentrated on a single three days period, which leads trainees to swallow quickly a big amount of information with a risk of poor efficiency. On the opposite, distance learning allows to spread the training on a 7 weeks period, to mix distance meetings between trainer and trainees, self training with possibility to deposit questions on a forum, exercises with feed-back and so on. So, the main goal of distance training is an improving of the efficiency.

The sessions started in November 2010 for Java language training, and during the first quarter of 2011 for Climate change training.

A report will be achieved about the efficiency of these courses, before extending the offer of ENM according to distance training.

D. Ednaldo Santos: WEBEDUMET: the Wikipedia of the Brazilian education meteorology

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Over the years is clear that information related to Brazilian education in Meteorology are not being updated, and are inaccessible to the academic community in general. The teaching of meteorology in our country requires an accurate and updated diagnosis of the functioning of each school regarding to difficulties and successes, available in real-time and full access. In this context, the Studious National Union of Meteorology - UNEMET has long experience in the dissemination of educational information in the Meteorological area in Brazil, published in Cirrus magazine (www.unemet.org.br/cirrus).

Given this scenario, aimed to create a database for Brazilian meteorological education Web-based so that access to this information in Brazil be done quickly, simple and free. This database will provide information of students, graduates and dropout, number of teachers and their titles, infrastructure and other information relevant to each Meteorological school in Brazil. So, UNEMET will use data collected in education institutions and also additional documents published in our country.

The database being created will use the Access application and available for download from UNEMET site (www.unemet.org.br). Through this action, would be that database is a useful tool in finding information regarding to the Brazilian Meteorological education, and from this may increasingly be updated and improved in all aspects.

E. Han Fei: Appraisal of application effect of Web2.0 on Distance education

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The essay focuses on Web2.0 application effect on distance education. The main task includes three parts: the design of web2.0 teaching model, the improvement of distance education platform with web2.0 technology, the test of teaching effect compared with web1.0.

The learners and contents are taken as center of the model, surrounded by Web2.0 technology environments. The model mainly embodies interactivities of learners and contents, at the same time the interactivities among learners, learners and teachers. As a node of learning procedure, teachers belong to interactive environment.

Web2.0 is collectively known as a plenty of network application compared to Web1.0, such as Weblog, Wiki, RSS, Tag, IM, SNS, P2P, AJAX. Community and contents management are introduced to the distance education platform.

The appraisal of application effect of Web2.0 on Distance education includes targets: a learner how many, how much taking part in learning activities in distance education platform and the whole effect, etc. The statistics of a case selected in Web1.0 is compared with the Web2.0 environments. In conclusion, learners do actions individually in Web1.0, who seldom take part in study activities. According to statistic, learners take more actions in study in Web2.0, the learning times, learning span, exam score, total on-line time and so on better than in Web1.0. The insufficient is that learners tend to be out control of the whole procedure.

In addition, there is multi-effects to organize on-line teaching and design different teaching pattern with various on-line teaching strategies that make use of Web 2.0 principles and technique's backings. Web2.0 techniques play an active role in improving participation of learners, characteristic study, and cooperation study, constructing or sharing learning resources.

F. Laurent Borrel: IT technologies for training

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As a service provider for Eumetcal program, ENM (Ecole Nationale de la Météorologie) has achieved since 10 years technological survey dealing with distance learning. This activity allowed to spread both through Eumetcal program and in ENM, IT facilities that allow to create teaching material (Scenari), and deliver distance training : Learning Management System (MOODLE), and a new Web Conferencing Tool (Centra).

The goal of ENM is now to renew its internal repository, in order to reach better an ergonomics and add new functionalities :

- possibility to download and upload material on and from the repository with a simple drag and drop as between two different parts from windows tree,
- possibility for a group of trainers to create and improve a training material in a safe working area of the repository and move it to the publishing area when finished,
- to associate Scenari and repository in order to improve the structure of new modules : Scenari module would no more integrate objects and just be a combination of metadata, selected directly in the repository through Scenari. Beyond a gain of time when creating the module, this structure would make future administration of training material more simple : when an object is renewed, all modules pointing to the associated metadata would be automatically renewed on their time.

First tests of the new software should be achieved before summer and the goal is to present a pre operational version during Calmet conference.

CAL Working Group

The CALMet Working Group provides guidance for CALMet events. The working group reports to CO-COM (Cordinating Committee) for SCHOTI (Standing Conference of the Heads of Training Institutions of National Meteorological Services). SCHOTI provides a forum and mechanism through which national meteorological Services may collaborate on education and training for the benefit of all World Meteorological Organisation (WMO) Members.

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Co-Chair: Patrick **Parrish** (The COMET Program)

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