

## Expected Result 7

# ENHANCED CAPABILITIES OF MEMBERS TO PROVIDE AND USE WEATHER, CLIMATE, WATER AND ENVIRONMENTAL APPLICATIONS AND SERVICES

## Strategic Thrust: Service Delivery

### SUMMARY

#### ISSUES TO BE DISCUSSED:

1. User focus
2. Improved products and services
3. Service delivery
4. Quality management
5. Socio-economic issues related to weather, climate and environmental applications
6. Capacity-building and training

#### ADDITIONAL FINANCIAL IMPLICATION:

None

#### DECISIONS/ACTIONS REQUIRED:

The Executive Council is requested to:

- (a) Approve the draft text for inclusion in the general summary of EC-LXI given in Appendix A;
- (b) Adopt draft Resolution 4.2/1 (EC-LXI) - Procedures to be followed in proposing common ISO/WMO Technical Standards given in Appendix B;
- (c) Adopt draft Resolution 4.2/2 (EC-LXI) - Qualification and competency requirements for aeronautical meteorological personnel given in Appendix C.

#### REFERENCES:

1. *Abridged Final Report with Resolutions of the Fifteenth World Meteorological Congress* (WMO-No. 1026)
2. *Abridged Final Report of the Sixtieth Session of the Executive Council* (WMO-No. 1032)

#### CONTENT OF DOCUMENT:

##### Appendices for inclusion in the final report:

- A. Draft text for inclusion in the general summary of EC-LXI
- B. Draft Resolution 4.2/1 (EC-LXI) - Procedures to be followed in proposing common ISO/WMO Technical Standards
- C. Draft Resolution 4.2/2 (EC-LXI) - Qualification and competency requirements for aeronautical meteorological personnel

##### Appendix for information:

EC-LXI/Rep. 4.2: Progress/Activity Report



## DRAFT TEXT FOR INCLUSION IN THE GENERAL SUMMARY OF EC-LXI

### 4.2 ENHANCED CAPABILITIES OF MEMBERS TO PROVIDE AND USE WEATHER, CLIMATE, WATER AND ENVIRONMENTAL APPLICATIONS AND SERVICES (*agenda item 4.2*)

#### User focus

##### ***Public Weather Services (PWS)***

**4.2.1** The WMO Executive Council (EC) took into consideration recommendations of the fourteenth session of Regional Association II (RA II, Tashkent, Uzbekistan, 5-11 December 2008) as well as the results of PWS surveys regarding enhancing user focus in National Meteorological and Hydrological Services (NMHSs). It agreed that any development of NMHSs through their public weather services should be undertaken in response to the real and stated needs of the user community, and not as an end in itself. It therefore requested the Secretariat to assist NMHSs to develop techniques which may be used to assist them enhance liaison with the users and to develop their abilities to assess user requirements, satisfaction and perception, so that NMHSs can focus their financial and human resources, operational procedures and priorities, systems and technology, to effectively meet user requirements.

##### ***Agricultural Meteorology (AGM)***

**4.2.2** The Council requested the Secretary-General to take steps for the creation of a Network on Climate Change and Food Security in South Asia in order to strengthen regional institutional and policy mechanisms, and to promote and facilitate implementation of location-specific adaptation and mitigation practices. This request was based on the recommendation from the Dhaka Symposium Declaration of the International Symposium on Climate Change and Food Security in South Asia (Dhaka, Bangladesh, 25-30 August 2008).

**4.2.3** The Council further agreed with the Dhaka Symposium Declaration regarding the establishment of a South Asia Climate Outlook Forum and requested the Secretary-General to facilitate the organization of the Forum in 2009. This, it noted, would contribute to minimizing short- and long-term vulnerability of South Asia to climate change, and advance food security in the region.

**4.2.4** The Council noted and expressed support to the WMO expert mission to Bangladesh which was undertaken in December 2008, to review the existing Agrometeorological Services in the Bangladesh Meteorological Department, and help improve these services to the farming community in Bangladesh. The recommendations from the expert Panel were submitted for consideration to the Government of Bangladesh to improve agrometeorological services in Bangladesh.

##### ***Marine Meteorology and Oceanography (MMO)***

**4.2.5** The Council recognized the importance of direct interaction with and feedback from the marine users and welcomed the results of the JCOMM survey on monitoring the effectiveness of the marine meteorological and oceanographic information produced and transmitted by NMHSs. The results demonstrated the increased demand for user-focused marine meteorological and oceanographic products and services. The Council therefore requested the Secretary-General to keep Members informed of the results of this and any further monitoring and urged Members concerned to take the appropriate actions to improve marine meteorological and oceanographic services within their areas of responsibility, in order to meet the marine users' requirements.

**4.2.6** The Council noted the International Maritime Organization (IMO) resolution A.705(17) on promulgation of maritime safety information, adopted by IMO/MSC-85 (2008). The resolution set out the organization, standards and methods which should be used for the promulgation and reception of maritime safety information, including navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages broadcast to ships, as documented in the International Convention of Safety of Life at Sea (SOLAS). The Council requested the Secretary-General to establish, in collaboration with the IMO, the IMO/WMO World-Wide Met-ocean Information and Warning Service (WWMIWS), to complement the existing IMO/International Hydrographic Organization (IHO) World-Wide Navigational Warning Services (WWNWS, IMO resolution A.706(17)).

#### ***Atmospheric Research and Environment (ARE)***

**4.2.7** The GAW Urban Research Meteorology and Environment (GURME) project has been working closely with the COST Action 728 “Enhancing Meso-Scale Meteorological Modelling Capabilities for Air Pollution and Dispersion Applications” and has agreed to host the final COST 728 Management Committee and related expert meeting at WMO in December 2009. The expert meeting would be jointly organized with PWS with the focus on user connection and dissemination. The Council welcomed this initiative for enhancing collaboration within and outside of WMO and for assisting NMHSs in expanding their activities and outreach, and public information aspects of air quality modelling.

#### **Improved products and services**

##### ***PWS***

**4.2.8** The Council endorsed the Project Implementation Plan developed by the Science Steering Group (SSG) of the World EXPO 2010 Nowcast Services Demonstration Project (WENS) in the context of the Shanghai Multi-Hazard Early Warning Services, in November 2008. It also supported the goals of WENS which are: to demonstrate how nowcasting applications can enhance short-range forecasts of high-impact weather using the opportunity afforded by the World EXPO 2010; and to promote the understanding and enhance the capability of WMO Members in nowcasting services. The work on WENS is continuing with the participation of Australia, Hong Kong, China and China and will culminate in the demonstration of the nowcasting services during the Expo in 2010.

**4.2.9** The Council expressed strong support for the Regional Subproject Implementation Plan of the Severe Weather Forecasting Demonstration Project (SWFDP) in Southern African countries that was produced at the Meeting of the Regional Technical Implementation Team held in Pretoria, South Africa, 24-27 February 2009. The Council recalled that PWS aspects had been included in the implementation of the SWFDP and noted the inclusion of new activities within the project aimed at the improvement of products and services. These activities include: verification of warnings; user-based assessments of the accuracy and usefulness of weather warning and forecast products; and enhancement of communication between forecasting centres in the exchange of warnings. In addition, the Council fully supported the inclusion of PWS in the proposed SWFDP in RA III and RA V and requested the Secretary-General to support the implementation of SWFDP in WMO Regions concerned.

##### ***AGM***

**4.2.10** The Council appreciated holding meetings of CAgM Expert and Implementation and Coordination Teams in conjunction with other institutions or organizations in order to obtain additional input for their work. It urged action on the following outcomes of the CAgM meetings: recommendations for producing and using weather and climate information to implement

adaptation strategies at the national and regional levels; the publication of WMO Operational Guidelines for Fire Weather Agrometeorology and Proceedings of the Fire Danger Rating Workshop; and publication of select papers from the WMO/COST Action 734 "Symposium on Climate Change and Variability-Agro Meteorological Monitoring and Coping Strategies for Agriculture" in the Hungarian Meteorological Service journal 'IDŐJÁRÁS'.

**4.2.11** The Council supported the recommendation from the CAgM Expert Team on Drought and Extreme Temperatures: Preparedness and Management for Sustainable Agriculture, Rangelands, Forestry, and Fisheries (ETDRET, Beijing, China, 18-19 February 2008), that the Secretary-General makes appropriate arrangements to identify the methods and to marshal resources for the development of standards for agricultural drought indices in a timely manner.

#### **MMO**

**4.2.12** The Council recalled the recent widespread flooding in the exposed islands in many Pacific Islands Countries (PICs) as a result of large swells generated from distant winds over the North Pacific. The Council noted that a major marine weather-related threat for the Small Island Developing States (SIDSs) is due to the remotely generated swell. Forecasts of ocean wave period and probabilistic forecasts of wave height were seen as essential tools in the generation of warnings of such severe phenomena. Noting that advanced centres (e.g., ECMWF and NOAA/NCEP) make these products freely available on their Websites, the Council urged Members to make maximum use of these products and requested the Secretary-General that capacity-building activities be aimed at promoting and facilitating the use of such forecasts be continued in order to improve NMHSs' marine services (see also agenda item 3.1).

#### **ARE**

**4.2.13** The Council noted that GURME is participating in the European Commission project MEGAPOLI (Mega cities: Emissions, urban, regional and Global Atmospheric POLLution and climate effects, and Integrated tools for assessment and mitigation). WMO is responsible for the task of implementation of integrated tools in mega cities and for encouraging global connections for this project. This task will feed directly into the COST work package on mitigation, policy options and impact assessment. The Council recommended that Members support this activity.

**4.2.14** The Council noted that the GURME Shanghai project on air pollution, a component of the Shanghai Multi-Hazard Early Warning System (MHEWS) Demonstration project, has progressed well for provision of operational ozone forecasting and is providing real-time display of observational data. The Council noted that GURME should assist the Shanghai Meteorological Bureau to produce their best products and that a workshop planned for autumn 2009 should focus on delivering operational components. The Council also noted that it would be important to proceed with the Heat Health Warning Systems (HHWS) as part of the Shanghai MHEWS, for the benefit of Members.

#### **Service delivery**

#### **PWS**

**4.2.15** The Council welcomed the results of the Survey on Improving the Delivery of Public Weather Services by the PWS Expert Team on Service and Products Improvement (ET/SPI). The results demonstrated that NMHSs rated building the capability of their staff in effective communication with the public as well as engaging in public education and awareness raising, as high-priorities in attaining high-quality service delivery. There was also a high requirement by NMHSs to improve their Nowcasting capabilities in order to improve their warning services associated with severe weather. The Council requested that these stated needs be kept in view

when planning the activities of the PWS Programme in assisting NMHSs in their service delivery efforts.

**4.2.16** The Council encouraged the WMO regional associations (RAs) to keep in view the recommendations of the “International Symposium on Public Weather Services: A Key to Service Delivery” (Geneva, Switzerland, 3-5 December 2007) as a guide to the implementation of public weather services programmes and activities of Members. Noting that one of the recommendations of the Symposium was for PWS to continue to collect and document examples of best practices in service delivery, the Council recommended that RAs encourage their Members to use these examples in improving their service delivery practices.

**4.2.17** The Council recalled that the “Learning Through Doing” (LTD) initiated by the PWS Programme, provides a new approach to building the capability of NMHSs to respond to user requirements and produce services and products to meet those requirements. The Council welcomed the actions of the Secretariat in implementing such projects in Madagascar, Chile, Peru, and more recently in Panama. In Chile and Peru, the project had got underway with kick-off workshops in 2008 which brought together the staff of NMHSs and representatives of a cross-section of user communities such as agriculture, fisheries, health and transport to start dialogue between user and provider communities and to work on the basics of economic analysis for application to evaluation of meteorological and hydrological services. A similar workshop had taken place in March 2009 in Panama, to identify the requirements of a number of user sectors including the public health. The Council expressed its appreciation to Spain for funding the project in these three countries.

**4.2.18** The Council welcomed the successful workshop in the LTD-Madagascar project as the first step in the implementation of this project. The workshop, which was held in Madagascar in 2008, initiated a partnership between the Madagascar Meteorological Services and the Ministry of Health and Family Planning which culminated in the establishment of a national Working Group on Weather, Climate and Health in the use of weather and climate information and services by the health sector. It noted that the workshop targeted the three diseases with the most disabling impact on the country namely, Malaria, Rift Valley Fever and Plague. The Council commended the signature of a Protocol of Partnership by the Ministers in charge of the two ministries concerned. The Council endorsed the LTD as an effective approach to national capacity-building and requested the Secretary-General to continue to support the implementation of these projects.

**4.2.19** The Council commended Members for their support and participation in the WMO Website ‘World Weather Information Service (WWIS), at <http://worldweather.wmo.int>, which won the Stockholm Challenge Award - Environmental Category in 2008. The Website currently provides information in Arabic, Chinese, English, French, German, Portuguese and Spanish languages, and is coordinated by Hong Kong, China. It has been proposed that Italian and Russian may be added to these languages in the near future as well. The Council urged Members to promote the use of the information on the Website, as well as increase their contribution of information to the Website.

**4.2.20** The Council commended Hong Kong, China for organizing, in conjunction with WMO, and funding the WMO VCP Training Course on the Use and Interpretation of City-specific Numerical Weather Prediction Products (Hong Kong, China, 1-5 December 2008), for Members participating in RA II City-Specific NWP Products Pilot Project. The Council recommended that the possibility of repeating the project in other WMO Regions be explored, so as to strengthen the capabilities of NMHSs of developing countries to effectively deliver public weather services.

## **AGM**

**4.2.21** The Council noted that the World Agrometeorological Information Service (WAMIS) Website (<http://www.wamis.org/>) continued to assist Members in disseminating their products. Products from 50 countries or institutions were available on WAMIS, and there were over 90,000 visits to the Website in 2008 with a monthly average of 7600 visits. The Council urged Members to take advantage of WAMIS to disseminate their products.

## **MMO**

**4.2.22** The Council recalled the coordinated initiative by WMO, IMO and the IHO to expand the Global Maritime Distress and Safety System (GMDSS) into the Arctic waters and the commitment by the Environment Canada, Norwegian Meteorological Institute and Roshydromet (Russian Federation) to serve as Issuing Services for the new Arctic METAREAs. The Council noted that new METAREA Issuing Services had developed their operating plans, including timelines, for the implementation of marine meteorological and oceanographic operational services. Noting that the GMDSS for the Arctic region should be fully implemented by 2010/11, the Council requested the Secretary-General to assist the Issuing Services concerned in implementing their operating plans for the provision of marine meteorological and oceanographic services for the Arctic region.

**4.2.23** The Council commended Members for their contributions and participation in the GMDSS-Weather Website (<http://weather.gmdss.org/>), which is managed and hosted by Météo-France. Noting the current expansion of this Website to include products prepared for the International Navigational Telex (NAVTEX) dissemination (see for example: <http://weather.gmdss.org/II.html>), the Council urged Members to disseminate these products through the GTS and to provide the appropriate metadata in compliance with the WIS.

**4.2.24** Recalling the continuing importance to mariners at sea in receiving graphical products, the gradual demise of HF radiofax as a means of disseminating those products, including for the Arctic region, and the Council's request, in its sixtieth session (EC-LX, Geneva, Switzerland, 18-27 June 2008), to JCOMM to continue researching methods for transmitting graphical products to marine users, the Council noted the successful development, in accordance with IHO standards, of product specification for sea ice information in Electronic Navigation Chart Systems (ENC). It encouraged Members to make maximum use of these essential tools and requested JCOMM to develop similar standards for other met-ocean variables. It requested the Secretary-General to promote resource mobilization to develop these activities and partnerships through national and international support.

## **Quality management**

### ***Aeronautical Meteorology (AEM)***

**4.2.25** The Council took note that the third meeting of the Inter-Commission Task team (ICTT) on Quality Management held at the end of October 2008 had reviewed the status of the WMO-QMF, in particular in the different technical commissions, and the necessary next steps for a credible implementation of the framework throughout the organization including the Secretariat.

**4.2.26** The Council noted the review that the third ICTT meeting had undertaken of the status of WMO mandatory publications and their orientation to Quality Management (QM) principles. The Task Team also developed a draft Technical Regulation Vol. IV that is available at the following site: <http://www.wmo.int/pages/prog/www/QMF-Web/Documentation.html>. The Council recommended that a consultation of WMO Members be carried out with a view of adopting the draft as an integral part of WMO Technical Regulations at EC-LXII.

**4.2.27** The Council, noting that the Aeronautical Meteorology Programme had progressed well towards integrating QM principles in the regulatory documents, and considering Resolution 8 (EC-LX) on the establishment of a WMO standard/regulation on meteorological service for international air navigation for inclusion in the WMO-QMF, recognized the need for full cooperation with ICAO as the “owner” of the Annex 3, which is the source for the publication WMO-No. 49, Vol. II, identical mutatis mutandis with Annex 3.

**4.2.28** The Council took note of the working arrangements between ISO and WMO as concluded on 16 September 2008. It further noted that the ICTT meeting had reviewed and developed a procedure to be adopted in the preparation of ISO/WMO common standards and formulated a draft resolution for consideration by the Council. The Council adopted Resolution 4.2/1 (EC-LXI) - Procedures to be followed in proposing common ISO/WMO Technical Standards.

### **MMO**

**4.2.29** Noting that the IMO resolution A.705(17) stated that common standards and procedures be applied to the collection, editing and dissemination of maritime safety information, the Council recognized the need for the development of a Quality Management System (QMS) for the provision of marine meteorological services for international navigation. It therefore requested the Secretary-General, in liaison with IMO, to integrate Quality Management (QM) principles in the regulatory documents on marine meteorological services. The Council urged Members to implement QMS for the provision of marine meteorological services for international navigation and to document the process in order to share with other NMHSs, with a view to facilitating and expediting QMS implementations.

### **Socio-economic issues related to weather, climate and environmental applications**

### **PWS**

**4.2.30** The Council recognized the “WMO Forum: Social and Economic Applications and Benefits of Weather, Climate, and Water Services” as a useful mechanism in the implementation of the Madrid Action Plan (MAP). It encouraged close interaction of major WMO programmes involved in service delivery with the Forum and participation in its activities, since the Forum will contribute to most of the WMO Expected Results.

**4.2.31** Noting that there was need for sustained action for successful implementation of the MAP, the Council requested that resource mobilization at the Secretariat aim at providing financial support for the major activities for this purpose including:

- (a) Pilot projects to assist NMHSs with techniques to enhance services to users;
- (b) Development and publication of methodologies for the evaluation and demonstration of the socio-economic benefits; and
- (c) Production of guidance materials on user-provider dialogue.

**4.2.32** The Council encouraged Members to contribute decision-support tools for uploading on the WMO Website: <http://www.wmo.int/pages/prog/amp/pwsp/socioeconomictools.htm>. These would help NMHSs to build capacity to assess, quantify and demonstrate benefits of weather, climate and water services to user sectors such as health, energy, tourism, transport and urban environment.

## **Capacity-building and training**

### ***PWS***

**4.2.33** The Council supported the focus on service delivery in training activities in public weather services which had taken place since its last session in 2008. These covered the interpretation of city-specific NWP products; public weather services related to the use of GDPFS products; “Learning through Doing” workshops; and the assessment of socio-economic benefits of Meteorological and Hydrological Services. Details of the training are provided in EC-LXI/Rep. 4.2.

### ***AGM***

**4.2.34** The Council appreciated the funding by the State Meteorological Agency of Spain (AEMET) to support the Roving Seminars on Weather, Climate, and Farmers in West Africa. Over 35 seminars took place from September 2008 to January 2009 in some countries in West Africa. The seminars, coordinated by WMO and AEMET, strive to secure farmers’ self reliance in West Africa by informing them about effective weather and climate risk management and the sustainable use of natural resources for agricultural production. The seminars increase the interaction and feedback between the rural farming community and NMHSs. AEMET is currently funding the second phase of the project in 2009 and has expanded the seminars to seven more countries. The Council urged Members to fund similar seminars in their countries.

### ***MMO***

**4.2.35** The Council supported the continuing activities aimed at enhancing capacities of NMHSs to access the existing marine products worldwide and making use of these products for operational forecast and warning services. It noted with appreciation the training activities in marine meteorological services which had taken place during the intersessional period, including on wave and storm surge forecasting, and ice analysis harmonization. Recognizing the need for improved marine meteorological services for international navigation, including for the Arctic region, the Council reiterated its support for a vigorous training and capacity-building programme in marine meteorology, with special focus on GMDSS WWMIWS and on the role and responsibilities of issuing Services as METAREA Coordinators. It requested the Secretary-General to facilitate and support such training events in the future.

### ***ETR***

**4.2.36** The Council recalled that EC-LX had requested the Task Team on Aviation Forecaster Qualifications (TT-AFQ) formed by the EC Panel on Education and Training to report to EC-LXI on a range of matters associated with the qualifications of aeronautical meteorological personnel. The Council took note of the outcome of the meeting of the TT-AFQ which made a number of recommendations including:

- (a) That the term “or equivalent” in the fourth edition of WMO-No. 258 be understood to mean ‘or equivalent to the relevant professional qualifications’ rather than “or equivalent to a degree”;
- (b) That a pathway for non-degreed personnel to become a WMO Meteorologist be created;
- (c) That the terms “Aviation Meteorological Forecaster” or “Aviation Meteorological Observer” used in WMO-No. 258 be replaced with the terms “Aeronautical Meteorologist” and “Aeronautical Meteorological Technician” to better reflect the

changing nature of the job, and the level of education and training associated with these roles;

- (d) That a revised implementation timetable for Members to meet the safety relevant competencies (November 2013) and education and training requirements (November 2016) for Aeronautical Meteorologists be put in place.

**4.2.37** The Council further agreed on the proposal to include a summary list of required competencies of aeronautical meteorologists and aeronautical meteorological technicians as a new appendix to WMO-No. 49, Vol. II. This process would remove the currently existing problem of “Standards” (in WMO-No. 9, Vol. II) referring to “Guidelines” (contained in WMO-No. 258). The Council noted the expected benefits of the proposed approach and the revised implementation timetable as challenging, but achievable. In particular, the Council expressed its expectations that:

- (a) Implementation of the Task Team’s recommendations will improve the quality of the meteorological services provided to air navigation by ensuring uniformly high standards of competence for all operational staff;
- (b) The recommendations provide Members with alternative pathways to develop personnel to the level of “WMO Meteorologist,” consistent with the original intention of the changes introduced in the fourth edition of WMO-No. 258;
- (c) They remove the current regulatory issue of “Standards” in Technical Regulations (WMO-No. 49, Vols. I and II) referencing non-compulsory “Guidelines” (WMO-No. 258);
- (d) They provide Members with further information on the recommended practices for ensuring that their personnel are competent to provide meteorological services to air navigation and provide a clear focus for their initial and ongoing education and training programmes;
- (e) The implementation cost in terms of financial and training resources of the recommended approach for existing former Class II staff should be less than provision of academic education and training for the acquisition of a university degree, while recognizing that for new entrants, the employment of degreed persons would be less costly and thus recommended as normal practice; and
- (f) The proposed implementation timeframe should provide Members with sufficient time to act and respond to the recommendations. To ensure a synchronized approach between WMO and ICAO, the proposed timeframe is explicitly tied to the governing update cycle for ICAO Annex 3 and the associated WMO-No. 49, Vol. II.

**4.2.38** The Council requested the EC Panel to further develop and refine the Task Team’s recommendations in order to produce and publish the fifth edition of WMO-No. 258 as soon as practicable, in light of the proposed implementation timetable. The Council requested the Commission for Aeronautical Meteorology to review and coordinate with the EC Panel of Experts on Education and Training and requested the Secretary-General to advise and work with Members on implementing the proposed changes, consistent with the proposed implementation timetable.

**4.2.39** In order to ensure a speedy implementation of the approved way forward, the Council adopted Resolution 4.2/2 (EC-LXI) – Qualification and competency requirements for aeronautical meteorological personnel.

## DRAFT RESOLUTION

### Res. 4.2/1 (EC-LXI) - PROCEDURES TO BE FOLLOWED IN PROPOSING COMMON ISO/WMO TECHNICAL STANDARDS

#### THE EXECUTIVE COUNCIL,

#### Noting:

- (1) Article 26 of the WMO Convention,
- (2) Resolution 6 (Cg-V) - Relations with the United Nations and other international Organizations,
- (3) The working arrangements between ISO and WMO formally adopted on 16 September 2008,

#### Recognizing:

The wide ranging benefits to NMHSs and user communities resulting from the implementation of common Standards for meteorological, climatological, hydrological, marine and related environmental data, products and services,

#### Considering:

- (1) The importance of following up on the working arrangements between the International Organization for Standardization and the World Meteorological Organization;
- (2) The need to establish the benefit/cost implication to Members of elevating an existing Technical Regulation/Manual/Guide to a common Standard, considering the consequences of converting recommendations to compulsory Standards;
- (3) The importance of determining cross-cutting elements of proposed common Standards with other WMO documents under the control of different technical commissions or Executive Council Panels and Working Groups (WGs) requiring action from these bodies following the approval of the common Standard;

#### Decides:

That, for each proposed common Standard, the responsible body initiating the proposal should prepare comprehensive supporting documentation that includes:

- (1) The benefit/cost implication to Members of elevating an existing Technical Regulation/Manual/Guide to a common Standard, considering the consequences of converting recommendations to compulsory standards ( from "should" to "shall");
- (2) A full description of the cross-cutting elements of the proposed common Standard with other WMO documents under the control of different technical commissions or EC Panels and WGs, that would lead to a requirement for action from these bodies in the event of the Standard being created. To this end, presidents of technical commissions and EC members are to be informed about potential impacts and invited to register an interest in the document being processed;

- (3) An assessment of which elements in the common Standard could create a risk if adopted, and which ones would constitute a risk if omitted or not approved as a common ISO/WMO standard. This risk assessment should be provided with due reference to the AS/NZ 4360:2004 Standard for Risk Management.
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## DRAFT RESOLUTION

### Res. 4.2/2 (EC-LXI) - QUALIFICATION AND COMPETENCY REQUIREMENTS FOR AERONAUTICAL METEOROLOGICAL PERSONNEL

#### THE EXECUTIVE COUNCIL,

##### Noting:

The pending decision by the ICAO the Council to require Members to implement an internationally recognized Quality Management System, including Standards on the required qualifications of personnel in the provision of meteorological services to international civil aviation with the forthcoming Amendment 75 of the ICAO Annex III,

##### Noting further:

The concern expressed by EC-LX and several Members over the difficulties experienced by Members to attract, retain and employ suitably qualified personnel with a relevant university degree,

##### Considering:

The existing ambiguity in the formulation of the required qualifications of aeronautical meteorologists of “a degree or equivalent”,

##### Considering further:

The proposals by the Task Team on Aeronautical Forecaster Qualifications (TT-AFQ),

##### Decides:

- (1) To approve that the term “or equivalent” in the fourth edition of WMO-No. 258 be understood to mean ‘or equivalent to the relevant professional qualifications’ rather than “or equivalent to a degree”;
  - (2) To endorse the addition of a pathway for non-degree personnel to become WMO Meteorologists and request the EC Panel to prepare the next edition of WMO-No. 258 for approval by WMO Congress (WMO Cg-XVII) and publication as soon as practicable;
  - (3) To endorse the proposal for the required competencies (i.e., knowledge, skills and work attitudes) of aeronautical meteorologists to be included as Standards and Recommended Practices in future editions of WMO-No. 49, Vol. II; and
  - (4) To endorse the revised implementation timetable for Members to meet the safety relevant competencies (November 2013) and education and training requirements (November 2016) for aeronautical meteorologists proposed by the Task Team on Aviation Forecaster Qualifications.
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World Meteorological Organization

EC-LXI/Rep. 4.2

THE EXECUTIVE COUNCIL

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## Expected Result 7

### ENHANCED CAPABILITIES OF MEMBERS TO PROVIDE AND USE WEATHER, CLIMATE, WATER AND ENVIRONMENTAL APPLICATIONS AND SERVICES

#### Strategic Thrust: Service Delivery

#### PROGRESS/ACTIVITY REPORT

#### SUMMARY

**Reference:** EC-LXI/Doc. 4.2

**CONTENT OF DOCUMENT:**

This document contains progress reports on issues concerning:

1. User focus
2. Improved products and services
3. Service delivery
4. Quality management
5. Socio-economic issues related to weather, climate and environmental applications
6. Capacity-building and training

**Appendix:**

- Progress/Activity Report

## PROGRESS/ACTIVITY REPORT SINCE EC-LX

### ENHANCED CAPABILITIES OF MEMBERS TO PROVIDE AND USE WEATHER, CLIMATE, WATER AND ENVIRONMENTAL APPLICATIONS AND SERVICES

#### User focus

#### ***Public Weather Services (PWS)***

1. The PWS Programme has produced, distributed and made available on the Public Weather Services (PWS) Website ([www.wmo.int/pws](http://www.wmo.int/pws)), various guidelines addressing subjects on user focus. These include:

- Guidelines on Performance Assessment of Public Weather Services;
- Guidelines on the Improvement of NMSs - Media Relations and Ensuring the use of Official Consistent Information (PWS-3);
- Supplementary Guidelines on Performance Assessment of Public Weather Services (PWS-7);
- Guide on Improving Public Understanding of and Response to Warnings (PWS-8); and
- Guidelines on Quality Management Procedures and Practices for Public Weather Services (PWS-11).

#### ***Agricultural Meteorology (AGM)***

2. An International Workshop on Advances in Operational Weather Systems for Fire Danger Rating was organized in Edmonton, Canada in July 2008 with over 50 experts from different parts of the world. Following the workshop, the CAgM Expert Team on Agrometeorological Aspects of Sustainable Agricultural Development was held with ten participants.

3. An International Symposium on Climate Change and Food Security in South Asia was held in Dhaka, Bangladesh in August, 2008. It was jointly sponsored by the Ohio State University, WMO, FAO, UNESCAP, University of Dhaka and the Government of Bangladesh. The aim of the symposium was to minimize short-and long-term vulnerability of South Asia to climate change and advance food security in the region by developing a Regional Agriculture Mitigation and Adaptation Framework for Climate Change for South Asia. The symposium was attended by around 250 participants from 17 countries (<http://www.wmo.int/dhaka08>).

4. A WMO Expert Mission to Bangladesh was held in Dhaka in December 2008. It was undertaken to review the existing Agrometeorological Services in the Bangladesh Meteorological Department and help improve these services to the farming community in Bangladesh. A one-day workshop on "Agrometeorology in the Service of Agriculture in Bangladesh" was attended by over 70 participants from all stakeholder organizations and senior government officials.

#### ***Marine Meteorology and Oceanography (MMO)***

5. The results of the Marine Meteorological Services (MMS) monitoring survey were compiled by the Secretariat, with the questionnaires distributed to ships' masters through national

PMOs as well as via the JCOMM and GMDSS Websites. The results of the 507 returns show that there remained considerable room for improvement with regards to both the quality and content of services, and their coverage and timeliness in some oceanic regions, and encouraged NMHSs to take corrective action in areas of identified weaknesses. The results of the analysis were compiled into a report and can be accessed at: [http://www.wmo.int/pages/prog/amp/mmop/jcomm\\_reports.html](http://www.wmo.int/pages/prog/amp/mmop/jcomm_reports.html). The IMO/WMO World-Wide Met-ocean Warning Service Guidance Document is under preparation in close collaboration with IMO and IHO. The Guidance Document will be submitted to IMO for adoption by its Members in late 2009.

### ***Atmospheric Research and Environment (ARE)***

6. The strong collaboration between GURME and COST Action 728 “Enhancing Meso-Scale Meteorological Modelling Capabilities for Air Pollution and Dispersion Applications” has resulted in the joint publications “Overview of Existing Integrated (off-line and on-line) Mesoscale Meteorological and Chemical Transport Modelling Systems in Europe” (GAW Report No. 177) and “Overview of Tools and Methods for Meteorological and Air Pollution Mesoscale Model Evaluation and User Training” (GAW Report No. 181). Through this action, advice is offered to users on running a model, the accessibility of models to potential users is increased, and guidance for employing mesoscale models for meteorological and air pollution applications are provided.

### **Improved products and services**

#### ***PWS***

7. The Project Implementation Plan (PIP) of the World EXPO 2010 Nowcast Services Demonstration Project (WENS) was prepared by the WENS Science Steering Group (SSG) in November 2008. The PIP contains detailed description of the WENS project, including its goals and objectives and mode of operation. The project will demonstrate the application of nowcasting services to high impact weather during the EXPO. A post-project review will be conducted to assess the impact of WENS. This will be followed by the publication of guidelines on the provision of nowcasting services reflecting experience gained from WENS and capacity-building workshops for WMO Members. More information on this is available on [http://www.wmo.int/pages/prog/amp/pwsp/documents/WENSProjectImplementationPlan\\_Version6\\_12Dec.pdf](http://www.wmo.int/pages/prog/amp/pwsp/documents/WENSProjectImplementationPlan_Version6_12Dec.pdf).

8. The meeting of the Regional Technical Implementation Team of the Severe Weather Forecasting Demonstration Project (SWFDP) for Southern Africa was held in Pretoria in February 2009. One of the outcomes of the meeting was the Regional Subproject Implementation Plan: 2008/2011. The plan describes the implementation of SWFDP in all Southern African countries. Various activities planned during the implementation phase of the project Aim at the improvement of products and services. A user questionnaire template was developed as part of the project to assess user satisfaction.

#### ***AGM***

9. A WMO/COST Action 734 “Symposium on Climate Change and Variability-Agro Meteorological Monitoring and Coping Strategies for Agriculture” with the participation of 75 experts was held in Oscarborg, Norway in June 2009 in conjunction with a CAgM Expert Team on Climate Risks in Vulnerable Areas: Agrometeorological Monitoring and Coping Strategies.

10. A Workshop on Climate Change Impacts and Adaptation to Agriculture, Forestry and Fisheries at the National and Regional Levels was held in Orlando, Florida, USA in

November 2008, organized by WMO, the United States Department of Agriculture (USDA), and the US Southeast Climate Consortium (SECC). The workshop was held in conjunction with the meeting of the WMO CAgM Implementation/Coordination Team (ICT) on Climate Change/Variability and Natural Disasters in Agriculture and meeting of the SECC members.

11. A CAgM Expert Team on the Collection and Evaluation of Operational Agrometeorological Tools and Methodologies was held in Nairobi, Kenya in October 2008. The Expert Team met with representatives from international organizations based in Nairobi such as the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), the International Livestock Research Institute (ILRI), the University of Nairobi, and the Canadian International Development Research Centre (IDRC).

12. An International Workshop on Drought and Extreme Temperatures: Preparedness and Management for Sustainable Agriculture, Rangelands, Forestry and Fisheries was held in Beijing, China in 18-19 February 2009 organized by WMO and CMA. This workshop was held in conjunction with the CAgM Expert Team on Drought and Extreme Temperatures, which used the presentations and recommendations as input in their deliberations. More than 40 scientists participated in the workshop and Expert Team.

13. An International Conference on the Challenges and Opportunities in Agrometeorology was held in New Delhi, India, 23-25 February 2009. This Workshop was organized by the Indian Meteorological Society and co-sponsored by WMO, the India Meteorological Department, Ministry of Earth Sciences, Ministry of Agriculture, Department of Science and Technology, the Indian Council of Agricultural Research and other Indian organizations. More than 100 participants attended the workshop. This workshop was followed by a Meeting of the CAgM Implementation and Coordination Team on Support Systems for Agrometeorological Services.

14. The Secretariat represented WMO at the following fourteen meetings: FAO Expert Meeting on Climate Change Adaptation and Mitigation (Rome, March 2008); Management Committee Meeting of EU COST 734 (Greece, March 2008); World Food Programme Meeting (Rome, Italy, April 2008); sixteenth session of Commission on Sustainable Development (USA, May 2008); Southeast Europe Regional Climate Outlook Forum (RCOF), (Croatia, June 2008); CAgM Management Group Meeting (Obninsk, Russian Federation, June 2008); IFAD Workshop on Climate Change and Agriculture (Rome, July 2008); CTA Steering Committee Meeting (Netherlands, September 2008); Argentinean Congress of Agrometeorology (Argentina, October 2008); CTA International Seminar on the Implications of Global Climate Change for Sustainable Agricultural Production Systems in ACP countries (Burkina Faso, October 2008); UNCCD Committee of Science and Technology (Turkey, November 2008); High-Level Meeting on Food Security (Spain, January 2009); GEO Workshop on Developing an Agricultural Monitoring System of Systems (China, February 2009); and the thirty-second IFAD Governing Council (Rome, February 2009).

#### **MMO**

15. *The Guide to Storm Surge Forecasting* was finalized, and will be published and distributed in late 2009. This publication will assist Members in developing an operational storm surge forecasting system.

#### **ARE**

16. The European Commission project MEGAPOLI (Megacities: Emissions, urban, regional and Global Atmospheric POLLution and climate effects, and Integrated tools for assessment and mitigation) brings together leading European research groups, state-of-the-art scientific tools and key players from third countries to investigate interactions among megacities, air quality and

weather with global atmospheric chemistry and climate. The main objectives are to: assess impacts of megacities and large air-pollution hot spots on local, regional and global air quality; quantify feedbacks among megacity air quality, local and regional climate, and global climate change; and develop improved integrated tools for prediction of air pollution in megacities. This project looks at the whole picture from emissions and megacity features to air quality and further to mitigation, policy options and impact assessment. The WMO GURME is responsible for the task of implementation of integrated tools to other megacities within the work package “Integrated tools and implementation for megacities”. The evaluators noted the involvement of WMO in the project and thought it highly commendable that links to the international community had already been made.

17. The Shanghai MHEWS Demonstration project consists of six components including the GURME demonstration project on air pollution; and the demonstration project on Heat and Health Warning System (HHWS). The GURME project was started in February 2007 with the main focus on air quality prediction, ozone episode warnings and health and safety related services. The HHWS component is to develop and sustain effective partnerships with local and regional health and emergency response authorities; issue specialized warnings and information on heatwaves for improved prevention, preparedness, and response activities and in addition it will enhance the understanding of Members of various HHWSs and requirements for their implementation.

## **Service delivery**

### ***PWS***

18. The PWS Expert Team on Services and Products Improvement (ET/SPI) prepared the survey questionnaire on Improving the Delivery of Public Weather Services. The objectives of the survey were: to assess the needs of NMHSs especially in developing countries regarding public weather services with a focus on identifying opportunities to improve products and services; and to identify the emerging needs for new and improved PWS products and services for the emergency management community and media partners. The survey results gave an indication of the state of implementation of PWS programmes and activities by NMHSs, as well as the gaps that NMHSs have identified. The results of the analysis were compiled into a report which is available on the WMO PWS Website and can be accessed at: <http://www.wmo.int/pages/prog/amp/pwsp/surveys.htm>.

19. The International Symposium on PWS (Geneva, Switzerland, 3-5 December 2007) made seven recommendations putting particular emphasis on focussing on assisting NMHSs develop capacities in key areas of service delivery for ensuring availability, dependability, usability, and credibility of the services that NMHSs render to users, and to continuously seek out best practice examples in service delivery and to take necessary steps to ensure that more NMHSs adopt such practices. The examples of best practices have already been produced and distributed to NMHSs. They can be accessed at: [http://www.wmo.int/pages/prog/amp/pwsp/publicationsguidelines\\_en.htm](http://www.wmo.int/pages/prog/amp/pwsp/publicationsguidelines_en.htm). It is planned to continue compiling such examples on a continuous basis as a vital resource for improvement of service delivery by NMHSs.

20. The PWS Programme created the concept of “Learning Through Doing”, LTD, in 2007, through the work of the CBS OPAG on PWS as a new approach to capacity-building and to address those Actions in the Madrid Action Plan (MAP) which are of direct relevance to PWS, namely: (i) making users aware of range of products and services and their expected benefits; (ii) facilitating dialogue between suppliers and users of services; and (iii) developing methodologies for quantifying the benefits of NMHS services. Several LTD workshops have been held so far in Chile, Peru, Panama and Madagascar to concentrate on basics of economic analysis for

application to evaluation of meteorological and hydrological services and lay the foundation for collaboration between NMHSs and the targeted user sectors.

21. The WMO Website 'World Weather Information Service (WWIS)' (<http://worldweather.wmo.int/>), won the Stockholm Challenge Award - Environmental Category in 2008. More details on the Award are available on the Stockholm Challenge Website, <http://www.stockholmchallenge.se/>. By 1 January 2009, 119 Members supplied official weather forecasts for 1273 cities. A total of 1275 cities from 161 WMO Members also had their climatological data presented on this Website. The Severe Weather Information Centre Website, <http://severe.worldweather.wmo.int/> continued to display advisories issued by Regional Specialized Meteorological Centres (RSMCs) and Tropical Cyclone Warning Centres (TCWCs), and official warnings issued by NMHSs. The severe weather phenomena on the site were tropical cyclones, heavy rain, heavy snow and thunderstorms.

22. The WMO VCP Training Course on the Use and Interpretation of City-specific Numerical Weather Prediction Products (Hong Kong, China, December 2008), aimed at raising the capabilities of participants in the use of numerical weather prediction products for city-specific weather forecasting. It was designed to benefit the recipients of the NWP products provided through the RA II Pilot Project on the Provision of City-Specific NWP Products to Developing Countries via the Internet. The course was designed for Meteorologists with experience in weather forecasting. As a contribution to the WMO VCP, Hong Kong, China offered more than ten fellowships to participants from the developing and Least Developed Countries (LDCs).

#### **MMO**

23. WMO participated in several IMO and IHO meetings to coordinate the expansion of the Global Maritime Distress and Safety System (GMDSS) into the Arctic waters, and the revision of IMO resolutions A.705(17) on promulgation of maritime safety information, and A.706(17) on the World-Wide Navigational Warning Service. The WMO marine broadcast system under GMDSS Website (<http://weather.gmdss.org>) continued to disseminate official maritime safety information and warnings supplied by the existing METAREA Issuing Services (high seas). The inclusion of maritime safety information prepared for NAVTEX dissemination (coastal waters) is under preparation. IHO has been collaborating with WMO and its JCOMM Expert Team on Maritime Safety Services to include navigational warnings on this Website.

24. The sea ice services Website (<http://ipy-ice-portal.com/>) for the global sea ice operational information has been in operation since May 2007. An Ice Objects Catalogue, defining 23 ice "object classes" (with formal definitions and enumerations, in accordance with WMO-No. 259 – *WMO Sea Ice Nomenclature*) was produced in consistency with the existing IMO, IHO and the International Electrotechnical Commission (IEC) standards and specifications for Marine Information Objects (MIO), and progress has been made to integrate it into the IHO Registry and development of an S-57 Product Specification for ice information. This Catalogue would provide the essential tool to enable NMHSs, in particular their National Ice Services, to develop products specifically for Electronic Navigation Chart Systems and would allow the implementation of software to decode and display ice information by the manufacturers of these systems, using the S-57 chart data exchange standard.

#### **Quality Management**

#### **MMO**

25. A catalogue on marine meteorological and oceanographic best practices and standards is under preparation by JCOMM in accordance with the recommendations from ICT-QMF and

Resolution 32 (Cg-XV, May 2007). This catalogue should assist Members in developing quality management systems for marine meteorological forecasts and services.

### **Socio-economic issues related to weather, climate and environmental applications**

#### **PWS**

26. The “WMO Forum: Social and Economic Applications and Benefits of Weather, Climate, and Water Services”, which succeeded the Task Force on Socio-Economic Applications of Meteorological and Hydrological Services, has modified Terms of Reference (ToRs). It also has a wider spectrum of membership including NMHSs, government departments, NGOs, the World Bank, academia and the media. It is expected to guide the process of the implementation of the Madrid Action Plan. The first meeting of the group after its transformation from a Task force to the Forum is scheduled to be held in Geneva, Switzerland, 18-19 June 2009. The outcomes of the meeting will be reported to EC LXII.

27. The decision-support tools on the WMO Website: <http://www.wmo.int/pages/prog/amp/pwsp/socioeconomictools.htm>, cover the following sectors so far: health, energy, tourism, water management, engineering, transport (road, shipping, aviation) and marine sectors. It is planned to expand this data base and expand it into other sectors. This is only possible if NMHSs contribute more tools to the data base and, where possible, provide guidance on ways in which the tools can be adapted for application elsewhere.

### **Capacity-building and training**

#### **PWS**

28. The following training events in PWS took place after EC-LX:

- (a) WMO VCP Training Course on the Use and Interpretation of City-specific Numerical Weather Prediction Products (For Members participating in RA II City-Specific NWP Products Pilot Project), Hong Kong, China, December 2008;
- (b) Severe Weather Forecasting Demonstration Project (SWFDP) – Southern Africa: Training Workshop on the Use of GDPFS Products and Public Weather Services Aspects, Pretoria, South Africa, November 2008;
- (c) Kick-off workshop for the “Learning through Doing Project: Public Weather Services and Health Sector”, Antananarivo, Madagascar, October 2008;
- (d) Training Workshop on Severe Weather Demonstration Project (SWFDP) for South America, Brazil, September 2008;
- (e) Training Workshop on the Assessment of Socio-economic Benefits of Meteorological and Hydrological Services, Sofia, Bulgaria, September 2008; and
- (f) PWS Training Workshop for Hurricane Committee region, Miami, Florida, April 2009.

#### **AGM**

29. The Roving Seminars on Weather, Climate and Farmers made substantial progress in 2008 and 2009. WMO and AEMET organized an Expert Meeting on Agrometeorology in the Service of West African Agriculture at the AGRHYMET Regional Centre in Niamey, Niger in April 2008. This meeting recommended the organization of roving seminars in five countries

(Burkina Faso, Mali, Mauritania, Niger and Senegal) to assist farmers in providing them with climate information and applications for increasing productivity of their cropping systems. AEMET agreed to fund these seminars to be coordinated by WMO.

30. A coordination and training meeting for the Roving Seminars was held in Bamako, Mali in September 2008. Roving Seminars were held in Mali during September and October. In Mauritania, more than 100 farmers attended an extended five-day roving seminar in mid-September. Roving Seminars were held in December 2008 and January 2009 in Burkina Faso, Senegal, and Niger.

31. AEMET and WMO organized an Evaluation and Planning Meeting on Roving Seminars on Weather, Climate, and Farmers in West Africa in Bamako, Mali in March 2009 to evaluate the Roving Seminars held in the first five countries. This evaluation was then used for a planning meeting to expand the Roving Seminar concept to seven more countries in West Africa.

### **MMO**

32. The following training events were organized to improve the capabilities of NMHSs to enhance marine service provision:

- (a) The Ice Analysts Workshop (Rostock, Germany, June 2008); and
- (b) The JCOMM/TCP workshop on storm surge and wave forecasting (Melbourne, Australia, December 2008).

Proceedings are available on the WMO Website at:  
<http://www.wmo.int/pages/prog/amp/mmop/publications.html>.

### **ARE**

33. EC-LX had agreed that training workshops should be organized in WMO Regions or sub-regions to make possible the expansion of air quality forecasting to countries that require this service but that lack expertise. A GURME International Workshop on Air Quality Forecasting was held for South Asian countries in Pune, India, December 2008, hosted by the Indian Institute of Tropical Meteorology. International and Indian experts trained about 50 participants from the sub-region.

### **ETR**

34. The Task Team on Aviation Forecaster Qualifications (TT-AFQ), created by the WMO Executive Council Panel of Experts on Education and Training at its twenty-third Session in Costa Rica in March 2008, met at the UK Met Office in Exeter in February 2009. The Report of this meeting is available (in English) at:  
[http://www.wmo.int/pages/prog/etr/documents/REPORT\\_Task\\_Team\\_AFQ.pdf](http://www.wmo.int/pages/prog/etr/documents/REPORT_Task_Team_AFQ.pdf).

35. The Task Team reviewed the background and issues related to the Qualifications required by aeronautical meteorologists. Following discussion with, and clarification from, the editors of the fourth edition of WMO-No. 258, the Task Team recommended that the term "or equivalent" be interpreted as "or equivalent to the relevant professional qualifications" rather than "or equivalent to a degree".

36. The Task Team recommended that a new pathway for non-degreed personnel to become a WMO Meteorologist be incorporated in the next (fifth) edition of WMO Publication No. 258 "Guidelines for the Education and Training of Personnel in Meteorology and Operational

Hydrology, Vol. 1 Meteorology”, scheduled to be published in 2010. The additional pathway recognizes the difficulty many Members experience in attracting and retaining university graduates by providing an alternative pathway that does not require a full university degree.

37. The Task Team reviewed and revised the implementation timetable originally proposed by the EC Panel of Experts on Education and Training. The new timetable takes into account: the meeting schedules of the appropriate WMO decision bodies; the proposed publication dates of the ICAO and WMO linked documents (ICAO Annex III and WMO-No. 49, Vol. II) and the fifth edition of WMO-No. 258; and, the need to ensure the competence of all personnel providing meteorological services to air navigation.

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Annex: 1

## ANNEX

### **TASK TEAM ON AVIATION FORECASTER QUALIFICATIONS (TT-AFQ) RECOMMENDATIONS FOR EC-LXI AND THE EC PANEL OF EXPERTS ON EDUCATION AND TRAINING**

In response to the tasks given to the TT-AFQ by the EC Panel and subsequently endorsed with modifications by EC-LX, the TT-AFQ formulated the following recommendations:

- The ETR Office to provide copies of the final report of this meeting to the EC Panel to discuss the TT-AFQ findings by correspondence;
  - The WMO Secretariat seek approval from EC LXI that the term “or equivalent” in the fourth edition of WMO-No. 258 be understood to mean ‘or equivalent to the relevant professional qualifications’ rather than “or equivalent to a degree”;
  - The WMO Secretariat to advise the EC Panel of the Task Team’s recommendation to include a pathway for non-degreed personnel to become a WMO Meteorologist. This recommendation is based on the clarification of ‘or equivalent’ in the current edition of WMO-No. 258 (Section 1.1 Basic Assumptions (c) and (d));
  - The WMO Secretariat to advise the EC Panel that the terms “Aviation Meteorological Forecaster” or “Aviation Meteorological Observer” used in WMO-No. 258 be replaced with the terms “Aeronautical Meteorologist” and “Aeronautical Meteorological Technician” to better reflect the changing nature of the job, and the level of education and training associated with these roles;
  - The WMO Secretariat to seek approval from EC to publish this revised fifth edition of WMO-No. 258 as soon as practicable;
  - The WMO Secretariat to include the required competencies (i.e., knowledge, skills and work attitudes) of Aeronautical Meteorologists, as currently specified in WMO-No. 258 Supplement 1 (Sections 2.2 to 2.4) and updated by CAeM ET/ET, as Standards and Recommended Practices in WMO-No. 49, Vol. II for approval by EC; and
  - The implementation timetable proposed by the EC Panel of full compliance by end of 2014 be modified in light of recommendations 2, 3 and 4 above. The new implementation timetable is based upon the three yearly update of WMO-No. 49. Late 2013 has been selected to prioritize safety relevant competencies and allow the education and training institutions time to establish appropriate education and training programs in time for late 2016.
-