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INTERNATIONAL CIVIL AVIATION ORGANIZATION



EUR SIGMET AND AIRMET GUIDE

~~SECOND~~ **THIRD** EDITION
~~2010~~ **2020**
(~~Amended 2019~~)

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RECORD OF AMENDMENTS AND CORRIGENDA

Amendments			
No.	Date of issue	Date entered	Entered by
1	5-July-2011	5-July-2011	RO-MET
2	24-Nov-2011	24-Nov-2011	RO-MET
3	15-Feb-2013	15-Feb-2013	RO-MET
4	3-Jan-2014	3-Jan-2014	RO-MET (align w/ Am76 to Annex 3)
5	11-Feb-2014	11-Feb-2014	MET—Update App-B entries-Norway
6	3-Nov-2014	3-Nov-2014	Update-WMO-AHL for Russian Federation and ad-hoc-METG changes (align w/ global template)
7	26-Oct-2015	26-Oct-2015	Non-controversial editorials: Identification of METWSG best practice guidance; Removal of 'UIR' on its own; Re-ordering of the methods by which spatial location of hazards should be provided in accordance with IATA's preferences. Updated guidance regarding amending SIGMET/AIRMET. Updates to Appendix B and Appendix H (which includes examples of SIGMET for complex FIRE) as well as the inclusion of Appendix I that provides examples of special air reports. Appendix F is now a link to SIGMET focal point contact information which was considered dynamic and could be updated more frequently.
8	27-Jul-2016	27-Jul-2016	Update-WMO-AHL for Finland, Germany, Italy, Russian Federation, Ukraine
9	31-Jan-2017	31-Jan-2017	Update for compliance with Amendment 77 to ICAO Annex 3. Inclusion of 'Best Practice'

[illegible]

EUR SIGMET and AIRMET Guide

			procedures — as agreed — at METG/26. Includes SIGMET examples — for tropical cyclone; guidance on cross-FIR coordination; use of speed of movement (use two digits for speed 09 or less); use of SEV TURB (instead of CAT); use of ENTIRE FIR for all SIGMET types; inclusion of guidance on vertical extent of phenomenon using altitudes (M, FT) in combination with FL depending on transition altitude; and expression of midnight as dd0000.					
10	21-Dec-2017	21-Dec-2017	Update for compliance with decisions taken at METG27					
11	29-Oct-2018	29-Oct-2018	Update WMO AHL for SIGMET for Russian Federation; Uzbekistan; compliance with Amendment 78 to ICAO Annex3; items from DMG/23 related to IWXXM; best practices provided by the SIGMET ad-hoc group; as well as proposals provided by the Netherlands					
12	30-Sep-2019	30-Sep-2019	Alignment with Amendment 78 to ICAO Annex3 (EXER, TEST, radioactive cloud); best practices provided at ICAO METG/29 by the SIGMET ad-hoc group (SQL definition; TSGR, minimum extent of phenomena) as well as update of some references and minor editorial changes.					

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PART 1. INTRODUCTION

1.1 The main purpose of this document is to provide guidance for standardization and harmonization of the procedures and formats related to the occurrence or expected occurrence of specified hazardous en-route weather conditions that may affect the safety of aircraft and low-level aircraft operations, known as SIGMET and AIRMET information. The guidance is complementary to the Annex 3 standards and recommended practices (SARPs) regarding SIGMET and AIRMET, and to the SIGMET and AIRMET related provisions of the EUR eANP (ICAO Doc 7754).

1.2 In respect of SIGMET messages, this document includes guidance for significant en-route weather phenomena and volcanic ash SIGMET messages. ~~Provisional Guidance is also included for those EUR States with responsibility for issuing SIGMET messages for EUR/NAT FIRs that may be affected by tropical cyclones is also included, pending official requirements within the eANP. Space Weather is not within the scope of this document, as there is no requirement for issuing related SIGMETs.~~

1.3 ICAO provisions concerning the issuance and dissemination of SIGMET information are primarily contained in:

- Annex 3 - *Meteorological Service for International Air Navigation*, Part I, Chapter 3, paragraphs 3.4, ~~3.7~~, Chapter 7, paragraph 7.1, and Part II, Appendix 6.
- EUR eANP, Volume II Part V – Meteorology (MET), Table MET II-1.
- Annex 11 - *Air Traffic Services*, Chapter 4, paragraph 4.2.1 and Chapter 7, paragraph 7.1.
- PANS – *Air Traffic Management*, Doc 4444, Chapter 9, paragraph 9.1.3.2.
- EUR Regional Supplementary Procedures, Doc 7030, Chapter 6, 6.13.2.

Additional guidance on the SIGMET procedures is contained in the *Manual of Aeronautical Meteorological Practice*, Doc 8896, and *Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services*, Doc 9377.

1.4 AIRMET information is issued by a Meteorological Watch Office (MWO) concerning the occurrence or expected occurrence of specified en-route weather phenomena which may affect the safety of low-level aircraft operations and which was not already included in the forecast issued for low-level flights in the flight information region concerned or sub-area thereof.

1.5 ICAO provisions concerning the issuance and dissemination of AIRMET information are primarily contained in:

- Annex 3 - *Meteorological Service for International Air Navigation*, Part I, Chapter 3, paragraph 3.4, Chapter 6, paragraph 6.5, Chapter 7, paragraph 7.2, and Part II, Appendix 6.
- EUR eANP, Volume II, Part V – Meteorology (MET), Table MET II-1
- Annex 11 - *Air Traffic Services*, Chapter 4, paragraph 4.2.1.
- PANS – *Air Traffic Management*, Doc 4444, Chapter 9, paragraph 9.1.3.2.

Additional guidance on the AIRMET procedures is contained in the *Manual of Aeronautical Meteorological Practice*, Doc 8896, and *Manual on Coordination between Air Traffic Services, Aeronautical Information Services and Aeronautical Meteorological Services*, Doc 9377.

~~Second Edition~~ Third Edition

30 Sep 2019

Commented [WC2]: TC-handling described

Commented [SK3]: Instead of intended, perhaps use "requirement"

Commented [WC4R3]: Added

Commented [SK5]: I checked the reference. SIGMET is only in 3.4. 3.5 to 3.7 don't have anything to do with SIGMETS.

1.6 The SIGMET and AIRMET Guide is intended mainly to assist the MWOs in the EUR Region in preparing and disseminating SIGMET and AIRMET information. It provides detailed information on the format of SIGMET and AIRMET messages as specified by Annex 3. The explanations of the format are accompanied by a number of examples based on region-specific meteorological phenomena. The guide also provides information regarding the necessary coordination between the MWOs, the Air Traffic Service (ATS) units, and the pilots, and their respective responsibilities.

1.7 This document is prepared by the ICAO EUR/NAT Regional Office, with the assistance of the ~~EANPG-EASPG~~ Meteorology Group (METG), and is published on the website at URL: <http://www.icao.int/EURNAT/Pages/welcome.aspx> (EUR/NAT Documents ---> EUR Documents ---> 014 – EUR SIGMET and AIRMET Guide). It should be reviewed and updated regularly in order to be kept in line with the ICAO SARPs and regional procedures.

1.8 This document is furthermore aimed to be in alignment with the most recent Amendment to ICAO Annex 3 and is designed as guideline. Additional requirements resulting from national and European legislation remain unaffected by this document.

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PART 2. RESPONSIBILITIES AND COORDINATION

2.1 General

2.1.1 SIGMET and AIRMET are of highest priority among other types of OPMET information provided to aviation users. The primary purpose of SIGMET and AIRMET is for in-flight service, which requires timely transmission of the SIGMET and, where available, AIRMET messages to pilots by the ATS units and/or through ~~VOLMET and, D-VOLMET~~ and other suitable means of data transmission.

Commented [WC6]: This is not exhaustive, isn't it? SIGMETs are also transmitted to electronic flight bags and in future via SWIM services. Maybe we add the other existing ways of transmission?

2.1.2 Airlines are the main users of the SIGMET and AIRMET information. Pilots contribute to the effectiveness of the SIGMET and AIRMET service through issuance of (routine and special) air-reports to the ATS units. Such air-reports are among the most valuable sources of information for the Meteorological Watch Offices (MWO) in the preparation of SIGMET and AIRMET. The ATS units receiving special air-reports should forward them to the associated MWOs without delay as well as to WAFCs if received by data-link communications. In addition, special air-reports of pre-eruption volcanic activity, a volcanic eruption, volcanic ash cloud or aircraft encounter with volcanic ash received by MWOs should be transmitted to their associated VAAC and WAFCs using the address specified in ICAO Doc 9766, ~~VAACs at the address specified in Table 4-2 of Doc 9766, to the WAFAC London SADIS at the address specified in Appendix B of ICAO Doc 9766, according to the region containing the area affected, and the WAFAC Washington at KWBCYMYX (reference ICAO Doc 9766).~~

Commented [SK7]: Does this need to go in this document? Just put "should be transmitted to their associated VAAC and WAFCs using the address specified in ICAO Doc 9766"

Also suggest breaking para 2.1.2 into two as it is very long.

Commented [HP8R7]: I agree with Karen, end of the par should be removed.

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~~2.1.2.1.3~~ The ATS units receiving routine air-reports by data link communication should forward them to the associated MWOs and WAFCs without delay. Examples on the format and dissemination of special air-reports are provided at **Appendix D1**. ~~The importance of these reports was described at METG/29 (paragraph 3.3.67) as follows: *Special air-reports have value for the following reasons: airlines use these reports in their Safety Risk Assessment approach as well as for choosing efficient routes; appropriate special air-reports relevant to the whole route are required to be provided to operators and flight crew; confirmation of other similar reports and/or SIGMET; and post-analysis of hazardous weather products.* For these reasons many MWOs in the EUR Region disseminate special air-reports all the time.,~~

~~2.1.3.2.1.4~~ As seen from the above, the SIGMET and AIRMET service involves Meteorology (MET), ATS and pilots. In order for the SIGMET and AIRMET service to be effective, close coordination between these parties, as well as mutual understanding of the needs and responsibilities, should be maintained.

~~2.1.4.2.1.5~~ For the special case of SIGMET for volcanic ash, the MWOs are provided with advisories from the Volcanic Ash Advisory Centres (VAACs) designated in the Regional ANP.

~~2.1.5.2.1.6~~ SIGMET and AIRMET information is also used for ~~the~~ flight planning and in-flight monitoring. This requires global dissemination of SIGMET and AIRMET through the EUR Regional OPMET Centres (ROCs) that will forward the information to the international OPMET data banks and World Area Forecast Centres (WAFCs) London and Washington for global distribution (via SADIS and WIFS and SADIS FTP, noting WIFS does not distribute AIRMET and special air-reports) ~~and for use in the preparation of the significant weather (SIGWX) forecasts.~~

Commented [SK9]: We don't use them in SIGWX production – time scale is all wrong!

~~2.1.6~~ ~~In the next paragraphs, the main responsibilities and coordination links between MET, ATS and pilots are described.~~

2.2 Meteorological Watch Office - responsibilities and procedures related to SIGMET and AIRMET

2.2.1 SIGMET and AIRMET information is issued by the MWO in order to provide timely warning for the occurrence or expected occurrence of specified en-route weather phenomena, affecting the safety of the flight operations in the MWO's Area Of Responsibility (AOR). SIGMET and AIRMET provide information concerning the location, extent, intensity and expected evolution of the specified phenomena.

2.2.2 Information about the provision of SIGMET and AIRMET service, including details on the designated MWO(s), should be included in the State's Aeronautical Information Publication (AIP) as specified in Annex 15, Aeronautical Information Service, Appendix 1, GEN 3.5.8.

2.2.3 All designated MWOs in the EUR Region are listed in Table MET II-1 of the EUR eANP Volume II.

2.2.4 In case of interruption to the operation of an MWO – for example due to an IT/communication failure or other such short-term (temporary) outage – its functions may be carried out by another MWO or other meteorological centre as designated by the meteorological authority of the State concerned. The activation/deactivation of such contingency arrangements may be notified to users via NOTAM. ~~If, for some reason, a MWO is not able to meet its obligations, including the provision of SIGMET and AIRMET, arrangements have to be made by the meteorological authority concerned, that another MWO takes over these responsibilities for a certain period of time. Such delegation of responsibilities has to be notified by a NOTAM~~

2.2.5 In the case of a more permanent interruption to the operation of an MWO, the meteorological authority of the State concerned may establish a longer-term arrangement (including a bilateral arrangement with another State) to be recorded in the ICAO Regional Air Navigation Plan (ANP) and State Aeronautical Information Publication (AIP). In addition, a Letter of Agreement should be negotiated by the respective MET Authorities and if necessary, assisted by the relevant ICAO Regional Office. ~~and a letter to the ICAO Regional Office.~~

2.2.6 When an MWO serves as a backup to another MWO to issue SIGMET, the SIGMET bulletin headers should be provided to the Regional OPMET Centres in the EUR Region if they are different in order to update their routing databases. Note that there are cases where the backup MWO does not change the bulletin headers in which case no notification is necessary.

2.2.57 Since the MWO is normally not a separate administrative unit, but part of the functions of an aerodrome meteorological office or another meteorological office, the meteorological authority concerned should ensure that the MWO obligations and responsibilities are clearly defined and assigned to the unit designated to serve as MWO. The corresponding operational procedures have to be established and the meteorological staff should be trained accordingly.

2.2.68 In preparing SIGMET and AIRMET information, the MWOs have to strictly follow the format determined in Annex 3 (detailed format description is provided in Appendix 6, Table A6-1A of Annex 3). ~~For more assistance on the SIGMET, reference Appendix H to this guide – SIGMET Guidance Table: Enhanced SIGMET Guidance Table Developed from Annex 3 Table A6-1A. SIGMET and AIRMET should be issued only for those weather phenomena listed in Annex 3 and only when specified criteria for intensity and spatial extent are met.~~

~~Note: MWOs should not issue SIGMET and AIRMET for weather phenomena of lower intensity or of such transient nature or smaller scale, which do not affect significantly the flight safety, and their transmission to users may lead to unnecessary precautionary measures.~~

2.2.79 The MWOs should be adequately equipped in order to identify, analyse and forecast (to the extent required) those phenomena for which SIGMET and AIRMET is required. The MWO should make use of all available sources of information, such as special air-reports, information from meteorological satellites and weather radars, numerical predictions, etc.

2.2.810 On receipt of a special air-report from the associated Area Control Centre (ACC) or Flight Information Centre (FIC), the MWO ~~should:~~

- a) issue the corresponding SIGMET and AIRMET information; ~~or~~
- b) send the special air-report for on-ward transmission in case that the issuance of SIGMET information is not warranted (e.g., the phenomenon reported is of transient nature). ~~Note that~~

Second/Third Edition 30/24 Sep 2019/2020

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Commented [WC10]: Isn't this sentence obsolete, as we define criteria with this document/Annex 3?

Commented [SK11R10]: Agree

Commented [WC12]: Added DMG30 comment

Commented [WC13R12]: On May 6th we discussed this new paragraph version. We need agreement from the group that the words, especially "is invited to" emphasize forwarding of reports as added optional procedure in EUR without being contradictory to Annex 3 (reports which lead to an SIGMET are not being forwarded)

Commented [HP14R12]: I agree with Andreas proposal, according to past discussions within the group.

Commented [MSD15]: Agree with the added DMG30-proposal – Or even better: would prefer apfoser's suggestion of changing the order so that sending special air-report is mentioned first and SIGMET/AIRMET secondly

Commented [MSD16]: Delete 'should'

Commented [a17]: Has been repeatedly discussed during previous years within the group. The procedure in some or many (?) states within the EUR region is to issue both, ARS AND (not OR) SIGMET.

To reflect this, a proposal could be (to be discussed):
"2.2.8 On receipt of a special air-report from the ACC or FIC, the MWO should:
a) send the special air-report for on-ward transmission. Note that a list of special air-report headers ... and
b) issue a corresponding SIGMET or AIRMET information if the phenomenon is not of transient nature or smaller scale"

Commented [MSD18]: delete the word "that"?

~~a list of special air report headers for the EUR Region is provided at the following website: <http://www.icao.int/EURNAT/Pages/welcome.aspx> (EUR/NAT Documents > EUR Documents > MET Guidance > Headers Special air reports).~~

2.2.9¹¹ Appropriate telecommunication means have to be available at the MWO in order to ensure timely dissemination of SIGMET and AIRMET (as per Table MET II-1 of the EUR eANP Volume II) according to a dissemination scheme, which includes transmission to the responsible Regional OPMET Centres (ROCs) and international EUR OPMET data banks (it should be arranged through the EUR RODEX scheme, that SIGMET and AIRMET are sent to the designated OPMET data banks in other ICAO Regions, ~~to the WAFCs and to the SADIS and WIFS Gateways noting WIFS does not distribute AIRMET and special air reports~~); and

*Note that SIGMET, AIRMET and special air-reports priority indicator is **FF** for flight safety messages (Annex 10, Volume II, 4.4.1.1.3)*

2.2.4¹² In issuing SIGMET for volcanic ash, the MWOs should take into consideration the advisory information received from the responsible VAAC. In addition to the information received from the VAAC, the MWOs may use available complementary information from other reliable sources. ~~In such a case the responsibility for this additional information would lie completely on the MWO concerned.~~

2.3 Responsibilities of ATS units

2.3.1 Close coordination should be established between the MWO and the corresponding ATS unit (ACC or FIC), including arrangements in order to ensure:

- receipt without delay and display at the relevant ATS units of SIGMET and AIRMET issued by the associated MWO;
- receipt and display at the ATS unit of SIGMET and AIRMET issued by MWOs responsible for the neighbouring FIRs/ACCs if these SIGMET and AIRMET are required according to paragraph 2.3.4 below; and
- transmission without delay of special air-reports received through voice communication to the associated MWO.

2.3.2 SIGMET and AIRMET information should be transmitted to aircraft with the least possible delay on the initiative of the responsible ATS unit, by the preferred method of direct transmission followed by acknowledgement or by a general call when the number of aircraft would render the preferred method impracticable.

~~2.3.3 SIGMET and AIRMET information passed to aircraft should cover a portion of the route up to a flying time of two hours ahead of the aircraft.~~

2.3.3⁴ Air traffic controllers should ascertain whether any of the currently valid SIGMETs ~~or AIRMETs~~ may affect any of the aircraft they are controlling, either within or outside their AOR up to a flying time of two hours ahead of the current position of the aircraft. If this is the case, the controllers should transmit the SIGMET promptly to the aircraft-in-flight likely to be affected.

2.3.4⁵ The ATS units have to transmit to the concerned aircraft-in-flight the special air-reports received, for which SIGMET has not been issued. Once a SIGMET for the weather phenomenon reported in the special air report is made available, this obligation of the ATS unit expires.

2.4 Responsibilities of pilots

Commented [SK19]: Remove the bit I have highlighted. Its already in a para a further up the document

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Commented [H20]: I think, MWO is responsible for any SIGMET issued on the VAAC basis and/or additional information basis. In my point of view, this wording removes a significant part of MWOs responsibility in case of the issuance of SIGMET messages based on the VA advisory. MWOs and VAACs are centers of different States with diverse legislation in most cases and nominated differently thereto. So VAACs are responsible for their own advisory information, and MWOs are responsible for SIGMETs.

Commented [SK21]: Delete sentence as it is repetition. 2.3.4 says the same.

2.4.1 Timely issuance of SIGMET and AIRMET information is largely dependent on the prompt receipt by MWOs of special air-reports. That is why it is essential that pilots prepare and transmit such reports to the ATS units whenever any of the specified en-route conditions are encountered or observed.

2.4.2 It should be emphasized that, even when Automatic Dependent Surveillance (ADS) is being used for routine air reports, pilots should continue to make special air-reports.

2.5 Coordination between MWOs with responsibility for neighbouring FIRs

2.5.1 In order to provide consistent information to operators and air traffic control service providers, MWOs are encouraged to develop coordination processes with those MWOs responsible for adjacent FIRs. Such bilateral or multilateral arrangements between Contracting States, including for cooperation and delegation, are enabled by Annex 3 provisions and supported by guidance contained in the *Manual of Aeronautical Meteorological Practice*, Doc 8896.

2.5.2 Such coordination results in consistent forecasts of hazardous phenomenon and ensures that all stakeholders are basing their decisions on consistent and coherent meteorological information.

2.5.3 From experience shared by those MWOs who already undertake such coordination, the following advice to the establishment of coordination activities is provided. It may of course be adapted to suit particular circumstances:

- 1) Managers of the meteorologists who will be engaged with coordination activities establish contact and agree on the principles of coordination. Consider if Letters of Agreement or Memorandum of Understanding are necessary. A template Letter of Agreement is provided at **Appendix KE**.
- 2) A template 'coordination process' is provided at **Appendix FL** and has been successfully used by a number of States with regard to establishing SIGMET coordination. It is intended that the template be adapted as necessary, but it is also intended to help establish a degree of commonality.
- 3) Meteorologists who will be involved in the process should be involved early in the process of establishing the coordination activity.
- 4) Agree to the language under which coordination will take place.
- 5) Share the names of meteorologists who will be involved in the coordination process in advance. This seems to help overcoming any initial reluctance to contact the adjacent MWO. Where feasible within budgetary constraints, liaison through workshops of operational meteorologists should be encouraged.
- 6) Encourage meteorologists to be receptive to the ideas/opinions of adjacent MWO meteorologists. Whilst the MWO retains the ultimate right to issue the SIGMET as it considers most appropriate, a professional approach includes acknowledgement of the validity of additional opinions from fellow professionals.
- 7) Monitor the occasions where coordination has taken place to demonstrate the benefits of undertaking the process. Maintenance of logs, particularly where agreement cannot be reached, can provide great benefit in converging practices. **Appendix GM** provides an example form for the monitoring of SIGMET coordination between MWOs.
- 8) Seek feedback from the meteorologists concerned.

9) Arrange an appropriate time for a review of the process between coordinating MWOs.

10) Introduce coordination activities in a gradual process – it may not be practical to implement coordination activities with all adjacent States at the same time, but once coordination activities begin the process is easier to implement with additional States.

2.5.4 The coordination process is also considered to facilitate closer relationships between National Meteorological Services (NMSs) and the MWO meteorologists. ~~responsible for SIGMET and AIRMET production.~~

2.5.5 Time should be allocated in the normal SIGMET production workflow for coordination activities to take place should they be required, and to be carried out with a sufficient lead time to ensure the timely production of the SIGMET. For observed SIGMET phenomena, coordination activities may be postponed in order to provide a timely warning for airspace users.

2.5.6 The coordination discussion shall comprise

- Whether or not a SIGMET should be issued
- The type of SIGMET phenomenon
- The horizontal and vertical extent
- The period of validity
- The movement, intensity development and forecast position

2.5.7 Coordination, mainly using phone calls or other suitable means of communication, should be instigated by a MWO when:

- A SIGMET phenomenon is expected to occur near to, or cross an airspace border, specifically the moment and manner of handover from one FIR to another.
- A SIGMET phenomenon is moving towards an airspace border, and is expected to cross the border during the validity period of the SIGMET
- A coordinated SIGMET needs to be extended or cancelled

2.5.8 The goal of coordination is a consistent SIGMET production for airspace users. However, although using common best practices and criteria, the result of coordination may also be regarded as successful, if it is agreed to not issue additional SIGMETs or if attributes of SIGMET deviate due to meteorological reasons.

2.6 Coordination between MWOs and the VAACs

2.6.1 Amongst the phenomena for which SIGMET information is required, the volcanic ash clouds are of particular importance for the planning of long-haul flights.

2.6.2 Since the identification, analysis and forecasting of volcanic ash require considerable technical and human resources, normally not available at each MWO, a number of Volcanic Ash Advisory Centres (VAACs) have been designated to provide VA advisories to the users and assist MWOs in the preparation of the SIGMET for volcanic ash. Close coordination should be established between the MWO and the responsible VAAC.

2.6.3 Information regarding the VAACs serving the EUR Region with their corresponding areas of responsibility and lists of MWOs to which advisories are to be sent is provided in Part 2 of the Handbook on the International Airways Volcano Watch (IAVW) (ICAO Doc 9766).

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Commented [HP22]: I should keep only the first part "Time should be allocated in the normal SIGMET production workflow for coordination activities to take place"
I propose to move 2.5.5, 2.5.6 and 2.5.7 within 2.5.3.
Not sure that 2.5.8 should be kept.

Commented [SK23]: The wording in this paragraph is weird, and in part repeated further down. Perhaps simply use the following:

"Time should be allocated in the normal SIGMET production workflow for coordination activities to take place should they be required, and to be carried out with a sufficient lead time to ensure the timely production of the SIGMET. For observed SIGWX phenomena, coordination activities may be postponed in order to provide a timely warning for airspace users"

Commented [MSD24]: Suggestion: Add a first bullet "whether or not a SIGMET should be issued near the border"

Commented [HP25]: Communication?

Commented [SK26]: Perhaps use "instigated by a MWO when:"

Commented [SK27]: Can we write these in plain English!
"A SIGMET phenomena is expected to occur near to, or cross an airspace border"
"A SIGMET phenomena is moving towards an airspace border, and is expected to cross the border during the validity period of the SIGMET"
"A coordinated SIGMET needs to be extended or cancelled"

Commented [HP28]: I find this paragraph redundant for the 1st part and a bit confusing for the 2nd part.

Commented [MSD29]: Not clear to me exactly what is meant by this?

Commented [WC30R29]: That coordination is useful even if only the forecast position touches any borders – we had some discussions concerning this in the past because some visualization systems make no difference of initial SIGMET position and forecast position.

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PART 3. RULES FOR PREPARATION OF SIGMET INFORMATION

3.1 General

3.1.1 SIGMET information is prepared in abbreviated plain language using approved ICAO abbreviations, a limited number of non-abbreviated words, and numerical values of self-explanatory nature. All abbreviations and words to be used in SIGMET (and AIRMET) in Traditional Alphanumeric Code (TAC) format are given in **Appendix A**. In addition to the issuance of SIGMET information in Traditional Alphanumeric Code (TAC) format, MWOs should issue SIGMET information in the ICAO Meteorological Information Exchange Model (IWXXM) format. *For more information; please refer to EUR Doc 018, EUR Doc 020 and WMO [documentation](#) No.306 Volume 1.3.*

3.1.2 The increasing use of automated systems for handling MET information by the MET offices and the aviation users makes it essential that all types of OPMET information, including SIGMET, are prepared and transmitted in the prescribed standardized formats. Therefore, the structure and format of the SIGMET message, as specified in Annex 3, Part II, Appendix 6, should be followed strictly by the MWOs. Annex 3, Appendix 6, Table A6-1A provides detailed information regarding the content and order of elements in the SIGMET message.

3.1.3 SIGMET is intended for transmission to aircraft in flight either by Air Traffic Control (ATC) or by VOLMET or D-VOLMET or the aircraft operators. Therefore, SIGMET messages should be kept short and clear, without additional descriptive text other than that prescribed in Annex 3.

3.1.4 After issuing a SIGMET, the MWO maintains watch over the evolution of the phenomenon for which the SIGMET has been issued and issues a new updated SIGMET when necessary. VA SIGMETs have to be updated at least every 6 hours.

3.1.5 SIGMETs should be promptly cancelled when the phenomenon is no longer occurring or no longer expected to occur in the MWO's area of responsibility. In addition, **an** incorrect SIGMET (e.g. error in FL) should be cancelled and a new SIGMET issued with the corrected information avoiding the use of COR as it is: a) not in Annex 3; b) is not supported by ICAO Meteorological Information Exchange Model (IWXXM); and c) is not clear to the users what element is corrected. The SIGMET is understood to cancel itself automatically at the end of its validity period. If the phenomenon persists, a new SIGMET message for a further period of validity has to be issued.

3.1.6 Some SIGMETs are generated using information from special air-reports (received by voice communications or data link (downlink)). The reporting of turbulence and icing used in special air-reports includes both moderate and severe categories (as per Doc 4444, Appendix 1). Some pilots report turbulence as "moderate to severe". **A MWO is then faced with determining which category to use in a special air-report (uplink) or in a SIGMET message for severe turbulence. It is recommended for MWOs, taking the aircraft type into account, to treat such "moderate to severe" observations as 'severe' in the context of using the report to prompt the issuance of a SIGMET. It is recommended to treat such "moderate to severe" observations as 'severe' in the context of using the report to prompt the issuance of a SIGMET message or a special air report (uplink).**

3.2 Types of SIGMET

3.2.1 Although Annex 3 provides one general SIGMET format, which encompasses all weather phenomena, it is convenient when describing the structure and format of the messages to distinguish between three types of SIGMET, as follows:

- **WS SIGMET: these are SIGMET for en-route weather phenomena other than volcanic ash or tropical cyclones (this includes: TS, TURB, ICE, MTW, DS, SS, and RDOACT CLD); this SIGMET is referred to as a WS SIGMET;**

Commented [WW(31)]: Refer to specific documents

Commented [WC32R31]: Added the schematron link – is it the right link here?

Commented [WC33R31]: Manual on codes to reference Vol 1 Part 3

Commented [MSD34]: Maybe a little off-topic, but I am interested to discuss this – not for SIGMET, only for special air-reports:
If the pilot reports a phenomenon as "moderate to severe" shouldn't the uplink version (from the MWO) of the air-report keep this exact wording (even though it is maybe strictly speaking not allowed in Annex 3 Table A6-1B)? Isn't it wrong to alter the wording to "severe"?

My suggestion for 3.1.6:
"Some SIGMETs are generated using information from special air-reports (received by voice communications or data link (downlink)). The reporting of turbulence and icing used in special air-reports includes both moderate and severe categories (as per Doc 4444, Appendix 1). Some pilots report turbulence as "moderate to severe". It is recommended for MWOs to treat such "moderate to severe" observations as 'severe' in the context of using the report to prompt the issuance of a SIGMET. For the special air-report (uplink) the original wording "moderate to severe" should be kept.

Commented [WC35R34]: Agree to your proposal

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Commented [SK36]: Perhaps write this as:
"WS SIGMETs: these are for en-route weather phenomena other than volcanic ash or tropical cyclones (this includes: TS, TURB, ICE, MTW, DS, SS, and RDOACT CLD)

~~WV SIGMETs: these are for volcanic ash~~ ~~SIGMET for volcanic ash is referred to as a WV SIGMET;~~

~~WC SIGMETs: these are for a tropical cyclone~~ ~~is referred to as a WC SIGMET. Four Seven~~ EUR members (France, Ireland, Morocco, Portugal, Russian Federation, Spain and United Kingdom) will have responsibility for issuing TC SIGMET for EUR/NAT FIRs ~~after pending approval into the eANP~~. As such, ~~provisional~~ guidance is included for TC SIGMET in this guide.

3.2.2 The type of SIGMET can be identified through the data type designator included in the World Meteorological Organization (WMO) abbreviated heading of the SIGMET message, as explained in the following paragraphs.

3.3 Structure of the SIGMET message

3.3.1 A SIGMET message in TAC (Traditional Alphanumeric Code) format consists of:

- *WMO heading* – all SIGMETs are preceded by an appropriate WMO heading;
- *First line*, containing location indicators of the relevant ATS unit and MWO, sequential number and period of validity;
- *Meteorological part*, containing meteorological information concerning the phenomenon for which the SIGMET is issued;

These elements are also part of a SIGMET message in IWXXM format, according to the IWXXM Schema.

3.4 Format of SIGMET

Note 1: In the following text, square brackets - [] - are used to indicate an optional or conditional element, and angled brackets - < > - for symbolic representation of a variable element, which in the real SIGMET accepts explicit numerical values.

Note 2: The rules below apply for SIGMET in TAC format, as well as for SIGMET in IWXXM format. However, for the exact formatting of the messages in IWXXM, the XML schema and schematron rules can be found at the following URL: <http://schemas.wmo.int/iwxxm/>.

3.4.1 WMO Header

T₁T₂A₁A₂ii CCCC YYGGgg

3.4.1.1 The group **T₁T₂A₁A₂ii** is the bulletin identification for the SIGMET message. It is constructed in the following way:

T ₁ T ₂	Data type designator	For SIGMET in TAC format:
		WS for SIGMET for phenomenon and radioactive cloud
		WC for SIGMET for tropical cyclone (issued by four EUR Members with responsibility for EUR/NAT FIRs that are occasionally affected by Tropical Cyclones)
		WV for SIGMET for volcanic ash WC (for tropical cyclones), WV (for volcanic ash), and WS (for other phenomena)
		For SIGMET in IWXXM format:
		LY (for tropical cyclones), LV (for volcanic ash), and LS (for other phenomena)
		LS for SIGMET for phenomenon and radioactive cloud
		LV for SIGMET for tropical cyclone

Commented [SK37]: Perhaps write this as "WV SIGMETs: these are for volcanic ash"

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Commented [GB38]: Refer to earlier comment. Is this actually a stated requirement in the EUR eANP?

Commented [WC39R38]: Referring to METG Decision 29/01, I would cut and paste the paragraphs concerning WC SIGMET into an other document, to replace them, if the TC ad hoc group produces output for the next refurbishment of this document

Commented [SK40]: Perhaps write this as "WC SIGMETs: are for tropical cyclones. Four EUR members"

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Commented [SK41]: I think this table could be simplified further.

In the right hand column put:
"For SIGMET in TAC format: WS, WC and WV "(as like Majken says the decode is already in 3.2
And then "For SIGMET in IWXXM format: LS, LY (tropical cyclone) and LV (volcanic ash)"

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		LY for SIGMET for volcanic ash
A₁A₂	Country or territory designator ^s	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 paragraph 2.3.2.2, Part II of Manual on the Global Telecommunication System, Vol I – Global Aspects (WMO - No. 386)

3.4.1.2 **CCCC** is the ICAO location indicator of the communication centre disseminating the message (could be the same as the MWO).

3.4.1.3 **YYGGgg** is the date/time group, where YY is the date and GGgg is the time in hours and minutes UTC^s of the transmission of the SIGMET (normally this is the time assigned by the Aeronautical Fixed Telecommunication Network (AFTN) centre which disseminates the message).

3.4.1.4 It is recommended to assign a unique WMO header for each SIGMET bulletin per FIR, Control Area (CTA) or Upper Information Region (UIR)¹. The distinction between different SIGMET bulletins issued by the State's MWOs should be through the respective data type designator (T₁T₂) and bulletin number (ii), as for example in Germany:

"WSDL31 EDZF" and "WVDL31 EDZF" for EDGG LANGEN FIR
 "WSDL32 EDZF" and "WVDL32 EDZF" for EDWW BREMEN FIR
 "WSDL33 EDZF" and "WVDL33 EDZF" for EDMM MUENCHEN FIR
 "WSDL34 EDZF" and "WVDL34 EDZF" for EDUU RHEIN UIR
 "WSDL35 EDZF" and "WVDL35 EDZF" for EDVV HANNOVER UIR

Examples:

WSDL32 EDZF 121200
WVRH~~JP~~31 LDZAR~~JTD~~ 010230
WSNO31 ENMI~~WC~~N~~G~~21 AYPY~~100600~~

Note: A table with WMO SIGMET headers used by the EUR Meteorological Watch Offices is included in Appendix B

3.4.2 First line of TAC SIGMET

CCCC SIGMET [n][n]n VALID YYGGgg/YYGGgg CCCC-

3.4.2.1 The meaning of the groups in the first line of the SIGMET is as follows:

CCCC	ICAO location indicator of the ATS unit serving the FIR, UIR or CTA to which the SIGMET refers
SIGMET	Message identifier
[n][n]n	Daily sequence number (see paragraph 3.4.2.2)
VALID	Period of validity indicator
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 (see paragraph 3.4.2.3)
CCCC-	ICAO location indicator of the MWO originating the message and – (hyphen, without space, to separate the preamble from the text)

Commented [WC42]: Concerning the footnote below:
 WC/LY is currently not in the linked document, propose to delete it and update when available

¹ Note that the list of EUR SIGMET (WS/LS, WV/LV, ~~WC/LY~~) headers is provided at the following website: <http://www.icao.int/EURNAT/Pages/welcome.aspx> (EUR/NAT Documents ---> EUR Documents ---> EUR Documents ---> MET Guidance ---> Headers – EUR SIGMET and AIRMET).
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3.4.2.2 The numbering of SIGMETs should start every day at 0001 UTC. The sequence number should consist of up to three symbols and may be a combination of letters and numbers, such as:

- 1, 2, ...
- 01, 02, ...
- A01, A02, ...

Examples:

EDWW SIGMET **I03** VALID 121100/121500 EDZF-

UMMV ~~VHHK~~ SIGMET ~~A304~~ VALID 270212030/247021430 UMMSV ~~VHHH~~

Note 1: No other combinations should be used, like "CHARLIE 05" or "NR7".

Note 2: Correct numbering of SIGMET is very important since the number is used for reference in the communication between ATC and pilots and in VOLMET and D-VOLMET.

Note 3: *Generally, the sequence number is the sequence number for all SIGMET message types (WS, WV and WC) for one flight information region*

~~Note 4: Within States for which Regulation (EU) 2017/373 is applicable should note that from January 2020 it will be only be permitted to use a phenomenon-specific SIGMET sequence numbering which consists of one letter and two numbers (e.g. A01, A02). Refer to AMCI.MET.TR.250(c) SIGMET.~~

3.4.2.3 The following has to be considered when determining the validity period:

- the period of validity of WS SIGMET should not exceed 4 hours;
- the period of validity of WC or WV SIGMET should be up to 6 hours;
- in case of a SIGMET for an observed phenomenon the filing time (date/time group in the WMO heading) should be the same or close to the time in the date/time group indicating the start of the SIGMET validity period;
- when the SIGMET is issued for an expected phenomenon:
 - o the beginning of validity period should be the time of expected commencement (occurrence) of the phenomenon;
 - o the lead time (the time of issuance of the SIGMET) should be not more than 4 hours before the start of validity period (i.e., expected time of occurrence of the phenomenon). *If the forecaster has unambiguous information for the occurrence of a phenomenon, it is recommended to aim for a lead time of at least 30 minutes before the start of the validity period.* ~~and~~
 - o for WV and WC² SIGMETs the lead time may be up to 12 hours.

In addition, the minimum horizontal extent and ~~validity period~~ ~~duration~~ of the hazardous area for reporting TURB, ICE, MTW, TS and TSGR in SIGMET should have, respectively:

- have a longest diagonal or side of the polygon representative of the whole hazardous area (independent of the FIR boundaries) of 100 km

² Provisional guidance, pending approval by the EASPG and reflection in the eANP.

Commented [SK43]: Am I right in thinking that when EU 373 comes in we will only be able to use A01. If that is the case should we have a note that alerts people that this is coming?

Commented [HP44R43]: As far as I know, there has been no information on that change. Maybe an IP on that topic should be useful at the next METG.

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Commented [ME45]: This statement is not correct. WS and WV may be numbered separately; when sequence numbers are based on EU regulation, there is a separate numbering for each causing phenomenon.

Commented [WC46R45]: Aligned with original Note 4

Commented [SK47]: In EU 373 there is a table which shows which letter is used for which phenomena (Thunderstorms are T, Turbulence is U, Freezing Rain is F etc). Should it be included within this doc?

Commented [WW(48): I prefer keeping the original first sentence and add the first new sentence.

Commented [WC49R48]: Yes, sounds more concise

Commented [WC50]: Should we give a recommendation for a minimum lead time, if possible, for these FCST SIGMETs?

Example

– it is recommended to issue SIGMETs with a lead time of at least 30 minutes if the forecaster has according information, but not more than 4 hours before the start of validity period (i.e., expected time of occurrence of the phenomenon);

The rationale is to motivate forecasters in clearly severe situations to not wait until the last minute, as the SIGMET information has to be forwarded to the customers

Commented [MSD51R50]: Agree

Commented [a52R50]: Agree.

Commented [HP53R50]: I am not sure that this practice is adopted at MF but OK to mention it as a target. Maybe rewording as follows: "...for a lead time of at least 30 minutes **before the start of the validity period**"

- have a minimum ~~validity period~~ duration of 30 minutes.

3.4.2.4 The period of validity is the period during which the SIGMET is valid for transmission to aircraft in flight.

Examples:

1. First line of TAC SIGMET ~~for an observed phenomenon~~:

~~WSIE31 EIDB 241120~~
EISN DB SIGMET 3 VALID 241120/241500 EINN-

2. First line of TAC SIGMET ~~for a forecast phenomenon (expected time of occurrence 1530)~~ in line with Regulation (EU) 2017/373.

~~WSSQG31 LZIBWSSC 251130~~
LZZBWSSA SIGMET T01 VALID 251530/251930 LZIBWSSM-

Commented [ME54]: Examples here should only cover “first line of TAC SIGMET”, WMO header should be removed.

Commented [MSD55]: Please don't delete this line, as it contains the whole point of the example

Commented [WC56R55]: You are right, I had the deleteritis

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Commented [MSD57]: Please don't delete this line, as it contains the whole point of the example

3.4.3 *Format of the second line containing the meteorological part of the TAC SIGMET*

3.4.3.1 The meteorological part of a SIGMET consists of ten elements as shown in the table below.

1	2	3	4	5	6	7
Location indicator of the FIR/UIR or CTA	Name of the FIR or FIR/UIR or UIR or CTA	Status Indicator Test or Exercise	Description of the phenomenon	Observed or forecast*	Location of the phenomenon*	Flight level or altitude and extent*
<CCCC>	<name> FIR [FIR/UIR, UIR, CTA]	[TEST] or [EXER]	<Phenomenon>	OBS [AT <GGggZ>] or FCST [AT <GGggZ>]	Geographical location of the phenomenon given by coordinates, or by reference to lines of latitude and or longitude	FL<nnn/nnn> or [SFC]/FL<nnn> or [SFC]/<nnnn>M or [SFC]/<[n]nnnn>FT or TOP FL<nnn> or [TOP] ABV FL<nnn> or [TOP] ABV <[n]nnnn>FT or <nnnn/nnnn>M or <[n]nnnn/[n]nnnn>FT or <nnnn>M/FL<nnn> or <[n]nnnn>FT/FL<nnn>
8		9		10		
Movement or expected movement*		Changes in intensity*		Forecast position at the end of the validity period*		
MOV <direction, speed> KMH[KT], or STNR		INTSF or WKN or NC		FCST AT <GGggZ> location of the phenomenon given by coordinates or		

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Commented [a58]: According to Annex 3 Template A6-1A the following elements should also be included here:

<nnnn/nnnn>M
or
<[n]nnnn/[n]nnnn>FT
or
<nnnn>M/FL<nnn>
or
<[n]nnnn>FT/FL<nnn>

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			by reference to lines of latitude and or longitude
--	--	--	--

*
In the case of VA cloud or cumulonimbus associated with tropical cyclone³ covering more than one area within the FIR, these elements can be repeated, as necessary. Each location and forecast position is to be preceded by an observed or forecast time.

~~*In the case of the same phenomenon covering more than one area within the FIR, these elements can be repeated, as necessary for volcanic ash and tropical cyclone only.~~

3.4.3.1.1 Location indicator and name of the FIR, FIR/UIR, UIR or CTA

location indicator <name> FIR

or

location indicator <name> FIR/UIR

or

location indicator <name> UIR

or

location indicator <name> CTA

Example:

EDWW BREMEN FIR

3.4.3.1.2 TEST or EXER (applicable 7 Nov 2019)

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.

TEST is generally employed in messages without meteorological information, to test the data dissemination (e.g. regular DMG EUR OPMET Warning Monitoring Exercises⁴). When TEST is used, the SIGMET message may end immediately after the word TEST.

EXER is generally used for international exercises where realistic meteorological information will be used to test coordination or tactical decisions but not for operational purposes (e.g. regular VOLCEX exercises preparing users to the management of a volcano eruption over the European airspace).

Examples :

~~LECBYUDD~~ ~~SHANLON~~ ~~BARCELONA~~ FIR/UIR **TEST**=

~~YUDD~~ ~~LECB~~ ~~SHANLON~~ ~~BARCELONA~~ FIR **EXER** SEV TURB OBS NE OF LINE
~~N4345~~ ~~N4120~~ ~~E02115~~ ~~W00040~~ - ~~N4230~~ ~~N3830~~ ~~E02145~~ ~~E00330~~ FL250/370
MOV ESE 20KT INTSF=

3.4.3.1.3 Phenomenon

The description of the phenomenon consists of a qualifier and a phenomenon abbreviation.
~~The appropriate abbreviations and combinations thereof, and their meaning are given in Appendix C.~~

³ Provisional guidance, pending approval by the EASPG and reflection in the eANP.

⁴ EUR/NAT SIGMET test focal points can be accessed at <http://www.icao.int/EURNAT/Pages/welcome.aspx> - EUR/NAT Documents; EUR Documents; MET Guidance; EUR/NAT SIGMET test focal points
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Commented [a59]: Correct me if I am wrong, but according to the new Amdt 79 of Annex 3, I suppose, the asterisk has to be added also to column 5 as per Note 20 of Table A6-1A, where it is stated "In the case of VA cloud covering more than one area within the FIR, these elements can be repeated, as necessary. **Each location and forecast position is to be preceded by an observed or forecast time.**"

Commented [HP60R59]: I agree and propose to adopt a wording closer from Amdt79 : *In the case of VA cloud or cumulonimbus associated with tropical cyclone covering more than one area within the FIR, these elements can be repeated, as necessary. Each location and forecast position is to be preceded by an observed or forecast time.

Commented [WC61]: Following E-Mail conversation (March 11th, 2020) EXER is allowed only once so this paragraph may stay at it is.

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Commented [MSD62]: I support this merging of 3.4.3.1.3 with appendixes C and J, good!

SIGMET shall be issued only for the following phenomena (with only one phenomenon in each SIGMET) observed or forecast to persist for more than 30 minutes:

Phenomenon ¹	Description in TAC format	Meaning
Thunderstorm ⁷ (TS)	OBSC ² TS EMBD ³ TS FRQ ⁴ TS SQL ⁵ TS OBSC TSGR ⁶ EMBD TSGR ⁶ FRQ TSGR ⁶ SQL TSGR ⁶	Obscured thunderstorm(s) Embedded thunderstorm(s) Frequent thunderstorm(s) Squall line thunderstorm(s) Obscured thunderstorm(s) with hail Embedded thunderstorm(s) with hail Frequent thunderstorm(s) with hail Squall line thunderstorm(s) with hail
Turbulence (TURB)	SEV TURB ⁸	Severe turbulence
Icing (ICE)	SEV ICE ⁹ SEV ICE (FZRA) ¹⁰	Severe icing Severe icing due to freezing rain
Mountain wave (MTW)	SEV MTW ¹¹	Severe mountain wave
Duststorm (DS)	HVY DS ¹²	Heavy duststorm
Sandstorm (SS)	HVY SS ¹²	Heavy sandstorm
Volcanic ash cloud (VA)	VA (+ volcano name, if known)	Volcanic ash (+ volcano name)
Tropical Cyclone ⁵ (TC)	TC (+TC name)	Tropical cyclone (+ tropical cyclone name)
Radioactive cloud	RDOACT CLD ¹³	Radioactive cloud

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The notes below refer to agreed best practice with regard to SIGMET within the EUR Region. The guidance is not intended to conflict with regulations or guidance in ICAO documentation, such as ICAO Annex 3, and is provided to complement such regulations:

1. Only one of the weather phenomena listed should be selected and included in each SIGMET. For multiple and independent occurrences of one phenomenon within the same FIR, individual SIGMETs should be issued.

2. Obscured (OBSC) indicates that the thunderstorm is obscured by haze or smoke. When interpreting the definition of OBSC in ICAO Annex 3, it is considered that obscuration through two thirds or more of expected vertical depth is an appropriate threshold on which to base a decision to include in SIGMET. Note that thunderstorm obscuration due to darkness is excluded here, as lightning activity is assumed to increase the visibility of nightly thunderstorms.

3. Embedded (EMBD) – indicates that the thunderstorm is embedded within cloud layers and cannot be readily recognized. When interpreting the definition of EMBD in ICAO Annex 3, it is considered that phenomenon embedded through two thirds or more of expected vertical depth and when associated with frontal structure or organised mesoscale convective systems is an appropriate threshold on which to base a decision. Appropriate satellite imagery, soundings, or radar may help coming to a decision.

4. Frequent (FRQ) indicates an area of thunderstorms within which there is little or no separation between adjacent thunderstorms with a maximum spatial coverage greater than 75% of the area affected, or forecasts to be affected, by the phenomenon (at a fixed time or during the period of validity). When interpreting the definition of FRQ in ICAO Annex 3, it is considered that a distribution assessed over a domain of approximately 100 KM by 100 KM is an appropriate threshold on which to base a decision to include in SIGMET. In addition, the assessment should be considered across FIR boundaries, and SIGMETs coordinated accordingly between MWOs. It is also noted that the abbreviation 'FRQ' (for 'frequent') is a temporal

Commented [WC63]: Added to clarify that several SIGMETs for same phenomena may exist

Commented [MSD64]: Question: what about darkness? (cf. Annex 3, appendix 6, 4.2.1.a). P.S. I am definitely not in favour of the 'cannot be readily seen due to darkness' part of the OBSC-definition in Annex 3- just asking whether anyone knows more about the status of this discussion, maybe higher up in ICAO? I believe the topic was raised at METG some years ago?

Within NAMCON some countries take notice of the 'darkness' part and some don't. My feeling is that most European countries don't, but according to Annex 3 they should...?

Commented [SK65R64]: This was discussed last year (or the year before that) when updating this document, and we decided to take it out. Thunderstorms are less obscured when it is dark!

Commented [WC66R64]: Add sentence why we do this

Commented [WC67]: New text added

⁵ Provisional guidance, pending approval by the EASPG and reflection in the eANP.
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descriptor, yet the ICAO definition is spatial. –It is proposed that for simplification the spatial definition is retained when assessing need to include reference to FRQ in SIGMET.

5. **Squall line (SQL)** indicates thunderstorms along a line with little or no space between individual clouds. This convective system could be stationary or moving, associated with sustained winds, varying rapidly in direction, and possibly strong gusts. When interpreting the definition of SQL in ICAO Annex 3, the thunderstorms along a line without significant gaps and a length of at least 100 KM is an appropriate threshold on which to base a decision to include in SIGMET. –In addition, the assessment should be considered ACROSS FIR boundaries, and SIGMETs coordinated accordingly between MWOs.

6. **TSGR:** TSGR should be mentioned when hail is observed on the ground, detected from radar data, or expected from nowcasting / forecasting data. For direct observation, it is proposed to use the 5 mm criterion defined in ICAO Annex 3 (4.4.2.3). Furthermore, as hail is more often observed in mountainous areas, a proposal was to restrict the criterion to observations below a maximum height of 3000 ft AMSL.

7. **Phenomena priority:** When issuing TS SIGMET, when there are multiple occurrences of the listed weather condition occurring simultaneously in the same area, given their impact evaluation from users, the following priority of use should be adopted:

SQL > FRQ > EMBD > OBSC TS/TSGR

8. **Severe (SEV) turbulence (TURB)** refers only to:

- low-level turbulence associated with strong surface winds;
- rotor streaming;
- turbulence whether in cloud or not in cloud (CAT);
- turbulence not associated with convective clouds exclusively;
- turbulence is considered severe whenever the peak value of the cube root of eddy dissipation rate (EDR⁶) is equal to or above 0.45.

Guidance for SEV TURB can be found in WMO Aviation Hazards (AeM SERIES No. 3 (https://library.wmo.int/opac/doc_num.php?explnum_id=4555)).

A SIGMET for SEV TURB should be issued when observations and/or NWP outputs or other forecasts methods suggest a high probability of its occurrence. In addition, in the absence of other information, it is reminded that WAFC SIGWX charts can provide material to issue SIGMET for SEV TURB.

The perception of turbulence strongly depends on aircraft type and mass of the aircraft. When SEV TURB is reported by pilots of heavy or medium aircraft (if type known) and the forecaster considers that the phenomenon is not of transient nature and therefore expected to persist, SIGMET for SEV TURB should be issued. Note that reference about aircraft types can be found in ICAO Doc 4444 PANS-ATM 16th Edition (2016) Part 4.9.1.1.

9. Guidance for **SEV ICE** can be found in WMO Aviation Hazards (AeM SERIES No. 3 (https://library.wmo.int/opac/doc_num.php?explnum_id=4555)).

10. **FZRA:** Given the impact of freezing precipitation on take-off/landing performances:

- on receipt of observation of freezing rain at the surface or aloft, SIGMET for severe icing due to freezing rain - SEV ICE (FZRA) - should always be issued, regardless of the depth of the freezing precipitation layer or the surface proximity.
- on receipt of observation of freezing drizzle, SIGMET for severe icing could be issued, regardless of the depth of the freezing precipitation layer or the surface proximity. The mention (FZRA) could be added, depending on the estimated impact of the phenomenon.

Commented [SK68]: Perhaps say
“... when a listed weather condition occurs multiple times simultaneously in the same area...”
Or
“... when there are multiple occurrences of the listed weather condition occurring simultaneously in the same area ...”

Commented [WC69]: New Text added

Commented [a70]: “cube root” is deleted in Annex 3 Amd79

Commented [WC71R70]: Agree

Commented [SK72]: I think that this needs to state “for a medium sized aircraft” on the end.

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Commented [a73]: I added this sentence for clarification, maybe it helps to explain why only heavy and medium aircraft are taken into account when deciding on issuing a SIGMET

⁶ These thresholds apply for a medium-sized transport aircraft under typical en-route conditions

Here, it must be reminded that, due to the risk of false alarm, automated observations of FZRA from ground stations must be cautiously considered.

In this context it is also worth mentioning that the observation of FZRA by ground stations must not be mixed up with the observation of SEV ICE (FZRA) by a pilot, with the former referring to ground observations of rain during temperatures below zero while the latter describes significant airframe ice accretion observed by a pilot. Thus if evidence of a pilot observation is not given it is recommended to formulate the SIGMET as SEV ICE (FZRA) FCST. However, if a pilot report has confirmed the occurrence of severe icing due to freezing rain, a SIGMET about SEV ICE (FZRA) OBS is more appropriate.

Therefore, it is considered that the following guidance be followed:

- SEV ICE (FZRA) FCST when FZRA (rain with negative temperatures) is observed by ground stations;
- SEV ICE (FZRA) OBS when a pilot report confirms the occurrence of severe icing (significant airframe accretion) due to freezing rain, respecting the guidance provided in 3.4.3.1.5. ~~In case when pilot report confirms the occurrence of severe icing due to freezing rain within the area which is already covered by SIGMET SEV ICE (FZRA) FCST the AIRREP should be issued. And only if the pilot report the occurrence of severe icing due to freezing rain outside the SIGMET SEV ICE (FZRA) FCST area a SIGMET SEV ICE (FZRA) OBS should be issued by MWO.~~

11. A mountain wave (MTW) is considered:

- severe – whenever an accompanying downdraft of 3.0 m/s (600 ft/min) or more and/or severe turbulence is observed or forecast.

12. Sandstorm/duststorm (SS/DS) should be considered heavy whenever the visibility is below 200 m and the sky is obscured.

- ~~thunderstorms if they are OBSC, EMBD, FRQ or SQL with or without hail;~~
- ~~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~~
- ~~volcanic ash VA (+volcano name and position, if known)~~
- ~~tropical cyclone TC (+cyclone name)~~

Commented [MSD74]: Maybe by writing “has confirmed”, the deletion of the FCST/OBS discussion six lines further down is more acceptable to everyone?

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Commented [WC75]: TC topic

Commented [SK76]: This bit is now redundant as it is in the table that is on page 19/20.

Commented [HP77]: Maybe, to clearly separate different items, add a new sub section entitled “3.4.3.1.4 Specific conventions for VA and TC SIGMETs”

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3.4.3.1.4 Specific conventions for VA and TC SIGMETs

For volcanic ash SIGMET (WV) only, the following conventions should be used:

~~In the case when~~ 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~~ 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

Commented [SK78]: Get rid of the “In the case” on this and the following three paras? And in the TC para.

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~~In the case when~~ 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

It is worth noting that formats of volcanic ash SIGMET (WV) issued by the MWOs and Volcanic Ash Advisories (VAA) issued by the VAACs are clearly distinct. Several examples of WV are provided in **Appendix GC**. The template for VAA is described in Appendix 2 of Annex 3 (Table A2-1).

For tropical cyclone SIGMET (WC) only⁷, the following conventions should be used

~~In the case w~~ 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 w~~ When the tropical cyclone is not yet named.

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

3.4.3.1.45 Indication if the phenomenon is observed or forecast

OBS [AT <GGggZ>]

or

FCST [AT <GGggZ>]

The indication whether the phenomenon is observed or forecast is given by the abbreviations OBS and FCST. OBS and FCST may be followed by a time group in the form AT GGggZ, where GGgg is the time of the observation or forecast in hours and minutes UTC.

~~In the case of OBS AT, the time of the report/observation having triggered or confirmed the phenomenon should be considered. This is generally the case when OBS AT is used to have different times for the observation and the start of validity of the SIGMET. The observation can be the trigger for the forecaster to issue a SIGMET and the preparation time of the SIGMET will lead to a SIGMET start validity time later than the observation.~~

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**

~~Appendix C, section 11 provides additional examples and advice with regard to using FCST AT <GGggZ>.~~

It is recommended to use FCST SIGMETs for areas which are regarded as significant by using meteorological methods and forecasting capabilities. OBS SIGMETs imply a higher confidence as they are based on observations such as remote sensing imagery or special air-reports. Therefore, OBS SIGMETs should be limited to the area which is represented by observations. The evaluation which observation is regarded as representative and the linked decision for issuing FCST and/or OBS SIGMETs should consider the different perception of both SIGMET types on the user side.

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Commented [WC79]: New paragraph

Commented [WC80]:

Commented [HP81R80]: I agree with Karen

Location of the phenomenon

Commented [a82]: This sentence sounds confusing to me. I think, the intention of the sentence was to mention that there is no need to issue an OBS SIGMET if a FCST SIGMET is already valid and later confirmed by an OBS-Pilotreport.

Commented [WC83R82]: Changed the sentence to be more concise

So I would prefer a wording something like “After the FCST SIGMET ends, if the phenomenon is still reported in observations, a new SIGMET shall be issued as an OBS SIGMET for an area which encompasses the information brought by the observations.”

Commented [WC85R84]: Agree and added

Perhaps include this (some of the wording from 3.4.3.1.11) as a following/preceeding paragraph.

The following use of WITHIN is the most preferred way to describe the location of the phenomenon for ingestion into automated systems used by the airlines for flight planning and in-flight decision making. For tropical cyclone, volcanic ash and radioactive clouds deviating location descriptions are listed below:

Commented [WC87]: Proposal:

Instead of explaining all options of indicating SIGMET location in detail, we could only give a short overview on the possibilities, e.g.

- And refer to Appendix G for details

Commented [HP88R87]: It makes sense, good idea.

Commented [MSD89]: Agree, good idea.

Commented [MSD90]: typo

Commented [WC91]: Wiel: Except for TC and VA CLD sections 4 and 5 below?

For example:

WI ~~N60-N50~~ ~~E025-E015~~ - ~~N62-N52~~ ~~E027-E017~~ - ~~N58-N48~~ ~~E030-E020~~ - ~~N59-N49~~
~~E026-E016~~ - ~~N60-N50~~ ~~E025-E015~~

Annex 3 specifies that the points of a polygon ‘... should be kept to a minimum and should not normally exceed seven’. However, some FIR boundaries are complex, and it would be unrealistic to expect that a polygon would be defined that followed such boundaries exactly. As such, some States have determined that the polygon points be chosen in relation to the complex boundary such that the FIR boundary approximates, but is wholly encompassed by, the polygon, and that any additional area beyond the FIR boundary be the minimum that can be reasonably and practically described. Caution should however be exercised in those instances where international aerodromes are located in close proximity to such a complex FIR boundary. Appendix G provides examples and advice with regard to describing such areas.

Commented [SK92]: I don't think this is needed, as the next line directs people to Appendix C.

Commented [WC93R92]: Wiel: Is after deletion clear that more details can be found in appendix C for the additina; ways and for within?

Formatted: German (Germany)

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Commented [WC94]: This exact paragraph is also found in Appendix G (p. 58). I would propose giving only a short overview on options of SIGMET location here and keeping the details and visualization in Appendix G.

Commented [a95R94]: Agree.

Commented [SK96R94]:

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2a) In a sector of the FIR (or UIR) defined relative to a set of up to three specified lines in different variations, or single series of up to three connected lines, with start and end points on the FIR (or UIR) boundary.

For example:

NE OF LINE N5000 E03000 – N4900 E0330

With reference to a LINE, described with latitude/longitude of two to four points. These points should be on the FIR boundary, or so close to the FIR boundary to leave no doubt as to the intent that the points should be considered as being on the FIR boundary.

~~<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]>]~~

For example:

NE OF LINE N2500 W08700 – N2000 W08300

SE OF LINE N3730 W01230 – N4000 W01130 – N3830 W01030 – N3800 W00945

W OF LINE N20 E042 – N35 E045

2b) In a sector of the FIR (or UIR) 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.

For example:

N OF N1200 N3300 AND S OF N2530 N3600

W OF W060 AND E OF W082

2c) In a sector of the FIR (or UIR) 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 (or UIR) boundary (or start and end points 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 these points).

~~<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~~

Commented [MSD97]: Is this wording entirely correct? Maybe someone native English speaking can help? I'm not sure...

Commented [SK98R97]: I would write:
"In a sector of the FIR (or UIR) defined relative to a specified line or lines"
And then have mention that up to three different lines that may or may not intersect are permitted.

~~<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]>]~~

For example:

NE OF LINE ~~N2500~~~~N5500~~ ~~W08700~~~~W00450~~ – ~~N2000~~~~N5200~~ ~~W083041~~~~40~~ AND SW
OF LINE ~~N2800~~~~N5800~~ ~~W08500~~~~W00250~~ – ~~N2200~~~~N5400~~ ~~W08200~~~~W04200~~

~~W OF LINE N20 E042 – N35 E045 AND E OF LINE N20 E039 – N35 E043~~

2d) In a sector of the FIR (or UIR) defined relative to a line of latitude and a line of longitude (effectively a quadrant)

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

For example:

N OF ~~N1200~~~~N4700~~ AND E OF ~~W02530~~~~E00830~~ (effectively a quadrant)

~~S OF N60 AND W OF E030~~

2e) In a sector of the FIR (or UIR) defined relative to a line of latitude or longitude (effectively a segment)

————— Indication of a part of the FIR with reference to latitude:

~~<N OF>or<S OF> <Nnn[nn]>or<Snn[nn]>~~

For example:

N OF ~~S2230~~~~N5730~~ (effectively a segment)

————— Indication of a part of the FIR with reference to a longitude:

~~<E OF>or<W OF> <Ennn[nn]>or<Wnnn[nn]>~~

For example:

W OF ~~E080~~~~E020~~ (effectively a segment)

3) Defined by a ‘corridor’ of specified width, centred upon a line, of up to three connected segments, described by;

Note: With reference to METP/2 Decision 8/3, the term ‘APRX’ should be removed from the regional SIGMET guide template and not recommended for use.

~~APRX 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}>]~~

or

~~APRX 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}>]~~

For example:

APRX 50KM WID LINE BTN N64 W017 N60 W010 N57 E010

43) At a specific point within the FIR (or UIR)

At a specific point within the FIR, indicated by a single coordinate of latitude and longitude. Note: this is not recommended to be used as it is not in line with SIGMET minimum size. Information concerning SIGMET phenomena of transient and local nature should be made available by issuing special air-reports.

~~<Nnn{nn}> or <Snn{nn}> <Wnnn{nn}> or <Ennn{nn}>~~

For example:

~~N5530 W02230~~E01230

~~S23 N46 E107~~E007

54) Within a specified radius of the centre of a tropical cyclone⁷.

Symbolically, this is indicated as:

~~WI <nnnKM> OF TC CENTRE~~

or

~~WI <nnnNM> OF TC CENTRE~~

For example:

WI 400KM OF TC CENTRE

WI 250NM OF TC CENTRE

65) 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}>~~

or

~~WI nnNM OF <Nnn{nn}> or <Snn{nn}> <Wnnn{nn}> or <Ennn{nn}>~~

Commented [WW99]:

Should we mention that WI instead of APRX as given in Annex 3 should be used as decided by ... See also comments for AIRMET

Commented [ME100R99]: According to the note above we should no longer mention this option in a "Best practise" document.

Commented [WC101R99]: Will remove it but retain the details in the Appendix

Commented [HP102R99]: Last year, we kept this remark as some countries were still using APRX. OK to be more directive in the 2020 version of the guide, accordingly with last version of Annex3.

Commented [a103]: A phenomenon located only at a specific point instead of an area does not meet the criterion of the minimum size of the SIGMET area.

Commented [MSD104]: Agree, we have a self-contradiction here. I have never understood why it should be OK to issue a SIGMET for only a point, but according to Annex 3, it is. BTW, where does the criterion of the minimum size of the SIGMET area (Doc014 §3.4.2.3) come from?

Commented [HP105R104]: The criterion of the minimum size comes from discussions within the adhoc group in March 2018.

Commented [WC106]: Addition of sentence after communication with IFALPA

Commented [WC107]: Change to EUR

Commented [GB108]: Refer to earlier comment on TC SIGMET

Commented [WC109]: TC topic

⁷ Provisional guidance, pending approval by the EASPG and reflection in the eANP.

For example:

WI 30KM OF ~~N6030~~N5030 ~~E02550~~E00550

WI 16NM OF ~~N2200~~N4911 ~~W06315~~E01415

~~When detailed information on the release is not available, a~~ 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 (FIR/UIR) or control area (CTA) is to be applied. ~~[Applicable 7 November 2019].~~

75) A reference to the whole FIR, FIR/UIR, UIR or CTA.

For example ~~Symbolically, this is indicated as:~~

ENTIRE FIR ~~[UIR, FIR/UIR]~~

ENTIRE CTA

More details on reporting of the location of the phenomenon are given in Appendix 6 to Annex 3 and in Appendix ~~BE~~ and ~~G-C~~ to this Guide.

3.4.3.1.67 Flight level or altitude and extent

FLnnn
or
nnnnM
or
[n]nnnnFT
or
SFC/FLnnn
or
SFC/nnnnM
or
SFC/[n]nnnnFT
or
FLnnn/nnn
or
TOP FLnnn
or
ABV FLnnn
or
TOP ABV FLnnn
or
ABV [n]nnnnFT
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

Commented [WC110]: This sentence becomes obsolete by November 5 2020. Should we indicate this?

Commented [SK111R110]: Perhaps check with Chris Keohan when the guide will get published.

Commented [SK112R110]: Perhaps re-word this para to say "A radius of 30km (or 16nm) from the source, and a vertical extent from the surface (SFC) to the upper limit of the flight information region (FIR/UIR) or control area (CTR) must be used, regardless of whether other information on the extent of the release is available"

(since this guide is to go with the Amd 79 change I don't think the after 5 Nov part is needed)

Commented [HP113R110]: I agree with the removal of 5Nov and with Karen's wording.

Commented [MSD114]: Question: even if the detailed information should indicate a larger area than 30km radius??!

Commented [SK115R114]: Yes. Although in reality the near impossibility in defining the source term in the dispersion model means that no-one can produce detailed information!

Commented [HP116R114]: I totally agree.

Formatted: Font: Not Bold, English (United States)

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nnnnM/FLnnn

or

[n]nnnnFT/FLnnn

The location or extent of the phenomenon in the vertical is given by one or more of the above abbreviations, as follows:

- reporting of single level – **FL<nnn>**;

For example: **FL320**

- reporting at a single geometric level, in metres or feet – **<nnnn>M or <nnnn>FT**

For example: **4500M or 8250FT or 12000FT**

- reporting of a layer – **SFC/FL<nnn>**, **SFC/<nnnn>M**, or **SFC/<nnnn>FT**, where the lower level is the surface and the upper level is a flight level, an altitude in metres or an altitude in feet respectively;

For example: **SFC/FL320 or SFC/3000M or SFC/9900FT**

- reporting a layer using flight levels – **FL<nnn/nnn>**, where the lower flight level is reported first; ~~this is used particularly in reporting turbulence and icing;~~

For example: **FL250/290**

- reporting the top of a phenomenon with reference to one flight level (**applies to TS SIGMET or if** base is unknown, but top is known) – **TOP FL<nnn>**

For example: **TOP FL350**

- reporting a phenomenon with reference to one flight level and the abbreviation ABV (top is unknown, but base is known) – **ABV FL<nnn>**

For example: **ABV FL350**

- reporting the top of a phenomenon with reference to one flight level and the abbreviation ABV – **TOP ABV FL<nnn>**

For example: **TOP ABV FL350**

- reporting phenomenon expected between a lower and upper geometric level expressed in metres or feet:

For example: **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:

For example: **4000M/FL220 or 6000FT/FL140 or 11000FT/FL190**

- reporting the CB upper limit for tropical cyclone SIGMET⁸

For example: **TOP BLW FL450**

⁸ Provisional guidance, pending approval by the EASPG and reflection in the eANP.

Additional examples:

EMBD TS ... TOP ABV FL340
 SEV TURB ... FL180/210
 SEV ICE ... SFC/FL150
 SEV MTW ... FL090/180

Commented [WC117]: Do we need that many examples?

Commented [SK118R117]: I don't think they are needed

Commented [HP119R117]: I agree.

3.4.3.1.78 Movement

Note: This option must not be used in combination with the 'Forecast position' section of SIGMET. Only one ~~or the other~~ of the two options may be used, not both.

MOV <direction> [<speed><KMH>or<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 NW
MOV NNW 30KMH
MOV E 25KT
STNR

3.4.3.1.89 Expected changes in intensity

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

INTSF – intensifying
WKN – weakening
NC – no change

It is only permitted to make a single reference to change in intensity, even if the change in intensity may be different within different areas of the phenomenon. It is recommended to err on the side of safety, **INTSF** (intensifying) takes priority if any sub-area of the region intensifies; **NC** (no change) takes priority if applicable to a sub-area of the region and if **INTSF** does not apply; and **WKN** (weakening) is only used if applicable to the entire area.

Commented [MSD120]: Should we add guidance about omitting (should/could omit) the expected change in intensity for volcanic ash SIGMETs? And for RDOACT CLD? (cf. apfoser's comment on page 112)

Commented [WC121R120]: agree

3.4.3.1.910 Forecast time

This section is used 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 GGggZ

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for example

FCST AT 1600Z

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

Note. — In accordance with Annex 5 – Units of Measurement to be Used in Air and Ground Operations, when the validity period ends at midnight, YY should be set for the following day and GGgg should be '0000'. i.e. SIGMET validity ending at midnight on the 23rd day of the month should be expressed as '240000'.

3.4.3.1.4011 Forecast position at the end of the SIGMET validity period

Forecast position of the phenomenon at the end of the validity period of the SIGMET message is conditional, included wherever applicable, instead of the movement/expected movement option. The location of the phenomenon is indicated by one of the ways described in 3.4.3.1.5-6 above. The levels of the phenomenon are considered to remain fixed throughout the SIGMET validity period because there is currently no provision for indicating changes to the levels. If the forecast position of a SIGMET is expected to leave the FIR/UIR, the validity period and forecast position should be selected to end the SIGMET validity at the border to enable coordination and handover to the neighbouring MWO as recommended in Chapter 2.5. As such, and as per footnote 26 to Table A6-1A of Annex 3, it should be assumed that the levels affected remain the same for both initial and forecast positions.

Example:

FCST AT 1630Z WI N4519 E02849 – N4400 E02750 – N4338 E02533 – N4351 E02250 – N4519 E02849

More details on reporting the location of the phenomenon are given in the examples in Appendix 6 to Annex 3 and Appendix E-B and C to and C of this Guide.

3.4.3.1.11 Possible use of FCST AT for the element 8 of ICAO Annex 3 (Table A6-1A)

In Annex 3 Table A6-1A Template for SIGMET and AIRMET messages, the 8th element (between 'Phenomenon' and the 'Location') is as reproduced here below:

Element	Detailed content	SIGMET template	SIGMET message examples
Observed or forecast phenomenon (M):	Indication whether the information is observed and expected to continue, or forecast	OBS [AT-GGggZ] or FCST [AT-GGggZ]	OBS OBS AT 1210Z FCST FCST AT 1815Z

The mention of **AT-GGggZ**, to emphasize the time when the phenomenon was observed '**OBS AT-GGggZ**' or the time when the phenomenon is forecast to start '**FCST AT-GGggZ**', is optional. However, in the case of **OBS AT**, the relevance to indicate the time of the report/observation having triggered or confirmed the phenomenon is quite obvious. This is generally the case when **OBS AT** is used to have different times for the observation and the start of validity of the SIGMET. The observation can be the trigger that will make the forecaster issuing a SIGMET and the time of writing and issuing the SIGMET will lead to a SIGMET start validity time later than the observation. Hence, the need to use **OBS AT** should seem natural to most of SIGMET producers. This is not true with the use of **FCST AT** where two possibilities may be considered:

- using FCST AT with a different time from the one of validity period;
- using FCST AT with the same time as the validity period starting hour.

These two possibilities are exemplified in Appendix C section C-12.

Commented [MSD122]: Suggest to add here:

“- this of course also means that the coordinates used to describe the forecast position at the end of the SIGMET validity period must be located inside the FIR or UIR.”

This is just a logical consequence of the reference to §3.4.3.1.5, but I think it could be good to underline that the “end polygon” also has to be inside the FIR/UIR.

Maybe this even calls for adding an extra sentence/guidance about how to handle the case when a phenomenon is moving out of the FIR/UIR? (not use the 'Forecast position at the end of the SIGMET validity period' but instead use the 'Movement')

Commented [WC123R122]: Good points we should discuss!

Commented [WC124]: New Text

Commented [MSD125]: Suggestion for rephrasing of this: “The forecast position at the end of the SIGMET validity period should be coordinated with neighbouring MWOs just as recommended for the initial SIGMET position.”

Commented [WC126R125]: Agree, this is what I meant with the lifecycle some pages above

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Commented [WC127]: Is this the right position here? And what is the relation to the preceding paragraph 3.4.3.1.4? I would propose deleting this paragraph, as it is not at the right position (FCST/OBS, not FCST AT at the end of SIGMET) and I struggle to understand the message

Commented [MSD128]: Agree to delete 3.4.3.1.11

3.4.5 Cancellation of SIGMET

3.4.5.1 If, during the validity period of a SIGMET, the phenomenon for which the SIGMET had been issued is no longer occurring or no longer expected, this SIGMET should be cancelled by the issuing MWO. ~~This is in support to Annex 3, 7.1.2 which requires “SIGMET information shall be cancelled when the phenomena are no longer occurring or are no longer expected to occur in the area”.~~

The cancellation is ~~done~~ **carried out** by issuing the same type of SIGMET with the following structure in TAC format:

- 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 location indicator and name of the FIR, UIR or CTA, the combination CNL SIGMET, followed by the sequential number of the original SIGMET and its original validity period.

Examples:

1. Cancellation of a WS SIGMET with the ~~original~~ **following** first line

~~WSXY31 WSGR31 YUSO LGAT 101200~~
~~YUDD LGAT LGGG SIGMET 5 VALID 101200/101600 LGAT YUSO~~
~~YUDD LGAT LGGG SHANLON ATHINAI FIR ...~~

Cancellation SIGMET:

~~WSGRXY31 YUSO LGAT 101430~~
~~YUDD ENMI LGGG SIGMET 6 VALID 101430/101600 LGAT YUSO~~
~~YUDD LGAT LGGG SHANLON ATHINAI FIR CNL SIGMET 5 101200/101600=~~

2. Cancellation of a WV SIGMET

~~WVNOXY31 EKCHYUSO 131518~~
~~YUDD ENMI EKDK NOR SIGMET A03 VALID 131515/132115 EKMI YUSO~~
~~YUDD ENMI EKDK NOR SHANLON KOBENHAVN FIR ...~~

Cancellation SIGMET:

~~WVXY31 WVNO31 YUSO EKCH 132000~~
~~YUDD ENMI ENORKDK SIGMET A04 VALID 132000/132115 EKMI YUSO~~
~~YUDD SHANLON ENMI ENOREKDK KOBENHAVN FIR CNL SIGMET A03~~
~~131515/132115 VA MOV TO YUDO ESAA FIR=~~

Note. – For SIGMET for volcanic ash only, the FIR (YUDO-ESAA in the example) where the volcanic ash has moved into is permitted to be indicated.

3.4.5.2 If it is known that an existing SIGMET no longer accurately describes the existing or expected future evolution of the ~~phenomena~~ **phenomenon or there is a significant error/mistake in the SIGMET** 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 the hazard has completely dissipated. ~~after has been~~

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Commented [SK129]: Change to “original”

Commented [MSD130]: Needs to be changed to xxxx (?) probably LGAT

Commented [MSD131]: Needs to be changed to xxxx (?) probably LGAT

Commented [MSD132]: Needs to be changed to xxxx (?) (maybe ENMI?)

Commented [MSD133]: Needs to be changed to xxxx (?) (maybe ENMI?)

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Commented [SK134]: Perhaps add “or there is a significant error/mistake in the SIGMET”

And then don't add the extra statement to the end of the paragraph.

In order to prevent unwanted suppression or overwriting of SIGMET messages, the WMO Abbreviated Header Line (AHL) must always be unique. This may mean issuing SIGMET bulletins with at least 1 minute difference in the compilation time.

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

~~WSAU21 WSBX31 ADRM EBBR~~ 201855
~~EBBU YBBB~~ SIGMET ~~E01 U01~~ VALID 202000/210000 ~~YPDM EBBR~~
~~YBBB BRISBANE~~ ~~EBBU~~ BRUSSELS FIR SEV TURB FCST WI N5107 E00357 – N5105
 E00500 – N5015 E00535 – N5040 E00333 – N5107 E00357 WI S1530 E13700 – S1900
 E13730 – S2000 E13130 – S1600 E13500 – S1530 E13700 SFC/FL120 MOV SE 12KT
 STNR WKN=

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

~~WSAU21 WSBX31 ADRM EBBR~~ 202155
~~YBBB EBBU~~ SIGMET ~~EU02~~ VALID 202155/210000 ~~YPDM EBBR~~
~~EBBU BRUSSELS YBBB BRISBANE~~ FIR SEV TURB FCST WI N5107 E00357 – N5100
 E00432 – N5010 E00427 – N5040 E00333 – N5107 E00357 WI S1530 E13700 – S2000
 E13750 – S2045 E13245 – S1600 E13500 – S1530 E13700 SFC/FL120 MOV SE 12KT
 STNR WKN=

Cancellation SIGMET (this cancels the original SIGMET):

~~WSAU21 WSBX31 ADRM EBBR~~ 202156
~~YBBB EBBU~~ SIGMET ~~EU03~~ VALID 202156/210000 ~~YPDM EBBR~~
~~EBBU BRUSSELS YBBB BRISBANE~~ FIR CNL SIGMET ~~UE01~~ 202000/210000=

Note: 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.

3.4.5.3 If a SIGMET was issued with an error (e.g. incorrect FL), a new SIGMET with the correct information should be issued, followed immediately by a cancellation of the original, incorrect SIGMET. Avoid the use of COR for SIGMET as it is: 1) not permissible in Annex 3; 2) is not supported by IWXXM; and 3) is not clear to the users what element is subject to the correction. 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 the hazard is no longer present.

Furthermore, if a SIGMET is cancelled before its start of validity it becomes valid, the cancellation SIGMET should refer to the whole period of the SIGMET originally issued.

Originally issued SIGMET, subsequently determined to contain an error (bold text identifies the element that is considered to be incorrect):

~~WSAU21 WSBX31 ADRM EBBR~~ 201855
~~YBBB EBBU~~ SIGMET ~~UE04~~ VALID 202000/202300 ~~YPDM EBBR~~
~~YBBB EBBU BRISBANE~~ BRUSSELS FIR SEV TURB FCST WI N5107 E00357 – N5105
 E00500 – N5015 E00535 – N5040 E00333 – N5107 E00357 WI S1530 E13700 – S2000
 E13750 – S2045 E13245 – S1600 E13500 – S1530 E13700 SFC/FL020 MOV SE 12KT STNR
 WKN=

Updated SIGMET (bold text identifies what has been changed):

~~WSAU21 WSBX31 ADRM EBBR~~ 201900
~~YBBB EBBU~~ SIGMET ~~UE05~~ VALID 202000/202300 ~~YPDM EBBR~~

Commented [WW135]: This is the same as the footnote below the example. Delete?

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Commented [MSD136]: Needs to be changed to xxxx (?)

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Commented [MSD137]: Need to exchange Australian coordinates with Belgian ones in both examples

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Commented [MSD138]: Needs to be changed to xxxx (?)

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Commented [MSD139]: Needs to be changed to xxxx (?)

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Commented [MSD140]: I suggest to change these examples to European ones – maybe with EU 2017/373 letter-numbers

Commented [SK141R140]: Perhaps also change the examples in 3.4.5.1

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Commented [WC142]: This whole paragraph is redundant to the one above.

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Commented [SK143]: Perhaps use “cancelled before it becomes valid”

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Commented [MSD144]: Needs to be changed to xxxx (?)

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Commented [MSD145]: Need to exchange Australian coordinates with Belgian ones in both examples

Commented [MSD146]: Needs to be changed to xxxx (?)

~~YBBB~~ ~~EBBU~~ ~~BRISBANE~~ ~~BRUSSELS~~ FIR SEV TURB FCST ~~WI~~ ~~N5107~~ ~~E00357~~ ~~–~~ ~~N5100~~
~~E00432~~ ~~–~~ ~~N5010~~ ~~E00427~~ ~~–~~ ~~N5040~~ ~~E00333~~ ~~–~~ ~~N5107~~ ~~E00357~~ ~~WI~~ ~~S1530~~ ~~E13700~~ ~~–~~ ~~S2000~~
~~E13750~~ ~~–~~ ~~S2045~~ ~~E13245~~ ~~–~~ ~~S1600~~ ~~E13500~~ ~~–~~ ~~S1530~~ ~~E13700~~ SFC/FL120 ~~MOV~~ ~~SE~~ ~~12KT~~ ~~STNR~~
WKN=

Cancellation SIGMET (this cancels the original incorrect SIGMET)

WSAUBX231 ~~ADRM~~ ~~EBBR~~ 201905
~~YBBB~~ ~~EBBU~~ SIGMET ~~UE~~06 VALID 202000/202300 ~~YPDM~~ ~~EBBR~~–
~~YBBB~~ ~~EBBU~~ ~~BRISBANE~~ ~~BRUSSELS~~ FIR CNL SIGMET ~~E04~~ ~~U04~~ 202000/202300=

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Commented [a147]: Maybe this sentence and example could remain because there is information how to deal with cancellations before the start of validity period.

Commented [WC148R147]: True, I will resurrect it

PART 4. RULES FOR PREPARATION OF AIRMET INFORMATION

Note: This guidance is developed as a follow-up of EANPG Conclusion 49/42.

4.1 General

4.1.1 AIRMET messages provide information on the occurrence of specified en-route weather phenomena which may affect the safety of low-level aircraft operations and which were not already included in the forecasts issued for low-level flights in the flight information region.

4.1.1.1.2 AIRMETs should be issued by MWOs in accordance with the regional air navigation agreement. According to the EUR Air Navigation Plan, Volume II, Part V – Meteorology (MET), AIRMET information should be issued by a MWO if agreed on between the users and the meteorological authority concerned. The requirements for the issuance of AIRMET should be reflected provided in Table MET II-1. The decision of a meteorological authority for issuance of AIRMET should also be based on an assessment of the density of air traffic operating below flight level 100 (or flight level 150 or higher in mountainous areas).

4.1.1.1.3 An AIRMET is issued for a FIR; where necessary, the FIR should be divided in sub-areas and separate AIRMET issued for the entire FIR or sub-area(s) of the FIR issued for each sub-area.

4.1.1.1.4 When issuing AIRMET information, MWOs should pay attention on the related products, such as GAMET, and SIGMET and LLSWC (low level significant weather chart⁹), in order to avoid duplication, as AIRMET addresses phenomena which were not already included in these products. An inventory on regional exchange of GAMET and graphical products to support low-level flights is provided at the following link: <https://www.icao.int/EURNAT/Pages/welcome.aspx> <http://www.2010.icao.int/EURNAT/Pages/welcome.aspx> (EUR/NAT Documents ---> EUR Documents ---> MET Guidance ---> Headers and exchange – GAMET for LLF Flight).

4.1.1.1.5 AIRMET information is prepared in abbreviated plain language using approved ICAO abbreviations, a limited number of non-abbreviated words, and numerical values of self-explanatory nature. All abbreviations and words to be used in AIRMET (and SIGMET) in Traditional Alphanumeric Code (TAC) format are given in Appendix A. In addition to the issuance of AIRMET information in Traditional Alphanumeric Code (TAC) format, MWOs should issue AIRMET information in the ICAO Meteorological Information Exchange Model (IWXXM) format. For more information, please refer to EUR Doc 018, EUR Doc 020 and WMO No.306 Volume I.3 documentation.

4.1.1.1.6 The increasing use of automated systems for handling MET information by the MET offices and the aviation users makes it essential that all types of OPMET information, including AIRMET, are prepared and transmitted in the prescribed standardized formats. Therefore, the structure and format of the AIRMET message, as specified in Annex 3, Part II, Appendix 6, should be followed strictly by the MWOs. Annex 3, Appendix 6, Table A6-1A provides detailed information regarding the content and order of elements in the AIRMET message.

4.1.1.1.7 AIRMET messages should be kept short and clear, without additional descriptive text other than that prescribed in Annex 3.

4.1.1.1.8 After issuing an AIRMET, the MWO maintains watch over the evolution of the phenomenon for which the AIRMET has been issued and issues a new updated AIRMET when necessary.

4.1.1.1.9 AIRMETs should be cancelled promptly when the phenomenon is no longer occurring or no longer expected to occur in the MWO's area of responsibility. The AIRMET is understood to cancel itself automatically at the end of its validity period. If the phenomenon persists and no regular low level forecast product addresses it, a new AIRMET message for a further period of validity has to be issued.

Commented [WC149]: Still relevant?

Commented [WC150]: Added this definition from EU 2017/373 to define AIRMET first. I had the feeling there was no sentence about what an AIRMET actually is.

Commented [SK151]: Suggested wording (I have taken a bit more from the Annex 3 definition)

AIRMET messages provide information on the occurrence of specified en-route weather phenomena which may affect the safety of low-level aircraft operations and which were not already included in the forecasts issued for low-level flights in the flight information region.

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Commented [WC152]: Wiel: seems rather vague, should take into account?

Commented [WC153]: In practice, AIRMET is the supplementary product for LLSWC and GAMET. (EU) 2017/373 reflects this:
AIRMET message' means information [...] concerning the occurrence [...] of specified en-route weather phenomena [...] which was not already included in the forecast issued for low-level flights in the flight information region concerned or sub-area thereof;
Should we reflect this relation?

Commented [SK154R153]: I kind of put this in to the new 4.1.1.
I am not an AIRMET expert as we don't issue these in the UK.

Commented [HP155R153]: AIRMET is often considered as an amendment of GAMET, for instance if there is a change in intensity or location for a given phenomenon. I agree it is important to avoid duplication with existing products but it is also important to guarantee consistency with related products (SIGMET for instance). So I should keep both SIGMET and LLSWC. Note the AIRMET are not produced in France where, in agreement with our CAA, LLSWC contain GAMET information and Amended LLSWC contain AIRMET information. Latest version of EUR 2017-373 still allows this possibility.

Commented [WC156]: I have the feeling, this might not be clear. We do not create sub-FIRs, do we? I think it may mean, several AIRMETs may be issued for distinct phenomena within a FIR?

Commented [WC157R156]: Wiel: ..issued for the entire FIR or sub-area(s) of the FIR?

Commented [WC158]: AIRMET and SIGMET have different criteria

Commented [SK159]: I think you should keep SIGMET. You will need to explain the abbreviation LLSWC if you use it

Commented [WC160]: Not working for me – replaced it

Commented [WC161]: Similar documents like in SIGMET section

⁹ In some states with applicability of (EU) No. 2017/373 individually accepted as replacement for GAMET and AIRMET
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4.2 Structure of the AIRMET message

4.2.1 An AIRMET message in TAC format consists of:

- *WMO heading* – all AIRMETs are preceded by an appropriate WMO heading;
- *First line*, containing location indicators of the relevant ATS unit and MWO, sequential number and period of validity;
- *Meteorological part*, containing meteorological information concerning the phenomenon for which the AIRMET is issued.

These elements are also part of an AIRMET message in IWXXM format, according to the IWXXM schema.

4.3 Format of AIRMET

Note 1: In the following text, square brackets - [] - are used to indicate an optional or conditional element, and angled brackets - <> - for symbolic representation of a variable element, which in the real AIRMET accepts concrete numerical values.

Note 2: The rules below apply for AIRMET in TAC format, as well as for AIRMETs in IWXXM format. However, for the exact formatting of the messages in IWXXM, the XML schema and schematron rules can be found at the following URL: <http://schemas.wmo.int/iwxxm/>.

4.3.1 WMO Header

T₁T₂A₁A₂ii CCCC YYGGgg

4.3.1.1 The group **T₁T₂A₁A₂ii** is the bulletin identification for the AIRMET message. It is constructed in the following way:

T₁T₂	Data type designator	WA (AIRMET in TAC format) LW (AIRMET in IWXXM format)
A₁A₂	Country or territory designator	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 paragraph 2.3.2.2, Part II of Manual on the Global Telecommunication System, Vol I – Global Aspects (WMO - No. 386)

4.3.1.2 **CCCC** is the ICAO location indicator of the communication centre disseminating the message (could be the same as the MWO).

4.3.1.3 **YYGGgg** is the date/time group, where YY is the date and GGgg is the time in hours and minutes UTC, of the transmission of the AIRMET (normally this is the time assigned by the AFTN centre which disseminates the message).

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4.3.1.4 A unique WMO header should be assigned for each AIRMET bulletin issued for an FIR, or part of an FIR¹⁰. The distinction between different AIRMET bulletins issued by the State's MWOs should be through the bulletin number (ii) as, for example:

WABX31 EBBR 061752 [Example from Belgium]

WAPL31 EPWA 061534 [Example from Poland]

~~Note: A table with WMO SIGMET and AIRMET headers used by the EUR Meteorological Watch Offices is included in Appendix B~~

4.3.2 First line of TAC AIRMET

CCCC AIRMET [n][n]n VALID YYGGgg/YYGGgg CCCC-

4.3.2.1 The meaning of the groups in the first line of the AIRMET is as follows:

CCCC	ICAO location indicator of the ATS unit serving the FIR to which the AIRMET refers
AIRMET	Message identifier
[nn]n	Daily sequence number (see paragraph 3.4.2.2)
VALID	Period of validity indicator
YYGGgg/YYGGgg	Validity period of the AIRMET given by date/time group of the beginning and date/time group of the end of the period (see paragraph 3.4.2.3)
CCCC-	ICAO location indicator of the MWO originating the message and – (hyphen, without space, to separate the preamble from the text)

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4.3.2.2 The numbering of the AIRMETs should start every day at 0001 UTC. The sequence number should consist of up to three symbols and may be a combination of letters and numbers, such as:

- 1, 2, ...
- 01, 02, ...
- A01, A02, ...

Examples:

EDWW AIRMET 3 VALID 121100/121500 EDZF-

EPWW AIRMET 5 VALID 061535/061935 EPWA-

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4.3.2.3 The following has to be considered when determining the validity period:

- the period of validity of **an** AIRMET shall not exceed 4 hours;
- in case of **an** AIRMET for an observed phenomenon the filing time (date/time group in the WMO heading) should be same or close to the date/time group indicating the start of the AIRMET validity period;

¹⁰ Note that the list of EUR AIRMET (WA/LW) headers is provided at the following website: <http://www.icao.int/EURNAT/Pages/welcome.aspx> (EUR/NAT Documents ----> EUR Documents ----> MET Guidance --> Headers – EUR SIGMET and AIRMET). Note that the FIR indicator must be in ICAO Doc 7910 (if not listed, the State will be reflected in non-implementation of AIRMET format).

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- when the AIRMET is issued for an expected phenomenon:

- ~~the beginning of validity period should be the time of expected commencement (occurrence) of the phenomenon; and~~
- ~~the beginning of the validity period should correspond to the time the phenomena is expected to commence~~
- ~~the validity period of AIRMET information should be coordinated with the dissemination of regular forecasts for low level flights, keeping in mind that AIRMET is intended as supplementary information and phenomena should be covered by the regular forecast products~~
- the lead time (the time of issuance of the AIRMET) should be not more than 4 hours before the start of validity period (i.e., expected time of occurrence of the phenomenon). If the forecaster has unambiguous information for the occurrence of a phenomenon, it is recommended to aim for a lead time of at least 30 minutes.

In addition, the minimum horizontal extent and ~~validity period~~ duration of the hazardous area for reporting TURB, ICE, MTW, TS and TSGR in AIRMET should have, respectively:

- have a longest diagonal or side of the polygon representative of the whole hazardous area (independent of the FIR boundaries) of 100 km
- have a minimum ~~validity period~~ duration of 30 minutes.

4.3.2.4 The period of validity is the period during which the AIRMET is valid for transmission to aircraft in flight.

Examples:

1. AIRMET for an observed phenomenon:

**WADL41 EDZF 070015
EDGG AIRMET 01 VALID 070015/070300 EDZF-
EDGG LANGEN FIR ISOL TS OBS N OF N49 TOP FL330 MOV E WKN=**

2. AIRMET for a forecast phenomenon:

**WASW41 LSSW 061758
LSAS AIRMET 5 VALID 061800/062100 LSZH-
LSAS SWITZERLAND FIR MOD TURB FCST AT 1800Z W OF E007
SFC/FL160 STNR NC=**

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Commented [WC162]: I propose that the update time of the regular product, which is supplemented by AIRMET (e.g. GAMET or LLSWC) should be considered while defining the validity period. E.g. if the new GAMET is issued in 90 min any deviation in the old product should be covered by a AIRMET with 90 min validity and the phenomenon should then be considered in the new regular product

Commented [a163R162]: I think, that could be a good idea.

Commented [HP164R162]: I agree. When we amend LLSWC, we keep the same validity period as used for the original chart.

Commented [SK165]: Perhaps say
"the beginning of the validity period should correspond to the time the phenomena is expected to commence"

Commented [WC166]: bullet point

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Commented [WW(167)]: copied from SIGMET!?

4.3.3 **Format of the second line containing the meteorological part of TAC AIRMET**

4.3.3.1 The meteorological part of an AIRMET consists of nine elements as shown in the table below.

1	2	3	4	5	6	7
Location indicator of the FIR or CTA	Location indicator and name of the FIR/CTA, or part thereof for which the AIRMET is issued^	Status indicator : test or exercise	Description of the phenomenon	Observed or forecast	Location (referring to latitude and longitude (in degrees and minutes))	Commented [W] purpose?
<CCCC>	<name> FIR[/n]	TEST or EXER	<Phenomenon>	OBS [AT <GGggZ> or FCST [AT <GGggZ>]	Geographical location of the phenomenon given by coordinates	FL<nnn/nnn> or [SFC/]FL<nnn> or [SFC/]<[n]nnnn> FT or [SFC/]<nnnn>M or TOP FL<nnn> or [TOP] ABV FL<nnn> or [TOP] ABV <[n]nnnn>FT or [<nnnn>]/<nnnn> M or [<[n]nnnn>]/<[n]nnnn>FT or [<nnnn>M]/FL<nnn> or [<[n]nnnn>FT]/FL<nnn>

8	9
Movement or expected movement	Changes in intensity
MOV <direction, speed> KMH[KT], or STNR	INTSF or WKN or NC

[^]when FIR is divided in sub-areas: separate AIRMET should be issued for each sub-area, as necessary. Issued AIRMET and GAMET should cover the same sub-area.

Commented [WC169]: Relevant? I do not know such cases

Commented [SK170R169]: I don't know about this for AIRMETS as we don't do them, but in the UK we produce a GAMET which is split into sub-FIR areas.

4.3.3.1.1 Location indicator and name of the FIR

location indicator <name> FIR[/n]

Example:

EBBU BRUSSELS FIR

4.3.3.1.2 TEST or EXER ~~(applicable 7 Nov 2019)~~

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

TEST is generally employed in messages without meteorological information, to test the data dissemination (e.g. regular DMG EUR OPMET Warning Monitoring Exercises). When TEST is used, the AIRMET message may end immediately after the word TEST.

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EXER is generally used for international exercises where realistic meteorological information will be used to test coordination or tactical decisions but not for operational purposes (e.g. regular VOLCEX exercises preparing users to the management of a volcano eruption over the European airspace).

4.3.3.1.3 Phenomenon

The description of the phenomenon consists of a qualifier and a phenomenon abbreviation. ~~The appropriate abbreviations and combinations thereof, and their meaning are given in Appendix D.~~ AIRMET shall be issued only for the following phenomena (with only one phenomenon in each AIRMET): at cruising levels below FL100 (FL150 or higher for mountainous areas ¹¹ ~~(“An area of changing terrain profile where the changes of terrain elevation exceed 900m (3000 ft) within a distance of 18.5 km (10.0 NM)” Chap 1, Vol II, ICAO Doc 8168 – Aircraft Operations)~~), where necessary):

Commented [SK171]: Not needed. Text of Appendix D has been added into this section now.

Phenomenon ¹	Description in TAC format	Meaning
Surface wind	SFC WIND (+wind direction, speed and units)	Widespread ² mean surface wind direction with mean speed above 15 m/s (30 kt)
Surface visibility	SFC VIS (+visibility) (+ one of the weather phenomena causing the reduction of visibility)	Widespread ² areas affected by reduction of visibility to less than 5 000 m, including the weather phenomenon causing the reduction of visibility
Thunderstorm	ISOL ⁴ TS OCNL ⁵ TS ISOL ⁴ TSGR OCNL ⁵ TSGR	Isolated thunderstorm(s) Occasional thunderstorm(s) Isolated thunderstorm(s) with hail Occasional thunderstorm(s) with hail
Mountain obscuration	MT OBSC ⁶	Mountains obscured
Cloud	BKN CLD (+height ³) OVC CLD (+height ³) ISOL ⁴ CB OCNL ⁵ CB FRQ ⁷ CB ISOL ⁴ TCU OCNL ⁵ TCU FRQ ⁷ TCU	Widespread ² areas of broken cloud Widespread ² areas of overcast cloud Isolated CB Occasional CB Frequent CB Isolated TCU Occasional TCU Frequent TCU

¹¹ Mountainous area is an area of changing terrain profile where the changes of terrain elevation exceed 900 m (3 000 ft) within a distance of 18.5 km (10.0 NM)– Chap 1, Vol II, ICAO Doc 8168 - Aircraft Operations
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Icing	MOD ⁸ ICE	Moderate icing
Turbulence	MOD ⁹ TURB	Moderate turbulence
Mountain wave	MOD ¹⁰ MTW	Moderate mountain wave

Notes:

1. Only one of the weather phenomena listed should be selected and included in each AIRMET
2. The term “widespread” is used to indicate a spatial coverage of more than 75 percent of the area concerned. (reference: EUR eANP, VOLUME II, PART V – METEOROLOGY, EXAMPLE FOR SPECIFIC REGIONAL REQUIREMENTS)
3. Refer to ICAO Annex 3, Appendix 3, 4.5.3: The height of cloud base shall be reported above aerodrome elevation, unless precision approach procedures make local arrangements necessary, or reports are made by offshore structures
4. Isolated (**ISOL**) indicates that an area of thunderstorms, or cumulonimbus cloud, or towering cumulus cloud, consists of individual features which affect, or are forecast to affect, an area with a maximum spatial coverage less than 50 per cent of the area concerned (at a fixed time or during the period of validity)
5. Occasional (**OCNL**) indicates that an area of thunderstorms, or cumulonimbus cloud, or towering cumulus cloud, consists of well-separated features which affect, or are forecast to affect, an area with a maximum spatial coverage between 50 and 75 per cent of the area concerned (at a fixed time or during the period of validity)
6. Mountain obscured (**MT OBSC**) should be used to indicate widespread mountain obscuration. (reference: EUR eANP, VOLUME II, PART V – METEOROLOGY, EXAMPLE FOR SPECIFIC REGIONAL REQUIREMENTS)
7. Frequent (**FRQ**) indicates an area of cumulonimbus cloud or towering cumulus cloud, within which there is little or no separation between adjacent CB or TCU clouds, with a maximum spatial coverage greater than 75% of the area affected, or forecasts to be affected, by the phenomenon (at a fixed time or during the period of validity). Note that FRQ TS corresponds the issuance of a SIGMET, not an AIRMET.
8. Moderate (**MOD**) icing (**ICE**) should refer to icing in other than convective clouds.
9. Moderate (**MOD**) turbulence (**TURB**) refers only to:
 - low-level turbulence associated with strong surface winds;
 - rotor streaming;
 - turbulence whether in cloud or not in cloud (CAT);
 - turbulence not associated with convective clouds exclusively;
 - Turbulence is considered moderate when the peak value of the ~~cube root of~~ EDR is equal to or above 0.20 and below 0.45.
10. A mountain wave (**MTW**) is considered moderate (**MOD**) whenever an accompanying downdraft of 1.75–3.0 m/s (350–600 ft/min) and/or moderate turbulence is observed or forecast.

10

- surface wind
- surface visibility
- thunderstorms — if they are ISOL or OCNL with or without hail
- mountain obscuration
- cloud — BKN or OVC
- CB or TCU — if they are ISOL, OCNL or FRQ

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Commented [WC172]: New text added

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Commented [a174]: cube root is deleted in Annex 3 Amd79

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- ~~icing only MOD~~
- ~~turbulence only MOD~~
- ~~mountain wave only MOD~~

4.3.3.1.4 Indication if the phenomenon is observed or forecast

OBS [AT <GGggZ>]
or
FCST [AT <GGggZ>]

The indication whether the phenomenon is observed or forecast is given by the abbreviations OBS and FCST. OBS and FCST may be followed by a time group in the form AT GGggZ, where GGgg is the time of the observation or forecast 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

4.3.3.1.5 Location of the phenomenon

The location of the phenomenon is given with reference to geographical coordinates (latitude and longitude in degrees and minutes). The MWOs should try to be as specific as possible in reporting the location of the phenomenon and, at the same time, to avoid overwhelming geographical information, which may be difficult to process or perceive. For TAC AIRMETs, the number of coordinates should be no less than 4 and normally no greater than 7 noting the first point is repeated (the end point should be a repeat of the start point). The recommended best practice is to list the coordinates in a clockwise order as this is an XML/GML convention.

The use of WITHIN is the most preferred way to describe the location of the phenomenon for ingestion into automated systems used by the airlines for flight planning and in-flight decision making:

1) An area of the FIR or UIR defined by a polygon. The end point should be a repeat of the start point.

**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]>]**

For example:

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

WI N60 E025 – N62 E027 – N58 E030 – N59 E026 – N60 E025

For the usage of polygon AIRMETs within FIRs with complex boundaries, further guidance is given in **Appendix C**.

The following are additional ways to describe the location of the phenomenon (however they can only be used for AIRMETs in TAC format). Further details are found in [Appendix B and C](#):

2) In a sector of the FIR (or UIR) defined relative to a set of up to three specified lines in different variations.

For example:

NE OF LINE N5500 W00700 – N5000 W00300

N OF N4500 AND S OF N4750

NE OF LINE N5500 W00700 – N5000 W00300 AND SW OF LINE N5900 W00850 – N5200 W00200

N OF N4200 AND E OF E01530 (effectively a quadrant)

N OF N5230 (effectively a segment)

W OF E020 (effectively a segment)

3) At a specific point within the FIR (or UIR).

Note: this is not recommended to be used as it is not in line with AIRMET minimum size. Information concerning AIRMET phenomena of transient and local nature shall be made available by issuing special air-reports

For example:

N5530 W00230

4) A reference to the whole FIR, FIR/UIR, UIR or CTA.

For example: Symbolically, this is indicated as:

ENTIRE FIR [UIR, FIR/UIR]

ENTIRE CTA

More details on reporting of the location of the phenomenon are given in Appendix 6 to Annex 3 and in [Appendix B and G](#) to this Guide.

The following is the most preferred way to describe the location of the phenomenon for ingestion into automated systems used by the airlines for flight planning and in-flight decision making:

1) An area of the FIR defined by a polygon. The end point should be a repeat of the start point.

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}>

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~~<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~~

Use of polygons with complex FIR boundaries

Annex 3 specifies that the points of a polygon '... should be kept to a minimum and should not normally exceed seven'. However, some FIR boundaries are complex, and it would be unrealistic to expect that a polygon would be defined that followed such boundaries exactly. As such, some States have determined that the polygon points be chosen in relation to the complex boundary such that the FIR boundary approximates, but is wholly encompassed by, the polygon, and that any additional area beyond the FIR boundary be the minimum that can be reasonably and practically described. Caution should however be exercised in those instances where international aerodromes are located in close proximity to such a complex FIR boundary. **Appendix C** provides examples and advice with regard to describing such areas.

The following are additional ways to describe the location of the phenomenon (however, they can only be used for AIRMETs in Traditional Alphanumeric Code format):

Commented [WC176]: Redundant with Appendix G

2a) In a sector of the FIR defined relative to specified line or single series of up to three connected lines, with start and end points on the FIR boundary.

With reference to a LINE, described with latitude/longitude of two to four points. These points should be on the FIR boundary, or so close to the FIR boundary to leave no doubt as to the intent that the points should be considered as being on the FIR boundary.

~~<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~~

~~SE OF LINE N3730 W01230 N4000 W1130 N3830 W01030 N3800 W00945
W OF LINE N20 E042 N35 E045~~

2b) 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~~

2c) 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.

These points should be on the FIR boundary, or so close to the FIR boundary to leave no doubt as to the intent that the points should be considered as being on the FIR boundary.

~~<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]>]~~

Chosen so that the affected area is BETWEEN two specified lines, and meets both criteria.

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~~

~~2d) In a sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant)~~

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

Examples:

~~N OF N1200 AND E OF W02530
S OF N60 AND W OF E030~~

~~2e) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment)~~

Indication of a part of the FIR with reference to latitude:

~~<N OF> or <S OF> <Nnn[nn]> or <Snn[nn]>~~

Example:

~~N OF S2230~~

Indication of a part of the FIR with reference to a longitude:

~~————— <E OF> or <W OF> <Ennn[nn]> or <Wnnn[nn]>~~

————— Example:

~~————— W OF E080~~

~~3) Defined by a ‘corridor’ of specified width, centred upon a line, of up to three connected segments, described by;~~

~~Note: With reference to METP/2 Decision 8/3, the term ‘APRX’ should be removed from the regional SIGMET guide template and not recommended for use.~~

~~APRX 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]>]~~

or

~~APRX 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]>]~~

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Commented [ME177]: See comment regarding SIGMET.

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Example:

~~APRX 50KM WID LINE BTN N64 W017 N60 W010 N57 E010~~

4) ~~At a specific point within the FIR~~

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

~~<Nnn[nn]> or <Snn[nn]> <Wnnn[nn]> or <Ennn[nn]>~~

Examples:

~~N5530 W02230~~

~~S23 E107~~

5) ~~A reference to the whole FIR.~~

~~Symbolically, this is indicated as:~~

~~ENTIRE FIR~~

~~More details on reporting of the location of the phenomenon are given in Appendix 6 to Annex 3 and in Appendix E to this Guide.~~

4.3.3.1.6 Flight level or altitude and extent

FLnnn
or
nnnnM
or
[n]nnnnFT
or
SFC/FLnnn
or
SFC/nnnnM
or
SFC/[n]nnnnFT
or
FLnnn/nnn
or
TOP FLnnn
or
ABV FLnnn
or
TOP ABV FLnnn
or
ABV [n]nnnnFT
or
TOP ABV [n]nnnnFT
or

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

The location or extent of the phenomenon in the vertical is given by one or more of the above abbreviations, as follows:

- reporting of single level – **FL<nnn>**;
 For example: **FL090**
- reporting at a single geometric level, in metres or feet– **<nnnn>M or <[n]nnnn>FT**
 For example: **4500M or 8200FT or 12000FT**
- reporting of a layer – **SFC/FL<nnn>, SFC/<nnnn>M, or SFC/<[n]nnnn>FT**, where the lower level is the surface and the upper level is a flight level, an altitude in metres or an altitude in feet respectively;
 For example: **SFC/FL100 or SFC/3000M or SFC/11000FT**
- reporting a layer using flight levels – **FL<nnn/nnn>**, where the lower flight level is reported first; this is used particularly in reporting turbulence and icing;
 For example: **FL070/090**
- reporting the top of a phenomenon with reference to one flight level (base is unknown but top is known)– **TOP FL<nnn>**
 For example: **TOP FL080**
- reporting a phenomenon with reference to one flight level and the abbreviation ABV (top is unknown, but base is known)–**ABV FL<nnn>**
 For example: **ABV FL060**
- reporting the top of a phenomenon exceeding the vertical limit of AIRMET message and the abbreviation ABV – **TOP ABV FL<nnn>**
 For example: **TOP ABV FL060**
- reporting phenomenon expected between a lower and upper geometric level expressed in metres or feet - **<nnnn>/<nnnn>M - <[n]nnnn>/<[n]nnnn>FT**;
 For example: **1500/3000M or 8000/12000FT or 11000/14000FT**
- reporting phenomenon expected between a lower geometric level expressed in metres or feet and a higher flight level - **<nnnn>M/FL<nnn> - <[n]nnnn>FT/FL<nnn>**;
 For example: **2000M/FL100 or 3000FT/FL100 or FL060/150**

Additional examples:

ISOL CB ... TOP ABV FL100
MOD TURB ... FL050/080
MOD ICE ... SFC/FL090
MOD MTW ... FL060/180

Note that the flight levels reported should be up to FL100 (FL150 or higher for mountainous areas, where necessary). Recommendation: if possible and known, the actual vertical boundaries of an AIRMET phenomenon shall be reported regardless of the limitations of the initial forecast issued for low level flights.

4.3.3.1.7 Movement

MOV <direction> [<speed>< KMH>] or [<speed><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 and NNW). Speed is given in KMH or KT. The abbreviation STNR is used if no significant movement is expected.

Examples:

MOV NW
MOV NNW 30KMH
MOV E 25KT
STNR

Note. – Annex 3 does not enable AIRMET to contain explicit forecast position as per SIGMET message.

4.3.3.1.8 Expected changes in intensity

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

INTSF – intensifying
WKN – weakening
NC – no change

4.3.4 Cancellation of AIRMET

4.3.4.1 If, during the validity period of an AIRMET, the phenomenon for which the AIRMET had been issued is no longer occurring or no longer expected, this AIRMET should be cancelled by the issuing MWO. This is in support to Annex 3, 7.2.2 which requires “*AIRMET information shall be cancelled when the phenomena are no longer occurring or are no longer expected to occur in the area*”.

Note – If it is expected (or confirmed from observation) that the phenomenon for which AIRMET had been issued will change (or has changed) significantly from the original message content, the current AIRMET message should be cancelled and a new AIRMET message should be issued as appropriate (see 4.3.4.2).

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Commented [WC178]: This is an interesting example, and I am unsure what already has been discussed. The note below says flight levels only up to FL100-150 but we have 180 now. How is the common practice, e.g. for a CB AIRMET; Tops abv FL100 or the actual tops? Is it MOD ICE FL100/200 or FL100/XXX.

Considering that some countries have LLSWC instead of GAMETs now (valid up to FL245 e.g. instead of FL100-150) which are the base of AIRMET issuance, I see some space for confusion.

If we have information on the actual Tops/upper limits of an phenomenon, shouldn't we just indicate it?

Commented [WC179R178]: I want to give attention to this

Commented [a180R178]: Our former GAMET product in Austria (before 2017) was valid SFC/FL200 instead of FL150 as we made use of the passage “**or higher** for mountainous areas where necessary”. In addition our CB forecast in the GAMET included the actual tops in any case (even if higher than FL200) to emphasize the possible impact of the thunderstorm on flight operations in lower levels (the higher the tops the stronger the effect)

Commented [HP181R178]: In our LLSWC, we strictly stick to the max height FL150 when indicating the top for phenomena, even for mountainous areas. These charts are mainly used for VFR flights.

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The cancellation is done by issuing the same type of AIRMET with the following structure in TAC format:

- 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 location indicator and name of the FIR, the combination CNL AIRMET, followed by the sequential number of the original AIRMET and its original validity period.

Examples:

Cancellation of AIRMET with the following first line:

~~WAXY31 WACR40 YUSO-LEMM 151520~~
~~YUDD-GCCC AIRMET 1 VALID 151520/151800 YUSOLEMM-~~
~~YUDD-GCCC SHANLON-CANARIAS FIR ...~~

Cancellation AIRMET:

~~WAXY31 WACR40 YUSO-LEMM 151650~~
~~YUDD-GCCC AIRMET 2 VALID 151650/151800 YUSOLEMM-~~
~~YUDD-GCCC CANARIAS SHANLON FIR CNL AIRMET 1 151520/151800=~~

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4.3.4.2 If it is known that an existing AIRMET no longer accurately describes the existing or expected future evolution of the phenomena a new AIRMET, correctly describing the hazard should be issued, followed immediately by a cancellation of the original, erroneous AIRMET. The new AIRMET should be issued before the cancellation in order to ensure there is always an AIRMET in force and that the cancellation is not mistakenly understood to mean the hazard has completely dissipated.

In order to prevent unwanted suppression or overwriting of AIRMET messages, the WMO AHL must always be unique. This may mean issuing AIRMET bulletins with at least 1 minute difference in the compilation time.

Commented [WW(182)]: Same as note below example.

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

~~WSAU21 WAPL31 ADRM-EPWA 201855~~
~~YBBB-EPWW AIRMET E01 VALID 202000/210000 YPDM-EPWA-~~
~~YBBB-BRISBANE-EPWW WARSZAWA FIR MOD TURB FCST WI S1900~~
~~N5320 E13730 E01550 - S2000 S5315 E13130 E01830 -~~
~~S1600 N5155 E13500 01807 - S1530 N5215 E13700 01547 SFC/FL120 MOV~~
~~SE 12KT WKN=~~

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Update AIRMET (bold text identifies points that have been changed):

~~WSAU21 ADRM~~WAPL31 EPWA 202155
~~YBBB-EPWW AIRMET E01~~ VALID 202155/210000 ~~YPDM-EPWA-~~
~~YBBB-BRISBANE-EPWW WARSZAWA FIR MOD TURB FCST WI N5420 E01450~~
~~- S5415 E01930 -N5155 E01807 - N5215 E01547 WI S1530 E13700 - S2000 E13750~~
~~- S2045 E13245 - S1600 E13500 - S1530 E13700 -SFC/FL120 MOV SE 12KT WKN=~~

Cancellation AIRMET (this cancels the original AIRMET):

~~WSAU21 ADRM~~WAPL31 EPWA 202156
~~YBBB-EPWW~~ AIRMET E03 VALID 202155/210000 ~~YPDM~~EPWA-
~~YBBB-BRISBANE~~EPWW WARSZAWA FIR CNL AIRMET E01 202000/210000=

~~Note: It is essential that the times of issuance of the updated (correct) AIRMET and the cancellation are separated by at least one minute to prevent inadvertent suppression by message switches.~~

Appendix A - List of the abbreviations and decode used in SIGMET and AIRMET in Traditional Alphanumeric Code

List of the abbreviations and decode used in SIGMET and AIRMET in Traditional Alphanumeric Code

Abbreviation	Decode
ABV	Above
AIRMET	Information concerning en-route weather phenomena which may affect the safety of low-level aircraft operations
AND*	And
APRX	Approximate or approximately
AT	At <i>(followed by time)</i>
BKN	Broken
BLW	Below
BR	Mist
BTN	Between
BY*	By
CB	Cumulonimbus
CENTRE*	Centre <i>(used to indicate tropical cyclone centre)</i>
CLD	Cloud
CNL	Cancel or cancelled
CTA	Control area
DS	Duststorm
DU	Dust
DZ	Drizzle
E	East or eastern longitude
EMBD	Embedded in layer <i>(to indicate CB embedded in layers of other clouds)</i>
ENE	East-Northeast
ENTIRE*	Entire
ERUPTION*	Eruption <i>(used to indicate volcanic eruption)</i>
ESE	East-Southeast
EXER	Exercises or exercising or to exercise
EXP	Expected
FCST	Forecast
FG	Fog
FIR	Flight information region (link to global FIR map: http://gis.icao.int/flexviewer/)
FL	Flight level
FRQ	Frequent
FU	Smoke
FZRA	Freezing rain
GR	Hail
GS	Small hail and/or snow pellets
HVY	Heavy <i>(used to indicate intensity of weather phenomena)</i>
HZ	Haze
ICE	Icing
INTSF	Intensify or intensifying
ISOL	Isolated
KM	Kilometres
KMH	Kilometres per hour
KT	Knots
LINE	Line
MPS	Metres per second
MOD	Moderate <i>(used to indicate intensity of weather phenomena)</i>
MOV	Move or moving or movement

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Abbreviation	Decode
MT	Mountain
MTW	Mountain waves
N	North <i>or</i> northern latitude
NC	No change
NE	North-east
NM	Nautical miles
NN	No name, unnamed
NNE	North-Northeast
NNW	North-Northwest
NW	Northwest
OBS	Observe <i>or</i> observed <i>or</i> observation
OBSC	Obscure <i>or</i> obscured <i>or</i> obscuring
OCNL	Occasional <i>or</i> occasionally
OF*	Of ... (<i>place</i>)
OVC	Overcast
PL	Ice pellets
PO	Dust/sand whirls
PSN	Position
RA	Rain
RDOACT*	Radioactive
S	South <i>or</i> southern latitude
SA	Sand
SE	South-east
SEV	Severe (<i>used e.g. to qualify icing and turbulence reports</i>)
SFC	Surface
SG	Snow grains
SIGMET	Information concerning en-route weather and other phenomena in the atmosphere that may affect the safety of aircraft operations
SN	Snow
SQ	Squalls
SQL	Squall line
SS	Sandstorm
SSE	South-Southeast
SSW	South-Southwest
STNR	Stationary
SW	Southwest
TC	Tropical cyclone
TCU	Towering Cumulus
TEST*	Test (indicator of test message)
TO	To ... (<i>place</i>)
TOP	Cloud top
TS	Thunderstorm
TSGR	Thunderstorm with hail
TURB	Turbulence
UIR	Upper flight information region
VA	Volcanic ash
VALID*	Valid
VIS	Visibility
W	West <i>or</i> western longitude
WI	Within
WID	Width
WKN	Weaken <i>or</i> weakening
WNW	West-Northwest
WSW	West-Southwest
Z	Coordinated Universal Time (<i>used in meteorological messages</i>)

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Abbreviation	Decode
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** not in the ICAO Doc 8400, ICAO Abbreviations and Codes*

APPENDIX B

List of EUR SIGMET (WS/LS, WV/LV) and AIRMET (WA/LW) headers

*Note that updates to Appendix B is provided at the following website: <http://www.icao.int/EURNAT/Pages/welcome.aspx> (EUR/NAT Documents → EUR Documents → MET Guidance → Headers → EUR SIGMET and AIRMET). Note the **FIR indicator** must be in ICAO Doc 7910 (if not listed, the State will be reflected in non-implementation of SIGMET format).*

Commented [WC183]: Should we delete this Appendix, as it is no more than a reference to another document? As solution, we could insert a footnote at the header section referring to this online document

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APPENDIX C

Meteorological phenomena to be reported by SIGMET

Phenomenon	Description—in TAC format	Meaning
Thunderstorm (TS)	OBSC ² TS	Obscured thunderstorm(s)
	EMBD ³ TS	Embedded thunderstorm(s)
	FRQ ⁴ TS	Frequent thunderstorm(s)
	SQL ⁵ TS	Squall line thunderstorm(s)
	OBSC TSGR	Obscured thunderstorm(s) with hail
	EMBD TSGR	Embedded thunderstorm(s) with hail
	FRQ TSGR	Frequent thunderstorm(s) with hail
	SQL TSGR	Squall line thunderstorm(s) with hail
Tropical cyclone (TC)	TC (+ TC name)	Tropical cyclone (+ TC name)
Turbulence (TURB)	SEV TURB ⁶	Severe turbulence
Icing (ICE)	SEV ICE ²	Severe icing
	SEV ICE (FZRA)	Severe icing due to freezing rain
Mountain wave (MTW)	SEV MTW ⁸	Severe mountain wave
Duststorm (DS)	HVY DS ⁹	Heavy duststorm
Sandstorm (SS)	HVY SS ⁹	Heavy sandstorm
Volcanic ash cloud (VA)	VA (+ volcano name, if known)	Volcanic ash (+ volcano name)
Radioactive cloud	RDOACT CLD	Radioactive cloud

Notes:

1. Only one of the weather phenomena listed should be selected and included in each SIGMET
2. Obscured (**OBSC**) indicates that the thunderstorm is obscured by haze or smoke
3. Embedded (**EMBD**) indicates that the thunderstorm is embedded within cloud layers and cannot be readily recognized
4. Frequent (**FRQ**) indicates an area of thunderstorms within which there is little or no separation between adjacent thunderstorms with a maximum spatial coverage greater than 75% of the area affected, or forecasts to be affected, by the phenomenon (at a fixed time or during the period of validity)
5. Squall line (**SQL**) indicates thunderstorms along a line with little or no space between individual clouds. This convective system could be stationary or moving, associated with sustained winds, varying rapidly in direction, and possibly strong gusts.
6. Severe (**SEV**) turbulence (**TURB**) refers only to:
 - low level turbulence associated with strong surface winds;
 - rotor streaming;
 - turbulence whether in cloud or not in cloud (CAT);
 - turbulence is considered severe whenever the peak value of the eddy dissipation rate (EDR) exceeds 0.7.

Guidance for SEV TURB can be found in WMO Aviation Hazards (AeM SERIES No. 3 (https://library.wmo.int/opac/doc_num.php?explnum_id=4555)).

A SIGMET for SEV TURB should be issued when observations and/or NWP outputs or other forecasts methods suggest a high probability of its occurrence. In addition, in the absence of other information, it is reminded that WAFC SIGWX charts can provide material to issue SIGMET for SEV TURB.

Commented [WC184]: Would it be beneficial to merge this Appendix with Appendix J?

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~~When SEV TURB is reported by pilots of heavy or medium aircraft (if type known) and the forecaster considers that the phenomenon is not of transient nature and therefore expected to persist, SIGMET for SEV TURB should be issued. Note that reference about aircraft types can be found in ICAO Doc 4444 PANS-ATM 16th Edition (2016) Part 4.9.1.1.~~

~~The issuance of SIGMET for SEV TURB is recommended when light sized aircraft measure EDR of 0.70 or greater as per Annex 3, Appendix 4, 2.6.2 (anticipated to be 0.45 for medium aircraft in 2020 subject to approval), noting that light aircraft can experience severe turbulence with EDR lower than this value.~~

~~7. Guidance for SEV ICE can be found in WMO Aviation Hazards (AeM SERIES No. 3 (https://library.wmo.int/opac/doc_num.php?explnum_id=4555)).~~

~~8. A mountain wave (MTW) is considered:
severe whenever an accompanying downdraft of 3.0 m/s (600 ft/min) or more and/or severe turbulence is observed or forecast.~~

~~9. Sandstorm/duststorm should be considered heavy whenever the visibility is below 200 m and the sky is obscured.~~

Commented [WC185]: Proposal to delete this paragraph as it may be confusing

Commented [WC186]: I think we could add some more details, e.g. SEV ICE due to FZRA, SEV ICE due to supercooled large droplets..?

APPENDIX D***Meteorological phenomena to be reported by AIRMET***

Phenomenon ¹	Description – in – TAC format	Meaning
Surface wind	SFC WIND (+wind direction, speed and units)	Widespread ² mean surface wind direction with mean speed above 15 m/s (30 kt)
Surface visibility	SFC VIS (+visibility) (+ one of the weather phenomena causing the reduction of visibility)	Widespread ² areas affected by reduction of visibility to less than 5 000 m, including the weather phenomenon causing the reduction of visibility
Thunderstorm	ISOL ³ TS OCNL ⁴ TS ISOL ³ TS GR OCNL ⁴ TS GR	Isolated thunderstorm(s) Occasional thunderstorm(s) Isolated thunderstorm(s) with hail Occasional thunderstorm(s) with hail
Mountain obscuration	MT OBSC ⁵	Mountains obscured
Cloud	BKN CLD (+height) OVC CLD (+height) ISOL ³ CB OCNL ⁴ CB FRQ ⁶ CB ISOL ³ TCU OCNL ⁴ TCU FRQ ⁶ TCU	Widespread ² areas of broken cloud Widespread ² areas of overcast cloud Isolated CB Occasional CB Frequent CB Isolated TCU Occasional TCU Frequent TCU
Iceing	MOD ⁷ ICE	Moderate iceing
Turbulence	MOD ⁸ TURB	Moderate turbulence
Mountain wave	MOD ⁹ MTW	Moderate mountain wave

Notes:

1. Only one of the weather phenomena listed should be selected and included in each AIRMET

2. The term “widespread” is used to indicate a spatial coverage of more than 75 percent of the area concerned. (reference: EUR eANP, VOLUME II, PART V – METEOROLOGY, EXAMPLE FOR SPECIFIC REGIONAL REQUIREMENTS)

3. Isolated (ISOL) indicates that an area of thunderstorms, or cumulonimbus cloud, or towering cumulus cloud, consists of individual features which affect, or are forecast to affect, an area with a maximum spatial coverage less than 50 per cent of the area concerned (at a fixed time or during the period of validity)

4. Occasional (OCNL) indicates that an area of thunderstorms, or cumulonimbus cloud, or towering cumulus cloud, consists of well separated features which affect, or are forecast to affect, an area with a maximum spatial coverage between 50 and 75 per cent of the area concerned (at a fixed time or during the period of validity)

5. Mountain obscured (MT OBSC) should be used to indicate widespread mountain obscuration. (reference: EUR eANP, VOLUME II, PART V – METEOROLOGY, EXAMPLE FOR SPECIFIC REGIONAL REQUIREMENTS)

~~6. Frequent (**FRQ**) indicates an area of cumulonimbus cloud or towering cumulus cloud, within which there is little or no separation between adjacent CB or TCU clouds, with a maximum spatial coverage greater than 75% of the area affected, or forecasts to be affected, by the phenomenon (at a fixed time or during the period of validity)~~

~~7. Moderate (**MOD**) icing (**ICE**) should refer to icing in other than convective clouds.~~

~~8. Moderate (**MOD**) turbulence (**TURB**) refers only to:~~

~~— low level turbulence associated with strong surface winds;~~

~~— rotor streaming;~~

~~— turbulence whether in cloud or not in cloud (CAT);~~

~~— Turbulence is considered moderate whenever the peak value of the cube root of the eddy dissipation rate (EDR) is above 0.4 and below or equal to 0.7.~~

~~9. A mountain wave (**MTW**) is considered moderate (**MOD**) whenever an accompanying downdraft of 1.75–3.0 m/s (350–600 ft/min) and/or moderate turbulence is observed or forecast~~

~~10. Mountainous area is an area of changing terrain profile where the changes of terrain elevation exceed 900 m (3 000 ft) within a distance of 18.5 km (10.0 NM)~~

Commented [WC187]: Alignment with Final Review of AMD 79 letter 04/11/19

Commented [WC188]: Where is the 10 in the table?

Appendix **EB** - Guidelines for reporting geographical coordinates in SIGMET and AIRMET in TAC format

Guidelines for reporting geographical coordinates in SIGMET and AIRMET in TAC format

When reporting geographical coordinates of points in SIGMET or AIRMET the following should apply:

1. Each point is represented by latitude/longitude coordinates in whole degrees or degrees and minutes in the form:

N(S)nn[nn] W(E)nnn[nn]

Note: There is a space between the latitude and longitude value.

Examples: **N3623 W04515**
S1530 E12500
N42 E023

2. In describing lines or polygons, the latitude, longitude coordinates of the respective points are separated by the combination space-hyphen-space, as in the following examples:

S0530 E09300 – N0100 E09530 – N1215 E11045 – S0820 E10330 – S0530 E09300

S05 E093 – N01 E095 – N12 E110 – S08 E103 – S05 E093

Note 1: The points of a polygon should be provided in a clockwise order, and the end point should be a repeat of the start point.

Note 2: In the case of volcanic ash cloud or tropical cyclone covering more than one area within the FIR, these elements may be repeated, as necessary.

3. When describing a volcanic ash cloud approximate form and position, a limited number of points, which form a simplified geometric figure (a line, or a triangle, or quadrangle, etc.) should be used in order to allow for a straightforward interpretation by the user.

APPENDIX F

EUR/NAT SIGMET test focal points can be accessed at <http://www.icao.int/EURNAT/Pages/welcome.aspx> — EUR/NAT Documents; EUR Documents; MET Guidance; EUR/NAT SIGMET test focal points

Commented [WC189]: Same is in Appendix B. Ist it even an Appendix when there is only reference to another document?

Appendix ~~GC~~ - ~~Sigmat~~SIGMET Examples

SIGMET EXAMPLES

*Note. —The figures used in this appendix are intended simply to clarify the intent of the SIGMET message in abbreviated plain language (TAC), and therefore how each SIGMET should be **constructed** by MWOs and also **interpreted** by users. ~~The figures used are **not** intended to give guidance on how ~~a~~ SIGMETs in graphical format should be ~~produced~~displayed.~~*

Examples of ‘**WS**’ SIGMET. See the sections for SIGMET for volcanic ash only (WV) and SIGMET for tropical cyclone only (WC) for examples specific to those phenomena.

Contents

- 1) An area defined by a polygon.
Use of polygons with complex FIR boundaries.
- 2a) 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.
- 2b) In a sector of the FIR defined as being between two lines of latitude, or between two lines of longitude.
- 2c) 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.
- 2d) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a ~~segment~~quadrant).
- 2e) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment).
- 3) Defined by a ‘corridor’ of specified width, centred upon the line described.
- 4) At a specific point within the FIR.
- 5) Covering entire FIR.
- 6) Additional examples using volcanic ash references applicable to volcanic ash SIGMET only.
- 7) Additional examples using volcanic ash references applicable to multiple areas in SIGMET for volcanic ash.

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Commented [a190]: Understood. But perhaps it could be an idea to add an extra chapter in Doc014 “SIGMET in graphical format in the EUR region” ? (could be helpful for those states already issuing SIGMETs in graphical format to do so in harmonized way)

Commented [WC191R190]: Display guidelines / for customers

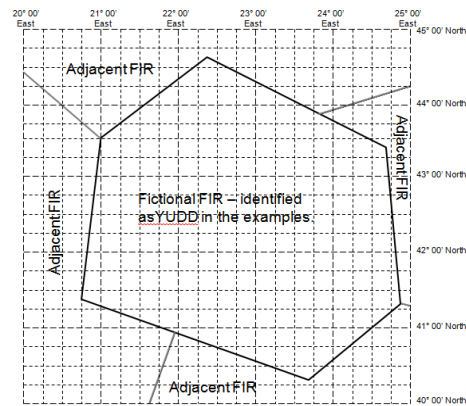
Commented [MSD192]: Just correcting a mistake that is also found in the current version of Doc014

-
- 8) Additional example illustrating use of "WI nnnKM (or nnnNM) OF TC CENTRE " in Tropical Cyclone SIGMET only.
 - 9) Additional example using tropical cyclone references applicable to multiple areas of cumulonimbus cloud associated with -a tropical cyclone
 - 10) Additional examples of SIGMETs relating to 'concave' or 'horseshoe' shaped FIRs.
 - 11) Additional examples for using FCST AT.
 - 12) Examples for TEST and EXER
 - 13) Example for -radioactive cloud SIGMET

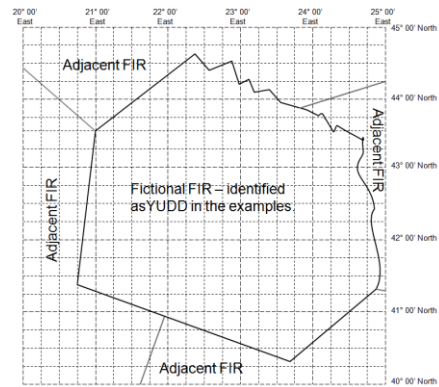
General

In the following paragraphs, some examples of SIGMET are provided in TAC format.
Explanation of fictional FIR.

In each of the examples below, a fictional FIR area is indicated, with portions of adjacent fictional FIRs also indicated. -The FIR areas are overlaid on a coordinate grid, in order that the example plain language SIGMETs can be explicitly related to the intended meaning.



For some cases, examples are given where the FIR has boundaries that are complex (country borders for example, especially when defined by rivers)



Fictional FIR 'Shanlon = YUDD' is used for the examples.

Repetition of start point as last coordinate.

In accordance with practices and procedures laid down for other aeronautical bulletins (i.e. NOTAM), it is recommended that the last point of a polygon is a repeat of the first point of the polygon. This will ensure that the polygon has been closed, and that no points have been accidentally omitted.

'Direction' of encoding of the points of a polygon

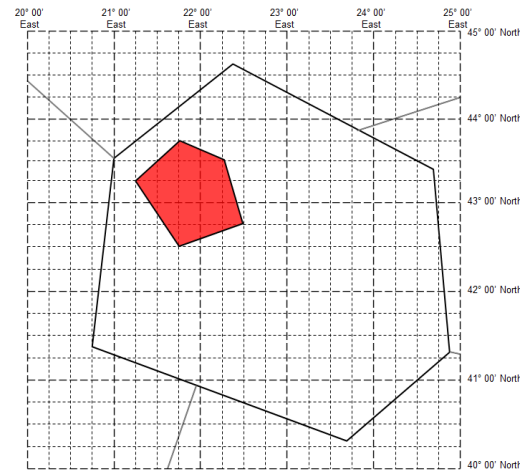
In accordance with practices and procedures laid down for other aeronautical bulletins and international practice (e.g. BUFR encoding of WAFS significant weather (SIGWX) forecasts), it is recommended that the points of a polygon are provided in a 'clockwise' sense. This assists automated systems in determining the 'inside' of polygons.

Use of 'Expected Movement' and 'Forecast Position'/'Forecast Time'.

~~With applicability of Amendment 77, the~~ 'Expected Movement' element of SIGMET should not be used if the 'Forecast Position'/'Forecast Time' element is being used, and vice versa. This is to prevent duplication at best and inconsistencies at worst.

1) An area defined by a polygon. -The end point should be a repeat of the start point. Points of a polygon are provided in a 'clockwise' sense.

When the SIGMET does not include a 'forecast position' section.

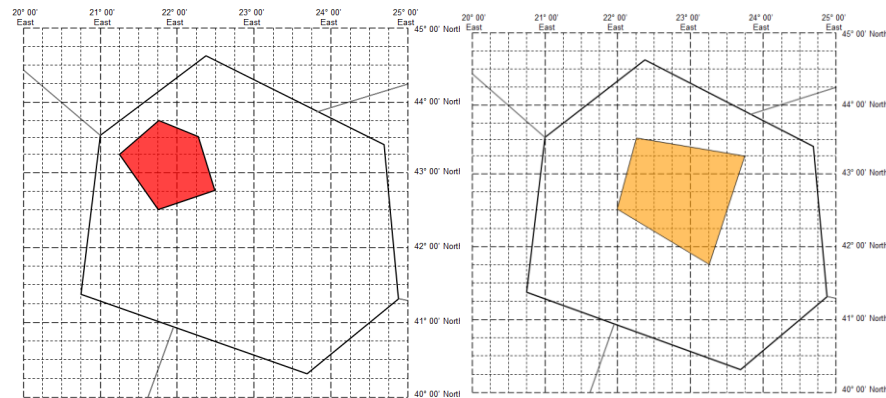


YUDD SIGMET 2 VALID 101200/101600 YUSO-
 YUDD SHANLON FIR/UIR SEV TURB FCST WI N4230 E02145 - N4315 E02115 - N4345 E02145 - N4330 E02215 - N4245
 E02230 - N4230 E02145 FL250/370 MOV ESE 20KT INTSF=

With an explicit forecast position:

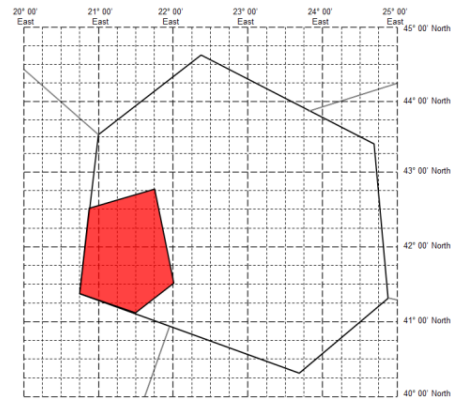
Commented [HP193]: From Wiel :
 This is misleading. The area defined by the polygon is not limited to the FIR, see 2 examples at the end of this section.

Commented [HP194R193]: Ok, modified.



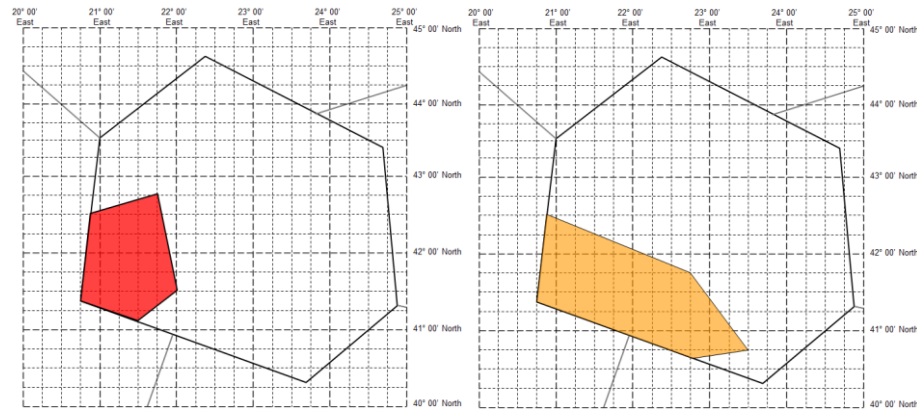
YUDD SIGMET 2 VALID 101200/101600 YUSO-
 YUDD SHANLON FIR/UIR SEV TURB FCST WI N4230 E02145 - N4315 E02115 - N4345 E02145 - N4330 E02215 - N4245
 E02230 - N4230 E02145 FL250/370 INTSF FCST AT 1600Z WI N4145 E02315 - N4230 E02200 - N4330 E02215 - N4315
 E02345 - N4145 E02315=

When the SIGMET does not include a 'forecast position' section.



YUDD SIGMET 2 VALID 101200/101600 YUSO-
YUDD SHANLON FIR/UIR SEV TURB FCST WI N4230 E02052 - N4245 E02145 - N4130 E02200 - N4107 E02130 - N4123
E02045 - N4230 E02052 FL250/370 MOV SE 30KT WKN=

With an explicit forecast position:



YUDD SIGMET 2 VALID 101200/101600 YUSO-

YUDD SHANLON FIR/UIR SEV TURB FCST WI N4230 E02052 - N4245 E02145 - N4130 E02200 - N4107 E02130 - N4123 E02045- N4230 E02052 FL250/370 WKN FCST AT 1600Z WI N4230 E02052 - N4145 E02245 - N4045 E02330 - N4040 E02248 - N4123 E02045- N4230 E02052=

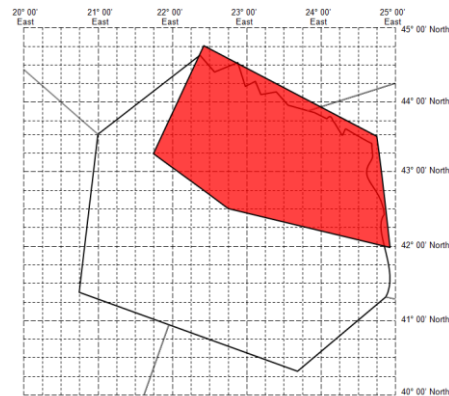
Use of polygons with complex FIR boundaries.

Annex 3 -specifies that the points of a polygon '...~~should are to~~ be kept to a minimum and should not normally exceed seven'. However, some FIR boundaries are complex, and it would be unrealistic to expect that a polygon would be defined that followed such boundaries precisely. As such, some States have determined that the polygon points be chosen in relation to the complex boundary such that the FIR boundary approximates, but is wholly encompassed by, the polygon, and that any additional area beyond the FIR boundary be the minimum that can be reasonably and practically described. Caution should however be exercised in those instances where international aerodromes are located in close proximity to such a complex FIR boundary.

Commented [a195]: according to new Amd79 of Annex 3

In the examples below, it would not be practical to follow the north-eastern boundary of the FIR exactly. The point close to N4330 E02245 is obviously a 'major' turning point along the FIR boundary, but the other, numerous and complex turning points can only be approximated when constrained to seven points.

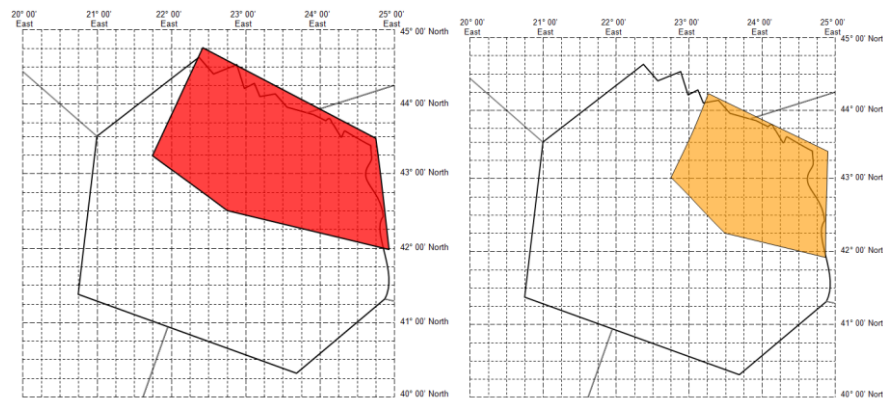
When the SIGMET does not include a 'forecast position' section.



YUDD SIGMET 2 VALID 101200/101600 YUSO-

YUDD SHANLON FIR/UIR SEV TURB FCST WI N4315 E02145 - N4445 E02245 - N4330 E02445 - N4200 E02455 - N4230 E02245- N4315 E02145 FL250/370 MOV SE 20KT WKN=

With an explicit forecast position:



YUDD SIGMET 2 VALID 101200/101600 YUSO-
 YUDD SHANLON FIR/UIR SEV TURB FCST WI N4315 E02145 - N4445 E02245 - N4330 E02445 - N4200 E02455 - N4230
 E02245- N4315 E02145 FL250/370 WKN FCST AT 1600Z WI N4300 E02245 - N4415 E02315 - N4322 E02452 - N4155
 E02445 - N4215 E02330- N4300 E02245=

2a) 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).

The specified points shall be 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) With reference to a LINE, described with latitude/longitude of two to four points. These start and end points should be on the FIR boundary, or so close to the FIR boundary to leave no doubt as to the intent that the points should be considered as being on the FIR boundary.

*<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]>]*

For example:

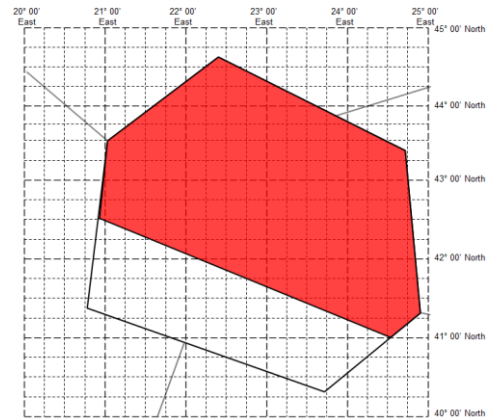
NE OF LINE N2500 W08700 – N2000 W08300

SE OF LINE N3730 W01230 – N4000 W01130 – N3830 W01030 – N3800 W00945

W OF LINE N20 E042 – N35 E045

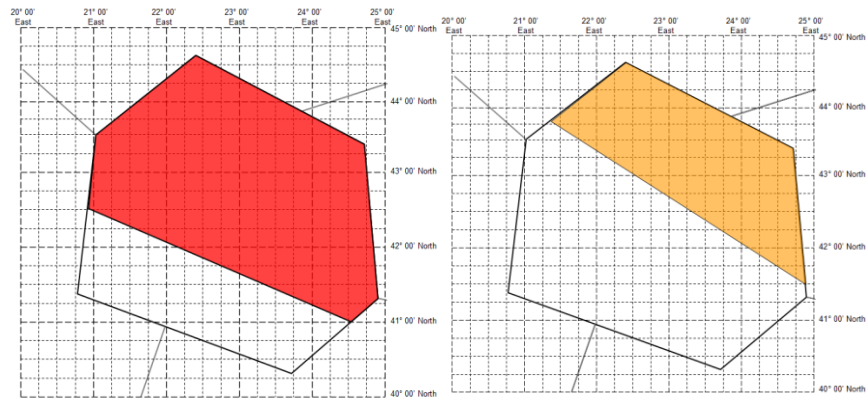
When the SIGMET does not include a ‘forecast position’ section.

Commented [a196]: only start and end points should be on the FIR boundary, not the points connecting the two or three lines



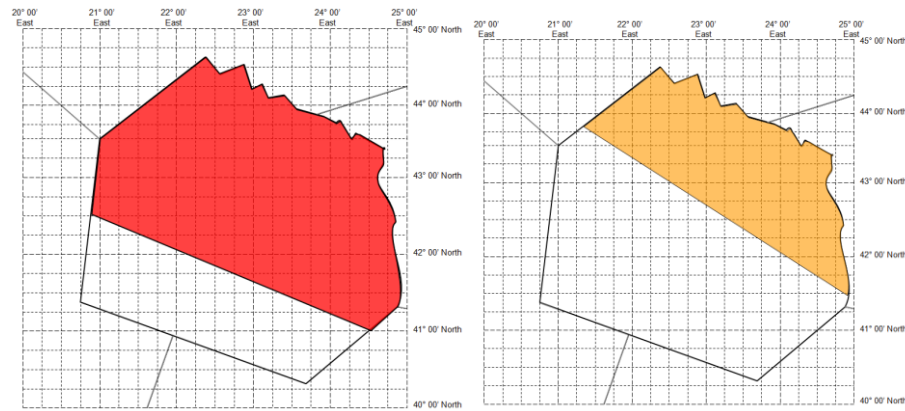
YUDD SIGMET 2 VALID 101200/101600 YUSO-
YUDD SHANLON FIR SEV TURB FCST NE OF LINE N4230 E02052 - N4100 E02430 FL250/370 MOV NE 15KT WKN=

With an explicit forecast position:



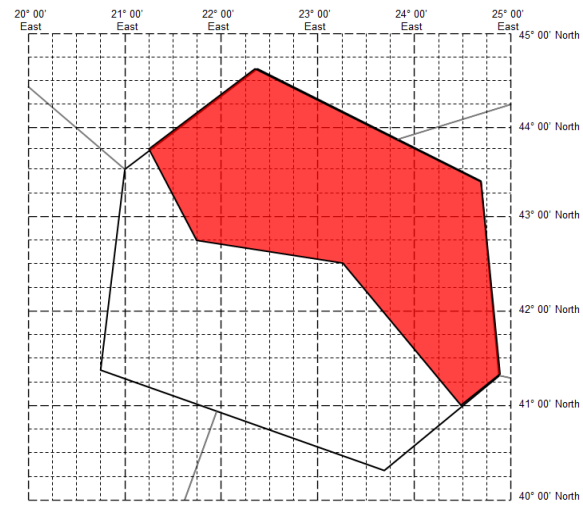
YUDD SIGMET 2 VALID 101200/101600 YUSO-
YUDD SHANLON FIR SEV TURB FCST NE OF LINE N4230 E02052 - N4100 E02430 FL250/370 WKN FCST AT 1600Z NE OF
LINE N4346 E02122 - N4130 E02452=

A separate example is provided below illustrating a case where the north-eastern boundary is complex.



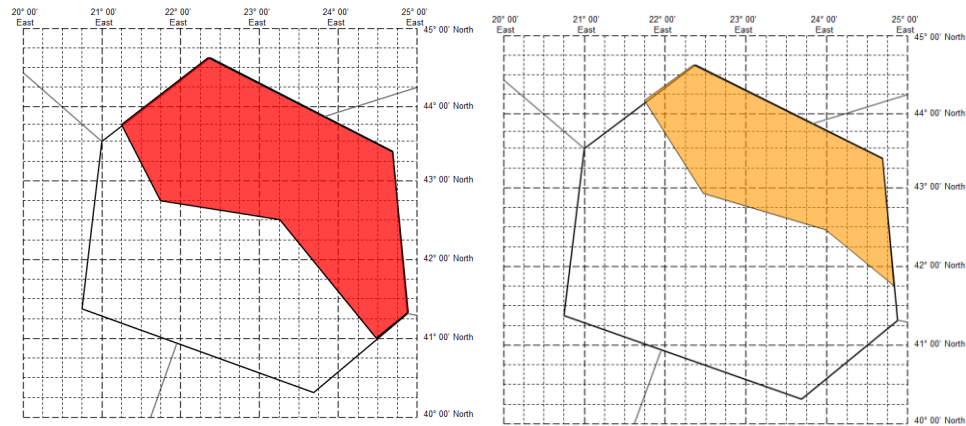
YUDD SIGMET 2 VALID 101200/101600 YUSO-
 YUDD SHANLON FIR SEV TURB FCST NE OF LINE N4230 E02052 - N4100 E02430 FL250/370 WKN FCST AT 1600Z NE OF
 LINE N4346 E02122 - N4130 E02457=

For a series of connected lines when the SIGMET does not include a 'forecast position' section.



YUDD SIGMET 2 VALID 101200/101600 YUSO-
YUDD SHANLON FIR SEV TURB FCST NE OF LINE N4345 E02115 - N4245 E02145 - N4230 E02315 - N4100 E02430 FL250/370
MOV NE 20KT WKN=

With an explicit forecast position:



YUDD SIGMET 2 VALID 101200/101600 YUSO-

YUDD SHANLON FIR SEV TURB FCST NE OF LINE N4345 E02115 - N4245 E02145 - N4230 E02315 - N4100 E02430 FL250/370
WKN FCST AT 1600Z NE OF LINE N4411 E02145 - N4255 E02228 - N4228 E02400 - N4130 E02450=

2b) 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]>

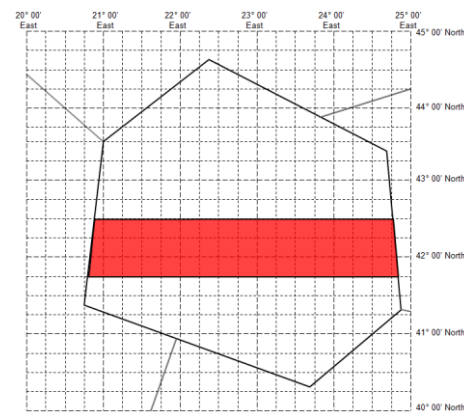
Chosen so that the affected area is between lines of latitude or between lines of longitude.

For example:

N OF N1200 AND S OF N2530

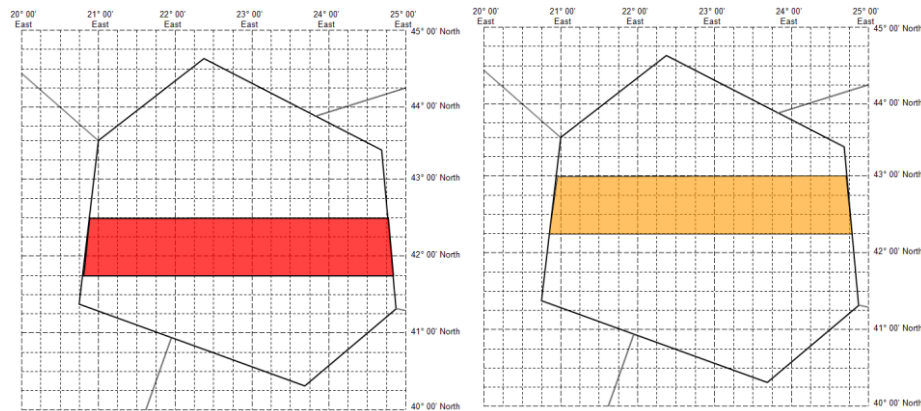
W OF W060 AND E OF W082

When the SIGMET does not include a 'forecast position' section.



YUDD SIGMET 2 VALID 101200/101600 YUSO-
YUDD SHANLON FIR SEV TURB FCST N OF N4145 AND S OF N4230 FL250/370 MOV N 30KT WKN=

With an explicit forecast position:



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)

2c) 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).

The specified points shall be 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)

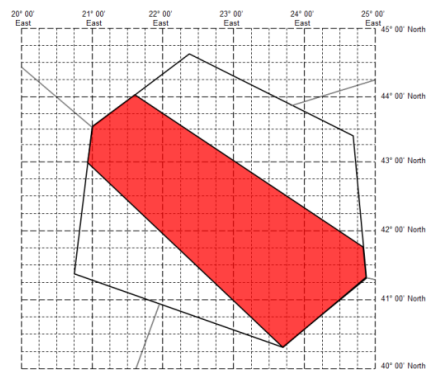
<N OF>or<NE OF>or<E OF>or<SE OF>or<S OF>or<SW OF>or<W OF>or<NW OF> LINE <Nnn[nn]>or<Snn[nn]>
 <Wnnn[nn]>or<Ennn[nn]> - <Nnn[nn]>or<Snn[nn]> <Wnnn[nn]>or<Ennn[nn]>[- <Nnn[nn]>or<Snn[nn]> <Wnnn[nn]>or
 <Ennn[nn]>][- <Nnn[nn]>or<Snn[nn]> <Wnnn[nn]>or<Ennn[nn]>] AND <N OF>or<NE OF>or<E OF>or<SE OF>or<S
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

For example:

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

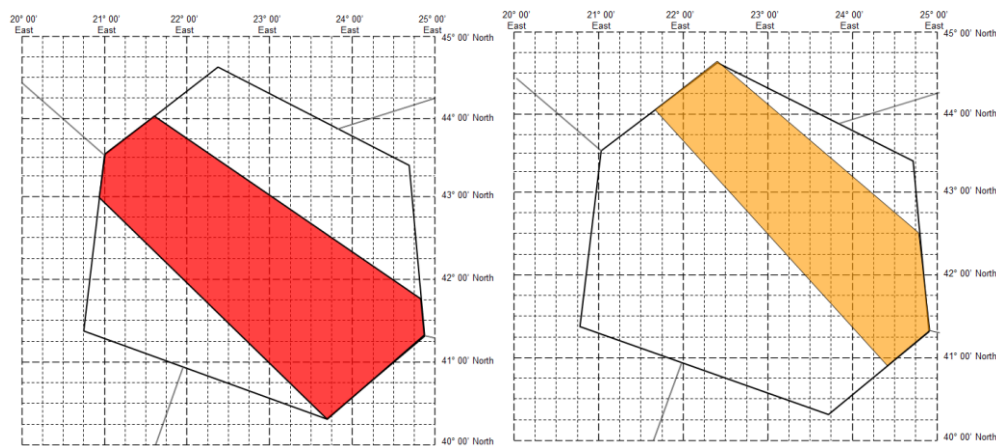
When the SIGMET does not include a ‘forecast position’ section.



YUDD SIGMET 2 VALID 101200/101600 YUSO-

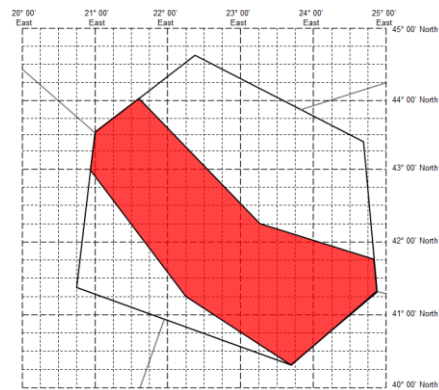
YUDD SHANLON FIR SEV TURB FCST NE OF LINE N4300 E02057 - N4020 E02340 AND SW OF LINE N4402 E02142 - N4145 E02450 FL250/370 MOV NE 20KT WKN=

With an explicit forecast position:



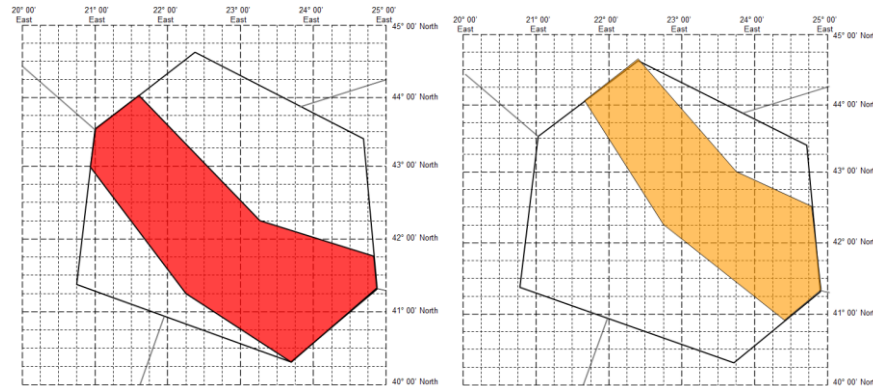
YUDD SIGMET 2 VALID 101200/101600 YUSO-
YUDD SHANLON FIR SEV TURB FCST NE OF LINE N4300 E02057 - N4020 E02340 AND SW OF LINE N4402 E02142 - N4145 E02450 FL250/370 WKN FCST AT 1600Z NE OF LINE N4403 E02140 - N4055 E02422 AND SW OF LINE N4437 E02222 - N4230 E02447=

For a series of connected lines when the SIGMET does not include a 'forecast position' section.



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 N4400 E02142 - N4215 E02315 - N4145 E02450 FL250/370 MOV NE 20KT WKN=

With an explicit forecast position:



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=

2d) In a sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant)

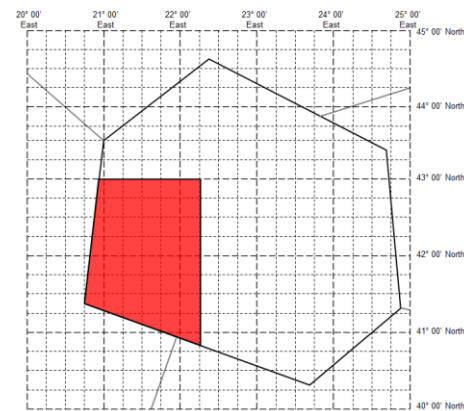
<N OF>or<S OF> <Nnn[nn]>or<Snn[nn]> AND <E OF>or<W OF> <Ennn[nn]> or<Wnnn[nn]>

For example:

N OF N1200 AND E OF W02530

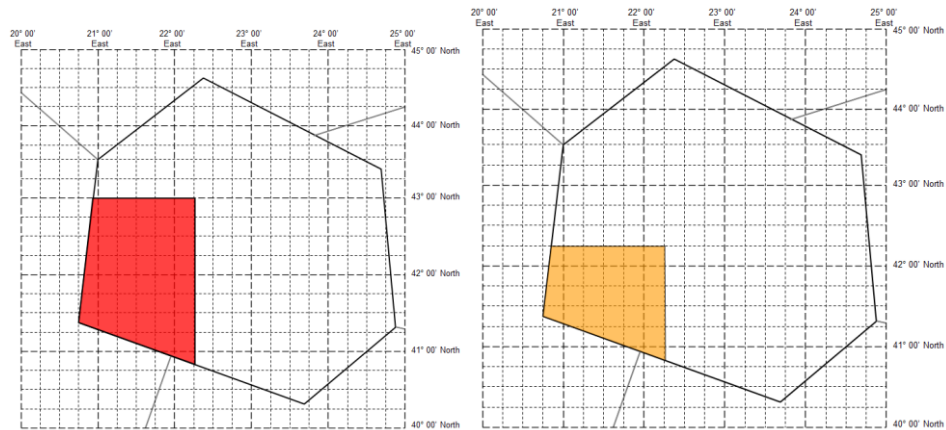
S OF N60 AND W OF E030

When the SIGMET does not include a 'forecast position' section.



YUDD SIGMET 2 VALID 101200/101600 YUSO-
YUDD SHANLON FIR/UIR SEV TURB FCST S OF N4300 AND W OF E02215 FL250/370 MOV S 12KT WKN=

When the SIGMET does include a 'forecast position'.



With an explicit forecast position:

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

2e) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment).

Indication of a part of the FIR with reference to latitude:

<N OF>or<S OF> <Nnn[nn]>or<Snn[nn]>

For example:

N OF S2230

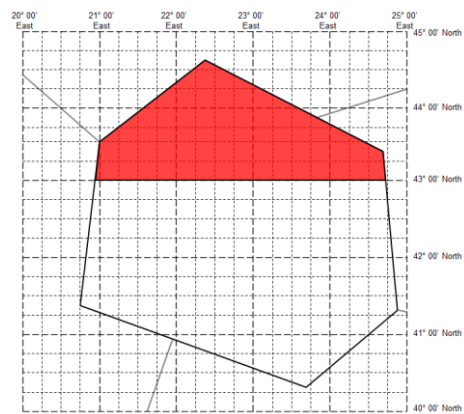
Indication of a part of the FIR with reference to a longitude:

<E OF>or<W OF> <Ennn[nn]>or<Wnnn[nn]>

For example:

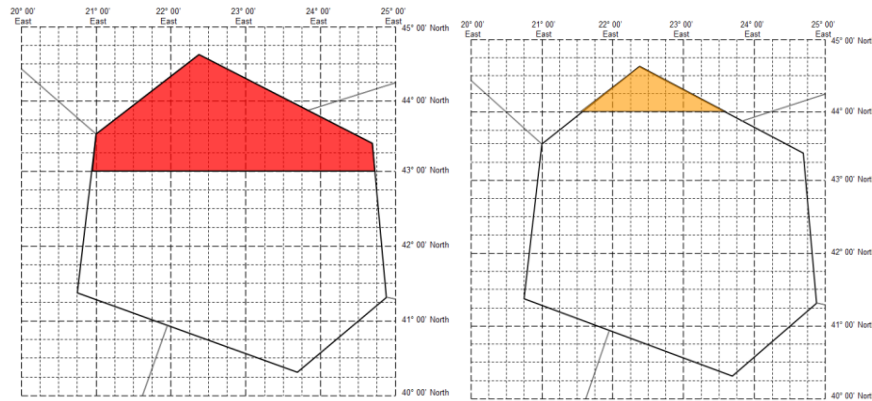
W OF E080

When the SIGMET does not include a 'forecast position' section.



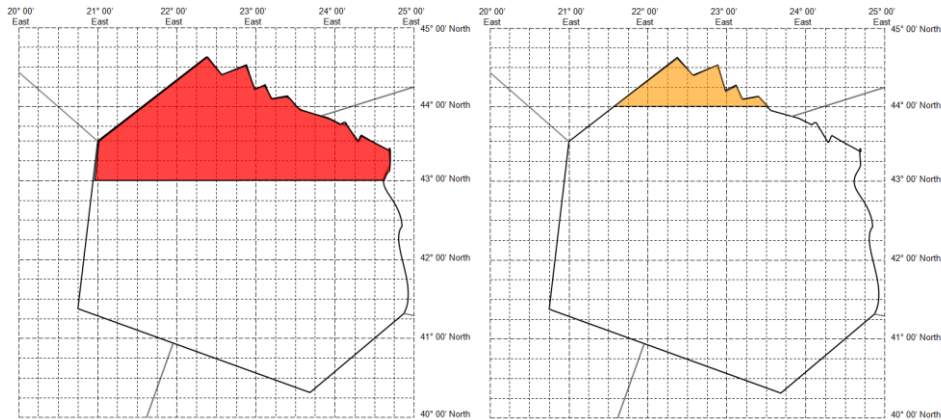
YUDD SIGMET 2 VALID 101200/101600 YUSO-
YUDD SHANLON FIR/UIR SEV TURB FCST N OF N43 FL250/370 MOV N 15KT WKN=

When the SIGMET does include a 'forecast position' section.



YUDD SIGMET 2 VALID 101200/101600 YUSO-
YUDD SHANLON FIR/UIR SEV TURB FCST N OF N43¹² FL250/370 WKN FCST AT 1600Z N OF N44=

¹² It would be equally valid to use 'N4300'.



YUDD SIGMET 2 VALID 101200/101600 YUSO-
YUDD SHANLON FIR/UIR SEV TURB FCST N OF N43¹³ FL250/370 WKN FCST AT 1600Z N OF N44=

3) Defined by a ‘corridor’ of specified width, centred upon the line described.

~~Note: Although using APRX is not recommended (METP/2 Decision 8/3) as this is not considered the best method to describe the horizontal extent of a hazard, the use of APRX is still tolerated. In addition, using APRX will pose issues when translating from TAC to IWXXM.~~ At METP/2, Decision 8/3 recommended that the term ‘APRX’ was removed from the regional SIGMET guide template (and therefore this document) and was ‘not recommended for use’. WI should be used as an alternative descriptor.

~~APRX~~ 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]>]

or

¹³ It would be equally valid to use 'N4300'.

Commented [SK197]: Clemens. We had a lot of discussion on this last year and as it was in Annex 3 it was decided we had to keep it. I prefer the original note rather than your suggestion.

Commented [WW198]:
Should we mention that WI instead of APRX as given in Annex 3 should be used as decided by ...
See also comments for AIRMET

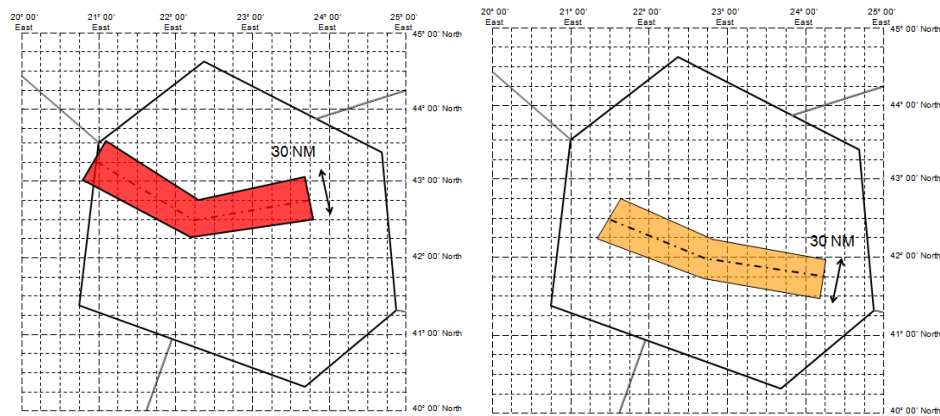
Commented [ME199R198]: According to the note above we should no longer mention this option in a “Best practise” document.

Commented [SK200R198]: Perhaps we just have the symbolic description, but get rid of the diagram.

APRX 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]>]

For example:

APRX 50KM WID LINE BTN N64 W017 – N60 W010 – N57 E010



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~~YUDD SIGMET 2 VALID 101200/101600 YUSO~~

~~YUDD SHANLON FIR/UIR SEV TURB FCST APRX 30NM WID LINE BTN N4315 E02100 – N4230 E02215 – N4245 E02345~~

~~FL250/370 WKN FCST AT 1600Z APRX 30NM WID LINE BTN N4230 E02130 – N4200 E02245 – N4145 E02415~~

4) **At a specific point within the FIR:**

Note: this is not recommended to be used as it is not in line with SIGMET minimum size. Information concerning SIGMET phenomena of transient and local nature should be made available by issuing special air-reports

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

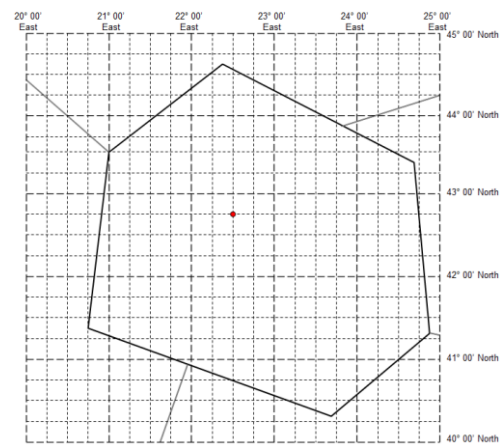
<Nnn[nn]>or<Snn[nn]> <Wnnn[nn]>or<Ennn[nn]>

For example:

N5530 W02230

S23 E107

When the SIGMET does not include a ‘forecast position’ section.



YUDD SIGMET 2 VALID 101200/101600 YUSO-
YUDD SHANLON FIR/UIR SEV TURB OBS N4245 E02230 FL250/370 STNR WKN=

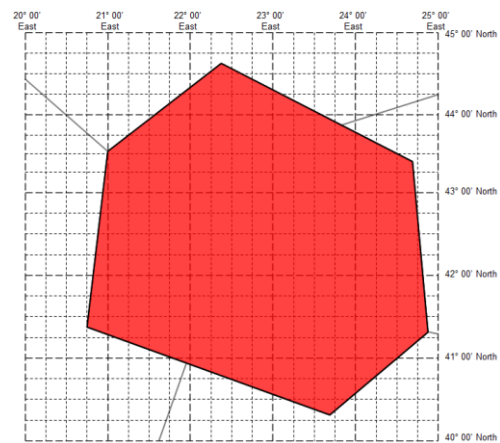
Commented [a201]: See my comment above.
A phenomenon located only at a specific point instead of an area does not meet the criterion of the minimum size of the SIGMET area.

Commented [HP202R201]: I agree it is a weird case. I am curious about who has already used this specific point location. If not, should we propose the removal of this case/example ?

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Note: The nature of this option (it is not automatically confined to the FIR) means that part of the cylinder may extend into the neighbouring FIR.

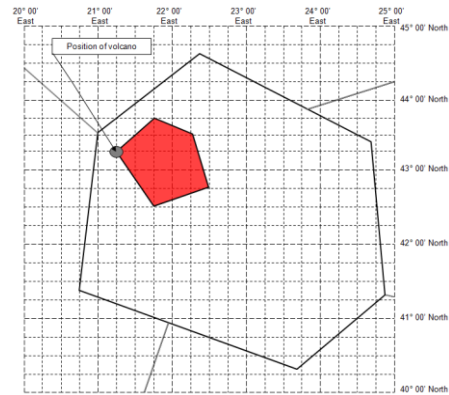
5) Covering entire FIR.



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

6) Additional examples using volcanic ash references applicable to volcanic ash SIGMET only.

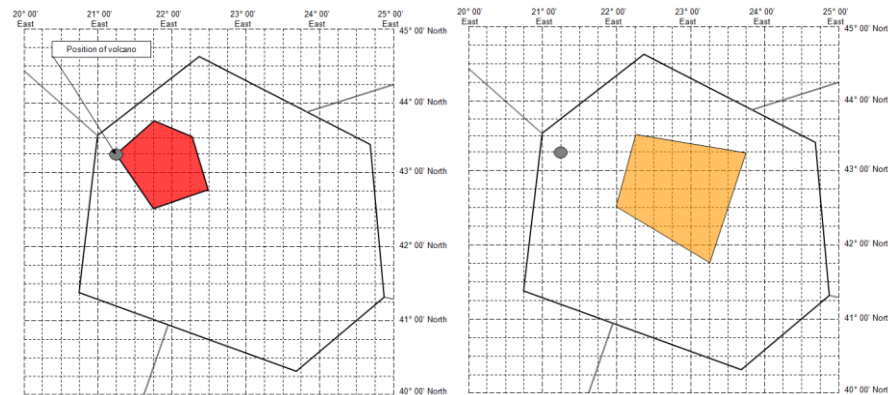
When the VA SIGMET does not include a 'forecast position' section.



YUDD SIGMET 2 VALID 101200/101600 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 MOV ESE 20KT NC=

When the VA SIGMET does include a 'forecast position' section (no rate of movement).

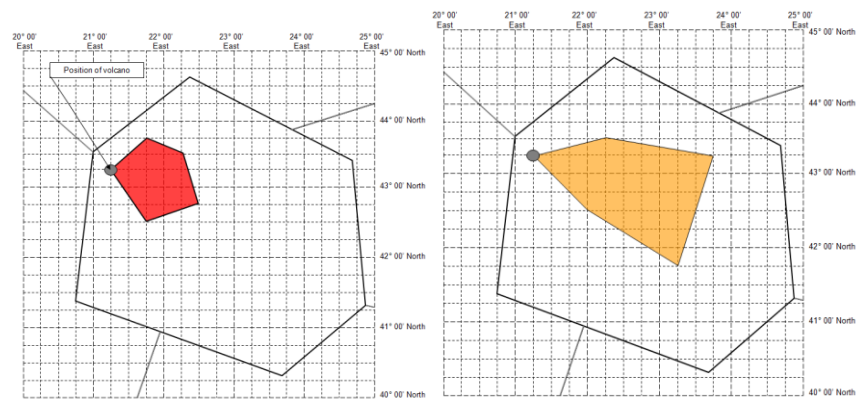
For VA (eruption ceased, ash cloud persists downwind):



YUDD SIGMET 2 VALID 101200/101800 YUSO-

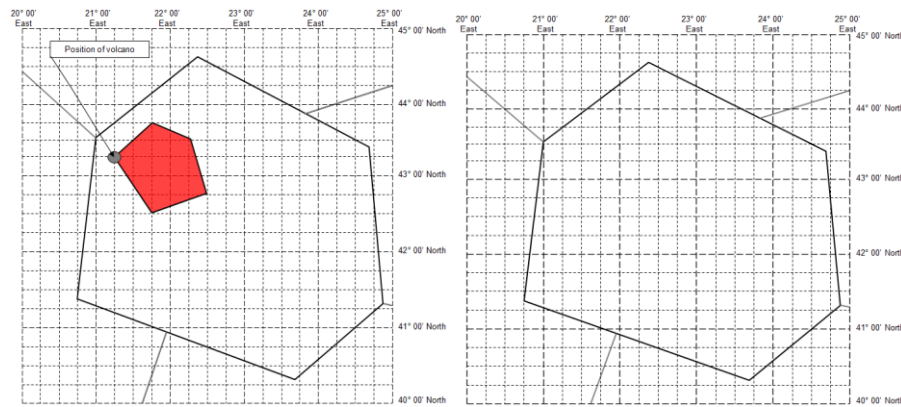
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD OBS AT 1200Z WI N4315 E02115 - N4345
 E02145 - N4330 E02215 - N4245 E02230 - N4230 E02145 - N4315 E02115 FL250/370 NC FCST AT 1800Z WI N4330
 E02215 - N4315 E02345 - N4145 E02315 - N4230 E02200 - N4330 E02215=

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):

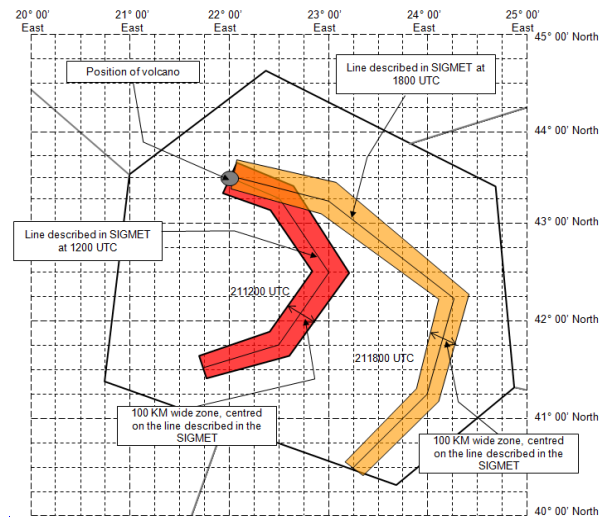


YUDD SIGMET 2 VALID 101200/101800 YUSO-

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 WKN FCST AT 1800Z NO VA EXP=

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

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Note: With reference to METP/2 Decision 8/3, the term ‘APRX’ should be removed from the regional SIGMET guide template and not recommended for use.

~~YUDD SIGMET 2 VALID 211200/211800 YUSO
YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4330 E02200 VA CLD FCST AT 1200Z APRX 100KM WID LINE BTN
N4330 E02200 N4315 E02230 N4230 E02300 N4145 E02230 N4130 E02145 FL310/450 NC FCST AT 1800Z APRX
100KM WID LINE BTN N4330 E02200 N4315 E02300 N4215 E02415 N4115 E02400 N4030 E02315~~

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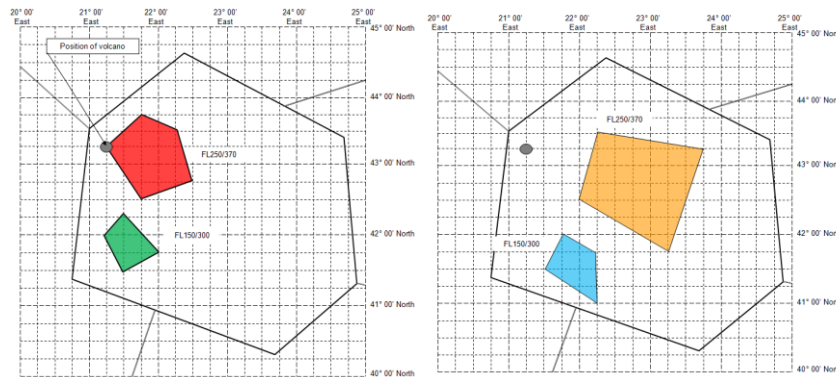
Commented [SK203]: Need to change the wording of this. And change the example to one which doesn't use APRX.,

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7) Additional examples using volcanic ash references applicable to multiple areas in SIGMET for volcanic ash.

The only way to include a second instance of a volcanic ash cloud in a SIGMET message is to use the 'AND' option after the 'Forecast position' section.

In the example below, two areas of volcanic ash cloud (at different levels) are forecast to move as described. The normal courier font refers to the northernmost areas of ash, and the italicised font refers to the southernmost areas of ash during the period. 'AND' is highlighted in **bold** to identify the separation of the two features.



```
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 OBS AT 1200Z WI N4200 E02115 - N4217 E02130
- N4145 E02200 - N4130 E02130 - N4200 E02115 FL150/300 NC FCST AT 1800Z WI N4200 E02145 - N4145 E02215 -
N4100 E02215 - N4130 E02130 - N4200 E02145=
```

The above only works if there are two instances of ash at the start and end of the period. -If the number of ash areas is different at the start and end, it is recommended that separate SIGMETs be issued as necessary.

It is worth noting that formats of volcanic ash SIGMET (WV) issued by the MWOs and volcanic ash advisories (VAA) issued by the VAACs are clearly distinct. Template for VAA can be found in Appendix 2 of Annex 3 (Table A2-1).

Commented [a204]: When I understood new Amd79 of Annex 3 correctly (note 20 states "In the case of VA cloud covering more than one area within the FIR, these elements can be repeated, as necessary. Each location and forecast position **must be preceded by an observed or forecast time**"), then OBS AT must be placed between AND and WI

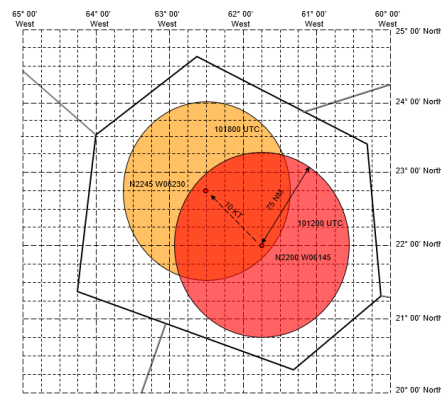
Commented [SK205R204]: Yes you are correct. I agree with your change to this example.

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8) Additional examples illustrating use of "WI nnnKM (or nnnNM) OF TC CENTRE " in Tropical Cyclone SIGMET only¹⁴

Commented [SK206]: Example should go in the TC section/appendix when created



The two following SIGMET forms are possible:

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 10KT WKN=

Or

YUDD SIGMET 2 VALID 101200/101800 YUSO-

¹⁴ Provisional guidance, pending approval by the EASPG and reflection in the eANP.

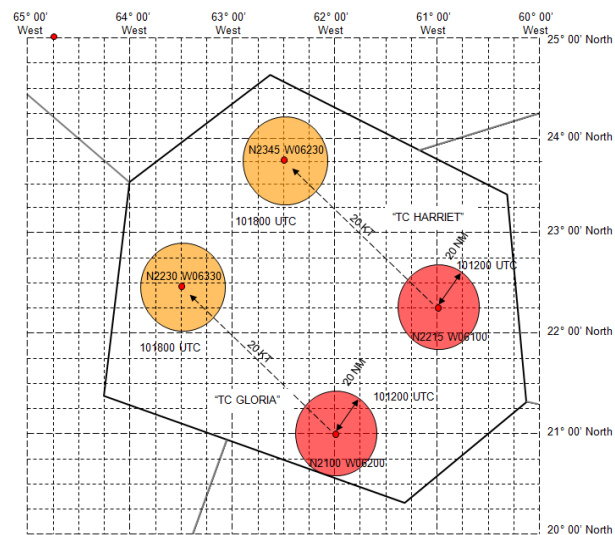
YUDD SHANLON FIR TC GLORIA PSN N2200 W06145 CB OBS AT 1200Z WI 75NM OF TC CENTRE TOP BLW FL500 WKN FCST AT 1800Z TC CENTRE PSN N2245 W06230=

Important remark: To be compliant with Annex 3, CB will be only mentioned as an observed phenomenon by using the mention “OBS AT”.

~~9) Additional example using tropical cyclones references applicable to multiple areas in SIGMET for tropical cyclone.~~

~~The only way to include a second instance of a tropical cyclone in a SIGMET is to use the 'AND' option following the 'Forecast position' section.~~

The example below demonstrates how two separate TCs, and the CB within a specified radius of those TCs, can be described. The normal courier font refers to TC Gloria, and the italicised font refers to TC Harriet. 'AND' is highlighted in **bold** to identify the separation between information for the two features.

~~YUDD SIGMET 2 VALID 101200/101800 YUSO~~

Commented [SK207]: Example should go in the TC section/appendix when created

Commented [SK208]: Not sure what happened here as I thought this example had been removed previously.

It is my understanding that the SIGMET code does not permit having two TC's in a single FIR. And given that it is uncommon for a single TC to make its way into EUR airspace

You can have two areas of CB associated with a TC. I have the example somewhere if we decide to do that. But I am for just leaving out this example entirely.

~~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~~

Commented [HP209]: From Wiel
Is this the correct position of “AND”?

Should AND be given after MOV ...WKN or FCST position as
AND is given at the end of the table in appendix H?

Hence should the example read:

YUDD SHANLON FIR TC HARRIET PSN N2215 W06100
CB OBS AT 1200Z WI 60NM OF TC CENTRE TOP FL500
FCST AT 1800Z TC CENTRE N2345 W06230 **AND** WI
N2030 W06115 - N2030 W06200 - N2100 W06315 -
N2145 W06315 - N2030 W06115 TOP FL500 MOV NW
20KT WKN=

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10) Additional examples of SIGMETs relating to ‘concave’ or ‘horseshoe’ shaped FIRs.

A) Considering a concave “horseshoe” shaped FIR partly surrounding another FIR with “legs” of a similar size.

There are examples of FIRs that partially surround adjacent FIRs and are what might be described as concave or 'horseshoe' shaped. An example is given below.

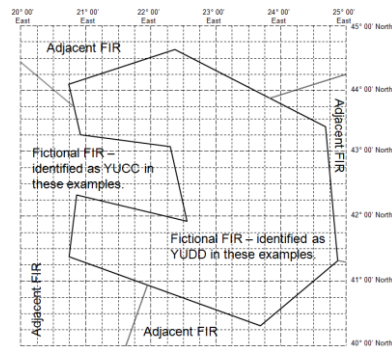


Figure 1: Fictional example of a complex 'concave' FIR – YUDD, partially surrounding FIR - YUCC¹⁵

The question arises as to how to encode a SIGMET under circumstances where the hazard affects the outer FIR (YUDD in this case) and the FIR that is partially enclosed (YUCC in this case).

¹⁵ YUDD and YUCC used in this paper are fictional FIRs

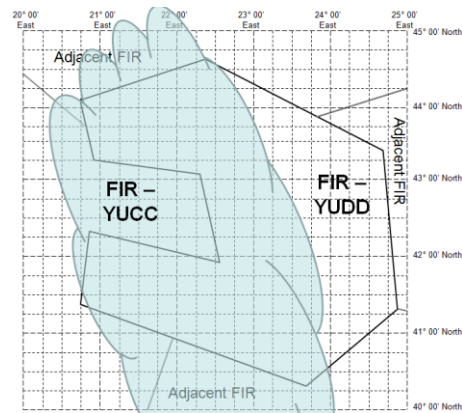


Figure 2: Fictional example of a complex 'concave' FIR – YUDD partially surrounding FIR – YUCC when both are affected by a meteorological hazard

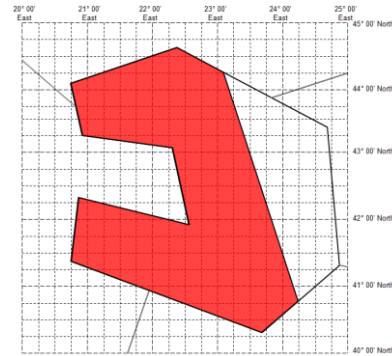
With due regard to removing any possible ambiguity, and also with regard to consistency with protocols for IWXXM versions of SIGMET, the following best practice for the EUR region is provided.

In these examples, it is taken as accepted that MWOs are coordinating their SIGMETs. The clarification sought is how the SIGMET (or AIRMET) should be compiled for a FIR that partially surrounds another FIR.

In the examples below, the area indicated in red is taken as representing the meteorological hazard.

Example 1)

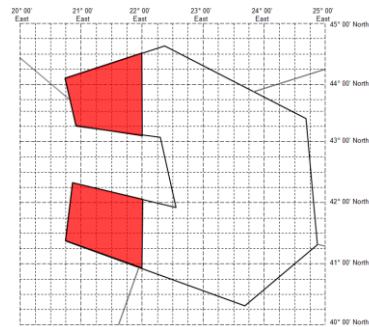
In this example, it is considered that the situation below could be encoded as a single, simple SIGMET. Users would be expected to interpret the SIGMET as indicating the area identified in red was affected by the hazard within the YUDD FIR.



YUDD SIGMET 2 VALID 101200/101600 YUSO-
YUDD SHANLON FIR/UIR SEV TURB FCST SW OF LINE N4415 E02305 - N4045 E02415 FL250/370 MOV SW 15KT WKN=

Example 2)

In this example, in order to prevent any possible ambiguity and to prevent complications and inconsistencies with equivalent IWXXM versions of SIGMET then two separate SIGMETs should be issued.



In this case, the following is recommended:

One SIGMET (northern extent of the 'horseshoe' shape)

YUDD SIGMET 2 VALID 101200/101600 YUSO-

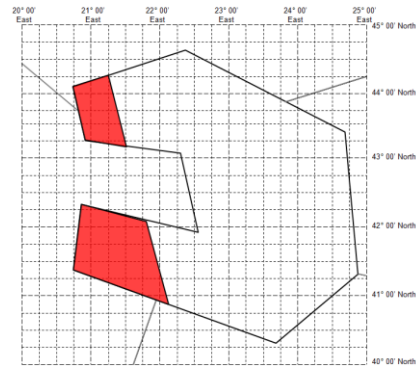
YUDD SHANLON FIR/UIR SEV TURB FCST W OF LINE N4430 E02200 - N4307 E02200 FL250/370 MOV W 15KT WKN=

AND a second SIGMET (southern extent of the 'horseshoe' shape)

YUDD SIGMET 3 VALID 101200/101600 YUSO-

YUDD SHANLON FIR/UIR SEV TURB FCST W OF LINE N4203 E02200 - N4058 E02200 FL250/370 MOV W 15KT WKN=

Where the line delineating the hazard is not a line of latitude or longitude, a similar process should be followed



One SIGMET (northern extent of the 'horseshoe' shape)

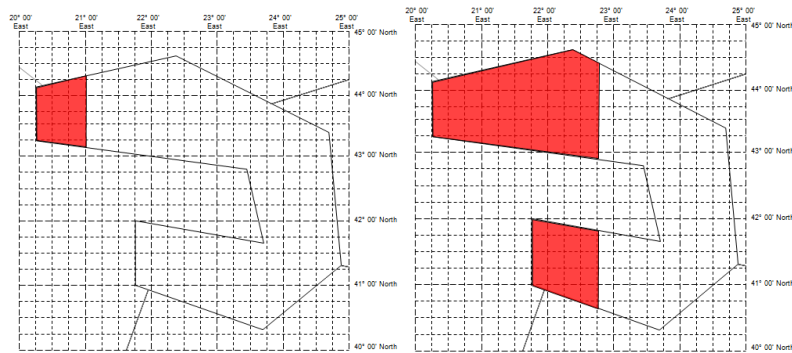
YUDD SIGMET 2 VALID 101200/101600 YUSO-
YUDD SHANLON FIR/UIR SEV TURB FCST SW OF LINE N4415 E02115 - N4312 E02130 FL250/370 MOV W 15KT WKN=

AND a second SIGMET (southern extent of the 'horseshoe' shape)

YUDD SIGMET 3 VALID 101200/101600 YUSO-
YUDD SHANLON FIR/UIR SEV TURB FCST SW OF LINE N4205 E02147 - N4052 E02206 FL250/370 MOV W 15KT WKN=

B) Considering a concave, 'horseshoe' shaped FIR partially surrounding another FIR with 'legs' of very different size.

If the southern 'leg' is expected to be affected during the forecast validity period, as the example below then 2 SIGMETs should be issued.



YUDD SIGMET 2 VALID 101200/101600 YUSO-

YUDD SHANLON FIR/UIR SEV TURB FCST AT 1200Z W OF LINE N4416 E02100 - N4307 E02100 FL250/370 WKN FCST AT 1600Z W OF LINE N4427 E02245 - N4252 E02245=

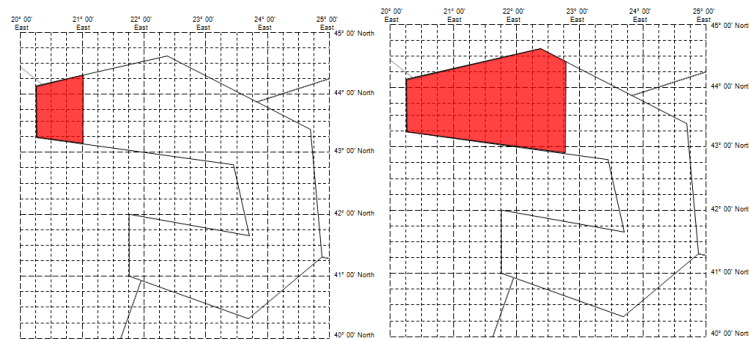
And

YUDD SIGMET 3 VALID 101330/101600 YUSO-

YUDD SHANLON FIR/UIR SEV TURB FCST AT 1330Z W OF LINE N4200 E02145 - N4100 E02145 FL250/370 WKN FCST AT 1600Z W OF LINE N4147 E02245 - N4038 E02245=

Note, the validity time (highlighted) of the second SIGMET commences sometime after that of the first since the southern extent of the horseshoe shape is not as far west.

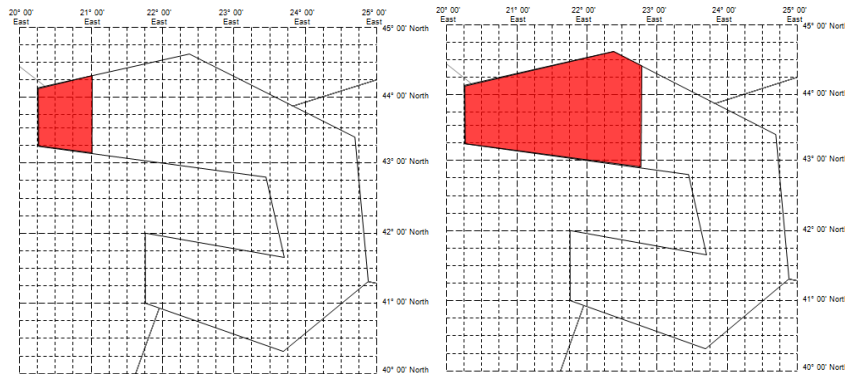
If the southern leg of the FIR is not expected to be affected, as in the example below,



Then a single SIGMET could be issued.

YUDD SIGMET 2 VALID 101200/101600 YUSO-
 YUDD SHANLON FIR/UIR SEV TURB FCST AT 1200Z W OF LINE N4415 E02100 - N4307 E02100 FL250/370 MOV E 25KT
 WKN=

However, to remove any possible doubt it is better to include an explicit forecast position,



YUDD SIGMET 2 VALID 101200/101600 YUSO-

YUDD SHANLON FIR/UIR SEV TURB FCST AT 1200Z W OF LINE N4415 E02100 - N4307 E02100 FL250/370 MOV E-25KTP
 WKN FCST AT 1600Z W OF LINE N4427 E02245 - N4252 E02245=

Commented [a210]: forecast position not to be used in conjunction with movement

Commented [HP211R210]: Agree.

It should also be noted that in all of these examples relating to concave, horseshoe shaped FIRs, polygons could also be used to explicitly define the areas affected. The above examples are intended to show that the principle under such circumstances is that two SIGMETs should be issued. This, as noted, will prevent ambiguity and will permit straightforward translation of alphanumeric SIGMET into IWXXM versions of SIGMET.

11) Additional examples for using FCST AT (VA CLOUD SIGMET)

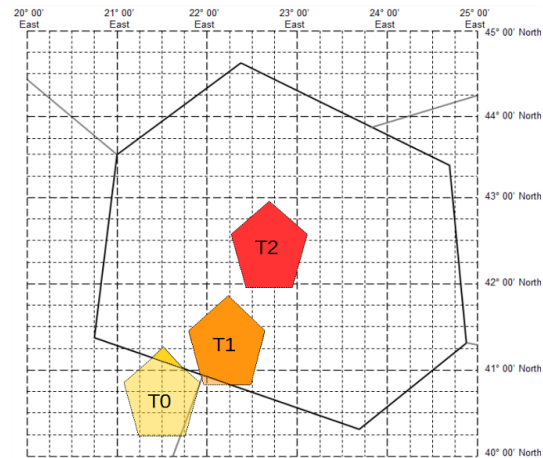
Case 1) Using FCST AT with a different time from the one of validity period

In this example, a SIGMET is issued for a phenomenon born outside the FIR boundaries then moving and reaching the border of the FIR at time T_p (H0H0M0M0). Logically, the validity period of the SIGMET in that case would begin at the exact time (T₀) when the phenomenon reaches the border of the FIR because the FIR is impacted from this moment (see Figure hereinafter).

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The impact area at this starting time T0 can be not relevant to describe in the **location** of the phenomenon as only a small part of the FIR is impacted by the hazard, in the worst case, only a single point. A possibility is then given by the mention FCST AT to describe the area covered by the phenomenon at a later time T1 (H1H1M1M1) when a significant part is already within the FIR and to use the element FCST AT to clarify the time when the location of phenomenon is described in the SIGMET.

This frequently occurs, generally with VA SIGMET as Volcanic Ash clouds move towards the FIR from the volcano area. Furthermore, describing the polygon of VA at given times (synoptic hours) allows to use directly the Volcanic Ash Advisory (VAA) information without having to perform extrapolations or interpolations.



YUDD SIGMET 1 VALID 101200/101800 YUSO-

YUDD SHANLON FIR/UIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD **FCST AT** ~~1400Z~~**1300Z** WI "POLYGON1"
FL250/370 NC **FCST AT 1800Z WI "POLYGON2"** =

Commented [MSD212]: 1400Z changed to 1300Z – otherwise contradiction with Note below

Note: The time delay between T0 (start of validity period) and T1 (time of description of the phenomenon within the FIR) should be kept short, 1/2h or 1h maximum. As a matter of fact, too long delays between these two times would lead to warn the users of a hazard without giving precisions about it, which would be confusing.

Thus two possibilities are offered to the forecaster to describe the VA cloud movement:

a) YUDD SIGMET 1 VALID 101200/101800 YUSO -
YUDD SHANLON FIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD FCST AT ~~1400Z~~1300Z WI [POLYGON1] FL250/370
NC FCST AT 1800Z WI [POLYGON2]=

Commented [MSD213]: 1400Z changed to 1300Z – otherwise contradiction with Note above

b) YUDD SIGMET 1 VALID 101200/101800 YUSO -
YUDD SHANLON FIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD FCST AT ~~1400Z~~1300Z WI [POLYGON1] FL250/370
MOV NE 10KT NC=

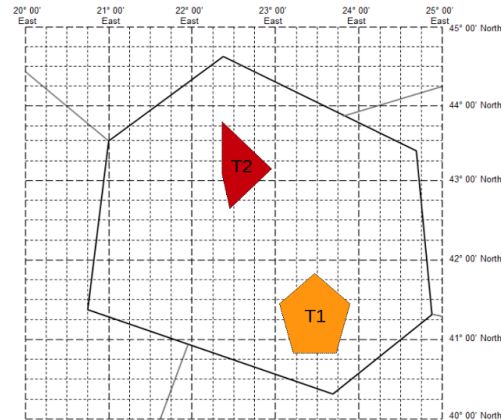
Commented [MSD214]: 1400Z changed to 1300Z – otherwise contradiction with Note above

Case a) is more informative than case b).

Case 2) Using FCST AT with the same time as the validity period starting hour

For any SIGMET, the aim is to make explicit the time of validity T1 of the polygon even if it is redundant with the information given in the validity group. Especially when the location at the end of validity is described by a polygon (and not by MOV) the symmetry between the description of the polygons at time T1 and T2 is better.

According to Annex 3 provisions, FCST AT (in *Forecast position (C)*) is mandatory for the polygon 2 at T2 (if described) whereas both FCST or FCST AT can be used in *observed or forecast phenomenon (M)* for the polygon 1 at T1.



Thus two possibilities are offered to the forecaster to describe the VA cloud movement:

a) YUDD SIGMET 2 VALID 101200/101800 YUSO -
 YUDD SHANLON FIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD FCST AT 1200Z WI [POLYGON 1] FL250/370 WKN
 FCST AT 1800Z WI [POLYGON2]=

b) YUDD SIGMET 2 VALID 101200/101800 YUSO -
 YUDD SHANLON FIR VA ERUPTION MT ASHVAL PSN N4315 E02115 VA CLD FCST AT 1200Z WI [POLYGON 1] FL250/370 MOV
 NW 10KT WKN=

Formation a) is more recommended as further information on the future position of the VA cloud is provided.

12) Examples using TEST and EXER indicators.

Commented [SK215]: Perhaps put this as the last example.

Commented [HP216R215]: Yes, it would be useful.

The principles of using the TEST and EXER indicators are straightforward.

The fundamental and overriding principle is that SIGMET bulletins marked as TEST or EXER through the use of these indicators MUST NOT be used for operational decision making.

When using TEST, depending on the circumstances, the SIGMET may be truncated immediately after the TEST indicator, and this approach may be useful when simply testing routing of messages.

Alternatively, and again depending on the circumstances, realistic data may be included.

With regard to EXER, it is expected that the SIGMET will contain realistic although not valid data. This will permit exercises at national or regional level to be undertaken.

In all instances, by including the TEST or EXER indicators at a specified point in the SIGMET message, users and systems can immediately identify if the message should be used for operational decision making.

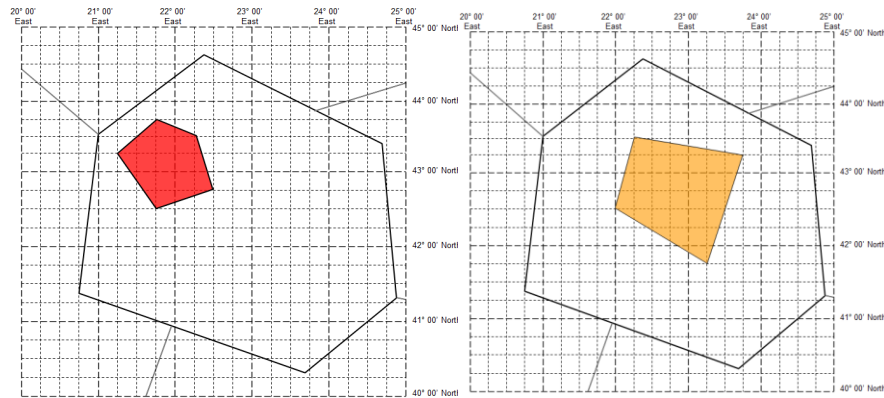
THIS DOES NOT REMOVE THE REQUIREMENT FOR ALL STAKEHOLDERS TO APPLY APPROPRIATE RIGOUR AND QUALITY CONTROL WITH REGARD TO CORRECT IDENTIFICATION AT ORIGINATION AND CORRECT USE ON RECEIPT/PROCESSING

TEST SIGMET message, with minimum content:

The example below may be used for ad hoc testing of routing, or for regional SIGMET routing tests.

```
YUDD SIGMET 2 VALID 101200/101600 YUSO-  
YUDD SHANLON FIR/UIR TEST =
```

TEST SIGMET message, with realistic (though not necessarily valid) content:



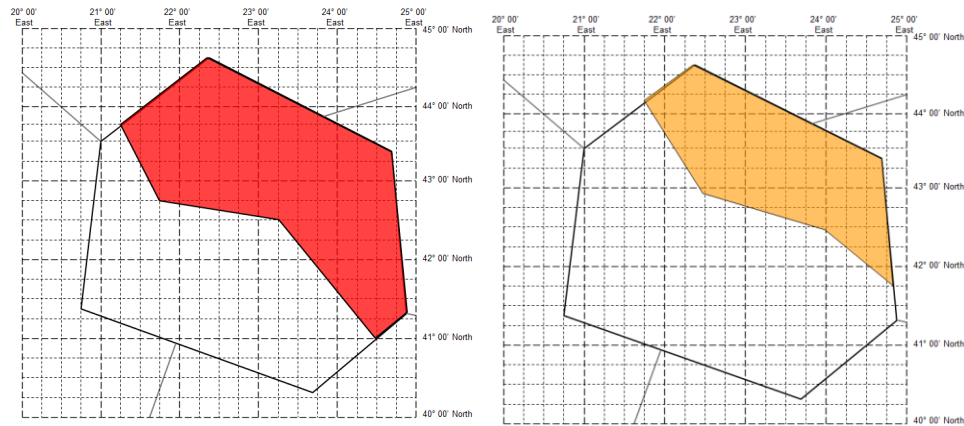
YUDD SIGMET 2 VALID 101200/101600 YUSO-

YUDD SHANLON FIR/UIR TEST 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=

EXER SIGMET message, with realistic content:

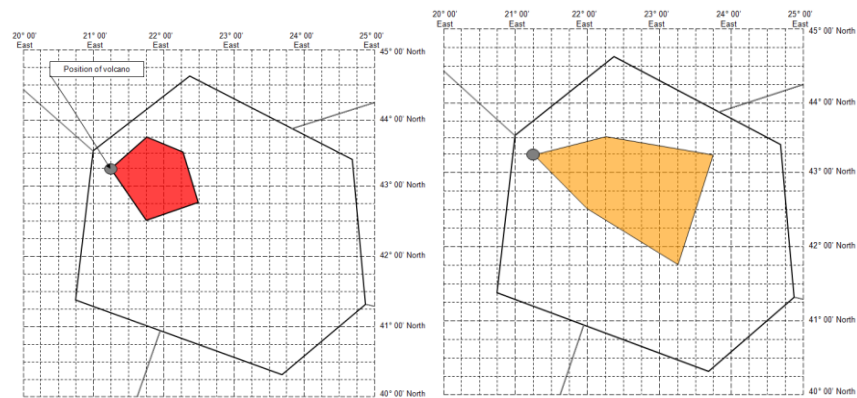
Commented [SK217]: Remove as per Wiels comment on the previous page.

Commented [HP218R217]: OK



YUDD SIGMET 2 VALID 101200/101600 YUSO-
 YUDD SHANLON FIR EXER SEV TURB FCST NE OF LINE N4345 E02115 - N4245 E02145 - N4230 E02315 - N4100 E02430
 FL250/370 WKN FCST AT 1600Z NE OF LINE N4411 E02145 - N4255 E02228 - N4228 E02400 - N4130 E02450=

The most common, organised EXER – especially at regional level – is likely to be related to volcanic ash. On such occasions, 'historical' data is used in order to practice procedures over specific areas.



YUDD SIGMET 2 VALID 101200/101800 YUSO -
 YUDD SHANLON FIR EXER 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 N4315
 E02115 - N4330 E02215 - N4315 E02345 - N4145 E02315 - N4230 E02200 - N4315 E02115=

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13) Example for radioactive cloud SIGMETs

Due to the difficulties in forecasting the dimensions of an area affected by radioactive cloud, the Inter-Agency Committee on Radiological and Nuclear Emergencies SIGMET Task Group of the International Atomic Energy Agency (IAEA) have advised the following:

- that a radius of up to 30KMkm (or 16 nautical miles) from the source is applied and,
- a vertical extent from the surface to the upper limit of the FIR/UIR or control area (CTA) is to be applied.

After 5 November 2020, this is applied even if detailed information on the release is available.

~~Whilst at the time this guide was written, Annex 3 permits the area affected by a radioactive release to be described in a variety of ways, limitations will be brought in for Amendment 79 (applicable from 5 November 2020) which only permits “WI nnKM (or nnNM) OF”, STNR and the values indicated above to be used.~~

If the radioactive release site is close to the FIR boundary, then the SIGMET may be displayed as shown in the figure below. The neighbouring FIR will need to issue a SIGMET for the remaining portion of the circle.

Symbolically, this is indicated as:

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

or

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

Commented [WC219]: Alignment with Final Review of AMD 79 letter 04/11/19
Radius of up to 30 km in every case.

Do we want to reflect the interim solution of 7 November 2019- 5 November 2020? (radius only if actual dispersion is unknown)

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Commented [HP220]: I could not find a reference for not issuing the SIGMET.
The SIGMET text must be located below the picture, as for the other SIGMET examples.

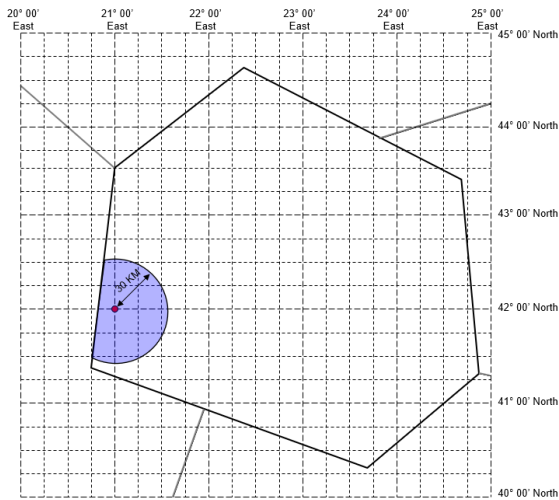
Commented [SK221R220]: Image swapped.
There is no reference/guidance about what to do in the other region. Advise from MOG was for us to decide what we wanted to do.....

In light of what you have written in the draft METG paper Philippe then it seems you want to go with the other option, which is to issue another matching SIGMET for the other region. So I have added a second SIGMET to the example below

Commented [HP222R220]: OK with your proposal.

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YUDD SIGMET 3 VALID 101200/101800 YUSO -
YUDD SHANLON FIR RDOACT CLD OBS AT 1150Z WI 30KM OF N4200 E02100 SFC/FL450 STNR NC=

YAAA SIGMET 4 VALID 101200/101800 YPDM -
YAAA SHANLAT FIR RDOACT CLD OBS AT 1150Z WI 30KM OF N4200 E02100 SFC/FL450 STNR NC=

Commented [a223]: A question for clarification:
According to Annex 3 Amd79 Table A6-1A, changes in intensity is conditional **or mandatory-?**
However, in Example A6-4, SIGMET message for radioactive cloud, the SIGMET ends directly after STNR (without NC). Is it foreseen to add a change in intensity, and if yes, is it specified to use “NC” (“INTSF” / “WKN” not allowed) ?

APPENDIX HSIGMET

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ENHANCED SIGMET GUIDANCE TABLE DEVELOPED FROM ANNEX 3 TABLE A6-1A

Note. The table below seeks to provide more detailed guidance than that given in Table A6-1A of Annex 3. It does this by removing all references to the AIRMET message from Table A6-1A. The table below simplifies the available options and provides more specific expansion of the symbolic structure of SIGMET messages, with guidance sub-titles where appropriate. It should be noted that Annex 3, Appendix 6, Table A6-1A remains the authoritative reference.

Ref No.	Element as specified in Chapter 5 and Appendix 6	Detailed Content	Expanded symbolic — These 'expanded' symbolic representations of the various SIGMET code elements represent the interpretation of Table A6-1A of Annex 3. MWOs are encouraged to align their SIGMETs with the guidelines below.	Examples. These examples of various SIGMET code elements represent the interpretation A6-1A of Annex 3. MWOs are encouraged to align their SIGMETs with the examples below.
1.1	Location indicator of FIR/CTA (M) ¹	ICAO location indicator of the ATS unit serving the FIR or CTA to which the SIGMET refers	####	YUCC ² YUDD ²
1.2	Identification (M)	Message identification and sequence number ³	SIGMET n SIGMET nn SIGMET nnn 12345	SIGMET 1 SIGMET 01 SIGMET A01
1.3	Validity period (M)	Day-time groups indicating the period of validity in UTC	VALID #####/#####	VALID 010000/010400 VALID 221215/221600 VALID 101520/101800 VALID 251600/252200 VALID 152000/160000 VALID 192300/200300 VALID 122200/130400 (6 hour validity applicable to TC or VA only)
1.4	Location indicator of MWO (M)	Location indicator of MWO originating the message with a separating hyphen	####-	YUDD ² YUSG ²
1.5	Name of the FIR/UIR/CTA	Location indicator and name of the FIR/UIR/CTA ⁴ for which the SIGMET is issued	####-##### FIR ####-##### FIR/UIR ####-##### UIR ####-##### CTA	YUCC AMSWELL FIR ² YUDD SHANLON FIR/UIR ² YUDD SHANLON FIR ² YUDD SHANLON UIR ² YUCC AMSWELL CTA ²

Commented [WW224]:

Do we need to include a similar appendix/table for AIRMET?

Commented [WC225R224]: I have the feeling, that this table may be too much information. We got Annex 3, then this Doc 014 with Chapter 3.4, Appendix G. Is there that much benefit for maintaining this table here?

Commented [HP226R224]: I agree but on the other side it is convenient for forecasters to have the reference information gathered in one document.

Commented [MSD227]: Agree, this table is too much information

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Ref No.	Element as specified in Chapter 5 and Appendix 6	Detailed Content	Expanded symbolic — These 'expanded' symbolic representations of the various SIGMET code elements represent the interpretation of Table A6-1A of Annex 3. MWOs are encouraged to align their SIGMETs with the guidelines below.	Examples — These examples of various SIGMET code elements represent the interpretation A6-1A of Annex 3. MWOs are encouraged to align their SIGMETs with the examples below.
1.6	Status indicator (C) ¹	Indicator for test or exercise	TEST or EXER	TEST EXER
2.1	Phenomenon (M)	Description of phenomenon causing the issuance of SIGMET	OBSC TS OBSC TSGR EMBD TS EMBD TSGR FRQ TS FRQ TSGR SQL TS SQL TSGR TC nnnnnnnnnn PSN Nnn{nn} or Snn{nn} Wnnn{nn} or Ennn{nn} CB TC NN PSN Nnn{nn} or Snn{nn} Wnnn{nn} or Ennn{nn} CB SEV TURB SEV ICE SEV ICE (FZRA) ¹⁴ SEV MTW HVY DS HVY SS VA ERUPTION PSN Nnn{nn} or Snn{nn} Ennn{nn} or Wnnn{nn} VA CLD VA ERUPTION MT nnnnnnnnnn PSN Nnn{nn} or Snn{nn} Ennn{nn} or Wnnn{nn} VA CLD VA CLD RDOACT CLD	OBSC TS OBSC TSGR EMBD TS EMBD TSGR FRQ TS FRQ TSGR SQL TS SQL TSGR TC GLORIA PSN N2215 W07500 CB TC NN PSN S26 E150 CB SEV TURB SEV ICE SEV ICE (FZRA) SEV MTW HVY DS HVY SS VA ERUPTION PSN N27 W017 VA CLD VA ERUPTION PSN S1200 E01730 VA CLD VA ERUPTION MT ASHVAL ² PSN S15 E073 VA CLD VA ERUPTION MT VALASH ² PSN N2030 E02015 VA CLD VA CLD RDOACT CLD
2.2	Observed or forecast phenomenon (M)	Indication whether the information is observed and expected to continue, or forecast	OBS OBS AT nnnnZ FCST FCST AT nnnnZ	OBS OBS AT 1210Z FCST FCST AT 1815Z

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			<p>boundary so as to leave no doubt that the intent is for the line to connect to the FIR boundary at those points).</p> <p>{N}{NE}{E}{SE}{S}{SW}{W}{NW} OF LINE ²² Nnn{nn} OR Snn{nn} Wnnn{nn} OR Eann{nn} — Nnn{nn} — OR Snn{nn} Wnnn{nn} OR Eann{nn} [— Nnn{nn} — OR Snn{nn} Wnnn{nn} OR Eann{nn}] [— Nnn{nn} — OR Snn{nn} Wnnn{nn} — OR Eann{nn}] AND</p> <p>{N}{NE}{E}{SE}{S}{SW}{W}{NW} OF LINE ²³ Nnn{nn} OR Snn{nn} Wnnn{nn} OR Eann{nn} — Nnn{nn} — OR Snn{nn} Wnnn{nn} OR Eann{nn} [— Nnn{nn} — OR Snn{nn} Wnnn{nn} OR Eann{nn}] [— Nnn{nn} — OR Snn{nn} Wnnn{nn} OR Eann{nn}]</p> <p>2d) In a sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant);</p> <p>N OF Nnn{nn} AND W OF Wnnn{nn} OR N OF Nnn{nn} AND E OF Wnnn{nn} OR S OF Nnn{nn} AND W OF Wnnn{nn} OR S OF Nnn{nn} AND E OF Wnnn{nn} OR N OF Snn{nn} AND W OF Eann{nn} OR N OF Snn{nn} AND E OF Eann{nn} OR S OF Snn{nn} AND W OF Eann{nn} OR S OF Snn{nn} AND E OF Eann{nn} OR</p> <p>or</p> <p>2e) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment);</p> <p>N OF Nnn{nn} OR S OF Nnn{nn} OR N OF Snn{nn} OR S OF Snn{nn} OR W OF Wnnn{nn} OR E OF Wnnn{nn} OR W OF Eann{nn} OR E OF Eann{nn}.</p> <p>or</p> <p>3) Defined by a 'corridor' of specified width, centred upon a line, of up to three connected segments, described by;</p>	<p>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).</p> <p>SW OF LINE N50 W020 — N45 E010 AND NE OF LINE N45 W020 — N40 E010</p> <p>S OF N3200 AND E OF E02000 S OF S3215 AND W OF E10130 S OF N12 AND W OF E040 N OF N35 AND E OF E078</p> <p>or</p> <p>2e) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment);</p> <p>N OF S2230 S OF S43 E OF E01700 E OF W005</p> <p>or</p> <p>3) Defined by a 'corridor' of specified width, centred upon a line, of up to three connected segments, described by;</p>
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			<p>APRX ²¹ nnKM WID LINE ²² 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} }</p> <p>APRX ²⁴ nnNM WID LINE ²² 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} }</p> <p>or</p> <p>4) At a specific point within the FIR;</p> <p>Nnn{nn} Wnnn{nn} or Nnn{nn} Ennn{nn} or Snn{nn} Wnnn{nn} or Snn{nn} Ennn{nn}</p> <p>or</p> <p>5) tropical cyclone;</p> <p>WI nnnKM (or nnnNM) OF TC CENTRE ²⁴</p> <p>or</p> <p>6) radioactive cloud;</p> <p>WI nnnKM OF Nnn{nn} or Snn{nn} Wnnn{nn} or Ennn{nn} ²⁵ WI nnnNM OF Nnn{nn} or Snn{nn} Wnnn{nn} or Ennn{nn} ²⁴</p> <p>or</p> <p>7) A reference to the whole FIR, FIR/UIR, UIR or CTA</p> <p>ENTIRE FIR ENTIRE FIR/UIR ENTIRE UIR</p>	<p>APRX 50KM WID LINE BTN N64 W017 N60 W010 N57 E010 N60 E015</p> <p>APRX 50NM WID LINE BTN S1530 W09500 S1915 W10130 S2000 W10300</p> <p>or</p> <p>4) At a specific point within the FIR;</p> <p>N5530 W02230 S12 E177</p> <p>or</p> <p>5) tropical cyclone;</p> <p>WI 400KM OF TC CENTRE WI 250NM OF TC CENTRE</p> <p>or</p> <p>6) radioactive cloud;</p> <p>WI 30KM OF N2200 W06315 WI 16NM OF N2200 W06315</p> <p>or</p> <p>7) A reference to the whole FIR, FIR/UIR, or CTA</p> <p>ENTIRE FIR ENTIRE FIR/UIR ENTIRE UIR ENTIRE CTA</p>
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			ENTIRE CTA	
2.4	Level (C) ²⁰⁻²³	Flight level or altitude ²⁴	<p>1) Generic height/range descriptors to be used when 'Location' descriptors above are used.</p> <p>FLnnn nnnnFT nnnnnFT nnnnM SFC/FLnnn SFC/nnnnM SFC/nnnnFT SFC/nnnnnFT FLnnn/nnn TOP FLnnn ABV FLnnn TOP ABV FLnnn ABV {n}nnnnFT TOP ABV {n}nnnnFT nnnn/nnnnM {n}nnnn/{n}nnnnFT nnnnM/FLnnn {n}nnnnFT/FLnnn</p> <p>or ²⁴</p> <p>TOP BLW FLnnn</p> <p>or ²⁴</p> <p>TOP ABV FLnnn</p>	<p>1) Generic height/range descriptors to be used when 'Location' descriptors above are used.</p> <p>FL180 7000FT 10000FT 600M 1200M SFC/FL070 SFC/9000FT SFC/10000FT SFC/2500M FL050/080 FL310/450 TOP FL390 ABV FL280 TOP ABV FL100 ABV 12000FT TOP ABV 9000FT 3000M 2000/3000M 8000FT 6000/12000FT 11000/14000FT 2000M/FL150 8000FT/FL190 10000FT/FL250</p> <p>or ²⁴</p> <p>TOP BLW FL450</p> <p>or ²⁴</p> <p>TOP ABV FL360</p>
2.5	Movement or expected movement (C) ²⁰⁻²³	Movement or expected movement (direction and speed) with reference to one of the sixteen points of compass, or stationary	<p>MOV{N}{NNE}{NE}{ENE}{E}{ESE}{SE}{SSE}{S}{SSW}{SW}{WSW}{W}{WNW}{NW}{NNW} nnKMH</p> <p>or</p> <p>MOV{N}{NNE}{NE}{ENE}{E}{ESE}{SE}{SSE}{S}{SSW}{SW}{WSW}{W}{WNW}{NW}{NNW} nnKT</p> <p>or</p> <p>STNR</p>	<p>MOV E 40KMH MOV E 20KT MOV SE STNR</p>

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[illegible]

		<p>N OF Nnn{nn} or N OF Snn{nn} AND S OF Nnn{nn} or S OF Snn{nn}</p> <p>or</p> <p>W OF Wnnn{nn} or W OF Ennn{nn} AND E OF Wnnn{nn} or E OF Ennn{nn}</p> <p>or</p> <p>2c) 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).</p> <p>{N}{NE}{E}{SE}{S}{SW}{W}{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}] or Ennn{nn} AND {N}{NE}{E}{SE}{S}{SW}{W}{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}]</p> <p>2d) In a sector of the FIR defined relative to a line of latitude and a line of longitude (effectively a quadrant);</p> <p>N OF Nnn{nn} AND W OF Wnnn{nn} or N OF Nnn{nn} AND E OF Wnnn{nn} or S OF Nnn{nn} AND W OF Wnnn{nn} or S OF Nnn{nn} AND E OF Wnnn{nn} or N OF Snn{nn} AND W OF Ennn{nn} or N OF Snn{nn} AND E OF Ennn{nn} or S OF Snn{nn} AND W OF Ennn{nn} or S OF Snn{nn} AND E OF Ennn{nn} or</p> <p>or</p> <p>2e) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment);</p> <p>N OF Nnn{nn} or S OF Nnn{nn} or</p>	<p>N OF N45 AND S OF N50 W OF E04530 AND E OF E04000</p> <p>or</p> <p>2c) 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).</p> <p>SW OF LINE N50 W020 — N45 E010 AND NE OF LINE N45 W020 — N40 E010</p> <p>S OF N3200 AND E OF E02000 S OF S3215 AND W OF E10130 S OF N12 AND W OF E040 N OF N35 AND E OF E078</p> <p>or</p> <p>2e) In a sector of the FIR defined relative to a line of latitude or longitude (effectively a segment);</p> <p>N OF S2230 S OF S43</p>
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		<div>N-OF-Snn{nn}OF S-OF-Snn{nn}OF W-OF-Wnnn{nn}OF E-OF-Wnnn{nn}OF W-OF-Ennn{nn}OF E-OF-Ennn{nn}OF or 3) Defined by a 'corridor' of specified width, centred upon a line, of up to three connected segments, described by; APRX²⁴ nnKM WID LINE²⁵ 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} }</div> <div>APRX²⁴ nnNM WID LINE²⁵ 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} }</div> <div>or 4) At a specific point within the FIR; Nnn{nn} Wnnn{nn}OF Nnn{nn} Ennn{nn}OF Snn{nn} Wnnn{nn}OF Snn{nn} Ennn{nn} or 5) radioactive cloud; WI nnKM OF Nnn{nn} or Snn{nn} Wnnn{nn} or Ennn{nn}³⁵ WI nnNM OF Nnn{nn} or Snn{nn} Wnnn{nn} or Ennn{nn}³⁵</div>	<div>E-OF-E01700 E-OF-W005 or 3) Defined by a 'corridor' of specified width, centred upon the line described; APRX 50KM WID LINE BTN N64 W017 — N60 W010 — N57 E010 — N60 E015 ▲ APRX 50NM WID LINE BTN S1530 W09500 — S1815 W10130 — S2000 W10300 or 4) At a specific point within the FIR; N5530 W02230 S12 E177 or 5) radioactive cloud;</div>
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		<p>or</p> <p>6) A reference to the whole FIR, FIR/UIR, UIR, or CTA</p> <p>ENTIRE FIR ENTIRE FIR/UIR ENTIRE UIR ENTIRE CTA</p> <p>or</p> <p>7) No volcanic ash expected</p> <p>NO VA EXP</p>	<p>or</p> <p>6) A reference to the whole FIR, FIR/UIR, UIR or CTA</p> <p>ENTIRE FIR ENTIRE FIR/UIR ENTIRE UIR ENTIRE CTA</p> <p>or</p> <p>7) No volcanic ash expected</p> <p>NO VA EXP</p>
Repetition of elements (C)	Repetition of elements included in a SIGMET message for volcanic ash cloud or tropical cyclone	{AND}	AND
Cancellation of SIGMET (C)	Cancellation of SIGMET referring to its identification	<p>CNL SIGMET n nnnnn/nnnnn</p> <p>CNL SIGMET nn nnnnn/nnnnn</p> <p>CNL SIGMET nnn nnnnn/nnnnn</p> <p>or</p> <p>CNL SIGMET n nnnnn/nnnnn VA MOV TO nnnn FIR</p> <p>CNL SIGMET nn</p>	<p>CNL SIGMET 2 102000/110000</p> <p>CNL SIGMET 12 101200/101600</p> <p>CNL SIGMET A12 031600/032000</p> <p>CNL SIGMET 3 251030/251630 VA MOV TO YUDO FIR</p>

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			nnnnn/nnnnn VA MOV TO nnnn FIR CNL SIGMET nnn nnnnn/nnnnn VA MOV TO nnnn FIR	CNL SIGMET 06 191200/191800 VA MOV TO YUDO FIR CNL SIGMET B10 030600/031200 VA MOV TO YUDO FIR
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Table A 1: Expanded SIGMET template

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Footnotes to table: (note, in order to ensure consistency between this document and ICAO Annex 3, Table 6-1A, any footnote in Table 6-1A that refers to AIRMET only is identified as such below:

1. See 4.1. **Recommendation.** *In cases where the airspace is divided into a flight information region (FIR) and an upper flight information region (UIR), the SIGMET should be identified by the location indicator of the air traffic services unit serving the FIR. Note. 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 are given in the text of the message.*
2. Fictitious location.
3. In accordance with 1.1.3 and 2.1.2 “The sequence number referred to in the template in Table A6-1A shall correspond with the number of SIGMET messages issued for the flight information region since 0001 UTC on the day concerned. The meteorological watch offices whose area of responsibility encompasses more than one FIR and/or control area (CTA) shall issue separate SIGMET messages for each FIR and/or CTA within their area of responsibility.”
4. AIRMET only – not SIGMET
5. Used only when the message issued to indicate that a test or an exercise is taking place. When the word “TEST” or the abbreviation “EXER” is included, the message may contain information that should not be used operationally or will otherwise end immediately after the word “TEST” [Applicable 7 November 2019]
6. In accordance with 1.1.4 “In accordance with the template in Table A6-1A, only one of the following phenomena shall be included in a SIGMET message, using the abbreviations as indicated below [list of SIGMET phenomena follows in section 1.1.4 – see section]”
7. In accordance with 4.2.1.a *Obscured (OBSC) if it is obscured by haze or smoke in accordance with ICAO Annex 3, 4.2.1 a) and agreed EUR best practices not using “due to darkness”*
8. In accordance with 4.2.4 *“Hail (GR) should be used as a further description of the thunderstorm, as necessary”*
9. In accordance with 4.2.1 b) *“embedded (EMBD) if it is embedded within cloud layers and cannot be readily recognized”*
10. In accordance with 4.2.2 **Recommendation.** *An area of thunderstorms should be considered frequent (FRQ) if within that area there is little or no separation between adjacent thunderstorms with a maximum spatial coverage greater than 75 per cent of the area affected, or forecast to be affected, by the phenomenon (at a fixed time or during the period of validity)”*
11. In accordance with 4.2.3 **Recommendation.** *Squall line (SQL) should indicate a thunderstorm along a line with little or no space between individual clouds.”*
Note : This convective system could be stationary or moving, associated with sustained winds, varying rapidly in direction, and possibly strong gusts.
12. Used for unnamed tropical cyclones.
13. In accordance with 4.2.5 and 4.2.6 **Recommendation.** *Severe turbulence (TURB) should refer only to: low-level turbulence associated with strong surface winds; rotor streaming; or turbulence whether in cloud or not in cloud (CAT). Turbulence should not be used in connection with convective clouds.” and “Turbulence shall be considered: a) severe whenever the peak value of the cube root of EDR exceeds 0.7”*
14. In accordance with 4.2.7 **Recommendation.** *Severe icing (ICE) should refer to icing in other than convective clouds. Freezing rain (FZRA) should refer to severe icing conditions caused by freezing rain”*

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15. In accordance with 4.2.8 “**Recommendation.**— A mountain wave (MTW) should be considered: a) severe whenever an accompanying downdraft of 3.0 m/s (600 ft/min) or more and/or severe turbulence is observed or forecast; and b) *moderate whenever an accompanying downdraft of 1.75–3.0 m/s (350–600 ft/min) and/or moderate turbulence is observed or forecast.*”

16. AIRMET only not SIGMET

17. AIRMET only not SIGMET

18. AIRMET only not SIGMET

19. AIRMET only not SIGMET

20. In the case of volcanic ash cloud or cumulonimbus clouds associated with tropical cyclone covering more than one area within the FIR, these elements can be repeated, as necessary.

21. With reference to METP/2 Decision 8/3, the term ‘APRX’ should be removed from the regional SIGMET guide template and not recommended for use.

22. A straight line is to be used between two points drawn on a map in the Mercator projection or between two points which crosses lines of longitude at a constant angle.

23. The number of coordinates should be kept to a minimum and should not normally exceed seven.

24. Only for SIGMET messages for tropical cyclones.

25. Only for SIGMET messages for radioactive cloud. When detailed information on the release is not available, a radius 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 [Applicable 7 November 2019]

26. The elements “forecast time” and “forecast position” are not to be used in conjunction with the element “movement or expected movement”.

27. The levels of the phenomena remain fixed throughout the forecast period.

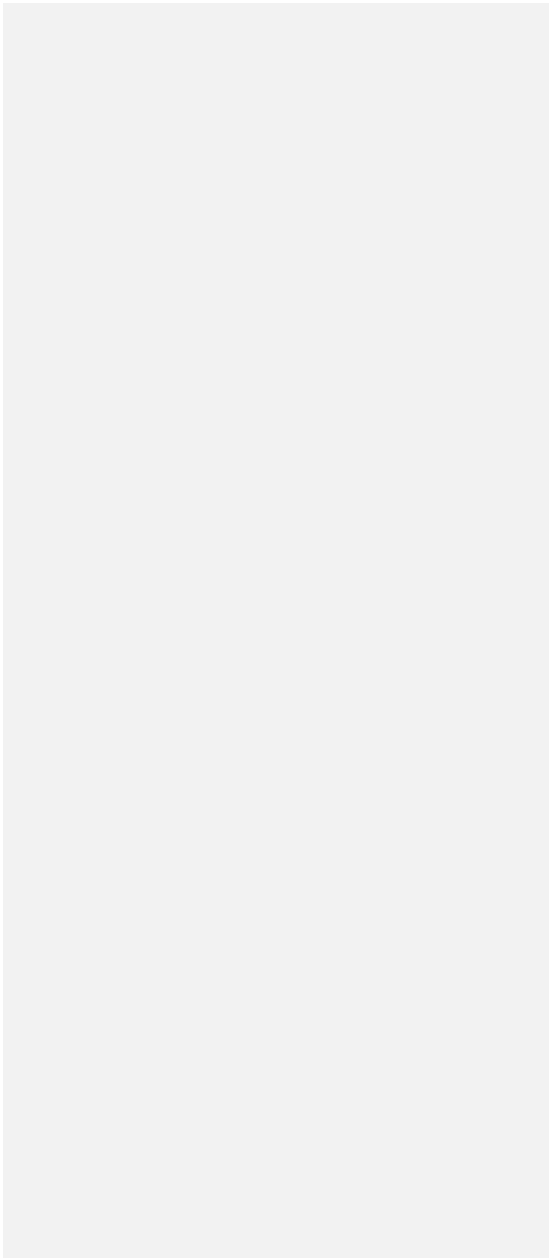
28. Only for SIGMET messages for volcanic ash.

29. To be used for two volcanic ash clouds or two centres of tropical cyclones simultaneously affecting the FIR concerned.

30. End of the message (as the SIGMET message is being cancelled).

Additional notes (not specifically identified in footnotes to Table A6-1A):

In accordance with 4.2.9 “Sandstorm/duststorm 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 m and 600 m.” (no footnote in Annex 3, but this is applicable reference)



Appendix **D** - Guidance on Special air-reports

Note that a list of special air-report headers for the EUR Region is provided at the following website: <http://www.icao.int/EURNAT/Pages/welcome.aspx> (EUR/NAT Documents --> EUR Documents --> EUR Documents --> MET Guidance --> Headers – Special air-reports).

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Example - Special air-report on volcanic ash

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- **pilot to ACC Petropovlovsk-Kamchatsky**

- A pilot provides a special air-report on volcanic ash via voice communications to ACC. Referencing PANS-ATM Appendix 1, Part 1 – Reporting instructions sections 1-4 and 9, the following example is provided.

**‘AIREP SPECIAL UNITED AIRLINES TREE TOO TOO POSITION FIVE FIVE ZERO TREE
NORTH WUN SEVEN ZERO TOO ZERO EAST FLIGHT LEVEL TREE ZERO ZERO
CLIMBING TO FLIGHT LEVEL TREE FIVE ZERO VOLCANIC ASH CLOUD’**

- **ACC Petropovlovsk-Kamchatsky (PKK) to MWO Yelizovo**

There are different arrangements between ACC and MWO (e.g. information provided by fax or phone vs. AFTN). The following is an example of providing a special air-report from the ACC to the MWO via AFTN.

- The format used for forwarding of meteorological information received by voice communications to the associated meteorological watch office (MWO) is provided in subtitle 3 of Appendix 1 of PANS-ATM. An example is provided based on the information given by the pilot or dispatch.

- **ARS UAL322 5503N17020E 0105 F300 ASC F350 VA CLD=**

- **MWO Yelizovo to VAAC Tokyo, Regional OPMET Centre-ROC Vienna, SADIS, WIFS**

- The format used for forwarding of a special air-report from the MWO to VAAC, ROC, SADIS and WIFS is in accordance to Annex 3, Appendix 6, Table A6-1B (**uplink**). An example is provided based on the information given by the ACC.

ARS UA322 VA CLD OBS AT 0105Z N5503E17020 FL300/350=

- The MWO should send this information using the World Meteorological Organization Abbreviated Header Line (WMO AHL) of **UARA71 RUPK** to:

- Appropriate ROC – in this case, ROC Vienna at AFTN address **LOWMMMXX** which will then route to SADIS (EGZZWPXX) and WIFS (KWBCYMYX) Appropriate VAAC – in this case, VAAC Tokyo (fax: +81 (3) 3212 6446; email vaac@eqvol2.kishou.go.jp; AFTN address **RJTDYMYX**), according to the regional OPMET exchange schema

When absence of visible ash is observed by pilots, follow procedures in section 4.7 of the Handbook on the International Airways Volcano Watch (IAVW) that is reproduced here within.

In the event of an eruption, operators should request their pilots to report, when appropriate, any observation related to a volcanic ash cloud including the absence of visible ash and all other relevant information such as observational conditions. The operator should then forward this information to the associated VAAC in a timely manner.

Note. – Visible ash is defined in the Manual on Volcanic Ash, Radioactive Material and Toxic Chemical Clouds (Doc 9691).

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Example - Special air-report for severe turbulence

- **pilot to ACC Paris**

- A pilot provides a special air-report on severe turbulence via voice communications to ACC. Referencing PANS-ATM Appendix 1, Part 1 – Reporting instructions sections 1-4 and 9, the following example is provided.

‘AIREP SPECIAL AIR NEW ZEALAND WUN ZERO WUN POSITION FIVE ZERO ZERO FIVE NORTH ZERO ZERO TOO ZERO WUN WEST WUN FIVE TREE SIX FLIGHT LEVEL TREE WUN ZERO CLIMBING TO FLIGHT LEVEL TREE FIVE ZERO SEVERE TURBULENCE’

- **ACC Paris (LFFF) to MWO Toulouse (Centre Meteo)**

There are different arrangements between ACC and MWO (e.g. information provided by fax or phone vs. AFTN). The following is an example of providing a special air-report from the ACC to the MWO via AFTN.

- The format used for forwarding of meteorological information received by voice communications to the associated meteorological watch office (MWO) is provided in subtitle 3 of Appendix 1 of PANS-ATM. An example is provided based on the information given by the pilot or dispatch.

- **ARS ANL101 5005N00201W 1536 F310 ASC F350 SEV TURB=**

- **MWO Toulouse to Regional OPMET Centre-ROC Toulouse, SADIS, WIFS**

- The format used for forwarding of a special air-report from the MWO to ROC, SADIS and WIFS is in accordance to Annex 3, Appendix 6, Table A6-1B (**uplink**). An example is provided based on the information given by the ACC.

ARS NL101 SEV TURB OBS AT 1536Z N5005W00201 FL310/350=

- The MWO should send this information using the World Meteorological Organization Abbreviated Header Line (WMO AHL) of **UAFR61 LFPW** to:

- Appropriate ROC – in this case, ROC Toulouse at AFTN address **LFPWYMEU** which will then route to SADIS (EGZZWPXX) and WIFS (KWBCYMYX) according to the regional OPMET exchange schema

Appendix J — Agreed EUR Best Practice with regard to SIGMET

The guidance below refers to agreed best practice with regard to SIGMET within the EUR Region. The guidance is not intended to conflict with regulations or guidance in ICAO documentation, such as ICAO Annex 3, and is provided to complement such regulations.

OBSC: Within EUR, it is considered that the following guidance be followed. "*when interpreting the definition of OBSC in ICAO Annex 3, it is considered that obscuration through two thirds or more of expected vertical depth is an appropriate threshold on which to base a decision to include in SIGMET.*"

EMBD: Within EUR, it is considered that the following guidance be followed. "*when interpreting the definition of EMBD in ICAO Annex 3, it is considered that phenomenon embedded through two thirds or more of expected vertical depth and when associated with frontal structure or organised mesoscale convective systems is an appropriate threshold on which to base a decision to include in SIGMET.*"

FRQ: Within EUR, it is considered that the following guidance be followed. "*when interpreting the definition of FRQ in ICAO Annex 3, it is considered that a distribution assessed over a domain of approximately 100 KM by 100 KM is an appropriate threshold on which to base a decision to include in SIGMET. In addition, the assessment should be considered ACROSS FIR boundaries, and SIGMETs coordinated accordingly between MWOs.*" It is also noted that that the abbreviation 'FRQ' (for 'frequent') is a temporal descriptor, yet the ICAO definition is spatial. It is proposed that for simplification the spatial definition is retained when assessing need to include reference to FRQ in SIGMET.

SQL: Within EUR, it is considered that the following guidance be followed. "*when interpreting the definition of SQL in ICAO Annex 3, the thunderstorms along a line without gaps of at least 100 KM in length is an appropriate threshold on which to base a decision to include in SIGMET. In addition, the assessment should be considered ACROSS FIR boundaries, and SIGMETs coordinated accordingly between MWOs.*"

TS: Within EUR, it is considered that the following guidance be followed. "*when thunderstorms are observed in one part of a FIR occupying a large territory and forecast in another part of the same FIR, separate SIGMET should be issued within the FIR.*"

TSGR: Within EUR, it is considered that the following guidance be followed. "*TSGR should be mentioned when hail is observed on the ground, detected from radar data, or expected from nowcasting/forecasting data.*" For direct observation, it is proposed to use **the 5 mm criterion** defined in ICAO Annex 3 (4.4.2.3). Furthermore, as hail is more often observed in mountainous areas, a proposal was to restrict the criterion to observations below a maximum height of 3000 ft amsl.

Phenomena priority: Within EUR, it is considered that the following guidance be followed. "*When issuing TS SIGMET, when multiple of the listed weather conditions occur simultaneously in the same area, given their impact evaluation from users, the following priority of use should be adopted:*

SQL > FRQ > EMBD > OBSC TS/TSGR.

FZRA: In presence of very low inversions, very shallow freezing precipitation layers may develop at or very near the surface. Even if the 'intensity of the precipitation' is slight, the 'intensity of the airframe icing under such circumstances' is often considered to be severe.

Commented [WC231]: Would it be easier if we implement these really helpful extra information on SIGMET issuance into Appendix D?

Commented [WC232]: Propose to add:
To discern embedded from detached thunderstorms, e.g. satellite imagery may be used.

Commented [WC233]: Changed the text to emphasize the thunderstorm line shall be 100 km in length and not the gaps (if this is what is meant)

Commented [WC234]: Isn't this valid for all phenomena?

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~~Furthermore, pilots have reported that freezing precipitation may have strong impacts on take-off/landing performances.~~

~~As a consequence, within EUR, it is considered that the following guidance be followed:~~

~~“Given the impact of freezing precipitation on take off/landing performances:~~

- ~~— on receipt of observation of freezing rain at the surface or aloft, SIGMET for severe icing due to freezing rain —SEV ICE (FZRA)— should always be issued, regardless of the depth of the freezing precipitation layer or the surface proximity.~~
- ~~— on receipt of observation of freezing drizzle, SIGMET for severe icing could be issued, regardless of the depth of the freezing precipitation layer or the surface proximity. The mention (FZRA) could be added, depending on the estimated impact of the phenomenon.”~~

~~Here, it must be reminded that, due to the risk of false alarm, automated observations of FZRA from ground stations must be cautiously considered.~~

~~In this context it is also worth mentioning that the observation of FZRA by ground stations must not be mixed up with the observation of SEV ICE (FZRA) by a pilot, with the former referring to ground observations of rain during temperatures below zero while the latter describes significant airframe ice accretion observed by a pilot. Thus if evidence of a pilot observation is not given it is recommended to formulate the SIGMET as SEV ICE (FZRA) FCST. However, if a pilot report confirms the occurrence of severe icing due to freezing rain, a SIGMET about SEV ICE (FZRA) OBS is more appropriate.~~

~~Therefore, it is considered that the following guidance be followed:~~

- ~~—SEV ICE (FZRA) FCST when FZRA (rain with negative temperatures) is observed by ground stations;~~
- ~~—SEV ICE (FZRA) OBS when a pilot report confirms the occurrence of severe icing (significant airframe accretion) due to freezing rain.~~

~~**FCST/OBS SIGMET and pilot reports:** Dealing with reports of observed phenomena when SIGMET is already valid. On receipt of a Special air report, a MWO is expected to consider if the report warrants re-issuance of an OBS SIGMET, in case of significant change between the conditions described in the valid SIGMET and the reported observations, if considered to be representative of the whole area expressed in the SIGMET. In any case, special air reports shall be disseminated in the same way that SIGMET messages are disseminated in accordance with Annex3 Appendix 6.~~

~~After the FCST SIGMET ends, if the phenomenon is still reported in observations, a new SIGMET shall be issued, as an OBS SIGMET for an area in which the observations are considered representative.~~

~~**Change in intensity INTSF / WKN / NC:** It is only permitted to make a single reference to change in intensity, and of course the change in intensity may be different within different areas of the phenomena. It is proposed that to err on the side of safety, INTSF (intensifying) would take priority if any sub-area of the region intensifies; NC (no change) would take priority if applicable to a sub-area of the region and if INTSF does not apply; and WKN (weakening) would only be used if applicable to the entire area.~~

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Appendix K-E – Template for Letter of Agreement
Directives for the cross-FIR SIGMET coordination
between MWOs of adjacent States

General Guidelines

The present Template for Letter of Agreement (hereinafter referred to as **the LoA template**) may be used by the MET Service Providers (METSPs) in drafting their operational Letters of Agreement (LoA) and facilitate the implementation of SIGMET coordination procedure between MWOs of adjacent States. However, it is unable to provide for all aspects of a given situation between two MWOs. The structure and the content of the LoA template should be considered as guidelines and as such, may have to be adapted as required. The detailed cross-FIR SIGMET co-ordination procedure is recommended to be addressed in Annex to a LoA. Normally, a LoA should be signed by the representatives of the METSPs.

Structure and content of the LoA template	Comments/Notes
<p>1. GENERAL</p> <p>1.1 Objective The objective of this Letter of Agreement between [METSP¹] and [METSP²] is to establish the directives for the necessary coordination between [MWO¹] and [MWO²] to provide the aviation community with consistent SIGMET information when cross-border weather phenomenon is observed or forecast.</p> <p>1.2 Operational Status Both METSPs as early as practicable should keep each other informed of any changes in the MWOs' operational contact details which may affect the procedures specified in this Letter of Agreement.* <i>Also, the following may be considered for inclusion in the LoA:</i> Both MWOs should keep each other informed of any change in the operational status of the resources, including technical facilities, which may affect the procedures specified in this Letter of Agreement.</p>	<p><i>* This is especially important to be included in LoA if a relocation of MWO or assignment, to third MWO, of the responsibility for providing meteorological watch is planned to be implemented as contingency measures.</i></p>
<p>2. AREAS of RESPONSIBILITY The lateral and vertical limits of the Areas of Responsibility (FIR/UIR) of the [MWO¹] and [MWO²] are provided in Appendix.</p>	<p><i>Reference should be made to the appropriate State AIPs.</i></p>
<p>3. PROCEDURES</p> <p>3.1 The procedures to be applied by [MWO¹] and [MWO²] are detailed in the Annexes to this Letter of Agreement: Annex 1: SIGMET Coordination Procedure Annex 2: Definitions and Abbreviations</p> <p>3.2 These procedures shall be promulgated to the operational staff of the MWOs concerned.</p>	
<p>4. REVISIONS and DEVIATIONS</p> <p>4.1 Revision of the Letter of Agreement The revision of this Letter of Agreement, excluding Annexes and Appendix, requires the mutual written consent of the signatories.</p>	
<p>4.2 Revision of the Annexes to the Letter of Agreement The revision of Annexes to this Letter of Agreement requires the mutual written consent of the representatives of the respective MWOs designated by the respective signatories, normally the chiefs of the MWOs.</p>	
<p>4.3 Temporary Deviations When necessary, the respective chiefs of the MWOs may introduce by mutual agreement and for a specified time period temporary modifications to the procedures laid down in the Annexes to this Letter</p>	<p><i>* - figure to be agreed upon locally</i></p>

of Agreement. These temporary changes are not intended to last more than.....*days.	
4.4 Incidental Deviations Instances may arise where incidental deviations from the procedures specified in the Annexes to this Letter of Agreement may become necessary. Under these circumstances the operational meteorologists are expected to exercise their best judgement to ensure the safety of air traffic.	
5. CANCELLATION 5.1 Cancellation of this Letter of Agreement by mutual agreement of the respective approving authorities of the METSPs may take place at any time. 5.2 Cancellation of this Letter of Agreement by either approving authority of the METSP is possible at any time, provided that the cancelling party declares its intention to cancel the Letter of Agreement with a notice period of ...*days before the date the cancellation is to take effect.	* - time period to be agreed upon locally
6. COORDINATION MEETINGS Regular and/or ad-hoc coordination meetings (e-mail/phone communication or teleconferences as alternative) between the chiefs of the MWOs and MWO representatives to discuss implementation of SIGMET coordination process or any planned changes will be convened as appropriate and at least every* months.	* - time period to be agreed upon locally
7. VALIDITY This Letter of Agreement becomes effective [date]. or This Letter of Agreement becomes effective [date], and supersedes the Letter of Agreement between [METSP ¹] and [METSP ²] dated [date].	
8. APPENDIX. AREAS of RESPONSIBILITY	<i>Appendix with map of the appropriate FIRs/[UIRs]</i>
9. ANNEX 1. SIGMET COORDINATION PROCEDURE 9.1 Purpose of the procedure. 9.2 Initiation of the process (criteria for coordination activity, including issuance of special air report (uplink) as the equivalent of SIGMET ^{1, 2,3}). 9.3 Means to be used for operational communication, including, if necessary, for exchanging/supplying information (for example, forwarding of special air-reports additionally to their dissemination via ROC). 9.4 Contact details (phone, fax etc.). 9.5 Language. 9.6 Responsibilities ⁴ . 9.7 Maintaining of logs when agreement is not reached. 9.8 Special arrangements for contingency situation (notification about change of MWO operational status and new contact details ⁵), as well as any other arrangements as reasonably required.	1. When at least one MWO applies the procedure for issuing a special air report (uplink) as the equivalent of SIGMET in case of the phenomenon reported is "of a transient nature". 2. For cases when the phenomenon reported is expected to persist but moves away from the FIR in which it is observed to the territory of adjacent FIR (the phenomenon reported is "of a transient nature" with regard to own FIR only). 3. At least information about applicability/non-applicability of the procedure by each MWO involved should be clearly indicated and promulgated to the meteorologists. 4. Each MWO retains the right to issue SIGMET at its final discretion within its FIR when the MWOs involved cannot

	<i>agree on the content of SIGMET information.</i> <i>5. See comments above for paragraph 1.2 "Operational Status".</i>
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Appendix **L-F** – SIGMET coordination process template

SIGMET Coordination between State_X (Name_of_State_X MWO) and State_Y (Name_of_State_Y MWO).

Explanatory note:

It is intended that each State would have what is effectively a reciprocal version of the template below. Of course, if necessary where one or other or both States have multiple mutually adjacent FIRs, then additional FIRs, and perhaps even MWO contact details will need to be included. The template is a framework. It is intended to be adapted as necessary to meet the aims of each State, yet also providing a common approach to establishing SIGMET coordination. It is also intended that this Explanatory note be deleted from the final version agreed between States.

Language in which SIGMET Coordination will be undertaken: XXXX

Customer location / forecast area:

Any SIGMET which affects the State_X FIR_Name FIR [CCCC_of_FIR] which may also affect the State_Y FIR_Name FIR [CCCC_of_FIR] and vice versa.

See enclosed detailed FIR maps.

Purpose of Service:

To allow for consistency of SIGMETs between the State_X_Met_Provider and State_Y_Met_Provider. This is in terms of the content, horizontal position, vertical extent, severity, timing and movements of SIGMET phenomena between the State_X and State_Y FIR regions with mutual boundaries.

Description of requirement:

1. Telephone/email consultation between the State_X_Met_Provider meteorologist responsible for State_X Meteorological Watch Office (MWO) and State_Y_Met_Provider meteorologist responsible for the State_Y MWO to agree on proposed content, horizontal location, vertical depth, boundaries and speeds of movement of any SIGMETs affecting, or expected to affect, both States' FIR regions of responsibility.
2. The caller should clearly identify who is calling, what function and from what office. It should also be clearly stated that the purpose of the call is SIGMET coordination.

Production methodology:

- Whenever practicable, approximately 15 minutes before the issue of a SIGMET for the State_X FIR, the State_X MWO meteorologist is to consider if the phenomena may also affect the State_Y FIR. If so, the State_X MWO meteorologist is to contact the State_Y meteorologist

(Tel +yyyyyyyyy) to discuss the content of the SIGMET and the proposed location on the boundary with [State_Y](#) FIR(s).

- [State_Y](#) meteorologist will follow the same procedure and will contact [State_X](#) MWO (Tel +xxxxxxx) to discuss any SIGMETs they are proposing to issue for [State_Y](#) FIR(s) which they believe may also affect the [State_X](#) FIR.
- Refer to the SIGMET FIR maps to discuss boundaries of proposed SIGMETs, in order to agree consistent forecasts in terms of where the SIGMET crosses the FIR boundaries.
- Current issued SIGMETs can be visualised graphically by the [State_X_Met_Provider](#) on [System](#) to aid discussion. Current issued SIGMETs can be visualised graphically by the [State_Y_Met_Provider](#) on [System](#) to aid discussion.
- In the event of any disagreement, each MWO will retain the right to the final details relating to the phenomenon over their own area(s) of responsibility.
- To facilitate understanding of reasons for differences, and to permit further coordination, under circumstances of differences of opinion a brief summary should be provided to the meteorologists' manager.
- This procedure to be made effective dd/mm/yy

Amendment criteria:

SIGMETs are not amended. If they are incorrect they are cancelled and the correct version transmitted as a new SIGMET. If the phenomenon changes intensity, location etc, enough to make the existing SIGMET misleading, it should be cancelled and a new one issued. The cancelled SIGMET should be numbered according to the normal sequential daily numbering system.

The [State_Y](#) meteorologist should be consulted as per the process above in relation to any cancellation and re-issuance of SIGMET that may affect [State_Y](#)'s area of responsibility.

Map of State_X and State_Y FIR(s):

Include appropriate map.

Larger Scale Map of State_X and State_Y FIR(s):

Include appropriate map.

Appendix M-G – Example ~~proforma-form to use to~~for logging of SIGMET coordination – bilateral phone call statistics

The ~~proforma-form~~ below may be used by MWOs to log the statistics relating to SIGMET coordination. It may, of course, be adapted as necessary.

MWO:				Date/Time (UTC)	
SIGMET Phenomenon :					
Exchange with MWO(s) (Name, FIR):				Call made before the issuance of the SIGMET?: <input type="checkbox"/> YES <input type="checkbox"/> NO	
Who called whom?					
Result of the Discussion:	Agreement on SIGMET issuance	Agreement on duration	Agreement on horizontal extent	Agreement on vertical extent	
	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	
Additional remarks:					
Signature: (Forecaster on duty)					

MWO:				Date/Time (UTC)	
SIGMET Phenomenon :					
Exchange with MWO(s) (Name, FIR):				Call made before the issuance of the SIGMET?: <input type="checkbox"/> YES <input type="checkbox"/> NO	
Who called whom?					
Result of the Discussion:	Agreement on SIGMET issuance	Agreement on duration	Agreement on horizontal extent	Agreement on vertical extent	
	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	<input type="checkbox"/> yes <input type="checkbox"/> no	
Additional remarks:					
Signature: (Forecaster on duty)					

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