WORLD METEOROLOGICAL ORGANIZATION

COMMISSION FOR BASIC SYSTEMS

CBS MANAGEMENT GROUP
Fourth session

Langen, Germany, 13-16 October 2003

CBS-MG-IV/Doc. 3.3(1)
(7.X.2003)

ITEM: 3.3

Original: ENGLISH

OPAG on Data Processing and Forecasting Systems

(Submitted by the Secretariat and Chair of OPAG on DPFS)

Summary and Purpose of Document

This document contains a summary of OPAG on DPFS planned activities

ACTION PROPOSED

The CBS Management Group is invited to:

(a) Note the proposed relevant OPAG on DPFS planned activities

(b) Review and make as appropriate its recommendations on the future work programme on DPFS

1 OPAG on DPFS planned activities

1.1 The outcome of Congress suggests a need to establish under the OPAG on DPFS an ET on severe weather forecasting; otherwise specific expert meetings will address the severe weather issues. The management Group should take action on this issue.

1.2 The outcome of CBS indicated the need for Meteorological services to collaborate with Hydrological Services to develop and implement the use of forecasts and warnings in flood forecasting and in particular take part in a WMO Action Programme on Flood forecasting/warning. A Preparatory meeting for a workshop on flood forecasting was held in Geneva in April 2003 at which the CBS Rapporteur on severe weather participated. The management Group should give guidance on CBS participation in further development of the action plan and the workshop.

1.3 With respect to Seasonal to Internal forecasting in particular availability of SI forecasts from global producing centres, Workshop of global producers of SI forecasts was held in Geneva, 10-13 February 2003. Follow-up global activities will be under the ET on Infrastructure for LRF and regional programmes in some regions. The management group may wish to give guidance on the way forward.

1.4 The outcome of CBS also indicated the need for development of guidance for training on DPFS in particular a capacity training policy, using approaches similar to those of satellite activities. The management Group should give guidance on this issue.

1.5 The OPAG on DPFS existing ETs will also take up specific future tasks as noted by CBS Extraordinary 2002 (in complement/adjustment of terms of reference of the OPAG Teams and rapporteurs) as follows:

- The Expert Team on the Infrastructure for Long-range Forecasting will continue to develop procedures for the exchange of long-range forecasting products.

- Expert teams on verification of long-range forecasts and EPS still have some tasks to continue in order to develop the verification system for long-range forecasts and implementation of EPS.

- The task for verification and long-range forecasts should include:

    (*a)* Coordinate the provision of long-range forecast verification scores and related information to NMHSs and RCCs, real-time monitoring of forecasts and relevant exchange between participating centres and institutes;

    (b) Encourage and monitor feedback from NMHSs and RCCs on the usefulness of verification information provided by producing centres under the scheme;

    (c) Review the effectiveness of the verification scheme in assisting NMHSs and RCCs to use the global-scale products to provide end-user services;

    (d) Contribute to the further development of the activities of Lead Centres' on their Web sites with links to producing centres and the development and provision of relevant software to NMHSs and RCCs as capacity building measures to access information from producing centres to produce user-friendly verification information;

    (e) Recommend updates to operational practices to be followed in terms of the information on validation results to be attached to the long-

range forecast products in the light of the experience and progress in research on verification activities;

(f) Develop relevant standards for representation and presentation of verification information in maps and contingency tables;

(g) In consultation with CAS (CLIVAR/Working Group on Seasonal to Interannual Prediction) and CCl, propose recommendations for improvements to CBS.

- The ET on EPS should develop an outline plan for the development of a workshop on EPS, build on the available documentation and develop components on the interpretation of EPS;

- The EPS aspects should include:

  (a) Developing education and training material for forecasters including rationale of concepts and strategies of EPS, and on the nature, interpretation and application of EPS products;

  (b) Reviewing progress on EPS and its application to severe weather forecasting including progress on regional model based EPS, and prepare ways to make best operational usage of these developments;

  (c) Enhancing verification of EPS products;

  (d) Reporting on verification measures for EPS, and skill of available products.

- There is a need for NMSs to explore the application of atmospheric transport models to air quality, propagation of air borne diseases, other hazards or consequences related to natural disaster, with the cooperation of RSMCs with specialization in emergency response. The expansion of modelling applications beyond emergency response for nuclear incidents should be given consideration in relation to how best to organize them as well as additional funding requirements (e.g. meetings, training, documentation etc.).

- Nowcasting is a growing activity that will need some attention in the future. Activities such as a review of operational requirements for nowcasting, of technology and products available, will be required to raise awareness among Members, and to help them develop a nowcasting system.

- Computer-aided learning modules should also be developed.

- Congress requested the establishment of a WMO standard and/or recommended practice for weather forecasting techniques. It is proposed to have an expert team for this task in 2005, with assistance of consultant work.

- Finally there is an ongoing need for capacity building, such as the development of applications, training and the interpretation of products, and for developing expertise to run models on workstations/PCs.

1.6 The OPAG chair proposes the revised Terms of reference and deliverables for the different Expert Teams as included in the Annex to take into account the relevant CBS Ext.(2002) conclusions and Cg-XIV decisions (see Doc 3.3(2)) on DPFS programme and activities.

2. Specific planned activities in 2003, 2004-2005

2003
- ET on EPS - Geneva, 27-31 October 2003
- Meeting of Lead Centres for Verification of Long Range Forecasts, Montreal, 24-28 November 2003

2004
- ERA Co-ordination Group - Geneva, March 2004 (tentative dates)
- Expert meeting on Early warning systems for response strategies to severe weather - March 2004
- Meeting on severe weather forecasting -June 2004
-
- ICM on DPFS issues, NWP output on severe weather - September 2004
- First workshop on use of EPS products – with strong training component (Venue and date to be decided by ET on EPS in October 2003) - October 2004?
- Workshop on emergency response to severe weather and extreme natural events - August 2004

NOTE: Offers to host the meetings are highly solicited and very welcome

2005
- EM on Establishment of WMO standards for weather forecasting techniques
- EM dissemination and use of LRF products
- Second workshop on use of EPS products - with strong training component
- Workshop on emergency response to severe weather and extreme natural events
- Regional seminar on PWS and GDPFS to better support natural disaster prevention
- Training seminar on GDPFS, including strong component on use of EPS products

_____

Proposed revised Terms of Reference for DPFS Expert Teams

Expert Team on Ensemble Prediction Systems

Terms of Reference:

a) Develop education and training material for forecasters. Topics to include the rationale of concepts and strategies of EPS, and the nature, interpretation and application of EPS products;

b) Review progress on EPS, including regional model based EPS, and its application, particularly to severe weather forecasting, and prepare ways to make best operational usage of these developments;

c) Provide guidance on construction and use of regional model based EPS (to include tradeoffs between number of ensemble members versus resolution and options for collaboration between neighbouring countries to optimise use of resources);

d) Provide guidance on post-processing of EPS to optimise forecast information and to construct user-specific products;

e) Review procedures to disseminate EPS GRIB data and products;

f) Report on verification measures for EPS, and skill of available products;

g) Ensure that verification statistics are available to NMHSs using these products;

h) Further develop verification of EPS and processed products, including standards for testing and verification systems.

Deliverables for CBS 2004:

* Develop plan and training material for an international workshop on EPS. The workshop will be aimed at forecasters.
* Examine and recommend way forward to develop a virtual training lab such as the virtual lab for education and training in satellite meteorology.
* Guidance material on EPS (concept, interpretation, applications, etc....)
* Begin the exchange of EPS verification scores and report on skill of EPS
* Recommendations for future work

Expert team on the infrastructure for long-range forecasting

Terms of Reference

a) Develop a mechanism, criteria to facilitate the exchange of model ensembles to promote the development of multi-model seasonal forecasting systems

b) Report on experimental exchange and provide recommendations for future considerations and adoption by CBS, CAS and CCl, etc...

c) Contribute to the analysis of data needs for global LRF and their inclusion in the rolling requirements review process conducted by the CBS/OPAG on IOS.

d) Assist in the dissemination of specialized climate data sets, hindcast data and other supporting information needed to validate and verify operational models

Deliverables for CBS-2004:

* Report on products made available by GPCs to RCCs and NMHSs, the extent to which they meet guidelines from the Workshop on GPCs, identify gaps and issues and make recommendations.

Deliverables for 2005:

* Identify a mechanism/approach to facilitate the development of multi-model ensemble
* Revised data requirements to be delivered to the CBS OPAG on IOS
* Address gaps and issues identified in the 2004 report, with a view to facilitate access to LRF products to RCCs and NMHSs.

Expert team to develop a Verification system on Long-range forecasts

Terms of reference:

a) Coordinate the provision of long-range forecast verification scores and related information to NMHSs and RCCs, real-time monitoring of forecasts and relevant exchange between participating centres and institutes

b) Encourage and monitor feed back from NMHSs and RCCs on the usefulness of verification information provided by producing centres under the scheme

c) Review the effectiveness of the verification scheme in assisting NMHSs and RCCs to use the global-scale products to provide end-user services

d) Contribute to further development of the activities of lead centre web site with links to producing centres and development and provision of relevant software to NMHSs and RCCs as capacity building measures to access information from producing centres and producing user friendly verification information.

e) Recommend updates to operational practices to be followed in terms of the information on validation results to be attached to the long-range forecasts products in the light of experience and progress in research on verification activities

f) Develop relevant standards for representation and presentation of verification information in maps and contingency tables

g) In consultation with CAS (CLIVAR/WGSIP) and CCl, propose recommendations for improvements to CBS.

Deliverables for 2004:

* Establishment of two lead Centres. Agreement on Roles and responsibilities of Lead centres
* Survey of NMHSs /RCCs on the use and usefulness of the information
* Increased participation of GPCs in the provision of forecast verification scores

The survey would require some support from the WMO secretariat and increased participation of GPCs will depend on GPCs willingness to contribute

Coordination Group for Emergency Response Activities (ERA)

Terms of Reference:

a) Test and improve the collective ability of all RSMCs and the RTH Offenbach in the ERA to fulfil the operational requirements specified in the Global and Regional Arrangements, according to adopted standards and procedures. Encourage further Regional implementation.

b) Explore and implement improved distribution (or access) methods for specialized products to NMHSs and to the IAEA.

c) Encourage and facilitate the NMHSs to be familiar with the ERA capabilities, and as much as possible RSMCs to provide specialized atmospheric transport modelling support, upon their specific request(s).

d) Continue to explore cooperation with the CTBTO, including experimenting with possible operational arrangements.

e) Explore the ensembles approach for atmospheric transport modelling.

f) Study the direction, needs and options for an expanded role of RSMCs in non-nuclear atmospheric transport modelling for emergency response, and capacity building in related areas of application.

Deliverables for CBS 2004:

* Report from a consultant on study of expanded role of RSMCs in non-nuclear atmospheric transport modelling for emergency response.