



WORKING PAPER

**MEETING OF THE METEOROLOGY PANEL (METP)
WORKING GROUP MOG**

FIRST MEETING

Gatwick, London, United Kingdom, 8 to 11 September 2015

Agenda Item 4: Matters relating to WAFS

4.2: Other Operational Matters

**ADDITIONAL FLIGHT LEVEL INFORMATION TO BE PROVIDED AS PART OF WAFS
GRIDDED FORECASTS IN GRIB2 CODE FORM**

(Presented by the WAFC Provider States)

SUMMARY

This Working Paper appries the group of the work done to date by the WAFCs in regard to the provision of additional levels in the WAFS gridded forecast dataset, and seeks endorsement for implementing the next stages.

1. INTRODUCTION

1.1 The group will recall eighth meeting of the World Area Forecast System Operations Group (WAFSOPSG/8)¹ Conclusion 8/5 relating to the provision of additional flight level information as part of the World Area Forecast System (WAFS) gridded forecasts in GRIB2 code form.

1.2 The group will further recall that the Meteorological Divisional Meeting 2014 (MET/14)² also considered this proposal, and recommended (Recommendation 5/1 – page 5.A-14) that additional flight level information as part of the WAFS gridded forecasts in GRIB2 code form be provided.

1.3 This Working Paper appries the group of the work done by the World Area Forecast Centres (WAFCs) in this regard, and seeks endorsement for implementing the next stages.

¹ WAFSOPSG/8, 2-5 September 2013, Bangkok, Thailand

² MET/14, 7-18 July 2014, Montréal, Canada; in part held conjointly with the Fifteenth Session of the World Meteorological Organization (WMO) Commission for Aeronautical Meteorology (CAeM) including Technical Conference

2. DISCUSSION

2.1 Background and requirements:

2.1.1 The MET/14 meeting, using the WAFSOPSG Conclusion 8/5 as a basis, recommended (Recommendation 5/1 – page 5.A-14) that additional flight level information as part of the WAFS gridded forecasts in GRIB2 code form be provided. The extra data required is specified in **Appendix A**, and can be summarised as:

- U wind for FL080 (750hPa), FL210 (450hPa), and FL480 (125hPa)
- V wind for FL080 (750hPa), FL210 (450hPa), and FL480 (125hPa)
- Geopotential altitude for FL080 (750hPa), FL210 (450hPa), and FL480 (125hPa)
- Temperature for FL080 (750hPa), FL210 (450hPa), and FL480 (125hPa)
- Humidity for FL080 (750hPa) only.

2.2 The WAFCs have undertaken initial work to meet this requirement, and have proposed WMO Abbreviated Header Line allocations as specified in **Appendix B**.

2.3 Both WAFCs are undertaking initial production and testing of the additional data.

2.4 Operational availability:

2.4.1 It is expected that the data would be made operationally available with applicability of Amendment 77 to ICAO Annex 3 – *Meteorological Service for International Air Navigation*. However, both WAFCs are in a position whereby the data could be made available earlier.

2.5 Whilst data could be made available in trial folders on both Secure SADIS FTP and WIFS, doing so would mean the re-introduction of 'TRIAL' folders, and this itself would require upgrades to user software.

2.6 It is therefore proposed that both WAFCs add the new data to the operational feeds 19th July 2016, effective from the 1200 UTC dataset.

3. CONCLUSIONS

3.1 With regard to the MET/14 recommendation (Recommendation 5/1 – page 5.A-14) both WAFCs are pleased to report good progress in production of the data, and are confident that the data could be made operationally available before the applicability of Amendment 77 to ICAO Annex 3 (November 2016).

3.2 In light of the foregoing, the group is invited to formulate the following draft Conclusion:

Conclusion 9/xx — Provision of additional levels for WAFS gridded forecasts

That the WAFS Provider States provide additional levels as specified in the MET/14 Division Meeting Report (Appendix A to this Working Paper) and that the data be made available via SADIS and via WIFS on 19th July 2016, effective with the 1200 UTC dataset.

Note 1.— The WMO Abbreviated Header Allocations to be used are as specified in Appendix B [to this Working Paper].

Note 2.— The WAFCs will update the WAFS Change Implementation Notice Board accordingly.

Note 3.— The WAFCs will advise SADIS and WIFS Workstation providers and users by NOUK10 and NOUS10 administrative message accordingly.

ACTION BY THE METP-WG/MOG

3.3 The METP-WG/MOG is invited to:

- a) note the information contained in this working paper; and
- b) decide on the draft conclusions for the group's consideration.

**APPENDIX A: Recommendation for additional flight level data to be provided as
part of WAFS gridded forecast data in GRIB2 code form
(already included in the proposed Amendment 77 to Annex 3)**

1. WORLD AREA FORECAST SYSTEM

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1.2 Upper-air gridded forecasts

WAFSOPSG

1.2.2 The grid point forecasts prepared by a WAFC shall comprise:

- a) wind and temperature data for flight levels 50 (850 hPa), 80 (750 hPa), 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 210 (450 hPa), 240 (400 hPa), 270 (350 hPa), 300 (300 hPa), 320 (275 hPa), 340 (250 hPa), 360 (225 hPa), 390 (200 hPa), 410 (175 hPa), 450 (150 hPa), 480 (125 hPa) and 530 (100 hPa);

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MET/14

- d) humidity data for flight levels 50 (850 hPa), 80 (750 hPa), 100 (700 hPa), 140 (600 hPa) and 180 (500 hPa);

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WAFSOPSG

- i) geopotential altitude data for flight levels 50 (850 hPa), 80 (750 hPa), 100 (700 hPa), 140 (600 hPa), 180 (500 hPa), 210 (450 hPa), 240 (400 hPa), 270 (350 hPa), 300 (300 hPa), 320 (275 hPa), 340 (250 hPa), 360 (225 hPa), 390 (200 hPa), 410 (175 hPa), 450 (150 hPa), 480 (125 hPa) and 530 (100 hPa).

APPENDIX B: 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 T₁T₂A₁A₂ii 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)	YHXC75	YHXC45	YHXC13	YTXG75	YTXG45	YTXG13	YUXG75	YUXG45	YUXG13	YVXC75	YVXC45	YVXC13	YRXC75
T+21 (H)	YHXC75	YHXC45	YHXC13	YTXH75	YTXH45	YTXH13	YUXH75	YUXH45	YUXH13	YVXH75	YVXH45	YVXH13	YRXH75
T+24 (I)	YHXC75	YHXC45	YHXC13	YTXI75	YTXI45	YTXI13	YUXI75	YUXI45	YUXI13	YVXI75	YVXI45	YVXI13	YRXI75
T+27 (J)	YHXC75	YHXC45	YHXC13	YTXJ75	YTXJ45	YTXJ13	YUXJ75	YUXJ45	YUXJ13	YVXJ75	YVXJ45	YVXJ13	YRXJ75
T+30 (K)	YHXC75	YHXC45	YHXC13	YTXK75	YTXK45	YTXK13	YUXK75	YUXK45	YUXK13	YVXK75	YVXK45	YVXK13	YRXK75
T+33 (L)	YHXC75	YHXC45	YHXC13	YTXL75	YTXL45	YTXL13	YUXL75	YUXL45	YUXL13	YVXL75	YVXL45	YVXL13	YRXL75
T+36 (M)	YHXC75	YHXC45	YHXC13	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.

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