Tel.: +1 514-954-8219 ext. 6717

Ref.: AN 10/1-17/41   7 April 2017

Subject: Proposals for the amendment of Annex 3 and
consequential amendments to Annex 15, PANS-ABC
and PANS-ATM

Action required: Comments to reach Montréal
by 7 July 2017

Sir/Madam,

1.   I have the honour to inform you that the Air Navigation Commission, at the ninth
meeting of its 204th Session held on 9 March 2017, considered proposals developed by the second
meeting of the Meteorology Panel (METP/2) for the amendment of Standards and Recommended
Practices (SARPs) in Annex 3 — *Meteorological Service for International Air Navigation* and
consequential amendments in Annex 15 — *Aeronautical Information Services*, *Procedures for Air
Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400) and *Procedures for Air
Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444). The Commission authorized
their transmission to Member States and appropriate international organizations for comments.

2.   The background of the aforementioned proposals is explained in Attachment A. The
proposals for amendment to Annexes 3 and 15, PANS-ABC and PANS-ATM are contained in
Attachments B through E, respectively. A rationale box providing more information has been included
immediately following each proposal.

3.   May I request that any comments you wish to make on the amendment proposals be
dispatched to reach me not later than 7 July 2017. To facilitate the processing of replies with substantive
comments, I invite you to submit an electronic version in Word format to icaohq@icao.int. The
Air Navigation Commission has asked me to specifically indicate that comments received after the due
date may not be considered by the Commission and the Council. In this connection, should you anticipate
a delay in the receipt of your reply, please let me know in advance of the due date.

4. For your information, the proposed amendment to Annex 3 is envisaged for applicability on 8 November 2018, except for the provisions related to modifications of IWXXM representations of information which are envisaged on 7 November 2019 and those pertaining to the IWXXM as a Standard on 5 November 2020. The consequential amendments to Annex 15, the PANS-ABC and PANS-ATM are envisaged for applicability on 8 November 2018. Any comments you may have thereon would be appreciated.

5. The subsequent work of the Air Navigation Commission and the Council would be greatly facilitated by specific statements on the acceptability or otherwise of the proposals. Please note that for the review of your comments by the Air Navigation Commission and the Council, replies are normally classified as "agreement with or without comments", "disagreement with or without comments" or "no indication of position". If in your reply the expressions "no objections" or "no comments" are used, they will be taken to mean "agreement without comment" and "no indication of position", respectively. In order to facilitate proper classification of your response, a form has been included in Attachment F which may be completed and returned together with your comments, if any, on the technical content of the proposals in Attachments B to E. Should you have comments on the wording of the amendment proposals in one of the languages other than English, you are invited to provide these in Attachment G. This will facilitate coordination with ICAO Languages and Publications.

Accept, Sir/Madam, the assurances of my highest consideration.

Fang Liu
Secretary General

Enclosures:
    A — Background information
    B — Proposed amendment to Annex 3
    C — Proposed amendment to Annex 15
    D — Proposed amendment to PANS-ABC
    E — Proposed amendment to PANS-ATM
    F — Response form
    G — Response form for comments on wording

BACKGROUND INFORMATION

1. **INTRODUCTION OF SPACE WEATHER ADVISORY INFORMATION SERVICE**

1.1   Attachment B (Initial Proposal 1) contains proposals to amend Annex 3 for the introduction of a space weather information service supporting international air navigation. The suggested introduction of these new SARPs is the culmination of a process initiated by Recommendation 1/20 c) of the Meteorology (MET) Divisional Meeting (Montréal, 9 to 27 September 2002) which requested the evaluation of the need to provide information for international air navigation, inter alia, on solar radiation storms. Subsequently, ICAO and WMO worked closely together over the years in maturing a proposal for a new requirement until December 2011 when IATA confirmed the high-level user requirement for information on space weather. Finally, Initial Proposal 1 was developed as a follow up of Recommendation 2/7 of the Meteorology (MET) Divisional Meeting (Montréal, 7 to 18 July 2014). The space weather proposals are consistent with the *Global Air Navigation Plan* (GANP) (Doc 9750) and are supported by a process for the assessment of prospective providers of space weather information, the establishment of providers and the further development of higher resolution information over time.

1.2   Attachment C (Initial Proposal 1) contains consequential proposals to amend Annex 15 provisions by introducing an expansion in the scope in NOTAM to include information on space weather events.

1.3   Attachment D (Initial Proposal 1) contains consequential proposals to amend PANS-ABC (Doc 8400) provisions by introducing abbreviations relating to space weather events and space weather information providers.

1.4   The proposed amendment as detailed in Attachment E (Initial Proposal 1) contains consequential proposals to amend PANS-ATM (Doc 4444) relating to the transmission of space weather information as part of a flight information service, and removes the current perspective that only supersonic operations are affected.

2. **IMPROVEMENT OF THE PROVISION OF SIGMET INFORMATION BY METEOROLOGICAL WATCH OFFICES (MWOS)**

2.1   Attachment B (Initial Proposal 2) adds a note to Annex 3, Chapter 3, 3.4.1, regarding the guidance to meteorological watch offices in bilateral and multilateral cooperation and coordination for the provision of SIGMET information messages to address user needs for better harmonization of the provision of en-route hazardous weather information.

3. **INFORMATION ON THE RELEASE OF RADIOACTIVE MATERIAL INTO THE ATMOSPHERE**

3.1   Attachment B (Initial Proposal 3) contains provisions to amend Annex 3 to allow for the provision of SIGMET and AIRMET messages to contain a cylindrical description of the airspace

affected. The proposed provision has an associated note to aid meteorological watch offices in the provision of the SIGMET messages for a radioactive cloud considering the recommendations of the International Atomic Energy Agency (IAEA). Further enhancements to the provision of information for the release of radioactive material into the atmosphere are under consideration by the METP.

4.   **SIGMET AND AIRMET INFORMATION**

4.1   Attachment B (Initial Proposal 4) contains proposals to amend Annex 3 that would enable the use of 'TEST' or 'EXERCISE' qualifiers in test messages for volcanic ash and tropical cyclone advisory as well as in SIGMET and AIRMET information. These provisions would remove the potential for ambiguity that may arise between operational messages and those messages issued during communications tests (e.g. TEST) or volcanic ash and tropical cyclone contingency exercises (e.g. EXERCISE).

4.2   Attachment B (Initial Proposal 6) contains proposals to amend Annex 3 that would enable greater clarity in the presentation of information about tropical cyclones (TC) (Annex 3, Table A2-2 Template for advisory message for tropical cyclones) with regard to their advisory number, observation time, TC centre position, and associated observed cumulonimbus (CB) cloud. These proposals are reflected in proposals for related changes in SIGMET information (Annex 3, Table A6-1A Template for SIGMET and AIRMET messages) as well as with the remediation of missing cloud level utility and area description with reference to FIR and UIR.

5.   **INTRODUCTION OF IWXXM**

5.1   Attachment B (Initial Proposal 5) contains provisions to amend Annex 3 that extend the use of the ICAO Meteorological Information Exchange Model (IWXXM) to facilitate the exchange of meteorological observations and reports (METAR/SPECI), aerodrome forecasts (TAF), SIGMETs, AIRMETs, and volcanic ash and tropical cyclone advisory information, in a system wide information management (SWIM) compliant environment. The current provisions allow those States with the capability to begin using IWXXM to exchange meteorological information in such a manner. From November 2020, the exchange of information in IWXXM format (in addition to the traditional alphanumeric code) is proposed to become a Standard and the primary means for the exchange of international MET information [1].

---

[1] The IWXXM timeline is:
1.   2016-2018: TAC is a Standard, IWXXM is a Recommended Practice for METAR/SPECI/Trend, TAF, VAA, TCA, SIGMET, AIRMET;
2.   2018: TAC is a Standard, IWXXM is a Recommended Practice for METAR/SPECI/Trend, TAF, VAA, TCA, SIGMET, AIRMET, Space Weather;
3.   2020: TAC is a Standard, IWXXM is a Standard for METAR/SPECI/Trend, TAF, VAA, TCA, SIGMET, AIRMET, Space Weather.

6. **AERONAUTICAL METEOROLOGICAL PERSONNEL QUALIFICATION AND COMPETENCY, EDUCATION AND TRAINING**

6.1 Attachment B (Initial Proposal 7) contains proposals to amend Annex 3 that would provide greater clarity with regard to the qualification and competency, education and training of personnel engaged in the provision of meteorological service for international air navigation (i.e. aeronautical meteorological personnel). The proposal brings the ICAO provisions in line with the requirements of the World Meteorological Organization (WMO) in this regard.

— — — — — — — —

PROPOSED AMENDMENT TO ANNEX 3

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it.~~	Text to be deleted
New text to be inserted is highlighted with grey shading.	New text to be inserted
~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	New text to replace existing text

TEXT OF PROPOSED AMENDMENT TO THE

**INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION

**ANNEX 3
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION**

INITIAL PROPOSAL 1

**INTRODUCTION OF A SPACE WEATHER INFORMATION SERVICE SUPPORTING
INTERNATIONAL AIR NAVIGATION (ANNEX 3)**

PART I. CORE SARPs

…

CHAPTER 1. DEFINITIONS

1.1 Definitions

…

Space weather centre (SWXC). A centre designated to monitor and provide information on space weather expected to affect communications, GNSS-based navigation and surveillance systems and/or pose a radiation risk to flight crew members and passengers.

Note. – A space weather centre may be designated as global or regional.

…

CHAPTER 3. ~~WORLD AREA FORECAST SYSTEM AND METEOROLOGICAL OFFICES~~ GLOBAL SERVICES, THEIR ASSOCIATED CENTRES AND METEOROLOGICAL OFFICES

…

3.8 Space weather centres (SWXC)

3.8.1   A Contracting State, having accepted the responsibility for providing a SWXC, shall arrange for that centre to provide information on space weather that is expected to affect communications, navigation and surveillance systems and/or pose a radiation risk to flight crew members and passengers in its area of responsibility by arranging for that centre to:

a) monitor relevant ground-based, airborne and space-based observations to detect, and predict when possible, the existence and extent of space weather conditions that have an impact in the following areas:

  1) high frequency (HF) radio communications;

  2) GNSS-based navigation and surveillance; and

  3) radiation exposure at flight levels;

b) issue advisory information regarding the extent, severity and duration of the space weather phenomena that may have an impact referred to in a);

c) supply the advisory information referred to in b) to:

  1) area control centres, flight information centres and meteorological watch offices serving flight information regions in its area of responsibility which may be affected;

  2) other SWXCs; and

  3) international OPMET databanks, international NOTAM offices and aeronautical fixed service Internet-based services.

3.8.2 SWXC shall maintain a 24-hour watch.

3.8.3 In case of interruption of the operation of a SWXC, its functions shall be carried out by another SWXC or another centre, as designated by the SWXC Provider State concerned.

Note.— Guidance on the provision of space weather information, including the ICAO-designated provider(s) of space weather information, is provided in the Manual on Space Weather in Support of International Air Navigation *(Doc ####).*

…

CHAPTER 9.   SERVICE FOR OPERATORS
AND FLIGHT CREW MEMBERS

9.1 General provisions

…

9.1.3   Meteorological information supplied to operators and flight crew members shall be up to date and include the following information, as agreed between the meteorological authority and the operators concerned:

…

i)   meteorological satellite images; ~~and~~

j)   ground-based weather radar information~~.~~; and

k)   space weather phenomena relevant to the whole route.

. . .

9.3 Flight documentation

Note.— The requirements for the use of automated pre-flight information systems in providing flight documentation are given in 9.4.

9.3.1 Flight documentation to be made available shall comprise information listed under 9.1.3 a) 1) and 6), b), c), e), f) and, if appropriate, g) and k). However, flight documentation for flights of two hours' duration or less, after a short stop or turnaround, shall be limited to the information operationally needed, as agreed between the meteorological authority and the operator concerned, but in all cases it shall at least comprise information on 9.1.3 b), c), e), f) and, if appropriate, g) and k).

. . .

PART II. APPENDICES AND ATTACHMENTS

. . .

APPENDIX 2.   TECHNICAL SPECIFICATIONS RELATED TO ~~WORLD AREA FORECAST SYSTEM~~ GLOBAL SERVICES, THEIR ASSOCIATED CENTRES AND METEOROLOGICAL OFFICES
(See Chapter 3 of this Annex)

. . .

6.   SPACE WEATHER CENTRES

6.1 Space weather advisory information

6.1.1 **Recommendation.—** *Advisory information on space weather should be issued in abbreviated plain language, using approved ICAO abbreviations and numerical values of self-explanatory nature, and should be in accordance with the templates shown in Table A2-3. When no approved ICAO abbreviations are available, English plain language text, to be kept to a minimum, should be used.*

6.1.2 **Recommendation.—** *Until 5 November 2020, space weather advisory information should be available in IWXXM GML form, in addition to the dissemination of space weather advisory information in abbreviated plain language in accordance with 6.1.1.*

6.1.3 From 5 November 2020, space weather advisory information shall be disseminated in IWXXM GML form, in addition to the dissemination of this advisory information in abbreviated plain language in accordance with 6.1.1.

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

6.1.4 **Recommendation.—** *One or more of the following space weather effects should be included in the space weather advisory information, using their respective abbreviations as indicated below:*

- HF communication (propagation, absorption)   *HF COM*

- GNSS-based navigation and surveillance (degradation)   *GNSS*

- Radiation at flight levels (increased exposure)   *RADIATION*

6.1.5 **Recommendation.—** *The following intensities should be included in space weather advisory information, using their respective abbreviations as indicated below:*

- moderate   *MOD*

- severe   *SEV*

6.1.6 **Recommendation.—** *Updated advisory information should be issued as necessary but at least every six hours.*

…

Insert new Table A2-3 as follows:

Table A2-3. Template for advisory message for space weather information

Key: M = inclusion mandatory, part of every message
          C = inclusion conditional, included whenever applicable

Note 1.— The explanations for the abbreviations can be found in the Procedures for Air Navigation Services — ICAO Abbreviations and Codes *(PANS-ABC, Doc 8400).*

Note 2.— The spatial resolutions are shown in Attachment E.

	Element	Detailed content	Template(s)	Examples
1	Identification of the type of message (M)	Type of message	SWX ADVISORY	SWX ADVISORY
2	TEST or EXERCISE indicator (C)*	TEST or EXERCISE indicator (C)*	Indicator of TEST or EXERCISE	TEST or EXERCISE
3	Time of origin	Year, month, day,	DTG: nnnnnnnn/nnnnZ	DTG: 20161108/0100Z

	Element	Detailed content	Template(s)	Examples
	(M)	time in UTC		
4	Name of centre (M)	Name of SWXC	SWXC: nnnnnnnnnnn	SWXC: <TBD>
5	Advisory number (M)	Number with year in full and unique message number	ADVISORY NR: nnnn/[n][n][n]n	ADVISORY NR: 2016/1
6	Space weather effect and intensity (M)	Kind of effect and intensity from the space weather event (HF communication, GNSS navigation and surveillance, radiation level exposure environment)	SWX EFFECT: HF COM MOD *or* SEV, *or* GNSS MOD *or* SEV, *or* HF COM MOD *or* SEV AND GNSS MOD *or* SEV, *or* RADIATION[1] MOD *or* SEV	SWX EFFECT: HF COM MOD GNSS SEV HF COM MOD AND GNSS MOD RADIATION MOD
7	Observed or expected extent of space weather event (M)	Specify time: year, month, day, time in UTC (time T) Observed (or forecast if event has yet to occur) space weather horizontal extent (latitude bands and longitude in degrees) and/or altitude at time T.	OBS *or* FCST SWX: nnnnnnnn/nnnnZ DAYLIGHT SIDE *and/or* HNH *and/or* MNH *and/or* EQN *and/or* EQS *and/or* MSH *and/or* HSH Wnnn(nn) *or* Ennn(nn) – Wnnn(nn) *or* Ennn(nn) *and/or* ABV FLnnn *or* FLnnn–nnn *or* Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – [Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or* NO SWX EXP	OBS SWX: FCST SWX: 20161108/0100Z DAYLIGHT SIDE HNH HSH HNH MNH MSH HSH EQN EQS W18000 – W09000 ABV FL350 S3000 E09000 – S3000 E18000 – S4000 E18000 – S4000 E09000 NO SWX EXP
8	Forecast for the next 6 hours (M)	Day and time (in UTC) (6 hours from time given in item 7, rounded to the next full hour) Forecast extent and/or altitude for the fixed valid time.	FCST SWX +6 HR: nn/nnnnZ DAYLIGHT SIDE *and/or* HNH *and/or* MNH *and/or* EQN *and/or* EQS	FCST SWX +6 HR: 20161108/0700Z DAYLIGHT SIDE HNH HSH HNH MNH MSH HSH

	Element	Detailed content	Template(s)	Examples
			and/or MSH *and/or* HSH *and/or* Wnnn(nn) *or* Ennn(nn) – Wnnn(nn) *or* Ennn(nn) *and/or* ABV FLnnn *or* FLnnn–nnn *or* Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – [Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or* NO SWX EXP *or* NOT AVBL	EQN EQS W09000 – W00000 ABV FL350 S3000 E09000 – S3000 E18000 – S4000 E18000 – S4000 E09000 NO SWX EXP NOT AVBL
9	Forecast for the next 12 hours (M)	Day and time (in UTC) (12 hours from time of onset given in item 7, rounded to the next full hour) Forecast extent and/or altitude for the fixed valid time.	FCST SWX +12 HR: nn/nnnnZ DAYLIGHT SIDE *or* HNH *and/or* MNH *and/or* EQN *and/or* EQS *and/or* MSH *and/or* HSH *and/or* Wnnn(nn) *or* Ennn(nn) – Wnnn(nn) *or* Ennn(nn) *and/or* ABV FLnnn *or* FLnnn–nnn *or* Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – [Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or*	FCST SWX +12 HR: 20161108/1300Z DAYLIGHT SIDE HNH HSH HNH MNH MSH HSH EQN EQS E00000 – E09000 ABV FL350 S3000 E09000 – S3000 E18000 – S4000 E18000 – S4000 E09000 NO SWX EXP NOT AVBL

	Element	*Detailed content*	*Template(s)*	*Examples*
			NO SWX EXP *or* NOT AVBL	
10	Forecast for the next 18 hours (M)	Day and time (in UTC) (18 hours from time of onset given in item 7, rounded to the next full hour) Forecast extent and/or altitude for the fixed valid time.	FCST SWX +18 HR: nn/nnnnZ DAYLIGHT SIDE *or* HNH *and/or* MNH *and/or* EQN *and/or* EQS *and/or* MSH *and/or* HSH *and/or* Wnnn(nn) *or* Ennn(nn) – Wnnn(nn) *or* Ennn(nn) *and/or* ABV FLnnn *or* FLnnn–nnn *or* Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – [Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or* NO SWX EXP *or* NOT AVBL	FCST SWX +18 HR: 20161108/1900Z DAYLIGHT SIDE HNH HSH HNH MNH MSH HSH EQN EQS E09000 – E18000 ABV FL350 S3000 E09000 – S3000 E18000 – S4000 E18000 – S4000 E09000 NO SWX EXP NOT AVBL
11	Forecast for the next 24 hours (M)	Day and time (in UTC) (24 hours from time of onset given in item 7, rounded to the next full hour) Forecast extent and/or altitude for the fixed valid time.	FCST SWX +24 HR: nn/nnnnZ DAYLIGHT SIDE *or* HNH *and/or* MNH *and/or* EQN *and/or* EQS *and/or* MSH	FCST SWX +24 HR: 20161109/0100Z DAYLIGHT SIDE HNH HSH HNH MNH MSH HSH EQN EQS

	Element	Detailed content	Template(s)	Examples
			and/or HSH and/or Wnnn(nn) *or* Ennn(nn) – Wnnn(nn) *or* Ennn(nn) *and/or* ABV FLnnn *or* FLnnn–nnn *or* Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – [Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or* NO SWX EXP *or* NOT AVBL	W18000 – W09000 ABV FL350 S3000 E09000 – S3000 E18000 – S4000 E18000 – S4000 E09000 NO SWX EXP NOT AVBL
12	Remarks (M)	Remarks, as necessary.	RMK: Free text up to 256 characters.	RMK: SWX EVENT HAS CEASED RMK: WWW.SPACEWEATHERPROVIDER.GOV RMK: NIL
13	Next advisory (M)	Year, month, day, time in UTC.	NXT ADVISORY: nnnnnnnn/nnnnZ *or* Free text up to XX (TBD) characters *or* NO FURTHER ADVISORIES	NXT ADVISORY: 20161108/0700Z. NO FURTHER ADVISORIES

*   Use only when the message issued is a TEST or EXERCISE and is not to be used for operational decision-making. When TEST or EXERCISE is indicated, the message may contain information (not to be used operationally) or will otherwise end immediately after the word "TEST".

Example A2-3: Space weather advisory message (GNSS and HF COM effects)

(communication header)	
SWX ADVISORY	
DTG:	20161108/0100Z
SWXC:	(to be determined)
SWX EFFECT:	GNSS MOD AND HF COM MOD
ADVISORY NR:	2016/1
OBS SWX:	20161108/0100Z HNH HSH E18000 – W18000
FCST SWX +6 HR:	20121108/0700Z HNH HSH E18000 – W18000
FCST SWX +12 HR:	20161108/1300Z HNH HSH E18000 – W18000
FCST SWX +18 HR:	20161108/1900Z HNH HSH E18000 – W18000
FCST SWX +24 HR:	20161109/0100Z NO SWX EXP
RMK:	LOW-LEVEL GEOMAGNETIC STORMING IS CAUSING INCREASED AURORAL ACTIVITY AND SUBSEQUENT MOD DEGRADATION OF GNSS AND HF COM AVAILABILITY IN THE AURORAL ZONE. THIS STORMING IS EXPECTED TO SUBSIDE

	IN THE FORECAST PERIOD. SEE WWW.SPACEWEATHERPROVIDER.WEB
NXT ADVISORY:	NO FURTHER ADVISORIES

Example A2-4: Space weather advisory message (RADIATION effects)

(communication header)	
SWX ADVISORY	
DTG:	20161108/0000Z
SWXC:	(to be determined)
SWX EFFECT:	RADIATION MOD
ADVISORY NR:	2016/2
FCST SWX:	20161108/0100Z HNH HSH E18000 – W18000 ABV FL350
FCST SWX +6 HR:	20121108/0700Z HNH HSH E18000 – W18000 ABV FL350
FCST SWX +12 HR:	20161108/1300Z HNH HSH E18000 – W18000 ABV FL350
FCST SWX +18 HR:	20161108/1900Z HNH HSH E18000 – W18000 ABV FL350
FCST SWX +24 HR:	20161109/0100Z NO SWX EXP
RMK:	RADIATION LEVELS HAVE EXCEEDED 100 PERCENT OF BACKGROUND LEVELS AT FL350 AND ABOVE. THE CURRENT EVENT HAS PEAKED AND LEVELS ARE SLOWLY RETURNING TO BACKGROUND LEVELS. SEE WWW.SPACEWEATHERPROVIDER.WEB
NXT ADVISORY:	NO FURTHER ADVISORIES

Example A2-5: Space weather advisory message (HF COM effects)

(communication header)	
SWX ADVISORY	
DTG:	20161108/0100Z
SWXC:	(to be determined)
SWX EFFECT:	HF COM SEV
ADVISORY NR:	2016/1
OBS SWX:	20161108/0100Z DAYLIGHT SIDE
FCST SWX +6 HR:	20121108/0700Z DAYLIGHT SIDE
FCST SWX +12 HR:	20161108/1300Z DAYLIGHT SIDE
FCST SWX +18 HR:	20161108/1900Z DAYLIGHT SIDE
FCST SWX +24 HR:	20161109/0100Z DAYLIGHT SIDE
RMK:	PERIODIC HF COM ABSORPTION HAS BEEN OBSERVED AND IS LIKELY TO CONTINUE IN THE NEAR TERM. COMPLETE AND PERIODIC LOSS OF HF ON THE SUNLIT SIDE OF THE EARTH EXPECTED. CONTINUED HF COM DEGRADATION LIKELY OVER THE NEXT 7 DAYS. SEE WWW.SPACEWEATHERPROVIDER.WEB
NXT ADVISORY:	20161108/0700Z

End of new Table A2-3.

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

(See Chapter 9 of this Annex)

…

4. SPECIFICATIONS RELATED TO FLIGHT DOCUMENTATION

4.1 Presentation of information

…

4.1.3 METAR and SPECI (including trend forecasts as issued in accordance with regional air navigation agreement), TAF, GAMET, SIGMET, and AIRMET, volcanic ash, and tropical cyclone and space weather advisory information shall be presented in accordance with the templates in Appendices 1, 2, 3, 5 and 6. Such meteorological information received from other meteorological offices shall be included in flight documentation without change.

…

Insert new Attachment E as follows.

ATTACHMENT E.   SPATIAL RANGES AND RESOLUTIONS FOR SPACE WEATHER ADVISORY INFORMATION

Note.— The guidance contained in this table relates to Appendix 2, 6.1 Space weather advisory information.

Element		Range	Resolution
Flight Level:		250-600	30
Longitudes for advisories:	(degrees)	000 – 180	15
	(minutes)	00	0
Latitude bands for advisories:	High latitudes northern hemisphere (HNH)	N9000 - N6000	
	Middle latitudes northern hemisphere (MNH)	N6000 - N3000	
	Equatorial latitudes northern hemisphere (EQN)	N3000 - N0000	30
	Equatorial latitudes southern hemisphere (EQS)	S0000 - S3000	
	Middle latitudes southern hemisphere (MSH)	S3000 - S6000	
	High latitudes southern hemisphere (HSH)	S6000 - S9000	

Note.— One or more latitude ranges should be included in the space weather advisory information for GNSS and RADIATION.

End of new Attachment E.

Origin	Rationale
METP/2	This amendment has been introduced to support the initial implementation of the provision of space weather advisory information to enhance the safety and efficiency of international air navigation consistent with the Global Air Navigation Plan. Due to the pressing need to implement the service, the global service is introduced as a matter of priority with subsequent consideration of the introduction of regionally-based models of integrated service delivery. The provision of this information would include advisories for space weather events affecting, or expected to affect, communications, GNSS-based navigation and surveillance systems, and which could pose a radiation risk to flight crew members and passengers within the next 24 hours.

INITIAL PROPOSAL 2

IMPROVEMENT OF THE PROVISION OF SIGMET INFORMATION BY METEOROLOGICAL WATCH OFFICES (MWOS). (ANNEX 3)

PART I. CORE SARPs

…

CHAPTER 3. ~~WORLD AREA FORECAST SYSTEM AND METEOROLOGICAL OFFICES~~ GLOBAL SERVICES, THEIR ASSOCIATED CENTRES AND METEOROLOGICAL OFFICES

...

3.4 Meteorological watch offices

3.4.1   A Contracting State, having accepted the responsibility for providing air traffic services within a flight information region (FIR) or a control area (CTA), shall establish, in accordance with regional air navigation agreement, one or more MWOs, or arrange for another Contracting State to do so.

Note.— Guidance on the arrangements between Contracting States for the provision of meteorological watch office services can be found in the Manual of Aeronautical Meteorological Practice (*Doc 8896*).

Origin	Rationale
METP/2	The introduction of this proposal for a Note is needed to point to additional guidance material to be developed to support bilateral and multilateral cooperation and coordination of the issuance of SIGMET information before the introduction of the regional advisory system for select en-route hazardous meteorological conditions.

INITIAL PROPOSAL 3

SIGMET INFORMATION ON THE RELEASE OF RADIOACTIVE MATERIAL INTO THE ATMOSPHERE. (ANNEX 3)

(APPLICABILITY DATE: NOVEMBER 2019)

APPENDIX 6.   TECHNICAL SPECIFICATIONS RELATED TO SIGMET AND AIRMET INFORMATION, AERODROME WARNINGS AND WIND SHEAR WARNINGS AND ALERTS

(See Chapter 7 of this Annex.)

…

Table A6-1A.   Template for SIGMET and AIRMET messages

…

Element	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
…	…	…	…	…	…
Location (C)[19]	Location (referring to latitude and longitude (in degrees and minutes))	Nnn[nn] Wnnn[nn] *or* Nnn[nn] Ennn[nn] *or* Snn[nn] Wnnn[nn] *or* Snn[nn] Ennn[nn] *or* N OF Nnn[nn] *or* S OF Nnn[nn] *or* N OF Snn[nn] *or* S OF Snn[nn] [AND] W OF Wnnn[nn] *or* E OF Wnnn[nn] *or* W OF Ennn[nn] *or* E OF Ennn[nn] *or* N OF Nnn[nn] *or* N OF Snn[nn] AND S OF Nnn[nn] *or* S OF Snn[nn] *or* W OF Wnnn[nn] *or* W OF Ennn[nn] AND E OF Wnnn[nn] *or* E OF Ennn[nn] *or* N OF LINE[20] *or* NE OF LINE[20] *or* E OF LINE[20] *or* SE OF LINE[20] *or* S OF LINE[20] *or* SW OF LINE[20] *or* W OF LINE[20] *or* NW OF LINE[20] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [AND N OF LINE[20] *or* NE OF LINE[20] *or* E OF LINE[20] *or* SE OF LINE[20] *or* S OF LINE[20] *or* SW OF LINE[20] *or* W OF LINE[20] *or* NW OF LINE[20] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [– Nnn[nn]		N2020 W07005 N48 E010 S60 W160 S0530 E16530 N OF N50 S OF N5430 N OF S10 S OF S4530 W OF W155 E OF W45 W OF E15540 E OF E09015 N OF N1515 AND W OF E13530 S OF N45 AND N OF N40 N OF LINE S2520 W11510 – S2520 W12010 SW OF LINE N50 W005 – N60 W020 SW OF LINE N50 W020 – N45 E010 AND NE OF LINE N45 W020 – N40 E010 WI N6030 E02550 – N6055 E02500 – N6050 E02630 – N6030 E02550 APRX 50KM WID LINE BTN N64 W017 – N60 W010 – N57 E010	

Element	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
		or Snn[nn] Wnnn[nn] or Ennn[nn]]]			
		or WI[20, 21] Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – [Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] or APRX nnKM WID LINE[20] BTN (or nnNM WID LINE[20] BTN) Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] or ENTIRE FIR[/UIR] or ENTIRE CTA or[22] WI nnnKM (or nnnNM) OF TC CENTRE or[29] WI nnnNM or nnnKM OF Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn(nn)		ENTIRE FIR ENTIRE FIR/UIR ENTIRE CTA WI 400KM OF TC CENTRE WI 250NM OF TC CENTRE WI 30 KM OF N6030 E02550	
…	…	…	…	…	…
Forecast position (C)[19, 24, 25]	Forecast position of phenomenon at the end of the validity period of the SIGMET message	Nnn[nn] Wnnn[nn] or Nnn[nn] Ennn[nn] or Snn[nn] Wnnn[nn] or Snn[nn] Ennn[nn] or N OF Nnn[nn] or S OF Nnn[nn] or N OF Snn[nn] or S OF Snn[nn] [AND] W OF Wnnn[nn] or E OF Wnnn[nn] or W OF Ennn[nn] or E OF Ennn[nn] or N OF Nnn[nn] or N OF Snn[nn] AND S OF Nnn[nn] or S OF Snn[nn] or W OF Wnnn[nn] or W OF Ennn[nn] AND E OF Wnnn[nn] or E OF Ennn[nn] or N OF LINE[20] or NE OF LINE[20] or E OF LINE[20] or SE OF LINE[20] or S OF LINE[20] or	—	N30 W170 N OF N30 S OF S50 AND W OF E170 S OF N46 AND N OF N39 NE OF LINE N35 W020 – N45 W040 SW OF LINE N48 W020 – N43 E010 AND NE OF LINE N43 W020 – N38 E010 WI N20 W090 – N05 W090 – N10 W100 – N20 W100 – N20 W090 APRX 50KM WID LINE BTN N64 W017 – N57 W005 – N55 E010 – N55 E030 ENTIRE FIR ENTIRE FIR/UIR ENTIRE CTA	—

Element	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
		SW OF LINE[20] *or* W OF LINE[20] *or* NW OF LINE[20] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [AND N OF LINE[20] *or* NE OF LINE[20] *or* E OF LINE[20] *or* SE OF LINE[20] *or* S OF LINE[20] *or* SW OF LINE[20] *or* W OF LINE[20] *or* NW OF LINE[20] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]]] *or* WI[20, 21] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] *or* APRX nnKM WID LINE[20] BTN (nnNM WID LINE[20] BTN) Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or* ENTIRE FIR[/UIR] *or* ENTIRE CTA *or*[22] TC CENTRE PSN Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]		TC CENTRE PSN N2740 W07345 NO VA EXP WI 30 KM OF N6030 E02550	

Element	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
		or[26] NO VA EXP *or*[29] WI nnnNM *or* nnnKM OF Nnn[nn] *or* Snn[nn] Wnnn[nn] or Ennn(nn)			
…	…	…	…	…	…

Notes.—

…

29. For issuing SIGMET for RDOACT CLD, when detailed information on the release is not available, a radius of up to 30 km may be applied based on the International Atomic Energy Agency (IAEA) recommendation for surface contamination contained in IAEA Safety Guide GS-G-2.1 - *Arrangements for Preparedness for a Nuclear or Radiological Emergency* (2007); and a vertical extent from surface (SFC) to the upper limit of the flight information region/upper flight information region (FIR/UIR) or control area (CTA) is to be applied.

…

Origin	**Rationale**
METP/2	This proposed amendment has been introduced to support the standardization of the description of airspace affected by a release of radioactive material into the atmosphere by allowing the production of SIGMETs and AIRMETs in a vertical cylinder and when detailed information on the release is not available by allowing the use of a 30 km radius consistent with recommendations from the International Atomic Energy Agency.

INITIAL PROPOSAL 4

USE OF 'TEST' OR 'EXERCISE' QUALIFIERS IN TEST MESSAGES FOR VOLCANIC ASH AND TROPICAL CYCLONE ADVISORY AS WELL AS IN SIGMET AND AIRMET INFORMATION (ANNEX 3)

(APPLICABILITY DATE: NOVEMBER 2019)

…

APPENDIX 2.   TECHNICAL SPECIFICATIONS RELATED TO ~~WORLD AREA FORECAST SYSTEM~~ GLOBAL SERVICES, THEIR ASSOCIATED CENTRES AND METEOROLOGICAL OFFICES

(See Chapter 3 of this Annex)

…

Table A2-1   Template for Advisory message for volcanic ash

…

	Element	Detailed content	Template(s)		Examples	
1	Identification of the type of message (M)	Type of message	VA ADVISORY		VA ADVISORY	
2	TEST or EXERCISE indicator (C)*	Indicator of TEST or EXERCISE	TEST *or* EXERCISE		TEST EXERCISE	
~~2~~3	Time of origin (M)	Year, month, day, time in UTC	DTG:	nnnnnnnn/nnnnZ	DTG:	20080923/0130Z
~~3~~4	Name of VAAC (M)	Name of VAAC	VAAC:	nnnnnnnnnnn	VAAC:	TOKYO
~~4~~5	Name of volcano (M)	Name and IAVCEI[1] number of volcano	VOLCANO: *or* UNKNOWN *or* UNNAMED	nnnnnnnnnnnnnnnnnnnnn [nnnnn]	VOLCANO: VOLCANO:	KARYMSKY 1000-13 UNNAMED
	…	…	…		…	

Notes.—

• • •

---

*   Use only when the message issued is a TEST or EXERCISE. When TEST or EXERCISE is indicated, the message may contain information that should not be used operationally or will otherwise end immediately after the word "TEST".

Table A2-2.   Template for advisory message for tropical cyclones

Key: =   =   a double line indicates that the text following it should be placed on the subsequent line.

Note 1.— The ranges and resolutions for the numerical elements included in advisory messages for tropical cyclones are shown in Appendix 6, Table A6-4.

Note 2.— The explanations for the abbreviations can be found in the PANS-ABC (Doc 8400).

Note 3.—   All the elements are mandatory.

Note 4~~3~~.— Inclusion of a "colon" after each element heading is mandatory.

Note ~~5~~4.— The numbers 1 to ~~19~~21 are included only for clarity and they are not part of the advisory message, as shown in the example.

	Element	Detailed content	Template(s)		Examples	
1	Identification of the type of message (M)	Type of message	TC ADVISORY		TC ADVISORY	
2	TEST or EXERCISE indicator (C)[1]	Indicator of TEST or EXERCISE	TEST *or* EXERCISE	TEST EXERCISE	TEST or EXERCISE indicator	TEST or EXERCISE indicator
~~2~~3	Time of origin (M)	Year, month, day and time in UTC of issue	DTG:	nnnnnnnn/nnnnZ	DTG:	20040925/19~~6~~00Z
~~3~~4	Name of TCAC (M)	Name of TCAC (location indicator *or* full name)	TCAC:	nnnn *or* nnnnnnnnnn	TCAC: TCAC:	YUFO[~~1~~2] MIAMI
~~4~~5	Name of tropical cyclone (M)	Name of tropical cyclone *or* "NN" for unnamed tropical cyclone	TC:	nnnnnnnnnnnn *or* NN	TC:	GLORIA
…	…	…	…		…	

Notes.—
1.   Use only when the message issued is a TEST or EXERCISE. When TEST or EXERCISE is indicated, the message may contain information that should not be used operationally or will otherwise end immediately after the word "TEST".
~~1~~2.   Fictitious location.

. . .

APPENDIX 6.   TECHNICAL SPECIFICATIONS RELATED TO SIGMET AND AIRMET INFORMATION, AERODROME WARNINGS AND WIND SHEAR WARNINGS AND ALERTS

(See Chapter 7 of this Annex.)

. . .

Table A6-1A.   Template for SIGMET and AIRMET messages

. . .

Element	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
…	…	…	…	…	…
Name of the FIR/CTA (M)	Location indicator and name of the FIR/CTA[4] for which the SIGMET/AIRMET is issued	nnnn nnnnnnnnnn FIR[/UIR] *or* nnnn nnnnnnnnnn CTA	nnnn nnnnnnnnnn FIR[/n]	YUCC AMSWELL FIR[2] YUDD SHANLON[2] FIR/UIR[2] YUDD SHANLON CTA[2]	YUCC AMSWELL FIR/2[2] YUDD SHANLON FIR[2]
IF THE SIGMET OR AIRMET MESSAGE IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE.					
TEST or EXERCISE indicator (O)*	Indicator of TEST or EXERCISE	TEST *or* EXERCISE	TEST *or* EXERCISE	TEST EXERCISE	TEST EXERCISE
Phenomenon (M)[5]	Description of phenomenon causing the issuance of SIGMET/AIRMET	OBSC[6] TS[GR[7]] EMBD[8] TS[GR[7]] FRQ[9] TS[GR[7]] SQL[10] TS[GR[7]] TC nnnnnnnnnn PSN Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] CB *or* TC NN[11] PSN Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] CB …..	SFC WIND nnn/nn[n]MPS (*or* SFC WIND nnn/nn[n]KT) SFC VIS nnnnM (nn)[15] ISOL[16] TS[GR[7]] OCNL[17] TS[GR[7]] MT OBSC …..	OBSC TS OBSC TSGR EMBD TS EMBD TSGR FRQ TS FRQ TSGR SQL TS SQL TSGR TC GLORIA PSN N10 W060 CB TC NN PSN S2030 E06030 CB ….	SFC WIND 040/40MPS SFC WIND 310/20KT SFC VIS 1500M (BR) ISOL TS ISOL TSGR OCNL TS OCNL TSGR MT OBSC ……
…	…	…	…	…	…

Notes.—

. . .

*   Use only when the message issued is a TEST or EXERCISE. When TEST or EXERCISE is indicated, the message may contain information that should not be used operationally or will otherwise end immediately after the word "TEST".

Origin	**Rationale**
METP/2	This proposed amendment has been introduced to support the inclusion of a clear data line in volcanic ash and tropical cyclone advisories and related SIGMETs to denote those that are issued as part of tests or exercises. This change is necessary to clarify for both users and producers when volcanic ash and tropical cyclone advisories are for test or exercise purposes.

INITIAL PROPOSAL 5

ICAO METEOROLOGICAL INFORMATION EXCHANGE MODEL (IWXXM) (ANNEX 3)

PART I. CORE SARPs

…

CHAPTER 1. DEFINITIONS

1.1   Definitions

…

ICAO meteorological information exchange model (IWXXM). A data model for representing aeronautical meteorological information.

…

PART II. APPENDICES AND ATTACHMENTS

…

APPENDIX 2.   TECHNICAL SPECIFICATIONS RELATED TO ~~WORLD AREA FORECAST SYSTEM~~ GLOBAL SERVICES, THEIR ASSOCIATED CENTRES AND METEOROLOGICAL OFFICES

(See Chapter 3 of this Annex)

3.   VOLCANIC ASH ADVISORY CENTRES

3.1 Volcanic Ash Advisory Information

…

3.1.2   **Recommendation.**— *Until 5 November 2020, ~~Volcanic ash advisory centres (VAACs) should issue~~ volcanic ash advisory information should be disseminated in ~~digital~~ IWXXM GML form in addition to the issuance of this advisory information in ~~abbreviated plain language in~~ accordance with 3.1.1.*

3.1.3   ~~Volcanic ash advisory information, if disseminated in digital form, shall be formatted in accordance with a globally interoperable information exchange model and shall use extensible markup language (XML)/geography markup language (GML).~~ From 5 November 2020, volcanic ash advisory information shall be disseminated in IWXXM GML form in addition to the issuance of this advisory information in accordance with 3.1.1.

3.1.4 ~~Volcanic ash advisory information, if disseminated in digital form, shall be accompanied by the appropriate metadata.~~

Note.— Guidance on ~~the information exchange model~~ IWXXM, ~~XML/GML and the metadata profile is provided in the~~ Manual on the ICAO Meteorological Information Exchange Model (IWXXM) ~~Digital Exchange of Aeronautical Meteorological Information~~ *(Doc 10003).*

. . .

5.   TROPICAL CYCLONE ADVISORY CENTRES

5.1 Tropical Cyclone Advisory Centres

. . .

5.1.3   **Recommendation.**— *Until 5 November 2020, ~~Tropical cyclone advisory centres should issue~~ tropical cyclone advisory information should be disseminated in ~~digital~~ IWXXM GML form in addition to the issuance of this advisory information in ~~abbreviated plain language in~~ accordance with 5.1.2.*

5.1.4   ~~Tropical cyclone advisory information, if disseminated in digital form, shall be formatted in accordance with a globally interoperable information exchange model and shall use XML/GML.~~ From 5 November 2020, tropical cyclone advisory centres shall issue tropical cyclone advisory information in IWXXM GML form in addition to the issuance of this advisory information in abbreviated plain language in accordance with 5.1.2.

5.1.5 ~~Tropical cyclone advisory information, if disseminated in digital form, shall be accompanied by the appropriate metadata.~~

Note.— Guidance on ~~the information exchange model~~ IWXXM, ~~XML/GML and the metadata profile~~ is provided in the Manual on the ICAO Meteorological Information Exchange Model (IWXXM) *(Doc 10003).*

. . .

APPENDIX 3.   TECHNICAL SPECIFICATIONS RELATED TO METEOROLOGICAL OBSERVATIONS AND REPORTS

(See Chapter 4 of this Annex)

. . .

2.   GENERAL CRITERIA RELATED TO METEOROLOGICAL REPORTS

2.1 Format of meteorological reports

. . .

2.1.3   **Recommendation**.— *Until 5 November 2020, METAR and SPECI should be disseminated in ~~digital~~ IWXXM GML form in addition to the dissemination of the METAR and SPECI in accordance with 2.1.2.*

2.1.4   ~~METAR and SPECI if disseminated in digital form shall be formatted in accordance with a globally interoperable information exchange model and shall use extensible markup language (XML)/geography markup language (GML).~~ From 5 November 2020, METAR and SPECI shall be disseminated in IWXXM GML form in addition to the dissemination of the METAR and SPECI in accordance with 2.1.2.

~~2.1.5   METAR and SPECI if disseminated in digital form shall be accompanied by the appropriate metadata.~~

Note.— Guidance on ~~the information exchange model~~ IWXXM, ~~XML/GML and the metadata profile~~ is provided in the Manual on the ICAO Meteorological Information Exchange Model (IWXXM) ~~Digital Exchange of Aeronautical Meteorological Information~~ *(Doc 10003).*

. . .

APPENDIX 5.   TECHNICAL SPECIFICATIONS RELATED TO FORECASTS

(See Chapter 6 of this Annex)

1.   CRITERIA RELATED TO TAF

1.1 TAF format

. . .

1.1.2   **Recommendation**.— *Until 5 November 2020, TAF should be disseminated in ~~digital~~ IWXXM GML form in addition to the dissemination of the TAF in accordance with 1.1.1.*

1.1.3   ~~TAF if disseminated in digital form shall be formatted in accordance with a globally interoperable information exchange model and shall use extensible markup language (XML)/geography markup language (GML).~~ From 5 November 2020, TAF shall be disseminated in IWXXM GML form in addition to the dissemination of the TAF in accordance with 1.1.1.

~~1.1.4   TAF if disseminated in digital form shall be accompanied by the appropriate metadata.~~

Note.— Guidance on ~~the information exchange model~~ IWXXM, ~~XML/GML and the metadata profile~~ is provided in the Manual on the ICAO Meteorological Information Exchange Model (IWXXM) ~~Digital Exchange of Aeronautical Meteorological Information~~ *(Doc 10003).*

. . .

APPENDIX 6.   TECHNICAL SPECIFICATIONS RELATED TO SIGMET AND AIRMET INFORMATION, AERODROME WARNINGS AND WIND SHEAR WARNINGS AND ALERTS

(See Chapter 7 of this Annex)

1.   SPECIFICATIONS RELATED TO SIGMET INFORMATION

1.1 Format of SIGMET messages

. . .

1.1.6   **Recommendation.**— *Until 5 November 2020, ~~Meteorological watch offices should issue~~ SIGMET information should be disseminated in ~~digital~~ IWXXM GML form~~,~~ in addition to the ~~issuance~~ dissemination of ~~this~~ SIGMET information in ~~abbreviated plain language in~~ accordance with 1.1.1.*

1.1.7   ~~SIGMET if disseminated in digital form shall be formatted in accordance with a globally interoperable information exchange model and shall use extensible markup language (XML)/geography markup language (GML).~~ From 5 November 2020, SIGMET information shall be disseminated in IWXXM GML form in addition to the dissemination of SIGMET information in accordance with 1.1.1.

~~1.1.8   SIGMET if disseminated in digital form shall be accompanied by the appropriate metadata.~~

Note.— Guidance on ~~the information exchange model~~ IWXXM, ~~XML/GML and the metadata profile~~ is provided in the Manual on the ICAO Meteorological Information Exchange Model (IWXXM) ~~Digital Exchange of Aeronautical Meteorological Information~~ *(Doc 10003).*

. . .

2.   SPECIFICATIONS RELATED TO AIRMET INFORMATION

2.1 Format of AIRMET messages

. . .

2.1.6   **Recommendation.**— *Until 5 November 2020, ~~Meteorological offices should issue~~ AIRMET information should be disseminated in ~~digital~~ IWXXM GML form~~,~~ in addition to the ~~issuance~~ dissemination of ~~this~~ AIRMET information in ~~abbreviated plain language in~~ accordance with 2.1.1.*

2.1.7   ~~AIRMET if disseminated in digital form shall be formatted in accordance with a globally interoperable information exchange model and shall use XML/GML.~~ From 5 November 2020, AIRMET information shall be disseminated in IWXXM GML form in addition to the dissemination of AIRMET information in accordance with 2.1.1.

~~2.1.8   AIRMET if disseminated in digital form shall be accompanied by the appropriate metadata.~~

Note.— Gualance on ~~the information exchange model~~ IWXXM, ~~XML/GML and the metadata~~ ~~profile~~ is provided in the Manual on the ICAO Meteorological Information Exchange Model (IWXXM) (Doc 10003).

...

Origin	Rationale
METP/2	This proposed amendment has been introduced to support the exchange of aeronautical meteorological information using the ICAO Meteorological Information Exchange Model (IWXXM). This amendment supports the GANP and will encourage all ICAO States to ensure that they are ready to implement IWXXM for the international exchange of aeronautical meteorological information by November 2020.

INITIAL PROPOSAL 6

GREATER CLARITY IN THE PRESENTATION OF INFORMATION ABOUT TROPICAL CYCLONES (TC) (ANNEX 3)

PART II. APPENDICES AND ATTACHMENTS

...

APPENDIX 2.   TECHNICAL SPECIFICATIONS RELATED TO ~~WORLD AREA FORECAST SYSTEM~~ GLOBAL SERVICES, THEIR ASSOCIATED CENTRES AND METEOROLOGICAL OFFICES

(See Chapter 3 of this Annex)

Table A2-2.   Template for advisory message for tropical cyclones

Key: =   =   a double line indicates that the text following it should be placed on the subsequent line.

Note 1.— The ranges and resolutions for the numerical elements included in advisory messages for tropical cyclones are shown in Appendix 6, Table A6-4.

Note 2.— The explanations for the abbreviations can be found in the PANS-ABC (Doc 8400).

Note 3.— All the elements are mandatory.

Note 4~~3~~.— Inclusion of a "colon" after each element heading is mandatory.

Note 5~~4~~.— The numbers 1 to ~~19~~21 are included only for clarity and they are not part of the advisory message, as shown in the example.

	Element	Detailed content	Template(s)		Examples	
1	Identification of the type of message (M)	Type of message	TC ADVISORY		TC ADVISORY	
2	TEST or EXERCISE indicator (C)[1]	Indicator of TEST or EXERCISE	TEST *or* EXERCISE	TEST EXERCISE	TEST or EXERCISE indicator	TEST or EXERCISE indicator
~~2~~3	Time of origin (M)	Year, month, day and time in UTC of issue	DTG:	nnnnnnnn/nnnnZ	DTG:	20040925/19~~6~~00Z
~~3~~4	Name of TCAC (M)	Name of TCAC (location indicator *or* full name)	TCAC:	nnnn *or* nnnnnnnnnn	TCAC: TCAC:	YUFO~~12~~ MIAMI
~~4~~5	Name of tropical cyclone (M)	Name of tropical cyclone *or* "NN" for unnamed tropical cyclone	TC:	nnnnnnnnnnnn *or* NN	TC:	GLORIA
~~5~~6	Advisory number (M)	Advisory number: Year in full and message number (separate sequence ~~starting with "01"~~ for each cyclone)	ADVISORY NR:	nnnn/[n][n]nn	ADVISORY NR:	2004/13~~01~~
~~6~~7	Observed ~~p~~Position of the centre (M)	Day and time (in UTC) and ~~p~~Position of the centre of the tropical cyclone (in degrees and minutes)	OBS PSN:	nn/nnnnZ Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]	OBS PSN:	25/1800Z N2706 W07306
8	Observed CB cloud[3] (M)	Location of CB cloud (referring to latitude and longitude (in degrees and minutes)) and vertical extent (flight level)	CB:	WI nnnKM (*or* nnnNM) OF TC CENTRE *or* WI[4] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – [Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] TOP [ABV *or* BLW] FLnnn	CB:	WI 250NM OF TC CENTRE TOP FL500
~~7~~9	Direction and speed of movement (M)	Direction and speed of movement given in sixteen compass points and km/h (*or* kt), respectively, ~~or moving slowly (< 6 km/h (3 kt))~~ *or* stationary (< 2 km/h (1 kt))	MOV:	N nnKMH (*or* KT) *or* NNE nnKMH (*or* KT) *or* NE nnKMH (*or* KT) *or* ENE nnKMH (*or* KT) *or* E nnKMH (*or* KT) *or* ESE nnKMH (*or* KT) *or* SE nnKMH (*or* KT) *or* SSE nnKMH (*or* KT) *or* S nnKMH (*or* KT) *or* SSW nnKMH (*or* KT) *or* SW nnKMH (*or* KT) *or*	MOV:	NW 20KMH

	Element	Detailed content	Template(s)		Examples	
				WSW nnKMH (*or* KT) *or* W nnKMH (*or* KT) *or* WNW nnKMH (*or* KT) *or* NW nnKMH (*or* KT) *or* NNW nnKMH (*or* KT) *or* ~~SLW *or*~~ STNR		
8~~10~~	Central pressure (M)	Central pressure (in hPa)	C:	nnnHPA	C:	965HPA
9~~11~~	Maximum surface wind (M)	Maximum surface wind near the centre (mean over 10 minutes, in m/s (or kt))	MAX WIND:	nn[n]MPS (or nn[n]KT)	MAX WIND:	22MPS
10~~12~~	Forecast of centre position (+6 HR) (M)	Day and time (in UTC) (6 hours from the "DTG" given in Item 6); Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +6 HR:	nn/nnnnZ Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]	FCST PSN +6 HR:	26/0000Z N2748 W07350
11~~13~~	Forecast of maximum surface wind (+6 HR) (M)	Forecast of maximum surface wind (6 hours after the "DTG" given in Item 6)	FCST MAX WIND +6 HR:	nn[n]MPS (or nn[n]KT)	FCST MAX WIND +6 HR:	22MPS
12~~14~~	Forecast of centre position (+12 HR) (M)	Day and time (in UTC) (12 hours from the "DTG" given in Item 6); Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +12 HR:	nn/nnnnZ Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]	FCST PSN +12 HR:	26/0400Z N2830 W07430
13~~15~~	Forecast of maximum surface wind (+12 HR) (M)	Forecast of maximum surface wind (12 hours after the "DTG" given in Item 6)	FCST MAX WIND +12 HR:	nn[n]MPS (or nn[n]KT)	FCST MAX WIND +12 HR:	22MPS
14~~16~~	Forecast of centre position (+18 HR) (M)	Day and time (in UTC) (18 hours from the "DTG" given in Item 6); Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +18 HR:	nn/nnnnZ Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]	FCST PSN +18 HR:	26/1000Z N2852 W07500
15~~17~~	Forecast of maximum surface wind (+18 HR) (M)	Forecast of maximum surface wind (18 hours after the "DTG" given in Item 6)	FCST MAX WIND +18 HR:	nn[n]MPS (*or* nn[n]KT)	FCST MAX WIND +18 HR:	21MPS
16~~18~~	Forecast of centre position (+24 HR) (M)	Day and time (in UTC) (24 hours from the "DTG" given in Item 6); Forecast position (in degrees and minutes) of the centre of the tropical cyclone	FCST PSN +24 HR:	nn/nnnnZ Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]	FCST PSN +24 HR:	26/1600Z N2912 W07530
17~~19~~	Forecast of maximum surface wind (+24 HR) (M)	Forecast of maximum surface wind (24 hours after the "DTG" given in Item 6)	FCST MAX WIND +24 HR:	nn[n]MPS (*or* nn[n]KT)	FCST MAX WIND +24 HR:	20MPS

	Element	Detailed content	Template(s)		Examples	
18 20	Remarks (M)	Remarks, as necessary	RMK:	*Free text up to 256 characters* *or* NIL	RMK:	NIL
19 21	Expected time of issuance of next advisory (M)	Expected year, month, day and time (in UTC) of issuance of next advisory	NXT MSG:	[BFR] nnnnnnnn/nnnnZ *or* NO MSG EXP	NXT MSG:	20040925/2000Z

Notes.—

1. Use only when the message issued is a TEST or EXERCISE. When TEST or EXERCISE is indicated, the message may contain information that should not be used operationally or will otherwise end immediately after the word "TEST".
1. 2. Fictitious location.
3. Optional field.
4. The number of coordinates should be kept to a minimum and should not normally exceed seven.

Example A2-2.   Advisory message for tropical cyclones

```
TC ADVISORY

DTG:                          20040925/19600Z
TCAC:                         YUFO
TC:                           GLORIA
ADVISORY NR:                  2004/1301
OBS PSN:                      25/1800Z N2706 W07306
CB:                           WI 250NM OF TC CENTRE
MOV:                          NW 20KMH
C:                            965HPA
MAX WIND:                     22MPS
FCST PSN +6 HR:               25/2200Z N2748 W07350
FCST MAX WIND +6 HR:          22MPS
FCST PSN +12 HR:              26/0400Z N2830 W07430
FCST MAX WIND +12 HR:         22MPS
FCST PSN +18 HR:              26/1000Z N2852 W07500
FCST MAX WIND +18 HR:         21MPS
FCST PSN +24 HR:              26/1600Z N2912 W07530
FCST MAX WIND +24 HR:         20MPS
RMK:                          NIL
NXT MSG:                      20040926/0100Z
```

Table A6-1A.   Template for SIGMET and AIRMET messages

Key: M   =   inclusion mandatory, part of every message;
       C   =   inclusion conditional, included whenever applicable;
       =   =   a double line indicates that the text following it should be placed on the subsequent line.

Note 1.— The ranges and resolutions for the numerical elements included in SIGMET/AIRMET messages are shown in Table A6-4 of this appendix.

Note 2.— In accordance with 1.1.5 and 2.1.5, severe or moderate icing and severe or moderate turbulence (SEV ICE, MOD ICE, SEV TURB, MOD TURB) associated with thunderstorms, cumulonimbus clouds or tropical cyclones should not be included.

Element	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
Location indicator of FIR/CTA (M)[1]	ICAO location indicator of the ATS unit serving the FIR or CTA to which the SIGMET/AIRMET refers	nnnn		YUCC[2] YUDD[2]	
Identification (M)	Message identification and sequence number[3]	SIGMET [n][n]n	AIRMET [n][n]n	SIGMET 1 SIGMET 01 SIGMET A01	AIRMET 9 AIRMET 19 AIRMET B19
Validity period (M)	Day-time groups indicating the period of validity in UTC	VALID nnnnnn/nnnnnn		VALID 010000/010400 VALID 221215/221600 VALID 101520/101800 VALID 251600/252200 VALID 152000/160000 VALID 192300/200300	
Location indicator of MWO (M)	Location indicator of MWO originating the message with a separating hyphen	nnnn–		YUDO–[2] YUSO–[2]	
Name of the FIR/CTA (M)	Location indicator and name of the FIR/CTA[4] for which the SIGMET/AIRMET is issued	nnnn nnnnnnnnnn FIR[/UIR] *or* UIR *or* FIR/UIR *or* nnnn nnnnnnnnnn CTA	nnnn nnnnnnnnnn FIR[/n]	YUCC AMSWELL FIR[2] YUDD SHANLON[2] FIR/UIR[2] UIR FIR/UIR YUDD SHANLON CTA[2]	YUCC AMSWELL FIR/2[2] YUDD SHANLON FIR[2]
IF THE SIGMET OR AIRMET MESSAGE IS TO BE CANCELLED, SEE DETAILS AT THE END OF THE TEMPLATE.					
TEST or EXERCISE indicator (C)[5]	Indicator of TEST or EXERCISE	TEST *or* EXERCISE	TEST *or* EXERCISE	TEST EXERCISE	TEST EXERCISE
Phenomenon (M)[5][6]	Description of phenomenon causing the issuance of SIGMET/AIRMET	OBSC[6][7] TS[GR[7][8]] EMBD[8][9] TS[GR[7][8]] FRQ[9][10] TS[GR[7][8]] SQL[10][11] TS[GR[7][8]] TC nnnnnnnnnn PSN Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] CB *or* TC NN[11][12] PSN Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] CB SEV TURB[12][13] SEV ICE[13][14] SEV ICE (FZRA)[13][14] SEV MTW[14][15] HVY DS HVY SS [VA ERUPTION] [MT nnnnnnnnnn] [PSN Nnn[nn] *or* Snn[nn]]	SFC WIND nnn/nn[n]MPS (*or* SFC WIND nnn/nn[n]KT) SFC VIS nnnnM (nn)[15][16] ISOL[16][17] TS[GR[7][8]] OCNL[17][18] TS[GR[7][8]] MT OBSC BKN CLD nnn/[ABV] nnnnM (*or* BKN CLD [n]nnn/[ABV] [n]nnnnFT) *or* BKN CLD SFC/[ABV] nnnnM (*or* BKN CLD SFC/[ABV][n]nnnnFT) OVC CLD nnn/[ABV]nnnnM (*or* OVC CLD	OBSC TS OBSC TSGR EMBD TS EMBD TSGR FRQ TS FRQ TSGR SQL TS SQL TSGR TC GLORIA PSN N10 W060 CB TC NN PSN S2030 E06030 CB SEV TURB SEV ICE SEV ICE (FZRA) SEV MTW HVY DS HVY SS VA ERUPTION MT	SFC WIND 040/40MPS SFC WIND 310/20KT SFC VIS 1500M (BR) ISOL TS ISOL TSGR OCNL TS OCNL TSGR MT OBSC BKN CLD 120/900M BKN CLD 400/3000FT BKN CLD 1000/5000FT BKN CLD SFC/3000M BKN CLD SFC/ABV 10000FT OVC CLD 270/ABV3000M OVC CLD 900/ABV10000FT OVC CLD 1000/5000FT

Element	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
		Ennn[nn] or Wnnn[nn]] VA CLD RDOACT CLD	[n]nnn/[ABV] [n]nnnnFT) or OVC CLD SFC/[ABV]nnnnM (or OVC CLD SFC/[ABV][n]nnnnFT) ISOL[17] CB[19] OCNL[18] CB[19] FRQ[10] CB[19] ISOL[17] TCU[19] OCNL[18] TCU[19] FRQ[10] TCU[19] MOD TURB[13] MOD ICE[14] MOD MTW[15]	ASHVAL[2] PSN S15 E073 VA CLD RDOACT CLD	OVC CLD SFC/3000M OVC CLD SFC/ABV 10000FT ISOL CB OCNL CB FRQ CB ISOL TCU OCNL TCU FRQ TCU MOD TURB MOD ICE MOD MTW
Observed or forecast phenomenon (M)	Indication whether the information is observed and expected to continue, or forecast	OBS [AT nnnnZ] or FCST [AT nnnnZ]		OBS OBS AT 1210Z FCST FCST AT 1815Z	
Location (C)[20]	Location (referring to latitude and longitude (in degrees and minutes))	Nnn[nn] Wnnn[nn] or Nnn[nn] Ennn[nn] or Snn[nn] Wnnn[nn] or Snn[nn] Ennn[nn] or N OF Nnn[nn] or S OF Nnn[nn] or N OF Snn[nn] or S OF Snn[nn] [AND] W OF Wnnn[nn] or E OF Wnnn[nn] or W OF Ennn[nn] or E OF Ennn[nn] or N OF Nnn[nn] or N OF Snn[nn] AND S OF Nnn[nn] or S OF Snn[nn] or W OF Wnnn[nn] or W OF Ennn[nn] AND E OF Wnnn[nn] or E OF Ennn[nn] or N OF LINE[21] or NE OF LINE[21] or E OF LINE[21] or SE OF LINE[21] or S OF LINE[21] or SW OF LINE[21] or W OF LINE[21] or NW OF LINE[21] Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] [AND N OF LINE[21] or NE OF LINE[21] or E OF LINE[21] or SE OF LINE[21] or S OF LINE[21] or SW OF LINE[21] or W OF LINE[21] or NW OF LINE[21] Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]]]	N2020 W07005 N48 E010 S60 W160 S0530 E16530 N OF N50 S OF N5430 N OF S10 S OF S4530 W OF W155 E OF W45 W OF E15540 E OF E09015 N OF N1515 AND W OF E13530 S OF N45 AND N OF N40 N OF LINE S2520 W11510 – S2520 W12010 SW OF LINE N50 W005 – N60 W020 SW OF LINE N50 W020 – N45 E010 AND NE OF LINE N45 W020 – N40 E010 WI N6030 E02550 – N6055 E02500 – N6050 E02630 – N6030 E02550 APRX 50KM WID LINE BTN N64 W017 – N60 W010 – N57 E010	
		or WI[20, 22] Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] –	ENTIRE FIR ENTIRE UIR ENTIRE FIR/UIR	

Element	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
		[Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] or APRX nnKM WID LINE²⁹²¹ BTN (or nnNM WID LINE²⁹²¹ BTN) Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] – Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] [– Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]] or ENTIRE FIR[/UIR] or ENTIRE FIR or ENTIRE FIR/UIR or ENTIRE CTA or²²²³ WI nnnKM (or nnnNM) OF TC CENTRE or²⁹ WI nnnNM or nnnKM OF Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]		ENTIRE CTA WI 400KM OF TC CENTRE WI 250NM OF TC CENTRE WI 30KM OF N6030 E02550	
Level (C)¹⁴⁹²⁰	Flight level or altitude²³	[SFC/]FLnnn or [SFC/]nnnnM (or [SFC/][n]nnnnFT) or FLnnn/nnn or TOP FLnnn or [TOP] ABV FLnnn or (or [TOP] ABV [n]nnnnFT) [nnnn/]nnnnM (or [[n]nnnn/][n]nnnnFT) or [nnnnM/]FLnnn (or [[n]nnnnFT/]FLnnn) or²²²³ TOP [ABV or BLW] FLnnn		FL180 SFC/FL070 SFC/3000M SFC/10000FT FL050/080 TOP FL390 ABV FL250 TOP ABV FL100 ABV 7000FT TOP ABV 9000FT TOP ABV 10000FT 3000M 2000/3000M 8000FT 6000/12000FT 2000M/FL150 10000FT/FL250 TOP FL500 TOP ABV FL500 TOP BLW FL450	
Movement or expected movement (C)¹⁴⁹²⁰, ²⁴	Movement or expected movement (direction and speed) with reference to one of the sixteen points of compass, or stationary	MOV N [nnKMH] or MOV NNE [nnKMH] or MOV NE [nnKMH] or MOV ENE [nnKMH] or MOV E [nnKMH] or MOV ESE [nnKMH] or MOV SE [nnKMH] or MOV SSE [nnKMH] or MOV S [nnKMH] or MOV SSW [nnKMH] or MOV SW [nnKMH] or MOV WSW [nnKMH] or MOV W [nnKMH] or MOV WNW [nnKMH] or MOV NW [nnKMH] or MOV NNW [nnKMH] (or MOV N [nnKT] or MOV NNE [nnKT] or MOV NE [nnKT] or MOV ENE [nnKT] or MOV E [nnKT] or MOV ESE [nnKT] or		MOV SE MOV NNW MOV E 40KMH MOV E 20KT MOV WSW 20KT STNR	

Element	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
		MOV SE [nnKT] *or* MOV SSE [nnKT] *or* MOV S [nnKT] *or* MOV SSW [nnKT] *or* MOV SW [nnKT] *or* MOV WSW [nnKT] *or* MOV W [nnKT] *or* MOV WNW [nnKT] *or* MOV NW [nnKT] *or* MOV NNW [nnKT]) *or* STNR			
Changes in intensity (C) [1920]	Expected changes in intensity	INTSF *or* WKN *or* NC		INTSF WKN NC	
Forecast time (C)[24]	Indication of the forecast time of phenomenon	FCST AT nnnnZ	—	FCST AT 2200Z	—
TC forecast position (C)[22]	Forecast position of TC centre at the end of the validity period of the SIGMET message	TC CENTRE PSN Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]	—	TC CENTRE PSN N1030 *or* E1600015	TC forecast position (C)[22]
Forecast position (C) [1920, 24, 25]	Forecast position of phenomenon at the end of the validity period of the SIGMET message	Nnn[nn] Wnnn[nn] *or* Nnn[nn] Ennn[nn] *or* Snn[nn] Wnnn[nn] *or* Snn[nn] Ennn[nn] *or* N OF Nnn[nn] *or* S OF Nnn[nn] *or* N OF Snn[nn] *or* S OF Snn[nn] [AND] W OF Wnnn[nn] *or* E OF Wnnn[nn] *or* W OF Ennn[nn] *or* E OF Ennn[nn] *or* N OF Nnn[nn] *or* N OF Snn[nn] AND S OF Nnn[nn] *or* S OF Snn[nn] *or* W OF Wnnn[nn] *or* W OF Ennn[nn] AND E OF Wnnn[nn] *or* E OF Ennn[nn] *or* N OF LINE[2021] *or* NE OF LINE[2021] *or* E OF LINE[2021] *or* SE OF LINE[2021] *or* S OF LINE[2021] *or* SW OF LINE[2021] *or* W OF LINE[2021] *or* NW OF LINE[2021] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]	—	N30 W170

N OF N30

S OF S50 AND W OF E170

S OF N46 AND N OF N39

NE OF LINE N35 W020 – N45 W040

SW OF LINE N48 W020 – N43 E010 AND NE OF LINE N43 W020 – N38 E010

WI N20 W090 – N05 W090 – N10 W100 – N20 W100 – N20 W090

APRX 50KM WID LINE BTN N64 W017 – N57 W005 – N55 E010 – N55 E030

ENTIRE FIR ENTIRE UIR ENTIRE FIR/UIR

ENTIRE CTA

~~TC CENTRE PSN N2740 W07345~~

NO ~~VA~~ LONGER EXP | — |

Element	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
		[– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [AND N OF LINE[2021] *or* NE OF LINE[2021] *or* E OF LINE[2021] *or* SE OF LINE[2021] *or* S OF LINE[2021] *or* SW OF LINE[2021] *or* W OF LINE[2021] *or* NW OF LINE[2021] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]]] *or* WI[2021, 2122] Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] *or* APRX nnKM WID LINE[2021] BTN (nnNM WID LINE[2021] BTN) Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] – Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] [– Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn]] *or* ENTIRE FIR[/UIR] *or* ENTIRE UIR *or* ENTIRE FIR/UIR *or* ENTIRE CTA *or*[22] TC CENTRE PSN Nnn[nn] *or* Snn[nn] Wnnn[nn] *or* Ennn[nn] *or*[26]			

Element	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
		NO ~~VA~~ LONGER EXP			
Repetition of elements (C)[27]	Repetition of elements included in a SIGMET message for volcanic ash cloud or tropical cyclone	[AND][27]	—	AND	—

OR

Element	Detailed content	SIGMET template	AIRMET template	SIGMET message examples	AIRMET message examples
Cancellation of SIGMET/ AIRMET (C)[28]	Cancellation of SIGMET/AIRMET referring to its identification	CNL SIGMET [n][n]n nnnnnn/nnnnnn *or*[26] CNL SIGMET [n][n]n nnnnnn/nnnnnn VA MOV TO nnnn FIR	CNL AIRMET [n][n]n nnnnnn/nnnnnn	CNL SIGMET 2 101200/101600 CNL SIGMET A13 251030/251430 VA MOV TO YUDO FIR[2]	CNL AIRMET 05 151520/151800

Notes.—

1. See 4.1.
2. Fictitious location.
3. In accordance with 1.1.3 and 2.1.2.
4. See 2.1.3.
5. Used only when the message is issued as a TEST or EXERCISE. Under such circumstances the information contained within the message is not to be used for operational decision-making. When this field is omitted, information contained within the message is intended to be used operationally. When TEST is indicated, the message may contain information that should not be used operationally or will otherwise end immediately after the word "TEST".
~~5~~6. In accordance with 1.1.4 and 2.1.4.
~~6~~7. In accordance with 4.2.1 a).
~~7~~8. In accordance with 4.2.4.
~~8~~9. In accordance with 4.2.1 b).
~~9~~10. In accordance with 4.2.2.
~~10~~11. In accordance with 4.2.3.
~~11~~12. Used for unnamed tropical cyclones.
~~12~~13. In accordance with 4.2.5 and 4.2.6.
~~13~~14. In accordance with 4.2.7.
~~14~~15. In accordance with 4.2.8.
~~15~~16. In accordance with 2.1.4.
~~16~~17. In accordance with 4.2.1 c).
~~17~~18. In accordance with 4.2.1 d).
~~18~~19. The use of cumulonimbus (CB) and towering cumulus (TCU) is restricted to AIRMETs in accordance with 2.1.4.
~~19~~20. In the case of volcanic ash cloud or cumulonimbus clouds associated with a tropical cyclone covering more than one area within the FIR, these elements can be repeated, as necessary.
~~20~~21. A straight line is to be used between two points drawn on a map in the Mercator projection or between two points which crosses lines of longitude at a constant angle.
~~21~~22. The number of coordinates should be kept to a minimum and should not normally exceed seven.
~~22~~23. Only for SIGMET messages for tropical cyclones.
~~23.   Only for SIGMET messages for volcanic ash cloud and tropical cyclones.~~
24.   The elements "forecast time" and "forecast position" are not to be used in conjunction with the element "movement or expected movement".
25. The levels of the phenomena remain fixed throughout the forecast period.
26. Only for SIGMET messages for volcanic ash.
27. To be used for two volcanic ash clouds or two centres of tropical cyclones simultaneously affecting the FIR concerned..
28. End of the message (as the SIGMET/AIRMET message is being cancelled).
29.   Using SIGMET for RDOACT CLD, when detailed information on the release is not available, a radius of up to 30 km may be applied based on the International Atomic Energy Agency (IAEA) recommendation for surface contamination contained in IAEA Safety Guide GS-G-2.1 - *Arrangements for Preparedness for a Nuclear or Radiological Emergency* (2007); and a vertical extent from surface (SFC) to the upper limit of the flight information region/upper flight information region (FIR/UIR) or control area (CTA) is to be applied.

Origin	**Rationale**
METP/2	This proposed amendment has been introduced to improve the clarity of the information on tropical cyclones (TC) provided by Annex 3, Table A2-2 Template for advisory message for tropical cyclones, with respect to the advisory number, observation time, centre position, and observed CB cloud. These proposed provisions are reflected in proposals for related changes to SIGMET and AIRMET message.

INITIAL PROPOSAL 7

QUALIFICATION AND COMPETENCY, EDUCATION AND TRAINING OF PERSONNEL ENGAGED IN THE PROVISION OF METEOROLOGICAL SERVICE FOR INTERNATIONAL AIR NAVIGATION (ANNEX 3)

CHAPTER 2. GENERAL PROVISIONS

2.1 Objective, determination and provision of meteorological service

2.1.5   Each Contracting State shall ensure that the designated meteorological authority complies with the requirements of the World Meteorological Organization (WMO) in respect of qualifications, ~~and~~ competencies, education and training of meteorological personnel providing service for international air navigation.

Note.— Requirements concerning the qualifications, ~~and~~ competencies, education and training of meteorological personnel in aeronautical meteorology are given in the Technical Regulations *(WMO-No. 49), Volume I —* General Meteorological Standards and Recommended Practices*, Part V —* Qualifications and Competencies of Personnel Involved in the Provision of Meteorological (Weather and Climate) and Hydrological Services*, Part VI — Education and Training of Meteorological Personnel, and Appendix A —* Basic Instruction Packages*.*

Origin	**Rationale**
METP/2	This proposed amendment has been introduced to update Annex 3 with regard to the qualifications, competency, education and training of meteorological personnel to be consistent with the relevant World Meteorological Organization Technical Regulations. This amendment is similar to the provisions already provided in Annex 15, 3.7.4.

— — — — — — — —

PROPOSED AMENDMENT TO ANNEX 15

NOTES ON THE PRESENTATION OF THE AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it~~.	Text to be deleted
New text to be inserted is highlighted with grey shading.	New text to be inserted
~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	New text to replace existing text

TEXT OF PROPOSED AMENDMENT TO

**INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

AERONAUTICAL INFORMATION SERVICES

**ANNEX 15
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION**

INITIAL PROPOSAL 1

CHAPTER 5. NOTAM

5.1   Origination

. . .

5.1.1.1 A NOTAM shall be originated and issued concerning the following information:

. . .

t)   forecasts of ~~solar cosmic radiation, where provided~~ space weather events (that may have an impact on high frequency radio communications, GNSS-based navigation and surveillance, and radiation exposure at flight levels), the date and time of the event, the flight levels where provided, and portions of airspace which could be affected;

. . .

Origin	**Rationale**
METP/2	This amendment has been introduced to support the initial implementation of the provision of space weather information to enhance the safety and efficiency of international air navigation consistent with the Global Air Navigation Plan.

— — — — — — — —

PROPOSED AMENDMENT TO PANS-ABC (DOC 8400)

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it~~.	text to be deleted
New text to be inserted is highlighted with grey shading.	new text to be inserted
~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	new text to replace existing text

TEXT OF PROPOSED AMENDMENT TO THE

PROCEDURES FOR AIR NAVIGATION SERVICES — ICAO ABBREVIATIONS AND CODES

(PANS-ABC, DOC 8400)

INITIAL PROPOSAL 1

ABBREVIATIONS

DECODE

…

E

…

EOBT	Estimated off-block time
EQN	Equatorial latitudes northern hemisphere
EQPT	Equipment
EQS	Equatorial latitudes southern hemisphere

…

H

…

HN	Sunset to sunrise
HNH	High latitudes northern hemisphere
HO	Service available to meet operational requirements

…

HS	Service available during hours of scheduled operations
HSH	High latitudes southern hemisphere
HUD	Head-up display

M

…

MM	Middle marker
MNH	Middle latitudes northern hemisphere
MNM	Minimum

…

MSG	Message
MSH	Middle latitudes southern hemisphere
MSL	Mean sea level

…

S

…

SWB	South-westbound
SWX	Space weather
SWXC	Space weather centre

…

…

Origin	Rationale
METP/2	This proposed amendment has been introduced to support the initial implementation of the provision of space weather information to enhance the safety and efficiency of international air navigation consistent with the Global Air Navigation Plan.

— — — — — — — —

PROPOSED AMENDMENT TO PANS-ATM (DOC 4444)

NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

~~Text to be deleted is shown with a line through it~~.	Text to be deleted
New text to be inserted is highlighted with grey shading.	New text to be inserted
~~Text to be deleted is shown with a line through it~~ followed by the replacement text which is highlighted with grey shading.	New text to replace existing text

TEXT OF PROPOSED AMENDMENT TO THE

**PROCEDURES FOR AIR NAVIGATION SERVICES —
AIR TRAFFIC MANAGEMENT
(PANS-ATM, Doc 4444)**

INITIAL PROPOSAL 1

CHAPTER 9

FLIGHT INFORMATION SERVICE AND ALERTING SERVICE

9.1   FLIGHT INFORMATION SERVICE

. . .

9.1.3   Transmission of information

. . .

9.1.3.8 TRANSMISSION OF INFORMATION CONCERNING SPACE WEATHER ACTIVITY

Information on space weather events that have an impact on high frequency radio communications, GNSS-based navigation and surveillance, and radiation exposure at flight levels, within the area of responsibility of the ATS unit shall be transmitted to aircraft by one or more of the means specified in 9.1.3.1.1.

. . .

CHAPTER 15

**PROCEDURES RELATED TO EMERGENCIES,
COMMUNICATION FAILURE AND CONTINGENCIES**

. . .

15.5   OTHER IN-FLIGHT CONTINGENCIES

. . .

15.5.5 **Descents by ~~supersonic~~ aircraft due to solar ~~cosmic~~ radiation
from space weather events**

Air traffic control units should be prepared for the possibility that ~~supersonic~~ aircraft ~~operating at levels above 15 000 m (49 000 ft)~~ may, on rare occasions, experience a rise in solar ~~cosmic~~ radiation which requires them to descend to lower levels~~, possibly down to or below the levels being used by subsonic aircraft~~. When such a situation is known or suspected, air traffic control units should take all possible action to safeguard all aircraft concerned, including any ~~subsonic~~ aircraft affected by the descent.

Note.— All ~~*supersonic*~~ *aircraft in a particular portion of airspace and above a certain altitude may* ~~*will*~~ *be affected at the same time, and the event may be accompanied by a deterioration or loss of air-ground communications. It is expected that the aircraft will alert air traffic control units before the radiation reaches a critical level and will request a descent clearance when the critical level is reached. However, situations may occur in which the aircraft will need to descend without waiting for a clearance. In such cases, the aircraft are expected to advise air traffic control units, as soon as possible, of the emergency action taken.*

. . .

Origin	Rationale
METP/2	This proposed amendment has been introduced to support the initial implementation of the provision of space weather information to enhance the safety and efficiency of international air navigation consistent with the Global Air Navigation Plan.

— — — — — — — —

**RESPONSE FORM TO BE COMPLETED AND RETURNED TO ICAO TOGETHER
WITH ANY COMMENTS YOU MAY HAVE ON THE PROPOSED AMENDMENTS**

To: The Secretary General
        International Civil Aviation Organization
        999 Robert-Bourassa Boulevard
        Montréal, Quebec
        Canada, H3C 5H7

(State) _____

Please make a checkmark (✓) against one option for each amendment. If you choose options "agreement with comments" or "disagreement with comments", **please provide your comments on separate sheets**.

	Agreement without comments	*Agreement with comments**	*Disagreement without comments*	*Disagreement with comments*	*No position*
Amendment to Annex 3 — *Meteorological Service for International Air Navigation* (Attachment B refers)					
Amendment to Annex 15 — *Aeronautical Information Services* (Attachment C refers)					
Amendment to the *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400) (Attachment D refers)					
Amendment to the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444) (Attachment E refers)					

*"Agreement with comments" indicates that your State or organization agrees with the intent and overall thrust of the amendment proposal; the comments themselves may include, as necessary, your reservations concerning certain parts of the proposal and/or offer an alternative proposal in this regard.

Signature: _____   Date: _____

— — — — — — — —

**RESPONSE FORM FOR COMMENTS ON THE WORDING OF THE
AMENDMENT PROPOSALS IN ONE OF THE LANGUAGES
OTHER THAN ENGLISH**

(State) _____

1.   Do you have comments on the wording of the amendment proposals in one of the languages other than English?

                Yes   ☐   No   ☐

2.   If yes, please indicate your comments in the space provided below *(provide additional sheets if required)*:

	Reference/ Paragraph No.	*Comments*
Amendment to Annex 3 — *Meteorological Service for International Air Navigation* (Attachment B refers)		
Amendment to Annex 15 — *Aeronautical Information Services* (Attachment C refers)		
Amendment to the *Procedures for Air Navigation Services — ICAO Abbreviations and Codes* (PANS-ABC, Doc 8400) (Attachment D refers)		
Amendment to the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444) (Attachment E refers)		

— END —