International Civil Aviation Organization

**NINTH MEETING OF THE
METEOROLOGY SUB-GROUP (MET/SG/9)
OF THE AFI PLANNING AND
IMPLEMENTATION REGIONAL GROUP (APIRG)**

Dakar, Senegal, 21 – 23 October 2009

Agenda Item 3: WAFS in the AFI region

SUMMARY OF RECENT AND FORTHCOMING DEVELOPMENTS TO THE WAFS

(Presented by WAFC London)

SUMMARY

This paper describes WAFS developments since September 2008. Some of these developments have had a direct impact on end users. A number of important developments are planned to the WAFS in future years and these are highlighted in this paper for the consideration of the group.

1. INTRODUCTION

1.1 This paper presents developments to the WAFS since September 2008. For more details of the activities of the WAFS, users may wish to review information available on the ICAO WAFS Operations Group website at URL: www.icao.int/anb/wafsopsg/.

2. RECENT DEVELOPMENTS

2.1 Development of WAFS upper-air data in the GRIB 2 code form

WAFSOPSG/4 endorsed the WAFC Provider States to continue with the development of WAFS upper-air forecasts in the GRIB 2 code form, including new forecasts for icing, turbulence and CB cloud. The two WAFCs have been coordinating their development efforts to ensure that these gridded forecasts are harmonised with respect to content, encoding and compression algorithms. Coordination activities have included a science co-ordination meeting in Washington DC in April 2009.

GRIB 2 WAFS data benefits from higher spatial and temporal resolution, and additional fields, compared to its GRIB 1 predecessor – for example, the GRIB 2 WAFS data is based on a regular 1.25*1.25 degree (unthinned) grid, T+6 to T+36 at 3-hourly time intervals, and includes additional flight level information at FL270, FL320 and FL360 and icing, turbulence and CB cloud forecasts.

The WAFCs have provided a progress report to the WAFSOPSG/5 meeting (September 2009) outlining the steps taken towards delivery of GRIB 2 WAFS data. The progress report includes a summary of verification that both WAFCs have conducted with respect to icing, turbulence and CB cloud forecasts. In addition, the WAFC Provider States have prepared a general guidance document on the intended use of the gridded WAFS forecasts for icing, turbulence and CB cloud.

WAFSOPSG/5 reviewed the status of development of the GRIB 2 forecasts and determine their future operational implementation.

Suggested action: *Review discussions at WAFSOPSG and associated guidance material.*

2.2 Coordination between the WAFCs and the TCACs

In response to WAFSOPSG Conclusion 4/8, the WAFC Provider States have conducted a coordination trial with the Tropical Cyclone Advisory Centres, with a view to determining the feasibility of, and benefits for the WAFS from, establishing and maintaining contact with the TCACs in order the harmonise the information on TC in the WAFS SIGWX forecasts and the TCAC advisories.

The WAFSOPSG/5 considered that the trial was a success, with good participation and valuable feedback which had been beneficial for the WAFS; with little additional effort on the part of the WAFCs; it had led to greater awareness and harmonization between the TC information on the WAFS SIGWX charts and the advisory information issued by the TCACs.

The group was pleased to note that the overall feedback provided by participant TCACs had indicated that the coordinated sessions were easy to access and understand and of satisfactory duration. Noting the concerns expressed by some TCACs regarding the allotted time of the coordination sessions, sustained participation during the off-season and resource/language constraints, the group agreed that the involvement of the TCACs in the coordination sessions should be voluntary rather than mandatory. The group concurred that there was no need to extend the coordination session beyond simple confirmation of the name(s) and position(s) of TCs that were active or expected to develop during the next 24 hours.

Based on the beneficial outcomes of the trial for the WAFS, the group agreed that such Co-ordination activity should continue and formulated the following decision:

Decision 5/5 — Coordination between WAFCs and TCACs
That, the WAFC Provider States continue to maintain contact with the Tropical Cyclone Advisory Centres (TCACs) in order to harmonise the information on tropical cyclones in the WAFS SIGWX forecasts and TCAC advisories, by making available a web-based Internet chat-room facility, to be hosted by WAFC Washington.

Suggested action: *Note this information only.*

2.3 WAFC backup tests

The WAFC Provider States have continued to test their SIGWX backup procedures in the event that one WAFC was unable to produce SIGWX forecasts in the BUFR-code and PNG-

chart format. Routine backup tests are conducted quarterly, with the results posted on the WAFSOPSG website at URL: http://www.icao.int/anb/wafsopsg/Recent%20Chronology%20of%20WAFC%20Backup%20Tests.pdf. Tests over the last 12 months have been largely successful, and transparent for the overwhelming majority of WAFS users.

Forthcoming backup tests are outlined at URL: http://www.icao.int/anb/wafsopsg/Forthcoming%20WAFC%20Backup%20Tests.pdf. Notification of WAFC backup tests is promulgated on the SADIS broadcasts in advance, by way of administrative messages.

In addition, WAFC backup procedures are outlined at: http://www.icao.int/anb/wafsopsg/backup.pdf.

Suggested action: *Note this information and consider visiting the WAFSOPSG website to obtain information pertaining to WAFC backup tests and procedures.*

3. FORTHCOMING DEVELOPMENTS

3.1 Corrections to WAFS SIGWX forecasts

WAFSOPSG/4 endorsed the WAFC Provider States to introduce a practical and minimal procedure to handle corrections to WAFS SIGWX forecasts (in BUFR code and/or PNG chart form). The procedure would involve the issuance of a plain text administrative message drawing users attention to the identified error. The BUFR data and/or PNG charts themselves, which contain erroneous data, would not be re-issued due to downstream implications detailed in the WAFSOPSG/4 report.

In view of concerns expressed by the 12th meeting of the CNS/MET sub-group of the APANPIRG, implementation of WAFS SIGWX corrections in 2008 was deferred. General guidance on how an operator may wish to handle the receipt of such administrative messages has been drafted by the WAFCs for WAFSOPSG/5. The procedures were endorsed by WAFSOPSG/5, and corrections to WAFS SIGWX will be introduced before the end of 2009.

The WAFCs intend to use the following WMO bulletin headers to issue the plain text administrative messages: FXUK65 EGRR (for corrections to WAFC London SIGWX) and FXUS65 KKCI (for corrections to WAFC Washington SIGWX). Implementation will be communicated via the WAFS Change Implementation Notice Board at URL: http://www.icao.int/anb/wafsopsg/WAFS%20change%20notice%20board.pdf.

Suggested action: *Monitor the progress towards corrections to WAFS SIGWX through the WAFS Change Notice Board.*

3.2 Workshop on the gridded WAFS forecasts for icing, turbulence and CB cloud

In order to facilitate the implementation of the gridded forecasts for icing, turbulence and CB cloud, the WAFC Provider States, in co-ordination with ICAO and WMO, convened a two-day workshop on the intended use and visualisation of these new products.

The workshop took place at the ICAO Regional Office in Paris on 14 and 15 September 2009, immediately prior to WAFSOPSG/5.

Suggested action: *Review the Summary of discussions of the WAFS Workshop.*

3.3 Training for States on the use and visualisation of new gridded WAFS forecasts

The WAFSOPSG/5 noted that the need for training related to the "roll-out" of the new gridded forecasts had been recognized by most planning and implementation regional groups (PIRGs) which had formulated conclusions calling for the WAFC Provider States to organize training seminars on the use of the new gridded WAFS forecasts for CB clouds, icing and turbulence.

The group agreed that the availability of continuous training would be highly useful; therefore, it was considered important to develop computer-based training products for distribution to States and a web-based training package. The web-based training package will be basedaround a free and open-source e-learning software platform and available to all States and WAFS users; and the outline of proposed training, including associated costs, will be tabled for endorsement by the WAFSOPSG/6 Meeting.

Suggested action: *Consider what training needs your State will have regarding the use and visualisation the new gridded products.*

3.4 Improved visualisation of WAFS forecasts

An ad-hoc group of the WAFSOPSG (China as Rapporteur) has been studying how the visualisation of WAFS forecasts could be improved to ensure that the most relevant WAFS forecasts be presented in terms of space and time in flight documentation. These improvements to visualisation are expected to better serve the needs of the long-haul community.

Initial findings were presented to WAFSOPSG/4 (February 2008), with further proposals made at WAFSOPSG/5 (September 2009). The proposals are likely to include the concatenation of charts based on the gridded WAFS forecasts for icing, turbulence and CB cloud.

Suggested action: *Monitor the progress of developing concatenated WAFS forecasts through the WAFSOPSG.*

3.5 WAFS output performance indicators

WAFSOPSG/4 invited the WAFC Provider States to assess the possibility of providing additional WAFS output performance indicators. This invitation included wind and temperature performance indicators for the WMO defined area covering Australia and New Zealand, as well as globally for all standard forecast levels (in digital and chart form).

Wind and temperature performance indicators for Australia and New Zealand were added to the WAFCs websites during 2008. WAFC London data can be viewed at http://www.metoffice.gov.uk/icao/index.html and WAFC Washington data at http://www.emc.ncep.noaa.gov/gmb/icao/ncep_scores.html.

WAFC Washington has added performance indicators for the 850, 700, 500, 400, 300, 275, 225, 200, 150 and 100hPa standard levels, whilst WAFSOPSG/5 has endorsed corresponding levels to be added to the WAFC London web site.

The WAFCs have studied the cost and feasibility of providing global performance indicators in digital and chart format. The findings of this study were presented to WAFSOPSG/5 in order for the group to determine whether such an undertaking should be pursued.

Suggested action: *Access the output performance indicator websites of the two WAFCs and monitor the further development of these products through the WAFSOPSG.*

4. ACTION BY THE MET/SG

4.1 The MET Sub-Group is invited to review the content of this working paper and to consider suggested actions.

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