AFI SIGMET Workshop 2021

AFI Regional SIGMET Tests Procedures

Virtual, 9 December 2021

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SIGMET

SIGMET (Significant Meteorological Information) provides information concerning the occurrence or expected occurrence of weather phenomena of a hazardous nature and which could affect the safety of aircraft in flight.	SIGMETs are produced in text format and are also displayed graphically (see Appendix 1 to Annex 3).	SIGMET is transmitted to aircraft in flight either by ATC or by VOLMET or D-VOLMET, and therefore, SIGMET messages should be kept concise.	To this end, SIGMET information is prepared using approved ICAO abbreviations, a limited number of non-abbreviated words and, numerical values of a self-explanatory nature.	Some SIGMET are generated using information from special air-reports (received by voice communications or data link (downlink)).

ICAO guidance on SIGMET for AFI Region

Reviewed by APIRG IIM Sub Group MET project 1

Adopted by APIRG 24 meeting in November 2021

Outlines responsibilities of concerned stakeholders (MWO, ATS units, pilots) and the necessary coordination amongst them

Lays out and harmonizes procedures for the preparation, handling and dissemination of SIGMET

Provides guidance for the preparation and the run of SIGMET test/exercise

INTERNATIONAL CIVIL AVIATION ORGANIZATION

AFI REGIONAL SIGMET GUIDE

ELEVENTH EDITION — NOVEMBER 2021

Coordination between MWOs and ATS units

- To achieve the best service to aviation and as part of the collaborative decision-making process, close coordination between the MWO and the ATS units is required. This is of particular importance for the avoidance of hazardous weather.

- Close coordination shall be maintained between the meteorological watch office and the associated Area Control Centre/Flight Information Centre to ensure that information on volcanic ash included in SIGMET and NOTAM messages is consistent.

- A Letter of Agreement between the ATS authority and the meteorological authority is also recommended (as per ICAO Annex 3, 4.2) to outline the responsibilities and coordination processes between the MWOs and ATS units.

Coordination between MWOs, VAACs, TCACs and state volcano observatories

Close coordination should be established between the MWO and its responsible VAAC and/or TCAC.

Information regarding the VAACs and TCACs areas of responsibility and lists of MWOs and ACC/FICs to which advisories are to be sent is provided in the regional ANP FASID Tables MET 3A and MET 3B.

State volcano observatory provides information on significant pre-eruption volcanic activity, volcanic eruptions or the presence of volcanic ash clouds in the form of a Volcano Observatory Notification for Aviation (VONA) to their associated ACCs/FICs, MWO and VAAC.

Guidance including responsibilities for the issuance of the VONA is given in the Handbook on the International Airways Volcano Watch (IAVW) – Operational Procedures and Contact List (Doc 9766); the format of the VONA is given in Appendix E of the Doc 9766.

SIGMET structure

A SIGMET message consists of :

SIGMET main body

First line

WMO Abbreviated Heading Line (WMO AHL)

all SIGMETs are preceded by an appropriate WMO AHL;

containing location indicators of the respective ATS unit and MWO, sequential number and period of validity;

containing information concerning the observed or forecast phenomenon for which the SIGMET is issued together with its expected evolution within the period of validity.

SIGMET format

WMO header :   T1T2A1A2ii CCCC YYGGgg [BBB]

T1T2: Data type designator :   WS – for SIGMET phenomena   other than volcanic ash cloud or tropical cyclone
WC – for SIGMET for tropical cyclone
WV – for SIGMET for volcanic ash

A1A2: Country or Territory designators: Assigned   according to Table C1, Part II of Manual on the Global Telecommunication System, Vol I – Global Aspects (WMO No. 386)

ii: Bulletin number: Assigned on national level according to p 2.3.2.2, Part II of Manual WMO No. 386 Vol I

(see also AMBEX Handbook , Appendix E-1)

SIGMET format

CCCC: ICAO location indicator of the communication Centre disseminating the message (this may be the same as the MWO location indicator);

YYGGgg: is the date/time group; where **YY** is the day of the month and **GGgg** is the time of transmission of the SIGMET in hours and minutes UTC (normally this time is assigned by the disseminating (AFTN) Centre.

BBB: Optional group indicating an amended, corrected or delayed bulletin.

Examples of WMO AHL

- WSSN31 GOBD 121200

- WVNR31 DRRN 010230

- WCMZ20 FQMA 090001

First line: CCCC SIGMET [n][n]n VALID YYGGgg/YYGGgg CCCC-

CCCC: ICAO location indicator of the ATS unit serving the FIR or CTA to which the SIGMET refers

SIGMET: Message identifier

[n][n]n: Daily sequence number. The sequence number should consist of up to three alphanumeric characters and may be a combination of letters and numbers, such as:

- **1**, **2**, …

- **01**, **02**, …

-    **A01**, **A02**, …

The sequence number is the sequence number for all SIGMET messages types (WS, WV and WC) for one flight information region since 0001 UTC on the day concerned.

YYGGgg/YYGGgg: Validity period of the SIGMET given by date/time group of the beginning and date/time group of the end of the period.

- The period of validity of a WS SIGMET should not be more than 4 hours;

- The period of validity of a WC or WV SIGMET should not be more than 6 hours;

- In case of a SIGMET for an observed phenomenon, the filing time (date/time group in the WMO header) should be the same or very close to the time in the date/time group indicating the start of the SIGMET validity period.

- When the SIGMET is issued for a forecast phenomenon:

  - the beginning of validity period should be the time of the expected commencement (occurrence) of the phenomenon in the MWO area of responsibility;

  - the time of issuance of a WS SIGMET should not be more than 4 hours before the start of validity period (i.e., expected time of occurrence of the phenomenon); and for WC (tropical cyclone) and WV (volcanic ash) SIGMET the lead time should not be more than 12 hours.

CCCC : ICAO location indicator of the issuing MWO

- : Mandatory **hyphen** to separate the preamble from the text.

Example of first 2 lines of SIGMET

- First two lines of a SIGMET for an observed phenomenon:

  WSSN31 GOBD 241120
  GOOO SIGMET 3 VALID 241120/241500 GOBD

- First two lines of a SIGMET for a forecast phenomenon (expected time of occurrence 1530)

  WVZW31 FHVA 310330
  FVHA SIGMET A02 VALID 311530/312130 FVHA

Structure of the meteorological part of SIGMET

The meteorological part of a SIGMET for the phenomena consists of elements as shown in the table below :

1	2	3	4	5	6
Name of the FIR/UIR or CTA (M)	Test or Exercise (C)	Phenomenon (M)	Observed or forecast phenomenon (M)	Location (C)	Level (C)
7	**8**	**9**	**10**	**11**	**12**
Movement *or* expected movement (C)	Changes in intensity (C)	Forecast time (C)	TC Forecast position (C)	Forecast position (C)	Repetition of elements (C)

M = inclusion mandatory, part of every message. C = inclusion conditional, include whenever applicable

Name of the FIR/UIR or CTA

- **CCCC <name> FIR[/UIR]   or   CCCC <name> CTA**

The ICAO location indicator and the name of the FIR/CTA are given followed by the appropriate abbreviation: FIR, FIR/UIR or CTA. The name may consist of up to 10 characters.

Example: HKNA NAIROBI FIR

TEST or EXERCISE

- This field will only be used if the SIGMET message is intended to be used for TEST or EXERCISE purposes. The omission of this field indicates that the SIGMET is intended for operational decision making.

- When used, the SIGMET message may either end immediately after the word TEST or EXERCISE. Alternatively, depending on the nature of the TEST and under most EXERCISE circumstances the SIGMET message may contain realistic, although not necessarily valid content.

Phenomenon

The phenomenon description consists of a qualifier and a phenomenon abbreviation. SIGMET should be issued only for the following phenomena observed and forecast to persist for more than a transitory period :

- thunderstorms – if they are OBSC, EMBD, FRQ or SQL with or without hail (GR);

- turbulence – only SEV

- icing – only SEV with or without FZRA

- mountain waves – only SEV

- dust storm – only HVY

- sand storm – only HVY

- radioactive cloud – RDOACT CLD

(see SIGMET guide, 3.2)

- For volcanic ash SIGMET (WV) only, the following conventions should be used in the case when the eruption is from a previously unknown or un-named volcano.

  VA ERUPTION PSN Nnn[nn] or Snn[nn] Ennn[nn] or Wnnn[nn] VA CLD

- In the case when the eruption is from a known and named volcano. The name may be up to 10 alphanumeric characters.

  VA ERUPTION MT nnnnnnnnnn PSN Nnn[nn] or Snn[nn] Ennn[nn] or Wnnn[nn] VA CLD

- In the case when a region of volcanic ash cloud is known to exist, but the precise origin of its source is unknown (the ash cloud may be of large horizontal extent, and obscuring the precise vent from which it emanates, and is otherwise in an area sparse of observation to identify the source).

  VA CLD

  Example: VA ERUPTION MT CAMEROON PSN N0412 E00910 VA CLD

- For tropical cyclone SIGMET (WC) only, the following conventions should be used.

- In the case when the tropical cyclone is known and named. The name may be up to 10 alphanumeric characters.

  TC nnnnnnnnnn PSN Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] CB

- In the case when the tropical cyclone is not yet named.

  TC NN PSN Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn] CB

- The appropriate abbreviations and combinations, and their meaning are given in the SIGMET guide (see 3.2).

  Example: TC CHARLIE PSN S1867 E04151 CB

Observed or forecast phenomenon

- OBS or   OBS AT GGggZ

or

- FCST or FCST AT GGggZ

If the phenomenon   is observed,   GGggZ is the time of the observation in hours and minutes UTC.

If the exact time of the observation is not known the time is not included.

When the phenomenon is based on a forecast without a reported observation, the time given for GGggZ represents the time of commencement of the validity period.

Examples:

OBS, OBS AT 0140Z, FCST, FCST AT 0200Z

Location of the phenomenon

- Given with reference to geographical coordinates (latitude and longitude).

- Latitude and longitude may be reported in degrees, or in degrees and minutes.

- When reporting in degrees the format will be Nnn or Snn for latitude, and Ennn or Wnnn for longitude.

- When reporting in degrees and minutes the format will be Nnnnn or Snnnn for latitude, and Ennnnn or Wnnnnn for longitude.

- MWOs should try to be as specific as possible in reporting the location of the phenomenon and, at the same time, to avoid overwhelming the SIGMET with too many coordinates, which may be difficult to process or follow when transmitted by voice radio.

- Many ways to describe the location of the phenomenon

- **An area of the FIR defined by a polygon**.
- Minimum 4 coordinates, and not normally more than 7 coordinates. This is the format preferred operationally by users.
- The points of a polygon should be provided in a clockwise order, and the end point should be a repeat of the start point. Symbolically this is indicated as:

WI <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]> -
<Nnn[nn]> or <Snn[nn]> <Wnnn[nn]> or <Ennn[nn]> -
<Nnn[nn]> or <Snn[nn]> <Wnnn[nn]> or <Ennn[nn]>

Examples:

WI N6030 E02550 – N6055 E02500 – N6050 E02630 –N6030 E02550

WI N60 E025 – N62 E027 - N58 E030 - N59 E026 - N60 E025
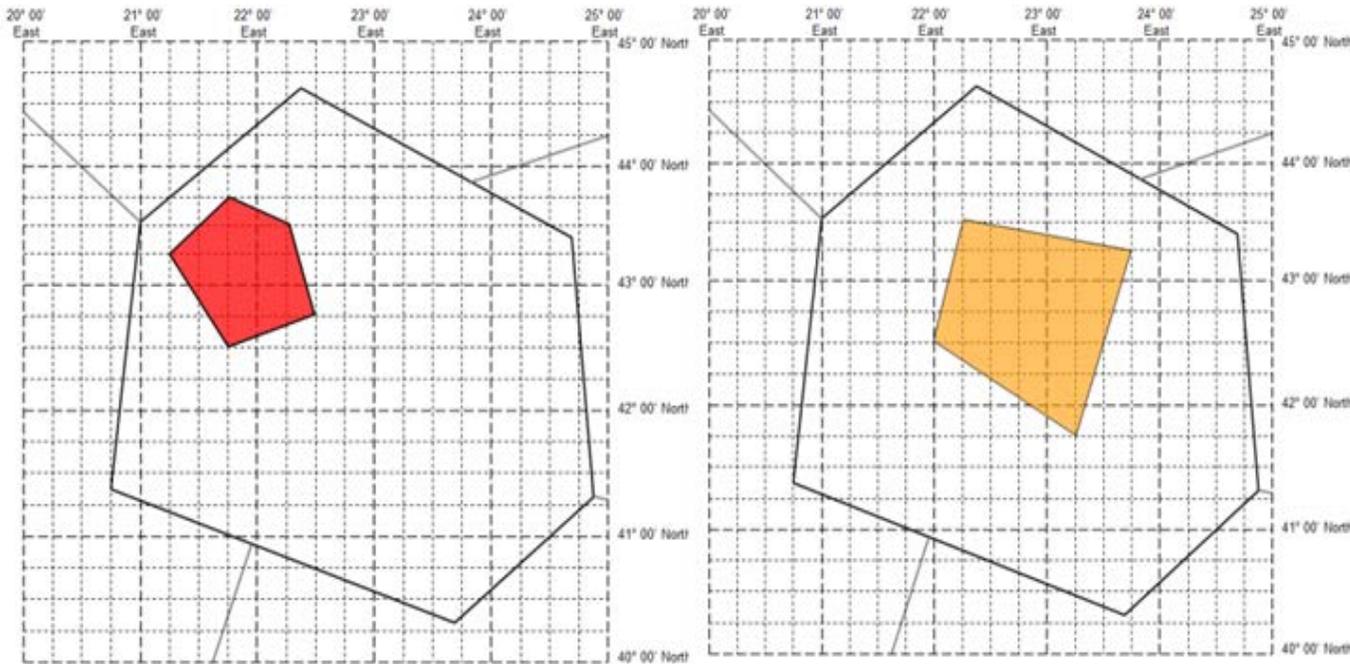
YUDD SIGMET 2 VALID 101200/101600 YUSO–YUDD SHANLON FIR/UIR SEV TURB FCST WI N4230 E02145 – N4315 E02115 –N4345 E02145 – N4330 E02215 – N4245 E02230 - N4230 E02145 FL250/370 INTSF FCST AT 1600Z WI N4145 E02315 – N4230 E02200 – N4330 E02215 – N4315 E02345 - N4145 E02315=

- **In a sector of the FIR defined relative to a specified line or single series of up to three connected lines, with start and end points on the FIR boundary (or so close to the FIR boundary so as to leave no doubt that the intent is for the line to connect to the FIR boundary at that point).**

- Symbolically this is indicated as:

  <N OF> or <NE OF> or <E OF> or <SE OF> or <S OF> or <SW OF> or <W OF> or <NW OF> LINE <Nnn[nn]> or <Snn[nn]> <Wnnn[nn]> or <Ennn[nn]> - <Nnn[nn]> or <Snn[nn]> <Wnnn[nn]> or <Ennn[nn]>

  Example:

  NE OF LINE N2500 W08700 – N2000 W08300

  W OF LINE N20 E042 – N35 E045
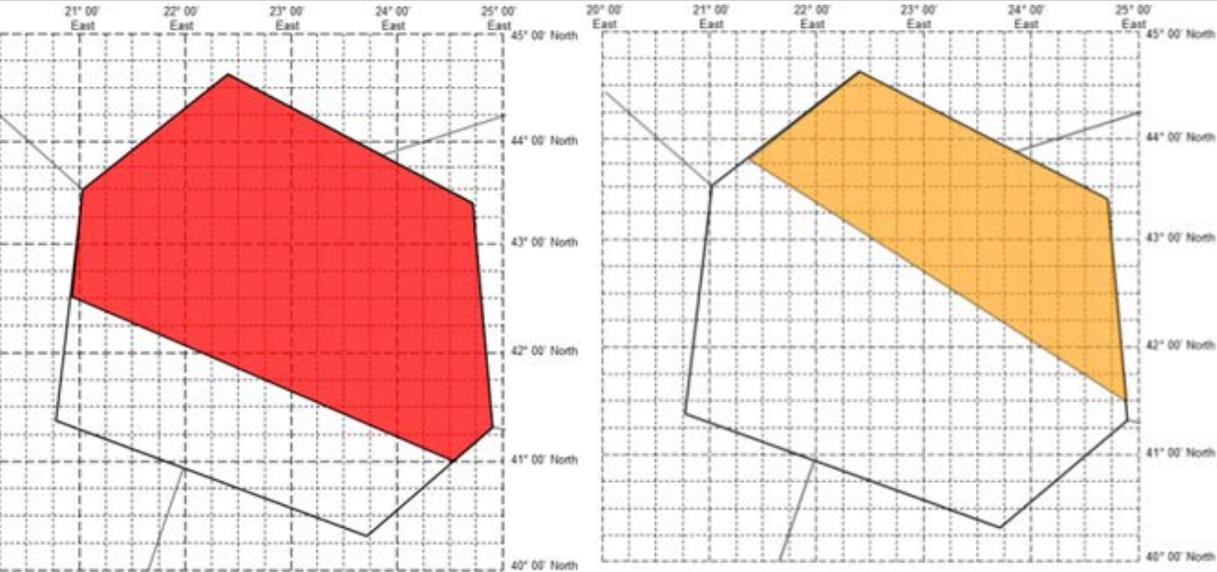
YUDD SIGMET 2 VALID 101200/101600 YUSO–
YUDD SHANLON FIR SEV TURB FCST NE OF LINE
N4230 E02052 – N4100 E02430 FL250/370 WKN FCST
AT 1600Z NE OF LINE N4346 E02122 – N4130 E02452=
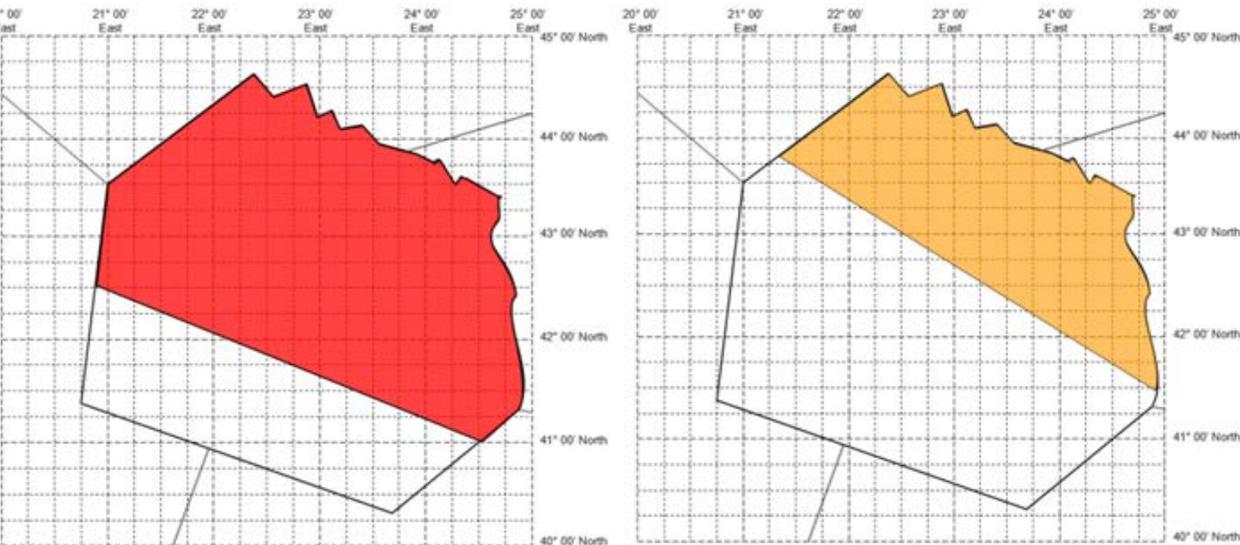
YUDD SIGMET 2 VALID 101200/101600 YUSO–
YUDD SHANLON FIR SEV TURB FCST NE OF LINE
N4230 E02052 – N4100 E02430 FL250/370 WKN FCST
AT 1600Z NE OF LINE N4346 E02122 – N4130
E02457=
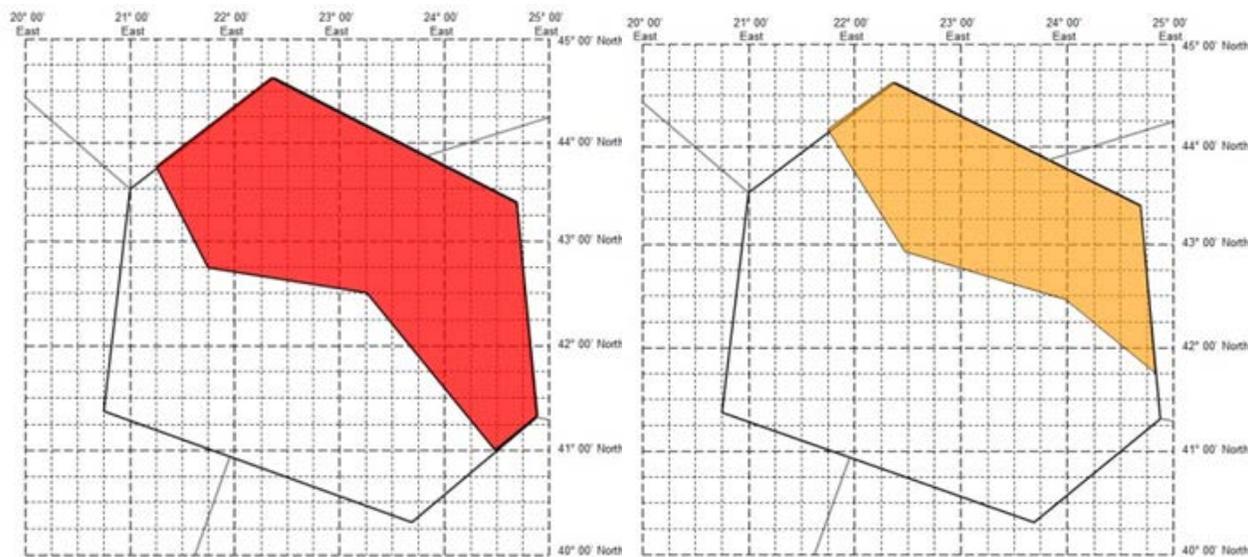
YUDD SIGMET 2 VALID 101200/101600 YUSO–
YUDD SHANLON FIR SEV TURB FCST NE OF LINE
N4345 E02115 – N4245 E02145 - N4230 E2315 – N4100
E2430 FL250/370 WKN FCST AT 1600Z NE OF LINE
N4411 E02145 – N4255 E02228 - N4228 E02400 – N4130
E02450

- **In a sector of the FIR defined as being between two lines of latitude, or between two lines of longitude**

- Symbolically this is indicated as:

 <N OF> or <S OF> <Nnn[nn]> or <Snn[nn]> AND <N OF> or <S OF> <Nnn[nn]> or <Snn[nn]><W OF> or <E OF> <Wnnn[nn]> or <Ennn[nn]> AND <W OF> or <E OF> <Wnnn[nn]> or <Ennn[nn]>

  Chosen so that the affected area is BETWEEN lines of latitude or BETWEEN lines of Longitude

  Examples :

  N OF N1200 AND S OF N2530

  W OF W060 AND E OF W082
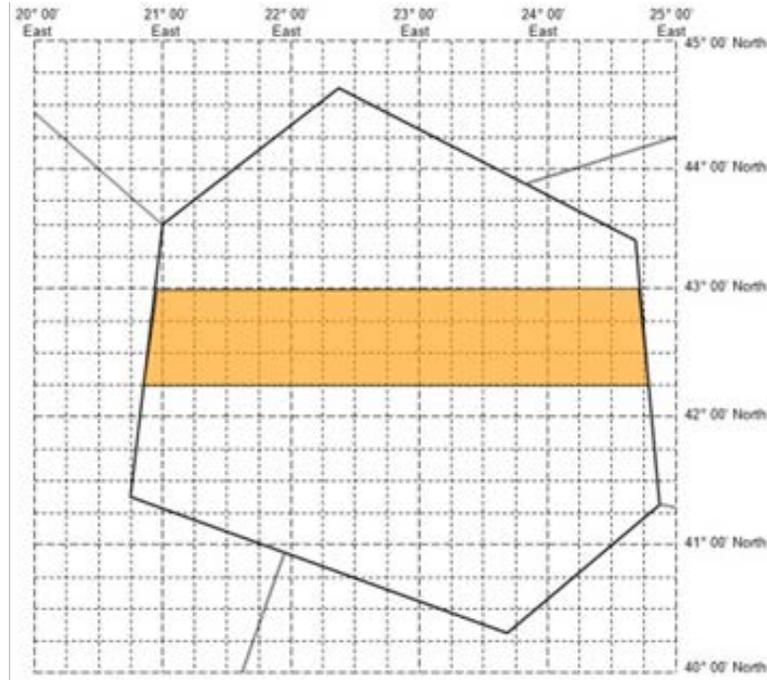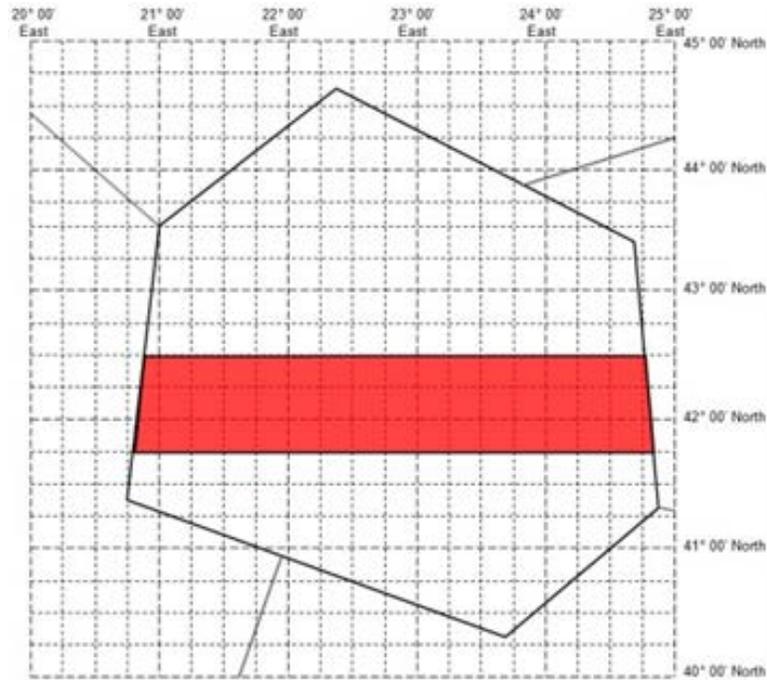
YUDD SIGMET 2 VALID 101200/101600 YUSO–

YUDD SHANLON FIR SEV TURB FCST N OF N4145 AND S OF N4230 FL250/370

WKN FCST AT 1600Z N OF N4215 AND S OF N4300=

(similar constructions can be used for specifying areas between lines of longitude)

- **In a sector of the FIR defined as being between two specified lines, or between two series of up to three connected lines, each with start and endpoints on the FIR boundary (or start and endpoints so close to the FIR boundary so as to leave no doubt that the intent is for the line to connect to the FIR boundary at those points).**

- Symbolically this is indicated as:

  <N OF> or <NE OF> or <E OF> or <SE OF> or <S OF> or <SW OF> or <W OF> or <NW OF> LINE <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> or <NE OF> or <E OF> or <SE OF> or <S OF> or <SW OF> or <W OF> or <NW OF> LINE <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]>]

  Examples:

  NE OF LINE N2500 W08700 – N2000 W08300 AND SW OF LINE N2800 W08500 – N2200 W08200

  W OF LINE N20 E042 – N35 E045 AND E OF LINE N20 E039 –N35 E043
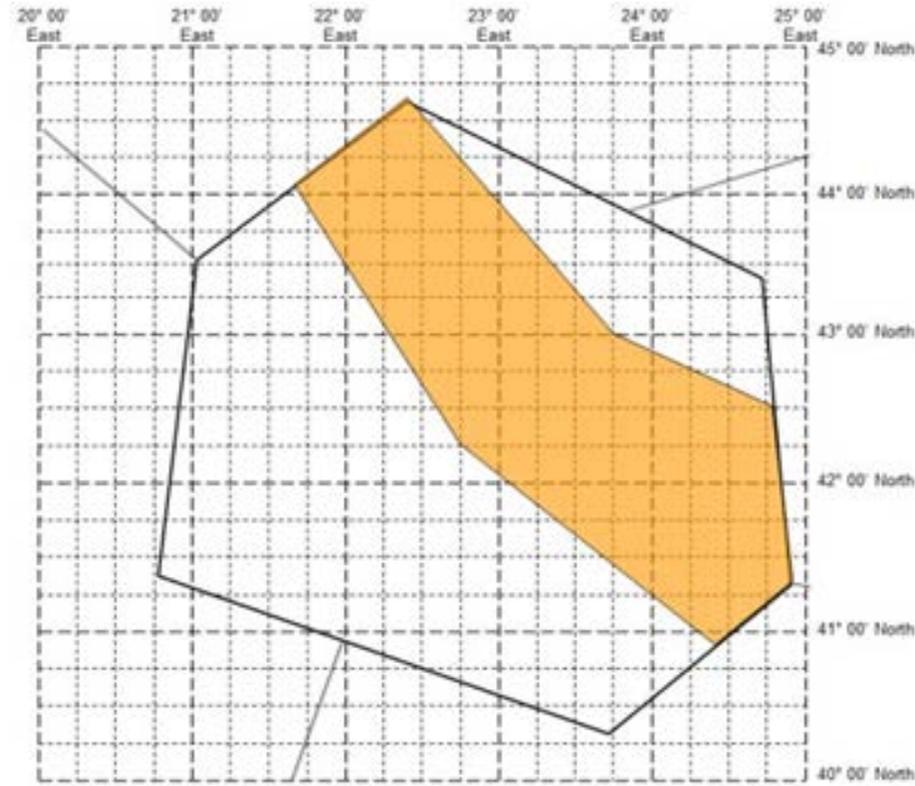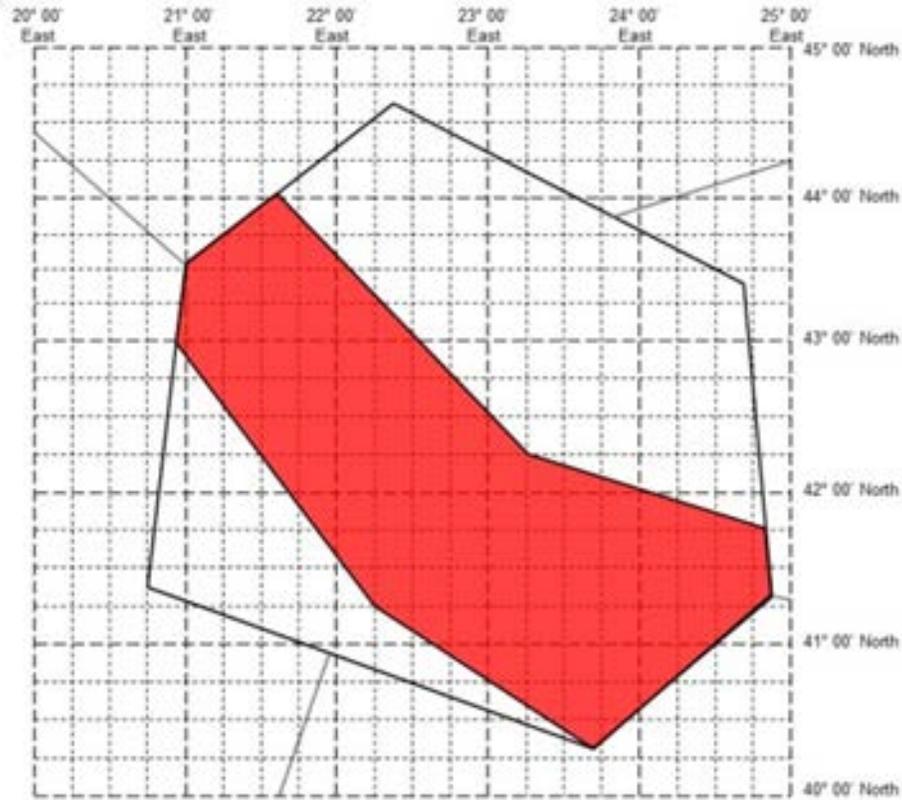
YUDD SIGMET 2 VALID 101200/101600 YUSO–

YUDD SHANLON FIR SEV TURB FCST NE OF LINE N4300 E02057 – N4115 E02215–

N4020 E02340 AND SW OF LINE N4402 E02142 – N4215 E02315 - N4145 E02450

FL250/370 WKN FCST AT 1600Z NE OF LINE N4403 E02140 N4215 E02245 – N4055

E02422 AND SW OF LINE N4437 E02222 – N4300 E02345– N4230 E02447=

- **In a sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant)**
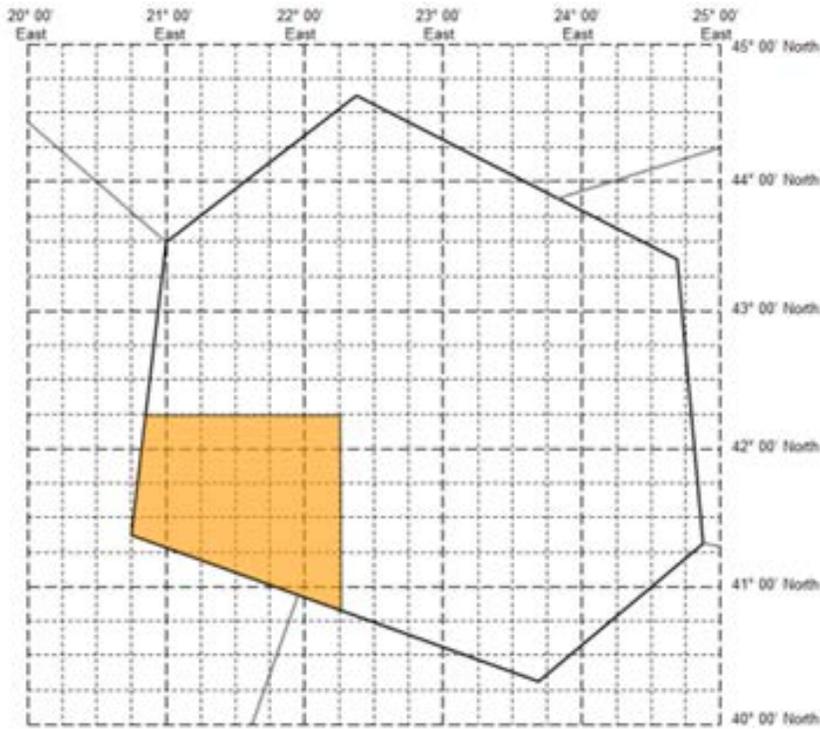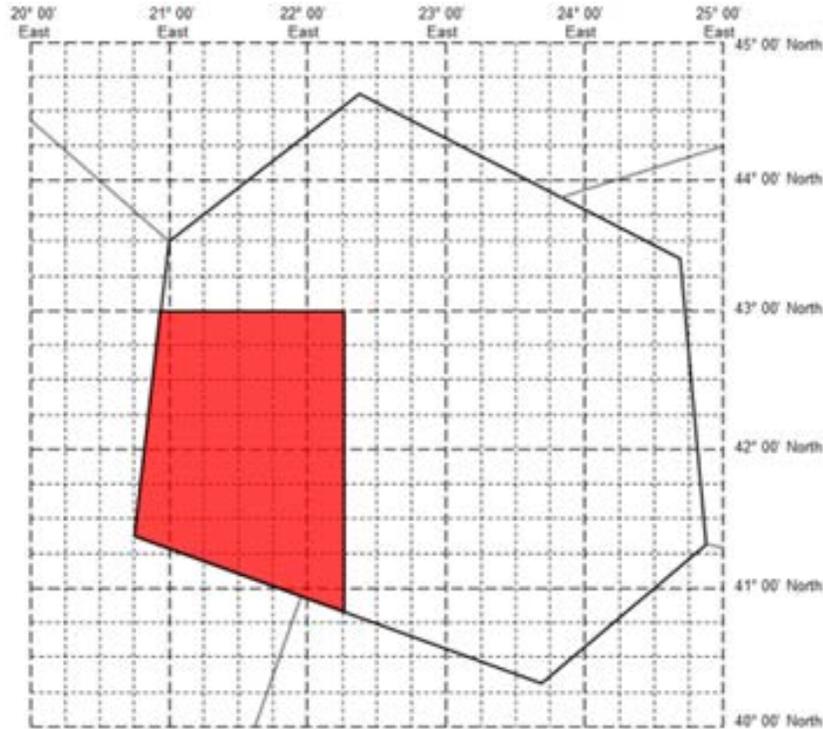
  Symbolically this is indicated as:

  <N OF> or <S OF> <Nnn[nn]> or <Snn[nn]> AND <E OF> or <W OF> <Wnnn[nn]> or <Ennn[nn]>

  Example:

  N OF N1200 AND E OF W02530

  S OF N60 AND W OF E120

YUDD SIGMET 2 VALID 101200/101600 YUSO–
YUDD SHANLON FIR/UIR SEV TURB FCST S OF N4300 AND W OF E02215
FL250/370WKN FCST AT 1600Z S OF N4215 AND W OF E02215=

- **In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment), where a coordinate of latitude (or longitude) defines a line, and the preceding descriptor defines on which side of the line the phenomena is expected**
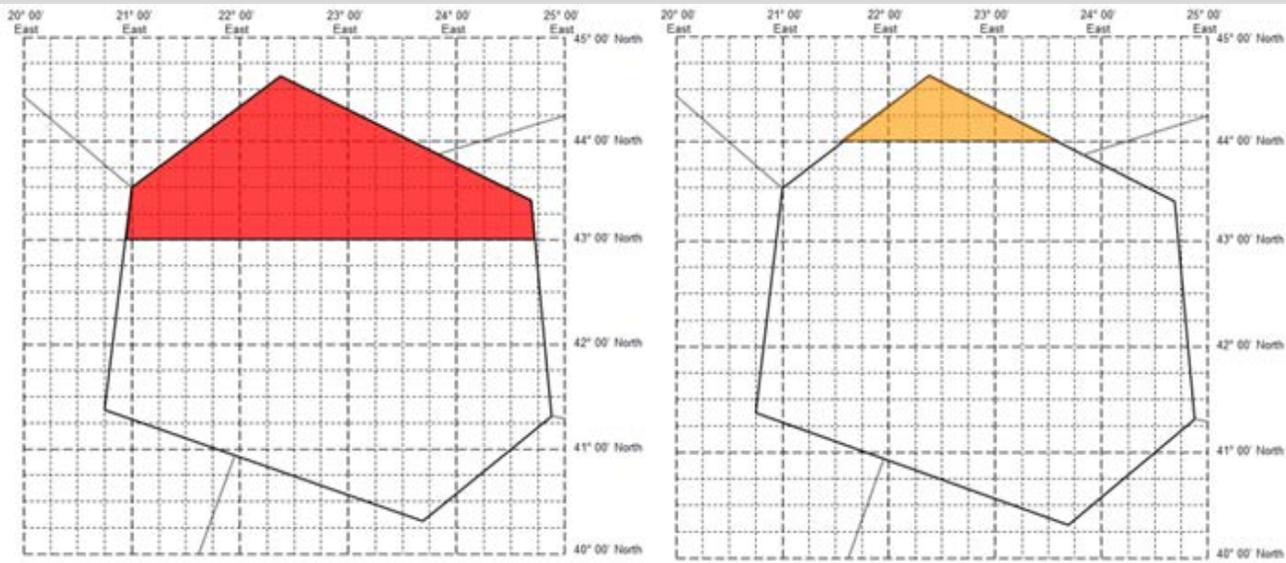
Symbolically, this is indicated as:

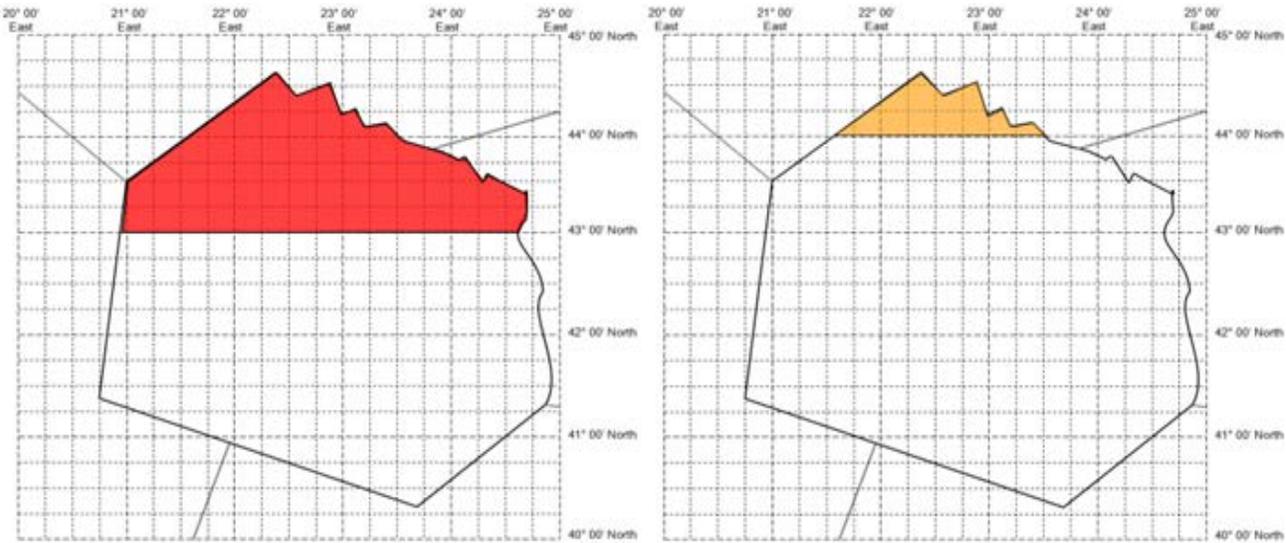<N OF> or <S OF> <Nnn[nn]> or <Snn[nn]> or <E OF> or <W OF> <Wnnn[nn]> or <Ennn[nn]>

Examples:

N OF S2230

W OF E080

YUDD SIGMET 2 VALID 101200/101600 YUSO–
YUDD SHANLON FIR/UIR SEV TURB FCST N OF
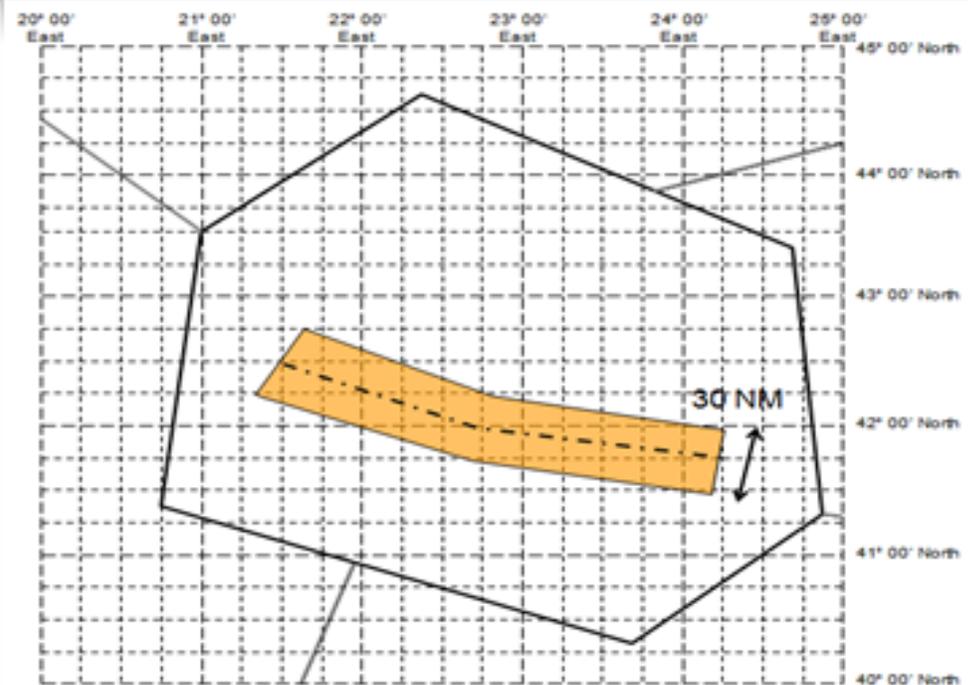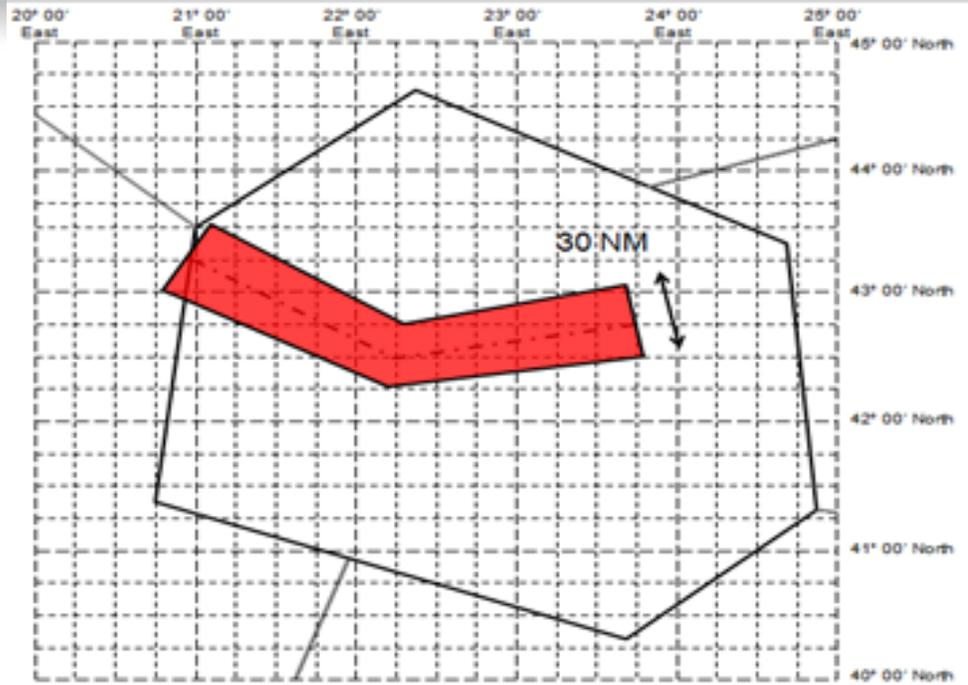N43 FL250/370 WKN FCST AT 1600Z N OF N44=

YUDD SIGMET 2 VALID 101200/101600 YUSO–
YUDD SHANLON FIR/UIR SEV TURB FCST N OF
N434 FL250/370 WKN FCST AT 1600Z N OF N44=

- **Defined by a 'corridor' of specified width, centred upon a line, of up to three connected segments, described by;**

WI nnKM WID LINE 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]>]

WI nnNM WID LINE 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]>]

YUDD SIGMET 2 VALID 101200/101600 YUSO–
YUDD SHANLON FIR/UIR SEV TURB FCST   WI 30NM WID LINE BTN N4315
E02100 – N4230 E02215 – N4245 E02345 FL250/370 WKN FCST AT 1600Z WI 30NM WID
LINE BTN N4230 E02130 – N4200 E02245 – N4145 E02415=

Note: The nature of this option means that, as at N4315 E02100, it is inferred that there is
some encroachment into the neighbouring FIR.

- **At a specific point within the FIR, indicated by a single coordinate of latitude and longitude.**

  Symbolically, this is indicated as:
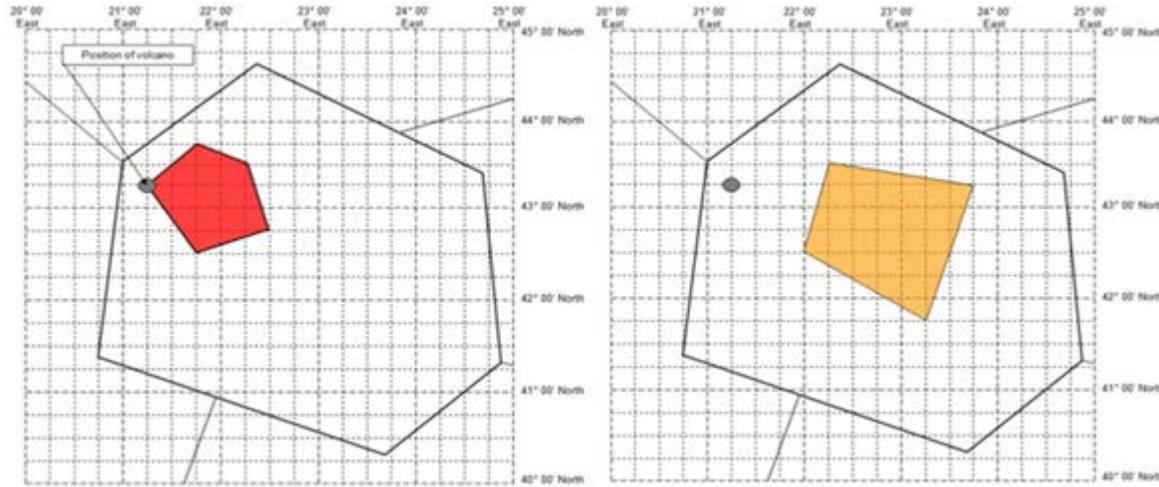
  <Nnn[nn]> or <Snn[nn]> <Wnnn[nn]> or <Ennn[nn]>
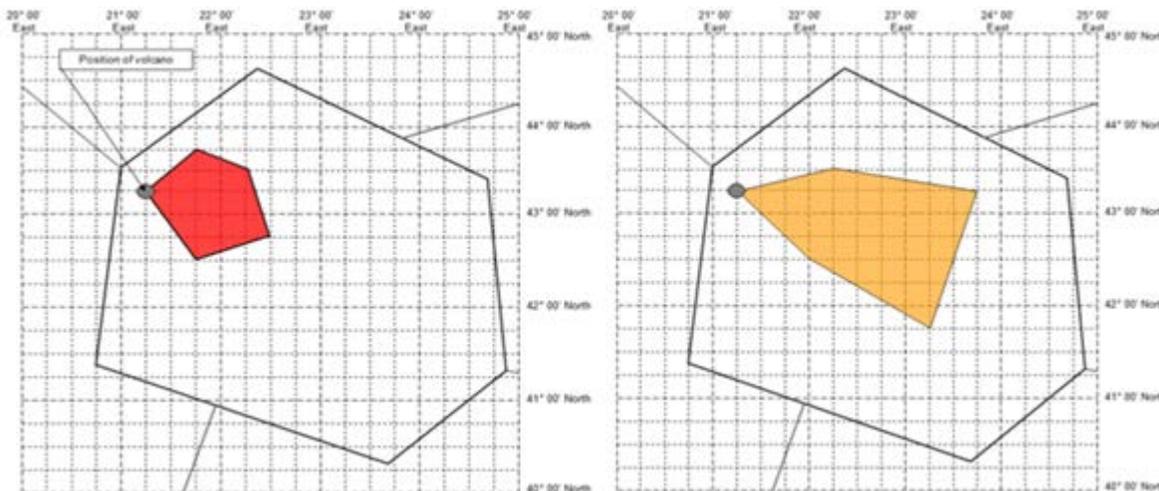
  Example:

  N5530 W02230

  S23 E107

For VA (eruption ceased, ash cloud persists downwind):

YYUDD SIGMET 2 VALID 101200/101800 YUSO–
YUDD SHANLON FIR/UIR 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 NC
FCST AT 1800Z WI N4330 E02215– N4315 E02345 –
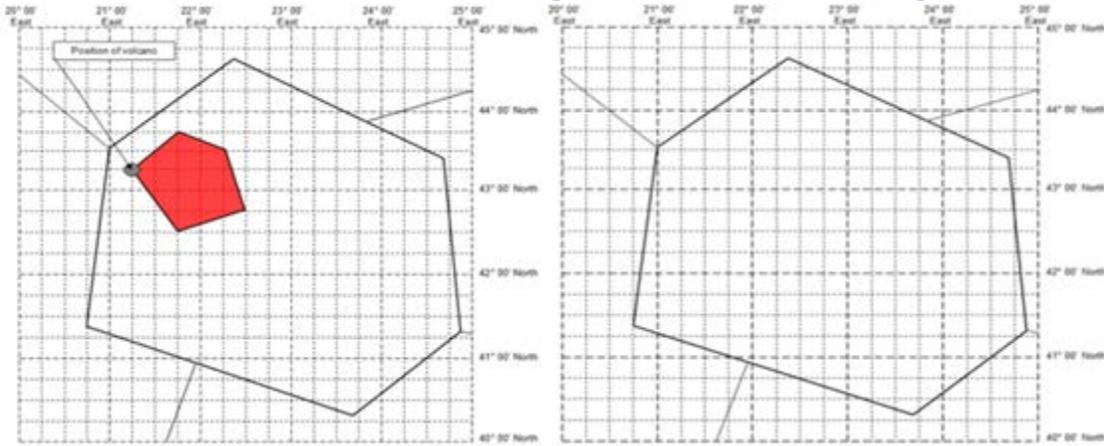N4145 E02315 – N4230 E02200 - N4330 E02215=

For VA (eruption on-going):

YUDD SIGMET 2 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 E2115 FL250/370 NC
FCST AT 1800Z WI N4315 E02115 - N4330 E02215 –
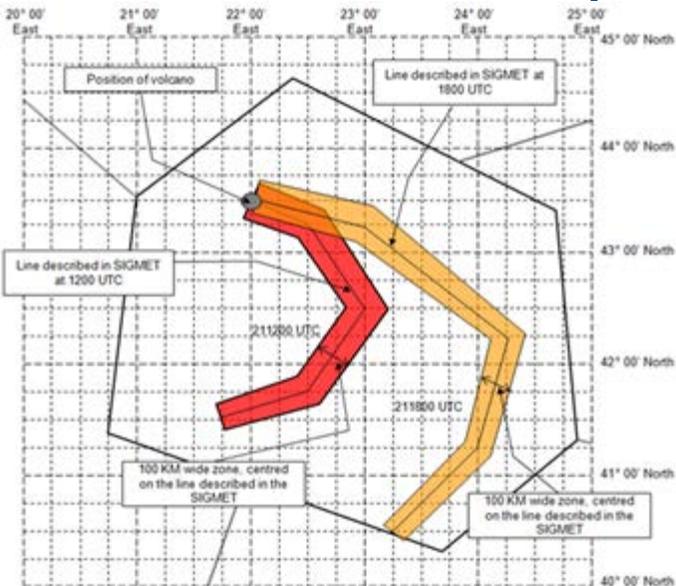N4315 E02345 – N4145 E02315 – N4230 E02200 –
N4315 E02115=

For VA (eruption ceasing, ash dispersing):

For VA (eruption on-going), defining the area affected as a corridor of specified width

YUDD SIGMET 2 VALID 101200/101800 YUSO–YUDD SHANLON FIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD OBS AT1200Z WI N4315 E02115 - N4345 E02145 – N4330 E02215 – N4245 E02230 - N4230 E02145 - N4315 E02115 FL250/370 WKN FCST AT 1800Z NO VA EXP=

YUDD SIGMET 2 VALID 211200/211800 YUSO – YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4330 E02200 VA CLD FCST AT 1200Z WI 100KM WID LINE BTN N4330 E02200 – N4315 E02230 – N4230 E02300 – N4145 E02230 – N4130 E02145 FL310/450 NC FCST AT 1800Z WI 100KM WID LINE BTN N4330 E02200 – N4315 E02300 – N4215 E02415 – N4115 E02400 N4030 E02315=
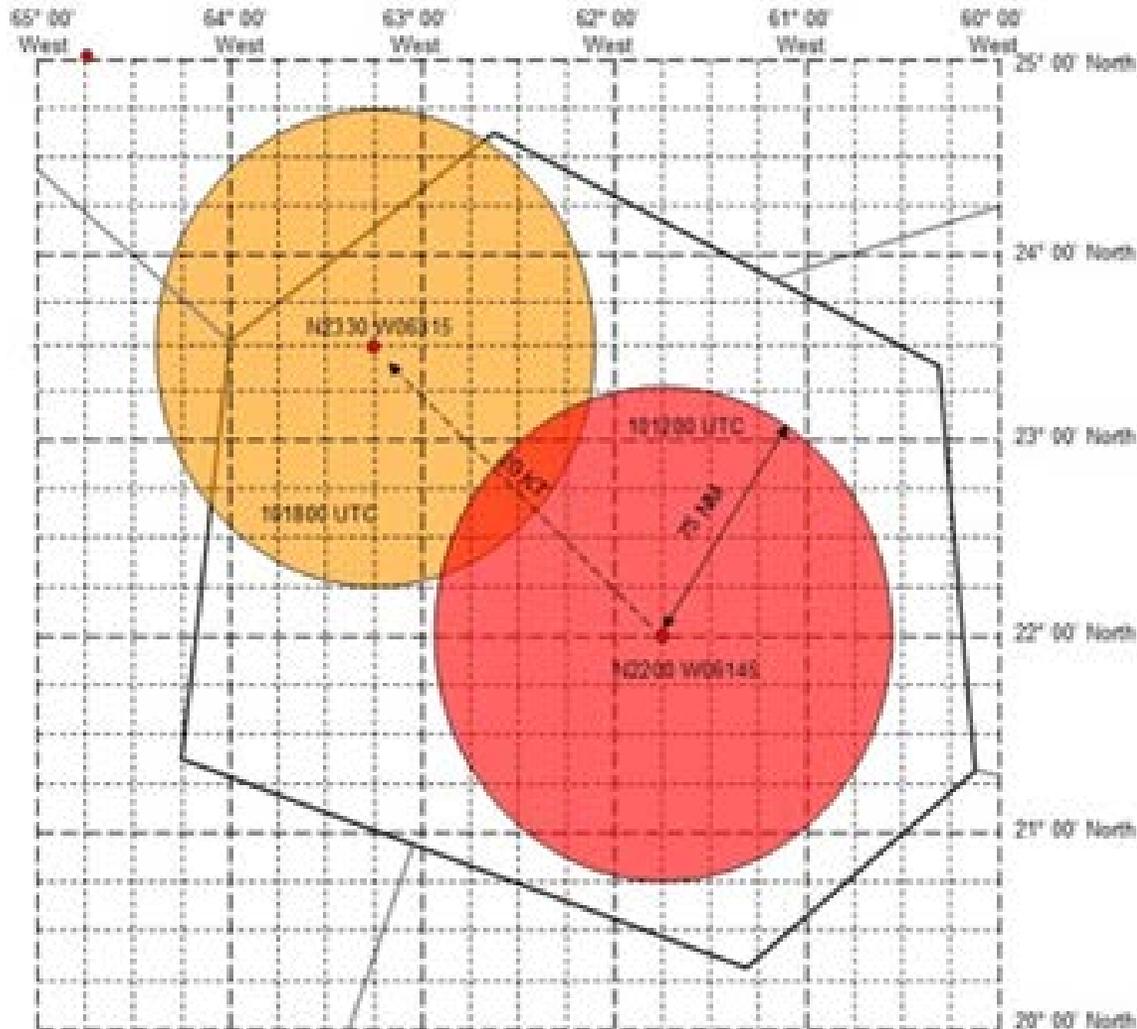
- **Within a specified radius of the centre of a tropical cyclone.**

  Symbolically, this is indicated as:

  WI nnnKM OF TC CENTRE

  WI nnNM OF TC CENTRE

YUDD SIGMET 2 VALID 101200/101800 YUSO–
YUDD SHANLON FIR TC GLORIA PSN N2200 W06145
CB OBS AT 1200Z WI 75NM OF TC CENTRE TOP
BLW FL500 MOV NW 20KT WKN=

YUDD SIGMET 2 VALID 101200/101800 YUSO–
YUDD SHANLON FIR TC GLORIA PSN N2200 W06145
CB OBS AT 1200Z WI 75NM OF TC CENTRE TOP
BLW FL500 WKN FCST AT 1800Z TC CENTRE PSN
N2330 W06315=

- **Within a specified radius of the location of a radioactive release event.**

  Symbolically, this is indicated as:

  WI nnKM OF <Nnn[nn]> or <Snn[nn]> <Wnnn[nn]> or <Ennn[nn]>

  WI nnNM OF <Nnn[nn]> or <Snn[nn]> <Wnnn[nn]> or <Ennn[nn]>

  When detailed information on the release is not available, a radius of up to 30 kilometres (or 16 nautical miles) from the source may be applied; 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.
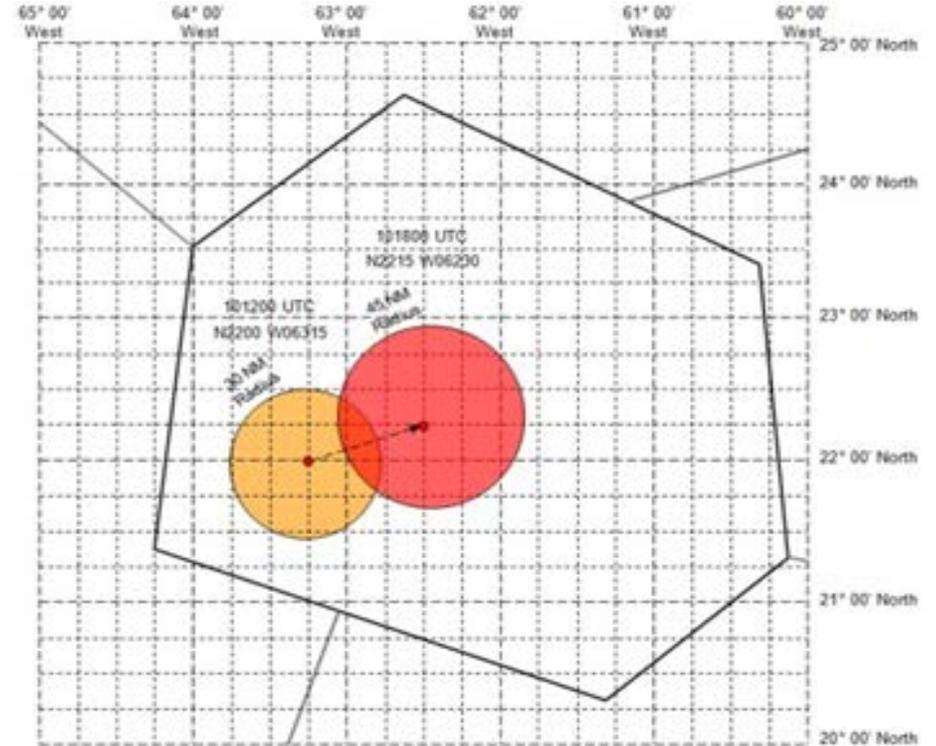
Where the surface position at the centre of the cylinder does not change, but the radius increases.
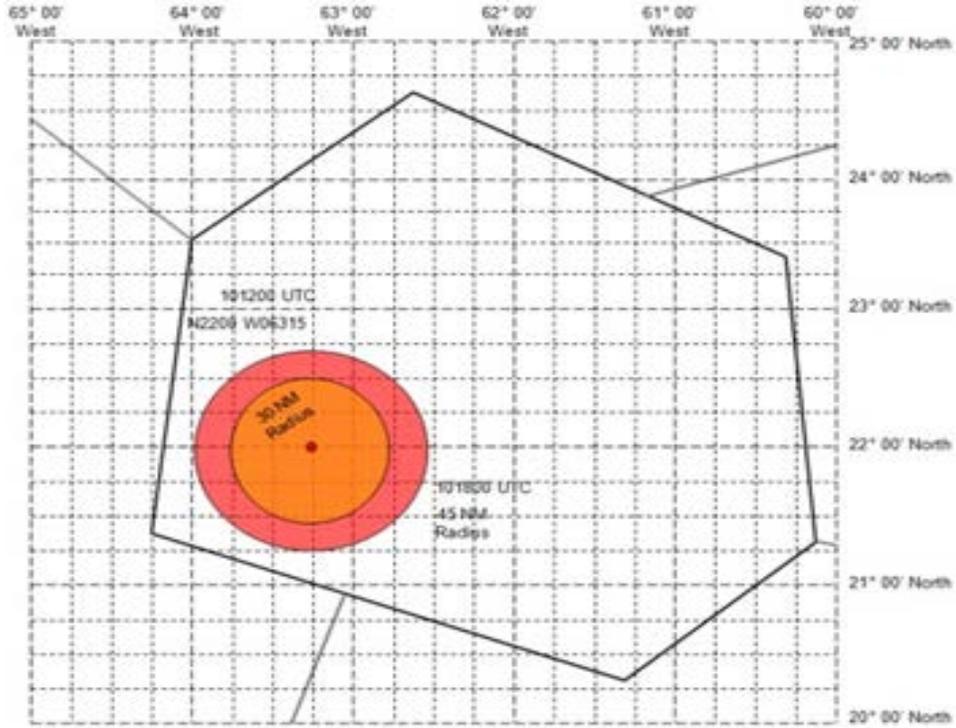
Where the surface position at the centre of the cylinder does move and the radius increases.

YUDD SIGMET 2 VALID 101200/101600 YUSO–
YUDD SHANLON FIR/UIR RDOACT CLD OBS AT 1150Z
WI 30NM OF N2200 W06315 SFC/3000FT NC FCST AT
1600Z WI 45NM OF N2200 W06315=

YUDD SIGMET 2 VALID 101200/101600 YUSO–
YUDD SHANLON FIR/UIR RDOACT CLD OBS AT 1150Z
WI 30NM OF N2200 W06315 SFC/3000FT NC FCST AT
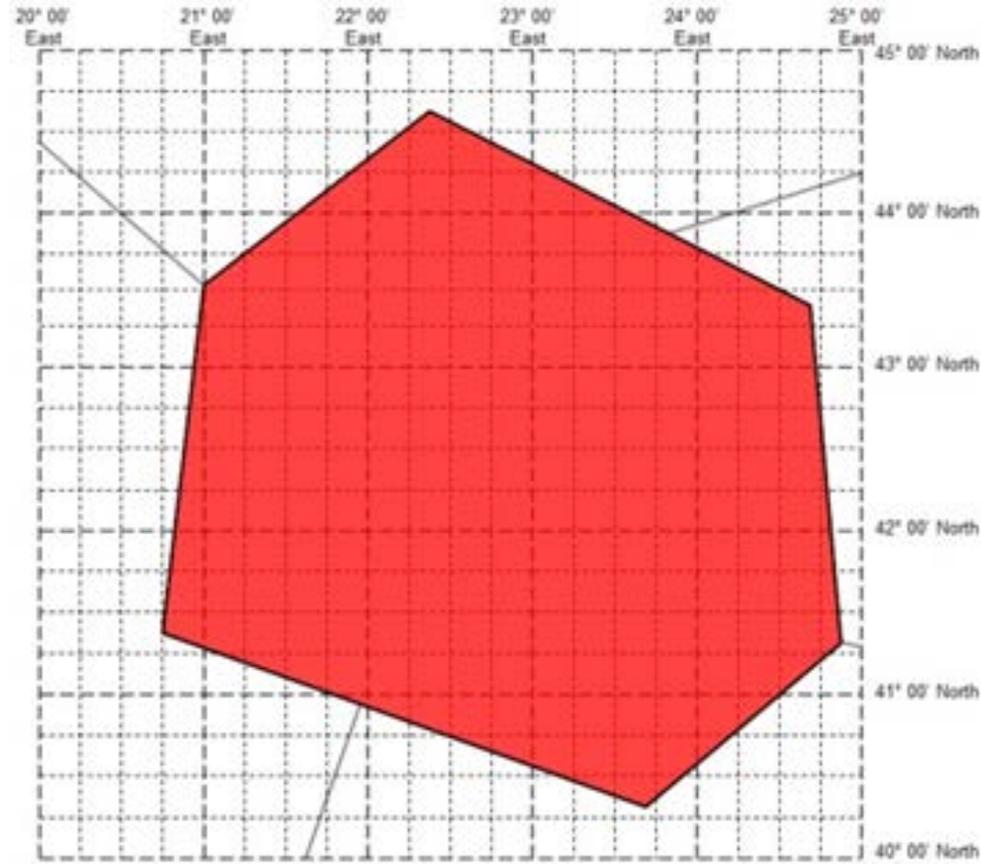1600Z WI 45NM OF N22150 W06230=

- **A reference to the whole FIR, FIR/UIR, or CTA .**

  Symbolically, this is indicated as:

  ENTIRE FIR

  ENTIRE FIR/UIR

  ENTIRE CTA

YUDD SIGMET 2 VALID 101200/101600 YUSO –
YUDD SHANLON FIR/UIR VA CLD FCST AT 1200Z ENTIRE FIR FL250/370 STNR WKN=

Flight level

- Symbolically, the options permitted are:

FLnnn or nnnnM or [n]nnnnFT

or SFC/FLnnn or SFC/nnnnM or SFC/[n]nnnnFT

or

FLnnn/nnn

or

TOP FLnnn or TOP [n]nnnnFT

or

ABV FLnnn

or

TOP ABV FLnnn or TOP ABV [n]nnnnFT

or

TOP BLW FLnnn (only to be used for tropical cyclone)

or

nnnn/nnnnM or [n]nnnn/[n]nnnnFT

or

nnnnM/FLnnn or [n]nnnnFT/FLnnn

- Reporting at a single flight level: FL320

- Reporting at a single geometric level, in metres or feet: 4500M or 8250FT or 12000FT

- Reporting a layer extending from the surface to a given height in meters, feet or flight level: SFC/3000M or SFC/9900FT or SFC/11000FT or SFC/FL350

- Reporting a layer extending from a given FL to a higher flight level: FL250/290

- Reporting a layer where the base is unknown, but the top is given: TOP FL350

- Reporting phenomenon above a specified flight level, but where the upper limit is unknown: ABV FL350

- Reporting phenomenon that has an unknown lower limit, but has an upper limit that is known to extend above a known flight level: TOP ABV FL350

- Reporting phenomenon expected between a lower and upper geometric level expressed in metres or feet:3500/9000M or 8000/12000FT or 11000/14000FT

- Reporting phenomenon expected between a lower geometric level expressed in metres or feet and a higher flight level: 4000M/FL220 or 6000FT/FL140 or 11000FT/FL190

- Reporting the CB upper limit for tropical cyclone SIGMET: TOP BLW FL450

Additional examples:

EMBD TS … TOP ABV FL340

SEV TURB … FL180/210

SEV ICE … SFC/FL150

SEV MTW … FL090

Movement

- The elements 'Forecast Time' and 'Forecast Position' are not to be used in conjunction with the element 'Movement or Expected Movement'" (Footnote 24 to Table A6-1A of ICAO Annex 3) .

- Rate of movement is indicated in the following way:

  MOV <direction> <speed>KMH[KT] or **STNR**

  Direction of movement is given with reference to one of the sixteen points of compass (**N**,**NNE**, **NE**, **ENE**, **E**, **ESE**, **SE**, **SSE**, **S**, **SSW**, **SW**, **WSW**, **W**, **WNW**, **NW**, **NNW**). Speed is given in **KMH** or **KT**. The abbreviation **STNR** is used if no significant movement is expected.

  Examples:

  MOV NNW 30KMH

  MOV E 25KT STNR

Expected changes in intensity

- The expected evolution of the phenomenon's intensity is indicated by one of the following abbreviations:

  INTSF

  or

  WKN

  or

  NC

Forecast time

- This section issued, with 'Forecast position' to explicitly provide a forecast of the position of the phenomena at the time specified. The format is fixed, and is of the form

  FCST AT nnnnZ

  where the forecast time is the same as the SIGMET validity end time.

  Example

  FCST AT 1600Z

TC Forecast position

- Only to be used for tropical cyclones, and used to indicate the location of the centre of the tropical cyclone.

- The forecast centre position of a tropical cyclone is given by:

- **TC CENTRE PSN Nnn[nn] or Snn[nn] Wnnn[nn] or Ennn[nn]**

  Example:

  TC CENTRE PSN N2740 W07345

Forecast position of the hazardous phenomenon at the end of the validity period of the SIGMET message

- The available methods of describing the forecast position of the phenomenon is exactly as detailed in the "location of the phenomenon" part of this presentation with the addition of the descriptor:

  NO LONGER EXP

  to indicate that the phenomenon will have ceased by the stated forecast time.

Forecast position of the hazardous phenomenon at the end of the validity period of the SIGMET message

- The available methods of describing the forecast position of the phenomenon is exactly as detailed in the "location of the phenomenon" part of this presentation with the addition of the descriptor:
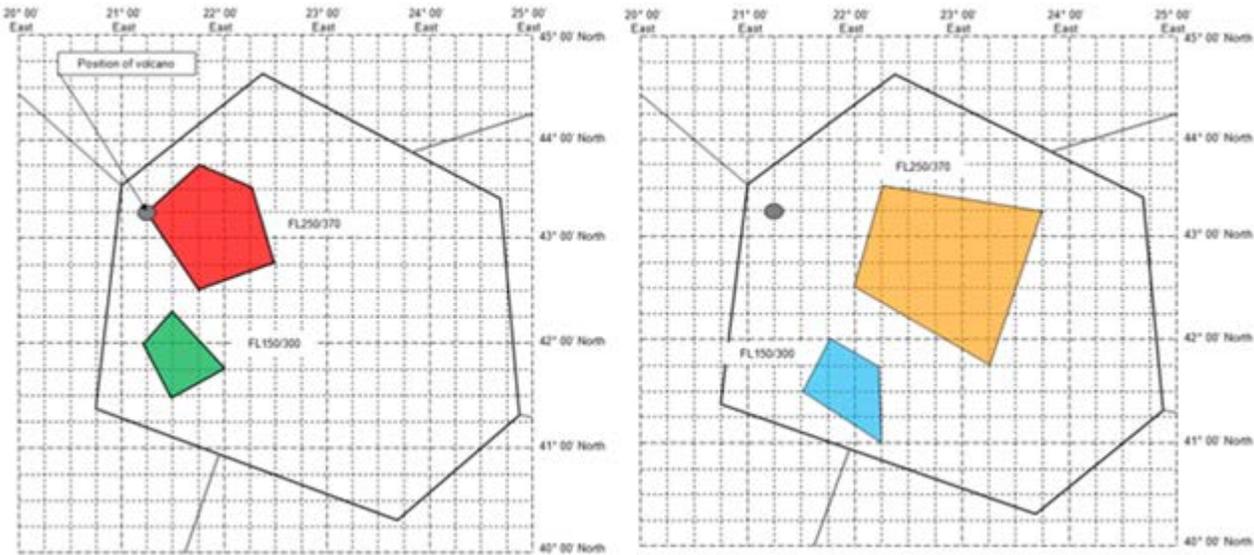
   NO LONGER EXP

   to indicate that the phenomenon will have ceased by the stated forecast time.

Repetition of elements (VA and TC SIGMET only)

- Inclusion of instances of volcanic ash phenomenon and tropical cyclone phenomenon in the same SIGMET is permitted for volcanic ash and tropical cyclone only.

- **Multiple areas of Volcanic Ash**

YUDD SIGMET 2 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 NC FCST AT 1800Z WI N4330 E02215– N4315 E02345 – N4145 E02315 – N4230 E02200 - N4330 E02215 **AND** *N4200 E02115 – N4217 E02130 – N4145 E02200 – N4130 E02130 – N4200 E02100FL150/300 NC FCST AT 1800Z WI N4200 E02145 – N4145 E02215 – N4100 E02215 - N4130 E02130 - N4200 E02145=*

Only works if there are two instances of ash at the start and end of the period.

Multiple tropical cyclones within the FIR
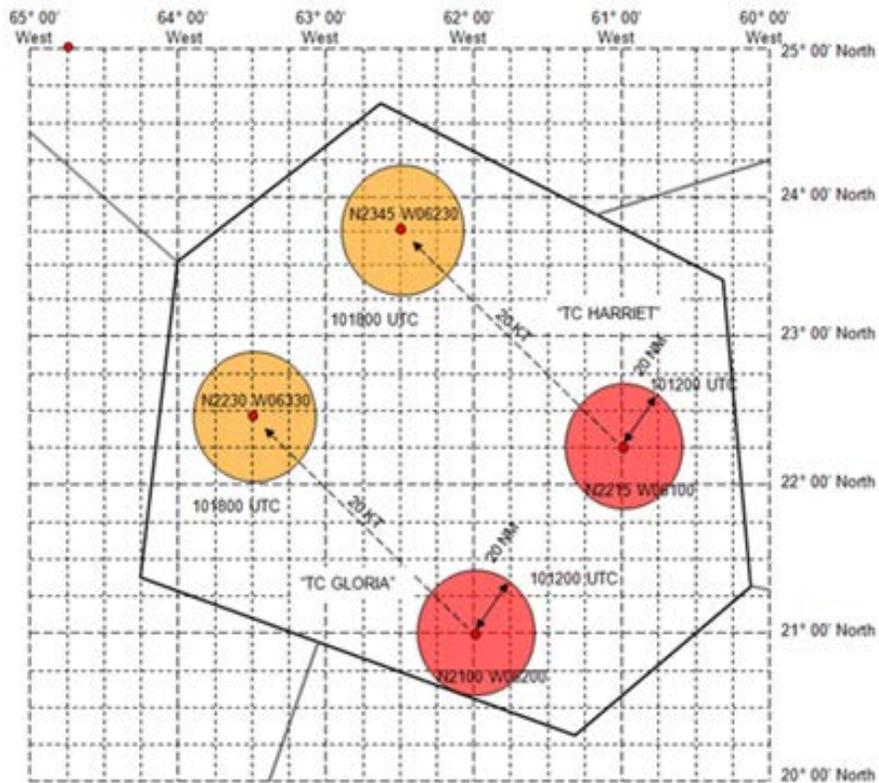
YUDD SIGMET 2 VALID 101200/101800 YUSO–
YUDD SHANLON FIR TC GLORIA PSN N2100 W06200 CB
OBS AT 1200Z WI 20NM OF TC CENTRE TOP FL500 MOV
NW 20KT WKN FCST AT 1800Z TC CENTRE N2230 W06330
AND *TC HARRIET FCST AT 1200Z N2215 W06100 CB TOP
FL400 WI 20NM OF CENTRE WKN FCST AT 1800Z TC
CENTRE N2345 W06230=*

Cancellation of SIGMET

Mandatory for an MWO to cancel any SIGMET that is valid but for which the specified phenomena no longer exists or is expected to exist.

Cancellation SIGMET should have a unique sequence number.

Cancellation done by issuing the same type of SIGMET (i.e. WS, WV or WC) with the following structure:

➢ WMO heading with the same data type designator;

➢ First line, including the next sequence number followed by a new validity period that represents the remaining time of the original period of validity, and

➢ Second line, which contains the name of the FIR or CTA, the combination CNL SIGMET, followed by the sequence number of the original SIGMET and its original validity period.

Example of SIGMET cancellation

- Original message

  HKNA SIGMET A01 VALID 260300/260700 HKJK –
  HKNA NAIROBI FIR EMBD TS FCST WI S4000 E12000 – S3830 E12200– S4200
  E12100 – S4000 E12000 TOP FL450 MOV SW 05KT INTSF=

  Cancellation message

  HKNA SIGMET A02 VALID 260600/260700 HKJK-
  HKNA NAIROBI FIR CNL SIGMET A01 260300/260700=

- For SIGMET for volcanic ash only, the following is permitted:

    WVSG31 GOBD 202155
    GOOO SIGMET E03 VALID 202155/210000 GOBD-
    GOOO DAKAR OCEANIC FIR CNL SIGMET E03 202000/210000 VA MOV TO
    WXYX FIR=

    Where the FIR (WXYZ in the example) into which the volcanic ash has moved is indicated.

Amendment/correction of SIGMET

SIGMET no longer accurately describes the existing or expected future evolution of the phenomena

A new SIGMET correctly describing the hazard should be issued, followed immediately by a cancellation of the original, erroneous SIGMET.

The new SIGMET should be issued before the cancellation in order to ensure there is always a SIGMET in force and that the cancellation is not mistakenly understood to mean that the hazard has completely dissipated.

It is essential that the times of issuance of the updated (correct) SIGMET and the cancellation are separated by at least one minute to prevent inadvertent suppression by message switches. However, it is also important that the minimum delay between issuance of the updated and the cancellation messages.

Example of SIGMET amendment

- Originally issued SIGMET, later determined to no longer be accurate (bold text identifies points that will be changed):

WSSG31 GOBD 201855
GOOO SIGMET E01 VALID 202000/210000 GOBD-
GOOO DAKAR OCEANIC FIR SEV TURB FCST WI S1530 E13700 - **S1900 E13730– S2000 E13130** - S1600 E13500 - S1530 E13700 SFC/FL120 MOV SE 12KT WKN=

- Updated SIGMET (bold text identifies points that have been changed):

WSSG31 GOBD 202155
GOOO SIGMET E02 VALID 202200/210000 GOBD-
GOOO DAKAR OCEANIC FIR SEV TURB FCST WI S1530 E13700 - **S2000 E13750 – S2045 E13245** - S1600 E13500 - S1530 E13700 SFC/FL120 MOV SE 12KT WKN=

- Cancellation SIGMET (this cancels the original SIGMET):

WSSG31 GOBD 202156
GOOO SIGMET E03 VALID 202155/210000 GOBD-
GOOO DAKAR OCEANIC FIR CNL SIGMET E01 202000/210000=

Dissemination of SIGMET

- SIGMET is part of operational meteorological (OPMET) information.

- According to Annex 3, the telecommunication facilities used for the exchange of the operational meteorological information should be the aeronautical fixed service (AFS) Internet-based services.

- SIGMET priority indicator is **FF** for flight safety messages (Annex 10, Volume II, 4.4.1.1.3 refers).

- AFTN and AMHS links should be used by the MWOs to send the SIGMET, as follows:

➢ to the adjacent MWOs and ACCs using direct AFTN addressing;

➢ when required for VOLMET or D-VOLMET, SIGMET should be sent to the relevant centre providing the VOLMET service;

➢ SIGMET should be sent to all regional OPMET Data Banks (RODB);

➢ it should be arranged that SIGMET is relayed to the SADIS and WIFS providers for satellite/public internet dissemination, as well as to the WAFCs London and Washington, either through the AMBEX scheme, or directly by the issuing MWO;

➢ SIGMET for volcanic ash should be disseminated to the responsible VAAC.

Conclusion and recommendations

Commercial air traffic predicted to increase three to four times over the next 10 to 20 years.

Weather is the primary cause in a growing percentage of annual accidents.With the climate change it is only going to get worse. And the impact on aviation will increase.

MWOs to strictly adhere to Table A6-1 of ICAO Annex 3 and Table A-1 of the AFI Regional guide on SIGMET.

Need of well structured and formatted SIGMET, timely disseminated to support ATCos and operators decision-making.

Enhance coordination between MWOs for cross-FIR SIGMET to avoid incoherence and inconsistencies (Agreement between MET services providers??)

Develop provisions for indicating changes to the levels affected by phenomena between the initial position and the forecast position.