



*International Civil Aviation Organization*

**TWENTIETH MEETING OF THE METEOROLOGY SUB-GROUP  
(MET SG/20) OF APANPIRG**

Bangkok, Thailand, 6 – 9 June 2016

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**Agenda Item 6: Research, development and implementation issues in the MET field**

6.1: Observations, reports, forecasts, advisories and warnings

**SUMMARY OF RECENT AND FORTHCOMING  
DEVELOPMENTS TO THE WAFS**

(Presented by WAFC Provider States)

**SUMMARY**

This paper reports out on the progress of World Area Forecast System (WAFS) since the last meeting of the Asia/Pacific MET Sub Group in August of 2015. 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.

This paper relates to – **Strategic Objectives:**

A: **Safety** – Enhance global civil aviation safety

**Global Plan Initiatives:**

GPI-19 Meteorological Systems

**1. INTRODUCTION**

1.1 This paper reports on the progress of the WAFS since the nineteenth meeting of the Asia/Pacific MET Sub Group (3<sup>rd</sup> to 6<sup>th</sup> August 2015, Bangkok, Thailand). Since APAC MET SG/19 there has been one meeting of the Meteorological Operations Working Group (WG-MOG) relating to WAFS/SADIS (8<sup>th</sup> to 11<sup>th</sup> September 2015, Gatwick, UK).

1.2 Users of WAFS are encouraged to review the 'Reference Documents' links for WAFS on the WG-MOG public webpage, accessible here:

<http://www.icao.int/airnavigation/METP/MOG/Pages/default.aspx>

**2. DISCUSSION**

2.1 The meeting should note that with the establishment of the MET Panel there are four working groups that have been created to take over the responsibilities of many of the actions from past study groups and operations groups. One of these groups is the MET Operations Group which will provide oversight of WAFS. The group is currently following the guidance provide from METD/14 on services that are anticipated for the block upgrades of the Global Air Navigation Plan.

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2.2 The meeting will note that the main changes to WAFS in the next year will be the introduction (subject to final version of Amendment 77 to ICAO Annex 3) of data for additional flight levels. More information is provided in the following sections.

### 3. FORTHCOMING DEVELOPMENTS

#### 3.1 Provision of additional flight levels to WAFS Upper Air Forecasts

Subject to the finalised version of Amendment 77 to ICAO Annex 3; it is expected that data for additional flight levels will be provided as part of the WAFS gridded upper air forecasts. The extra levels will be FL080 (750hPa); FL210 (450hPa); and FL480 (125hPa). Expected implementation will be with effect from the 1200 UTC model availability on 9 November 2016.

The details of the WMO AHL allocations for each of the new bulletins are provided in the Appendix.

WAFS London is making available test data (in the format that would be available on Secure SADIS FTP) from a test ftp server. Details can be obtained from the SADIS Manager, [chris.tytson@metoffice.gov.uk](mailto:chris.tytson@metoffice.gov.uk). Note, the test server is not operationally supported.

WAFS Washington is making available test data (in the format that will become operational). Details will be released in a WIFS advisory, found at <https://www.aviationweather.gov/wifs/page/open/id/18>.

*Action: Note this information. Contact your SADIS/WIFS Workstation provider to ensure that software is updated to benefit from the additional vertical levels. If software is developed in house, then it is strongly recommended that the test data is used to assist software updates. Refer to the separate 'Summary of Recent and Forthcoming Developments to the WAFS' for Details of WMO AHL Allocation for the New Bulletins.'*

### 4. STANDING ARRANGEMENTS

#### 4.1 Inclusion of WAFS GRIB2 CAT and CB verification data on the 'WAFS London Performance Indicators' page

Verification data for harmonized WAFS gridded upper air forecasts for Clear Air Turbulence potential and Cumulonimbus cloud forecasts is available from the "WAFS London Performance Indicators" webpage: <http://www.metoffice.gov.uk/aviation/responsibilities/icao>. The verification data should be used in conjunction with the guidance material noted in **Error! Reference source not found.** above.

*Suggested action: It is recommended that this information be consulted regularly in order to obtain the most benefit from these forecast fields.*

4.2 **Inclusion of WAFS GRIB2 ICING verification data on the WAFC Washington website.**

Verification data for harmonized WAFS gridded upper air forecasts for Icing potential is available from the "WAFC Washington webpage: <http://www.emc.ncep.noaa.gov/gmb/icao/>. The verification data should be used in conjunction with the guidance material noted in 2.2 above.

**Suggested action:** *It is recommended that this information be consulted regularly in order to obtain the most benefit from these forecast fields.*

4.3 **WAFS SIGWX BUFR Edition**

The WAFC Provider's will continue to issue SIGWX forecasts in BUFR format using BUFR Edition 3. There are no current plans to migrate to BUFR Edition 4.

**Suggested action:** *Note this information and ensure that your systems remain compatible with the BUFR Edition 3 for decoding of SIGWX BUFR. Note also that the SIGWX forecasts in PNG form will continue to be issued until further notice.*

4.4 **WAFC backup tests**

The WAFC Provider States have continued to test their SIGWX backup procedures in the event that one WAFC is 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 in the document Forthcoming and Historical Record of WAFC Backup Tests' available via URL:

<http://www.icao.int/safety/meteorology/WAFSOPSG/Reference%20Documents/Forms/AllItems.aspx>

Tests during the period of this report have been successful.

Forthcoming backup tests are outlined in the same document: 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 in the 'WAFC Backup Procedures' available from the same URL.

**Suggested action:** *Note this information and regularly visit the WAFC Reference documents on the WG-MOG website to obtain information pertaining to WAFC backup tests and procedures.*

4.5 **Access to Internet based services (Secure SADIS FTP/WIFS).**

The policies regarding the development of clear guidelines with regard to the accessing of data from Secure SADIS FTP and from WIFS have been endorsed by WAFSOPSG, SADISOPSG<sup>1</sup> and SCRAG<sup>2</sup>.

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<sup>1</sup> Satellite Distribution System Operations Group

<sup>2</sup> SADIS Cost Recovery Administrative Group

**Suggested action:** *Note this information. Users are encouraged to establish and regularly test backup accounts with the alternative provider to be used in the rare event that their normal service (Secure SADIS FTP or WIFS, as specified by Regional Air Navigation Plan) is unavailable.*

<http://www.icao.int/safety/meteorology/sadisopsg/SADIS%20User%20Guide/Obtaining%20access%20to%20WIFS%20as%20a%20backup%20to%20SADIS%20FTP.pdf> *It is the user's responsibility to apply for and arrange backup accounts.*

## **5. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) note the information contained in this paper; and
- b) discuss any relevant matters as appropriate.

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**APPENDIX: WMO Abbreviated Header Line Allocation for additional flight level data to be provided as part of WAFS gridded forecast data in GRIB2 code form**

The T<sub>1</sub>T<sub>2</sub>A<sub>1</sub>A<sub>2</sub>ii allocation for additional flight level data to be provided as part of WAFS gridded forecast data in GRIB2 code form.

The CCCC allocation will be EGRR for WAFC London, KWBC for WAFC Washington.

	Geopotential Altitude			Temperature			U Component of Wind			V Component of Wind			Humidity
Unit	gpm	gpm	gpm	Kelvin	Kelvin	Kelvin	m/s	m/s	m/s	m/s	m/s	m/s	%
Pressure Level	750hPa	450hPa	125 hPa	750hPa	450hPa	125 hPa	750hPa	450hPa	125 hPa	750hPa	450hPa	125 hPa	750hPa
Nominal Flight Level	FL080	FL210	FL480	FL080	FL210	FL480	FL080	FL210	FL480	FL080	FL210	FL480	FL080
T+06 (C)	YHXC75	YHXC45	YHXC13	YTXC75	YTXC45	YTXC13	YUXC75	YUXC45	YUXC13	YVXC75	YVXC45	YVXC13	YRXC75
T+09 (D)	YHXD75	YHXD45	YHXD13	YTXD75	YTXD45	YTXD13	YUXD75	YUXD45	YUXD13	YVXD75	YVXD45	YVXD13	YRXD75
T+12 (E)	YHXE75	YHXE45	YHXE13	YTXE75	YTXE45	YTXE13	YUXE75	YUXE45	YUXE13	YVXE75	YVXE45	YVXE13	YRXE75
T+15 (F)	YHXF75	YHXF45	YHXF13	YTXF75	YTXF45	YTXF13	YUXF75	YUXF45	YUXF13	YVXF75	YVXF45	YVXF13	YRXF75
T+18 (G)	YHXG75	YHXG45	YHXG13	YTXG75	YTXG45	YTXG13	YUXG75	YUXG45	YUXG13	YVXG75	YVXG45	YVXG13	YRXG75
T+21 (H)	YHXH75	YHXH45	YHXH13	YTXH75	YTXH45	YTXH13	YUXH75	YUXH45	YUXH13	YVXH75	YVXH45	YVXH13	YRXH75
T+24 (I)	YHXI75	YHXI45	YHXI13	YTXI75	YTXI45	YTXI13	YUXI75	YUXI45	YUXI13	YVXI75	YVXI45	YVXI13	YRXI75
T+27 (J)	YHXJ75	YHXJ45	YHXJ13	YTXJ75	YTXJ45	YTXJ13	YUXJ75	YUXJ45	YUXJ13	YVXJ75	YVXJ45	YVXJ13	YRXJ75
T+30 (K)	YHXK75	YHXK45	YHXK13	YTXK75	YTXK45	YTXK13	YUXK75	YUXK45	YUXK13	YVXK75	YVXK45	YVXK13	YRXK75
T+33 (L)	YHXL75	YHXL45	YHXL13	YTXL75	YTXL45	YTXL13	YUXL75	YUXL45	YUXL13	YVXL75	YVXL45	YVXL13	YRXL75
T+36 (M)	YHXM75	YHXM45	YHXM13	YTXM75	YTXM45	YTXM13	YUXM75	YUXM45	YUXM13	YVXM75	YVXM45	YVXM13	YRXM75

*The requirement will generate 143 additional bulletins per run. Following implementation there will be 858 (currently 715) WAFS GRIB2 bulletins for wind, temp, humidity, gph, and tropopause data. The number of CB, icing and turbulence bulletins, currently 407, will remain unchanged. As a consequence, the TOTAL number of bulletins issued per run by each WAFC will increase from 1122 to 1265.*