

Cadre de
Gestion des
Données



Data
Management
Framework

Encoder IWXXM SIGMET

**Version 1A
January 2026**

Table of Contents

1	Document Information	3
1.1	History.....	3
1.2	Filename & Location	3
1.3	Related Documents.....	3
2	Quick Overview	4
2.1	Useful IWXXM links.....	4
3	Input source and Output	5
4	Header portion of IWXXM SIGMET and Flag Values.....	5
4.1	Bulletin structure	5
4.2	GML:ID	5
5	Content of <meteorologicalInformation> section.....	6
5.1	IWXXM-CA.....	6
5.2	Report Status	6
5.3	Permissible Usage	6
5.4	Cancelled SIGMET	6
6	Issue Time	7
7	Issuing Air Traffic Service Unit	8
8	Originating Meteorological Watch Office.....	8
9	Issuing Air Traffic Services Region	9
10	Alphanumeric Sequence	11
11	Valid Period.....	11
12	Cancelled Report Sequence Number.....	12
13	Cancelled Report Valid Period	13
14	SIGMET Phenomenon.....	15
14.1	Canadian SIGMET phenomena	16
15	SIGMET Phenomenon Observed or Forecast	18
15.1	When element (4) is FCST:.....	18
15.2	When element (4) is OBS.....	19
16	SIGMET Location.....	20
16.1	Line corridor.....	21
16.2	Circle	22

16.3	Polygon	23
16.4	Equivalent location with respect to an aviation reference point	25
17	SIGMET Level	26
18	SIGMET movement or expected movement	28
19	SIGMET Change in intensity.....	29
20	RMK.....	30
21	Bulletin Identifier	31
22	Special Cases.....	32
22.1	RDOACT CLD SIGMET	32
22.2	VA SIGMET	33

1 Document Information

1.1 History

Author(s)	Date	Ver	Remarks
Gilles Ratté	February 5 th 2025	0Dv01	Draft
Gilles Ratté	March 20 th 2025	0Dv02	Draft
Gilles Ratté	March 25 th 2025	0Dv03	Draft
Gilles Ratté	April 1 st 2025	0Dv04	Draft
Gilles Ratté	April 8 th 2025	0Dv05	Draft
Gilles Ratté	October 16 th , 2025	0Dv06	Draft
Gilles Ratté	January 20 th 2026	0DV07	Draft
Gilles Ratté	January 27 th 2026	1A	Approved

1.2 Filename & Location

tbd

1.3 Related Documents

Title	Version
ICAO Annex 3 to the Convention on International Civil Aviation Meteorological Service for International Air Navigation https://portal.icao.int/icao-net/Annexes/an03_cons.pdf	AMD 82
ICAO PANS-MET Doc 10157 - Procedures for air navigation services - Meteorology https://portal.icao.int/icao-net/ICAO%20Documents/10157_1ed_en.pdf	1 st edition
MANAIR – Manual of Standards and Procedures for Aviation Forecasts https://publications.gc.ca/site/eng/9.941904/publication.html	8 th Edition

2 Quick Overview

ICAO Meteorological Information Exchange Model is a format for reporting weather information in XML/GML. IWXXM includes XML/GML-based representations for products standardized in International Civil Aviation Organization (ICAO) Annex 3, such as METAR/SPECI, TAF, SIGMET, AIRMET, Tropical Cyclone Advisory and Volcanic Ash Advisory. IWXXM products are used for operational exchanges of meteorological information for use in aviation.

Unlike the traditional forms of the ICAO Annex 3 products, IWXXM is not intended for direct human consumption. Instead IWXXM is designed to be ingested and manipulated by systems for downstream human consumption such as display software.

A SIGMET is an Information message issued by a meteorological watch office (MWO) to advise pilots of the occurrence or expected occurrence of specified weather phenomena, which may affect the safety of aircraft operations, and the development of those phenomena in time and space.

This document details the generation of IWXXM SIGMET from the DMS (Data Management System) XML decode of TAC bulletins. Canadian IWXXM SIGMET is built on WMO schema version 3.0.0 found at <https://schemas.wmo.int/iwxxm/3.0.0/>

Please refer to MANAIR for more details on SIGMET (link in section 1.3 above).

2.1 Useful IWXXM links

WMO SIGMET IWXXM Schema and Class Diagrams:

<https://schemas.wmo.int/iwxxm/3.0.0/sigmet.xsd>

<https://schemas.wmo.int/iwxxm/3.0.0/html/>

IWXXM SIGMET examples:

<https://github.com/wmo-im/iwxxm/tree/master/IWXXM/examples>

<https://schemas.wmo.int/iwxxm/3.0.0/examples/>

WMO Code Table

<http://codes.wmo.int/>

3 Input source and Output

The input source is the TAC SIGMET bulletin that has been decoded to DMS XML.

Input source
<code>/data/msc/alert/atmospheric/aviation/sigmet-2.0-ascii/decoded-xml-2.0</code>

Output of IWXXM
<code>/msc/alert/atmospheric/aviation/sigmet-2.0-ascii/product-iwxxm_xml-1.0</code>

4 Header portion of IWXXM SIGMET and Flag Values

4.1 Bulletin structure

In Canada, an IWXXM SIGMET files will contain only 1 SIGMET bulletin. The bulletin structure will look like this:

```
<collect:MeteorologicalBulletin gml:id="uuid....."  
  <collect:meteorologicalInformation>  
    <iwxxm:SIGMET gml:id="uuid....."  
      ...  
      ...  
    </iwxxm:SIGMET>  
  </collect:meteorologicalInformation>  
  .....  
  .....  
</collect:MeteorologicalBulletin>
```

4.2 GML:ID

Special attention is required to the values of the GML IDs to ensure successful aggregation of IWXXM messages at national or international data aggregators. This is because all GML IDs defined within an XML/GML instance must be unique. As IWXXM messages are prepared by different originators, ensuring the global uniqueness of GML IDs is essential to ensure smooth aggregation of IWXXM messages from different originators.

The values of the "gml:id" can be defined in accordance with some rules related to the characteristics of the report. Another approach to creating globally unique strings is to use a Universally Unique Identifier (UUID) generator. The latter technique relieves the burden on the originator to devise a custom-made algorithm to generate them. TT-AvXML team has chosen to make use of UUID generators to create values for gmi:ids in its IWXXM examples.

The rule for GML IDs requires a string starting with a letter, so a prefix beginning with one ensures this when using a UUID generator. Whichever technique you use, the GML ID value does not necessarily have to begin with 'uuid.'

Also, rule from the schema <https://schemas.wmo.int/iwxxm/3.0.0/rule/iwxxm.sch>

```
<sch:pattern id="Common.Report-5">
<sch:rule
context="//iwxxm:METAR|//iwxxm:SPECI|//iwxxm:TAF|//iwxxm:SIGMET|//iwxxm:VolcanicAshSIGM
ET|//iwxxm:TropicalCycloneSIGMET|//iwxxm:AIRMET|//iwxxm:TropicalCycloneAdvisory|//iwxxm:
VolcanicAshAdvisory|//iwxxm:SpaceWeatherAdvisory">
<sch:assert test="( if( //@gml:id[not(matches(.,'uuid\.[a-z0-9]{8}-[a-z0-9]{4}-[a-z0-9]{4}-[a-z0-9]{4}-
[a-z0-9]{12}') ) ) then( false() ) else( true() ) )">Common.Report-5: All gml:ids in IWXXM reports must
be prefixed with 'uuid.' and must be UUID version 4</sch:assert>
</sch:rule>
</sch:pattern>
```

5 Content of <meteorologicalInformation> section

5.1 IWXXM-CA

The use of extensions will allow Canada to include additional meteorological parameters found in Canadian SIGMET which are not directly supported by the core XML schemas. A Canadian extension schema (iwxxm-ca) has been published and is available at

<https://dd.meteo.gc.ca/today/aviation/iwxxm/schema>

See section 14.1 for the details on encoding Canadian extension content.

5.2 Report Status

The attribute "reportStatus" for SIGMET shall be set to "NORMAL".

Corrections or Amendments to a SIGMET do not exist.

5.3 Permissible Usage

PermissibleUsage defines the restricted set of permitted usages of data.

There are two possible values to report: "OPERATIONAL" and "NON-OPERATIONAL".

For IWXXM SIGMET this field is reported as:

```
permissibleUsage="OPERATIONAL"
```

For TEST IWXXM SIGMET this field is reported as:

```
permissibleUsage="NON-OPERATIONAL"
```

Additionally, the field permissibleUsageReason="TEST"

```
<iwxxm:SIGMET gml:id="uuid.78fa68e5-18b9-42cf-b04a-576735e2ccdc" reportStatus="NORMAL"
permissibleUsage="NON-OPERATIONAL" permissibleUsageReason="TEST" >
```

5.4 Cancelled SIGMET

If a SIGMET is cancelled, an additional attribute shall be reported:

```
isCancelReport="true"
```

Input from SIGMET source

```

version="1.0" encoding="UTF-8" standalone="no"
http://www.opengis.net/om/1.0
http://dms.ec.gc.ca/schema/point-observation/2.0
http://www.opengis.net/gml
http://www.w3.org/1999/xlink
http://www.w3.org/2001/XMLSchema-instance

identification
cancellation_message
unitless
true
    
```

IWXXM Output:

```

<iwxxm:AIRMET gml:id="uuid.fff20d63-f802-4b8a-8c2f-f2b24a5abec5" xsi:schemaLocation="http://icao.int/iwxxm/3.0 http://schemas.wmo.int/iwxxm/3.0/iwxxm.xsd" reportStatus="NORMAL" permissibleUsage="OPERATIONAL" isCancelReport="true" >
    
```

6 Issue Time

Issue Time is the time a SIGMET bulletin was issued.

In the TAC SIGMET bulletin, this value is found in the first line also known as the WMO bulletin header.

The generic form being: $T_1T_2A_1A_2ii$ **CCCC** **YYGGgg**

where **YYGGgg** International date-time group.

Input from SIGMET source:

```

version="1.0" encoding="UTF-8" standalone="no"
http://www.opengis.net/om/1.0
http://dms.ec.gc.ca/schema/point-observation/2.0
http://www.opengis.net/gml
http://www.w3.org/1999/xlink
http://www.w3.org/2001/XMLSchema-instance

identification
date_time
dateTime
2025-03-17T13:44:00.000Z
    
```

IWXXM Output:

```

<iwxxm:issueTime>
  <TimeInstant gml:id="uuid.80530dd5-4da3-4848-b47f-e817d15867f7" >
    <gml:timePosition>2025-03-17T13:44:00.000Z</gml:timePosition>
  </TimeInstant>
</iwxxm:issueTime>

```

7 Issuing Air Traffic Service Unit

In the TAC SIGMET bulletin, this element is found in the second. The generic form being:

CCCC SIGMET [n]nn VALID YYGGgg/YYGGgg **CCCC**

where the first CCCC (in red above) is the ICAO location indicator of the ATS unit serving the FIR to which the SIGMET refers. The codes and names are defined in the Aeronautical Information Exchange Model (AIXM).

Input from SIGMET source

In Canada, the **Issuing Air Traffic Service Unit** is identical to the **Issuing Air Traffic Services Region**. Therefore, the input source is that found in section 9 below.

IWXXM Output

```

<iwxxm:issuingAirTrafficServicesUnit>
  <aixm:Unit gml:id="uuid.bc1bbca1-fb59-440d-8784-a74d72d3a949" >
    <aixm:timeSlice>
      <aixm:UnitTimeSlice gml:id="uuid.8376b2ca-ebd4-4806-845a-f7fd76d39785" >
        <gml:validTime/>
        <aixm:interpretation>SNAPSHOT</aixm:interpretation>
        <aixm:name>CZWG FIC</aixm:name>
        <aixm:type>FIC</aixm:type>
        <aixm:designator>CZWG</aixm:designator>
      </aixm:UnitTimeSlice>
    </aixm:timeSlice>
  </aixm:Unit>
</iwxxm:issuingAirTrafficServicesUnit>

```

8 Originating Meteorological Watch Office

In the TAC SIGMET bulletin, this element is found on the second line. The generic form being:

CCCC SIGMET [n]nn VALID YYGGgg/YYGGgg **CCCC**

where the second CCCC (in red above) is the ICAO location indicator of the MWO originating the message. The codes and names are defined in the Aeronautical Information Exchange Model (AIXM).

Input from SIGMET source

```

version="1.0" encoding="UTF-8" standalone="no"
http://www.opengis.net/om/1.0
http://dms.ec.gc.ca/schema/point-observation/2.0
http://www.opengis.net/gml
http://www.w3.org/1999/xlink
http://www.w3.org/2001/XMLSchema-instance

identification
issuing_office
unitless
CWUL
    
```

IWXXM Output

```

<iwxxm:originatingMeteorologicalWatchOffice>
  <aixm:Unit gml:id="uuid.b81be478-7659-4420-8f23-bd3a9ac8ceb4" >
    <aixm:timeSlice>
      <aixm:UnitTimeSlice gml:id="uuid.a4ffad53-f87c-4b67-9aef-acf20c8d4623" >
        <gml:validTime/>
        <aixm:interpretation>SNAPSHOT</aixm:interpretation>
        <aixm:name>CWUL MWO</aixm:name>
        <aixm:type>MWO</aixm:type>
        <aixm:designator>CWUL</aixm:designator>
      </aixm:UnitTimeSlice>
    </aixm:timeSlice>
  </aixm:Unit>
</iwxxm:originatingMeteorologicalWatchOffice>
    
```

9 Issuing Air Traffic Services Region

In the TAC SIGMET bulletin, these elements (1 and 2 below) are found on the third line. The generic form being:

1	2	3	4	5
Location indicator of the FIR	Name of the FIR	Description of the phenomenon	Observed or forecast	Location
<CCCC>	<name> FIR	<Phenomenon>	OBS [AT <GGggZ>] FCST	Geographical location of the phenomenon

6	7	8	9
Level	Movement or expected movement	Change in intensity	Remark
FL<nnn/nnn> SFC/FL<nnn> TOP FL<nnn>	MOV <direction, speed>KT Or STNR	INTSFYG or WKNG or NC	RMK

Ex:

WSCN27 CWA0 161220

CZQX SIGMET E1 VALID 161220/161620 CWUL

CZQX GANDER DOMESTIC FIR SEV TURB OBS AT 1155Z WI 90NM WID LINE

BTN /N5319 W06025/CYYR – /N5615 W05245/ – /N5930 W04715/ FL280/350 MOV

NE 20KT NC

RMK GFACN34/CZQX GANDER OCEANIC FIR/CTA SIGMET U1=

Input from SIGMET source

```

version="1.0" encoding="UTF-8" standalone="no"
http://www.opengis.net/om/1.0
http://dms.ec.gc.ca/schema/point-observation/2.
http://www.opengis.net/gml
http://www.w3.org/1999/xlink
http://www.w3.org/2001/XMLSchema-instance

identification
fir_indicator
unitless
CZQX

identification
fir_name
unitless
GANDER DOMESTIC FIR

```

IWXXM Output

```

<iwxxm:issuingAirTrafficServicesRegion>
  <aixm:Airspace gml:id="uuid.7adba630-b2c2-461e-8c2a-f6bc754b4dd7" >
    <aixm:timeSlice>
      <aixm:UnitTimeSlice gml:id="uuid.f6010498-ddac-4260-b8f4-942df35a4376" >
        <gml:validTime/>
        <aixm:interpretation>SNAPSHOT</aixm:interpretation>
        <aixm:type>OTHER:GANDER DOMESTIC</aixm:type>
        <aixm:designator>CZQX</aixm:designator>
        <aixm:name>GANDER DOMESTIC FIR</aixm:name>
      </aixm:UnitTimeSlice>
    </aixm:timeSlice>
  </aixm:Airspace>
</iwxxm:issuingAirTrafficServicesRegion>

```

10 Alphanumeric Sequence

In the TAC SIGMET bulletin, this element is found in the second line. The generic form being:

CCCC SIGMET [n]nn VALID YYGGgg/YYGGgg CCCC

where [n]nn (in red above) is the daily alphanumeric sequence.

Input from SIGMET source

```
version="1.0" encoding="UTF-8" standalone="no"
http://www.opengis.net/om/1.0
http://dms.ec.gc.ca/schema/point-observation/2.0
http://www.opengis.net/gml
http://www.w3.org/1999/xlink
http://www.w3.org/2001/XMLSchema-instance

identification
sequence_letter
unitless
B1
```

IWXXM Output

```
<iwxxm:sequenceNumber>B1</iwxxm:sequenceNumber>
```

11 Valid Period

In the TAC SIGMET bulletin, this element is found in the second line. The generic form being:

CCCC SIGMET [n]nn VALID YYGGgg/YYGGgg CCCC

where YYGGgg/YYGGgg (in red above) is the validity period of SIGMET given by date/time group of the beginning and date/time group of the end of the period.

Input from SIGMET source

IWXXM Output

```

<iwxxm:validPeriod>
  <gml:TimePeriod>
    <gml:beginPosition>2025-03-17T13:40:00.000Z</gml:beginPosition>
    <gml:endPosition>2025-03-17T17:40:00.000Z</gml:endPosition>
  </gml:TimePeriod>

```

12 Cancelled Report Sequence Number

If, during the validity period of a SIGMET, the phenomenon for which the SIGMET was issued is no longer occurring or no longer expected to occur, this SIGMET shall be cancelled. The cancellation is done by issuing the same type of SIGMET with a statement and alphanumeric sequence of the SIGMET being cancelled (in red font in the example below)

Ex:

WSCN05 CWA0 161120

CZUL SIGMET B2 VALID 161120/161130 CWUL

CZUL MONTREAL **CNL SIGMET B1** 160730/161130=

Input from SIGMET source

<pre> xml ├── om:ObservationCollection │ ├── xmlns:om │ ├── xmlns │ ├── xmlns:gml │ ├── xmlns:xlink │ ├── xmlns:xsi │ └── om:member │ └── om:Observation │ └── om:metadata │ └── set │ └── general │ ├── author : MSC-DMS-Decoder-Aviation-Warning │ │ ├── build │ │ ├── name │ │ └── version │ ├── dataset : msc/alert/atmospheric/aviation/sigmet-2.0-asci │ │ └── name │ ├── phase : decoded-xml-2.0 │ │ └── name │ ├── id │ │ ├── xlink:href │ │ └── parent │ │ └── xlink:href │ └── identification-elements │ ├── element : data_type_designator │ ├── element : geographical_designator │ ├── element : bulletin_number │ ├── element : bulletin_compiling_center │ ├── element : date_time │ ├── element : sequence_letter │ ├── element : sequence_number │ ├── element : sequence_identifier │ ├── element : issuing_office │ ├── element : date_time │ ├── element : date_time │ ├── element : fir_indicator │ ├── element : fir_name │ ├── element : cancellation_message │ ├── element : cancelled_sequence_number │ └── element : cancelled_sequence_letter │ ├── group │ ├── name │ ├── uom │ └── value </pre>	<pre> version="1.0" encoding="UTF-8" http://www.opengis.net/om/ http://dms.ec.gc.ca/schema http://www.opengis.net/gml http://www.w3.org/1999/xlink http://www.w3.org/2001/XMLSchema build.24 MSC-DMS-Decoder-Aviation-Warning 5.2 msc/alert/atmospheric/aviation/sigmet-2.0-ascii decoded-xml-2.0 /data/msc/alert/atmospheric/aviation/sigmet-2.0-ascii /data/msc/alert/atmospheric/aviation/sigmet-2.0-ascii identification cancelled_sequence_letter unitless B1 </pre>
--	---

IWXXM Output

```
<iwxxm:cancelledReportSequenceNumber>B1</iwxxm:cancelledReportSequenceNumber>
```

13 Cancelled Report Valid Period

The cancellation SIGMET also includes the valid period of the SIGMET message being cancelled (in red font in the example below).

Ex:

WSCN05 CWA0 161120

CZUL SIGMET M4 VALID 161120/161130 CWUL

CZUL MONTREAL FIR CNL SIGMET M3 **160730/161130**=

Input from SIGMET source

XML Tree Structure:

- om:ObservationCollection
 - xmlns:om
 - xmlns
 - xmlns:gml
 - xmlns:xlink
 - xmlns:xsi
 - om:member
 - om:Observation
 - om:metadata
 - set
 - general
 - identification-elements
 - element : data_type_designator
 - element : geographical_designator
 - element : bulletin_number
 - element : bulletin_compiling_center
 - element : date_time
 - element : sequence_letter
 - element : sequence_number
 - element : sequence_identifier
 - element : issuing_office
 - element : date_time
 - element : date_time
 - element : fir_indicator
 - element : fir_name
 - element : cancellation_message
 - element : cancelled_sequence_number
 - element : date_time
 - group
 - name
 - uom
 - value
 - qualifier : datetime_significance
 - code-src
 - code-type
 - group
 - name
 - uom
 - value
 - element : date_time
 - group
 - name
 - uom
 - value
 - qualifier : datetime_significance
 - code-src
 - code-type
 - group
 - name
 - uom
 - value

XML Namespace List:

- http://www.opengis.net/om/1.0
- http://dms.ec.gc.ca/schema/point-observation/2.0
- http://www.opengis.net/gml
- http://www.w3.org/1999/xlink
- http://www.w3.org/2001/XMLSchema-instance

XML Element Values:

```

identification
date_time
datetime
2025-03-18T07:30:00.000Z

std_code_src
datetime_significance
element
datetime_significance
code
cancelled_valid_start_time

identification
date_time
datetime
2025-03-18T11:30:00.000Z

std_code_src
datetime_significance
element
datetime_significance
code
cancelled_valid_end_time
    
```

IWXXM Output

```

<iwxxm:cancelledReportSequenceNumber>31807341209771013</iwxxm:cancelledReportSequenceNumber>
<iwxxm:cancelledReportValidPeriod>
  <gml:TimePeriod>
    <gml:beginPosition>2025-03-18T07:30:00.000Z</gml:beginPosition>
    <gml:endPosition>2025-03-18T11:30:00.000Z</gml:endPosition>
  </gml:TimePeriod>
</iwxxm:cancelledReportValidPeriod>
    
```

14 SIGMET Phenomenon

In the TAC SIGMET bulletin, this elements (3) is found on the third line. The generic form being:

| 1 | 2 | 3 | 4 | 5 |
|-------------------------------|-----------------|--------------------------------------|--------------------------|---|
| Location indicator of the FIR | Name of the FIR | Description of the phenomenon | Observed or forecast | Location |
| <CCCC> | <name> FIR | <Phenomenon> | OBS [AT <GGggZ>]
FCST | Geographical location of the phenomenon |

| 6 | 7 | 8 | 9 |
|---|-------------------------------------|-----------------------|--------|
| Level | Movement or expected movement | Change in intensity | Remark |
| FL<nnn/nnn>
SFC/FL<nnn>
TOP FL<nnn> | MOV <direction, speed>KT
Or STNR | INTSFYG or WKNG or NC | RMK |

Ex:

WSNT21 CWA0 171725

CZQX SIGMET J4 VALID 171725/172125 CWUL-

CZQX GANDER OCEANIC FIR/CTA **SEV ICE (FZRA)** FCST WI 180NM WID LINE BTN /N6030 W06130/ -

/N5800 W05730/ SFC/FL040 MOV ENE 15KT WKN

RMK GFACN34 GFACN36/CZUL MONTREAL FIR SIGMET D2 CZQX GANDER DOMESTIC FIR SIGMET P5=

Input from SIGMET source

The image shows an XML editor interface. On the left is a tree view of an XML document. The root is 'xml', containing an 'om:ObservationCollection'. Underneath are several 'xmlns' declarations and an 'om:member' element. The 'om:member' contains an 'om:Observation' element, which has sub-elements for 'om:metadata', 'om:samplingTime', 'om:resultTime', 'om:procedure', 'om:observedProperty', 'om:featureOfInterest', and 'om:result'. The 'om:result' element contains 'orig-header', 'orig-msg', and 'elements'. The 'elements' element contains two 'element' objects: one for 'data_type' and one for 'area'. The 'phenomenon' element under 'data_type' is highlighted in yellow. On the right side of the editor, the XML code is displayed, showing the structure of the XML, including version, encoding, standalone, namespaces, and various data elements like 'std_code_source', 'std_code_src', and 'SEV ICE (FZRA)'.

The IWXXM output must refer to a WMO code of the SIGMET phenomenon published at <https://codes.wmo.int/49-2/SigWxPhenomena>.

IWXXM Output

```
<iwxxm:phenomenon>xlink:href="http://codes.wmo.int/49-2/SigWxPhenomena/ICE_(FZRA)"</iwxxm:phenomenon>
```

14.1 Canadian SIGMET phenomena

In Canada, a SIGMET can be issued for thunderstorms with the specific mention of tornado or possible tornado. A SIGMET can also be issued for low level wind shear. As such, Canada has filed State differences against ICAO Annex 3 for these specific SIGMET phenomena which have the following codes:

| | |
|-------------------|---|
| FRQ TSGR POSS +FC | Frequent thunderstorm with hail and possible tornado/waterspout |
| FRQ TSGR +FC | Frequent thunderstorm with hail and tornado/waterspout |
| SQL TSGR POSS +FC | Squall line, with hail and possible tornado/waterspout |
| SQL TSGR +FC | Squall line, with hail and tornado/waterspout |
| L LVL WS | Low-level wind shear |

The generation of IWXXM SIGMET for these specific Canadian phenomena will involve the use of an extension block as well as the URL to the Canadian Code Registry where these phenomena are defined (<https://dd.meteo.gc.ca/today/aviation/iwxxm/code-ca/>).

WMO IWXXM SIGMET schema

The screenshot displays the XML Schema Definition (XSD) for the SIGMETType. On the left, a tree view shows the structure of the complexType, including elements like issueTime, issuingAirTrafficServicesUn, originatingMeteorologicalWa, issuingAirTrafficServicesRe, sequenceNumber, validPeriod, cancelledReportSequenceNumb, cancelledReportValidPeriod, phenomenon, analysis, forecastPositionAnalysis, and extension. The 'extension' element is circled in red. On the right, the schema details for the 'extension' element are shown, including its base type 'iwxxm:ExtensionType', its cardinality (0), and its unbounded nature. The 'phenomenon' element is also detailed, showing its base type 'iwxxm:AeronauticalSignificantWeatherPhenomenonType' and its cardinality (1).

The element: phenomenon will need to be encoded as:

```
<iwxxm:phenomenon nilReason = "http://codes.wmo.int/common/nil/template"/>
```

The extension block (at the very end of the complexType: SIGMETType) will need to carry the following:

```
<iwxxm:extension>
  <iwxxm-ca:phenomenon xlink:href="https...URL of specific phenomenon from the Canadian Registry">
```

Example of encoding for Canadian phenomenon L LVL WS

15 SIGMET Phenomenon Observed or Forecast

In the TAC SIGMET bulletin, this element (4) is found on the third line. The generic form being:

| 1 | 2 | 3 | 4 | 5 |
|-------------------------------|-----------------|-------------------------------|-----------------------------|---|
| Location indicator of the FIR | Name of the FIR | Description of the phenomenon | Observed or forecast | Location |
| <CCCC> | <name> FIR | <Phenomenon> | OBS [AT <GGggZ>]
FCST | Geographical location of the phenomenon |

| 6 | 7 | 8 | 9 |
|---|-------------------------------------|-----------------------|--------|
| Level | Movement or expected movement | Change in intensity | Remark |
| FL<nnn/nnn>
SFC/FL<nnn>
TOP FL<nnn> | MOV <direction, speed>KT
Or STNR | INTSFYG or WKNG or NC | RMK |

15.1 When element (4) is FCST:

Ex:

WSNT21 CWAQ 171725

CZQX SIGMET J4 VALID 171725/172125 CWUL-

CZQX GANDER OCEANIC FIR/CTA SEV ICE (FZRA) **FCST** WI 180NM WID LINE BTN /N6030 W06130/ -
/N5800 W05730/ SFC/FL040 MOV ENE 15KT WKN

RMK GFACN34 GFACN36/CZUL MONTREAL FIR SIGMET D2 CZQX GANDER DOMESTIC FIR SIGMET P5=

Input from SIGMET source

The image shows an XML editor interface. On the left is a tree view of an XML document. The root is 'xml', which contains an 'om:ObservationCollection'. This collection has several namespaces: 'xmlns:om', 'xmlns:gml', 'xmlns:xlink', and 'xmlns:xsi'. It also contains an 'om:member' element, which is an 'om:Observation'. This observation has several sub-elements: 'om:metadata', 'om:samplingTime', 'om:resultTime', 'om:procedure', 'om:observedProperty', 'om:featureOfInterest', and 'om:result'. The 'om:result' element contains an 'orig-header' (with a text child '#text'), an 'orig-msg' (with a text child '#text'), and an 'elements' element. The 'elements' element contains an 'element : data_type' with attributes: 'code-src', 'code-type', 'group', 'name', 'uom', and 'value'. On the right side of the editor, the XML code is displayed. It starts with 'version="1.0" encoding="UTF-8" standalone="no"', followed by namespace declarations for 'http://www.opengis.net/om/1.0', 'http://dms.ec.gc.ca/schema/point-observation/2...', 'http://www.opengis.net/gml', 'http://www.w3.org/1999/xlink', and 'http://www.w3.org/2001/XMLSchema-instance'. The main content includes 'WSNT21 CWA0 171725' and 'WSNT21 CWA0 171725...' followed by a list of attributes: 'std_code_source', 'data_type', 'classification', 'data_type', 'code', and 'forecast' (highlighted in yellow).

IWXXM Output

```
<iwxxm:SIGMETEvolvingConditionCollection gml:id="uuid.2ed2e4f5-82f0-4354-9f21-245913fe9372" timeIndicator="FORECAST" >
```

15.2 When element (4) is OBS

OBS is optionally followed by the time group in the form of AT <GGggZ>, where GGgg is the time of the observation in hours and minutes UTC.

Ex:

WSCN25 CWA0 191304

CZUL SIGMET A1 VALID 191300/191700 CWUL-

CZUL MONTREAL FIR SEV ICE **OBS AT 1300Z** WI 40NM WID LINE BTN /N4825 W07708/30 NE CYVO -
/N5043 W07308/75 W CRB4 SFC/FL020 MOV E 15KT WKN

RMK GFACN33=

Input from SIGMET source

| | |
|--|--|
| | <pre> version="1.0" encoding="UTF-8" standalone="no" http://www.opengis.net/om/1.0 http://dms.ec.gc.ca/schema/point-observation/2.0 http://www.opengis.net/gml http://www.w3.org/1999/xlink http://www.w3.org/2001/XMLSchema-instance WSCN25 CWA0 191304 WSCN25 CWA0 191304... std_code_source data_type classification data_type code observation time valid_time datetime 2025-03-19T13:00:00.000Z </pre> |
|--|--|

IWXXM Output

```

<iwxxm:SIGMETEvolvingConditionCollection gml:id="uuid.ffffdf197-f417-4705-8892-55a4a16c8bdf"
  timeIndicator="OBSERVATION" >
  <iwxxm:phenomenonTime>
    <gml:TimeInstant gml:id="uuid.c2aced74-d550-4673-9080-37eab7fddf3b" >
      <gml:timePosition>2025-03-19T13:00:00.000Z</gml:timePosition>
    </gml:TimeInstant>
  </iwxxm:phenomenonTime>
</iwxxm:SIGMETEvolvingConditionCollection>
        
```

16 SIGMET Location

The location of the SIGMET phenomenon is depicted as an area using coordinate points:

- The description always begins with the abbreviation WI (within)
- the area can be described as a circle, a line or a polygon
- the coordinate point are latitude and longitude in degrees and minutes
- in most cases, every coordinate point is associated with an equivalent location with respect to an aviation reference point (ex: airport) using distances in nautical miles and direction to the eight points of compass

16.1 Line corridor

Ex:

WSCN25 CWA0 191304

CZUL SIGMET A1 VALID 191300/191700 CWUL-

CZUL MONTREAL FIR SEV ICE OBS AT 1300Z **WI 40NM WID LINE BTN /N4825 W07708/30 NE CYVO -**
/N5043 W07308/75 W CRB4 SFC/FL020 MOV E 15KT WKN

RMK GFACN33=

Input from SIGMET source

```
<element code-src="std_code_src" code-type="area_type" group="geospatial" name="area" uom="code" value="line_corridor" >
  <qualifier group="index" name="polygon_index" uom="unitless" value="1" />
  <qualifier code-src="std_code_src" code-type="polygon_method" group="polygon" name="polygon_method" uom="code" value="coordinates_width" />
  <element code-src="std_code_src" code-type="polygon_node" group="polygon" name="polygon_node" uom="code" value="coordinate" >
    <qualifier group="index" name="coordinate_index" uom="unitless" value="1" />
    <element group="geospatial" name="node_latitude" uom="°" value="48.416666666666664" />
    <element group="geospatial" name="node_longitude" uom="°" value="-77.133333333333334" />
    <element group="geospatial" name="distance_from_aviation_reference_site" uom="n.mi" value="30" />
    <element group="geospatial" name="direction_from_aviation_reference_site" uom="unitless" value="NE" />
    <element group="geospatial" name="aviation_reference_site" uom="unitless" value="CYVO" />
  </element>
  <element code-src="std_code_src" code-type="polygon_node" group="polygon" name="polygon_node" uom="code" value="coordinate" >
    <qualifier group="index" name="coordinate_index" uom="unitless" value="2" />
    <element group="geospatial" name="node_latitude" uom="°" value="50.716666666666667" />
    <element group="geospatial" name="node_longitude" uom="°" value="-73.133333333333334" />
    <element group="geospatial" name="distance_from_aviation_reference_site" uom="n.mi" value="75" />
    <element group="geospatial" name="direction_from_aviation_reference_site" uom="unitless" value="W" />
    <element group="geospatial" name="aviation_reference_site" uom="unitless" value="CRB4" />
  </element>
  <element code-src="std_code_src" code-type="polygon_node" group="polygon" name="polygon_node" uom="code" value="line_buffer" >
    <element group="geospatial" name="line_buffer" uom="n.mi" value="40" />
  </element>
</element>
```

The DMS decoded XML converts the coordinate points from degrees-minutes to degrees-decimals.

The polygon represented as a line corridor (two coordinate points and a width in the example above) is then converted to a “true” polygon with all vertices described as coordinate points.

IWXXM Output

```
<aixm:horizontalProjection>
  <aixm:Surface gml:id="uuid.170ba923-eac7-4069-adaf-7b53ec3e0cac" srsDimension="2
    axisLabels="Lat Long" srsName="http://www.opengis.net/def/crs/EPSSG/0/4326" >
    <gml:polygonPatches>
      <gml:PolygonPatch>
        <gml:exterior>
          <gml:LinearRing>
            <gml:posList>-73.47190203041046,50.971542322674026 -
              72.79841051336354,50.460847713003254 -
              76.79380612895359,48.17241226637291 -
              77.4761248340822,48.65985414440957 -
              73.47190203041046,50.971542322674026</gml:posList>
            </gml:LinearRing>
          </gml:exterior>
        </gml:PolygonPatch>
      </gml:polygonPatches>
    </aixm:Surface>
  </aixm:horizontalProjection>
```

16.2 Circle

Ex:

WSCN25 CWA0 191524 CZUL

SIGMET B1 VALID 191520/191920 CWUL-

CZUL MONTREAL FIR L LVL WS FCST **WI 25NM OF /N4545 W07343/15 N CYUL** SFC/FL010 STNR NC

RMK GFACN33=

Input from SIGMET source

```
<element code-src="std_code_src" code-type="area_type" group="geospatial" name="area" uom="code"
  value="circle" >
  <qualifier group="index" name="polygon_index" uom="unitless" value="1" />
  <qualifier code-src="std_code_src" code-type="polygon_method" group="polygon" name="polygon_method"
    uom="code" value="coordinate_radius" />
  <element code-src="std_code_src" code-type="polygon_node" group="polygon" name="polygon_node" uom="code"
    value="coordinate" >
    <qualifier group="index" name="coordinate_index" uom="unitless" value="1" />
    <element group="geospatial" name="node_latitude" uom="°" value="45.75" />
    <element group="geospatial" name="node_longitude" uom="°" value="-73.71666666666666" />
    <element group="geospatial" name="distance_from_aviation_reference_site" uom="n.mi" value="15" />
    <element group="geospatial" name="direction_from_aviation_reference_site" uom="unitless" value="0" />
    <element group="geospatial" name="aviation_reference_site" uom="unitless" value="CYUL" />
  </element>
  <element code-src="std_code_src" code-type="polygon_node" group="polygon" name="polygon_node" uom="code"
    value="radius" >
    <element group="geospatial" name="radius" uom="n.mi" value="25" />
```

IWXXM Output

```
<aixm:horizontalProjection>
  <aixm:Surface gml:id="uuid.7f31606a-c330-4c24-83a2-a254522c0266"
    srsDimension="2" axisLabels="Lat Long"
    srsName="http://www.opengis.net/def/crs/EPSSG/0/4326" >
    <gml:polygonPatches>
      <gml:PolygonPatch>
        <gml:exterior>
          <gml:Ring>
            <gml:curveMember>
              <gml:Curve gml:id="uuid.79439a96-c444-455b-9eb1-
                80660d5304f7" >
                <gml:segments>
                  <gml:CircleByCenterPoint numArc="1" >
                    <gml:posList>45.75 -
                      73.716666666666667</gml:posList>
                    <gml:radius uom="[nmi_i]" >25</gml:radius>
                  </gml:CircleByCenterPoint>
                </gml:segments>
              </gml:Curve>
            </gml:curveMember>
          </gml:Ring>
        </gml:exterior>
      </gml:PolygonPatch>
    </gml:polygonPatches>
  </aixm:Surface>
</aixm:horizontalProjection>
```

16.3 Polygon

Ex:

WSCN25 CWA0 191731

CZUL SIGMET C2 VALID 191730/192130 CWUL-

CZUL MONTREAL FIR SEV TURB FCST **WI** /**N4843 W07655/60 NE CYVO** - /**N5156 W07620/15 NW CYHH**
- /**N5231 W07022/120 N CRB4** - /**N4843 W07655/60 NE CYVO** FL240/300 MOV NE 15KT WKN

RMK GFACN34 GFACN33=

Input from SIGMET source

```

<element code-src="std_code_src" code-type="area_type" group="geospatial" name="area" uom="code"
value="closed polygon">
  <qualifier group="index" name="polygon_index" uom="unitless" value="1" />
  <qualifier code-src="std_code_src" code-type="polygon_method" group="polygon" name="polygon_method"
uom="code" value="coordinates" />
  <element code-src="std_code_src" code-type="polygon_node" group="polygon" name="polygon_node" uom="code"
value="coordinate">
    <qualifier group="index" name="coordinate_index" uom="unitless" value="1" />
    <element group="geospatial" name="node_latitude" uom="°" value="48.7166666666667" />
    <element group="geospatial" name="node_longitude" uom="°" value="-76.9166666666667" />
    <element group="geospatial" name="distance_from_aviation_reference_site" uom="n.mi" value="60" />
    <element group="geospatial" name="direction_from_aviation_reference_site" uom="unitless" value="NE" />
    <element group="geospatial" name="aviation_reference_site" uom="unitless" value="CYVO" />
  </element>
  <element code-src="std_code_src" code-type="polygon_node" group="polygon" name="polygon_node" uom="code"
value="coordinate">
    <qualifier group="index" name="coordinate_index" uom="unitless" value="2" />
    <element group="geospatial" name="node_latitude" uom="°" value="51.9333333333333" />
    <element group="geospatial" name="node_longitude" uom="°" value="-76.3333333333333" />
    <element group="geospatial" name="distance_from_aviation_reference_site" uom="n.mi" value="45" />
    <element group="geospatial" name="direction_from_aviation_reference_site" uom="unitless" value="NW" />
    <element group="geospatial" name="aviation_reference_site" uom="unitless" value="CRH" />
  </element>
  <element code-src="std_code_src" code-type="polygon_node" group="polygon" name="polygon_node" uom="code"
value="coordinate">
    <qualifier group="index" name="coordinate_index" uom="unitless" value="3" />
    <element group="geospatial" name="node_latitude" uom="°" value="52.5166666666667" />
    <element group="geospatial" name="node_longitude" uom="°" value="-70.3666666666667" />
    <element group="geospatial" name="distance_from_aviation_reference_site" uom="n.mi" value="120" />
    <element group="geospatial" name="direction_from_aviation_reference_site" uom="unitless" value="W" />
    <element group="geospatial" name="aviation_reference_site" uom="unitless" value="CRB4" />
  </element>
  <element code-src="std_code_src" code-type="polygon_node" group="polygon" name="polygon_node" uom="code"
value="coordinate">
    <qualifier group="index" name="coordinate_index" uom="unitless" value="4" />
    <element group="geospatial" name="node_latitude" uom="°" value="48.7166666666667" />
    <element group="geospatial" name="node_longitude" uom="°" value="-76.9166666666667" />
    <element group="geospatial" name="distance_from_aviation_reference_site" uom="n.mi" value="60" />
    <element group="geospatial" name="direction_from_aviation_reference_site" uom="unitless" value="NE" />
    <element group="geospatial" name="aviation_reference_site" uom="unitless" value="CYVO" />
  </element>
</element>

```

The last block of coordinates is simply a repeat of the first coordinates to “close” the polygon.

IWXXM Output

```

<aixm:horizontalProjection>
  <aixm:Surface gml:id="uuid.d07b7779-9174-47d4-81d1-bf5fdd495be5" srsDimension="2"
axisLabels="Lat Long" srsName="http://www.opengis.net/def/crs/EPSSG/0/4326" >
  <gml:polygonPatches>
    <gml:PolygonPatch>
      <gml:exterior>
        <gml:LinearRing>
          <gml:posList>48.7166666666667 -76.9166666666667 51.9333333333333 -
76.3333333333333 52.5166666666667 -70.3666666666667 48.7166666666667
76.9166666666667</gml:posList>
        </gml:LinearRing>
      </gml:exterior>
    </gml:PolygonPatch>
  </gml:polygonPatches>
</aixm:Surface>
</aixm:horizontalProjection>

```

16.4 Equivalent location with respect to an aviation reference point

As seen in this section, every coordinate point is associated with an equivalent location with respect to an aviation reference point (ex: airport) using distances in nautical miles and direction to the eight points of compass. These elements are not directly supported by the WMO IWXXM SIGMET schema. However, the schema offers an extension block (at the very end of the complexType: SIGMETType) which will carry the following:

WMO IWXXM SIGMET schema



This extension block should look like this:

```

<iwxxm:extension>
  <iwxxm-ca:humanReadableText> text-text-text-text </iwxxm-ca:humanReadableText>
</iwxxm:extension>
  
```

Applied to the Line-corridor example, the extension block would look like this:

```

WSCN25 CWA0 191304
CZUL SIGMET A1 VALID 191300/191700 CWUL-
CZUL MONTREAL FIR SEV ICE OBS AT 1300Z WI 40NM WID LINE BTN /N4825 W07708/30 NE CYVO -
/N5043 W07308/75 W CRB4 SFC/FLO20 MOV E 15KT WKN
RMK GFACN33=
  
```

```

<iwxxm:extension>
  <iwxxm-ca:humanReadableText> WI 40NM WID LINE BTN 30 NE CYVO – 75 W CRB4 </iwxxm-
ca:humanReadableText>
</iwxxm:extension>
  
```

Applied to the Circle example, the extension block would look like this:

WSCN25 CWAO 191524 CZUL
 SIGMET B1 VALID 191520/191920 CWUL-
 CZUL MONTREAL FIR L LVL WS FCST **WI 25NM OF /N4545 W07343/15 N CYUL** SFC/FL010 STNR NC
 RMK GFACN33=

<iwxxm:extension>

<iwxxm-ca:humanReadableText> WI 25NM OF 15 N CYUL </iwxxm-ca:humanReadableText>
</iwxxm:extension>

Applied to the Polygon example, the extension block would look like this:

WSCN25 CWAO 191731
 CZUL SIGMET C2 VALID 191730/192130 CWUL-
 CZUL MONTREAL FIR SEV TURB FCST **WI /N4843 W07655/60 NE CYVO - /N5156 W07620/15 NW CYHH**
- /N5231 W07022/120 N CRB4 - /N4843 W07655/60 NE CYVO FL240/300 MOV NE 15KT WKN
 RMK GFACN34 GFACN33=

<iwxxm:extension>

<iwxxm-ca:humanReadableText> WI 60 NE CYVO - 15 NW CYHH - 120 N CRB4 - 60 NE CYVO
</iwxxm-ca:humanReadableText>
</iwxxm:extension>

17 SIGMET Level

In the TAC SIGMET bulletin, this is elements #6. The generic form being:

| 1 | 2 | 3 | 4 | 5 |
|-------------------------------|-----------------|-------------------------------|--------------------------|---|
| Location indicator of the FIR | Name of the FIR | Description of the phenomenon | Observed or forecast | Location |
| <CCCC> | <name> FIR | <Phenomenon> | OBS [AT <GGggZ>]
FCST | Geographical location of the phenomenon |

| 6 | 7 | 8 | 9 |
|---|----------------------------------|-----------------------|--------|
| Level | Movement or expected movement | Change in intensity | Remark |
| FL<nnn/nnn>
SFC/FL<nnn>
TOP FL<nnn> | MOV <direction, speed>KT
STNR | INTSFYG or WKNG or NC | RMK |

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

- A layer FL<nnn/nnn>, where the lower level is reported first; this is used particularly in reporting turbulence and icing
- A layer with reference to one FL using SFC/FL
- The level of the tops of the TS clouds using the abbreviation TOP

The IWXXM output provides the “level” value and unit of measurement (UOM) but also the applicable reference which are STD (for standard) when using FL and GND (for ground) when using SFC.

Ex:

WSCN25 CWA0 191731

CZUL SIGMET C2 VALID 191730/192130 CWUL-

CZUL MONTREAL FIR SEV TURB FCST WI /N4843 W07655/60 NE CYVO - /N5156 W07620/15 NW CYHH - /N5231 W07022/120 N CRB4 - /N4843 W07655/60 NE CYVO **FL240/300** MOV NE 15KT WKN

RMK GFACN34 GFACN33=

Input from SIGMET source

```
<element code-src="airmet_sigmet" code-type="vertical_extent" group="geospatial
  name="vertical_extent_bottom" uom="code" value="FL240" />
<element code-src="airmet_sigmet" code-type="vertical_extent" group="geospatial
  name="vertical extent top" uom="code" value="FL300" />
```

IWXXM Output

```
<iwxxm:geometry>
  <iwxxm:AirspaceVolume gml:id="uuid.a6554514-210a-44c6-b6a0-e2824047a865" >
    <aixm:upperLimit uom="FL" >300</aixm:upperLimit>
    <aixm:upperLimitReference>STD</aixm:upperLimitReference>
    <aixm:lowerLimit uom="FL" >240</aixm:lowerLimit>
    <aixm:lowerLimitReference>STD</aixm:lowerLimitReference>
```

Ex:

WSCN24 CWA0 191845

CZYZ SIGMET D1 VALID 191845/192245 CWUL-

CZYZ TORONTO FIR FRQ TSGR OBS WI 40NM WID LINE BTN /N4258 W08007/15 SW CYHM - /N4423 W08035/30 SE CYVV - /N4546 W08154/30 E CYZE **TOP FL320** MOV SE 15KT WKN

RMK GFACN33=

Input from SIGMET source

```
<element code-src="airmet_sigmet" code-type="vertical_extent"
  group="geospatial" name="vertical extent top" uom="code" value="FL320" />
```

IWXXM Output

```
<iwxxm:geometry>
  <iwxxm:AirspaceVolume gml:id="uuid.c4e597a5-950e-4977-992a-d0c9c06c42f5" >
    <aixm:upperLimit uom="FL" >320</aixm:upperLimit>
    <aixm:upperLimitReference>STD</aixm:upperLimitReference>
```

Ex:

WSCN25 CWA0 191859
 CZUL SIGMET E1 VALID 191855/192255 CWUL-
 CZUL MONTREAL FIR SEV ICE (FZRA) OBS WI 40NM WID LINE BTN /N4537 W07410/20 NW CYUL -
 /N4614 W07308/20 W CYRQ - /N4612 W07124/30 S CYQB **SFC/FL015** STNR NC
 RMK GFACN33=

Input from SIGMET source

```
<element code-src="airmet_sigmet" code-type="vertical_extent"
  group="geospatial" name="vertical_extent_bottom" uom="code" value="SFC" />
<element code-src="airmet_sigmet" code-type="vertical_extent"
  group="geospatial" name="vertical_extent_top" uom="code" value="FL015" />
```

IWXXM Output

```
<iwxxm:geometry>
  <iwxxm:AirspaceVolume gml:id="uuid.2805cd48-3917-46cb-b90d-6ba7b07b4a7b" >
    <aixm:upperLimit uom="FL" >015</aixm:upperLimit>
    <aixm:upperLimitReference>STD</aixm:upperLimitReference>
```

18 SIGMET movement or expected movement

In the TAC SIGMET bulletin, this is elements #7. The generic form being:

| 1 | 2 | 3 | 4 | 5 |
|-------------------------------|-----------------|-------------------------------|--------------------------|---|
| Location indicator of the FIR | Name of the FIR | Description of the phenomenon | Observed or forecast | Location |
| <CCCC> | <name> FIR | <Phenomenon> | OBS [AT <GGggZ>]
FCST | Geographical location of the phenomenon |

| 6 | 7 | 8 | 9 |
|---|--------------------------------------|-----------------------|--------|
| Level | Movement or expected movement | Change in intensity | Remark |
| FL<nnn/nnn>
SFC/FL<nnn>
TOP FL<nnn> | MOV <direction, speed>KT
Or STNR | INTSFYG or WKNG or NC | RMK |

Direction of movement is given with reference to one of the sixteen points of compass.
 Speed is given in knots (KT).

Input from SIGMET source

```
<element group="geospatial" name="movement_direction" uom="unitless" value="NE" />
<element group="geospatial" name="movement_speed" uom="kn" value="15" />
```

IWXXM Output

```
</iwxxm:geometry>
<iwxxm:directionOfMotion uom="deg" >45</iwxxm:directionOfMotion>
<iwxxm:speedOfMotion uom="[kn_i]" >15</iwxxm:speedOfMotion>
```

The abbreviation STNR is used if no significant movement is expected.

Input from SIGMET source

```
<element group="geospatial" name="movement_speed" uom="unitless" value="STNR" />
```

IWXXM Output

```
</iwxxm:geometry>
<iwxxm:directionOfMotion nilReason="http://www.opengis.net/def/nil/OGC/0/inapplicable" />
<iwxxm:speedOfMotion uom="[kn_i]" >0</iwxxm:speedOfMotion>
```

19 SIGMET Change in intensity

In the TAC SIGMET bulletin, this is elements #8. The generic form being:

| 1 | 2 | 3 | 4 | 5 |
|-------------------------------|-----------------|-------------------------------|--------------------------|---|
| Location indicator of the FIR | Name of the FIR | Description of the phenomenon | Observed or forecast | Location |
| <CCCC> | <name> FIR | <Phenomenon> | OBS [AT <GGggZ>]
FCST | Geographical location of the phenomenon |

| 6 | 7 | 8 | 9 |
|---|-------------------------------------|----------------------------|--------|
| Level | Movement or expected movement | Change in intensity | Remark |
| FL<nnn/nnn>
SFC/FL<nnn>
TOP FL<nnn> | MOV <direction, speed>KT
Or STNR | INTSFYG or WKNG or NC | RMK |

Applied to the following example:

WSCN23 CWA0 201510

CZWG SIGMET H1 VALID 201510/201910 CWEG-

CZWG WINNIPEG FIR SEV TURB FCST WI 90NM WID LINE BTN /N5131 W08849/45 SW CYLH - /N5316 W08131/45 NE CYAT - /N5214 W07157/90 N CRB4 - /N5304 W06556/30 E CYWK FL290/360 MOV NE 25KT NC

RMK GFACN34 GFACN33/CZUL MONTREAL FIR SIGMET F1 CZZY TORONTO FIR SIGMET G1=

The extension block would look like this:

<iwxxm:extension>

<iwxxm-ca:humanReadableText> GFACN34 GFACN33/CZUL MONTREAL FIR SIGMET F1 CZZY TORONTO FIR SIGMET G1 </iwxxm-ca:humanReadableText>

</iwxxm:extension>

21 Bulletin Identifier

The IWXXM SIGMET file should close with a line that specifies the IWXXM bulletin identifier.

Example of the bulletin identifier for an IWXXM TAF file

| | |
|--|--|
| <ul style="list-style-type: none">gml:idxsi:schemaLocationxmlns:iwxxmxmlns:gssxmlns:gsrxmlns:gtsxmlns:gmlxmlns:opmxmlns:xsixmlns:aixmxmlns:metcexmlns:gcoxmlns:collectxmlns:omxmlns:gmdxmlns:xlinkmeteorologicalInformation<ul style="list-style-type: none">iwxxm:TAFbulletinIdentifier<ul style="list-style-type: none">#text | <pre>uuid.5934829b-e93f-4ea3-9d06-08630d239158 http://def.wmo.int/collect/2014 http://schemas.wmo.int/collect http://icao.int/iwxxm/3.0 http://www.isotc211.org/2005/gss http://www.isotc211.org/2005/gsr http://www.isotc211.org/2005/gts http://www.opengis.net/gml/3.2 http://def.wmo.int/opm/2013 http://www.w3.org/2001/XMLSchema-instance http://www.aixm.aero/schema/5.1.1 http://def.wmo.int/metce/2013 http://www.isotc211.org/2005/gco http://def.wmo.int/collect/2014 http://www.opengis.net/om/2.0 http://www.isotc211.org/2005/gmd http://www.w3.org/1999/xlink A_LTCN21CWA0201200AAA_C_CWA0_20250320120000.xml</pre> |
|--|--|

22 Special Cases

22.1 RDOACT CLD SIGMET

In RDOACT CLD SIGMET, the elements FL, MOV and INTST can be set to “unknown”. Below is an example with all of these elements having the value “unknown”.

Ex:

WSCN25 CWA0 022151

CZUL SIGMET F2 VALID 022150/030150 CWEG-

CZUL MONTREAL FIR RDOACT CLD FCST WI 60NM OF /N4547 W07253/30 S CYRQ **FL UNKNOWN**

MOV UNKNOWN INTST UNKNOWN

RMK GFACN33=

In this situation, the IWXXM encoding will be using the code for “unknown”

<http://codes.wmo.int/common/nil/unknown> for FL.

The element **MOV** is composed of two distinct elements in IWXXM : *directionOfMotion* and *speedOfMotion* with the former encoded as <http://codes.wmo.int/common/nil/unknown> and the latter simply given the value of zero (0).

INTST will be omitted since it can only take the values “NO_CHANGE”, “WEAKEN”, and “INTENSIFY”.

IWXXM Output

| | |
|---|--|
|  | <pre>uuid.477e69c2-7378-400a-92ec-186b7a3651c9 http://codes.wmo.int/common/nil/unknown true STD http://codes.wmo.int/common/nil/unknown true STD deg http://codes.wmo.int/common/nil/unknown true [kn_i] 0</pre> |
|---|--|

22.2 VA SIGMET

In a VA SIGMET, the elements MT, PSN, FL and MOV can be set to “unknown”. Below is an example with all of these elements having the value “unknown”.

WVCN23 CWA0 201735

CZWG SIGMET I1 VALID 201735/202335 CWEG-

CZWG WINNIPEG FIR VA ERUPTION **MT UNKNOWN PSN UNKNOWN** VA CLD OBS WI /N5453

W10746/60 NE CYLJ - /N5320 W11555/45 S CYZU - /N5506 W11122/30 NE CYLB - /N5846 W10332/45

N CZWL - /N5553 W10408/45 SW CKA9 - /N5453 W10746/60 NE CYLJ **FL UNKNOWN MOV UNKNOWN**

RMK GFACN32/CZEG EDMONTON FIR SIGMET B1=

For the element **MT**, only a string is permissible so the word “unknown” will be used.

For the element **PSN** and **FL**, encoding will be done using the code for “unknown”

<http://codes.wmo.int/common/nil/unknown>

The element **MOV** is composed of two distinct elements in IWXXM : *directionOfMotion* and *speedOfMotion* with the former encoded as <http://codes.wmo.int/common/nil/unknown> and the latter simply given the value of zero (0).

IWXXM Output

| | |
|---|---|
| <pre> iwxxm:member ├── iwxxm:SIGMETEvolvingCondition │ ├── gml:id │ └── iwxxm:geometry │ ├── aixm:AirspaceVolume │ │ ├── gml:id │ │ ├── aixm:upperLimit │ │ │ ├── nilReason │ │ │ └── xsi:nil │ │ ├── aixm:upperLimitReference │ │ ├── aixm:lowerLimit │ │ │ ├── nilReason │ │ │ └── xsi:nil │ │ ├── aixm:lowerLimitReference │ │ └── aixm:horizontalProjection │ │ ├── aixm:Surface │ │ │ ├── gml:id │ │ │ ├── srsDimension │ │ │ ├── axisLabels │ │ │ └── srsName │ │ └── gml:polygonPatches │ │ └── gml:PolygonPatch │ │ ├── gml:exterior │ │ └── gml:LinearRing │ │ └── gml:posList │ ├── iwxxm:directionOfMotion │ │ ├── uom │ │ ├── nilReason │ │ └── xsi:nil │ └── iwxxm:speedOfMotion │ ├── uom │ └── #text ├── iwxxm:extension │ └── iwxxm-ca:humanReadableText ├── iwxxm:extension │ └── iwxxm-ca:humanReadableText └── iwxxm:eruptingVolcano ├── metce:Volcano │ ├── gml:id │ ├── metce:name │ └── metce:position │ └── nilReason </pre> | <pre> uuid.6a757e07-fb41-4fbb-9d50-f6392399f203 uuid.92451400-2d6b-4114-a3df-37d2215faa3b http://codes.wmo.int/common/nil/unknown true STD http://codes.wmo.int/common/nil/unknown true STD uuid.69553291-54f9-4171-bf5a-aedd82a954e9 2 Lat Long http://www.opengis.net/def/crs/EPSG/0/4326 46.85 -74.81666666666666 49.36666666666667 -71.683 deg http://codes.wmo.int/common/nil/unknown true [kn_i] 0 WI 60 NE CYMW - 60 NE CYRJ - 45 NE CYBG - 10 N CYQ GFACN34 GFACN33 uuid.f9cc1cf4-be1b-4b50-a697-fec227af11d1 MT UNKNOWN http://codes.wmo.int/common/nil/unknown </pre> |
|---|---|