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Regional progress of WAFS transition

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Bangkok, Thailand, 15 – 21 July 2003

Agenda Item 8(2): Transition to the final phase of WAFS

REGIONAL PROGRESS OF WAFS TRANSITION

(Presented by Chairman, WAFS Transition Task Force)

Summary

This paper presents the progress of WAFS transition and future development of WAFS implementation in the Asia and Pacific Regions.

1 Introduction

1.1 Subsequent to the last meeting of the CNS/MET SG during 15-19 July 2002, the final phase of the WAFS was discussed in depth in the Meteorology (MET) Divisional Meeting, Montreal, 9-27 September 2002. Discussions relevant to WAFS transition are highlighted below as background information for the CNS/MET SG: -

(a) WAFC London had been transmitting BUFR coded WAFS products on the satellite broadcast for some time to enable States to test their BUFR decoding/processing software. According to information provided by the WAFC Provider States at the meeting, the WAFC London BUFR coded WAFS products would become operational during November 2002 while WAFC Washington would begin similar transmissions towards the end of September 2002 with a view to becoming operational by the end of May 2003;

(b) The production/transmission of WAFS graphical output i.e., T4 facsimile charts, by the WAFCs would continue until 1 July 2005 so as to provide additional time to give assurance that all user States have had adequate opportunity to avail themselves of the offered assistance, and thereby become capable of using WAFS output in the GRIB and BUFR code forms;

(c) WAFC back-up procedures had been developed by the WAFS Study Group (WAFSSG). Upon updating and necessary editorial adjustments, the backup procedures would be included as an attachment to Annex 3 (Note: the WAFC back-up procedures have subsequently been included as Attachment C to Amendment 73 to Annex 3);

(d) The suggestion of extending the lead time for the issuance of SIGWX forecasts by WAFCs from the current 12 hours to 16 hours to meet the needs for a growing number of non-stop operations of 15 hours or longer was

discussed. This matter would be reviewed by the new WAFS Operations Group (WAFSOPSG), the successor group of the WAFSSG for a future amendment to Annex 3; and

(e) With the implementation of Amendment 73 to Annex 3, all references to the so-called "final" phase of the WAFS were considered redundant and counter-productive and thus would be eliminated. The development of the WAFS would continue in the future to meet evolving operational requirements under the guidance of the WAFSOPSG. The draft terms of reference of the WAFSOPSG includes, inter alia, the provision of advice and guidance concerning the operation of the WAFS and its effectiveness, and development of proposals for the development of the WAFS, to ensure that the WAFS continues to meet current and evolving global and, where appropriate, regional operational requirements.

1.2 With the above as background, this paper presents CNS/MET SG7 with the latest progress of WAFS transition in the Asia and Pacific Regions and highlights improvement areas and issues for consideration by the meeting.

2 Progress

2.1 The progress of WAFS transition in the Asia and Pacific Regions has been tracked by the document "ASIA/PAC WAFS Transition Plan and Procedures" developed and maintained by the WAFS Transition Task Force (WAFS/T TF) of the CNS/MET SG since 1998. This document was last updated by CNS/MET SG6 in July 2002 and is included as the Appendix to this paper for review and necessary updating by CNS/MET SG7.

2.2 CNS/MET SG7 is invited to review the progress of WAFS transition in the Asia and Pacific Regions against the "Indicative Timetable for Achieving the Final Phase of WAFS" given in the "ASIA/PAC WAFS Transition Plan and Procedures" (see Attachment 1 of Appendix), in particular the progress of the following items which are due or will be due for completion in 2003 or early 2004: -

Item	Task/Stage of Implementation of WAFS	Anticipated Date
3	Training in the operational conversion of GRIB forecasts to Wind / Temp charts	late 2002 (SADIS) early 2004 (ISCS)
6	Training in the operational conversion of BUFR to SIGWX charts	late 2003 (SADIS) early 2004 (ISCS)
8	The satellite distribution by the two WAFCs of global SWH and of SWM for limited geographical areas(*) in BUFR format	2003 (SADIS) early 2004 (ISCS)

(*) WAFC London will also distribute by satellite broadcast SWM in raw form, i.e. not quality controlled, outside the limited geographical areas.

2.3 The meeting may like to note that a training workshop on SADIS workstation

software for decoding of WAFS products in the GRIB and BUFR codes was held at the ICAO Asia and Pacific Office during 18-20 November 2002. As regards the satellite distribution of global SWH in BUFR format, WAFC London has advised that the WAFS SWH BUFR data issued by WAFC London can be considered operational data w.e.f. 4 June 2003.

2.4 As regards the satellite distribution of SWM in BUFR format, WAFC London has advised that the data is not currently produced but is scheduled to be available operationally in 2004. The meeting may also wish to review the footnote under item 8 of the Indicative Timetable as non-quality controlled SWM data is not considered WAFS data and the WAFSSG/8 Meeting had previously agreed that no such "raw" data should be provided as part of WAFS, since the philosophy behind WAFS was that all the data and products provided should be quality controlled. Furthermore, the MET Divisional Meeting (September 2002, Montreal) also emphasized that "requirements for WAFS SWM forecasts must be processed through the relevant PIRGs and, must be restricted to "limited geographical areas", in accordance with Annex 3". It is planned that the coverage of the SWM forecasts to be provided by the WAFCs will be tabled for consideration by the WAFSOPSG.

2.5 In early 2003, a regional survey was conducted by the WAFS Transition Task Force (WAFS/T TF) to assess the plans of the SADIS and ISCS user States in the Asia and Pacific Regions to upgrade/replace their workstations and software used for handling WAFS data, and the dates the new equipment and the software capability to decode and display GRIB and BUFR data are expected to be operational. The results of the survey are presented in a separate working paper for CNS/MET SG7.

3 Improvement Areas and Issues

3.1 **Lead time of SIGWX chart broadcasts** – as highlighted in para. 1.1(d) above, the matter would be reviewed by the successor group of the WAFSSG, viz. the WAFSOPSG, for a future amendment to Annex 3.

3.2 **SIGWX chart area and projection** – in CNS/MET SG6, the expert from the US presented an example of a proposed chart area "L" for consideration by the meeting. The meeting discussed the need for SIGWX chart "L" to cover the new polar routes over the North Pole that was raised at the WAFSSG meeting in 1999. It was expected that the WAFSSG (or its successor group) would review again the requirement for the SIGWX chart "L" and how it could be produced. The US stated in the last meeting that the chart could be made available on its Aviation Weather Centre website. In this regard, the US may like to provide the present meeting with an update on the availability of the chart.

3.3 **WAFS backup arrangements** – as highlighted in para. 1.1(c) above, backup procedures have been developed by the WAFSSG and they would be included as an attachment to Annex 3 after updating and necessary editorial adjustments.

3.4 **Medium-level SIGWX charts** – as pointed out in para. 2.4 above, it is planned that the coverage of the medium-level SIGWX forecasts to be provided by the WAFCs will be tabled for consideration by the WAFSOPSG.

3.5 **Migration to GRIB and BUFR**

3.5.1 The results of the GRIB/BUFR regional survey are presented in a separate working paper for consideration by CNS/MET SG7. Other points relevant to the GRIB/BUFR migration are discussed below.

3.5.2 The meeting may like to note that Hong Kong, China has been in close contact with WAFC London on the following technical issues in SIGWX chart plotting based on BUFR coded data: -

(a) interpolation of jetstreams between specified points;
(b) depiction of flight levels, wind barbs and change bars of jetstreams;
(c) problems in depiction of jetstreams over Area K;
(d) edge effects; and
(e) overlapping of features.

Examples will be provided at the meeting to illustrate these issues. It is understood that WAFC London may be tasked by the SADISOPSG to carry out a further evaluation of the different BUFR visualization software and provide updates on the SADIS website. In view of the technical issues identified above, this further evaluation by WAFC London is an important task to ascertain that the SIGWX charts generated by the available software meet the requirements of Annex 3 in full without the need for significant manual inputs. In view of the short time left to the final implementation of the BUFR coded SIGWX charts, the meeting may like to invite both WAFC Provider States to carry out the necessary evaluation of the different BUFR visualization software as a matter of priority so that the updated status of these software could be provided to States to facilitate their timely migration to BUFR.

3.5.3 As regards the ISCS hardware upgrade, it is understood that due to a contract award issue, the schedule for transitioning of all ISCS sites was delayed by approximately three months. It is further understood that planning has resumed for the transitioning of all ISCS sites. Thus, an updated transition schedule from WAFC Washington will be very useful for planning by ISCS user States. Subject to the availability of this schedule, the meeting may like to discuss whether more time will be needed by user States to upgrade/replace their existing ISCS workstations. WAFC Washington may also like to provide updated information on the status of the ISCS workstation upgrades/replacements for reference by States.

3.6 **WAFS products for turbulence and icing forecast** – the development of specialized WAFS products for turbulence and icing forecast was discussed by the MET Divisional Meeting. The WAFC Provider States, other States in a position to do so, and the WAFSSG (or its successor group) were requested to continue and, if possible, intensify the development of improved detection and forecast algorithms in order that the WAFCs may improve existing WAFS SIGWX products and/or propose the introduction of new WAFS turbulence and/or icing products.

4 Future Work

4.1 With the establishment of the WAFSOPSG covering both global and regional operational requirements on the planning and development of the WAFS, it is likely

that the role of the PIRGs in these regards may have to change accordingly. It is understood that the ICAO Secretariat will put forward a proposal on the matter for consideration by the meeting. In the light of these developments, there is a need for the meeting to review whether the WAFS/T TF should be maintained.

4.2 On the other hand, in respect of WAFS implementation, the CNS/MET SG is expected to continue to address the ongoing issues, including in particular, the States' progress in their capability to receive, decode, and process WAFS output products in the GRIB and BUFR code forms. Also, in view of the results of the GRIB/BUFR regional survey, urgent follow-up actions are required so that the Asia and Pacific Regions will be ready for the migration to GRIB and BUFR by mid-2005. In the event that the WAFS/T TF is not to be maintained, the meeting may wish to consider the way forward regarding the above WAFS implementation issues. One possibility is the establishment of a task team under the CNS/MET SG to look after WAFS implementation matters in the Asia and Pacific Regions, including the monitoring of the progress of the GRIB/BUFR migration and the necessary advice and assistance to States having difficulties with implementation.

5 Action

5.1 The meeting is invited to: -

(a) review the progress of relevant items in the "Indicative Timetable for Achieving the Final Phase of WAFS" given in the "ASIA/PAC WAFS Transition Plan and Procedures";

(b) consider necessary changes to the "ASIA/PAC WAFS Transition Plan and Procedures";

(c) discuss the improvement areas and issues described in Section 3 and identify the possible ways forward;

(d) consider urgent follow-up actions to ensure the timely migration to GRIB and BUFR in the ASIA/PAC Regions; and

(e) consider the future role of the CNS/MET SG in WAFS planning/implementation in the light of new developments and the attendant way forward for the relevant task force/team.

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ASIA/PAC WAFS Transition Plan and Procedures

5th Edition - July 2002

ASIA/PAC WAFS Transition Plan and Procedures

5th Edition - July 2002

Introduction

1. The Asia/Pacific WAFS Transition Plan and Procedures has been revised to take account of progress already made and in recognition of the impact of the final phase of WAFS.

The Final Phase of WAFS

2. This plan is based on the understanding that the Final Phase of WAFS, as it will apply to the Asia/Pacific Regions involves:

a. Production and dissemination by the WAFCs of global forecast winds, temperatures, tropopause height, tropopause temperature and humidity in GRIB format.

b. The transfer of responsibility for the production for SWH from RAFCs to the two WAFCs, and hence the closing down of the RAFCs.

c. The implementation of a communication system/s for the distribution of WAFS products in the Asia/Pacific Regions, to all the States that require the products in support of international air navigation. The final phase envisages this will be achieved via satellite broadcast (SADIS and ISCS/2). States may need to use an alternative distribution system.

d. The production and distribution (via satellite broadcast) by the WAFCs, of Global, quality controlled SWH (FL 250 - 630) in BUFR format.

e. The production and distribution (via satellite broadcast) by WAFC London of Global SWM in BUFR format (in raw form, i.e. not quality controlled except over limited geographical areas where required by PIRGS), and the production and distribution (via satellite broadcast) by WAFC Washington of quality controlled SWM in BUFR format over limited geographical areas where required by PIRGs.

f. The capability of States to convert BUFR and GRIB messages to graphical products on an operational basis.

SIGWX Charts

3. The table below shows the status of the SIGWX charts and responsible WAFCs.

Chart area & responsible WAFC
G London (SWH)
K London (SWH)
D London (SWH)
J Washington (SWH)

E	London (SWH)
F	Washington (SWH)
I	Washington (SWH)
M	Washington (SWH)

4. There will be an ongoing requirement for NMSs to monitor the quality of WAFC products, at least until the Final Phase of WAFS.

5. Action required to be taken by States to adhere to the provision of Annex 3 to ensure the relevant advisories for tropical cyclones, volcanic ash, the accidental release of radio active material and SIGMETs are made available to the WAFCs in a timely manner.

6. The SIGWX charts produced by WAFC Washington are also available on the US NWS Aviation Weather Center Internet site at: http://www.nws.noaa.gov/iscs. All WAFC London products are available on a password controlled internet-based FTP site, together with appropriate GRIB and BUFR decoding facilities.

7. States are encouraged to send comments to the WAFCs about the quality and accuracy of SIGWX on a frequent and regular basis during the transition period to the Final Phase. Contact details for comments are:

WAFC Washington

i. NWS/Aviation Weather Center
Attention: Mr Ronald Olson
7220 NW 101st Terrace
Kansas City, Missouri
USA 64153-2371
ii. E-mail addressed to: ronald.olson@noaa.gov
iii. Fax number: 1 816 880 0650

WAFC London

i. The Met. Office
Attention: Mr. Nigel Gait
Civil Aviation Branch
Sutton House
London Road, Bracknell
Berkshire RG12 2SY, United Kingdom
ii. E-mail addressed to: nigel.gait@metoffice.com
iii. Fax number: +44 (1344) 854 156

Distribution of WAFS Products

8. Most States in the Asia/Pacific Regions are receiving wind, temperature and humidity forecasts in GRIB, and SIGWX in T4 facsimile format from the two WAFCs by VSAT, either SADIS or ISCS/2. A range of WAFS products are available via the Internet and through bilateral arrangements with neighbouring national meteorological services.

9. In the Final Phase of WAFS, the two WAFCs will distribute by satellite broadcast Global, quality controlled SWH, and quality controlled SWM for limited geographical areas (Note: WAFC London will also distribute by satellite broadcast SWM in raw form, i.e. not quality controlled, outside the limited geographical areas). Once suitable decoding and visualization software has been acquired by States in the Asia/Pacific Regions, to provide them with the ability to operationally construct graphical SIGWX from the BUFR messages, and graphical products from the GRIB messages, the T4 facsimile format charts will be eliminated from the satellite broadcasts.

Indicative Timetable for Achieving the Final Phase of WAFS

10. The table given in Attachment 1 provides an indicative timetable for the implementation of the Final Phase of WAFS within the Asia/Pacific Regions.

Volcanic Ash Advisory Centres (VAACs)

11. The VAACs will have an ongoing role of monitoring WAFS SIGWX charts that cover their areas of responsibility, and advising the appropriate WAFC to ensure the accurate inclusion of the volcanic ash symbol.

Tropical Cyclone Advisory Centres (TCAC)

12. The TCACs will have an ongoing role of monitoring WAFS SIGWX charts that cover their areas of responsibility, and advising the appropriate WAFC to ensure the accurate inclusion of the tropical cyclone symbol.

ASIA/PAC WAFS Transition Plan and Procedures **Attachment 1**

Indicative Timetable for Achieving the Final Phase of WAFS

Item	Task/Stage of Implementation of WAFS	Anticipated Date
1	WAFC London products on access controlled internet site	completed
2	The establishment of back-up distribution arrangements for WAFS products	completed
3	Training in the operational conversion of GRIB forecasts to Wind / Temp charts	late 2002 (SADIS) early 2004 (ISCS)
4	All states that receive GRIB products capable of converting GRIB forecasts to Wind / Temp charts	mid 2004
5	Removal of T4 Facsimile Wind / Temp charts from the satellite broadcast	late 2004
6	Training in the operational conversion of BUFR to SIGWX charts	late 2003 (SADIS) early 2004 (ISCS)
7	States having the ability to operate the decoding software to convert BUFR SIGWX messages into graphical format	mid 2004
8	The satellite distribution by the two WAFCs of global SWH and of SWM for limited geographical areas(*) in BUFR format	2003 (SADIS) early 2004 (ISCS)
9	Removal of T4 Facsimile SIGWX products from the satellite broadcast	late 2004

(*) WAFC London will also distribute by satellite broadcast SWM in raw form, i.e. not quality controlled, outside the limited geographical areas.