EUMETCAL AND TRAINING IN SATELLITE METEOROLOGY

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Abstract

Eumetcal is a co-operative training and educational programme of and primarily funded by EUMETNET, a grouping of 29 European National Meteorological Services that provides a framework to organise co-operative programmes between its Members in the various fields of basic meteorological activities. Eumetcal in turn has 28 participating organisations and three (3) co-operation partners outside Europe. Finnish Meteorological Institute (FMI) is responsible for programme management. The programme is currently in its Phase III (2007-2012). Phase IV will cover 2013-2017, contingent of approval by EUMETNET.

Eumetcal's purpose is organisation of courses as well as production of new and sharing of existing computer assisted learning (CAL) material in the field of meteorology. Sharing of training material (and development thereof) between members is aimed at reducing costs and effort for training through cooperation.

Eumetcal has close links with EUMETSAT: Eumetcal and EuMeTrain collaborate in planning and implementation of courses and learning materials for satellite meteorology; EUMETSAT also provides substantial financial support for Eumetcal. As an example, Eumetcal, EuMeTrain and other parties organised three satellite-related courses in 2011: 1) Principles of Satellite Meteorology, 2) Satellite Image Interpretation and Applications, and 3) Synoptic and Mesoscale Analysis of Satellite Images. These courses were designed for operational forecasters.

In addition to provision of educational materials and courses targeted to forecasters and other end users, one of Eumetcal's activities is assisting and supporting training processes in its member National Meteorological Services and in other meteorological organisations. An example is training the trainers – educating trainers in design, implementation, tools and management of training activities as well as application thereof in their own organisations.

INTRODUCTION AND BACKGROUND

History

Eumetcal is the education and training programme of EUMETNET. Organisationally it is in EUMETNET's Forecasting Capability Area. The programme traces its roots to the EuroMET project funded by the European Commission in late 1990s. The Eumetcal itself started 2002 with a pilot phase (Phase I), which lasted until 2003. Phases II (2004—2007) and III (2007—2012) have followed. Phase IV is expected to start on 1 Jan 2013, contingent on final approval by the EUMETNET Assembly in its meeting in late November 2012.

Implementation of the Eumetcal Programme is entrusted to the Eumetcal Coordinating Member (of EUMETNET). The Finnish Meteorological Institute (FMI) has been the Coordinating Member in each phase of the programme.
Eumetcal participation

EUMETNET has mandatory and optional programmes, Eumetcal belongs to the latter category. Optionality implies, that the programme needs to be implemented in a way that both attracts participants among EUMETNET members as well as makes the participants choose to remain with Eumetcal. Currently (in Phase III) 24 of EUMETNET's full members have opted to participate in Eumetcal: Austria, Belgium, Croatia, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Luxembourg, Netherlands, Norway, Poland, Portugal, Serbia, Slovenia, Spain, Sweden, and Switzerland. In addition to EUMETNET members, Eumetcal collaborates (and has Memoranda of Understanding and Co-operation) with some non-EUMETNET European National Meteorological Services (NMSs) or their E & T organisations (Bulgaria, Lithuania, Romania and Russia), non-European NMSs (Australia and Canada) and other providers of meteorological education and training activities (UCAR/COMET).

Eumetcal's role and purpose

Eumetcal's participant organisations have their own internal E & T efforts and programmes of varying scales and scopes; in case of the larger NMSs, the in-house programmes can be quite comprehensive. Eumetcal's role is to supplement and complement, not duplicate or replace participating NMSs own efforts. The programme's mission could be summarised as

Support of the professional development of meteorological staff (including trainers of meteorological staff) in Europe through a virtual E & T organisation using co-operation to leverage more added-value from limited resources.

Resources, management structure and mode-of-operation

Eumetcal's resources are a combination of funding and in-kind contributions. Direct funding comes from the programme's participants through their contributions via EUMETNET. EUMETSAT provides substantial supplementary funding amounting to more than 20 % of Eumetcal's budget. Full extent of the in-kind contributions is difficult to quantify, but is indispensable for Eumetcal's function.

The programme is managed by a two-person team comprising the Programme Manager (PM) and the Training Support Officer (TSO) allocated by the Coordinating Member (FMI). Within EUMETNET, Eumetcal is organisationally under the Forecasting Capability Area. Partly due to this, Eumetcal's E & T activities have focused on forecasters and forecasting. In Phase III strategic insight and advice for the programme has been provided by a Steering Group.

Eumetcal normally does not implement E & T events itself – participants (and sometimes third parties) are invited to do it. The participants contribute as a baseline expertise, facilities and personnel, Eumetcal contributes support, coordination and expertise, on occasion also partial funding. Working Groups play key roles in E & T event planning and implementation. Currently Eumetcal has seven (7) active Working Groups: Satellite, Radar, High-Impact Weather, Numerical Weather Prediction, Aviation, Technical and Pedagogical.

As Eumetcal originates from Computer Assisted Learning, the programme continues to have a strong emphasis on online learning. Some of the E & T events are online only, but a large fraction of the events are blended events, combining on-site/face-to-face components with online components.
EUMETCAL ICT INFRASTRUCTURE

Emphasis on online learning would not be possible without good Information and Communications Technology (ICT) infrastructure. The infrastructure includes four major components:

1. the Learning Management System (LMS; currently based on the Moodle software; https://moodle.org),
2. training materials authoring toolbox (Scenari; http://scenari-platform.org/projects/scenari/en/pres/co/),
3. a learning materials repository (currently based on the IntraLibrary software; http://www.intrallect.com/) and
4. a video conferencing and video lecturing system (Saba Meeting, previously known as Centra; http://www.sabameeting.com/).

Administration and management of components 1-3 are handled by Météo-France/Ecole Nationale de Météorologie. Component 4 is a full service purchased from the provider, use and cost shared with EUMETSAT and EUMeTrain.

Eumetcal's E & T events include also training participants' staff in use of of this ICT infrastructure.

EUMETCAL IN THE FIELD OF METEOROLOGICAL E & T ACTIVITIES

As alluded to above, Eumetcal is one part of the European and global whole in the field of meteorological E & T activities. The programme's place and connections of highest significance in the field are illustrated in the schematic shown in Figure 1.

Regarding E & T activities especially in the area of satellite meteorology, Eumetcal's connections with EUMETSAT and EUMeTrain are particularly strong and tight. Collaboration with EUMeTrain manifests itself as up to several shared E & T events annually. Instead of setting a separate Satellite Meteorology Working Group, EUMeTrain also is and acts as the de facto Satellite WG of Eumetcal.
EUMETCAL EDUCATION AND TRAINING ACTIVITIES 2011-2012

A representative sample of Eumetcal E & T activities is listed in Table 1 below:

<table>
<thead>
<tr>
<th>Title</th>
<th>Year</th>
<th>Notes &amp; comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forecasters Meet Aviation Users</td>
<td>2011</td>
<td></td>
</tr>
<tr>
<td>Principles of Satellite Meteorology</td>
<td>2011</td>
<td>With EUMeTrain</td>
</tr>
<tr>
<td>Satellite Image Interpretation Applications</td>
<td>2011</td>
<td>With EUMeTrain</td>
</tr>
<tr>
<td>Synoptic and Mesoscale Analysis of Satellite Images</td>
<td>2011</td>
<td>With EUMeTrain</td>
</tr>
<tr>
<td>Climate Satellite Applications Facility</td>
<td>2012</td>
<td>One-day workshop held in conjunction with the EMS/ECAC Conference in Lodz, Poland. Supported by Eumetcal</td>
</tr>
<tr>
<td>ESSL Testbed Course</td>
<td>2012</td>
<td>Technical support from Eumetcal</td>
</tr>
<tr>
<td>Eumetcal Workshop</td>
<td>2012</td>
<td>Hosted by the UK MetOffice in Exeter</td>
</tr>
<tr>
<td>Forecasters Meet Aviation Users 2</td>
<td>2012</td>
<td>Expanded version of the 2011 course</td>
</tr>
<tr>
<td>GLAMEPS</td>
<td>2012</td>
<td>Technical support from Eumetcal</td>
</tr>
<tr>
<td>NOMEK</td>
<td>2012</td>
<td>Technical support from Eumetcal</td>
</tr>
</tbody>
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Table 1: Eumetcal E & T events and activities in 2011-2012.

Collaboration with EUMeTrain has played a significant role on Eumetcal's recent E & T activities. This state of affairs is expected to continue into Phase IV (see below).

EUMETCAL IN PHASE IV

The Programme is currently in last months of Phase III. Phase IV is slated to begin on 1 Jan 2013 (contingent on approval by the EUMETNET Assembly in November 2012) and last for five years, with FMI continuing as the Coordinating Member.

Eumetcal plans to continue delivering E & T events according to its mission and as a baseline in approximately similar extent as in Phase III (see below, however). Governance of Eumetcal is, however, expected to change slightly, although the day-to-day management approach remains the same.

The proposed plan of activities for Phase IV includes an option for expanding Eumetcal's portfolio of E & T activities to Climate and Observations (EUMETNET's two other Capability Areas) from Eumetcal's currently almost exclusive focus on forecasting. Survey among stakeholders and interested parties is slated for early 2013. Based on the results of that survey an expansion plan outlining activities, target audiences and funding requirements will be submitted to EUMETNET for consideration. As Climate is also currently part of EUMETSAT's mandate, this expansion may influence positively Eumetcal's satellite activities and hence the Eumetcal-EUMeTrain-EUMETSAT collaboration as well.