



International Civil Aviation Organization

**FIFTH MEETING OF THE ASIA/PACIFIC METEOROLOGICAL
HAZARDS TASK FORCE (MET/H TF/5)**

Seoul, Republic of Korea, 18 – 20 March 2015

Agenda Item 3: Guidance Material

SIGMET PAMPHLETS

(Presented by Ad Hoc Group - New Zealand (Rapporteur), Australia and Hong Kong, China)

SUMMARY

This paper presents a review of the WS and WC SIGMET posters and the establishment of WS and WC SIGMET pamphlets for comment following Amendment 76 to *Annex 3 – Meteorological Service for International Air Navigation*.

1. INTRODUCTION

1.1 At the third meeting of the Meteorological Hazards Task Force (MET/H TF/3), held in Bangkok from 13-15 March 2013, it was agreed that Australia, New Zealand and Hong Kong, China review the SIGMET posters (see Attachments A and C) following Amendment 76 to *Annex 3 – Meteorological Service for International Air Navigation*.

1.2 The fourth meeting of the Meteorological Hazards Task Force (MET/H TF/4), held in Beijing, China from 19-21 March 2014, formulated the agreed action 4/12 as follows: '*Ad-hoc group consisting of Australia, Hong Kong-China and New Zealand (Rapporteur) to review and update the SIGMET posters to realign with Amendment 77 to Annex 3 in 2016*'.

2. DISCUSSION

2.1 Further discussion within the ad hoc group regarding the format of the information concluded that it would be an advantage to provide the information in an A4 pamphlet style publication. This would allow for the information to be updated more readily as well as providing a format that could be easily viewed and/or downloaded from the Internet or sent to States via email.

2.2 The ad hoc group has incorporated the feedback and suggested changes into the pamphlets, and drafts of the WS and WC SIGMET pamphlets are given in Attachments B and D.

3. RECOMMENDATION

3.1 It is recommended that:

- a) the MET/H TF discuss any additional improvements to the WS and WC SIGMET pamphlets;
- b) the draft WS and WC SIGMET pamphlets (with agreed improvements incorporated) be forwarded to ICAO & WMO for review and endorsement;
- c) the ad hoc group arrange for publication of the pamphlets and provide these to ICAO and WMO for electronic distribution;
- d) Australia, New Zealand and Hong Kong, China review the WV SIGMET poster and establish a WV SIGMET pamphlet prior to the MET SG meeting; and
- e) Australia, New Zealand and Hong Kong, China review the pamphlets again in July 2016 when Amendment 77 to ICAO Annex 3 is published to ensure that they are updated prior to the effective date of November 2016.

4. ACTION BY THE MEETING

4.1 The meeting is invited to:

- a) Note the information in this working paper; and
- b) Adopt the recommendation in paragraph 3.1 as an action for the group.

ATTACHMENT A – WS SIGMET Poster

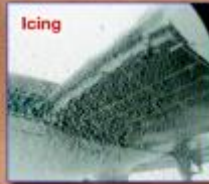
WS SIGMET

When any of the following phenomena are occurring or expected to occur in your FIR – issue WS SIGMET for each phenomenon **without delay**.

Phenomena: thunderstorms, heavy duststorms, heavy sandstorms, severe turbulence, severe mountain waves, severe icing, radioactive cloud.

STEP 1 Information Received

Source of information	Phenomena
Special AIREP	Thunderstorms, dust/sandstorms, turbulence/mountain waves, icing
Satellite pictures	
NWP forecasts	
RADAR	Thunderstorms
Lightning information	
WMO PSRACs (Atmospheric transport modelling for environmental emergency)	Radioactive cloud



Key

- WMO abbreviated heading, disseminating centre and transmission day/time
- Name of issuing MWO
- FIR**
- Sequence number and validity period day/time
- Description of phenomenon
- Phenomenon observed with time (optional) or forecast to occur, its location, level and movement or expected movement (direction – 8 points of compass)
- Changes in intensity
- For an observed phenomenon, the start of validity should be the same as the issue time. For a forecast phenomenon, the start of validity should be the time the phenomenon is expected to commence in a MWO's FIR.
- The validity of a WS SIGMET shall not be more than 4 hours.

STEP 2 WS SIGMET Prepared

SIGMET FORMATS:

WS SIGMET format:
 WSA A/J CCDC YYGGg
 CCCC SIGMET [n/n] VALID YYGGg/YYGGg CCCC
 CCCC [PHI] [Miles] FIR «Phenomena» OBS [AT «09gZ»]
 [V FCST «Level» «Level» «Movement or expected movement» «Changes in intensity»]
Cancellation format:
 WSA A/J CCCC YYGGg
 CCCC SIGMET [n/n] VALID YYGGg/YYGGg CCCC
 CCCC [PHI] [Miles] FIR CXL SIGMET [n/n] YYGGg
 YYGGg

SIGMET EXAMPLES:

Thunderstorms:
 YHHR SIGMET 1 VALID 180330/181230 VHHH-
 ZHHH HONG KONG FIR EMBD TS FCST N OF N2000
 W OF E11430 TOP FL400 MOV E 20KT NC

Duststorms:
 YHHR SIGMET 001 VALID 240335/240430 YPDG-
 YMMH MELBOURNE FIR HVY DS OBS W R2000 E1845 -
 S2840 E13800 - S2520 E13800 - S2520 E13200 BLW FLDG
 MOV N 25 KT NC

Sandstorms:
 YHHR SIGMET 2 VALID 301130/301910 ZRAA-
 ZHHH HONG KONG FIR SEV TS OBS AT 1110Z NW OF ZRAA
 MOV E 30KMH NC

Turbulence:
 YHHR SIGMET 1 VALID 200750/200600 YHHR-
 ZHHH HONG KONG FIR SEV TURB OBS AT 0228Z S OF
 N19 8W FL300 STNR INTSF

Mountain waves:
 YHHR SIGMET 307 VALID 081700/082100 YHHR-
 YMMH MELBOURNE FIR SEV MTW OBS W1 S3704 E14244
 S3911 E14750 - S3736 E14940 - S4006 E14800 -
 S2853 E14350 - S2704 E14244 FLDG/140 WFN

Icing:
 YHHR SIGMET 3 VALID 031930/031900 ZHHH-
 ZHHH HONG KONG FIR SEV ICE FCST N OF AGN BLW FL200 NC

Radioactive cloud:
 YUCC SIGMET 1 VALID 081030/081200 YUCC-
 YUCC ABBEGRILL FIR RADIOACT CLD FCST E OF E180
 BLW FL100

Cancellation:
 YHHR SIGMET 2 VALID 181900/181230 VHHH-
 ZHHH HONG KONG FIR CXL SIGMET 1 180330/181230

STEP 3 WS SIGMET Transmitted

WS phenomena are hazardous to aircraft operations, so the issue of WS SIGMET must be given high priority and issued without delay.

SEND TO:	Tel	Fax	AFTN	Email
ACC/FIC				
WAFCS				

Renew/Cancel

- RENEW**
- When the phenomenon has changed and necessitates an update
 - When the validity period is due to expire but the phenomenon persists or is expected to persist
- CANCEL**
- When the phenomenon is no longer occurring or expected to occur



For further information refer to the
 ICAO Annex 3/WMO Technical Regulations, Vol II
 Asia/Pacific Regional SIGMET Guide
 ICAO Manual of Aeronautical Meteorological Practice
 WMO Guide to Practices for Meteorological Offices Serving Aviation



ATTACHMENT B – WS SIGMET Pamphlet

Refer to attached draft pamphlet, noting that images within the pamphlet are for illustrative purposes only.



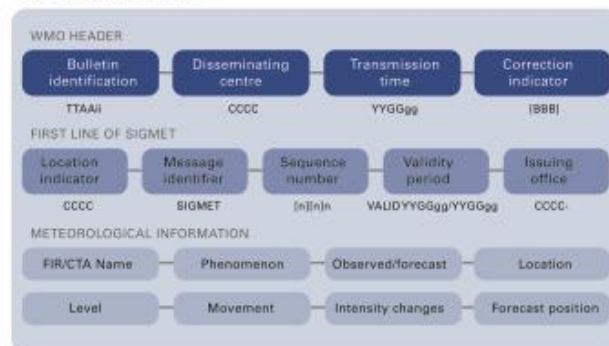
SIGMET Abbreviations

ABV	Above
CNL	Cancel or cancelled
CTA	Control area
FCST	Forecast
FIR	Flight Information Region
FL	Flight level
FT	Feet
INTSF	Intensify or intensifying
KT	Knots
KMH	Kilometres per hour
M	Metres
MOV	Moving
NC	No Change (in intensity)
NM	Nautical Miles
OBS	Observed
SFC	Surface
STNR	Stationary
TOP	Top (of CB cloud)
WI	Within (area)
WKN	Weakening (intensity)
Z	Coordinated Universal Time

WS SIGMET

A SIGMET provides concise information issued by a Meteorological Watch Office (MWO) concerning the occurrence or expected occurrence of specific en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. A WS SIGMET provides information on phenomena other than tropical cyclones and volcanic ash.

SIGMET Structure



WMO Header

Bulletin identification

TT	Data type designator	WS – for SIGMET for meteorological phenomena other than volcanic ash cloud and tropical cyclone
AA	Country or territory designators	Assigned according to Table C1, Part II of <i>Manual on the Global Telecommunication System, Volume I – Global Aspects</i> (WMO Publication No. 386)
ii	Bulletin number	Assigned on national level according to p 2.3.2.2, Part II of <i>Manual on the Global Telecommunication System, Volume I – Global Aspects</i> (WMO Publication No. 386)

Disseminating centre

CCCC is the ICAO location indicator of the communication centre disseminating the message (this may be the same as the MWO location indicator).

Transmission time

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).





Von Karman vortices forming in a stratocumulus field downwind from the volcanic island of Rishiri-to in the northern Sea of Japan. Image courtesy of NASA.

Correction indicator

BBB should be used only when issuing a correction to a SIGMET which had already been transmitted. The BBB indicator shall take the form **CCx** for corrections to previously relayed bulletins, where x takes the value A for the first correction, B for the second correction, etc.

First line of SIGMET

Location indicator

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

Message identifier

The message identifier is **SIGMET**.

Sequence number

The daily sequence number in the form **[n][n]**, e.g. 1, 2, 01, 02, A01, A02. The numbering of SIGMET starts every day at 0001 UTC.

Validity period

The validity period is given in the format **VALID YYGGgg/YYGGgg** where YY is the day of the month and GGgg is the time in hours and minutes UTC. The period of validity for a WS SIGMET shall be no more than 4 hours.

Issuing Office

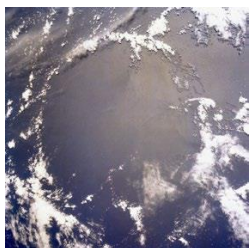
CCCC- is the ICAO location indicator of the MWO originating the message followed by a hyphen.

Meteorological Information

FIR/CTA Name

The ICAO location indicator and full name of the FIR/CTA for which the SIGMET is issued in the form **CCCC <name> FIR/[UIR] or CCCC <name> CTA**.

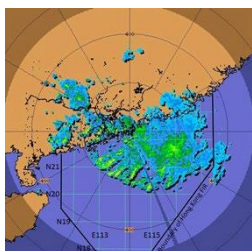
Phenomenon



Old outflow boundary from a collapsed thunderstorm is visible as a roughly circular pattern. Image courtesy of NASA.

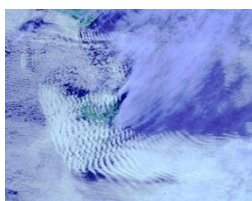
Code	Description
OBSC TS	Obscured thunderstorms
EMBDTS	Embedded thunderstorms
FRQTS	Frequent thunderstorms
SQLTS	Squall line thunderstorms
OBSC TSGR	Obscured thunderstorms with hail
EMBD TSGR	Embedded thunderstorms with hail
FRQ TSGR	Frequent thunderstorms with hail
SQL TSGR	Squall line thunderstorms with hail
SEVTURB	Severe turbulence
SEV ICE	Severe icing
SEV ICE (FZRA)	Severe icing due to freezing rain
SEV MTW	Severe mountain wave
HVY DS	Heavy duststorm
HVY SS	Heavy sandstorm
RDOACT CLD	Radioactive cloud

DRAFT
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Widespread thunderstorms affecting the Southern China and the northern part of South China Sea on 9 May 2014.

E	East or eastern longitude
ENE	East-north-east
ESE	East-south-east
N	North or northern latitude
NE	North-east
NNE	North-north-east
NNW	North-north-west
NW	North-west
S	South or southern latitude
SE	South-east
SSE	South-south-east
SSW	South-south-west
SW	South-west
W	West or western longitude
WNW	West-north-west
WSW	West-south-west



Satellite image of mountain waves over Tasmania, 3 December 2002.

Observed or forecast

Whether the phenomenon is observed or forecast in the form **OBS [AT GGggZ]** or **FCST [AT GGggZ]** where GG is hours and gg minutes.

Location

The location of the phenomenon is provided with reference to geographical coordinates in latitude and longitude in degrees and minutes.

Level

The level or vertical extent of the phenomenon:

FLnnn or **SFC/FLnnn** or **SFC/nnnnM** or **SFC/nnnnFT** or **FLnnn/nnn** or **nnnn/nnnnFT** or **TOP FLnnn** or **ABV FLnnn** or **TOP ABV FLnnn**.

Movement

Direction and rate of movement of the phenomenon where the direction is given with reference to one of the sixteen points of the compass (using the appropriate abbreviation) and the rate is given in KT (or KMH) in the form **MOV <direction> <speed>KT [or KMH]**. The abbreviation **STNR** (Stationary) is used if no significant movement is expected.

Intensity changes

The expected evolution of the phenomenon's intensity as indicated by:

INTSF or **WKN** or **NC**

Forecast position

The forecast position of the hazardous phenomena at the end of the end of the validity period of the SIGMET message in the form **FCST <GGgg>Z <location>**.

Renewing a SIGMET

A SIGMET is renewed with a new sequence number when the validity period is due to expire but the phenomenon is expected to persist.

Cancelling a SIGMET

If, during the validity period of a SIGMET, the phenomenon for which the SIGMET is no longer occurring or is no longer expected, the SIGMET shall be cancelled by issuing a SIGMET with the abbreviation CNL in lieu of meteorological information.

CNL SIGMET [n][n][n]YYGGgg/YYGGgg

Source of Information

Source of Information	Phenomena
Surface and upper-air observations Special AIREP Satellite pictures NWP forecasts	Thunderstorms, dust/sandstorms, turbulence, mountain waves, icing
RADAR Lightning information	Thunderstorms
WMO RSMC (Atmospheric transport modelling for environmental emergency)	Radioactive cloud

SIGMET Dissemination

SIGMET is part of operational meteorological (OPMET) information and should be exchanged via aeronautical fixed service (AFS). The SIGMET priority indicator used shall be **FF**.

WS Examples

Format

WSAAii CCCCYYGGgg [BBB]
CCCC SIGMET [n][n]n VALIDYYGGgg/YYGGgg CCCC-
CCCC <FIR/CTA Name> FIR <Phenomenon> OBS/FCST
[AT GGggZ] <Location> <Level> <Movement> <Intensity
changes> <Forecast position>=

Thunderstorms

WSSS20 VHHH 090900
VHHK SIGMET 3 VALID 090900/091300 VHHH-
VHHK HONG KONG FIR EMBD TS OBS AT 0900Z N OF
N2000 AND E OF E11300 TOP FL400 INSTF FCST 1300Z
N OF N2000 AND E OF E11300=

Duststorms

WSAU21 ADRM 240330
YMMM SIGMET D01 VALID 240330/240430 YPDM-
YMMM MELBOURNE FIR HVY DS OBS WI S2300
E13415 – S2240 E13800 – S2520 E13800 – S2525
E13520 – S2300 E13415 SFC/FL070 MOV N 25KT NC=

Sandstorms

WSCI33 ZBAA 301110
ZBPE SIGMET 2 VALID 301110/301510 ZBAA-
ZBPE BEIJING FIR HVY SS OBS AT 1100Z N OF N40
SFC/2000M MOV E 30KMH NC=

Turbulence

WSNZ21 NZKL 232134
NZZC SIGMET 18 VALID 232134/240134 NZKL-
NZZC NEW ZEALAND FIR SEV TURB FCST WI S3929
E17602 – S4305 E17136 – S4522 E17000 – S4538
E17159 – S4112 E17624 – S3929 E17602 FL180/260 MOV
E 25KT INTSF=

Mountain waves

WSAU21 AMRF 061700
YMMM SIGMET M07 VALID 061700/062100 YMRF-
YMMM MELBOURNE FIR SEV MTW OBS WI S3704 E14244
– S3611 E14753 – S3736 E14943 – S4006 E14800 – S3952
E14353 – S3704 E14244 FL080/140 STNR NC=

Icing

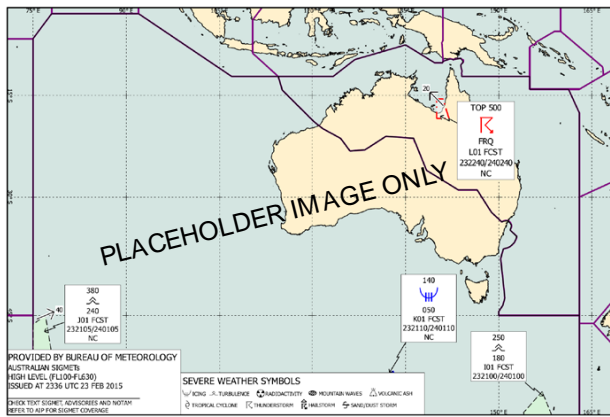
WSCI45 ZHHH 021100
ZHWH SIGMET 3 VALID 021100/021500 ZHHH-
ZHWH WUHAN FIR SEV ICE FCST N OF N28 SFC/FL200
STNR NC=

Radioactive cloud

WSSS20 VHHH 180830
VHHK SIGMET 1 VALID 180830/181230 VHHH-
VHHK HONG KONG FIR RDOACT CLD FCST E OF E114
SFC/FL100 MOV E 20KT WKN=

Cancellation

WSSS20 VHHH 181100
VHHK SIGMET 2 VALID 181100/181230 VHHH-
VHHK HONG KONG FIR CNL SIGMET 1 180830/181230=



DRAFT
2



References
ICAO Annex 3 – Meteorological Service for
International Air Navigation
ICAO Regional SIGMET Guide

ATTACHMENT C – WC SIGMET Poster

TC SIGMET

When a tropical cyclone (intensity 34 knots or greater) develops in your FIR, or has entered your FIR, or is expected to enter/develop in your FIR – Issue a TC SIGMET without delay.

STEP 1 Information Received

Source of Information	Type of Information	Issue a TC SIGMET
MWO, TCAC	Observations that confirm a tropical cyclone has developed, and/or information concerning a tropical cyclone is received from a TCAC.	TC observed - issue immediately. TC forecast to enter/develop in MWO's FIR - issue up to 12 hours before time TC is expected to enter/develop in FIR.



EXAMPLE: Tropical Cyclone Advisory issue by Tokyo TCAC for a tropical cyclone named Chanchu

```

151848 RJTDYMYX
FKPQ20 RJTD 151800Z
TC ADVISORY
TCAC: TOKYO
DTS: 20060519/1800Z
TCAC: CHANCHU
TC: 27
NR: N1855 E11500
PSN: NNW 06KT
MOV: 9204PA
C: 90KT
MAX WIND: 16/0000Z N1648 E11455
FCST PSN +6HR: 16/0000Z N1740 E11450
FCST MAX WIND +6HR: 90KT
FCST PSN +12HR: 16/0000Z N1740 E11450
FCST MAX WIND +12HR: 90KT
FCST PSN +18HR: 16/1800Z N1853 E11445
FCST MAX WIND +18HR: 90KT
FCST PSN +24HR: 16/1800Z N2005 E11440
FCST MAX WIND +24HR: 90KT
RMK: NIL
NXT MSG: 20060516/0000Z
    
```

Key

WMO abbreviated heading, disseminating centre and transmission day/time

Name of TCAC or issuing MWO

FIR

Sequence number and validity period day/time

Name of tropical cyclone

Time tropical cyclone observed and its position

Direction (16 points of compass) and speed of movement of tropical cyclone (TC advisory)

Extent, direction (8 points of compass), movement and changes in intensity of TC (provided by MWO)

Forecast position of tropical cyclone (TC advisory). The appropriate forecast position in a TC advisory is included in a TC SIGMET

For an observed TC, the start of validity for the SIGMET should be the same as the issue time. For a forecast TC SIGMET, the start of the validity should be the time the TC is expected to enter/develop in a MWO's FIR. The validity of a TC SIGMET is normally not more than 6 hours.

STEP 2 TC SIGMET Prepared

EXAMPLE 1: TC SIGMET for a TC observed in a MWO's FIR

```

Format:
WCAA JJ CCDC YYGGgg
CCCC SIGMET [nn]n VALID YYGGgg/YYGGgg cccc-
CCCC SIGMET [nn]n VALID YYGGgg/YYGGgg cccc-
CCCC SIGMET [nn]n VALID YYGGgg/YYGGgg cccc-
CCCC SIGMET [nn]n VALID YYGGgg/YYGGgg cccc-
CB TOP FL<NN> WI <NNN>KM or NMI OF CENTRE
MOV <Direction> <Speed> <Changes in Intensity>
FCST <GGgg> TC CENTRE <Lat> <Long>

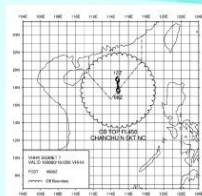
Example:
WCPH01 RPLL 151800Z
RPLL SIGMET 4 VALID 151800Z/160000Z RPLL-
RPLL SIGMET 4 VALID 151800Z/160000Z RPLL-
RPLL SIGMET 4 VALID 151800Z/160000Z RPLL-
RPLL SIGMET 4 VALID 151800Z/160000Z RPLL-
CB TOP FL450 WI 240NM OF CENTRE MOV N 9KT NC
FCST 0000Z TC CENTRE N1855 E11455
    
```

EXAMPLE 2: TC SIGMET for a TC forecast to enter a MWO's FIR from another FIR

```

Format:
WCAA JJ CCDC YYGGgg
CCCC SIGMET [nn]n VALID YYGGgg/YYGGgg cccc-
CCCC SIGMET [nn]n VALID YYGGgg/YYGGgg cccc-
CCCC SIGMET [nn]n VALID YYGGgg/YYGGgg cccc-
CCCC SIGMET [nn]n VALID YYGGgg/YYGGgg cccc-
CB TOP FL<NN> WI <NNN>KM or NMI OF CENTRE
MOV <Direction> <Speed> <Changes in Intensity>
FCST <GGgg> TC CENTRE <Lat> <Long>

Example:
WCSB00 VHHH 151800Z
VHHH SIGMET 2 VALID 150000Z/151200Z VHHH-
VHHH SIGMET 2 VALID 150000Z/151200Z VHHH-
VHHH SIGMET 2 VALID 150000Z/151200Z VHHH-
VHHH SIGMET 2 VALID 150000Z/151200Z VHHH-
CB TOP FL450 WI 240NM OF CENTRE MOV N 9KT NC
FCST 1200Z TC CENTRE N1853 E11445
    
```



Graphical SIGMET based on Example 2

While the CB cloud is shown stretching across more than one FIR, the depiction of any CB cloud outside an MWO's FIR is subject to the agreement by the State(s) concerned

STEP 3 TC SIGMET Transmitted

Tropical cyclones are hazardous to aircraft operations, so the issue of a TC SIGMET must be given high priority and issued without delay.

SEND TO:	Tel	Fax	AFTN	Email
ACC/FIC				
TCAC				
WAFcs				

Renew/Cancel

- RENEW**
- At least every 6 hours
- CANCEL**
- When tropical cyclone intensity falls below 34 knots
 - Tropical cyclone has moved out of the FIR (or is moving out)
- IF CANCELLED**
- Consider need for a TS SIGMET



For further information refer to the
 ICAO Annex 3/WMO Technical Regulations, Vol II
 Asia/Pacific Regional SIGMET Guide
 ICAO Manual of Aeronautical Meteorological Practice
 WMO Guide to Practices for Meteorological Offices Serving Aviation



ATTACHMENT D – WC SIGMET Pamphlet

Refer to attached draft pamphlet, noting that images within the pamphlet are for illustrative purposes only.



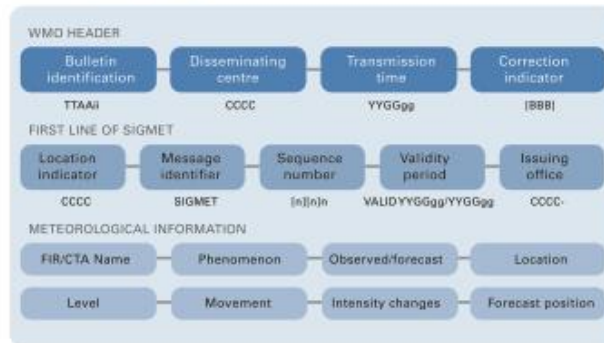
SIGMET Abbreviations

ABV	Above
AT	At (followed by time)
BLW	Below
CB	Cumulonimbus cloud
CNL	Cancel or cancelled
CTA	Control area
FCST	Forecast
FIR	Flight Information Region
FL	Flight level
FT	Feet
INTSF	Intensity or intensifying
KT	Knots
KMH	Kilometres per hour
M	Metres
MOV	Moving
NC	No Change (in intensity)
NM	Nautical Miles
OBS	Observed
SFC	Surface
STNR	Stationary
TOP	Top (of CB cloud)
WI	Within (area)
WKN	Weakening (intensity)

WC SIGMET

A SIGMET provides concise information issued by a Meteorological Watch Office (MWO) concerning the occurrence or expected occurrence of specific en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations. A WC SIGMET provides information on tropical cyclones (intensity 34 knots or greater). WC SIGMET should be based on the Tropical Cyclone Advisory.

SIGMET Structure



WMO Header

Bulletin identification

TT	Data type designator	WC – for SIGMET for tropical cyclone
AA	Country or territory designators	Assigned according to Table C1, Part II of <i>Manual on the Global Telecommunication System, Volume 1 – Global Aspects</i> (WMO Publication No. 386)
ii	Bulletin number	Assigned on national level according to p 2.3.2.2, Part II of <i>Manual on the Global Telecommunication System, Volume 1 – Global Aspects</i> (WMO Publication No. 386)

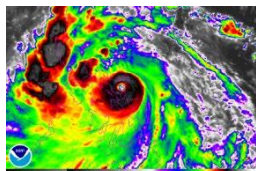
Disseminating centre

CCCC is the ICAO location indicator of the communication centre disseminating the message (this may be the same as the MWO location indicator).

Transmission time

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).





Typhoon Rammasun landfall in the Philippines on 15 July 2014. Image courtesy National Oceanic and Atmospheric Administration Satellite Services Division.



Typhoon Jelawat on 9 August 2000, showing clear Annular characteristics. Image courtesy NASA.



Satellite image of Severe Tropical Cyclone Yasi approaching Queensland, Australia on 2 February 2011. Image courtesy NASA; MODIS.



Correction indicator

BBB should be used only when issuing a correction to a SIGMET which had already been transmitted. The BBB indicator shall take the form **CCx** for corrections to previously relayed bulletins, where x takes the value A for the first correction, B for the second correction, etc.

First line of SIGMET

Location indicator

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

Message identifier

The message identifier is **SIGMET**.

Sequence number

The daily sequence number in the form **[n][n]n**, e.g. 1, 2, 01, 02, A01, A02. The numbering of SIGMET starts every day at 0001 UTC.

Validity period

The validity period is given in the format **VALID YYGGgg/YYGGgg** where YY is the day of the month and GGgg is the time in hours and minutes UTC. For an observed TC, the start of validity for the SIGMET should be the same as the issue time. For a forecast TC, the start of validity should be the time the TC is expected to enter/develop in a MWO's FIR and can be issued no more than 12 hours prior to the start of validity. The validity of a WC SIGMET shall be no more than 6 hours.

Issuing Office

CCCC- is the ICAO location indicator of the MWO originating the message followed by a hyphen.

Meteorological Information

FIR/CTA Name

The ICAO location indicator and full name of the FIR/CTA for which the SIGMET is issued in the form **CCCC <name> FIR/[UIR] or CCCC <name> CTA**.

Phenomenon

The description of the tropical cyclone consists of the abbreviation TC followed by the international name given by the corresponding WMO RSMC in the form **TC <name>**. If the disturbance is expected to become a TC, but is not yet named, the term **TC NN** should be used.

Observed or forecast

Whether the tropical cyclone is observed or forecast in the form **OBS [AT GGggZ]** or **FCST [AT GGggZ]** where GG is hours and gg minutes.

Location

The location of the centre of the tropical cyclone is provided with reference to geographical coordinates in latitude and longitude in degrees and minutes

Level

The vertical and horizontal extent of the tropical cyclone in the form:

CB TOP [ABV or BLW] <FLnnn> WI <nnnKM or nnnNM> OF CENTRE



E	East or eastern longitude
ENE	East-north-east
ESE	East-south-east
N	North or northern latitude
NE	North-east
NNE	North-north-east
NNW	North-north-west
NW	North-west
S	South or southern latitude
SE	South-east
SSE	South-south-east
SSW	South-south-west
SW	South-west
W	West or western longitude
WNW	West-north-west
WSW	West-south-west

Movement

Direction and rate of movement of the tropical cyclone where the direction is given with reference to one of the sixteen points of the compass (using the appropriate abbreviation) and the rate is given in KT (or KMH) in the form **MOV <direction> <speed>KT [or KMH]**. The abbreviation **STNR** (Stationary) is used if no significant movement is expected.

Intensity changes

The expected evolution of the tropical cyclone's intensity as indicated by:

INTSF or **WKN** or **NC**

Forecast position

The forecast position of the tropical cyclone in the form: **FCST <GGgg>ZTC CENTRE <location>**.

Renewing a SIGMET

A SIGMET is renewed with a new sequence number when the validity period is due to expire but the tropical cyclone is expected to persist.

Cancelling a SIGMET

If, during the validity period of a SIGMET, the tropical cyclone intensity falls below 34 knots or if it has moved out of the FIR, the SIGMET shall be cancelled by issuing a SIGMET with the abbreviation CNL in lieu of meteorological information.

CNL SIGMET [n][n][n] YYGGgg/YYGGgg

When cancelling a WC SIGMET consider the need for a WS SIGMET for thunderstorms.

Source of Information

Source of Information	Types of Information	Issue a WC SIGMET
MWO, TCAC	Observations that confirm a tropical cyclone has developed. Information concerning a tropical cyclone is received from a TCAC.	TC observed – issue immediately. TC forecast to enter/develop in MWOs FIR – issue up to 12 hours before the time the TC is expected to enter/develop in FIR.

SIGMET Dissemination

SIGMET is part of operational meteorological (OPMET) information and should be exchanged via aeronautical fixed service (AFS). The SIGMET priority indicator used shall be **FF**.



Super Typhoon Pongsona, 10 December 2002. Image courtesy NASA.



Damage from Supertyphoon Pongsona on the island of Rota, 20 December 2002. Image courtesy FEMA Photo Library, Andrea Booher.

TCA and WC SIGMET Examples

Tropical Cyclone Advisory (TCA) Example

```

FKAU05 ADRM 071830
TC ADVISORY
DTG: 20130307/1800Z
TCAC: DARWIN
TC: SANDRA
NR: 02
PSN: S1500 E15600
MOV: NE 07KT
C: 989HPA
MAX WIND: 35KT
FCST PSN +6HR: 08/0000Z S1500 E15630
FCST MAX WIND +6HR: 40KT
FCST PSN +12HR: 08/0600Z S1448 E15706
FCST MAX WIND +12HR: 45KT
FCST PSN +18HR: 08/1200Z S1454 E15736
FCST MAX WIND +18HR: 50KT
FCST PSN +24HR: 08/1800Z S1500 E15800
FCST MAX WIND +24HR: 60KT
RMK: NIL
NXT MSG: 20130308/0100Z
    
```

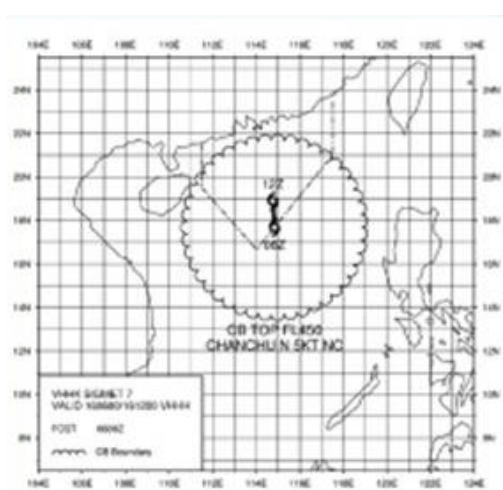
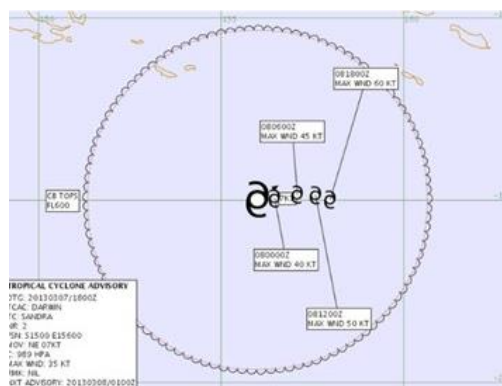
Tropical Cyclone Advisory (TCA) Example

```

FKPQ30 RJTD 151800
TC ADVISORY
DTG: 20060515/1800Z
TCAC: TOKYO
TC: CHANCHU
NR: 27
PSN: N1555 E11500
MOV: NNW 06KT
C: 930HPA
MAX WIND: 90KT
FCST PSN +6HR: 16/0000Z N1648 E11455
FCST MAX WIND +6HR: 90KT
FCST PSN +12HR: 16/0600Z N1740 E11450
FCST MAX WIND +12HR: 90KT
FCST PSN +18HR: 16/1200Z N1853 E11445
FCST MAX WIND +18HR: 90KT
FCST PSN +24HR: 16/1800Z N2005 E11440
FCST MAX WIND +24HR: 90KT
RMK: NIL
NXT MSG: 200605/0000Z
    
```



Tropical Cyclone Advisory Graphic (TCG) Example



Tropical Cyclone SIGMET Format
 WCAAii CCCC YYGGgg [BBB]
 CCCC SIGMET [n][n][n] VALID YYGGgg/YYGGgg CCCC-
 CCCC <FIR/CTA Name> FIR TC <Name> OBS/FCST [AT
 GGggZ] <Location> <Level> <Movement> <Intensity
 changes> <Forecast position>=

Tropical Cyclone SIGMET Example
 WCAU01 ABRF 071910
 YBBB SIGMET D02 VALID 071915/080115 YBRF-
 YBBB BRISBANE FIR TC SANDRA OBS AT 1800Z S1500
 E15600 CB TOP FL500 WI
 280NM OF CENTRE MOV NE 07KT INTSF FCST 0000Z TC
 CENTRE S1500 E15630=

Cancellation
 WCAU01 ABRF 100515
 YBBB SIGMET D12 VALID 100515/100715 YBRF-
 YBBB BRISBANE FIR CNL SIGMET D06 100115/100715=

Tropical Cyclone SIGMET Example
 WCPH31 RPLL 151800
 RPHI SIGMET 4 VALID 151800/160000 RPLL-
 RPHI MANILA FIR TC CHANCHU OBS AT 1800Z N1555
 E11500 CB TOP FL450 WI
 240NM OF CENTRE MOV N 05KT NC FCST 0000Z TC
 CENTRE N1648 E11455=

Tropical Cyclone SIGMET Example
 WCSS20 VHHH 151900
 VHKK SIGMET 7 VALID 160600/161200 VHHH-
 VHKK HONG KONG FIR TC CHANCHU FCST AT 0600Z
 N1740 E11450 CB TOP FL450 WI
 240NM OF CENTRE MOV N 05KT NC FCST 1200Z TC
 CENTRE N1853 E11445=



- References**
 ICAO Annex 3/ WMO Technical Regulation Vol II – Meteorological Service for International Air Navigation
 ICAO Regional SIGMET Guide
 ICAO Doc.8896 – Manual of Aeronautical Meteorological Practice
 WMO No.732 Guide to Practices for Meteorological Offices Serving Aviation