'AMC and GM to Part-MET — Issue 1, Amendment 1'

Annex V to Decision 2017/001/R is amended as follows:

The text of the amendment is arranged to show deleted text, new or amended text as shown below:

(a) deleted text is ~~struck through~~;

(b) new or amended text is highlighted in blue;

(c) an ellipsis […] indicates that the rest of the text is unchanged.

GM1 MET.OR.100 Meteorological data and information

DATA AND INFORMATION RELIABILITY

~~Owing to the variability of meteorological elements in space and time, to limitations of observing techniques and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in a forecast is understood to be the most probable value which the element is likely to assume during the period of the forecast. Similarly, when the time of occurrence or change of an element is given in a forecast, this time is understood to be the most probable time.~~

Owing to the variability of meteorological elements in space and time, to limitations of observing techniques, and to limitations caused by the definitions of some of the elements, the specific value of any of the elements given in a meteorological report or in a forecast is understood to be the best approximation to the actual conditions at the time of observation or the most probable value that the element is likely to assume during the period of the forecast, respectively. Similarly, when the time of occurrence or change of an element is given in a forecast, this time is understood to be the most probable time.

AMC1 MET.OR.100(a) Meteorological data and information

INFORMATION TO BE PROVIDED

[...]

(a) the provision in air traffic services units of displays related to ~~integrated~~ semi-automatic observing systems or automatic observing systems;

[...]

GM1 MET.OR.105(b) Retention of meteorological information

GENERAL

The competent authority determines who may be provided with meteorological information about inquiries and investigations concerning aviation.

GM1 MET.OR.110 Meteorological information exchange requirements

GENERAL

Operational meteorological information is disseminated to international OPMET databanks and the centres for the operation of the aeronautical fixed service ~~satellite distribution systems~~ internet-based services.

GM2 MET.OR.110 Meteorological information exchange requirements

OPMET DATABANK

The list of relevant meteorological exchange requirements for OPMET can be found in ~~the~~TABLE MET II-1, TABLE MET II-2, TABLE MET II-3, and TABLE MET II-EUR-1 of Volume II of ~~FASID tables in~~ ICAO Doc 7754 (‘EUROPEAN (EUR) AIR NAVIGATION PLAN’~~ANP~~).

GM1 MET.OR.120 Notification of discrepancies to the world area forecast centres (WAFCs)

REPORTING — SIGNIFICANT DISCREPANCIES

Guidance on reporting significant discrepancies is provided in ~~the~~ ICAO Doc 8896 ‘Manual of Aeronautical Meteorological Practice’ ~~(ICAO Doc 8896)~~ as last amended.

GM1 MET.OR.200(a)(2) Meteorological reports and other information

LOCAL SPECIAL REPORTS

By agreement between the aeronautical meteorological station and the appropriate ATS unit, local special reports ~~may not~~are not required to be disseminated in respect of:

[...]

~~AMC2 MET.OR.200(a)(3) Meteorological reports and other information~~

~~**METAR INTERVALS — NON-SCHEDULED INTERNATIONAL CAT**~~

~~For aerodromes not serving scheduled international commercial air transport operations, the dissemination of hourly METAR and SPECI, as well as the criteria to provide SPECI, should be agreed between the competent authority and the meteorological services provider.~~

GM1 MET.OR.200(a)(3) Meteorological reports and other information

METAR INTERVALS — NON-SCHEDULED INTERNATIONAL CAT

(a) For aerodromes not serving scheduled international commercial air transport operations, an aeronautical meteorological station may disseminate hourly METAR.

(b) Such dissemination, as well as the criteria to provide SPECI, should be agreed between the competent authority and the meteorological services provider.

AMC1 MET.OR.210 Observing meteorological elements

DISPLAY

Where automated equipment forms part of an integrated semi-automatic observing system or automatic observing system, displays of data which are made available to the local ATS units should be a subset of and displayed parallel to those available in the aeronautical meteorological stations or meteorological offices. In those displays, each meteorological element should be annotated to identify, as appropriate, the locations for which the element is representative.

AMC2 MET.OR.210 Observing meteorological elements

CLIMATOLOGICAL INFORMATION~~PROCESSING OF METEOROLOGICAL OBSERVATIONS~~

[...]

GM2 MET.OR.215(c) Forecasts and other information

TAF CONTINUOUS REVIEW GUIDANCE

Guidance on methods to keep Terminal Aerodrome Forecasts (TAF) under continuous review is given in Chapter 3 of ~~the Manual of Aeronautical Meteorological Practice (~~ICAO Doc 8896~~)~~ 'Manual of Aeronautical Meteorological Practice' as last amended.

GM1 MET.OR.220(a) Aerodrome forecasts

DISSEMINATION OF TAF

TAF and amendments thereto are disseminated to international OPMET databanks and the centres designated for the operation of the aeronautical fixed service ~~satellite distribution systems~~internet-based services.

AMC1 MET.OR.235(~~b~~c) Aerodrome warnings and wind shear warnings and alerts

WIND SHEAR FOLLOW-UP

Wind shear alerts should be updated at least every minute. They should be cancelled as soon as the headwind/tailwind change falls below 15 kt (7.5 m/s).

GM1 MET.OR.235(~~d~~c) Aerodrome warnings and wind shear warnings and alerts

WIND SHEAR ALERTS

Wind shear alerts are expected to complement wind shear warnings and together are intended to enhance situational awareness of wind shear.

.

GM~~2~~1 MET.OR.235(d) Aerodrome warnings and wind shear warnings and alerts

CANCELLATION OF WARNINGS

The criteria for the cancellation of ~~a~~ wind shear warnings are defined locally for each aerodrome, as agreed between the aerodrome meteorological office, the appropriate ATS units and the operators concerned.

GM1 MET.OR.240(a)(2) Information for use by operator or flight crew

GENERAL

For aerodromes not serving scheduled international commercial air transport operations within European Union:

(a) an aeronautical meteorological station may disseminate METAR on an hourly basis, as well as SPECI, as necessary; and

(b) such information should be made available and may include TREND.

AMC1 MET.OR.250(a) SIGMET ~~messages~~

FIR AND CTA

Meteorological watch offices whose area of responsibility encompasses more than one FIR and/or CTA should provide separate SIGMET ~~messages~~ for each FIR and/or CTA.

~~AMC2 MET.OR.250(a) SIGMET messages~~

~~DIGITAL FORMAT~~

~~In addition to the issuance of SIGMET information in abbreviated plain language, SIGMET information should be issued in a digital format.~~

GM1 MET.OR.250(a) SIGMET ~~messages~~

DISSEMINATION

(a) SIGMET ~~messages~~ are disseminated to meteorological watch offices and WAFCs and to other meteorological offices. SIGMET ~~messages~~ for volcanic ash are also disseminated to VAACs.

(b) SIGMET ~~messages~~ are disseminated to international OPMET databanks and the centres designated for the operation of the aeronautical fixed service ~~satellite distribution systems~~internet-based services.

AMC1 MET.OR.250(c) SIGMET ~~messages~~

SOURCE

SIGMET ~~messages~~ concerning volcanic ash clouds and tropical cyclones should be based on advisory information provided by VAACs and ~~T~~tropical ~~C~~cyclone ~~A~~advisory ~~C~~centres (TCACs), respectively.

~~AMC1 MET.OR.255(a) AIRMET messages~~

~~DIGITAL FORMAT~~

~~In addition to the issuance of AIRMET information in abbreviated plain language, AIRMET information should be issued in a digital format.~~

GM1 MET.OR.255(a) AIRMET ~~messages~~

DISSEMINATION

(a) AIRMET ~~messages~~ are disseminated to meteorological watch offices in adjacent flight information regions and to other meteorological watch offices or aerodrome meteorological offices, as agreed by the competent authorities concerned.

(b) AIRMET ~~messages~~ are transmitted to international operational meteorological databanks and the centres for the operation of the aeronautical fixed service internet-based services.

GM1 MET.OR.265(a) Volcanic ash advisory centres (VAACs) responsibilities

DISTRIBUTION OF METEOROLOGICAL DATA

The ~~AFTN~~AFS address to be used by the VAACs is given in ~~the~~ ICAO Doc 9766 'Handbook on the International Airways Volcano Watch (IAVW)' ~~(ICAO Doc 9766) which is available on the ICAO IAVWOPSG website~~.

AMC1 MET.TR.200(a) Meteorological reports and other information

TEMPLATE FOR LOCAL ROUTINE REPORT~~S~~ AND LOCAL SPECIAL REPORT~~S~~

Local routine report~~s~~ and local special report~~s~~ should be issued in abbreviated plain language, in accordance with the below template.

Template for local routine report (MET REPORT) and local special ~~(SPECIAL)~~ report~~s~~ (SPECIAL)
Key:
M = inclusion mandatory~~, part of every message~~;
C = inclusion conditional, dependent on meteorological conditions;
O = inclusion optional.

Element	Detailed content	Template(s)			Examples
Identification of the type of report (M)	Type of report	MET REPORT or SPECIAL			MET REPORT SPECIAL
Location indicator (M)	ICAO location indicator (M)	nnnn			YUDO
Time of the observation (M)	Day and actual time of the observation in UTC	nnnnnnZ			221630Z
Identification of an automated report (C)	Automated report identifier (C)	AUTO			AUTO
Surface wind (M)	Name of the element (M)	WIND			WIND 240/4MPS (WIND 240/8KT) WIND RWY 18 TDZ 190/6MPS (WIND RWY 18 TDZ 190/12KT)
	Runway (O)	RWY nn[L] or RWY nn[C] or RWY nn[R]			
	Runway section (O)	TDZ			
	Wind direction (M)	nnn/	VRB BTN nnn/ AND nnn/	C A	

Element	Detailed content	Template(s)			Examples
			or VRB	L M	WIND VRB1MPS WIND CALM (WIND VRB2KT)
	Wind speed (M)	[ABV]n[n][n]MPS (or [ABV]n[n]KT)			WIND VRB BTN 350/ AND 050/1MPS (WIND VRB BTN 350/ AND 050/2KT)
	Significant speed variations (C)	MAX[ABV]nn[n] MNMn[n]			
	Significant directional variations (C)	VRB BTN nnn/ AND nnn/	—		
	Runway section (O)	MID			WIND 270/ABV49MPS (WIND 270/ABV99KT)
	Wind direction (O)	nnn/	VRB BTN nnn/ AND nnn/ or VRB	C A L M	WIND 120/3MPS MAX9 MNM2 (WIND 120/6KT MAX18 MNM4)
	Wind speed (O)	[ABV]n[n][n]MPS (or [ABV]n[n]KT)			
	Significant speed variations (C)	MAX[ABV]nn[n] MNMn[n]			WIND 020/5MPS VRB BTN 350/ AND 070/ (WIND 020/10KT VRB BTN 350/ AND 070/)
	Significant directional variations (C)	VRB BTN nnn/ AND nnn/	—		
	Runway section (O)	END			WIND RWY 14R MID 140/6MPS (WIND RWY 14R MID 140/12KT)
	Wind direction (O)	nnn/	VRB BTN nnn/ AND nnn/ or VRB	C A L M	WIND RWY 27 TDZ 240/8MPS MAX14 MNM5 END 250/7MPS (WIND RWY 27 TDZ 240/16KT MAX28 MNM10 END 250/14KT)
	Wind speed (O)	[ABV]n[n][n]MPS (or [ABV]n[n]KT)			
	Significant speed variations (C)	MAX[ABV]nn[n] MNMn[n]			
	Significant directional variations (C)	VRB BTN nnn/ AND nnn/	—		
Visibility (M)	Name of the element (M)	VIS		C A V O K	VIS 350M CAVOK VIS 7KM VIS 10KM VIS RWY 09 TDZ 800M END 1200M VIS RWY 18C TDZ 6KM RWY 27 TDZ 4000M
	Runway (O)	RWY nn[L] or RWY nn[C] or RWY nn[R]			
	Runway section (O)	TDZ			
	Visibility (M)	n[n][n][n]M or n[n]KM			
	Runway section (O)	MID			
	Visibility (O)	n[n][n][n]M or n[n]KM			
	Runway section (O)	END			
	Visibility (O)	n[n][n][n]M or n[n]KM			
Runway visual range (C)	Name of the element (M)	RVR			RVR RWY 32 400M RVR RWY 20 1600M
	Runway (C)	RWY nn[L] or RWY nn[C] or RWY nn[R]			

Element	Detailed content	Template(s)			Examples
	Runway section (C)	TDZ			RVR RWY 10L BLW 50M RVR RWY 14 ABV 2000M RVR RWY 10 BLW 150M RVR RWY 12 ABV 1200M RVR RWY 12 TDZ 1100M MID ABV 1400M RVR RWY 16 TDZ 600M MID 500M END 400M RVR RWY 26 500M RWY 20 800M
	Runway visual range (M)	[ABV or BLW] nn[n][n]M			
	Runway section (C)	MID			
	Runway visual range (C)	[ABV or BLW] nn[n][n]M			
	Runway section (C)	END			
	Runway visual range (C)	[ABV or BLW] nn[n][n]M			
Present weather (C)	Intensity of present weather (C)	FBL or MOD or HVY		—	
	Characteristics and type of present weather (C)	DZ or RA or SN or SG or PL or DS or SS or FZDZ or FZUP or FC or FZRA or SHGR or SHGS or SHRA or SHSN or SHUP or TSGR or TSGS or TSRA or TSSN or TSUP12 or UP		FG or BR or SA or DU or HZ or FU or VA or SQ or PO or TS or BCFG or BLDU or BLSA or BLSN or DRDU or DRSA or DRSN or FZFG or MIFG or PRFG or //	MOD RA HVY TSRA HVY DZ FBL SN HZ FG VA MIFG HVY TSRASN FBL SNRA FBL DZ FG HVY SHSN BLSN HVY TSUP //
Cloud (M)	Name of the element (M)	CLD			CLD NSC CLD SCT 300M OVC 600M (CLD SCT 1000FT OVC 2000FT) CLD OBSC VER VIS 150M (CLD OBSC VER VIS 500FT) CLD BKN TCU 270M (CLD BKN TCU 900FT) CLD RWY 08R BKN 60M RWY 26 BKN 90M (CLD RWY 08R BKN 200FT RWY 26 BKN 300FT)
	Runway (O)	RWY nn[L] or RWY nn[C] or RWY nn[R]			
	Cloud amount (M) or vertical visibility (O)	FEW or SCT or BKN or OVC or ///	OBSC	NSC or NCD	
	Cloud type (C)	CB or TCU or ///	—		
	Height of cloud base or the value of vertical visibility (C)	n[n][n][n]M (or n[n][n][n]FT) or ///M	[VER VIS n[n][n]M(or VER VIS n[n][n][n]FT)] or		

Element	Detailed content	Template(s)				Examples
		(or ///FT)	VER VIS ///M (or VER VIS ///FT)			CLD /// CB ///M (CLD /// CB ///FT) CLD /// CB 400M (CLD /// CB 1200FT) CLD NCD
Air temperature (M)	Name of the element (M)	T				T17 TMS08
	Air temperature (M)	[MS]nn				
Dew-point temperature (M)	Name of the element (M)	DP				DP15 DPMS18
	Dew-point temperature (M)	[MS]nn				
Pressure values (M)	Name of the element (M)	QNH				QNH 0995HPA QNH 1009HPA
	QNH (M)	nnnnHPA				
	Name of the element (O)	QFE				QNH 1022HPA QFE 1001HPA QNH 0987HPA QFE RWY 18 0956HPA RWY 24 0955HPA
	QFE (O)	[RWY nn[L] or RWY nn[C] or RWY nn[R]] nnnnHPA [RWY nn[L] or RWY nn[C] or RWY nn[R] nnnnHPA]				
Supplementary information (C)	Significant meteorological phenomena (C)	CB or TS or MOD TURB or SEV TURB or WS or GR or SEV SQL or MOD ICE or SEV ICE or FZDZ or FZRA or SEV MTW or SS or DS or BLSN or FC				FC IN APCH WS IN APCH 60M-WIND 360/13MPS WS RWY 12 REFZRA CB IN CLIMB-OUT RETSRA
	Location of the phenomena (C)	IN APCH [n[n][n][n]M-WIND nnn/n[n]MPS] or IN CLIMB-OUT [n[n][n][n]M-WIND nnn/n[n]MPS] (IN APCH [n[n][n][n]FT-WIND nnn/n[n]KT] or IN CLIMB-OUT [n[n][n][n]FT-WIND nnn/n[n]KT]) or RWY nn[L] or RWY nn[C] or RWY nn[R]					
	Recent weather (C)	RERASN or REFZDZ or REFZRA or REDZ or RE[SH]RA or RE[SH]SN or RESG or RESHGR or RESHGS or REBLSN or RESS or REDS or RETSRA or RETSSN or RETSGR or RETSGS or REFC or REPL or REUP or REFZUP or RETSUP or RESHUP or REVA or RETS				
Trend forecast (O)	Name of the element (M)	TREND				TREND NOSIG TREND BECMG FEW 600M (TREND BECMG FEW 2000FT) TREND TEMPO 250/18 MPS MAX25 (TREND TEMPO 250/36KT MAX50)
	Change indicator (M)	NOSIG	BECMG or TEMPO			
	Period of change (C)		FMnnnn and/or TLnnnn or ATnnnn			
	Wind (C)		nnn/[ABV]n[n][n]MPS [MAX[ABV]nn[n]] (or nnn/[ABV]n[n]KT [MAX[ABV]nn])			
	Visibility (C)		VIS n[n][n][n]M or VIS n[n]KM	C A		

Element	Detailed content	Template(s)					Examples
	Weather phenomenon: intensity (C)		FBL or MOD or HVY	—	NSW	V O K	TREND BECMG AT1800 VIS 10KM NSW TREND BECMG TL1700 VIS 800M FG TREND BECMG FM1030 TL1130 CAVOK TREND TEMPO TL1200 VIS 600M BECMG AT1230 VIS 8KM NSW CLD NSC TREND TEMPO FM0300 TL0430 MOD FZRA TREND BECMG FM1900 VIS 500M HVY SNRA TREND BECMG FM1100 MOD SN TEMPO FM1130 BLSN TREND BECMG AT1130 CLD OVC 300M (TREND BECMG AT1130 CLD OVC 1000FT) TREND TEMPO TL1530 HVY SHRA CLD BKN CB 360M (TREND TEMPO TL1530 HVY SHRA CLD BKN CB 1200FT)
	Weather phenomenon: characteristics and type (C)		DZ or RA or SN or SG or PL or DS or SS or FZDZ or FZRA or SHGR or SHGS or SHRA or SHSN or TSGR or TSGS or TSRA or TSSN	FG or BR or SA or DU or HZ or FU or VA or SQ Or PO or FC or TS or BCFG or BLDU or BLSA or BLSN or DRDU or DRSA or DRSN or FZFG or MIFG or PRFG			
	Name of the element (C)		CLD				
	Cloud amount and vertical visibility (C)		FEW or SCT or BKN or OVC	OBSC	NSC		
	Cloud type (C)		CB or TCU	—			
	Height of cloud base or the value of vertical visibility (C)		n[n][n][n] M (or n[n][n][n]FT)	[VER VIS n[n][n] M (or VER VIS n[n][n][n]FT)]			

GM1 MET.TR.200(a) Meteorological reports and other information

RANGES AND RESOLUTIONS — LOCAL ROUTINE REPORT~~S~~ AND LOCAL SPECIAL REPORT~~S~~

(a) The ranges and resolutions for the numerical elements included in local routine report~~s~~ and local special report~~s~~ are shown below.

Ranges and resolutions for the numerical elements included in local routine reports and local special reports			
~~Element e~~Elements included in local routine reports and local special reports		Range	Resolution
Runway:	(no units)	01–36	1
Wind direction:	°true	010–360	10
Wind speed: MPS		~~1–99~~*1–99*	1
KT		~~1–199*~~1–199*	1
Visibility: M		~~0–7500~~–750	50
 M		~~800–4 900~~800–4 900	100
 KM		~~5–9~~5–9	1
 KM		10–	0 (fixed value: 10 KM)
Runway visual range:	M	~~0–375~~0–375	25
 M		400–750	50
 M		800–2 000	100
Vertical visibility:	M	0–75**	15
 M		90–600	30
 FT		0–250**	50
 FT		300–2 000	100
Clouds: height of cloud base:	M	0–75**	15
 M		90–~~3 000~~2 970	30
 FT		0–250**	50
 FT		300–~~10 000~~9 900	100
 FT		10 000-20 000	1 000
Air temperature;	°C	~~–80 – +60~~ –80–+60	1
Dew-point temperature:			
QNH; QFE: hPa		0500–1 100	1

* There is no aeronautical requirement to report surface wind speeds of 100 kt (50 m/s) or more; however, provision has been made for reporting wind speeds up to 199 kt (99 m/s) for non-aeronautical purposes, as necessary.
** Under circumstances as specified in AMC1 MET.TR.205(e)(~~1~~3); otherwise a resolution of 100 ft (30 m) is to be used.

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

AMC1 MET.TR.200(a)(4) Meteorological reports and other information

AUTOMATED REPORTING

Local routine report~~s~~ and local special report~~s~~ and METAR from automatic observing systems should be identified with the word 'AUTO'.

GM1 MET.TR.200(a)(4) Meteorological reports and other information

AUTOMATED REPORTING

METAR, local routine report~~s~~ and local special report~~s~~ from automatic observing systems may be used as agreed between the aeronautical meteorological stations and the users.

AMC1 MET.TR.200(a)(12) Meteorological reports and other information

SUPPLEMENTARY INFORMATION — SEMI-AUTOMATIC OBSERVING SYSTEM

(a) In local routine report~~s~~ and local special report~~s~~ and in METAR when reported by a semi-automatic observing system, the following recent weather phenomena should be reported, up to a maximum of three groups, in the supplementary information:

[...]

(b) In local routine report~~s~~ and local special report~~s~~ when reported by a semi-automatic observing system, the following significant meteorological conditions, or combinations thereof, should be reported in the supplementary information:

[...]

AMC2 MET.TR.200(a)(12) Meteorological reports and other information

SUPPLEMENTARY INFORMATION — AUTOMATIC OBSERVING SYSTEM

In local routine report~~s~~ and local special report~~s~~ and in METAR reported by an automatic observing system, the following recent weather phenomena should be reported, up to a maximum of three groups, in the supplementary information:

[...]

AMC3 MET.TR.200(a)(12) Meteorological reports and other information

SUPPLEMENTARY INFORMATION — WIND SHEAR

Information on wind shear should be included as supplementary information in local routine report~~s~~ and local special report~~s~~ and in METAR, where local circumstances so warrant.

AMC4 MET.TR.200(a)(12) Meteorological reports and other information

SUPPLEMENTARY INFORMATION — SEA-SURFACE TEMPERATURE AND STATE OF THE SEA ~~AND OF THE RUNWAY~~

In METAR, information on sea-surface temperature and the state of the sea or the significant wave height, from aeronautical meteorological stations established on offshore structures in support of helicopter operations, should be included in the supplementary information.

GM~~2~~1 to AMC~~1~~3 MET.TR.200(a)(12) Meteorological reports and other information

SUPPLEMENTARY INFORMATION — LOCAL CIRCUMSTANCES

Local circumstances include but are not necessarily limited to wind shear of non-transitory nature such as might be associated with low-level temperature inversions or local topography.

GM1 MET.TR.200(b) Meteorological reports and other information

EXAMPLE OF LOCAL SPECIAL REPORT

Local special report:
SPECIAL YUDO 151115Z WIND 050/25KT MAX37 MNM10 VIS 1200M RVR RWY 05 ABV 1800M HVY TSRA CLD BKN CB 500FT T25 DP22 QNH ~~1018HPA~~1008HPA TREND TEMPO TL1200 VIS 600M BECMG AT1200 VIS 8KM NSW NSC
Meaning:
Special report for Donlon/International* issued on the 15th of the month at 11.15 UTC; surface wind direction 050 degrees; wind speed 25 knots gusting between 10 and 37 knots; visibility 1 200 metres along the runway; Runway visual range above 1 800 metres at the threshold on runway 05; thunderstorm with heavy rain; broken cumulonimbus cloud at 500 feet; air temperature 25 degrees Celsius; dew-point temperature 22 degrees Celsius; QNH 1 008 hectopascals; TREND during next 2 hours; visibility along the runway temporarily 600 metres

from ~~1 1.15 to 1 2.00~~ 11.15 to 12.00, becoming at 12.00 UTC visibility along the runway 8 kilometres, thunderstorm ceases and nil significant weather and nil significant cloud. ** Fictitious location*

[…]

~~AMC1 MET.TR.200(c)(2) Meteorological reports and other information~~

~~**METAR — DIGITAL FORM**~~

~~METAR should be disseminated in a digital form.~~

GM1 MET.TR.200(e)(5) Meteorological reports and other information

NOISE ABATEMENT PROCEDURES

Noise abatement procedures are those in accordance with 7.2.6 of ~~the~~ ICAO Doc 4444 'Procedures for Air Navigation Services (PANS-ATM)' ~~(ICAO Doc 4444)~~ as last amended.

GM1 MET.TR.205(a)(3)(iii)(A) Reporting of meteorological elements

NOISE ABATEMENT PROCEDURES

Noise abatement procedures are those in accordance with 7.2.6 of ~~the~~ ICAO Doc 4444 'Procedures for Air Navigation Services (PANS-ATM)' ~~(ICAO Doc 4444)~~.

AMC~~2~~1 MET.TR.205(b)(1) Reporting of meteorological elements

VISIBILITY

In METAR, visibility should be reported as prevailing visibility. When the visibility is not the same in different directions and:

(a) when the lowest visibility is different from the prevailing visibility, and (1) less than 1 500 m or (2) less than 50 % of the prevailing visibility, and less than 5 000 m, the lowest visibility observed should also be reported and, when possible, its general direction in relation to the aerodrome reference point indicated by reference to one of the eight points of the compass;

[...]

AMC1 MET.TR.205(d) Reporting of meteorological elements

PRESENT WEATHER PHENOMENA — AUTOMATIC OBSERVING SYSTEM

In local routine report~~s~~ and local special report~~s~~ and in METAR reported by an automatic observing system, the following types of present weather phenomena should be reported, using their respective abbreviations and relevant criteria, as appropriate:

(a) Precipitation:

(1) drizzle (DZ);

(2) rain (RA);

(3) snow (SN); and

(4) Unidentified precipitation (UP)

(b) Obscurations (hydrometeors);

~~(c)~~(1) Fog (FG): reported when visibility is less than 1 000 m;

~~(d)~~(2) Mist (BR): reported when visibility is at least 1 000 m, but not more than 5 000 m;

~~(e)~~(c) Obscurations (lithometeors). Haze (HZ) should be used when the obscuration consists predominantly of lithometeors and the visibility is 5 000 m or less; and

~~(f)~~(d) Temporary failure of system/sensor: the present weather should be replaced by '//' when it cannot be observed due to a temporary failure of the system/sensor.

AMC2 MET.TR.205(d) Reporting of meteorological elements

PRESENT WEATHER PHENOMENA — SEMI-AUTOMATIC OBSERVING SYSTEM

In local routine report~~s~~ and local special report~~s~~ and in METAR reported by a semi-automatic observing system, the following types of present weather phenomena should be reported, using their respective abbreviations and relevant criteria, as appropriate:

(...)

AMC3 MET.TR.205(d) Reporting of meteorological elements

PRESENT WEATHER PHENOMENA — UNIDENTIFIED PRECIPITATION (UP)

In automated local routine report~~s~~ and local special report~~s~~ and in METAR, in addition to drizzle (DZ), rain (RA) and snow (SN), the abbreviation 'UP' should be used for unidentified precipitation when the type of precipitation cannot be identified by the automatic observing system.

AMC1 MET.TR.205(d)(3) Reporting of meteorological elements

PRESENT WEATHER PHENOMENA — ADDITIONAL CHARACTERISTICS

(a) In local routine report~~s~~ and local special report~~s~~ and in METAR, only when reported by a semi-automatic observing system, the following characteristics of present weather phenomena, as necessary, should be reported using their respective abbreviations and relevant criteria, as appropriate:

~~(a)~~(1) Shower (SH): used to report showers. Showers observed in the vicinity of the aerodrome should be reported as 'VCSH' without qualification regarding type or intensity of precipitation.

~~(b)~~(2) Blowing (BL): used with types of present weather phenomena raised by the wind to a height of 6 ft (2 m) or more above the ground.

~~(c)~~(3) Low drifting (DR): used with types of present weather phenomena raised by the wind to less than 6 ft (2 m) above ground level.

~~(d)~~(4) Shallow (MI): less than 6 ft (2 m) above ground level.

~~(e)~~(5) Patches (BC): fog patches randomly covering the aerodrome.

~~(f)~~(6) Partial (PR): a substantial part of the aerodrome covered by fog while the remainder is clear.

(b) In automated local routine report~~s~~, local special report~~s~~ and in METAR, when showers (SH) referred to above cannot be determined based upon a method that takes account of the presence of convective cloud, the precipitation should not be characterised by 'SH'.

AMC2 MET.TR.205(d)(3) Reporting of meteorological elements

PRESENT WEATHER PHENOMENA — INTENSITY

In local routine report~~s~~ and local special report~~s~~ and in METAR, the relevant intensity or, as appropriate, the proximity to the aerodrome of the reported present weather phenomena should be indicated as follows:

[...]

GM1 MET.TR.205(d)(3)(i) Reporting of meteorological elements

PRESENT WEATHER PHENOMENA — TS LIGHTNING DETECTION EQUIPMENT

(a) At aerodromes with human observers, lightning detection equipment may supplement human observations.

(b) For aerodromes with automatic observing systems, guidance on the use of lightning detection equipment intended for thunderstorm reporting is given in ~~the~~ ICAO Doc 9837 'Manual on Automatic Meteorological Observing Systems at Aerodromes' ~~(ICAO Doc 9837)~~.

AMC1 MET.TR.205(e)(1) Reporting of meteorological elements

CLOUD ~~— HEIGHT OF CLOUD BASE~~

In local routine report~~s~~ and local special report~~s~~ and in METAR:

[...]

AMC1 MET.TR.210(a) Observing meteorological elements

SURFACE WIND

(a) When local routine report~~s~~ and local special report~~s~~ are used for departing or arriving aircraft, the surface wind observations for these reports should be representative of conditions along the runway or the touchdown zone respectively.

[...]

AMC1 MET.TR.210(a)(1) Observing meteorological elements

SURFACE WIND — SITING

[...]

(c) Sensors for surface wind observations for local routine report~~s~~ and local special report~~s~~ should be sited to give the best practicable indication of conditions along the runway and touchdown zones.

[...]

AMC1 MET.TR.210(a)(3) Observing meteorological elements

SURFACE WIND — AVERAGING

The averaging period for measuring variations from the mean wind speed (gusts) reported in accordance with MET.TR.205(a)(3)(iii) should be 3 seconds for local routine report~~s~~, local special report~~s~~, METAR, and for wind displays used for depicting variations from the mean wind speed (gusts) in ATS units.

AMC1 MET.TR.210(b)(1) Observing meteorological elements

VISIBILITY — GENERAL

[...]

(c) When local routine report~~s~~ and local special report~~s~~ are used for departing aircraft, the visibility observations for these reports should be representative of the conditions along the runway.

(d) When local routine report~~s~~ and local special report~~s~~ are used for arriving aircraft, the visibility observations for these reports should be representative of the touchdown zone of the runway.

[...]

GM1 MET.TR.210(c) Observing meteorological elements

RUNWAY VISUAL RANGE (RVR) — ASSESSMENT

A detailed understanding of the assessment of RVR is described in ICAO Doc 9328 'Manual on 'RVR — Observing and reporting practices'.

AMC1 MET.TR.210(c)(2) Observing meteorological elements

RUNWAY VISUAL RANGE (RVR) — RUNWAY LIGHT INTENSITY

(a) Instrumented systems should consider the runway light intensity.

(b) When instrumented systems are used for the assessment of RVR, computations should be made separately for each available runway.

(c) For local routine report and local special report~~s~~, the light intensity to be used for the computation should be:

(1) for a runway with the lights switched on and a light intensity of more than 3 % of the maximum light intensity available, the light intensity actually in use on that runway;

(2) for a runway with the lights switched on and a light intensity of 3 % or less of the maximum light intensity available, the optimum light intensity that would be appropriate for operational use in the prevailing conditions; and

(3) for a runway with lights switched off (or at the lowest setting pending the resumption of operations), the optimum light intensity that would be appropriate for operational use in the prevailing conditions.

~~(c)~~(d) In METAR, the RVR should be based on the maximum light intensity available on the runway.

GM1 MET.TR.210(c)(2) Observing meteorological elements

RUNWAY VISUAL RANGE (RVR) — USE OF INSTRUMENTED SYSTEMS

[...]

(c) Guidance on the use of transmissometers and forward-scatter meters in instrumented Runway Visual Range systems is given in ~~the~~ ICAO Doc 9328 'Manual of Runway Visual Range Observing and Reporting Practices' ~~(ICAO Doc 9328)~~.

AMC1 MET.TR.210(d)(1) Observing meteorological elements

PRESENT WEATHER — GENERAL

(a) For local routine report~~s~~ and local special report~~s~~, the present weather information should be representative of the conditions at the aerodrome.

[...]

AMC1 MET.TR.210(e) Observing meteorological elements

CLOUDS — GENERAL

(a) Cloud observations for local routine report~~s~~ and local special report~~s~~ should be representative of the runway threshold(s) in use.

[...]

AMC1 MET.TR.210(e)(2) Observing meteorological elements

CLOUDS — SITING

[...]

(b) For local routine report~~s~~ and local special report~~s~~, in the case of aerodromes with precision approach runways, sensors for cloud amount and height of cloud base should be sited to give the best practicable indications of the cloud amount and height of cloud base at the threshold of the runway in use. For that purpose, a sensor should be installed at a distance of less than 4 000 ft (1 200 m) before the landing threshold.

AMC1 MET.TR.210(f) Observing meteorological elements

AIR TEMPERATURE AND DEW-POINT TEMPERATURE

Observations of air temperature and dew-point temperature for local routine report~~s~~ and local special report~~s~~ and for METAR should be representative of the whole runway complex.

AMC3 MET.TR.215(a) Forecasts and other information

AUTOMATED PRE-FLIGHT INFORMATION SYSTEMS

[...]

(c) use access and interrogation procedures based on abbreviated plain language and, as appropriate, ICAO location indicators, and aeronautical meteorological code data-type designators prescribed by WMO, or based on a menu-driven user interface, or other

appropriate mechanisms as agreed between the meteorological services provider~~authority~~ and the operators concerned; and

[...]

GM1 to AMC3 MET.TR.215(a) Forecasts and other information

AUTOMATED PRE-FLIGHT INFORMATION SYSTEMS

(a) ICAO abbreviations and codes and location indicators are given respectively in ~~the~~ ICAO Doc 8400 'Procedures for Air Navigation Services — ICAO Abbreviations and Codes (PANS-ABC)', ~~ICAO Doc 8400)~~ and ICAO Doc 7910 'Location Indicators ~~(ICAO Doc 7910)~~'.

(b) Aeronautical meteorological code data-type designators are given in the WMO Publication No 386~~,~~ 'Manual on the Global Telecommunication System'.

AMC1 MET.TR.215(e) Forecasts and other information

FLIGHT DOCUMENTATION

(a) Where the forecasts are supplied in chart form, flight documentation for low-level flights, including those in accordance with the visual flight rules, operating up to flight level 100 or up to flight level 150 in mountainous areas or higher, where necessary, should contain the following as appropriate to the flight:

(1) information from relevant SIGMET and AIRMET ~~messages~~;

[...]

AMC1 MET.TR.215(f) Forecasts and other information

CHARTS

Charts included in flight documentation should have a high standard of clarity and legibility and should have the following physical characteristics:

(a) For convenience, the largest size of charts should be about 42 × 30 cm (standard A3 size) and the smallest size should be about 21 × 30 cm (standard A4 size). The choice between these sizes should depend on the route lengths and the amount of detail that needs to be given in the charts as agreed between the aerodrome meteorological office~~authorities~~ and the users concerned;

[...]

GM1 MET.TR.215(g) Forecasts and other information

~~CONCATENATED ROUTE-SPECIFIC~~ FORECASTS IN CHART FORM

(a) ~~The flight documentation~~ Charts related to concatenated route-specific upper wind and upper-air temperature forecasts should be provided as agreed between the meteorological service provider and the operator concerned.

(b) Guidance on the design, formulation and use of concatenated charts is given in ~~the~~ ICAO Doc 8896 'Manual of Aeronautical Meteorological Practice' ~~(ICAO Doc 8896)~~ as last amended.

GM2 MET.TR.215(i) Forecasts and other information

CLIMATOLOGICAL SUMMARIES — MODELS

Models of climatological summaries related to (a) to (e) of AMC6 MET.TR.215(i) are given in the WMO Publication No 49, Technical Regulations, Volume II, Part III – 'AERONAUTICAL CLIMATOLOGY' ~~C.3.2~~.

GM1 MET.TR.220 Aerodrome forecasts

~~EXAMPLE OF~~ TAF — EXAMPLES

TAF for YUDO (Donlon/International)*:
TAF YUDO 152300Z 1600/1706 13010KT 9000 BKN025 BECMG 1606/1608 BKN014CB BKN020 TEMPO 1608/1612 17015G25KT 1000 TSRA BKN009CB BKN020 FM161230 15008KT 9999 BKN020
Meaning of the forecast:
TAF for Donlon/International* issued on the 15th of the month at 23.00 UTC valid from 00.00 UTC to 06.00 UTC on the 17th of the month; surface wind direction 130 degrees; wind speed 10 knots; visibility 9 kilometres, broken cloud at 2 500 feet; becoming between 06.00 UTC and 08.00 UTC on the 16th of the month, broken cumulonimbus cloud at 1 400 feet and broken cloud at 2 000 feet; temporarily between 08.00 UTC and 12.00 UTC on the 16th of the month surface wind direction 170 degrees; wind speed 15 knots gusting to 25 knots; visibility 1 000 metres in a thunderstorm with moderate rain, broken cumulonimbus cloud at 900 feet-and broken cloud at 2 000 feet; from 12.30 UTC on the 16th of the month, surface wind direction 150 degrees; wind speed 8 knots; visibility 10 kilometres or more; and broken cloud at 2 000 feet.
** Fictitious location*

~~TAF for YUDO (Donlon/International)*:~~

~~TAF YUDO 151800Z 1600/1618 13005MPS 9000 BKN020 BECMG 1606/1608 SCT015CB BKN020 TEMPO 1608/1612 17006G12MPS 1000 TSRA SCT010CB BKN020 FM161230 15004MPS 9999 BKN020~~

~~Meaning of the forecast:~~

~~TAF for Donlon/International* issued on the 15th of the month at 1800 UTC valid from 0000 UTC to 1800 UTC on the 16th of the month; surface wind direction 130 degrees; wind speed 5 knots; visibility 9 kilometres, broken cloud at 2 000 feet; becoming between 0600 UTC and 0800 UTC on the 16th of the month, broken~~

~~cloud at 800 feet; temporarily between 0800 UTC and 1200 UTC on the 16th of the month surface wind direction 170 degrees; wind speed 15 knots gusting to 25 knots; visibility 1 000 metres in a thunderstorm with moderate rain, scattered cumulonimbus cloud at 300 metres and broken cloud at 2 000 feet; from 1230 UTC on the 16th of the month, surface wind direction 150 degrees; wind speed 4 knots; visibility 10 kilometres or more; and broken cloud at 2 000 feet.~~

~~** Fictitious location*~~

GM2 MET.TR.220 Aerodrome forecasts

~~**EXAMPLE OF CANCELLATION OF** **TAF — EXAMPLE OF CANCELLATION**~~

Cancellation of TAF for YUDO (Donlon/International):*
TAF AMD YUDO 161915Z 1618/1703 CNL
Meaning of the forecast:
Amended TAF for Donlon/International* issued on the 16th of the month at 19.00 UTC cancelling the previously issued TAF valid from 180.0 UTC on the 16th of the month to 03.00 UTC on the 17th of the month.
** Fictitious location*

~~Cancellation of TAF for YUDO (Donlon/International)*:~~

~~TAF AMD YUDO 161500Z 1600/1618 CNL~~

~~Meaning of the forecast:~~

~~Amended TAF for Donlon/International* issued on the 16th of the month at 1500 UTC cancelling the previously issued TAF valid from 0000 UTC to 1800 UTC on the 16th of the month.~~

~~** Fictitious location*~~

GM3 MET.TR.220 Aerodrome forecasts

~~**ACCURACY OF** **TAF — ACCURACY**~~

[...]

Element to be forecast	Operationally desirable accuracy of forecasts	Minimum percentage of cases within range
TAF		
Wind direction	± 20°	80 % of cases
Wind speed	± 2.5 m/s (5 kt)	80 % of cases
Visibility	± 200 m up to 800 m ± 30 % between 800 m and 10 km	80 % of cases
Precipitation	Occurrence or non-occurrence	80 % of cases
Cloud amount	One category below 450 m (1 500 ft) Occurrence or non-occurrence of BKN or OVC between 450 m (1 500 ft) and 3 000 m (10 000 ft)	70 % of cases
Cloud height	± 30 m (100 ft) up to 300 m (1 000 ft)	70 % of cases

	± 30 % ~~between~~above 300 m (1 000 ft)~~ and 3 000 m (10 000 ft)~~	
Air temperature	± 1°C	70 % of cases

~~AMC1 MET.TR.220(b) Aerodrome forecasts~~

~~TAF — DIGITAL FORM~~

~~TAF should be disseminated in a digital form.~~

~~GM1 MET.TR.220(b) Aerodrome forecasts~~

~~TAF — DIGITAL FORM~~

~~When TAF is disseminated in a digital form, this is in addition to the TAF code form.~~

AMC1 MET.TR.220(c) Aerodrome forecasts

PERIOD OF VALIDITY

(a) The periods of validity for an up to 9-hour TAF should commence at 00, 03, 06, 09, 12, 15, 18 and 21 UTC and for a 24- and a 30-hour TAF at 00, 06, 12 and 18 UTC or 03, 09, 15, and 21 UTC.

(b) The 24- and 30-hour TAF periods of validity should be determined based on the types of operations, as agreed between the aerodrome meteorological office and the operators concerned.

~~At aerodromes with limited hours of operation, the beginning of the period of validity of a TAF should commence at least 1 hour prior to the aerodrome resuming operations, or more as agreed between the aerodrome meteorological office and the operators concerned, to meet planning requirements for flights that arrive at the aerodromes as soon as it is opened for use.~~

(c) A ~~R~~routine TAF valid for up to 9 hours should be issued every 3 hours, and those valid for 24 or 30 hours should be issued every 6 hours.

(d) At aerodromes with limited hours of operation, the beginning of the period of validity of a TAF should commence at least 1 hour prior to the aerodrome resuming operations, or more as agreed between the aerodrome meteorological office and the operators concerned, to meet planning requirements for flights that arrive at the aerodromes as soon as it is opened for use.

GM1 MET.TR.220(d) Aerodrome forecasts

TAF — DIGITAL FORM~~FORMAT OF TAF~~

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

(a) When a TAF is disseminated in digital form, this is in addition to the TAF code form.

(b) Guidance on the information exchange model, GML, and metadata profile is provided in ICAO Doc 10003 'Manual on the ICAO Meteorological Information Exchange Model'.

GM1 MET.TR.225(c)(2)(iii) Forecasts for landing

VISIBILITY

In TREND forecasts appended to local routine report~~s~~ and local special report~~s~~, visibility refers to the forecast visibility along the runway(s).

AMC1 MET.TR.235 Aerodrome warnings and wind shear warnings and alerts

AERODROME WARNINGS — FORMAT

[...]

Template for aerodrome warnings
Key:
M = inclusion mandatory~~, part of every message~~;
C = inclusion conditional, included whenever applicable.

[...]

GM1 MET.TR.235 Aerodrome warnings and wind shear warnings and alerts

RANGES AND RESOLUTIONS — AERODROME WARNINGS

[...]

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

[...]

AMC~~2~~1 MET.TR.235(a) Aerodrome warnings and wind shear warnings and alerts

~~FORMAT OF~~ AERODROME WARNINGS - FORMAT

GM1 MET.TR.235 Aerodrome warnings and wind shear warnings and alerts

RANGES AND RESOLUTIONS — AERODROME WARNINGS

[...]

Ranges and resolutions for the numerical elements included in volcanic ash and tropical cyclone advisory ~~messages~~, SIGMET, ~~/~~AIRMET, ~~messages and~~ aerodrome warning and wind shear warning~~s~~

[...]

GM1 MET.TR.235(~~c~~a) Aerodrome warnings and wind shear warnings and alerts

WIND SHEAR TYPES

Following reported encounters by both arriving and departing aircraft, two different wind shear warnings may exist: one for arriving aircraft and one for departing aircraft.

GM2 MET.TR.235(~~c~~a) Aerodrome warnings and wind shear warnings and alerts

REPORTING THE INTENSITY OF WIND SHEAR

Specifications for reporting the intensity of wind shear are still under development. It is recognised, however, that pilots, when reporting wind shear, may use the qualifying terms 'moderate', 'strong' or 'severe', based to a large extent on their subjective assessment of the intensity of the wind shear encountered.

GM~~3~~1 MET.TR.235(c) Aerodrome warnings and wind shear warnings and alerts

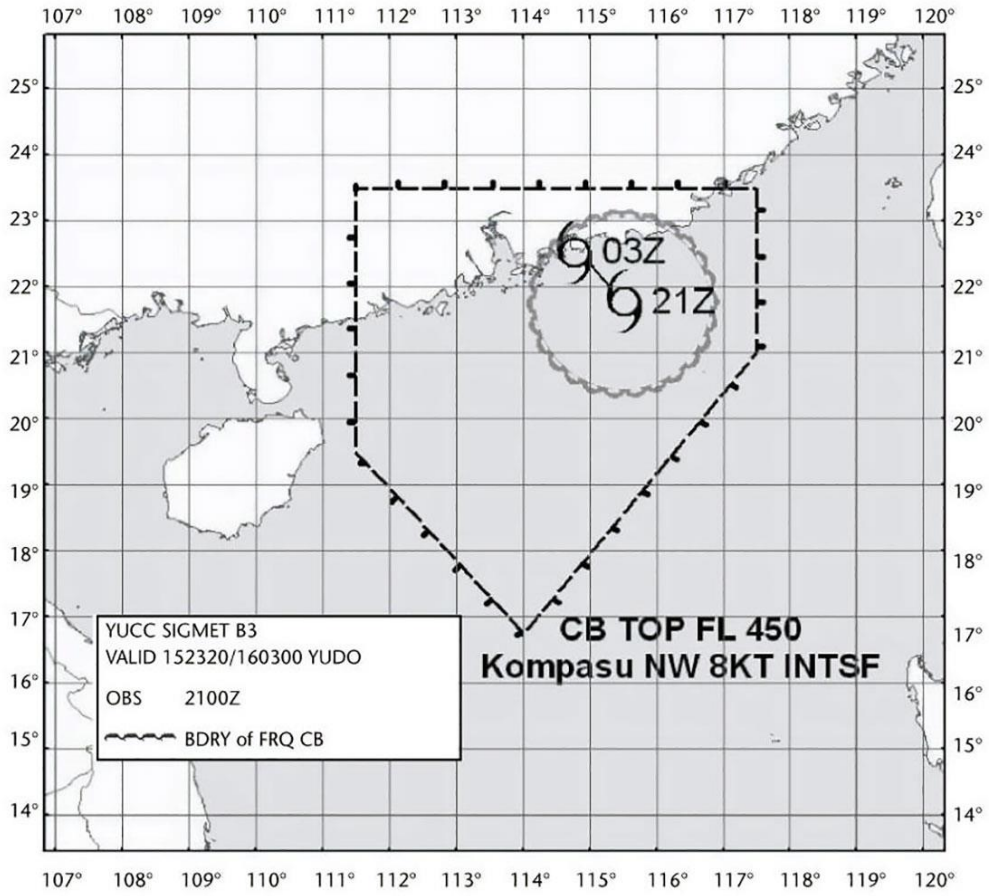
DETECTION OF WIND SHEAR

~~AMC1 MET.TR.250(a) SIGMET messages~~

~~**FORMAT**~~

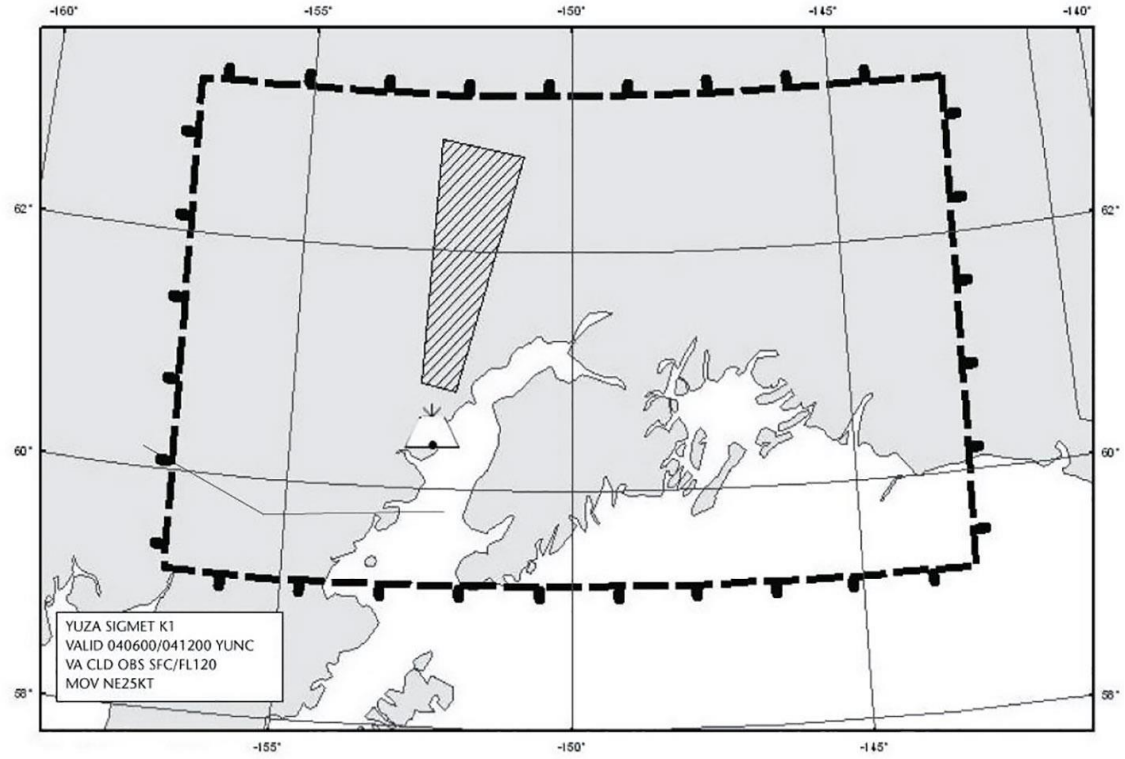
~~SIGMET, when issued in graphical format, should be as specified below:~~

~~(a) SIGMET FOR TROPICAL CYCLONE — MODEL STC~~



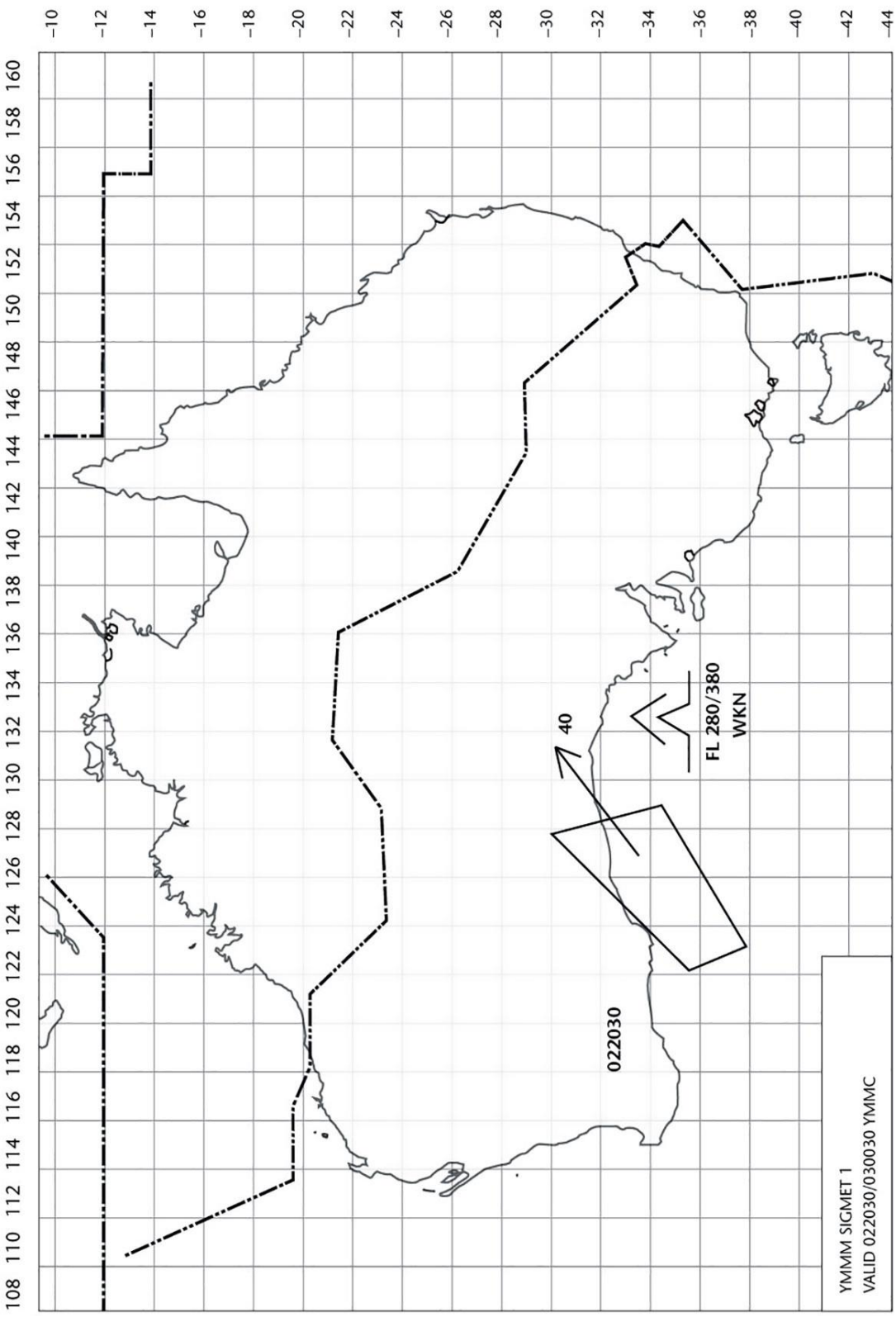
Note: Fictitious FIR.

~~(b) SIGMET FOR VOLCANIC ASH — MODEL SVA~~



Fictitious FIR.

~~(c) SIGMET FOR PHENOMENA OTHER THAN TROPICAL CYCLONE AND VOLCANIC ASH — MODEL SGE~~



AMC12 MET.TR.250(a) SIGMET ~~messages~~

AIRSPACE

In cases where the airspace is divided into a flight information region (FIR) and an upper-flight information region (UIR), the SIGMET ~~message~~ should be identified by the location indicator of the ATS unit serving the FIR.

GM1 MET.TR.250(a) SIGMET ~~messages~~

FLIGHT INFORMATION REGION

The SIGMET ~~message~~ applies to the whole airspace within the lateral limits of the FIR, i.e. to the FIR and to the UIR. The particular areas and/or flight levels affected by the meteorological phenomena causing the issuance of the SIGMET ~~message~~ are given in the text of the message.

GM2 MET.TR.250(a) SIGMET ~~messages~~

EXAMPLE OF SIGMET ~~MESSAGES~~, AND THE CORRESPONDING CANCELLATIONS

~~SIGMET~~	~~Cancellation of SIGMET~~
~~YUDD SIGMET 2 VALID 101200/101600 YUSO – YUDD SHANLON FIR/UIR OBSC TS FCST S OF N54 AND E OF W012 TOP FL390 MOV E WKN FCST 1600Z S OF N54 AND E OF W010~~	~~YUDD SIGMET 3 VALID 101345/101600 YUSO – YUDD SHANLON FIR/UIR CNL SIGMET 2 101200/101600~~

SIGMET

YUDD SIGMET T02 VALID 101200/101600 YUSO–

YUDD SHANLON FIR/UIR OBSC TS FCST S OF N54 AND E OF W012 TOP FL390 MOV E 20 KT WKN

Cancellation of SIGMET

YUDD SIGMET T03 VALID 101345/101600 YUSO–

YUDD SHANLON FIR/UIR CNL SIGMET T02 101200/101600

GM3 MET.TR.250(a) SIGMET ~~messages~~

EXAMPLE OF SIGMET ~~MESSAGE~~ FOR TROPICAL CYCLONE

YUCC SIGMET CO3 VALID 251600/252200 YUDO-—

YUCC AMSWELL FIR TC GLORIA PSN N2706 W07306 CB OBS AT 1600Z ~~N2706 W07306 CB TOP FL500~~ WI ~~150NM~~250NM OF TC CENTRE TOP FL500~~MOV NW 10KT~~ NC FCST AT 2200Z TC CENTRE PSN N2740 W07345

Meaning:

The third tropical cyclone SIGMET ~~message~~ issued for the AMSWELL* flight information region (identified by YUCC Amswell area control centre) by the Donlon/International* meteorological watch office (YUDO) since 00.01 UTC; the ~~message~~SIGMET is valid from 16.00 UTC to 22.00 UTC on the 25th of the month; tropical cyclone Gloria at 27 degrees 6 minutes north and 73 degrees 6 minutes west; cumulonimbus was observed at 16.00 UTC within 250 nautical miles of the centre of the tropical cyclone with top at flight level 500; no changes in intensity are expected; at 22.00 UTC, the centre of the tropical cyclone is forecast to be located at 27 degrees 40 minutes north and 73 degrees 45 minutes west.~~was observed at 1600 UTC at 27 degrees 6 minutes north and 73 degrees 6 minutes west with cumulonimbus top at flight level 500 within 150 nautical miles of the centre; the tropical cyclone is expected to move northwestwards at 10 knots and not to undergo any changes in intensity; the forecast position of the centre of the tropical cyclone at 2200 UTC is expected to be at 27 degrees 40 minutes north and 73 degrees 45 minutes west.~~

** Fictitious locations*

GM4 MET.TR.250(a) SIGMET ~~messages~~

EXAMPLE OF SIGMET ~~MESSAGE~~ FOR VOLCANIC ASH

YUDD SIGMET AO2 VALID 101200/101800 YUSO–

YUDD SHANLON FIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD OBS AT 1200Z WI N4315 E02115 - N4345 E02145 – N4330 E02215 – N4245 E02230 - N4230 E02145 - N4315 E02115 FL250/370 WKN FCST AT 1800Z NO VA EXP=

Meaning:

The second volcanic ash SIGMET issued for the SHANLON* flight information region (identified by YUDD Shanlon area control centre/upper flight information region) by the Shanlon/International* meteorological watch office (YUSO) since 00.01 UTC; the SIGMET is valid from 12.00 UTC to 18.00 UTC on the 10th of the month; volcanic ash eruption of Mount Ashval* located at 43 degrees 15 minutes north and 21 degrees 15 minutes east; volcanic ash cloud observed at 12.00 UTC within an area bounded by 43 degrees 15 minutes north and 21 degrees 15 minutes east to 43 degrees 30 minutes north and 22 degrees 15 minutes east to 42 degrees 45 minutes north and 22 degrees 30 minutes east to 42 degrees 30 minutes north and 21 degrees 45 minutes east to 43 degrees 15 minutes north and 21 degrees 15 minutes east between flight levels 250 and 370, weakening, and forecast at 18.00 UTC to have dissipated with no volcanic ash expected.

** Fictitious locations*

~~YUDD SIGMET 2 VALID 211100/211700 YUSO –~~

~~YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN S1500 E07348 VA CLD OBS AT 1100Z~~

~~APRX 220KM BY 35KM S1500 E07348 — S1530 E07642 FL310/450 MOV SE 35KT FCST 1700Z VA CLD~~

~~APRX S1506 E07500 — S1518 E08112 — S1712 E08330 — S1824 E07836~~

~~Meaning:~~

~~The second SIGMET message issued for the SHANLON* flight information region (identified by YUDD Shanlon area control centre/upper flight information region) by the Shanlon/International* meteorological watch office (YUSO) since 0001 UTC; the message is valid from 1100 UTC to 1700 UTC on the 21st of the month; volcanic ash eruption of Mount Ashval* located at 15 degrees south and 73 degrees 48 minutes east; volcanic ash cloud observed at 1100 UTC in an approximate area of 220 km by 35 km between 15 degrees south and 73 degrees 48 minutes east, and 15 degrees 30 minutes south and 76 degrees 42 minutes east; between flight levels 310 and 450, the volcanic ash cloud is expected to move south-eastwards at 35 knots; at 1700 UTC the volcanic ash cloud is forecast to be located approximately in an area bounded by the following points: 15 degrees 6 minutes south and 75 degrees east, 15 degrees 18 minutes south and 81 degrees 12 minutes east, 17 degrees 12 minutes south and 83 degrees 30 minutes east, and 18 degrees 24 minutes south and 78 degrees 36 minutes east.~~

~~** Fictitious locations*~~

GM5 MET.TR.250(a) SIGMET ~~messages~~

EXAMPLE OF SIGMET ~~MESSAGE~~ FOR RADIOACTIVE CLOUD

YUCC SIGMET RO2 VALID 201200/201600 YUDO~~-~~—

YUCC AMSWELL FIR RDOACT CLD OBS AT 1155Z WI S5000 W14000 — S5000 W13800 — S5200 W13800 — S5200 W14000 — S5000 W14000 SFC/FL100 ~~STNR~~ WKN FCST AT 1600Z WI S5200 W14000 — S5200 W13800 — S5300 W14000 — S5200 W14000

Meaning:

The second radioactive cloud SIGMET ~~message~~ issued for the AMSWELL* flight information region (identified by YUCC Amswell area control centre) by the Donlon/International* meteorological watch office (YUDO) since 00.01 UTC; the ~~message~~SIGMET is valid from 12.00 UTC to 16.00 UTC on the 20th of the month; radioactive cloud was observed at 11.55 UTC within an area bounded by 50 degrees 0 minutes south and 140 degrees 0 minutes west to 50 degrees 0 minutes south and 138 degrees 0 minutes west to 52 degrees 0 minutes south and 138 degrees 0 minutes west to 52 degrees 0 minutes south and 140 degrees 0 minutes west to 50 degrees 0 minutes south and 140 degrees 0 minutes west and between the surface and flight level 100; the radioactive cloud is expected ~~to remain stationary and~~ to weaken in intensity~~; at 16.00 UTC, the radioactive cloud is forecast to be located within an area bounded by 52 degrees 0 minutes south 140 degrees 0 minutes west to 52 degrees 0 minutes south 138 degrees 0 minutes west to 53 degrees 0 minutes south 138 degrees 0 minutes west to 53 degrees 0 minutes south 140 degrees 0 minutes west to 52 degrees 0 minutes south 140 degrees 0 minutes west~~.

** Fictitious locations*

GM6 MET.TR.250(a) SIGMET ~~messages~~

EXAMPLE OF SIGMET ~~MESSAGE~~ FOR SEVERE TURBULENCE

YUCC SIGMET U05 VALID 221215/221600 ~~YUDO —~~YUDO—

YUCC AMSWELL FIR SEV TURB OBS AT 1210Z N2020 W07005 FL250 MOV E 20KT WKN FCST 1600Z S OF N2020 E OF W06950

Meaning:

The fifth severe turbulence SIGMET ~~message~~ issued for the AMSWELL* flight information region (identified by YUCC Amswell area control centre) by the Donlon/International* meteorological watch office (YUDO) since 00.01 UTC; the ~~message~~SIGMET is valid from 12.15 UTC to 16.00 UTC on the 22nd of the month; severe turbulence was observed at 12.10 UTC 20 degrees 20 minutes north and 70 degrees 5 minutes west at flight level 250; the turbulence is expected to move eastwards at 20 knots and to ~~weaken~~strengthen in intensity; ~~forecast position~~ at 16.00 UTC, the severe turbulence is forecast to be located south of 20 degrees 20 minutes north and east of 69 degrees 50 minutes west.

** Fictitious locations*

AMC1 MET.TR.250(c) SIGMET ~~messages~~

SEQUENCE NUMBER

(a) The three-character sequence number should be constructed using a single letter identifying the phenomenon, followed by two numeric characters corresponding to the number of SIGMET issued for that phenomenon for the specified flight information region since 00.01 UTC on the day concerned.

(b) The letters to be used as the first character for the SIGMET sequence number to indicate the specified en-route weather phenomena ~~which may affect the safety of aircraft operations~~for which the SIGMET has been issued should be:

[...]

~~AMC2 MET.TR.250(c) SIGMET messages~~

~~**SEQUENCE NUMBER**~~

~~The three-character number to be used in the sequence number should correspond to the number of SIGMET messages, dependent on the phenomena as indicated by the first character, issued for the flight information region since 0001 UTC on the day concerned.~~

AMC1 MET.TR.250(d) SIGMET ~~messages~~

CRITERIA RELATED TO PHENOMENA

Sandstorm/dust storm should be considered:

(a) heavy whenever the visibility is below 200 m and the sky is obscured; and

(b) moderate whenever the visibility is:

(1) below 200 m and the sky is not obscured; or

(2) between 200 and 600 m.

GM1 MET.TR.250(d) SIGMET ~~messages~~

CRITERIA RELATED TO PHENOMENA

[...]

~~AMC1 MET.TR.250(f) SIGMET messages~~

~~**FORM**~~

~~SIGMET messages should be disseminated in a digital form, in addition to the abbreviated plain language.~~

GM1 MET.TR.250(f)(1) SIGMET ~~messages~~

SIGMET — DIGITAL FORM

(a) When SIGMET is disseminated in digital form, this is in addition to the SIGMET code form.

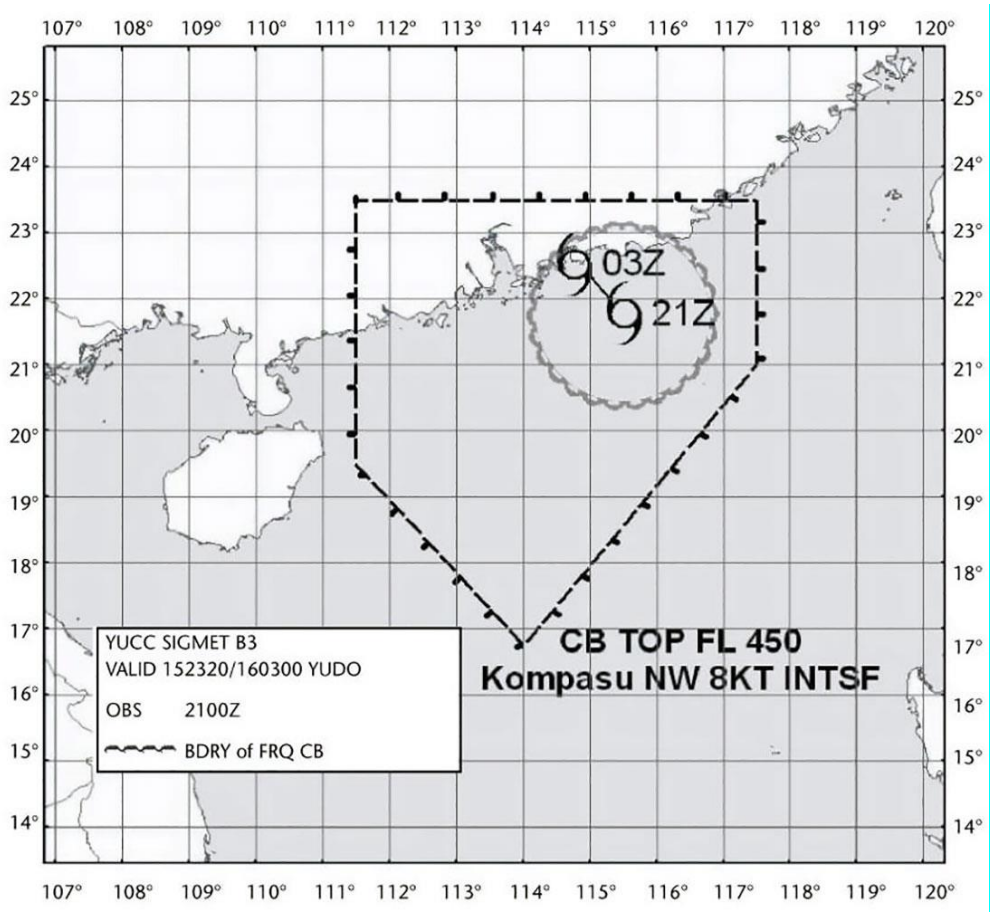
(b) Guidance on the information exchange model, GML, and ~~the~~ metadata profile is provided in ~~the~~ICAO Doc 10003 'Manual on the ~~Digital Exchange of Aeronautical~~ICAO Meteorological Information Exchange Model' ~~(ICAO Doc 10003).~~

AMC1 MET.TR.250(g) SIGMET

FORMAT

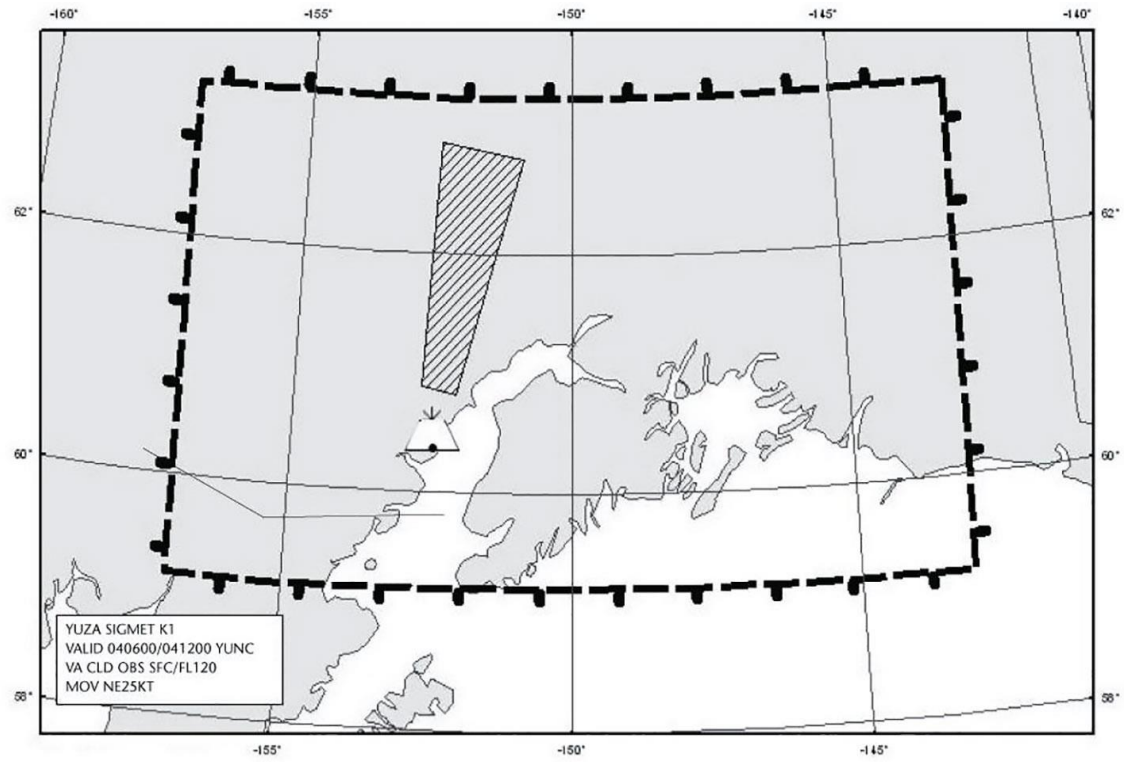
SIGMET, when issued in graphical format, should be as specified below:

(a) **SIGMET FOR TROPICAL CYCLONE — MODEL STC**

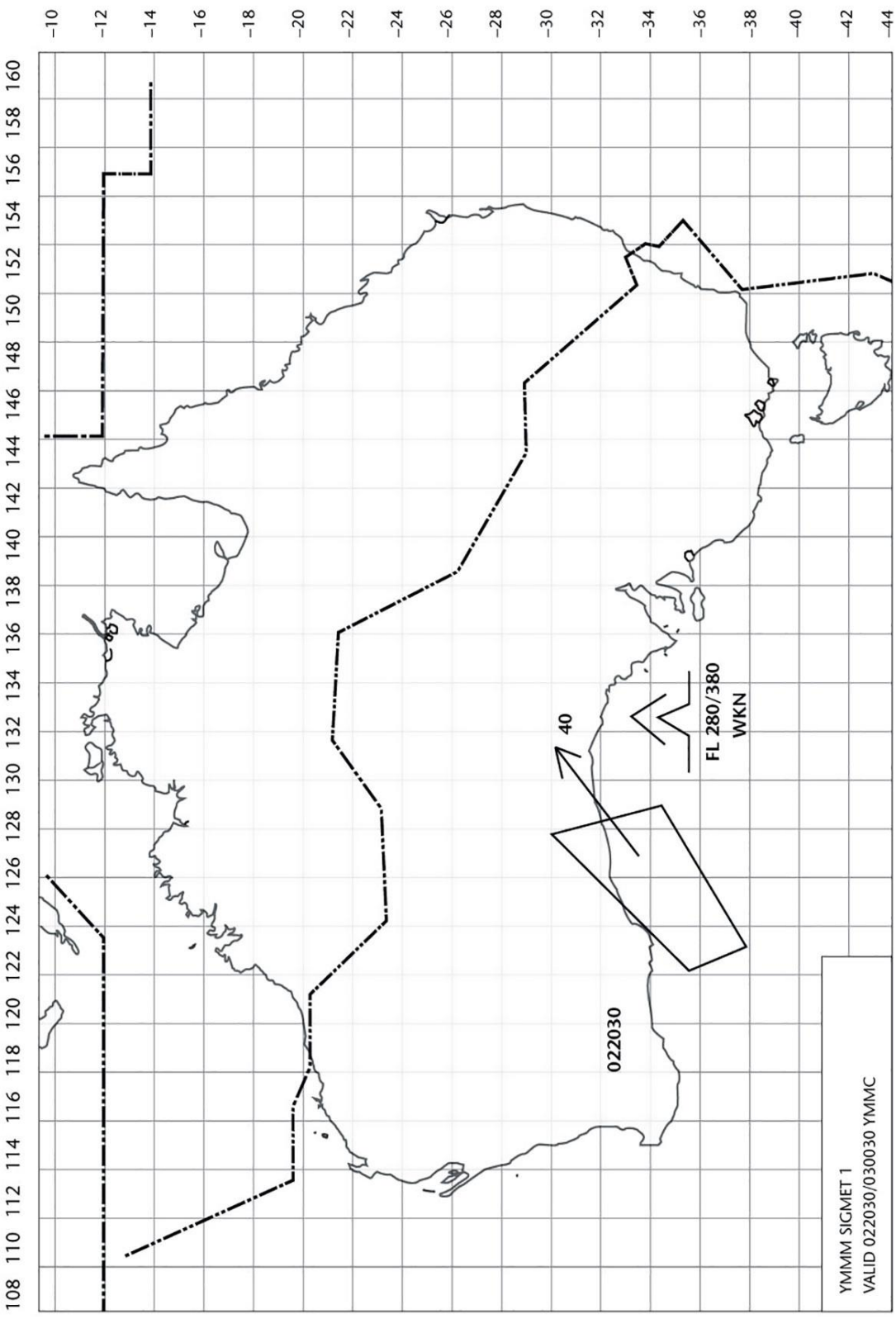


Note: Fictitious FIR.

(b) SIGMET FOR VOLCANIC ASH — MODEL SVA


-160°
-155°
-150°
-145°
-140°
62°
60°
58°
YUZA SIGMET K1
VALID 040600/041200 YUNC
VA CLD OBS SFC/FL120
MOV NE25KT
Fictitious FIR.

(c) SIGMET FOR PHENOMENA OTHER THAN TROPICAL CYCLONE AND VOLCANIC ASH — MODEL SGE



GM1 MET.TR.255(a) AIRMET ~~messages~~

EXAMPLE OF AIRMET ~~MESSAGE~~ FOR MODERATE MOUNTAIN WAVE

YUCC AIRMET 2 VALID 221215/221600 YUDO~~-~~—

YUCC AMSWELL FIR MOD MTW OBS AT 1205Z N48 E010 FL080 STNR NC

Meaning:

The second AIRMET ~~message~~ issued for the AMSWELL* flight information region (identified by YUCC Amswell area control centre) by the Donlon/International* meteorological watch office (YUDO) since 00.01 UTC; the ~~message~~AIRMET is valid from 12.15 UTC to 16.00 UTC on the 22nd of the month; moderate mountain wave was observed at 12.05 UTC at 48 degrees north and 10 degrees east at flight level 080; the mountain wave is expected to remain stationary and not to undergo any changes in intensity.

** Fictitious locations*

GM2 MET.TR.255(a) AIRMET ~~messages~~

EXAMPLE OF AIRMET ~~MESSAGES~~, AND THE CORRESPONDING CANCELLATIONS

~~AIRMET~~	~~Cancellation of AIRMET~~
~~YUDD AIRMET 1 VALID 151520/151800 YUSO – YUDD SHANLON FIR ISOL TS OBS N OF S50 TOP ABV FL100 STNR WKN~~	~~YUDD AIRMET 2 VALID 151650/151800 YUSO – YUDD SHANLON FIR CNL AIRMET 1 151520/151800~~

AIRMET

YUDD AIRMET 1 VALID 151520/151800 YUSO–

YUDD SHANLON FIR ISOL TS OBS N OF S50 TOP ABV FL100 STNR WKN

Cancellation of AIRMET

YUDD AIRMET 2 VALID 151650/151800 YUSO–

YUDD SHANLON FIR CNL AIRMET 1 151520/151800

GM1 MET.TR.255(b) AIRMET ~~messages~~

FIR

[...]

GM1 MET.TR.255(c) AIRMET ~~messages~~

CRITERIA RELATED TO PHENOMENA

[...]

AMC1 MET.TR.255(d) AIRMET ~~messages~~

CRITERIA RELATED TO PHENOMENA

[...]

GM1 MET.TR.255(e) AIRMET

AIRMET — DIGITAL FORM

(a) When AIRMET is disseminated in digital form, this is in addition to the AIRMET code form.

(b) Guidance on the information exchange model, GML, and metadata profile is provided in ICAO Doc 10003 'Manual on the ICAO Meteorological Information Exchange Model'.

AMC1 MET.TR.260 Area forecasts for low-level flights

AMENDMENT OF LOW-LEVEL FORECASTS

(...)

(c) The graphical part of a~~n~~ SIGWX chart should depict the weather situation at the beginning of the validity period. Significant changes of initial weather parameters should be depicted together with time intervals determining the duration of expected changes.

GM1 MET.TR.265(a) Volcanic ash advisory centres (VAACs) responsibilities

EXAMPLES OF ADVISORY ~~MESSAGE~~ FOR VOLCANIC ASH

VA ADVISORY DTG: 20160614/0925Z VAAC: LONDON

VOLCANO: HEKLA 372070

PSN: N6359 W01942

AREA: ICELAND

SUMMIT ELEV: 1491M

ADVISORY NR: 2016/002

INFO SOURCE: ICELAND MET OFFICE

AVIATION COLOUR CODE: RED

ERUPTION DETAILS: ERUPTION STARTED AT 0600Z ONGOING, PLUME TO 14KM

OBS VA DTG: 14/0900Z

OBS VA CLD: SFC/FL200 N6421 W02030 - N6421 W01900 - N6315 W01856 –

N6303 W02025 - N6421 W02030 FL200/350 N6423 7W02021 - N6423

W01854 - N6309 W01856 - N6309 W02022 - N6423 W02021 FL350/550

N6422 W02023 - N6422 W01856 - N6304 W01854 - N6306 W02023 - N6422 W02023

FCST VA CLD +6HR: 14/1500Z SFC/FL200 N6423 W01822 - N6138 W01826 - N6135 W02205 - N6423 W02213 - N6423 W01822 FL200/350 N6425 W01814 - N6051 W01825 - N6050 W02348 - N6424 W02055 - N6425 W01814 FL350/550 N6419 W01737 - N6109 W01753 - N6116 W02234 - N6423 W02108 - N6419 W01737

FCST VA CLD +12HR: 14/2100Z SFC/FL200 N6449 W02121 - N6441 W01717 - N5921 W01659 - N5922 W02419 - N6449 W02121 FL200/350 N6441 W02002 - N6227 W01556 - N5831 W01927 - N5833 W02629 - N6441 W02002 FL350/550 N6448 W01941 - N6117 W01507 - N5846 W02024 - N5910 W02520 - N6448 W01941

FCST VA CLD +18HR: 15/0300Z SFC/FL200 N6554 W02018 - N6053 W01348 - N5542 W02046 - N5606 W02724 - N6554 W02018 FL200/350 N6446 W01949 - N6039 W01415 - N5535 W02019 - N5538 W02851 - N6446 W01949 FL350/550 N6500 W01928 - N5918 W01407 - N5516 W02235 - N5927 W02532 - N6500 W01928

RMK: T+0 CONFIDENCE HIGH, PLUME HEIGHT OBTAINED BY MOBILE RADAR

NXT ADVISORY: WILL BE ISSUED BY 20160614/1200Z

VA ADVISORY

DTG: 20171010/1200Z

VAAC: TOULOUSE

VOLCANO: CAMPI FLEGREI 211010

PSN: N4049 E01408

AREA: ITALY

SUMMIT ELEV: 458M

ADVISORY NR: 2017/03

INFO SOURCE: INGV

AVIATION COLOUR CODE: RED

ERUPTION DETAILS: THE VOLCANO ACTIVITY CONTINUES

OBS VA DTG: 10/0600Z

OBS VA CLD: SFC/FL100 N4135 E01325 - N4155 E01410 - N4155 E01610 - N4000 E01655 - N4005 E01335 - N4135 E01325 FL100/390 N4130 E01335 - N4150 E01410 - N4115 E01645 - N3940 E01925 - N3715 E01800 - N3745 E01630 - N3910 E01500 - N4000 E01335 - N4130 E01335 MOV SE 20KT

FCST VA CLD +6HR: 10/1800Z SFC/FL100 N4150 E01255 - N4220 E01535 - N4115 E01845 - N3940 E01955 - N3820 E01915 - N4000 E01235 - N4150 E01255 FL100/390 N4135 E01310 - N4120 E02050 - N3750 E02335 - N3520 E02215 - N3525 E01935 - N3840 E01640 - N3945 E01255 - N4135 E01310

FCST VA CLD +12HR: 11/0000Z SFC/FL100 N4150 E01210 - N4215 E01530 - N4130 E01935 - N3925 E02200 - N3700 E02125 - N3830 E01650 - N3920 E01220 - N4150 E01210 FL100/390 N4130 E01310 - N4140 E02020 - N4030 E02400 - N3645 E02555 - N3455 E02350 - N3810 E01820 - N3935 E01255 - N4130 E01310

FCST VA CLD +18HR: 11/0600Z SFC/FL100 N4125 E01255 - N4120 E01820 - N4000 E02405 - N3530 E02430 - N3540 E02220 - N3725 E01845 - N3840 E01320 - N4115 E01255 - N4125 E01255 FL100/390 N4135 E01300 - N4145 E02010 - N4115 E02650 - N3900 E03105 - N3250 E02805 - N3720 E01830 - N3845 E01340 - N4135 E01300

RMK: VA CLD EVIDENT ON SATELLITE IMAGERY

NXT ADVISORY: NO FURTHER ADVISORY

~~FVFE01 RJTD 230130~~
~~VA ADVISORY~~

~~DTG:~~	~~20080923/0130Z~~
~~VAAC:~~	~~TOKYO~~
~~VOLCANO:~~	~~KARYMSKY 1000-13~~
~~PSN:~~	~~N5403 E15927~~
~~AREA:~~	~~RUSSIA~~
~~SUMMIT ELEV:~~	~~1536M~~
~~ADVISORY NR:~~	~~2008/4~~
~~INFO SOURCE:~~	~~MTSAT-1R KVERT KEMSD~~
~~AVIATION COLOUR CODE:~~	~~RED~~
~~ERUPTION DETAILS:~~	~~ERUPTION AT 20080923/0000Z FL300 REPORTED~~
~~OBS VA DTG:~~	~~23/0100Z~~
~~OBS VA CLD:~~	~~FL250/300 N5400 E15930 — N5400 E16100 — N5300 E15945 MOV SE 20KT SFC/FL200 N5130 E16130 — N5130 E16230 — N5230 E16230 — N5230 E16130 MOV SE 15KT~~
~~FCST VA CLD +6 HR:~~	~~23/0700Z FL250/350 N5130 E16030 — N5130 E16230 — N5330 E16230 — N5330 E16030 SFC/FL180 N4830 E16330 — N4830 E16630 — N5130 E16630 — N5130 E16330~~

~~FCST VA CLD +12 HR:~~	~~23/1300Z SFC/FL270 N4830 E16130 — N4830 E16600 — N5300 E16600 — N5300 E16130~~
~~FCST VA CLD +18 HR:~~	~~23/1900Z NO VA EXP~~
~~RMK:~~	~~LATEST REP FM KVERT (0120Z) INDICATES ERUPTION HAS CEASED. TWO DISPERSING VA CLD ARE EVIDENT ON SATELLITE IMAGERY~~
~~NXT ADVISORY:~~	~~20080923/0730Z~~

GM1 MET.TR.265(b) Volcanic ash advisory centre responsibilities

VOLCANIC ASH ADVISORY — DIGITAL FORM

(a) When a volcanic ash advisory is disseminated in digital form, this is in addition to the volcanic ash advisory code form.

(b) Guidance on the information exchange model, GML, and metadata profile is provided in ICAO Doc 10003 'Manual on the ICAO Meteorological Information Exchange Model'.

~~GM1 MET.TR.265(b)(2) Volcanic ash advisory centres (VAACs) responsibilities~~

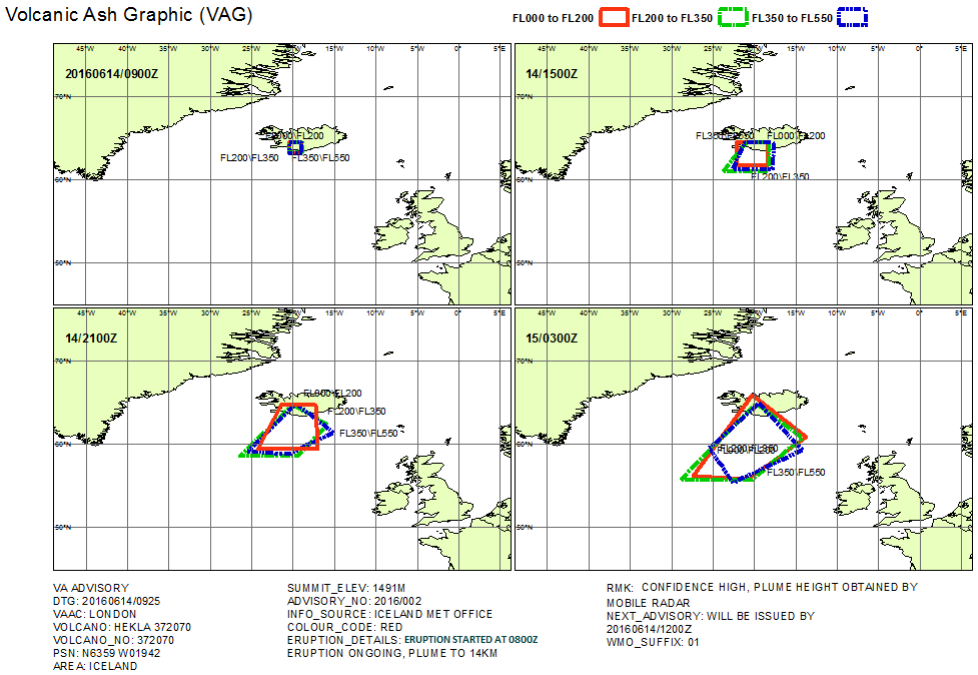
~~**BUFR CODE**~~

~~The BUFR code form is contained in the WMO Publication No 306, Manual on Codes, Volume I.2, Part B — Binary Codes.~~

AMC1 MET.TR.265(c) Volcanic ash advisory centre responsibilities

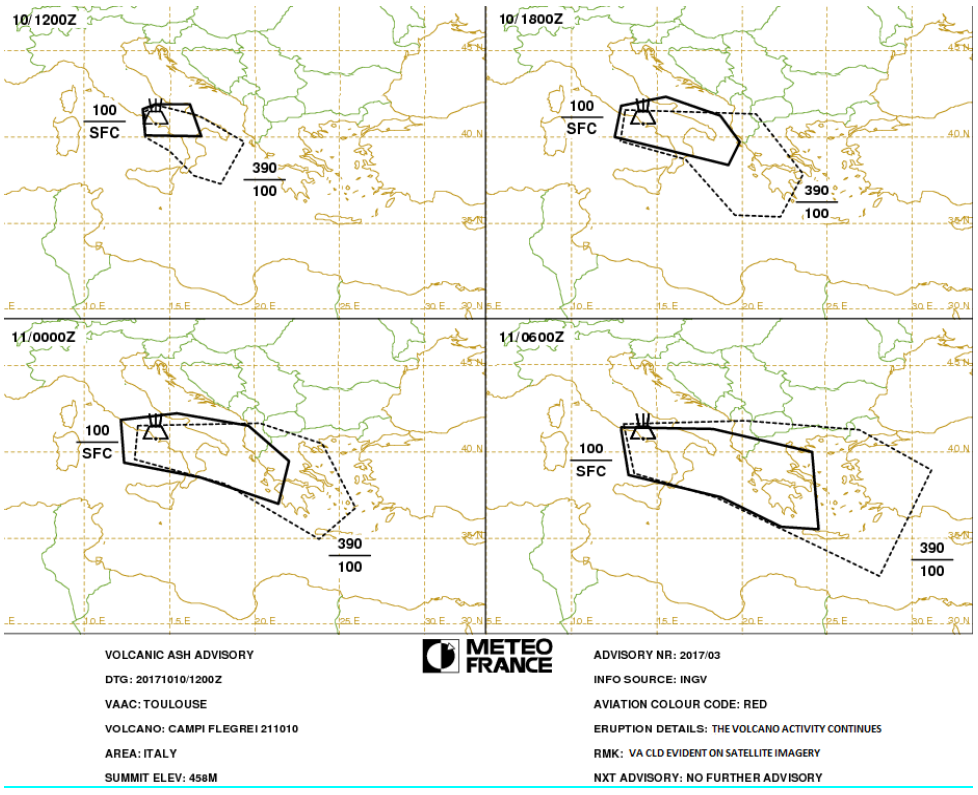
VOLCANIC ASH ADVISORY INFORMATION — GRAPHICAL FORMAT

The volcanic ash advisory information listed in Appendix 6 to Annex V (Part-MET) to Regulation (EU) 2017/373, when prepared in graphical format, should be as specified below.



Example of volcanic ash advisory in graphical format from the London VAAC.

Note: The example above is fictional.



Example of volcanic ash advisory in graphical format from the Toulouse VAAC.

Note: The example above is fictional.

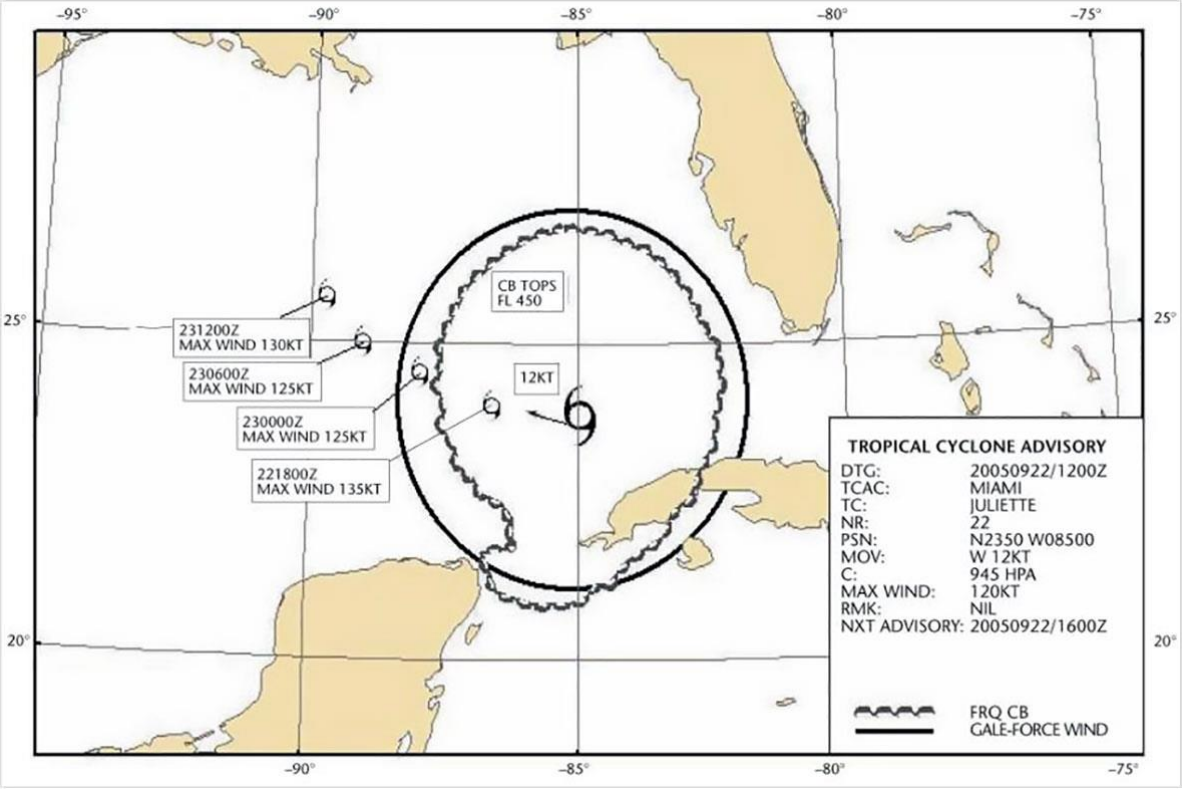
~~AMC1 MET.TR.270(b) Tropical cyclone advisory centres (TCACs) responsibilities~~

~~FORMAT OF ADVISORY INFORMATION ON TROPICAL CYCLONES~~

~~The tropical cyclone advisory information listed in Table 8 of Appendix 1, when prepared in graphical format, should be as specified below and should be issued using:~~

~~(a) the portable network graphics (PNG) format; or~~

~~(b) the BUFR code form, when exchanged in binary format.~~



GM1 MET.TR.270(b) Tropical cyclone advisory centre~~s (TCACs)~~ responsibilities

~~EXAMPLE FOR~~ ADVISORY FOR TROPICAL CYCLONES — EXAMPLE ~~CODE FOR ADVISORY INFORMATION ON TROPICAL CYCLONES~~

~~The BUFR code form is contained in the WMO Publication No 306, Manual on Codes, Volume I.2, Part B — Binary Codes.~~

TC ADVISORY

DTG:20170214/0600z

TCAC:REUNION

TC:DINEO

NR:4

PSN:S2220 E03849

MOV:SW 05KT

C:985HPA

MAX WIND:50KT

FCST PSN +06HR:14/1200Z S2236 E03831

FCST MAX WIND +06HR:55KT

FCST PSN +12HR:14/1800Z S2251 E03812

FCST MAX WIND +12HR:60KT

FCST PSN +18HR:15/0000Z S2304 E03748

FCST MAX WIND +18HR:70KT

FCST PSN +24HR:15/0600Z S2316 E03712

FCST MAX WIND +24HR:80KT

RMK:NIL

NXT MSG:20170214/1200Z

~~GM2 MET.TR.270(b) Tropical cyclone advisory centres (TCACs) responsibilities~~

~~**EXAMPLE FOR ADVISORY MESSAGE FOR TROPICAL CYCLONES**~~

~~TC ADVISORY~~	
~~DTG:~~	~~20040925/1600Z~~
~~TCAC:~~	~~YUFO~~
~~TC:~~	~~GLORIA~~
~~NR:~~	~~01~~
~~PSN:~~	~~N2706 W07306~~
~~MOV:~~	~~NW 12KT~~
~~C:~~	~~965HPA~~
~~MAX WIND:~~	~~73KT~~
~~FCST PSN +6 HR:~~	~~25/2200Z N2748 W07350~~
~~FCST MAX WIND +6 HR:~~	~~73KT~~
~~FCST PSN +12 HR:~~	~~26/0400Z N2830 W07430~~
~~FCST MAX WIND +12 HR:~~	~~73KT~~
~~FCST PSN +18 HR:~~	~~26/1000Z N2852 W07500~~
~~FCST MAX WIND +18 HR:~~	~~70KT~~
~~FCST PSN +24 HR:~~	~~26/1600Z N2912 W07530~~
~~FCST MAX WIND +24 HR:~~	~~60KT~~
~~RMK:~~	~~NIL~~
~~NXT MSG:~~	~~20040925/2000Z~~

GM1 MET.TR.270(c) Tropical cyclone advisory centre responsibilities

TROPICAL CYCLONE ADVISORY — DIGITAL FORM

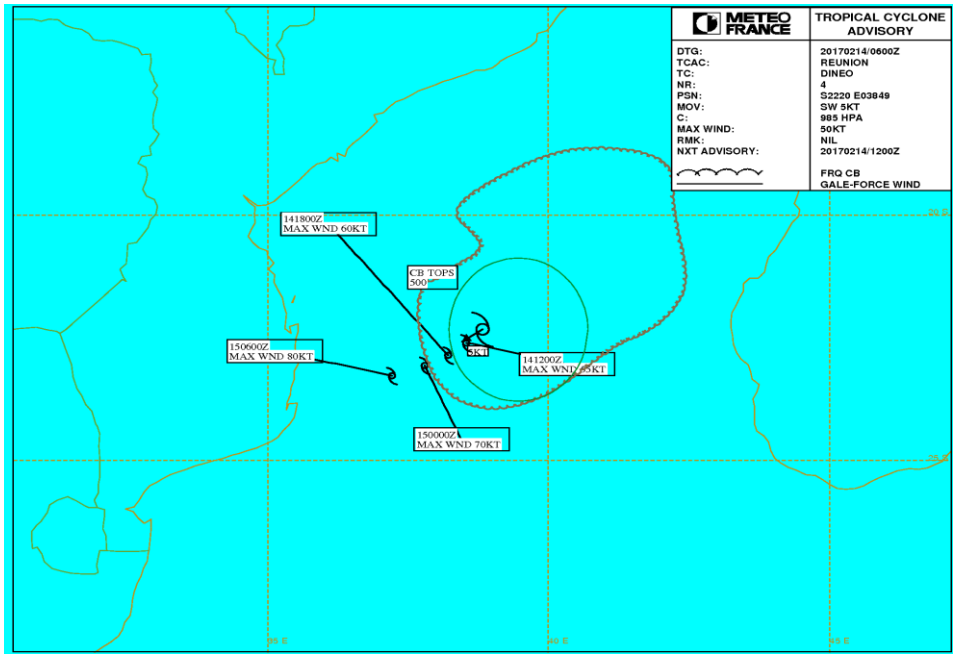
(a) When a tropical cyclone advisory is disseminated in digital form, this is in addition to the tropical cyclone advisory code form.

(b) Guidance on the information exchange model, GML, and metadata profile is provided in ICAO Doc 10003 'Manual on the ICAO Meteorological Information Exchange Model'.

AMC1 MET.TR.270(d) Tropical cyclone advisory centre responsibilities

TROPICAL CYCLONE ADVISORY INFORMATION — GRAPHICAL FORMAT

The tropical cyclone advisory information listed in Appendix 7 to Annex V (Part-MET) to Regulation (EU) 2017/373, when prepared in graphical format, should be as specified below.



Example of tropical cyclone advisory in graphical format from the La Réunion TCAC.

Note: The example above is based on a real event.