



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 the WAFS

4.2.1: WAFS Management Report

MANAGEMENT REPORT OF THE WAFC OPERATIONS

(Presented by the WAFC Provider States)

SUMMARY

This paper provides the WAFS management report for the period of June, 2013 through June, 2015 inclusive.

1. INTRODUCTION

1.1 In response to the World Area Forecast System Operations Group (WAFSOPSG) Conclusion 1/3, World Area Forecast Center (WAFC) Provider States are required to provide a joint world area forecast system (WAFS) management report at each WAFSOPSG meeting. The current report covering the period of June 2013 through June 2015, inclusive, addresses recent developments related to the main operational functions of the WAFS.

2. DISCUSSION

2.1 The WAFS management report is included in the **Attachment** to this paper. The group may wish to note the major developments highlighted in the executive summary on page A-2 of the report, followed by sections on “Progress on the development of the WAFS”, and “Development or operational difficulties with the WAFS”

3. **ACTION BY THE METP-WG/MOG**

3.1 The METP-WG/MOG is invited to:

- a) review the management report given in the **Attachment** to this paper;
- b) note its content; and
- c) agree that it meets the intent of the WAFSOPGS Conclusion 1/3.

ATTACHMENT

WORLD AREA FORECAST SYSTEM MANAGEMENT REPORT

June 2013 – June 2015

World Area Forecast Center (WAFC) London
World Area Forecast Center (WAFC) Washington

EXECUTIVE SUMMARY

Main milestones:

- 1) The WAFS gridded upper air forecasts in WMO GRIB2 code form for harmonized icing, turbulence, and Cumulonimbus (CB) cloud became operational, with a date of applicability of 14 November 2014.
- 2) Withdrawal of WAFS gridded upper air forecasts in GRIB1 code form on 14 November 2013. Gridded upper air forecasts are now provided by the WAFCs in GRIB2 code form only.
- 3) The WAFCs provided an interactive training module relating to the interpretation and use of WAFS Gridded forecasts for cumulonimbus cloud, icing and turbulence.
- 4) The WAFCs brought forward the issuance time of the harmonized WAFS gridded forecasts for cumulonimbus, icing and turbulence by approximately 60 minutes, effective from 12 March 2014.
- 5) The WAFCs commenced issuance of *scheduled* WAFC SIGWX backup tests to normal issuance time – i.e. no 2 hour delay. This was effective from 9 October 2013. *Note, in the event of an unscheduled backup test, the WAFC SIGWX forecasts may be issued up to 2 hours later than normal.*
- 6) A decision was endorsed at the Meteorological Panel (METP/1) meeting to withdraw the SADIS 2G service on 31 July 2016. This is due the satellite platform (Intelsat 904) being replaced by the satellite provider (Intelsat) in mid-2016. The replacement will not have the capability to use existing SADIS 2G uplink/downlink parameters (frequency, polarization etc).
- 7) The WAFC implemented the capability to issue corrections (not amendments) to SIGWX forecasts. This was implemented 2 December 2014 and both WAFCs have re-issued SIGWX forecasts when errors (not amendments) have been identified.

- 8) Thirteen (13) scheduled WAFC SIGWX backup tests were conducted. Two (2) scheduled WAFC SIGWX backup tests were cancelled. There were two (2) **unscheduled** backup events during the period. Details are provided in Appendix B to this Management Report.

FULL MANAGEMENT REPORT

1. PROGRESS ON THE DEVELOPMENT OF THE WAFS

1.1 WAFS Operational Product Changes

1.1.1 WAFS gridded upper air forecasts in WMO GRIB2 Code Form Edition 2 (WAFS GRIB2) for harmonized icing, turbulence, and Cumulonimbus (CB) cloud:- The WAFS GRIB2 forecasts for harmonized icing, turbulence, and Cumulonimbus (CB) cloud became operational with a date of applicability of 14 November 2014.

1.1.2 Withdrawal of WAFS gridded upper air forecasts in WMO GRIB1 code form (WAFS GRIB1):- The WAFS GRIB1 forecasts were withdrawn from the WAFS portfolio on 14 November 2013. Gridded upper air forecasts are now provided by the WAFCs in GRIB2 code form only.

1.1.3 Implementation of processes to re-issue corrected WAFS Significant Weather (SIGWX) Forecast and WAFS GRIB2 data:- On 2nd December 2014, effective 1200 UTC, both WAFCs implemented processes to re-issue corrected WAFS SIGWX and WAFS GRIB2 data with the appropriate 'CCA', 'CCB' etc identifiers. These updates to WAFC processes fulfil the requirements of WAFSOPSG/7 Conclusion 7/5.

1.2 Harmonization of WAFS data

1.2.1 Guidance material on the harmonized grids for icing, turbulence, and Cumulonimbus (CB) cloud:- The WAFCs provided an internet based training module relating to the interpretation and use of WAFS Gridded forecasts for CB cloud, icing and turbulence. In addition, the material was provided in pdf format translated into all official ICAO languages. This material can be found on the WAFSOPSG Webpages under 'Guidance Material'

1.2.2 Availability of WAFS GRIB2 CB Cloud, Icing and Turbulence Grids:- The WAFCs brought forward the issuance time of the harmonized WAFS GRIB2 forecasts for CB cloud, icing and turbulence by approximately 60 minutes, effective from 12 March 2014. This data is now made available within 4 hours and 35 minutes of the model data time. A cut-off time of 4 hours 50 minutes is used as a trigger for the issuance of non-harmonized data if the harmonization process is unsuccessful by that time.

1.2.3 WAFC Coordination:- The WAFCs continue to conduct routine coordination of the SIGWX forecasts, including harmonization of Tropical Cyclones and Volcanic Eruptions placed on all SIGWX forecasts. This routine coordination is accomplished via an interactive web chat portal prior to SIGWX dissemination, every 6 hours.

1.2.4 WAFC TCAC Coordination –In response to WAFSOPSG/4 Conclusion 4/8, the WAFCs, in cooperation with WMO and the Tropical Cyclone Advisory Centers (TCAC), continue to invite the TCACs to participate in the WAFC coordination web chats.

1.2.5 WAFC Quality Management System –

1.2.5.1 WAFC London – as a function of the Met Office, is ISO 9001:2008 certified. Twice per year, SGS (certification partners) visit the Met Office to monitor its compliance with ISO 9001. These

visits usually take place during May and November. The ISO 9001:2008 certificate is valid until 13 August 2017.

1.2.5.2 WAFC Washington continues to maintain ISO9001:2008 QMS certification, and is working towards upgrading to the new ISO9001:2015 standard. A major difference in the new standard is that it includes risk management.

1.3 **WAFS Workshops/Seminars**

1.3.1 WAFS Coordination Meeting – WAFCs London and Washington have held three Coordination meetings during the period of the report. Two were held at the Met Office Headquarters, Exeter, United Kingdom (29-31 October 2013, and 6-9 October 2014). One was held at NCAR's Foothills Laboratory facilities, Boulder, Colorado, United States of America (8-12 June 2015).

1.3.2 WAFS Science Meeting – Meetings between WAFC scientists were conducted at each of the three WAFS Coordination Meetings listed above. The first two meetings resulted in the draft WAFS Roadmap, which was presented at the ICAO/WMO Met Divisional (MET/14) Meeting in July, 2014. The third meeting resulted in plans to meet the requirements that were set at the ICAO/WMO MET/14 meeting. Further details are included in a separate paper to be delivered at MET/P-WP-MOG/1.

1.4 **Development of improved forecasts for Icing, Turbulence, and CB in the grid-point format**

1.4.1 The WAFCs are developing plans to use an ensemble system to meet ICAO requirements for gridded probability and severity forecasts for turbulence, icing and cumulonimbus cloud (CB). Further details are included in a separate paper to be delivered at MET/P-WP-MOG/1.

1.5 **WIFS Enhancements**

1.5.1 No changes or enhancements to WIFS occurred during the period of this report

1.6 **SADIS 2G and Secure SADIS Enhancements**

1.6.1 The inaugural meeting of the Meteorological Panel (METP/1) meeting (20-24 April 2015) endorsed a decision to withdraw the SADIS 2G satellite based service on 31 July 2016. This was following information regarding the approaching end of life of the satellite platform (Intelsat 904), and the replacement by a satellite that would not be able to provide data via the existing downlink parameters (frequency, polarization etc). The Secure SADIS FTP service will continue, and is unaffected by the decision to withdraw the SADIS 2G service.

1.6.2 Implementation of processes to permit traditional alphanumeric OPMET data to be updated at 1 minute intervals on Secure SADIS FTP – effective 1200 UTC, 29 October 2014. This work fulfils the requirement of **WAFSOPSG/8 Conclusion 8/7**.

1.6.3 Implementation of processes to permit provision of corrected WAFS SIGWX and WAFS GRIB2 data on Secure SADIS FTP (in accordance with 1.1.3 above) was implemented on 2 December 2014. This work fulfils the requirement of **WAFSOPSG/7 Conclusion 7/5**.

1.7 WAFS Performance Indicators

1.7.1 Response to WAFSOPSG conclusion 7/4 – In connection to WAFSOPSG conclusion 7/4 the WAFCs have included WAFS Performance Indicators in this management report. In accordance with the conclusion's recommendation the following tables provide statistics covering the period beginning June 2013 through to June 2015 inclusive in **Appendix A** to the **Attachment**.

1.7.2 During this period the meeting is invited to note that;

a) In October 2013 WAFc London aligned its monitoring process and time check with that of WAFc Washington for SIGWX BUFR and SIGWX PNG forecasts.

b) Effective 12 March 2014, the WAFCs brought forward the issuance time of the harmonized WAFS gridded forecasts for CB cloud, icing and turbulence. Consequently, the monitoring time checks were brought forward.

1.7.3 In response to WAFSOPSG Conclusion 8/10;

WAFc London updated its verification website to provide categorization by WMO Region (where sufficient sample size permits). This was implemented on 11th July 2014.

WAFc London updated its verification website to provide verification data for T+12 and T+36 (in addition to T+24) in relation to forecasts of CB cloud and Clear Air Turbulence (CAT) Potential. This was implemented on 11th July 2014.

The verification data can be accessed from:
<http://www.metoffice.gov.uk/public/weather/aviation-wafc/#?tab=wafcPerformance>

1.7.4 WAFc Washington is now making wind, temperature and icing potential verification data available at a new website, in a format similar to that of WAFc London. See <http://www.emc.ncep.noaa.gov/gmb/icao/>.

1.8 WAFc SIGWX Backup Tests

1.8.1 The WAFCs conducted SIGWX backup tests during the management report period. **Appendix B** to this **Attachment** lists all the test and genuine backup events during the period of the management report. The backup test schedule and test results are also available from the WAFSOPSG web site at URL <http://www.icao.int/safety/meteorology/WAFSOPSG/Reference%20Documents/Forms/AllItems.aspx> and select 'Recent and Forthcoming chronology of WAFc Backup Tests'.

2. **DEVELOPMENTAL OR OPERATIONAL DIFFICULTIES WITH THE WAFS**

2.1 **Service Interruptions**

2.1.1 **WAFC London –**

There have been no interruptions to WAFC London's capability to provide SIGWX forecasts during the period.

August 2013: Production of harmonized CB cloud, icing and turbulence. WAFS Upper Air Forecasts in GRIB2 format failed for a number of days due to WAFC London being unable to collect data from WAFC Washington. WAFC London issued un-harmonized data on these occasions.

July 2014: WAFC London CAT fields were withdrawn from the harmonization process on 23rd following changes to way WAFC London CAT fields were generated. One run (1800 UTC) resulted in different CAT fields being issued by the WAFCs. WAFC London CAT fields were re-introduced into the harmonization process on 13 October 2014, effective with 1200 UTC Data Time.

2.1.2 **WAFC Washington –**

There have been no interruptions to WAFC Washington's capability to provide SIGWX forecasts during the period. However, WAFC Washington did experience a database problem that caused random interruptions to the WIFS service on 05 June, 2015. A QMS Corrective Action was completed that should ensure that the problem will not reoccur.

WAFC Washington did not log detailed reasons for SIGWX corrections, nor detailed reasons for late or incomplete GRIB2, BUFR and PNG charts. In most cases, the corrections were for missing chart elements, and missing or incomplete data sets were related to a networking problem between WIFS and the Telecommunications Gateway. A QMS Corrective Action was completed that should ensure that the particular networking problem will not reoccur.

Appendix A to WAFC Management Report Attachment WAFS Performance Indicator Tables

The following tables provide information on:

WAFC London SIGWX PNG availability
WAFC Washington SIGWX PNG availability on WIFS

WAFC London GRIB2 availability (not including CB cloud, icing or turbulence parameters)
WAFC Washington GRIB2 availability (not including CB cloud, icing or turbulence parameters) on WIFS

WAFC London GRIB2 CB cloud, Icing and Turbulence availability
WAFC Washington GRIB2 CB cloud, Icing, Turbulence availability on WIFS

The number of WAFC London SIGWX Correction messages, by month
The number of WAFC Washington SIGWX Correction messages, by month

The number of harmonization failures of WAFS GRIB2 CB cloud, icing, and turbulence by WAFC London, by month
The number of harmonization failures of WAFS GRIB2 CB cloud, icing, and turbulence by WAFC Washington, by month

WAFc London SIGWX BUFR Availability

Month	Total sets	Complete sets by +6:55	Complete sets by +7:30	Complete sets by +8:55	Earliest time for complete set	Latest time for complete set	Average time for complete set	Incomplete sets
Jun 2013	120	118 (98.3%)	119 (99.2%)	119 (99.2%)	T+6:45	T+8:56 [^]	T+6:47	1
Jul 2013	124	122 (100%)*	122 (100%)*	124 (100%)	T+6:45	T+8:47	T+6:50	0
Aug 2013	124	124 (100%)	124 (100%)	124 (100%)	T+6:45	T+6:50	T+6:45	0
Sep 2013	120	119 (99.2%)	120 (100%)	120 (100%)	T+6:45	T+6:56	T+6:45	0
		Complete sets by +7:00	Complete sets by +7:30	Complete sets by +9:00	Earliest time for complete set	Latest time for complete set	Average time for complete set	Incomplete sets
Oct 2013	124	124 (100%)	124 (100%)	124 (100%)	T+6:45	T+6:56	T+6:47	0
Nov 2013	120	120 (100%)	120 (100%)	120 (100%)	T+6:45	T+6:50	T+6:46	0
Dec 2013	124	123 (99.2%)	124 (100%)	124 (100%)	T+6:45	T+6:57	T+6:46	0
Jan 2014	124	124 (100%)	124 (100%)	124 (100%)	T+6:45	T+6:54	T+6:48	0
Feb 2014	112	110 (98.2%)	112 (100%)	112 (100%)	T+6:45	T+7:02	T+6:47	0
Mar 2014	124	119 (96.0%)	123 (99.2%)	123 (99.2%)	T+6:45	T+9:40 ¹	T+6:58	0
Apr 2014	120	111 (92.5%)	111 (92.5%)	120 (100%)	T+6:45	T+6:55	T+6:47	0
May 2014	124	124 (100%)	124 (100%)	124 (100%)	T+6:45	T+6:59	T+6:46	0
Jun 2014	120	119 (99.2%)	120 (100%)	120 (100%)	T+6:45	T+6:58	T+6:47	0
Jul 2014	124	122 (98.4%)	123 (99.2%)**	124 (100%)	T+6:45	T+8:45	T+6:50	0
Aug 2014	124	121 (97.6%)	123 (99.2%)	123 (99.2%)	T+6:45	T+7:23 [^]	T+6:48	1
Sep 2014	120	120 (100%)	120 (100%)	120 (100%)	T+6:45	T+6:50	T+6:47	0
Oct 2014	124	124 (100%)	124 (100%)	123 (100%)	T+6:45	T+6:50	T+6:45	0
Nov 2014	120	120(100%)	120 (100%)	120 (100%)	T+6:45	T+6:52	T+6:47	0
Dec 2014	124	124 (100%)	124 (100%)	124 (100%)	T+6:45	T+6:52	T+6:46	0
Jan 2015	124	123 (99.2%)	124 (100%)	124 (100%)	T+6:45	T+7:02	T+6:47	0
Feb 2015	112	110 (98.2%)	112 (100%)	112 (100%)	T+6:45	T+7:02	T+6:47	0
Mar 2015	124	119 (96%)	124 (100%)	124 (100%)	T+6:50	T+7:05	T+6:51	0
Apr 2015	120	120 (100%)	120 (100%)	120 (100%)	T+6:50	T+6:55	T+6:51	0
May 2015	124	124 (100%)	124 (100%)	124 (100%)	T+6:50	T+6:55	T+6:51	0
Jun 2015	120	120 (100%)	120 (100%)	120 (100%)	T+6:50	T+6:55	T+6:51	0
TOTAL	3040	3004 (98.8%)	3025 (99.5%)	3036 (99.9%)	T+6:45	T+9:40	T+6:48	2 (0.07%)

¹ DT221800 UTC: Issues on Met Office MetSwitch. Significant delays to transmission of WAFc London GRIB2 data. All data resent.

^ Where incomplete datasets are identified, this time will reflect the time of the last received bulletin on the day in question

* Due to backup tests on 10 July 2013 and 24th July 2013, only 122 bulletins are expected by T+6:55 and T+7:30

** Due to genuine not notice backup by WAFC London of WAFC Washington for data time 020600 UTC, data issued 2 hours later than normal (within requirements)

WAFC Washington SIGWX BUFR Availability

Month	Total sets	Complete sets by +6:55	Complete sets by +7:30	Complete sets by +8:55	Earliest time for complete set	Latest time for complete set	Average time for complete set	Incomplete sets
Jun 2013	120	100 (83.3%)	120 (100.0%)	120 (100.0%)	T+6:45	T+7:05	T+6:49	0
Jul 2013	124	107 (86.3%)	121 (96.6%)	124 (100.0%)	T+6:45	T+8:48	T+6:52	0
Aug 2013	124	113 (91.1%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:08	T+6:50	0
Sep 2013	120	111 (92.5%)	119 (99.2%)	120 (100.0%)	T+6:45	T+7:33	T+6:49	0
		Complete sets by +7:00	Complete sets by +7:30	Complete sets by +9:00	Earliest time for complete set	Latest time for complete set	Average time for complete set	Incomplete sets
Oct 2013	124	119 (96.0%)	122 (98.4%)	123 (99.2%)	T+6:45	T+11:56	T+6:53	1
Nov 2013	120	119 (99.2%)	119 (99.2%)	120 (100.0%)	T+6:45	T+8:05	T+6:51	0
Dec 2013	124	120 (96.8%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:17	T+6:50	0
Jan 2014	124	120 (96.8%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:22	T+6:52	0
Feb 2014	112	110 (98.2%)	111 (99.1%)	112 (100.0%)	T+6:45	T+7:34	T+6:51	0
Mar 2014	124	124 (100.0%)	124 (100.0%)	124 (100.0%)	T+6:45	T+6:59	T+6:50	0
Apr 2014	120	119 (99.2%)	119 (99.2%)	120 (100.0%)	T+6:45	T+8:02	T+6:51	0
May 2014	124	124 (100.0%)	124 (100.0%)	124 (100.0%)	T+6:45	T+6:57	T+6:50	0
Jun 2014	120	119 (99.2%)	120 (100.0%)	120 (100.0%)	T+6:45	T+7:06	T+6:51	0
Jul 2014	124	120 (96.8%)	122 (98.4%)	123 (99.2%)	T+6:45	T+9:08	T+6:53	1
Aug 2014	124	120 (96.8%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:10	T+6:52	0
Sep 2014	120	117 (97.5%)	120 (100.0%)	120 (100.0%)	T+6:45	T+7:13	T+6:52	0
Oct 2014	124	123 (99.2%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:19	T+6:50	0
Nov 2014	120	118 (98.3%)	120 (100.0%)	120 (100.0%)	T+6:45	T+7:03	T+6:51	0
Dec 2014	124	124 (100.0%)	124 (100.0%)	124 (100.0%)	T+6:45	T+6:59	T+6:49	0
Jan 2015	124	124 (100.0%)	124 (100.0%)	124 (100.0%)	T+6:45	T+6:59	T+6:51	0
Feb 2015	112	109 (97.3%)	112 (100.0%)	124 (100.0%)	T+6:45	T+7:21	T+6:50	0
Mar 2015	124	123 (97.3%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:05	T+6:50	0
Apr 2015	119	117 (97.5%)	119 (99.2%)	119 (99.2%)	T+6:45	T+7:04	T+6:50	1

May 2015	124	123 (99.2%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:01	T+6:50	0
June 2015	120	116 (96.7%)	119 (99.2%)	119 (99.2%)	T+6:45	T+9:20	T+6:52	1
TOTAL	3039	2984 (98.2%)	3027 (99.6%)	3036 (99.9%)	T+6:45	T+11:56	T+6:50	4(0.13%)

WAFC London SIGWX PNG Availability

Month	Total sets	Complete sets by +6:55	Complete sets by +7:30	Complete sets by +8:55	Earliest time for complete set	Latest time for complete set	Average time for complete set	Incomplete sets
Jun 2013	120	118 (98.3%)	119 (99.2%)	119 (99.2%)	T+6:45	T+7:55	T+6:47	1
Jul 2013	124	122 (100%)*	122 (100%)*	124 (100%)	T+6:45	T+8:50	T+6:50	0
Aug 2013	124	124 (100%)	124 (100%)	124 (100%)	T+6:45	T+6:50	T+6:45	0
Sep 2013	120	117 (97.5%)	120 (100%)	120 (100%)	T+6:45	T+6:55	T+6:50	0
		Complete sets by +7:00	Complete sets by +7:30	Complete sets by +9:00	Earliest time for complete set	Latest time for complete set	Average time for complete set	Incomplete sets
Oct 2013	124	124 (100%)	124 (100%)	124 (100%)	T+6:45	T+6:50	T+6:45	0
Nov 2013	120	120 (100%)	120 (100%)	120 (100%)	T+6:45	T+6:55	T+6:47	0
Dec 2013	124	123 (99.2%)	124 (100%)	124 (100%)	T+6:45	T+6:55	T+6:46	0
Jan 2014	124	122 (98.4%)	124 (100%)	124 (100%)	T+6:45	T+7:00	T+6:48	0
Feb 2014	112	112 (100%)	112 (100%)	112 (100%)	T+6:45	T+6:55	T+6:47	0
Mar 2014	124	121 (97.6%)	122 (98.4%)	123 (99.2%)	T+6:40	T+9:40 ²	T+6:58	0
Apr 2014	120	110 (91.7%)	111 (92.5%)	120 (100%)	T+6:45	T+7:45	T+6:48	0
May 2014	124	123 (99.2%)	124 (100%)	124 (100%)	T+6:45	T+7:00	T+6:46	0
Jun 2014	120	119 (99.2%)	120 (100%)	120 (100%)	T+6:45	T+7:00	T+6:47	0
Jul 2014	124	119 (96.0%)	121 (97.6%)**	124 (100%)	T+6:45	T+8:45	T+6:53	0
Aug 2014	124	122 (98.4%)	124 (100%)	124 (100%)	T+6:45	T+7:10	T+6:47	0
Sep 2014	120	120 (100%)	120 (100%)	120 (100%)	T+6:45	T+7:00	T+6:48	0
Oct 2014	124	124 (100%)	124 (100%)	124 (100%)	T+6:45	T+6:50	T+6:46	0
Nov 2014	120	120 (100%)	120 (100%)	120 (100%)	T+6:45	T+6:55	T+6:47	0
Dec 2014	124	124 (100%)	124 (100%)	124 (100%)	T+6:45	T+7:00	T+6:50	0
Jan 2015	124	123 (99.2%)	124 (100%)	124 (100%)	T+6:45	T+7:05	T+6:47	0

² DT150600 UTC: Internal data communications problem. All data re-transmitted.

Feb 2015	112	110 (98.2%)	112 (100%)	112 (100%)	T+6:45	T+7:05	T+6:47	0
Mar 2015	124	120 (96.8%)	124 (100%)	124 (100%)	T+6:50	T+7:05	T+6:51	0
Apr 2015	120	119 (99.2%)	120 (100%)	120 (100%)	T+6:50	T+7:05	T+6:52	0
May 2015	124	124 (100%)	124 (100%)	124 (100%)	T+6:50	T+7:00	T+6:52	0
Jun 2015	120	120 (100%)	120 (100%)	120 (100%)	T+6:50	T+7:00	T+6:51	0
TOTAL	3040	3000 (98.7%)	3023 (99.4%)	3038 (99.9%)	T+6:40	T+9:40	T+6:48	1 (<0.03%)

* Due to backup tests on 10 July 2013 and 24th July 2013, only 122 bulletins are expected by T+6:55 and T+7:30

** Due to genuine not notice backup by WAFC London of WAFC Washington for data time 020600 UTC, data issued 2 hours later than normal (within requirements)

WAFC Washington SIGWX PNG Availability

Month	Total sets	Complete sets by +6:55	Complete sets by +7:30	Complete sets by +8:55	Earliest time for complete set	Latest time for complete set	Average time for complete set	Incomplete sets
Jun 2013	120	100 (83.3%)	120 (100.0%)	120 (100.0%)	T+6:45	T+7:05	T+6:49	0
Jul 2013	124	107 (86.3%)	121 (97.6 %)	124 (100.0%)	T+6:45	T+8:47	T+6:52	0
Aug 2013	124	113 (91.1%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:08	T+6:50	0
Sep 2013	120	111 (92.5%)	119 (99.2%)	120 (100.0%)	T+6:45	T+7:33	T+6:49	0
		Complete sets by +7:00	Complete sets by +7:30	Complete sets by +9:00	Earliest time for complete set	Latest time for complete set	Average time for complete set	Incomplete sets
Oct 2013	124	119 (96.0%)	122 (98.4%)	123 (99.2%)	T+6:45	T+11:56	T+6:53	1
Nov 2013	120	119 (99.2%)	119 (99.2%)	120 (100.0%)	T+6:45	T+8:05	T+6:51	0
Dec 2013	124	120 (96.8%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:17	T+6:53	0
Jan 2014	124	120 (96.8%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:22	T+6:50	0
Feb 2014	112	110 (98.2%)	111 (99.1%)	112 (100.0%)	T+6:45	T+7:34	T+6:51	0
Mar 2014	124	124 (100.0%)	124 (100.0%)	124 (100.0%)	T+6:45	T+6:59	T+6:50	0
Apr 2014	120	119 (99.2%)	119 (99.2%)	120 (100.0%)	T+6:45	T+8:06	T+6:51	0
May 2014	124	124 (100.0%)	124 (100.0%)	124 (100.0%)	T+6:45	T+6:57	T+6:51	0
Jun 2014	120	119 (99.2%)	120 (100.0%)	120 (100.0%)	T+6:45	T+7:06	T+6:51	0
Jul 2014	124	120 (96.8%)	122 (98.4%)	124 (100.0%)	T+6:45	T+8:45	T+6:53	0
Aug 2014	124	120 (96.8%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:10	T+6:52	0
Sep 2014	120	118 (98.3%)	120 (100.0%)	120 (100.0%)	T+6:45	T+7:03	T+6:52	0
Oct 2014	124	122 (98.4%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:19	T+6:50	0

Nov 2014	120	118 (98.3%)	120 (100.0%)	120 (100.0%)	T+6:45	T+7:03	T+6:51	0
Dec 2014	124	124 (100.0%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:00	T+6:49	0
Jan 2015	124	124 (100.0%)	124 (100.0%)	124 (100.0%)	T+6:45	T+6:59	T+6:51	0
Feb 2015	112	109 (97.3%)	112 (100.0%)	112 (100.0%)	T+6:45	T+7:21	T+6:50	0
Mar 2015	124	123 (99.2%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:05	T+6:50	0
Apr 2015	119	117 (97.5%)	118 (98.3%)	118 (98.3%)	T+6:45	T+9:54	T+6:51	2
May 2015	124	123 (99.2%)	124 (100.0%)	124 (100.0%)	T+6:45	T+7:01	T+6:50	0
Jun 2015	120	117 (97.5%)	119 (99.2%)	119 (99.2%)	T+6:45	T+9:20	T+6:52	1
TOTAL	3039	2985 (98.2%)	3026 (99.6%)	3036 (99.9%)	T+6:45	T+11:56	T+6:51	4(0.13%)

WAFC London GRIB2 Availability (not including CB, icing or turbulence parameters)

Month	Total sets	Complete sets by +4:20	Complete sets by +6:00	Earliest time for complete set	Latest time for complete set	Average time for complete set	Incomplete sets
Jun 2013	120	120 (100%)	120 (100%)	T+3:05	T+4:10	T+3:33	0
Jul 2013	124	123 (99.2%)	124 (100%)	T+3:30	T+4:30	T+3:32	0
Aug 2013	124	124 (100%)	124 (100%)	T+3:25	T+3:55	T+3:32	0
Sep 2013	120	119 (99.2%)	119 (99.2%)	T+3:30	T+7:10 ³	T+3:32	0
Oct 2013	124	123 (99.2%)	124 (100%)	T+3:25	T+5:40	T+3:32	0
Nov 2013	120	116 (96.7%)	120 (100%)	T+3:25	T+4:35	T+3:36	0
Dec 2013	124	124 (100%)	124 (100%)	T+3:30	T+4:00	T+3:36	0
Jan 2014	124	123 (99.2%)	124 (100%)	T+3:25	T+4:25	T+3:35	0
Feb 2014	112	111 (99.1%)	112 (100%)	T+3:15	T+4:25	T+3:30	0
Mar 2014	124	123 (99.2%)	123 (99.2%)	T+3:25	T+9:10 ⁴	T+4:00	0
Apr 2014	120	120 (100%)	120 (100%)	T+3:25	T+4:05	T+3:30	0
May 2014	124	124 (100%)	124 (100%)	T+3:25	T+3:30	T+3:26	0
Jun 2014	120	120 (100%)	120 (100%)	T+3:25	T+3:50	T+3:27	0
Jul 2014	124	122 (98.4%)	123 (99.2%)	T+3:25	T+6:05 ⁵	T+3:38	0
Aug 2014	108***	107 (99.1%)	108 (100%)	T+3:35	T+5:15	T+3:42	0
Sep 2014	120	119 (99.2%)	119 (99.2%)	T+3:35	T+7:05	T+3:44	0
Oct 2014	124	122 (98.4%)	124 (100%)	T+3:35	T+5:35	T+3:40	0
Nov 2014	120	120 (100%)	120 (100%)	T+3:40	T+4:10	T+3:43	0
Dec 2014	124	123 (99.2%)	124 (100%)	T+3:40	T+4:25	T+3:48	0
Jan 2015	124	123 (99.2%)	124 (100%)	T+3:35	T+4:25	T+3:44	0
Feb 2015	112	112 (100%)	112 (100%)	T+3:35	T+4:10	T+3:41	0
Mar 2015	124	122 (99.2%)	123 (100%)	T+3:25	T+6:50	T+3:39	0
Apr 2015	120	120 (100%)	120 (100%)	T+3:25	T+4:00	T+3:41	0
May 2015	124	122 (98.2%)	123 (99.1%)	T+3:30	T+8:40 ⁶	T+3:42	0
Jun 2015	120	120 (100%)	120 (100%)	T+3:25	T+3:45	T+3:37	0
TOTAL	3024	3002 (99.3%)	3018 (99.8%)	T+3:05	T+9:10	T+03:37	0 (0%)

*** Monitoring unavailable 1st to 4th inclusive August 2014

³ DT051200 UTC: Issues on the Met Office MetSwitch. Administrative messages issued.

⁴ DT221800 UTC: Issues on Met Office MetSwitch. Significant delays to transmission of WAFC London GRIB2 data. All data resent.

⁵ DT170600 UTC: Internal data communications problem.

⁶ DT201200 UTC and DT201800 UTC, Significant message switch problems – admin messages issued.

WAFC Washington GRIB2 Availability (not including CB, icing or turbulence parameters)

Month	Total sets	Complete sets by +4:20	Complete sets by +6:00	Earliest time for complete set	Latest time for complete set	Average time for complete set	Incomplete sets
Jun 2013	120	117 (97.5%)	120 (100.0%)	T+3:40	T+5:20	T+4:02	0
Jul 2013	124	124 (100.0%)	124 (100.0%)	T+3:40	T+4:05	T+3:59	0
Aug 2013	124	123 (99.2%)	124 (100.0%)	T+3:40	T+5:40	T+3:46	0
Sep 2013	120	116 (96.7%)	118 (98.3%)	T+3:40	T+13:27	T+3:53	2
Oct 2013	124	124 (100.0%)	124 (100.0%)	T+3:40	T+4:00	T+3:47	0
Nov 2013	120	119 (99.2%)	120 (100.0%)	T+3:45	T+5:30	T+3:53	0
Dec 2013	124	124 (100.0%)	124 (100.0%)	T+3:40	T+4:00	T+3:50	0
Jan 2014	124	123 (99.2%)	123 (99.2%)	T+3:45	T+4:15	T+3:52	1
Feb 2014	112	111 (99.1%)	112 (100.0%)	T+3:40	T+4:40	T+3:49	0
Mar 2014	124	122 (98.4%)	123 (99.2%)	T+3:40	T+6:15	T+3:49	1
Apr 2014	120	120 (100.0%)	120 (100.0%)	T+3:40	T+4:00	T+3:48	0
May 2014	124	124 (100.0%)	124 (100.0%)	T+3:45	T+3:55	T+3:49	0
Jun 2014	120	120 (100.0%)	120 (100.0%)	T+3:40	T+3:55	T+3:46	0
Jul 2014	124	124 (100.0%)	124 (100.0%)	T+3:40	T+3:55	T+3:43	0
Aug 2014	124	124 (100.0%)	124 (100.0%)	T+3:40	T+3:45	T+3:43	0
Sep 2014	120	119 (99.2%)	120 (100.0%)	T+3:40	T+4:45	T+3:44	0
Oct 2014	124	122 (98.4%)	122 (98.4%)	T+3:40	T+7:08	T+3:47	2
Nov 2014	120	119 (99.2%)	119 (99.2%)	T+3:40	T+3:45	T+3:44	1
Dec 2014	124	121 (97.6%)	122 (98.4%)	T+3:40	T+7:05	T+3:47	2
Jan 2015	124	124 (100.0%)	124 (100.0%)	T+3:40	T+3:50	T+3:47	0
Feb 2015	112	111 (99.1%)	111 (99.1%)	T+3:45	T+3:55	T+3:50	1
Mar 2015	124	123 (99.2%)	124 (100.0%)	T+3:45	T+4:40	T+3:49	0
Apr 2015	120	120 (100.0%)	120 (100.0%)	T+3:45	T+4:00	T+3:48	1
May 2015	124	122 (98.4%)	123 (99.2%)	T+3:45	T+8:26	T+3:49	0
Jun 2015	120	120 (100.0%)	120 (100.0%)	T+3:45	T+3:55	T+3:49	0
TOTAL	3036	3016 (99.3%)	3029 (99.8%)	T+3:40	T+13:27	T+3:51	11(0.36%)

WAFC London GRIB2 CB, Icing and Turbulence Availability

Month	Total sets	Complete sets by +5:30	N/A	Complete sets by +6:00	Earliest time for complete set	Latest time for complete set	Average time for complete set	Incomplete sets
Jun 2013	120	118 (98.3%)	N/A	118 (98.3%)	T+5:20	T+6:10	T+5:23	2
Jul 2013	124	124 (100%)	N/A	124 (100%)	T+5:20	T+5:30	T+5:23	0
Aug 2013	124	122 (98.4%)	N/A	123 (99.2%)	T+5:15	T+8:20 ⁷	T+5:24	0
Sep 2013	120	118 (98.3%)	N/A	118 (98.3%)	T+5:20	T+7:25 ⁸	T+5:24	1
Oct 2013	124	122 (98.4%)	N/A	123 (99.2%)	T+5:20	T+6:20 ⁹	T+5:34	0
Nov 2013	120	113 (94.2%)	N/A	117 (97.5%)	T+5:20	T+7:55 ¹⁰	T+5:35	0
Dec 2013	124	110 (88.7%)	N/A	123 (99.2%)	T+5:20	T+8:50 ¹¹	T+5:33	0
Jan 2014	124	106 (85.5%)	N/A	123 (99.2%)	T+5:20	T+6:35	T+5:25	0
Feb 2014	112	111 (99.1%)	N/A	112 (100%)	T+5:10	T+5:35	T+5:32	0
Mar 2014	45	45 (100%)	N/A	45 (100%)	T+5:15	T+5:20	T+5:15	0
From 12 March 2014, issue time brought forward	Total sets	Complete sets by +4:35	Complete sets by +4:50	Complete sets by +6:00	Earliest time for complete set	Latest time for complete set	Average time for complete set	Incomplete sets
Mar 2014	79	78 (98.7%)	78 (98.7%)	78 (98.7%)	T+4:15	T+7:25 ¹²	T+4:20	0
Apr 2014	120	120 (100%)	120 (100%)	120 (100%)	T+4:10	T+4:25	T+4:13	0
May 2014	124	119 (96.0%)	119 (96.0%)	124 (100%)	T+4:10	T+5:10 ¹³	T+4:15	0
Jun 2014	120	119 (99.2%)	120 (100%)	120 (100%)	T+4:10	T+4:35	T+4:14	0
Jul 2014	124	120 (96.8%)	123 (99.2%) ¹⁴	124 (100%)	T+4:10	T+4:55	T+4:13	0
Aug 2014	108***	107 (99.1%)	107 (99.1%)	107 (99.1%)	T+4:10	T+7:40 ¹⁵	T+4:12	0
Sep 2014	120	118 (98.3%)	118 (98.3%)	120 (100%)	T+4:10	T+4:55	T+4:14	0
Oct 2014	124	121 (97.6%)	123 (99.2%)	124 (100%)	T+4:10	T+5:30 ¹⁶	T+4:12	0

⁷ DT160000 UTC: Internal data communications problem⁸ DT051200 UTC: Issues on the Met Office MetSwitch. Administrative messages issued.⁹ DT111800 UTC: Issues on the Met Office MetSwitch¹⁰ DT140000 UTC and 140600 UTC dataset FL410 routing during initial implementation¹¹ DT071200 UTC: late availability of WAFC London raw data¹² DT221800 UTC: Issues on Met Office MetSwitch. Significant delays to transmission of WAFC London GRIB2 data. All data resent.¹³ DT061200, 081200, 091200, 121200 UTC: Testing on WAFC Washington servers affecting collection by WAFC London of raw WAFC Washington data. NOUK10s issued (except 061200).¹⁴ DT0260600 UTC: Later than normal availability of data¹⁵ DT260600 UTC: Distribution error from GPCS to MetSwitch. Data issued by 1400 UTC (~7hrs 30min late)¹⁶ DT090600 UTC: Issuance of un-harmonised data

Nov 2014	120	118 (98.3%)	119 (99.2%)	119 (99.2%)	T+4:10	T+4:30	T+4:11	1 (0.8%) ¹⁷
Dec 2014	124	120 (96.8%)	120 (96.8%)	124 (100%)	T+4:10	T+4:55	T+4:15	0
Jan 2015	124	123 (99.2%)	123 (99.2%)	124 (100%)	T+4:10	T+4:55	T+4:14	0
Feb 2015	112	109 (97.3%)	111 (99.1%)	112 (100%)	T+4:10	T+5:45	T+4:13	0
Mar 2015	124	117 (92.7%)	122 (97.9%)	123 (99.0%)	T+4:10	T+9:05	T+4:14	0
Apr 2015	120	120 (100%)	120 (100%)	120 (100%)	T+4:10	T+4:20	T+4:11	0
May 2015	124	122 (97.9%)	122 (97.9%)	123 (99.0%)	T+4:10	T+8:40 ¹⁸	T+4:14	0
Jun 2015	120	120 (100%)	120 (100%)	120 (100%)	T+4:10	T+4:20	T+4:11	0
TOTAL	3024	2940 (97.2%)	1865 (98.8%)	3008 (99.5%)	T+4:10	T+9:05	T+4:13 <i>(T+5:26 pre 12 March 2014)</i>	4 (0.13%)

*** Monitoring unavailable 1st to 4th inclusive August 2014

WAFC Washington GRIB2 CB, Icing, Turbulence Availability

Month	Total sets	Complete sets by +5:30	N/A	Complete sets by +6:00	Earliest time for complete set	Latest time for complete set	Average time for complete set	Incomplete sets
Jun 2013	120	118 (98.3%)	N/A	119 (99.2%)	T+5:00	T+5:35	T+5:01	1
Jul 2013	124	124 (100.0%)	N/A	124 (100.0%)	T+5:00	T+5:35	T+5:00	0
Aug 2013	124	122 (98.4%)	N/A	123 (99.2%)	T+5:00	T+6:05	T+5:01	1
Sep 2013	120	119 (99.2%)	N/A	119 (99.2%)	T+5:00	T+7:03	T+5:01	1
Oct 2013	124	124 (100.0%)	N/A	124 (100.0%)	T+5:00	T+5:05	T+5:00	0
Nov 2013	120	119 (99.2%)	N/A	120 (100.0%)	T+5:00	T+5:50	T+5:01	0
Dec 2013	124	124 (100.0%)	N/A	124 (100.0%)	T+5:00	T+5:05	T+5:00	0
Jan 2014	124	123 (99.2%)	N/A	123 (99.2%)	T+5:00	T+5:00	T+5:00	1
Feb 2014	112	111 (99.1%)	N/A	111 (99.1%)	T+5:00	T+5:05	T+5:00	1
From 12 March 2014, issue time brought forward	Total sets	Complete sets by +4:35	Complete sets by +4:50	Complete sets by +6:00	Earliest time for complete set	Latest time for complete set	Average time for complete set	Incomplete sets
Mar 2014	124	75 (60.5%)**	76 (61.3%)**	123 (99.2%)	T+4:35	T+6:45	T+4:46	1
Apr 2014	120	120 (100.0%)	120 (100.0%)	120 (100.0%)	T+4:35	T+4:35	T+4:35	0
May 2014	124	108 (87.1%)	124 (100.0%)	124 (100.0%)	T+4:35	T+4:40	T+4:35	0

¹⁷ Exceptionally rare system failure at WAFC London resulted in missing data

¹⁸ DT201200 UTC and DT201800 UTC, Message switch problems

Jun 2014	120	113 (94.2%)	120 (100.0%)	120 (100.0%)	T+4:35	T+4:40	T+4:35	0
Jul 2014	62***	61 (98.4%)	62 (100.0%)	62 (100.0%)	T+4:35	T+4:40	T+4:35	0***
Aug 2014	***	***	***	***	***	***	***	***
Sep 2014	***	***	***	***	***	***	***	***
Oct 2014	44***	43 (97.7%)	44 (100.0%)	44 (100.0%)	T+4:35	T+4:40	T+4:35	0***
Nov 2014	120	98 (81.7%)	120 (100.0%)	120 (100.0%)	T+4:35	T+4:40	T+4:36	0
Dec 2014	124	107 (86.3%)	123 (99.2%)	124 (100.0%)	T+4:35	T+5:39	T+4:36	0
Jan 2015	124	120 (96.8%)	124 (100.0%)	124 (100.0%)	T+4:35	T+4:40	T+4:35	0
Feb 2015	112	88 (78.6%)	112 (100.0%)	112 (100.0%)	T+4:35	T+4:40	T+4:36	0
Mar 2015	124	115 (92.7%)	123 (99.2%)	124 (100.0%)	T+4:35	T+4:55	T+4:35	0
Apr 2015	120	113 (94.2%)	119 (99.2%)	120 (100.0%)	T+4:35	T+5:30	T+4:36	0
May 2015	124	102 (82.3%)	124 (100.0%)	124 (100.0%)	T+4:35	T+4:50	T+4:36	0
Jun 2015	120	118 (98.3%)	120 (100.0%)	120 (100.0%)	T+4:35	T+4:40	T+4:35	0
TOTAL	2651	1381 (52.1%)	1511 (57.0%)	2648 (99.9%)	T+4:35	T+7:03	T+4:50	6(0.23%)

** Changed data collection times from +5:30 and +6:00 on March 12, 2014 to current settings +4:35, +4:50 and +6:00

***Monitoring Unavailable for parts of July, 2014 through a portion of October, 2014 due to script error.

SIGWX Correction Messages:

The number of WAFC London SIGWX Correction messages, by month										
Month	Jun 13	Jul 13	Aug 13	Sep 13	Oct 13	Nov 13	Dec 13	Jan 14	Feb 14	Mar 14
Number	3 ¹⁹	1 ²⁰	0	2 ²¹	0	0	0	1 ²²	1 ²³	1 ²⁴

The number of WAFC London SIGWX Correction messages, by month										
Month	Apr 14	May 14	Jun 14	Jul 14	Aug 14	Sep 14	Oct 14	Nov 14	Dec 14	Jan 15
Number	1 ²⁵	1 ²⁶	0	0	2 ²⁷	0	0	0	0	0

The number of WAFC London SIGWX Correction messages, by month					
Month	Feb 15	Mar 15	Apr 15	May 15	Jun 15
Number	0	1 ²⁸	0	0	1 ²⁹

Note: Live Tests of WAFC London Correction Process on 10/12/2014 (DT1800 UTC), 20/01/2015 (DT0000 UTC), 17/02/2015 (DT0600 UTC), 23/03/2015 (DT1800 UTC), 19/05/2015 (DT0000 UTC).

The number of WAFC Washington SIGWX Correction messages, by month										
Month	Jun 13	Jul 13	Aug 13	Sep 13	Oct 13	Nov 13	Dec 13	Jan 14	Feb 14	Mar 14
Number	0	0	0	4	0	1	1	1	0	5

The number of WAFC Washington SIGWX Correction messages, by month										
Month	Apr 14	May 14	Jun 14	Jul 14	Aug 14	Sep 14	Oct 14	Nov 14	Dec 14	Jan 15
Number	0	0	2	1	0	1	0	1	0	0

The number of WAFC Washington SIGWX Correction messages, by month					
Month	Feb 15	Mar 15	Apr 15	May 15	Jun 15
Number	0	1	0	2	0

Note: Live Tests of WAFC London Correction Process on 10/12/2014 (DT1800 UTC), 20/01/2015 (DT0000 UTC), 17/02/2015 (DT0600 UTC), 23/03/2015 (DT1800 UTC), 19/05/2015 (DT0000 UTC).

¹⁹ VT191800 UTC: missing CB area, human error; VT251800, missing CB area, human error, VT010600; wrong direction jet, human error.

²⁰ VT181200 UTC: missing volcanoes, human error

²¹ VT061800 UTC: misplaced tropical cyclone symbol, human error, not identified at two process check points. VT281200, incorrect jetstream height – FL320 should have been FL420.

²² VT120000 UTC: Missing area of CB

²³ VT220000 UTC: Missing area of CB

²⁴ VT160600 UTC: Communication issues. All re-transmitted.

²⁵ VT280600 UTC: Area of MOD CAT should have been identified as SEV CAT

²⁶ VT120600 UTC: Jetstream (110KT, FL270) close to Antarctic coast (67S 17E TO 63S 17W) wrong direction (reciprocal intended)

²⁷ VT040600 UTC: incorrect Jetstream hight (FL310 should have been FL370); human error. VT231200, incorrect TC name MARIA should have been MARIE; human error.

²⁸ DT150000 UTC: Incorrect inclusion of CB cloud (North Atlantic).

²⁹ DT141200 Missing TC 'Carlos'.

WAFS CB, Icing and Turbulence Harmonization failures:

The number of harmonization failures of WAFS GRIB2 CB, icing, and turbulence by WAFC London , by month										
Month	Jun 13	Jul 13	Aug 13	Sep 13	Oct 13	Nov 13	Dec 13	Jan 14	Feb 14	Mar 14
Number	2	0	14 ³⁰	0	0	1 ³¹	1 ³²	0	0	0

The number of harmonization failures of WAFS GRIB2 CB, icing, and turbulence by WAFC London , by month										
Month	Apr 14	May 14	Jun 14	Jul 14	Aug 14	Sep 14	Oct 14	Nov 14	Dec 14	Jan 15
Number	0	4 ³³	0	1 ³⁴	0	0	1 ³⁵	0 ³⁶	4 ³⁷	2 ^{38,39}

The number of harmonization failures of WAFS GRIB2 CB, icing, and turbulence by WAFC London , by month					
Month	Feb 15	Mar 15	Apr 15	May 15	Jun 15
Number	1 ^{40,41}	5 ^{42,43,44,45}	0	1 ⁴⁶	0

³⁰ 16th to 19th WAFS Washington implemented no notice change to server, preventing WAFS London accessing raw WAFS Washington data. Non-harmonised data issued.

³¹ DT151800: Washington raw data late. Run late and resent. No admin message issued.

³² DT071200 UTC: dataset, late availability of WAFS London raw data.

³³ DT061200, 081200, 091200, 121200 UTC: testing on WAFS Washington servers affecting collection by WAFS London of raw WAFS Washington data. NOUK10s issued (except 061200).

³⁴ DT231800 UTC: CAT Potential fields unharmonised for one run only.

³⁵ DT090600 UTC: Missing model data from WAFS London resulted in issuance of un-harmonized data..

³⁶ DT110600 UTC: Extremely rare failure of General Purpose Computing System at critical stage of processing. No data issued.

³⁷ DT190600 UTC, DT191200 UTC, DT191800 UTC, DT20000 UTC: Problems with WAFS Washington servers prevented WAFS London accessing their raw CB, icing and turbulence data.

³⁸ DT100600 UTC: File corrupted en route from WAFS Washington.

³⁹ DT270600 UTC: File transfer problems at WAFS Washington.

⁴⁰ DT280600 UTC: Issues with WAFS Washington's FTP server

⁴¹ DT 220000 UTC: Data issued late, but was harmonised. Admin messages issued.

⁴² DT010600 UTC; DT011200 UTC: Issues with WAFS Washington's FTP server. Admin messages issued.

⁴³ DT041200 UTC: Issues with WAFS Washington's FTP server. Admin messages issued.

⁴⁴ DT150000 UTC: Issues at WAFS London. Admin messages issued.

⁴⁵ DT170600 UTC: Issues following a change to an upstream system causing unexpected failures. Admin message issued.

⁴⁶ DT201200 UTC: Message switch issues. Admin message issued.

The number of harmonization failures of WAFS GRIB2 CB, icing, and turbulence by WAFC Washington , by month										
Month	Jun 13	Jul 13	Aug 13	Sep 13	Oct 13	Nov 13	Dec 13	Jan 14	Feb 14	Mar 14
Number	0	0	0	0	0	0	0	0	0	0

The number of harmonization failures of WAFS GRIB2 CB, icing, and turbulence by WAFC Washington , by month										
Month	Apr 14	May 14	Jun 14	Jul 14	Aug 14	Sep 14	Oct 14	Nov 14	Dec 14	Jan 15
Number	0	0	0	0	0	0	0	0	0	0

The number of harmonization failures of WAFS GRIB2 CB, icing, and turbulence by WAFC Washington , by month					
Month	Feb 15	Mar 15	Apr 15	May 15	Jun 15
Number	0	0	0	0	0

Appendix B to WAFC Management Report Attachment

History of Scheduled and un-scheduled WAFC SIGWX Backups

DATE	ISSUES
9 October 2013	Cancelled. No adverse impacts. This scheduled backup test was cancelled due to the partial shutdown of the USA government. Although both WAFCs retained capability to provide backup function if necessary, it was decided to cancel the backup test.
23 October 2013 - WAFC Washington successfully provided backup SIGWX products on behalf of WAFC London.	No.
08 January 2014 - WAFC London successfully provided backup SIGWX products on behalf of WAFC Washington.	No.
09 April 2014 - WAFC Washington successfully provided backup SIGWX products on behalf of WAFC London.	No.
18 April 2014 - WAFC London successfully provided unscheduled backup SIGWX products on behalf of WAFC Washington.	No
23 April 2014 - WAFC London successfully provided backup SIGWX products on behalf of WAFC Washington.	No.
02 July 2014 - WAFC London successfully provided unscheduled backup SIGWX products on behalf of WAFC Washington.	No
09 July 2014 - WAFC Washington successfully provided backup SIGWX products on behalf of WAFC London.	No
23 July 2014 - WAFC London successfully provided backup SIGWX products on behalf of WAFC Washington.	No
08 October 2014 - WAFC Washington successfully provided backup SIGWX products on behalf of WAFC London.	No
22 October 2014 - WAFC London successfully provided backup SIGWX products on behalf of WAFC Washington.	No

14 January 2015 - WAFC London successfully provided backup SIGWX products on behalf of WAFC Washington.	Cancelled. No adverse impacts. This scheduled backup test was cancelled due to a user reporting problems visualizing WAFC London BUFR data. Whilst it was believed that the fault was not related to the data itself, it was considered appropriate to cancel the backup whilst investigations continued. WAFC London remained in a position to implement backup for WAFC Washington in the event of a real requirement. The decision to cancel was purely discretionary and erring on the side of caution.
28 January 2015 - WAFC Washington successfully provided backup SIGWX products on behalf of WAFC London.	No
15 April 2015 - WAFC London provided backup SIGWX products on behalf of WAFC Washington.	The WAFC Washington data (KKCI) issued by WAFC London was available 20 minutes later than target (1300 UTC). Reception at WAFC Washington was also subject to some delay. No other user reported any problems with reception of data.
29 April 2015 - WAFC Washington successfully provided backup SIGWX products on behalf of WAFC London.	No
15 July 2015 - WAFC London provided backup SIGWX products on behalf of WAFC Washington.	No
29 July 2015 - WAFC Washington successfully provided backup SIGWX products on behalf of WAFC London.	No

Appendix C to WAFC Management Report Attachment WAFC Meetings and Seminar Participation

Meeting	Location	Date	WAFC London	WAFC Washington
EANPG METG/23	Paris, France	September 2013	Yes	No
IATA TF Meeting	Washington, DC	October 2013	Yes	Yes
WAFC Coordination	Exeter, United Kingdom	October 2013	Yes	Yes
IATA TF Meeting	Montréal	February 2014	Yes	Yes
SADISOPGS/19	London, United Kingdom	May 2014	Yes	Yes
MET/14	Montréal, Canada	July 2014	Yes	Yes
APANPIRG MET SG/18	Beijing, China	August 2014	Yes	Yes
MID MET SG/5	Jeddah, Saudi Arabia	September 2014	Yes	No
EANPG METG/24	Paris, France	September 2014	Yes	No
WAFC Coordination	Exeter, United Kingdom	October 2014	Yes	Yes
APIRG MET SG/10	Dakar, Senegal	December 2014	Yes (Via Internet)	No
METP/1	Montréal, Canada	April 2014	Yes	Yes
FOSTF (IATA)	Paris, France	May 2015	Yes	Yes
WAFC Coordination	Boulder, United States of America	June 2015	Yes	Yes
APANPIRG MET SG/19	Bangkok, Thailand	August 2015	Yes	Yes

— END —