



International Civil Aviation
Organization

METPWGMOG/7/SN/25
22/03/18

STUDY NOTE

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

SEVENTH MEETING

Offenbach, Germany, 11 to 13 April 2018

Agenda Item **3.3 Matters in support of WAFS Developments**

AMENDMENT 79 TO ANNEX 3

(Presented by the WAFS Provider States)

SUMMARY

This Study Note provides the opportunity for the group to review a proposed update to ICAO Annex 3, for Amendment 79 (applicable November 2020) in relation to WAFS SIGWX changes.

Action by the METP-WG/MOG is in paragraph 4.

1. INTRODUCTION

1.1 This paper provides the opportunity for the group to review proposed changes required in Annex 3 to support the planned upgrades to the WAFS data sets.

2. DISCUSSION

2.1 Appendix A contains the proposed changes to Annex 3 for Amendment 79 (applicable November 2020). The changes relate to the following:

2.1.1 METP-WG/MOG/4 Action 4/WAFS2 proposed a revision to paragraphs 1.2.1 and 1.3.1.1. of Appendix 2 of ICAO Annex 3 – *Meteorological Service for International Air Navigation* in relation to availability of WAFS Forecasts.

1. That the WAFc providers be invited to submit a Working Paper to the Meteorology Panel proposing;

2. a) revision to paragraph 1.2.1 of Appendix 2 of ICAO Annex 3 in relation to the availability of WAFS Upper Air grid point forecasts; and,

b) revision to paragraph 1.3.1.1 of Appendix 2 of ICAO Annex 3 in relation to the availability of WAFS SIGWX forecasts

These descriptions have been adjusted exactly as specified in METP-WG/MOG/4 Appendix B.

2.1.2 Minor adjustments to account for the initial provision of IWXXM format SIGWX data sets from November 2021, prior to the final implementation date of Nov 2022.

2.1.3 Removal of Tropopause height information. At present, due to the way that tropopause height information is added by the WAFc meteorologist, the SIGWX and gridded tropopause data does not match. The largest changes in tropopause height are associated with the jet stream, and it is not possible to place the markers in the correct position as they would often be obscured by the jet stream (and often CAT) information. Instead the meteorologists place this information in free space away from the other chart features. For this reason it is felt that users should obtain this information from the gridded tropopause height data instead.

2.2 Other changes with respect to the 10 year WAFS strategy to upgrade the SIGWX and gridded data provision, are not planned for implementation until Annex 3 Amendment 80, applicable from November 2022.

3. CONCLUSION

3.1 Having considered the revisions to Annex 3 presented in Appendix A the WAFcs invite the meeting to agree that the proposed changes be delivered to METP/4 for endorsement. Accordingly, the group is invited to formulate the following draft action:

Action 7/xx — Amendment 79 to Annex 3 (SIGWX)

That the proposed updates to Annex 3 for Amendment 79, as provided in Appendix A, relating to the provision of WAFS SIGWX information be presented at METP/4 for endorsement.

4. ACTION BY THE METP-WG/MOG

4.1 The METP-WG/MOG is invited to:

- a) note the information contained in this paper; and
- b) agree on the draft action presented in 3.1.

APPENDIX A

- New text to Annex 3 for Amendment 79 is shaded in grey.
- Deleted text is shown with ~~strikeout~~ and red font
- Blue text are action notes

APPENDIX 1. FLIGHT DOCUMENTATION — MODEL CHARTS AND FORMS

SIGNIFICANT WEATHER CHART (HIGH LEVEL)

MODEL SWH

Example. Polar stereographic projection (showing the jet stream vertical extent)

<New SWH to be prepared and given to WMO, which removes Tropopause Heights>

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SHEET OF NOTATIONS USED IN FLIGHT DOCUMENTATION

MODEL SN

<New text to be prepared for Table 2 and given to WMO, which removes Tropopause Heights>

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APPENDIX 2. TECHNICAL SPECIFICATIONS RELATED TO WORLD AREA FORECAST SYSTEM AND METEOROLOGICAL OFFICES

(See Chapter 3 of this Annex.)

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1. WORLD AREA FORECAST SYSTEM

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1.3 Significant weather (SIGWX) forecasts

1.3.1 General provisions

1.3.1.1 Forecasts of significant en-route weather phenomena shall be prepared as SIGWX forecasts four times a day by a WAFC and shall be valid for fixed valid times at 24 hours after the time (0000, 0600, 1200 and 1800 UTC) of the synoptic data on which the forecasts were based. ~~The dissemination of e~~ Each forecast shall be **completed** made available as soon as technically feasible but not later than **9 7** hours after standard time of observation **under normal operations and not later than 9 hours after standard time of observation during backup operations.**

1.3.1.2 SIGWX forecasts shall be issued in binary code form using the BUFR code form prescribed by WMO.

Note.— *The BUFR code form is contained in the Manual on Codes (WMO-No. 306), Volume I.2, Part B — Binary Codes.*

1.3.1.3 **Recommendation.**— *From xx November 2021, in addition to 1.3.1.2, SIGWX forecasts should be made available in IWXXM form.*

Note.— *Guidance on IWXXM is provided in the Manual on the ICAO Meteorological Information Exchange Model (IWXXM) (Doc 10003).*

1.3.2 Types of SIGWX forecasts

SIGWX forecasts shall be issued as high-level SIGWX forecasts for flight levels between 250 and 630.

Note.— *Medium-level SIGWX forecasts for flight levels between 100 and 250 for limited geographical areas will continue to be issued until such time that flight documentation to be generated from the gridded forecasts of cumulonimbus clouds, icing and turbulence fully meets user requirements*

1.3.3 Items included in SIGWX forecasts

SIGWX forecasts shall include the following items:

- a) tropical cyclone provided that the maximum of the 10-minute mean surface wind speed is expected to reach or exceed 17 m/s (34 kt);
- b) severe squall lines;
- c) moderate or severe turbulence (in cloud or clear-air);
- d) moderate or severe icing;
- e) widespread sandstorm/duststorm;
- f) cumulonimbus clouds associated with thunderstorms and with a) to e);

Note.— *Non-convective cloud areas associated with in-cloud moderate or severe turbulence and/or moderate or severe icing are to be included in the SIGWX forecasts.*

~~g) —flight level of tropopause;~~

hg) jet streams;

ih) information on the location of volcanic eruptions that are producing ash clouds of significance to aircraft operations,

comprising: volcanic eruption symbol at the location of the volcano and, in a separate text box on the chart, the volcanic eruption symbol, the name of the volcano (if known) and the latitude/longitude of the eruption. In addition, the legend of SIGWX charts should indicate “CHECK SIGMET, ADVISORIES FOR TC AND VA, AND ASHTAM AND NOTAM FOR VA”; and

- ji) information on the location of a release of radioactive materials into the atmosphere of significance to aircraft operations, comprising: the radioactive materials in the atmosphere symbol at the location of the release and, in a separate text box on the chart, the radioactive materials in the atmosphere symbol, latitude/longitude of the site of the release, and (if known) the name of site of the radioactive source. In addition, the legend of SIGWX charts on which a release of radiation is indicated should contain “CHECK SIGMET AND NOTAM FOR RDOACT CLD”.

Note 1.— Medium-level SIGWX forecasts include all the items above.

Note 2.— Items to be included in low-level SIGWX forecasts (i.e. flight levels below 100) are included in Appendix 5.

1.3.4 Criteria for including items in SIGWX forecasts

The following criteria shall be applied for SIGWX forecasts:

- a) items a) to d) in 1.3.3 shall only be included if expected to occur between the lower and upper levels of the SIGWX forecast;
- b) the abbreviation “CB” shall only be included when it refers to the occurrence or expected occurrence of cumulonimbus clouds:
 - 1) affecting an area with a maximum spatial coverage of 50 per cent or more of the area concerned;
 - 2) along a line with little or no space between individual clouds; or
 - 3) embedded in cloud layers or concealed by haze;
- c) the inclusion of “CB” shall be understood to include all weather phenomena normally associated with cumulonimbus clouds, i.e. thunderstorm, moderate or severe icing, moderate or severe turbulence and hail;
- d) where a volcanic eruption or a release of radioactive materials into the atmosphere warrants the inclusion of the volcanic eruption symbol or the radioactive materials in the atmosphere symbol in SIGWX forecasts, the symbols shall be included on SIGWX forecasts irrespective of the height to which the ash column or radioactive material is reported or expected to reach; and
- e) in the case of co-incident or the partial overlapping of items a), i) and j) in 1.3.3, the highest priority shall be given to item i), followed by items j) and a). The item with the highest priority shall be placed at the location of the event, and an arrow shall be used to link the location of the other item(s) to its associated symbol or text box.

2. AERODROME METEOROLOGICAL OFFICES

2.1 Use of world area forecast system (WAFS) products

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2.1.2 In order to ensure uniformity and standardization of flight documentation, the WAFS GRIB, ~~and~~ BUFR and from

xx November 2021, IWXXM data received shall be decoded into standard WAFS charts in accordance with relevant provisions in this Annex, and the meteorological content and identification of the originator of the WAFS forecasts shall not be amended.

2.2 Notification of WAFC concerning significant discrepancies

Aerodrome meteorological offices using WAFS BUFR and or IWXXM data shall notify the WAFC concerned immediately if significant discrepancies are detected or reported in respect of WAFS SIGWX forecasts concerning:

- a) icing, turbulence, cumulonimbus clouds that are obscured, frequent, embedded or occurring at a squall line, and sandstorms/duststorms; and
- b) volcanic eruptions or a release of radioactive materials into the atmosphere, of significance to aircraft operations.

The WAFC receiving the message shall acknowledge its receipt to the originator, together with a brief comment on the report and any action taken, using the same means of communication employed by the originator.

Note.— Guidance on reporting significant discrepancies is provided in the Manual of Aeronautical Meteorological Practice (Doc 8896).

APPENDIX 8. TECHNICAL SPECIFICATIONS RELATED TO SERVICE FOR OPERATORS AND FLIGHT CREW MEMBERS

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2. SPECIFICATIONS RELATED TO INFORMATION FOR PRE-FLIGHT PLANNING AND IN-FLIGHT REPLANNING

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2.2 Format of information on significant weather

2.2.1 Information on significant weather supplied by WAFCs for pre-flight and in-flight replanning shall be in the BUFR code form.

Note.— The BUFR code form is contained in the Manual on Codes (WMO-No. 306), Volume I.2, Part B — Binary Codes.

2.2.2 **Recommendation.**— *From xx November 2021, in addition to 2.2.1, information on significant weather supplied by WAFCs for pre-flight and in-flight replanning should be in the IWXXM form.*

Note 2.— Guidance on IWXXM is provided in the Manual on the ICAO Meteorological Information Exchange Model (IWXXM) (Doc 10003).

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