



# SADIS API - USER GUIDE

First Edition — February 2024

*Prepared by the ICAO Meteorological Panel Meteorological Operations Working Group  
(WG MOG)*

**INTERNATIONAL CIVIL AVIATION ORGANIZATION**

The designations and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of ICAO concerning the legal status of any country, territory, city or area of its authorities, or concerning the delimitation of its frontiers or boundaries



## RECORD OF AMENDMENTS AND CORRIGENDA

| AMENDMENTS |            |  |
|------------|------------|--|
| No.        | Date       | Pages affected   |
| 1          | 09/02/24   | Original issue   |
| 2          | 20/02/24   | Table 5 collection names adjusted to be all in lower case  |
| 3          | 13/03/24   | Further adjustments to make sure all gridded collection names are in lower case. CB filename in Appendix B corrected.  |
| 4          | 14/03/24   | CB, max wind and trop filenames in Appendix B corrected.   |
| 5          | 13/05/24   | 4.1.8 – incorrectly referenced table rectified.<br>4.16 – adjusted to say updates to data types in a collection are not instantaneous.<br>4.4.2 – IP addresses added which will appear in redirect URL   |
| 6          | 21/11/2025 | References to Annex 3 updated throughout the document to align with Annex 3 Amendment 82 and the first edition of the new PANS-MET<br>2.3 – Updating of SIGWX section generally<br>3.2.6 – new paragraph to explain that only one token per API can be used per subscription at any one time.<br>3.2.7 – addition of information on the URLs used for token management<br>Chapter 5 – updated generally to reflect final SIGWX provision on the API.<br>5.4.4 – clarification of tropical cyclone and volcano handling within the IWXXM files.<br>6.4.2 – IP added that will appear in OPMET redirect URL<br>6.4.5 – updated/expanded explanation of OPMET naming convention<br>Chapter 7 – an example of a fully visualized SIGWX forecast has been added |
| 7          | 13/02/2026 | 4.4.2 – change to payload URL<br>4.4.4 – updated file sizes (sizes reduced after system update)  |
|            |            |  |
|            |            |  |



# TABLE OF CONTENTS

|  |           |
|--|-----------|
| Glossary .....   | iii       |
| Reference documents .....  | v         |
| <b>Chapter 1. INTRODUCTION TO THE SADIS API.....</b>                                 | <b>6</b>  |
| 1.1. Background.....   | 6         |
| 1.2. Management of SADIS .....   | 6         |
| 1.3. Access to SADIS.....  | 7         |
| 1.4. Permitted Use .....   | 8         |
| 1.5. SADIS API registration .....  | 8         |
| 1.6. SADIS cost allocation and recovery .....  | 9         |
| <b>Chapter 2. PRODUCTS AND DATA AVAILABLE ON SADIS .....</b>                         | <b>10</b> |
| 2.1. Introduction .....  | 10        |
| 2.2. WAFS Gridded Data .....   | 10        |
| 2.3. WAFS Significant Weather (SIGWX) forecasts ** Operational from Nov 2024** ..... | 12        |
| 2.4. OPMET data .....  | 13        |
| <b>Chapter 3. API SPECIFICATION .....</b>  | <b>15</b> |
| 3.1. API Conformance.....  | 15        |
| 3.2. Access and Authentication .....   | 15        |
| <b>Chapter 4. Using the WAFS gridded element of the SADIS API.....</b>               | <b>16</b> |
| 4.1. General Information .....   | 16        |
| 4.2. Requesting Data .....   | 20        |
| 4.3. Restrictions .....  | 21        |
| 4.4. Data Payloads.....  | 22        |
| <b>Chapter 5. Using the SIGWX element of the SADIS API.....</b>                      | <b>24</b> |
| 5.1. General Information .....   | 24        |
| 5.2. Requesting Data .....   | 25        |
| 5.3. Restrictions .....  | 25        |
| 5.4. Data Payloads.....  | 25        |
| <b>Chapter 6. Using the OPMET element of the SADIS API.....</b>                      | <b>29</b> |
| 6.1. General Information .....   | 29        |
| 6.2. Requesting Data .....   | 30        |
| 6.3. Restrictions .....  | 31        |
| 6.4. Data payloads .....   | 31        |
| <b>Chapter 7. Visualising WAFS data sets .....</b>                                   | <b>34</b> |
| 7.1. Introduction .....  | 34        |
| 7.2. Data visualisation systems .....  | 34        |
| 7.3. Gridded Data.....   | 35        |
| 7.4. WAFS SIGWX forecasts .....  | 42        |

---

|  |           |
|--|-----------|
| <b>Chapter 8. Support</b> .....  | <b>47</b> |
| 8.1. Support .....   | 47        |
| 8.2. Backup .....  | 47        |
| 8.3. Differences between SADIS API and WIFS API .....                  | 48        |
| <b>Appendix A - Gridded data specification</b> .....                   | <b>A</b>  |
| <b>Appendix B – OPMET Data sets</b> .....                              | <b>B</b>  |
| <b>Appendix C – permissible “id” codes for gridded data sets</b> ..... | <b>C</b>  |

# Glossary

## ABBREVIATIONS AND TERMS

|                      |  |
|----------------------|--|
| AFS                  | Aeronautical fixed service   |
| AFTN                 | Aeronautical fixed telecommunication network   |
| AIREP                | Air-report   |
| API                  | Application Programming Interface  |
| CB                   | Cumulonimbus cloud   |
| FL                   | Flight level   |
| FTP                  | File transfer protocol   |
| GAMET                | Area forecast for low-level flights  |
| GRIB2                | Gridded binary code (WMO) — Edition 2  |
| IWXXM                | ICAO Meteorological Information Exchange Model   |
| METAR                | Aerodrome routine meteorological report  |
| METP                 | Meteorological Panel (ICAO)  |
| OPMET                | Operational meteorological (information). For the purposes of the SADIS API the term OPMET is the collective term used to describe METAR, TAF, SIGMET, AIRMET, Volcanic Ash Advisories, Tropical Cyclone Advisories, Space Weather Advisories, ASHATAM and VA NOTAMS, and notices. |
| PNG                  | Portable network graphics  |
| SADIS                | Secure Aviation Data Information Service (formerly, until 1 August 2016, Satellite Distribution System for Information Relating to Air Navigation)   |
| SADIS Provider       | United Kingdom Met Office  |
| SADIS Provider State | United Kingdom, represented by the Head of the Meteorological Authority, United Kingdom Civil Aviation Authority   |
| SCRAG                | SADIS Cost Recovery Administrative Group   |
| SIGMET               | Information concerning en-route weather phenomena which may affect the safety of aircraft operations   |
| SIGWX                | Significant weather forecasts  |
| SPECI                | Aerodrome special meteorological report  |
| TAC                  | Traditional Alphanumeric code format   |
| TAF                  | Aerodrome forecast   |
| TCAC                 | Tropical cyclone advisory centre   |
| UTC                  | Co-ordinated Universal Time  |
| VAAC                 | Volcanic ash advisory centre   |
| VONA                 | Volcano Observatory Notice to Aviation   |

|                     |  |
|---------------------|--|
| WAFC                | World Area Forecast Centre (London and Washington)   |
| WAFS                | World Area Forecast System   |
| WIFS                | WAFS internet file service, operated by the United States.   |
| WG-MOG              | Meteorological Operations Group (reporting to METP)  |
| WMO                 | World Meteorological Organization  |
| WIFS Provider       | United States National Weather Service Aviation Weather Center   |
| WIFS Provider State | United States, represented by the Head of the Meteorological Authority,<br>United States Federal Aviation Administration |
| ZIP                 | A file format used for file compression and decompression  |

## Reference documents

- ICAO Annex 3      *Meteorological Service for International Air Navigation*
- Doc 10157      *(PANS-MET) Procedures for Air Navigation Services – Meteorology*
- Doc 7910      *Location Indicators*
- Doc 9855      *Guidelines on the Use of the Public Internet for Aeronautical Applications*
- Doc 10003      *Manual on the ICAO Meteorological Information Exchange Model.*

### **Air Navigation Plans**

- Doc 7754      *Air Navigation Plan — European Region*
- Doc 7474      *Air Navigation Plan — Africa-Indian Ocean Region*
- Doc 8733      *Air Navigation Plan — Caribbean and South American Regions*
- Doc 8755      *Air Navigation Plan — North Atlantic, North American and Pacific Regions*
- Doc 9634      *Air Navigation Plan — North Atlantic Region*
- Doc 9673      *Air Navigation Plan — Asia and Pacific Regions*
- Doc 9708      *Air Navigation Plan — Middle East Region*

### **WMO**

- WMO-No 306      *Manual on Codes Volume I:2 International Codes. Part B (WMO code FM 92 - IX Ext).*  
<https://library.wmo.int/records/item/35625-manual-on-codes-volume-i-2-international-codes>
- WMO-No 306      *Manual on Codes Volume I:3 Representations derived from data models. Part D.*  
<https://library.wmo.int/records/item/35769-manual-on-codes-volume-i-3-international-codes>
-

# Chapter 1. INTRODUCTION TO THE SADIS API

## 1.1. Background

1.1.1. As part of its responsibilities as a World Area Forecast Centre (WAFc) London, the Met Office is required to provide a means by which aviation users can access the World Area Forecast System (WAFS) data sets. This is fulfilled by the Secure Aviation Data Information Service (SADIS).

1.1.2. The SADIS API is the third incarnation of SADIS, having originally started out as a satellite-based system and then an FTP system. The SADIS FTP system will continue to run alongside the SADIS API until 2028 and information on it is published in a separate user guide.

1.1.3. The WAFS data sets provided on SADIS are described in ICAO Annex 3 — *Meteorological Service for International Air Navigation*<sup>1</sup>, and the first edition of ICAO Doc 10157 - PANS-MET – *Procedures for Air Navigation Services – Meteorology*<sup>2</sup>. It is expected that the data sets available on via the SADIS API will evolve with time to respond to new requirements by the International Civil Aviation Organisation (ICAO), States and end users.

1.1.4. The purpose of this *SADIS API User Guide* is to give an overview of the available data and to provide information on using the SADIS API. It is intended to complement the information provided within the API specification itself and technical manuals which will accompany the individual software that is provided by third parties to interact with and visualise data which is downloaded.

1.1.5. This *SADIS API User Guide* is published on the ICAO METP website: <https://www.icao.int/airnavigation/METP/MOGWIFSSADIS%20Reference%20Documents/Forms/AllItems.aspx> and Met Office website <https://www.metoffice.gov.uk/services/transport/aviation/regulated/sadis/info/sadis-api>. Additional system information is available from the Met Office SADIS website at URL: <https://www.metoffice.gov.uk/services/transport/aviation/regulated/sadis/info/sadis-api>. It will be reviewed annually and updated when changes are made to the system or data provided.

## 1.2. Management of SADIS

1.2.1. As SADIS is a multi-regional service provided by one State to serve multiple ICAO States, it is necessary to enable the user States to have an influence over the content and schedule of SADIS; and the medium and long-term management of the service to ensure that their requirements and those of the end users are adequately met. The ICAO Meteorological Panel (METP) – through its Meteorological Operations working Group (WG-MOG) oversees the SADIS to ensure that the information provided meets their requirements. It will act on behalf of users to address complaints and any difficulties which have not been resolved through normal day to day operational oversight by the SADIS Provider. It also integrates new requirements for the system and identifies operational adjustments to the service.

1.2.2. Meetings of the WG-MOG are held annually in relation to SADIS and WAFS.

1.2.3. The United Kingdom, as the SADIS Provider State, has been invited by ICAO to implement the SADIS in accordance with ICAO specifications for the system. The SADIS Provider manages the day-to-day operational control and support of the SADIS system and ensures that the data required by all users is delivered in accordance with ICAO provisions.

---

<sup>1</sup> 'ICAO Annex 3' hereafter

<sup>2</sup> 'PANS-MET' hereafter

### 1.3. Access to SADIS

1.3.1. States may wish to meet their obligation under Article 28 of the Convention on International Civil Aviation regarding the supply of meteorological information to aviation users for the provision of meteorological service for international air navigation by using SADIS.

1.3.2. In particular, Section 5.1.3 of the PANS-MET notes:

5.1.3.1 Aerodrome meteorological offices shall use forecasts issued by the WAFCS in the preparation of flight documentation, whenever these forecasts cover the intended flight path in respect of time, altitude and geographical extent, unless otherwise agreed between the meteorological service provider and the operator concerned.

5.3.1.2 In order to ensure uniformity and standardization of flight documentation, the world area forecast system (WAFS) gridded code form and IWXXM form received from the WAFCS shall be decoded into standard WAFS charts in accordance with relevant provisions in this PANS and Annex 3, and the meteorological content and identification of the originator of the forecasts provided by the WAFCS shall not be amended.

1.3.3. As described in the Regional Air Navigation Plans, SADIS provides WAFS and OPMET data to Africa, Europe, and Middle East ICAO Regions; and to west and central parts of the ICAO Asia and Pacific Region.

1.3.4. The WAFS Information File Service (WIFS), which is administered by the Aviation Weather Centre that is part of the National Oceanic and Atmospheric Administration (NOAA) in the United States of America, provides data to the Americas; and to east and central parts of the ICAO Asia and Pacific Region. Information on WIFS is available here: <https://www.aviationweather.gov/wifs/>

1.3.5. Figure 1, below, shows the different coverage areas of SADIS and WIFS. States in the area marked as “US/UK shared” can choose which service to use operationally, but it is important to note that it is not permitted to use both SADIS and WIFS operationally at the same time.

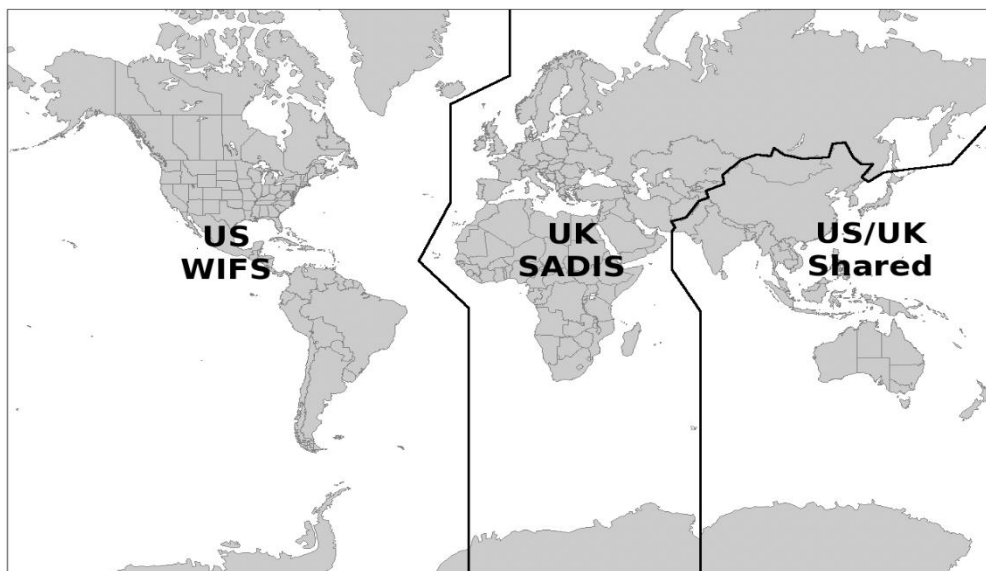


Figure 1 – Area of responsibility for SADIS and WIFS.

1.3.6. Authorized access to the SADIS API by an end user is subject to the direction in the appropriate ICAO Regional Air Navigation Plan and will only be granted after authorization by the ICAO State concerned. The authorization will be based upon advice from the meteorological authority of the State concerned as defined in ICAO Annex 3, Chapter 1, and Chapter 2, 2.1.4, and will be communicated to ICAO and also to the United Kingdom Met Office (as the SADIS Provider) by the authorizing State itself.

1.3.7. It is the prerogative of each State to determine the distribution of the OPMET information and WAFS forecasts to users, in the State concerned, as well as means, links and information flow to be used for this purpose. In view of this, it is for each State to determine the users in the State concerned to be provided with the authorized access to the SADIS.

1.3.8. If the Meteorological Authority has previously granted access to use the SADIS FTP this will be honored for the SADIS API unless the SADIS provider is notified otherwise.

1.3.9. A list of authorized SADIS user organizations will be maintained and published by the SADIS Provider.

1.3.10. The SADIS API can be used by WIFS API users in the event of an outage if authorized by the WIFS provider and the full SADIS API account registration procedure has been completed. Backup users should only make use of the SADIS API during times of a WIFS API outage, and outside of these periods the backup should not be used more frequently than is necessary to ensure that switchover processes work. Usage will be monitored to ensure this facility is not abused.

## 1.4. Permitted Use

1.4.1. The data provided on SADIS can be used for activities related to the aviation industry, and can be integrated and visualized within your systems, however you must not use the data sets to initialize your own numerical weather prediction models.

1.4.2. If your organization has rights under ICAO Annex 3, Chapter 2 for the provision of meteorological services to operators, flight crew, air traffic service units, airport management and others concerned with the conduct of international air navigation the data available on SADIS may be shared to third parties in your area of responsibility. If this is the case the SADIS provider should be notified (this is purely so we can assess the global benefit that WAFS data has).

1.4.3. Without the rights described in the previous paragraph the data held on SADIS should not be retransmitted or redistributed outside of your organization in their original form.

1.4.4. Data from the SADIS API should be downloaded to a central server in your organization before being cascaded out to individual workstations or devices. A fair use policy is in place, with limitations described in chapters 4, 5 and 6, and API usage will be monitored to ensure this is adhered to.

## 1.5. SADIS API registration

1.5.1. In order to use the SADIS API, a registration process needs to be completed – even for existing SADIS FTP users. This consists of the following:

- Completion of a registration form
- Agreeing to a set of SADIS API user terms and conditions which are available to view here: <https://www.metoffice.gov.uk/services/transport/aviation/regulated/sadis/info/sadis-api-service-summary>
- Onboarding to the Met Office API management system (to get an authentication key so that the API can be accessed). Instructions on this process will be sent to you separately once the previous two steps have been completed.

1.5.2. If your State is not currently a SADIS using State, then an additional step to get approval from your Met Authority will need to be completed before SADIS access can be granted.

1.5.3. The registration process can be instigated by e-mailing the [SADISmanager@metoffice.gov.uk](mailto:SADISmanager@metoffice.gov.uk)

## 1.6. SADIS cost allocation and recovery

1.6.1. A mechanism for the recovery of the operating costs of SADIS incurred by the SADIS Provider State is in place. The SADIS cost allocation and recovery scheme is based on mandatory participation by the SADIS user States and is administered by the ICAO SADIS Cost Recovery Administrative Group (SCRAG).

1.6.2. States included in the United Nations list of Least Developed Countries are exempt from the cost recovery scheme. The participating States will contribute towards the scheme in proportion to the number of Available Tonne Kilometers (ATKs) performed in scheduled services (international and domestic) in the preceding calendar year by air carriers based in the territory of the State and recover these contributions from the airspace users through en route charges. A copy of the agreement for sharing of costs for SADIS is available at: <http://www.icao.int/sustainability/Joint-Financing/Pages/SCRAG-Reports.aspx> via the link in the first paragraph of the webpage.

1.6.3. Use of SADIS is dependent on the users' State paying their annual SADIS invoice (if applicable).

## Chapter 2. PRODUCTS AND DATA AVAILABLE ON SADIS

### 2.1. Introduction

2.1.1. Three types of data are available on the SADIS API: WAFS gridded data, WAFS Significant Weather forecasts (SIGWX) and OPMET data.

2.1.2. The WAFS data sets are produced by the two World Area Forecast Centres (WAFCs); WAFS London and WAFS Washington. The United Kingdom is both the SADIS Provider State and the WAFS London Provider State. Similarly, the United States is the WAFS Provider State and the WAFS Washington Provider State.

2.1.3. The WAFS gridded forecasts have a number of applications for users, e.g. to calculate specific leg winds for detailed flight planning, or to create charts of selected map areas or routes using visualization software. WAFS SIGWX forecasts are designed for situational awareness.

### 2.2. WAFS Gridded Data

2.2.1. The WAFS gridded forecasts have a number of applications for users, e.g. to calculate specific leg winds for detailed flight planning, or to create charts of selected map areas or routes using visualization software.

2.2.2.

- a) upper wind;
- b) upper-air temperature;
- c) upper-air humidity;
- d) geopotential altitude of flight levels;
- e) direction, speed and flight level of maximum wind;
- f) flight level and temperature of tropopause;
- g) horizontal extent and flight levels of base and top of cumulonimbus (CB) clouds;
- h) icing severity; and
- i) turbulence severity;

2.2.3. Table 1 summarises the data sets that are available. They are based on a latitude/longitude regular grid at a 0.25° x 0.25° horizontal resolution.

2.2.4. WAFS data is produced for data at specific flight levels. For example, flight level 300 (FL300) at 1000ft vertical intervals (for example FL050, FL060, FL070) and the vertical range of the data is shown in Table 1. Appendix A gives a more detailed overview of the data sets and contains the exact pressure level values that correspond to each flight level.

2.2.5. The Icing Severity, Turbulence Severity and Cumulonimbus fields are a harmonised data set which is created by blending together the WAFS London and WAFS Washington model output. Both WAFS's use the same blending process and input data sets.

2.2.6. Table 2 details the forecast time-steps that will be provided for the WAFS gridded data sets.

| Parameter | Vertical levels |
|-----------|-----------------|
|-----------|-----------------|

|   |   |
|---|---|
| Wind (u and v components), temperature, and geopotential altitude | FL050 to FL600 at 1000ft vertical intervals |
| Humidity  | FL050 to FL180 at 1000ft vertical intervals |
| Flight level and temperature of tropopause                        | These are not provided for specific levels  |
| Maximum wind (u and v components) and height of maximum wind      | These are not provided for specific levels  |
| Icing severity  | FL050 to FL300 at 1000ft vertical intervals |
| Turbulence severity   | FL100 to FL450 at 1000ft vertical intervals |
| CB horizontal extent, CB base, and CB top                         | These are not provided for specific levels  |

Table 1 – Flight level ranges for WAFS gridded data at 0.25° horizontal resolution.

| Parameter   | 1-hourly intervals  | 3-hourly intervals                      | 6-hourly intervals   |
|---|---|---|--|
| Wind, temperature, geopotential altitude          | 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24 hours | 27, 30, 33, 36, 39, 42, 45 and 48 hours | 54, 60, 66, 72, 78, 84, 90, 96, 102, 108, 114 and 120 hours <sup>3</sup> |
| Flight level and temperature of tropopause        |   |   |  |
| Direction, speed and flight level of maximum wind |   |   |  |
| Humidity  |   |   |  |
| CB horizontal extent, CB base, and CB top         | 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23 and 24 hours | 27, 30, 33, 36, 39, 42, 45 and 48 hours | Not provided   |
| Icing   |   |   |  |
| Turbulence  |   |   |  |

Table 2 – Fixed valid times for the WAFS gridded data at 0.25° horizontal resolution. Times shown are after the time (0000, 0600, 1200, 1800 UTC) of the synoptic data on which the forecasts were based.

2.2.7. The WAFS gridded data sets are all provided using the WMO GRIB Edition 2 (GRIB2) code form (WMO FM 92 IX Ext. GRIB refers), and will usually be available to users at the following times:

- WAFC London (EGRR) 0.25-degree non-hazard data 04:40, 10:40, 16:40 and 22:40 UTC.
- WAFC London (EGRR) 0.25-degree hazard data 04:20, 10:20, 16:20 and 22:20 UTC.
- WAFC Washington (KWBC) 0.25-degree non-hazard data 04:45, 10:45, 16:45 and 22:45 UTC.
- WAFC Washington (KWBC) 0.25-degree hazard data 05:00, 11:00, 17:00 and 23:00 UTC.

<sup>3</sup> WAFC London will only be able to provide data past 66 hours for the 0000 and 1200 forecast issues initially.

2.2.8. A limited selection of data is available based on a latitude/longitude regular grid at a 1.25° x 1.25° horizontal resolution for those unable to process those fields at the higher resolution and these are summarized in table 3. These parameters are available for 6, 9, 12, 15, 18, 21, 24, 27, 30, 33 and 36 hours after the time (0000, 0600, 1200, 1800 UTC) of the synoptic data on which the forecasts were based.

| 1.25-degree horizontal resolution Parameter                       | Vertical levels  |
|---|--|
| Wind (u and v components), temperature, and geopotential altitude | FL050, FL080, FL100, FL140, FL180, FL210, FL240, FL270, FL300, FL320, FL340, FL360, FL390, FL410, FL450, FL480, FL530. |
| Humidity  | FL050, FL080, FL100, FL140, FL180  |
| Flight level and temperature of tropopause                        | These are not provided for specific levels   |
| Maximum wind (u and v components) and height of maximum wind      | These are not provided for specific levels   |

Table 3 – Flight level ranges for WAFS gridded data at 1.25° horizontal resolution.

2.2.9. 1.25-degree data sets will usually be available to users at the following times:

- WAFS London (EGRR) 1.25-degree non-hazard data: 04:10, 10:10, 16:10 and 22:10 UTC.
- WAFS Washington (KWBC) 1.25-degree non-hazard data: 04:10, 10:10, 16:10 and 22:10 UTC.

### 2.3. WAFS Significant Weather (SIGWX) forecasts

2.3.1. WAFS London and WAFS Washington produce forecasts of global SIGWX four times daily. SIGWX forecasts are designed to be used for situational awareness. The following parameters are included in the forecasts:

- Jet Stream information (speed, direction, and height);
- OCNL CB and FRQ CB;
- MOD and SEV Turbulence;
- MOD and SEV Icing;
- flight level of tropopause; and
- tropical cyclones, sandstorms, volcanic eruptions and the release of radioactive material into the atmosphere.

2.3.2. Each WAFS will use their own wind and tropopause gridded data sets to create the jet stream and tropopause features will use the WAFS gridded data sets, so there will be small differences between issuing centres. Turbulence, icing and cumulonimbus features are based on the blended data sets, so if the blending process has been successful at both WAFSs these features will be identical.

2.3.3. The SIGWX forecasts encompass the air space that lies between FL100 and FL600 and are produced for fixed valid times of 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45 and 48 hours after the time (0000, 0600, 1200, 1800 UTC) of the synoptic data on which the forecasts were based.

2.3.4. These forecast data sets should be available just prior to. 06:00, 12:00, 18:00 and 00:00 UTC (approx. 5:50 or 5:55 minutes after the time of the synoptic data on which the forecasts were based.

2.3.5. SIGWX forecasts are provided in IWXXM format, and will follow the schema created by WMO. The latest schematrons are published on <https://schemas.wmo.int/iwxxm/>. Currently version 1.1.0 of the schematron is in use.

2.3.6. Any schematron update will be coordinated between both WAFCs, and test data sets will be made available prior for users to test in their systems. Users will be notified of the change at least 1 month in advance.

2.3.7. Visualization standards for SIGWX are described in the PANS-MET. Using the IWXXM format data enables users to choose a map coverage area, map projection, colour schemes which suits their specific needs, and if displayed on screen different map layers can be switched on and off. Chapter 7 contains guidance on how to visualize each feature.

2.3.8. The WAFCs will not be providing “paper copy” charts for this new data set, and if required users will need to create these from their own visualisations of the digital data. However, the WAFCs will provide a set of three charts (one Mercator global view, and two polar stereograph views) for every model run that will enable users to check that the digital SIGWX data is being correctly represented. These are not designed for and should not be used as briefing charts.

## 2.4. OPMET data

2.4.1. In the context of the SADIS API, the term “OPMET” is used to collectively refer to all the data types listed in table 4 which lists them and the start of their WMO designator (TT). Appendix B gives a more detailed description of the available OPMET data sets.

2.4.2. The TAC and IWXXM format data listed in Table 4 is exchanged over the Aeronautical Fixed Service (AFS). This uses the Aeronautical Fixed Telecommunication Network (AFTN) or ATS Message Handling System (AMHS) described in ICAO Annex 10 — *Aeronautical Telecommunications, Volume II — Communication Procedures*. This data is collected by the London Regional OPMET Centre (which is also an interregional gateway) and supplied directly to SADIS.

2.4.3. ICAO Meteorological Information Exchange Model (IWXXM) format OPMET is defined in WMO-No 306 *Manual on Codes Volume 1:3 Representations derived from data models*. It is exchanged internationally via AMHS and is described in detail in ICAO Doc 10003 – *Manual on the ICAO Meteorological Information Exchange Model*.

2.4.4. OPMET data that is routed to SADIS in collective bulletins is split into individual pieces of data by the SADIS API before it is published at five-minute intervals.

2.4.5. The “SADIS OPMET Catalogue” gives a detailed listing of the TAC format data normally available on SADIS. The catalogue is available on <https://www.icao.int/airnavigation/METP/Pages/Public-Documents.aspx> (in the MOG-SADIS/WIFS Reference Documents section). The content of the catalogue is created comparing data from ROC London, SADIS, ICAO DOC 7910 and the eANP List of Aerodromes.

2.4.6. New OPMET data sets may be added if they become a provision under ICAO Annex 3.

| Traditional Alphanumeric Format (TAC) | IWXXM format                   | Graphics (.PNG)                          |
|---------------------------------------|--------------------------------|--|
| METAR (SA) and SPECI (SP)             | METAR (LA) and SPECI (LP)      | Volcanic Ash Advisory Graphic (PFXD)     |
| TAF (FC, FT)                          | TAF (LC, LT)                   | Tropical Cyclone Advisory Graphic (PZXD) |
| SIGMET (WC, WS, WV)                   | SIGMET (LS, LV, LY)            |  |
| AIRMET (WA)                           | AIRMET (LW)                    |  |
| GAMET (FA)                            | Volcanic Ash Advisory (LU)     |  |
| Special AIREP (UA)                    | Tropical Cyclone Advisory (LK) |  |
| Volcanic Ash Advisory (FV)            | Space Weather Advisory (LN)    |  |
| Tropical Cyclone Advisory (FK)        | VONA <sup>4</sup> (LM)         |  |
| Space Weather Advisory (FN)           |                                |  |
| ASHTAM/VA NOTAM (NW)                  |                                |  |
| Nuclear Emergency Messages (NN)       |                                |  |
| Notices (NO)                          |                                |  |
| VONA <sup>4</sup> (WM)                |                                |  |

Table 4 – OPMET data types available on the SADIS API

<sup>4</sup> International distribution of VONA messages only became an ICAO requirement in November 2025, so it is expected that the fully availability of these messages will take some time to achieve.

## Chapter 3. API SPECIFICATION

### 3.1. API Conformance

3.1.1. In accordance with the ICAO Global Air Navigation Plan (GANP) (Doc 9750) <https://www4.icao.int/ganportal/> the SADIS API has been built in accordance with the System Wide Information Management (SWIM) requirements. SWIM consists of Standards, Infrastructure and Governance, enabling the management of Air Navigation Services related information and its exchange between qualified parties via interoperable services.

3.1.2. The SADIS API conforms to the EUROCONTROL SWIM 'Yellow Profile' technical specification <https://www.eurocontrol.int/publication/eurocontrol-specification-swim-technical-infrastructure-ti-yellow-profile> and uses the Open Geospatial Consortium (OGC) Environmental Data Retrieval (EDR) API framework <https://ogcapi.ogc.org/edr/>.

3.1.3. Both the SADIS API and the WIFS API are harmonized where possible to enable each service to act as the backup for the other should problems arise.

3.1.4. The known differences between the SADIS and WIFS API's are described in section 8.3.

3.1.5. The SADIS API comprises of three elements: one providing OPMET data, one providing the WAFS gridded data, and one providing the WAFS SIGWX data. The function of each is described in the following sections.

### 3.2. Access and Authentication

3.2.1. When access to SADIS is granted, users will be provided with information on how to sign up to the Met Office API developer portal. This will include application names for you to use (this will be set by the SADIS manager).

3.2.2. Where possible registrations should be made with an organizational e-mail address,

3.2.3. Consideration should be given to who manages the API registration for your organisation so that you don't lose your access to the developer portal should someone leave. Please note that during the registration process there will be a step in which you have 30 minutes in which to enter a verification code, so if you have a high degree of latency in your e-mail system this may not leave you much time.

3.2.4. OAuth2 tokens are used for authentication and are valid for 60 minutes, after which a new token is required. Users are advised to set up an automated process to run that refreshes the token just prior to them expiring.

3.2.5. During the token transition, if there is a request in-flight using the old token this may fail, so re-try logic should be applied.

3.2.6. Only one token per API is valid at any given time. If more than one token is required (for example during setup and testing when multiple systems may be requesting data) then additional subscriptions can be set up to the SADIS API. Please contact the SADIS Manager to request an appropriate application name to use.

3.2.7. The SADIS API will use the following two URLs for token creation/management:

<https://gateway.api-management.metoffice.cloud>

<https://api-km.api-management.metoffice.cloud>

## Chapter 4. Using the WAFS gridded element of the SADIS API

### 4.1. General Information

4.1.1. General information on the Gridded element of the API can be found using the following commands:

- <https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/> is the API landing page
- <https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/api> gives general information on the API specification
- <https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/conformance> gives information on the specification that the API conforms to.

4.1.2. In accordance with the OGC-EDR API framework the WAFS gridded data is organized into a series of collections. A request for <https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections> will return a JSON format file which describes all the available collections as well as range of metadata relating to each collection.

4.1.3. The available collections are shown in table 5 below. Data sets for both WAFC London (EGRR) and WAFC Washington (KWBC) are available.

| collectionId<br>(WAFC London Data) | Description  | collectionId<br>(WAFC Washington Data) |
|------------------------------------|--|--|
| egrr_wafs_windtempgeo_0p25         | This collection contains u and v wind, temperature and geopotential altitude data for multiple flight levels at a 0.25 degree horizontal resolution.                       | kwbc_wafs_windtempgeo_0p25             |
| egrr_wafs_humidity_0p25            | This collection contains relative humidity data for multiple flight levels at a 0.25 degree horizontal resolution  | kwbc_wafs_humidity_0p25                |
| egrr_wafs_tropjet_0p25             | This collection contains tropopause height and temperature, height of the maximum wind (i.e. Jet stream) and the maximum u and v wind at 0.25 degree horizontal resolution | kwbc_wafs_tropjet_0p25                 |
| egrr_wafshzds_blended_ice_0p25     | This collection contains the harmonized icing forecast for multiple flight levels at a 0.25 degree horizontal resolution <sup>5</sup> .                                    | kwbc_wafshzds_blended_ice_0p25         |
| egrr_wafshzds_blended_turb_0p25    | This collection contains the harmonized turbulence forecast for multiple flight levels at a 0.25 degree horizontal resolution <sup>5</sup> .                               | kwbc_wafshzds_blended_turb_0p25        |

<sup>5</sup> If the harmonization/blending process is successful the data in the EGRR collection will be almost identical to the KWBC equivalent.

|                               |  |                               |
|-------------------------------|--|-------------------------------|
| egrr_wafshzds_blended_cb_0p25 | This collection contains the harmonized cumulonimbus base, top and extent forecasts a 0.25 degree horizontal resolution <sup>5</sup> .                                     | kwbc_wafshzds_blended_cb_0p25 |
| egrr_wafs_windtempgeo_1p25    | This collection contains u and v wind, temperature and geopotential height data for multiple flight levels at a 1.25-degree horizontal resolution.                         | kwbc_wafs_windtempgeo_1p25    |
| egrr_wafs_humidity_1p25       | This collection contains relative humidity data for multiple flight levels at a 1.25-degree horizontal resolution  | kwbc_wafs_humidity_1p25       |
| egrr_wafs_tropjet_1p25        | This collection contains tropopause height and temperature, height of the maximum wind (i.e. Jet stream) and the maximum u and v wind at 1.25-degree horizontal resolution | kwbc_wafs_tropjet_1p25        |

Table 5 – WAFS Gridded data available data collections

4.1.4. The API only makes the most recently produced set of model data available. This is then updated four times daily with the data typically first available at the times shown in table 6. Hazard data refers to data found in the “wafshzds\_blended\_turb”, “wafshzds\_blended\_ice” and “wafshzds\_blended\_cb” collections, whilst non-hazard data is data found in the “windtempgeo”, “humidity” and “tropjet” collections.

|                           | Model Run |           |           |           |
|---------------------------|-----------|-----------|-----------|-----------|
|                           | 00 UTC    | 06 UTC    | 12 UTC    | 18 UTC    |
| EGRR 1.25 non-hazard data | 04:00 UTC | 10:00 UTC | 16:00 UTC | 22:00 UTC |
| EGRR 0.25 non-hazard data | 04:30 UTC | 10:30 UTC | 16:30 UTC | 22:30 UTC |
| EGRR hazard data          | 04:20 UTC | 10:20 UTC | 16:20 UTC | 22:20 UTC |
| KWBC 1.25 non-hazard data | 04:00 UTC | 10:00UTC  | 16:00 UTC | 22:00 UTC |
| KWBC 0.25 non-hazard data | 04:45 UTC | 10:45 UTC | 16:45 UTC | 22:45 UTC |
| KWBC hazard data          | 05:00 UTC | 11:00 UTC | 17:00 UTC | 23:00 UTC |

Table 6 – typical publishing time for the gridded data sets.

4.1.5. <https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections/collectionId> (where the `collectionId` is one of those listed in table 5) for example [https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections/egrr\\_wafs\\_windtempgeo\\_0p25](https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections/egrr_wafs_windtempgeo_0p25)

4.1.6. The information you get back when making a query type shown in 4.1.2 and 4.1.5 contains a range of metadata about the collection that has been queried, including the available pressure levels, forecast validity times, and parameters.

4.1.7. This metadata also includes “temporal” information which describes the “interval” over which the data in each collection is valid for. The first time listed will give the validity time for the T+06 data, and this could be used to determine whether it is a data set that has already been downloaded or whether it is a newly published data set.

```
"temporal": {
  "interval": [
    "2024-01-12T12:00:00Z",
    "2024-01-15T00:00:00Z"
  ]
}
```

4.1.8. Polling one collection within each grouping of data (shown in table 6) should be sufficient to find out if it has updated (or started updating), as all collections within that grouping will update at approximately the same time<sup>6</sup>. If the temporal information has not advanced by 6 hours then we suggest that you re-try your request at 5 or 10 minute intervals. There will be occasions where a model run is later than normal.

4.1.9. Including /items on the end of the query, for example [https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections/egrr\\_wafs\\_windtempgeo\\_0p25/items](https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections/egrr_wafs_windtempgeo_0p25/items) will provide metadata on the specific data files that are available for download within that collection. These are defined by their “id” which uses the “T<sub>1</sub>T<sub>2</sub>T<sub>3</sub>A<sub>1</sub> A<sub>2</sub>B<sub>1</sub>B<sub>2</sub>B<sub>3</sub> B<sub>1</sub>B<sub>2</sub>B<sub>3</sub>FLnnn” code form included in table 7.

| T <sub>1</sub> T <sub>2</sub> T <sub>3</sub> A <sub>1</sub><br>A <sub>2</sub> B <sub>1</sub> B <sub>2</sub> B <sub>3</sub> B <sub>1</sub> B <sub>2</sub> B <sub>3</sub> FLnnn | Description   | Options   |
|---|---|---|
| T <sub>1</sub>  | Always start with Y (Y stands for GRIB)                       | <b>Y</b>  |
| T <sub>2</sub>  | Designates parameter as                                       | <b>UV</b> = u and v winds<br><b>T</b> = temperature<br><b>R</b> = relative humidity<br><b>H</b> = geopotential height, and height of tropopause<br><b>I</b> = icing severity<br><b>L</b> = turbulence severity<br><b>B</b> = cumulonimbus |
| T <sub>3</sub>  | To designate whether output is probabilistic or deterministic | <b>D</b> = deterministic<br><b>P</b> = probabilistic (for future WAFS data sets)  |
| A <sub>1</sub>  | Resolution  | <b>X</b> = 1.25<br><b>Y</b> = 0.25  |
| A <sub>2</sub>  | Spatial Coverage  | <b>G</b> = Global<br><b>A1, A2, A3, A4, A5, A6, A7, A8</b> = Tile region number. See figure 1 for coverage areas  |
| B <sub>1</sub> B <sub>2</sub> B <sub>3</sub>  | Starting forecast timestep in hours                           | e.g. “024” or “054”<br>See table 10 for permissible options   |

<sup>6</sup> At the time of writing there is an issue with the metadata in the windtempgeo\_0p25 collection file updating before all the data is published (sometimes by 20 minutes due to the time taken to create the regional wind and temperature tiles). The SADIS provider is looking to implement a fix to this in January 2026.



4.1.13. It will not be possible for users to define their own region, but this capability may be developed in the future.

4.1.14. At the present time all forecast vertical levels for the chosen data set will be provided. These are documented in Appendix A. Please note that an exact pressure level is used for the data (instead of the nearest standard pressure level) in order to accommodate all of the flight levels.

4.1.15. The data is grouped into “items” containing three forecast timesteps. The permitted timestep groupings are shown in table 8.

| Timestep groupings at 0.25° resolution |   | Timestep groupings at 1.25° resolution |   |
|--|---|--|---|
|  | B <sub>1</sub> B <sub>2</sub> B <sub>3</sub> _B <sub>1</sub> B <sub>2</sub> B <sub>3</sub> in the item name |  | B <sub>1</sub> B <sub>2</sub> B <sub>3</sub> _B <sub>1</sub> B <sub>2</sub> B <sub>3</sub> in the item name |
| T+006, T+007, T+008                    | 006_008   | T+006, T+009, T+012                    | 006_012   |
| T+009, T+010, T+011                    | 009_011   | T+015, T+018, T+021                    | 015_021   |
| T+012, T+013, T+014                    | 012_014   | T+024, T+027, T+030                    | 024_030   |
| T+015, T+016, T+017                    | 015_017   | T+033, T+036                           | 033_036   |
| T+018, T+019, T+020                    | 018_020   |  |   |
| T+021, T+022, T+023                    | 021_023   |  |   |
| T+024, T+027, T+030                    | 024_030   |  |   |
| T+033, T+036, T+039                    | 033_039   |  |   |
| T+042, T+045, T+048 <sup>1</sup>       | 042_048   |  |   |
| T+054, T+060, T+066 <sup>2</sup>       | 054_066   |  |   |
| T+072, T+078, T+084                    | 072_084   |  |   |
| T+090, T+096, T+102                    | 090_102   |  |   |
| T+108, T+114, T+120                    | 108_120   |  |   |

Note:  
<sup>1</sup> Cumulonimbus, icing and turbulence parameters only go up to timestep T+048.  
<sup>2</sup> For the 06Z and 18Z model updates, EGRR datasets only go up to timestep T+066.

Table 8 – permitted timestep groupings

## 4.2. Requesting Data

4.2.1. In order to download a complete set of WAFS data a series of download requests would need to be made that encompasses all the different “itemId” types within each separate collection. After initial polling has identified that new data sets are available (see 4.1.7 and 4.1.8) queries for individual items can be made.

4.2.2. Requests must take this form: <https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections/{collectionId}/items/{itemId}> (where the **collectionId** is one of those listed in table 7 and the **itemId** is one of those listed in Appendix C).

4.2.3. Examples of the query types needed to download these individual files is shown below:

[https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections/egrr\\_wafs\\_windtempgeo\\_0p25/items/YUVDYG006\\_008FLALL](https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections/egrr_wafs_windtempgeo_0p25/items/YUVDYG006_008FLALL)

[https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections/egrr\\_wafs\\_windtempgeo\\_0p25/items/YTDYA4018\\_020FLALL](https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections/egrr_wafs_windtempgeo_0p25/items/YTDYA4018_020FLALL)

[https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections/egrr\\_wafs\\_tropjet\\_0p25/items/YHTDYG021\\_023FL998](https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections/egrr_wafs_tropjet_0p25/items/YHTDYG021_023FL998)

[https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections/egrr\\_wafshzds\\_blended\\_turb\\_0p25/items/YLDYG042\\_048FLALL](https://gateway.api-management.metoffice.cloud/sadis-wafs-gridded-data/1.0/collections/egrr_wafshzds_blended_turb_0p25/items/YLDYG042_048FLALL)

4.2.4. A full set of the permissible “ItemId” codes is included in Appendix C.

4.2.5. Table 9, below, shows the number of individual queries that would be required to get a full set of gridded data for a single tile.

|  | T+0, T+12 model run | T+6, T+18 model run |
|--|---------------------|---------------------|
| WAFC London (EGRR) 0.25-degree non-hazard data     | 104                 | 80                  |
| WAFC London (EGRR) 0.25-degree hazard data         | 45                  | 45                  |
| WAFC London (EGRR) 1.25-degree non-hazard data     | 32                  | 32                  |
| WAFC Washington (KWBC) 0.25-degree non-hazard data | 104                 | 104                 |
| WAFC Washington (KWBC) 0.25-degree hazard data     | 45                  | 45                  |
| WAFC Washington (KWBC) 1.25-degree non-hazard data | 32                  | 32                  |

*Table 9 – number of requests required to collect a full set of data.*

4.2.6. Please do not submit requests for an entire set of gridded data simultaneously, please make the requests over a longer period of time, perhaps on a collection by collection basis.

### 4.3. Restrictions

4.3.1. A limitation on the number of requests that can be made by a user<sup>7</sup> is being imposed to protect the system from unreasonable downloading practices. This will equate to 5000 individual requests day which is sufficient for users to do the following:

- Take a full set of EGRR data for the global tile and a full set of KWBC data for the global tile
- Take a full set of EGRR data for a regional tile and a full set of KWBC data for a regional tile
- Take a full set of EGRR data for two different regional tiles and a full set of KWBC data for two different regional tiles
- Take a full set of EGRR data for three different regional tiles (but please note if you are using this many regional tiles it is probably sensible to take the global tile instead).

4.3.2. In addition to the total daily limit to the number of requests, there will be a maximum request rate (burst) of 500 requests per minute.

4.3.3. If this allowance does not meet your needs please contact the SADIS manager who can provide you with additional API accounts (for example for backup systems).

4.3.4. The SADIS manager will monitor the number and volume of downloads made to ensure that the SADIS API is operating effectively.

<sup>7</sup> SADIS backup users (i.e. primary WIFS API users) accounts will be monitored to ensure the SADIS API is not being used on a daily basis and instead is only being used when needing to use it as a failover from the WIFS API.

4.3.5. SADIS API download limits will be in place to make sure that individual users don't make an unreasonable number of downloads. The following guidance is provided:

- 1) If a single regional tile suits, please use that.
- 2) Two or three regional tiles can be downloaded. If more than three are required, please use the global tile instead.
- 3) If your operations are global, then just take the global tile.

The SADIS provider would be very grateful for users to carefully consider what data they really need and download that, rather than simply taking everything. There is no reason to take the global tile for a data set as well as a regional version.

## 4.4. Data Payloads

4.4.1. A successful response will return a "302 Found" response with a "Location" header which provides a unique URL which can be used to access the requested data set. This URL is valid for a 1 hour period only. When following the Redirected URL, you will get a 200 response and the requested binary GRIB data, which you can save as a GRIB2 file in your systems.

4.4.2. This redirect URL will be from this IP address: <https://objects.aviation-gridded-data.api.metoffice.gov.uk>

4.4.3. The downloaded data file will contain a series of individual GRIB files, one after the other, which encompass all the levels and timesteps for that request.

4.4.4. The size of downloaded data files varies with the different parameter types. Typical file sizes for the global tiles are shown in table 10.

| Parameter and resolution                                  | Typical size of an individual downloaded data file |
|---|--|
| 0.25 degree U and V Wind                                  | 126 MB   |
| 0.25 degree Temperature                                   | 43 MB  |
| 0.25 degree Geopotential Height                           | 33 MB  |
| 0.25 degree Relative Humidity                             | 50 MB  |
| 0.25 degree Turbulence                                    | 22 MB  |
| 0.25 degree Icing   | 4 MB   |
| All other 0.25 degree parameters, and all 1.25 parameters | <5 MB  |

Table 10 – typical downloaded file sizes

4.4.5. If your request is unsuccessful, one of the following response types will be returned:

|  |  |
|--|--|
| 400 Invalid Request  | The request is invalid in some way. This could include: <ul style="list-style-type: none"> <li>• An invalid “collectionId” was used</li> <li>• The URL is incorrect in some way.</li> </ul>            |
| 401 Unauthorized<br>403 Forbidden                                | Valid security credentials were not provided, or the token has expired.  |
| 404 Requested data<br>Not Found                                  | The requested data is not available. This could be an error in the collectionId or itemId, or could occur if attempting to request EGRR data for beyond 66-hours for the 06 UTC and 18 UTC model runs. |
| 500 Internal Server<br>502 Bad Gateway<br>504 Gateway<br>Timeout | Unexpected server error, please retry.   |

*Table 11 – Response message types when query is invalid in some way.*

## Chapter 5. Using the SIGWX element of the SADIS API

### 5.1. General Information

5.1.1. General information on the SIGWX element of the API can be found using the following commands

<https://gateway.api-management.metoffice.cloud/sadis-wafs-sigwx/1.0/> is the API landing page

- <https://gateway.api-management.metoffice.cloud/sadis-wafs-sigwx/1.0/api> gives general information on the API specification
- <https://gateway.api-management.metoffice.cloud/sadis-wafs-sigwx/1.0/conformance> gives information on the specification that the API conforms to.

5.1.2. In accordance with the OGC-EDR API framework the WAFS SIGWX data is organized into a series of collections. These are shown in table 12 below. Data sets for both WAFS London (EGRR) and WAFS Washington (KWBC) are available.

| Collection Name<br>(WAFS London Data) | Description  | Collection Name<br>(WAFS Washington Data) |
|---------------------------------------|--|---|
| egrr_iwxxm_forecasts                  | This collection contains the IWXXM files   | kkci_iwxxm_forecasts                      |
| egrr_charts_global                    | This collection contains the Mercator charts that can be used for checking the IWXXM has been properly visualized                                | kkci_charts_global                        |
| egrr_charts_northpole                 | This collection contains the Northern Hemisphere Polar Stereographic charts that can be used for checking the IWXXM has been properly visualized | kkci_charts_northpole                     |
| egrr_charts_southpole                 | This collection contains the Southern Hemisphere Polar Stereographic charts that can be used for checking the IWXXM has been properly visualized | kkci_charts_southpole                     |

Table 12 – WAFS SIGWX available data collections

5.1.3. The API only makes the most recently produced set of data available. This is then updated four times daily at 05:50UTC, 11:50UTC, 17:50UTC and 23:50UTC.

5.1.4. Running the <https://gateway.api-management.metoffice.cloud/sadis-wafs-sigwx/1.0/collections> query will return a JSON format file which describes all the available collections as well as metadata relating to each collection.

5.1.5. This metadata includes “temporal” information which describes the interval over which data in each collection is valid for. The first time will equate to the T+06 forecast, and the second the T+48 forecast validity date/time. This should be used to determine whether it is a data set that has already been downloaded or whether it is a newly published data set.

```
"temporal": {
  "interval": [
    "2024-01-12T12:00:00Z",
    "2024-01-14T12:00:00Z"
  ]
}
```

5.1.6. If the temporal information has not advanced by 6-hours then we suggest that you re-try the request at 5-minute intervals.

5.1.7. Querying an individual collection, for example [https://gateway.api-management.metoffice.cloud/sadis-wafs-sigwx/1.0/collections/egrr\\_iwxxm\\_forecasts/](https://gateway.api-management.metoffice.cloud/sadis-wafs-sigwx/1.0/collections/egrr_iwxxm_forecasts/) will return metadata relating to that specific collection.

## 5.2. Requesting Data

5.2.1. For SIGWX data it is possible to specify which specific forecast time step, or time steps are downloaded with a single request.

5.2.2. All available forecast timesteps can be retrieved with the following query [https://gateway.api-management.metoffice.cloud/sadis-wafs-sigwx/1.0/collections/egrr\\_charts\\_global/locations/GLOBAL](https://gateway.api-management.metoffice.cloud/sadis-wafs-sigwx/1.0/collections/egrr_charts_global/locations/GLOBAL) (omitting a dateTime string)

5.2.3. Use of the dateTime query parameter allows an individual forecast timestep to be requested. For example requesting data valid at 06Z on the 15<sup>th</sup> November 2024:

```
https://gateway.api-management.metoffice.cloud/sadis-wafs-sigwx/1.0/collections/egrr\_iwxxm\_forecasts/locations/GLOBAL?dateTime=2024-11-15T06:00:00Z
```

5.2.4. The dateTime query can also be used to request all data between a bounded interval. For example requesting data valid between 06Z and 18Z (inclusive) on the 15<sup>th</sup> November 2024 : [https://gateway.api-management.metoffice.cloud/sadis-wafs-sigwx/1.0/collections/egrr\\_iwxxm\\_forecasts/locations/GLOBAL?dateTime=2024-11-15T06:00:00Z/2023-11-15T18:00:00Z](https://gateway.api-management.metoffice.cloud/sadis-wafs-sigwx/1.0/collections/egrr_iwxxm_forecasts/locations/GLOBAL?dateTime=2024-11-15T06:00:00Z/2023-11-15T18:00:00Z)

5.2.5. The dateTime query can also be used to request data from a half bounded interval (e.g. every item from the specified time forwards: [https://gateway.api-management.metoffice.cloud/sadis-wafs-sigwx/1.0/collections/egrr\\_iwxxm\\_forecasts/locations/GLOBAL?dateTime=2024-11-15T06:00:00Z/.](https://gateway.api-management.metoffice.cloud/sadis-wafs-sigwx/1.0/collections/egrr_iwxxm_forecasts/locations/GLOBAL?dateTime=2024-11-15T06:00:00Z/)

## 5.3. Restrictions

5.3.1. A limitation on the number of requests that can be made by a user will be applied to protect the system from unreasonable downloading practices. Two limits are set, one at 200 individual requests per day, which we prefer you use, but also a higher tier with a maximum of 1000 individual requests per day. It should be noted that it is possible to download all EGRR and KWBC iwxxm files and charts with just 32 individual requests per day.

## 5.4. Data Payloads

5.4.1. A successful request for Charts will return a “302 Found” response code which provides a redirect link (dynamically generated URL) in the Location header of the response which can be used to download the requested data set. This URL is valid for a 1-hour period only.

5.4.2. This URL will be from the one of the following IP addresses:

<https://main-sigwx-prod-sigwx-combined-forecasts-bucket.s3.amazonaws.com> (IWXXM)

<https://main-sigwx-prod-sigwx-forecasts-bucket.s3.amazonaws.com> (charts)

5.4.3. For the IWXXM data, a single xml format file is returned. This file contains the requested data and its name reflects the forecast time-steps, issuing centre, and model run date/time for example “SIGWX06-36\_EGRR\_20240104T000000Z.xml”

5.4.4. Within the xml data file that is returned a `<collect:MeteorologicalBulletin>` wrapper is used and then each individual time-step is contained within sets of `<collect:meteorologicalInformation>` and `</collect:meteorologicalInformation>` tags.

5.4.5. Within each individual timestep IWXXM data file there is list which shows which phenomena are included within the forecast.

```
<iwxxm:phenomenaList xlink:href="http://codes.wmo.int/49-2/MeteorologicalFeature/TURBULENCE"/>
<iwxxm:phenomenaList xlink:href="http://codes.wmo.int/49-2/MeteorologicalFeature/TROPOPAUSE"/>
<iwxxm:phenomenaList xlink:href="http://codes.wmo.int/49-2/MeteorologicalFeature/JETSTREAM"/>
<iwxxm:phenomenaList xlink:href="http://codes.wmo.int/49-2/MeteorologicalFeature/AIRFRAME_ICING"/>
<iwxxm:phenomenaList xlink:href="http://codes.wmo.int/49-2/MeteorologicalFeature/CLOUD"/>
<iwxxm:phenomenaList xlink:href="http://codes.wmo.int/49-2/MeteorologicalFeature/TROPICAL_CYCLONE"/>
<iwxxm:phenomenaList xlink:href="http://codes.wmo.int/49-2/MeteorologicalFeature/VOLCANO"/>
```

- The “turbulence”, “tropopause”, “Jetstream”, “airframe\_icing” and “cloud” phenomena will always be listed. Further specific information on these phenomena is included within the main body of the IWXXM data file.
- For volcanic eruptions, the “volcano” phenomena will be listed, however if there are no eruptions taking place no further information will be included within the main body of the IWXXM data file.
- For tropical cyclones, the “tropical\_cyclone” phenomena will only be listed in IWXXM data files up to and including T+24 (as forecast information is only provided up to and including T+24), however if there are no active tropical cyclones no further information will be included within the main body of the IWXXM data file.
- Forecast information for tropical cyclones is not included within the SIGWX forecast for T+27 onwards, so for these forecast timesteps there will be no “tropical\_cyclone” included in the phenomena list shown above.

5.4.6. For charts, a single zip file is returned. This file contains the requested data and its name reflects the chart type, issuing center, forecast timesteps included, and model date/time for example “PGN\_egrr\_20240104T000000Z\_t006-048.zip” which contains the north polar view charts (PGN), for all timesteps (06-48) issued by WAFC London (EGRR) and for the 00Z model run on 4<sup>th</sup> January 2024.

5.4.7. When unzipped this file would have individual files named in a similar form e.g. “PGN\_egrr\_20240104T000000Z\_t006.png”

5.4.8. An example of the global image is shown below. They aren’t designed to be printed on a single sheet of A3 or A4 paper and aren’t for use as briefing charts. The images are at a resolution that will allow users to check their visualization matches what the WAFC’s have forecast by zooming in to the image.

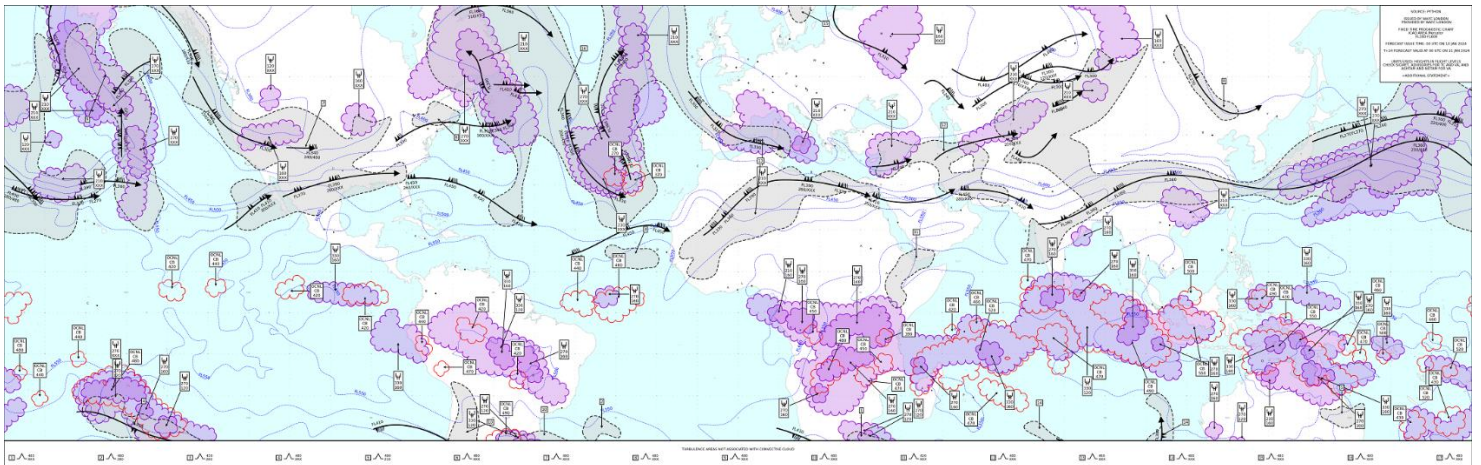


Figure 2 – “global” SIGWX map provided for set up and cross-checking purposes

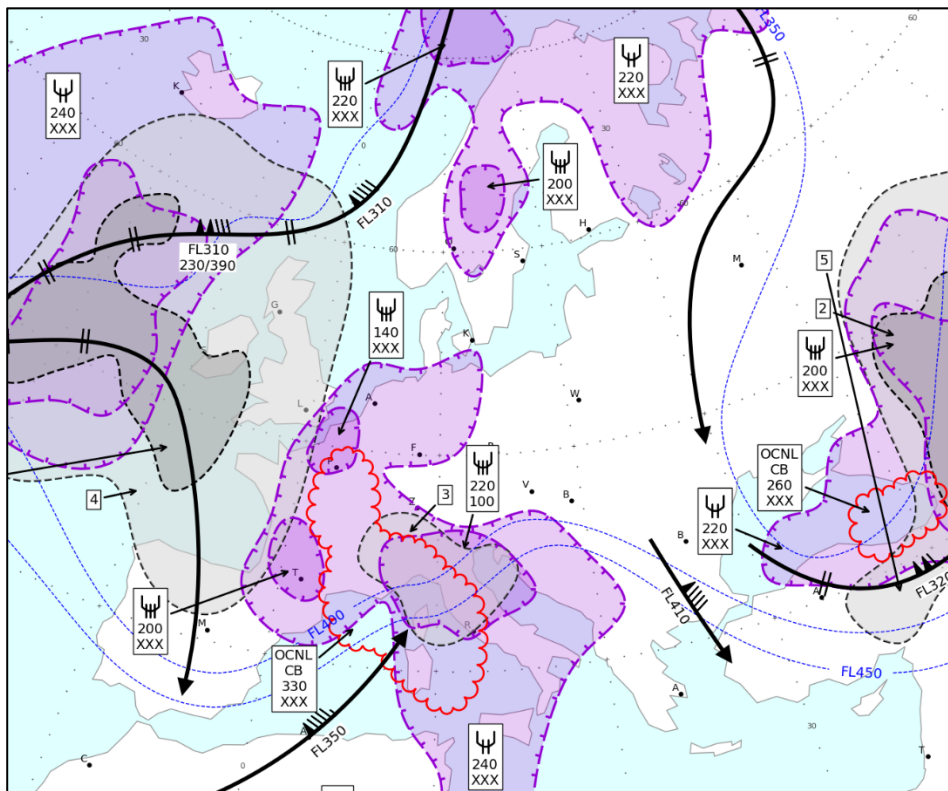


Figure 3 – Zoomed in section of figure 2 to show the detail. Blue contours = tropopause height, red scalloped areas = cumulonimbus areas, purple areas = icing areas, grey shaded area encompassed by a dashed line = moderate or severe turbulence.

5.4.9. A range of other response message types will be returned if the request cannot be fulfilled.

|                                   |   |
|-----------------------------------|---|
| 400 Invalid Request               | The request is invalid in some way. This could include: <ul style="list-style-type: none"> <li>• An invalid “id” was used</li> <li>• An incorrect collectionId or locationId was used</li> <li>• The URL is incorrect in some way.</li> </ul> |
| 401 Unauthorized<br>403 Forbidden | Valid security credentials were not provided, or the token has expired.   |
| 404 Not Found                     | The request is valid, but no data is available. This would occur if attempting to request data for invalid time range.  |
| 429 Too Many Requests             | Too many requests have been sent. You might see this error code when rate limits are applied. See Restrictions above.   |
| 500 Internal Server Error         | A valid or invalid request was made but the system was unable to serve the request due to an error. Retrying after a certain amount of time may help but if this persists then you may have to trigger failover options.                      |

*Table 13 – Response message types when query is invalid in some way*

## 5.5. Failover

5.5.1. In the event of production problems with the WAFC London data set, automatic failover will publish the WAFC Washington data in its place (so KKCI data will be present in the EGRR collections). If this occurs it could be 1-hour after the normal publication time of the data.

5.5.2. In the event that WAFC Washington data is not received by WAFC London then the EGRR data will be published in the KKCI collections.

## Chapter 6. Using the OPMET element of the SADIS API

### 6.1. General Information

6.1.1. General information on the OPMET element of the SADIS API in JSON format can be found using the following commands:

- <https://gateway.api-management.metoffice.cloud/sadis-opmet/1/> is the API landing page
- <https://gateway.api-management.metoffice.cloud/sadis-opmet/1/api> gives general information on the API specification
- <https://gateway.api-management.metoffice.cloud/sadis-opmet/1/conformance> gives information on the specification that the API conforms to.

6.1.2. In accordance with the OGC-EDR API framework the OPMET data is organized into a series of collections. These are shown in table 14 below.

| Collection Name        | Description  |
|------------------------|--|
| tac_opmet_reports      | This collection contains METAR, TAF, SPECI, SIGMET (all types), AIRMET, GAMET and special AIREPs in the traditional alphanumeric code format.<br>This data is available in regional subsets, as described in table 15.                 |
| iwxxm_opmet_reports    | This collection contains METAR, TAF, SPECI, SIGMET (all types) and AIRMET, in IWXXM format.<br>This data is available in regional subsets, as described in table 15.   |
| tac_advisory_reports   | This collection contains tropical cyclone advisories, volcanic ash advisories, space weather advisories, nuclear emergency messages, VONA and NOTAM/ASHTAM relating to volcanic eruptions in the traditional alphanumeric code format. |
| iwxxm_advisory_reports | This collection contains tropical cyclone advisories, volcanic ash advisories, VONA and space weather advisories in IWXXM format.  |
| graphical_reports      | This collection contains volcanic ash graphics and tropical cyclone graphics in .png format.   |
| notices                | This collection contains various notification messages issued by the European Regional OPMET Centres (ROC London, ROC Toulouse, ROC Vienna and ROC Moscow) and the Regional OPMET Data Bank in Brussels.                               |

Table 14 – OPMET API collection names

6.1.3. Running the <https://gateway.api-management.metoffice.cloud/ads-sadis-opmet/0.0.1/collections> query will return a JSON format file which describes all the available collections as well as metadata relating to each collection.

6.1.4. For the “iwxxm\_opmet\_reports” and “tac\_opmet\_reports” global coverage data sets as well as regional data sets will be available. The regional data sets are broadly aligned with the ICAO regions, and the content of each is described in table 15.

| locationId | ICAO “CCCC”  |
|------------|--|
| EUR-NAT    | E***<br>L***<br>B***<br>U***                         |
| NAM-CAR    | C***<br>K***<br>M***<br>T***<br>P***                 |
| SAM        | S***   |
| AFI        | G***<br>D***<br>F***<br>H***                         |
| MID        | O***   |
| ASIA-PAC   | A***<br>N***<br>R***<br>V***<br>W***<br>Y***<br>Z*** |
| GLOBAL     | all ICAO codes                                       |

Table 15 – OPMET API regional collection names

6.1.5. It is possible that for a few airports, their data may not be in the regional collection that you expect it to be. For example: Madeira (part of Portugal) has an ICAO code which starts with “L” therefore would be in the EUR-NAT collection, but the Canary Islands (part of Spain) have an ICAO code that starts with G and will therefore be found in the AFI collection.

## 6.2. Requesting Data

6.2.1. To request data from one of the “opmet\_reports” collections the following convention is used: <https://gateway.api-management.metoffice.cloud/sadis-opmet/1/collections/:collectionId/locations/:locationId?datetime=2023-09-05T09:30Z/PT5M> where the “collectionId” is either “tac\_opmet\_reports” or “iwxxm\_opmet\_reports” and the “locationId” is one of the options shown in table 15. For example:

- [https://gateway.api-management.metoffice.cloud/sadis-opmet/1/collections/tac\\_opmet\\_reports/locations/GLOBAL?datetime=2023-09-05T09:30Z/PT5M](https://gateway.api-management.metoffice.cloud/sadis-opmet/1/collections/tac_opmet_reports/locations/GLOBAL?datetime=2023-09-05T09:30Z/PT5M) would return TAC format METAR/TAF/SIGMET etc data received in the 5 minute period up to 09:30UTC on the 5<sup>th</sup> September 2023 anywhere in the globe.
- [https://gateway.api-management.metoffice.cloud/sadis-opmet/1/collections/iwxxm\\_opmet\\_reports/locations/EUR-NAT?datetime=2023-10-08T21:50Z/PT5M](https://gateway.api-management.metoffice.cloud/sadis-opmet/1/collections/iwxxm_opmet_reports/locations/EUR-NAT?datetime=2023-10-08T21:50Z/PT5M) would return IWXXM format METAR/TAF/SIGMET etc data received in the 5 minute period up to 21:50UTC on the 8<sup>th</sup> October 2023 that is valid for the EUR-NAT ICAO region.

6.2.2. To request data from one of the other collections the “locationId” must always be GLOBAL as regional data is not provided.

6.2.3. The datetime string at the end of the query indicates the start of the five minute period for which data is being requested, and must fall on a standard 5 minute interval. For example 09:30 and 09:35 are valid, but 09:31, 09:32, 09:33 and 09:34 are not valid queries.

- For notices the data is updated every 30 minutes at hh:15 and hh:45, with PT30M used to indicate the time period so requests would take the form shown below. <https://gateway.api-management.metoffice.cloud/sadis-opmet/1/collections/notices/locations/GLOBAL?datetime=2023-09-05T09:15Z/PT30M> would return any notices received in the 30 minute period up to 09:15UTC on the 5<sup>th</sup> September 2023.
- <https://gateway.api-management.metoffice.cloud/sadis-opmet/1/collections/notices/locations/GLOBAL?datetime=2023-09-05T09:45Z/PT30M> would return any notices received in the 30 minute period up to 09:45UTC on the 5<sup>th</sup> September 2023.

6.2.4. Timesteps up to 36 hours in the past can be requested.

### 6.3. Restrictions

6.3.1. A limitation on the number of requests that can be made by a user per day<sup>1</sup> will be applied to protect the system from unreasonable downloading practices. This will equate to 5000 individual requests per day.

6.3.2. A reasonable download profile is to request the following:

- Data from each collection every 5 minutes (30 minutes for notices) and a single “locationID” (e.g. just the EUR-NAT collection, or the GLOBAL collection) for the “iwxxm\_opmet\_reports” and “tac\_opmet\_reports” collections.
- Data from each collection every 5 minutes (30 minutes for notices) and two or three different “locationID” (e.g. the EUR-NAT and MID regions) for the “iwxxm\_opmet\_reports” and “tac\_opmet\_reports” collections.

The SADIS provider would be very grateful for users to carefully consider what data they really need and download that, rather than simply taking everything. There is no reason to take a regional data set and the global data set from the same collection.

### 6.4. Data payloads

6.4.1. Valid API requests will return a “301 - Moved Permanently” response in which the location header will provide a pre-signed URL from which the requested data can be downloaded.

---

<sup>1</sup> SADIS backup users will be subject to a lower weekly/monthly threshold as the SADIS API should only be used when needing to failover from the WIFS API.

6.4.2. This URL will be from one of two IP addresses:

<https://blue-adsopmetapi-prod-feature-store-bucket-297373961550.s3.amazonaws.com/>

<https://green-adsopmetapi-prod-feature-store-bucket-297373961550.s3.amazonaws.com/>

6.4.3. A zip file will be returned in which the data is separated into directories of different data types.

For example a five minute file downloaded from the “tac\_opmet\_reports” directory would look something like this when unzipped:

```
TAC_opmet_reports_Global_20231012T1505_20231012T1510.zip
├── AIREP
│   └── UARS61_RURD_121505_c514f80c5226f8d39e36c04e25f8767e
├── METAR
│   ├── SAAE31_VTBD_121500_a892ed2c43ce2771019830ce701b8344
│   └── SAAU99_YPCC_121500_21863aa473c5676e56f05e78102319a5
├── SIGMET
│   ├── WSAU21_YMMM_121505_7a4588357223102e5fe8d4018d73210c
│   └── WSMA31_FIMM_121500_014b948b9b979554b75ecaf641119e59
└── TAF
    ├── FCRE99_FMEP_121100_AAA_62de21312d8ef366f47694759cb40400
    ├── FCTS31_DTKA_121500_01acb57ad591cb97b347978a21366d99
    └── FTUS99_KLAS_121506_AAA_1a3a077b72ca7adbd28129e427b24512
```

6.4.4. If there are no files of a particular type, then that folder would be omitted from the zip file.

6.4.5. The file naming convention uses information from the original bulletin header of the message or collection of messages that was received by the SADIS system (in other words the bulletin header used for transmission of the data over the Aeronautical Fixed System (AFS)), plus a unique identification code. For METAR and TAF bulletins, the “ii” part of the bulletin header is also changed if there was more than one METAR or TAF in the original bulletin.

For example:

Original Bulletin

```
SAUK20 EGGY 210950
METAR EGRE 210950Z AUTO 23025KT 9999 FEW028/// SCT039/// 05/M01 Q1014=
METAR EGRK 210950Z AUTO 25017KT 9999 FEW032/// 06/M01 Q1018=
METAR EGRO 210950Z AUTO 28012KT 250V320 9999 FEW036/// 06/M01 Q1021=
METAR EGRP 210950Z AUTO /////KT /// // ///// 06/// Q1021=
METAR EGRS 210950Z AUTO 33008KT CAVOK 06/00 Q1021=
METAR EGRV 210950Z AUTO 36005KT 330V040 CAVOK 06/01 Q1025 W///S4=
METAR EGRW 210950Z AUTO 26013KT CAVOK 07/02 Q1025 W///S4=
```

On SADIS API

The original bulletin will be split into files named using the CCCC for the airport instead of the CCCC that belongs to the compiling centre (in this example EGGY) in the bulletin header, and the number “99” to prevent issues for users who also use METAR bulletins transmitted over the AFS.

SAUK99\_EGRE\_210950\_[UNIQUE ID].

SAUK99\_EGRK\_210950\_[UNIQUE ID].

SAUK99\_EGRO\_210950\_[UNIQUE ID].

etc

6.4.6. A range of other response message types will be returned if the request cannot be fulfilled.

|                  |  |
|------------------|--|
| 202 Accepted     | The request is valid, but the file is still being built (i.e. its not quite ready). You should try your request again in 30 seconds.   |
| 204 No content   | IF no data has come into SADIS in that 5-minute period this will be returned instead of an empty response file.  |
| 400 Bad Request  | The request is invalid in some way. The response will tell you how it is invalid. This could include: <ul style="list-style-type: none"> <li>• A missing, incorrect or invalid datetime query parameter was used (e.g. you have used a datetime for more than 36 hours ago or in the future)</li> <li>• An incorrect collectionId or locationId was used</li> <li>• The URL is incorrect in some way.</li> </ul> |
| 401 Unauthorized | Valid security credentials were not provided, or the token has expired.  |
| 404 Not Found    | Incorrect URL  |

*Table 16 – Response message types when query is invalid in some way.*

## Chapter 7. Visualising WAFS data sets

### 7.1. Introduction

7.1.1. Whilst the SADIS API provides the mechanism for moving data between the SADIS provider and individual user organisations, it will need to undergo additional processing in order to visualise the data and to use it in calculations to plan safe and efficient flights.

7.1.2. Users intending to use the gridded data will need a data processing system that is able to decode and display GRIB2 format data for their specific purposes. Visualization software will be needed to produce wind and temperature charts, or SIGWX charts according to the guidance in ICAO Annex3 and ICAO Doc 8896 - *Manual of Aeronautical Meteorological Practice*.

7.1.3. Data downloaded from SADIS should be made available to a user by visual reference on a screen display, or printed e.g. as flight documentation, as necessary. All products utilising WAFS data should include a clear reference to the validity times of the data and possibly also reference to synoptic hour on which the forecast is based. For example

“Valid at 12UTC on 23 October 2023, based on 18 UTC data on 22 October 2023”

“T+24 forecast valid at 12UTC 23 October 2023”.

7.1.4. Display packages may enable users to manipulate the information presented to the workstation. This may be a useful feature for users who wish to use their workstation for the production of national products, however it is important that users appreciate that any modification to the meteorological content of information available on SADIS invalidates that information as being a de facto WAFS forecast. In such a case, the forecast becomes a national product. It is imperative that such a change be clearly reflected in the legend that would be assigned to the forecast.

7.1.5. It should be noted that there is an obligation for States to retain flight documentation for at least 30 days in case of an enquiry (ICAO Annex 3, 9.3.7).

### 7.2. Data visualisation systems

7.2.1. Information on some SADIS workstation and software providers is available here: <https://www.metoffice.gov.uk/services/transport/aviation/regulated/sadis/software/suppliers> (this is not an exhaustive list). When assessing software users should ensure it works with the new SADIS/WIFS API and is able to display the new multi-timestep SIGWX forecasts.

7.2.2. Detailed guidance material has been developed by the SADIS provider to enable users to assess the capability and functionality of software in using the data sets provided on SADIS. The “SADIS Workstation Evaluation Guide” is published here: <https://www.icao.int/airnavigation/METP/Pages/Public-Documents.aspx>

7.2.3. The data visualisation system should be able to:

- a) display all WAFS gridded data types on a map in an appropriate colour scheme with appropriate scales and legends;
- b) pan and zoom the map area, and change the map projection
- c) toggle different layers of gridded data on and off;
- d) ensure that the standard ICAO areas are available on the system as map area defaults;
- e) produce wind and temperature charts from the GRIB data in the appropriate ICAO Annex 3 format;

- f) produce SIGWX charts from the IWXXM SIGWX data in according to the conventions in Annex 3, PANS-MET and other guidance documentation
- g) produce charts that span the international date line, and cover all of the standard ICAO areas; and,
- h) print the screen display;

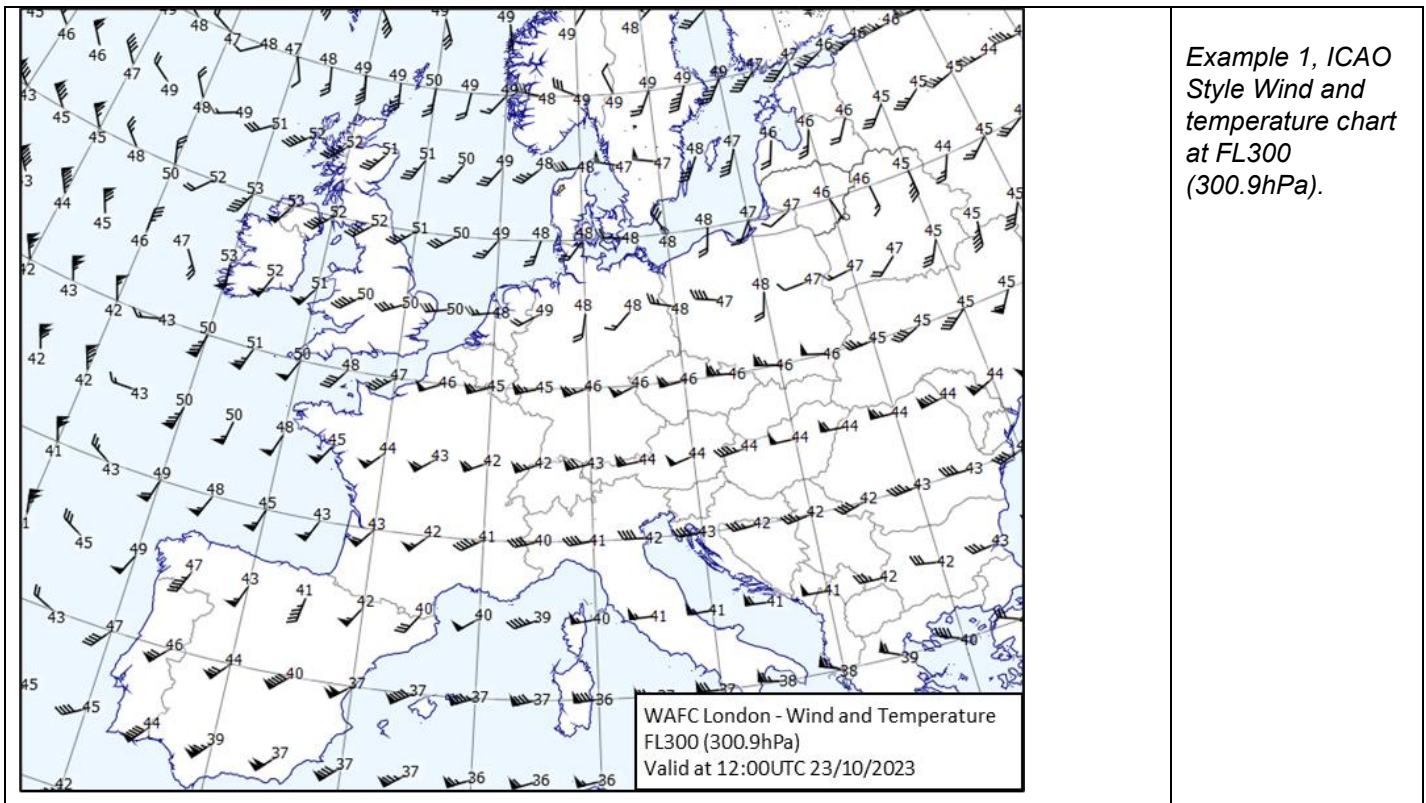
7.2.4. For OPMET data the system should also be able to:

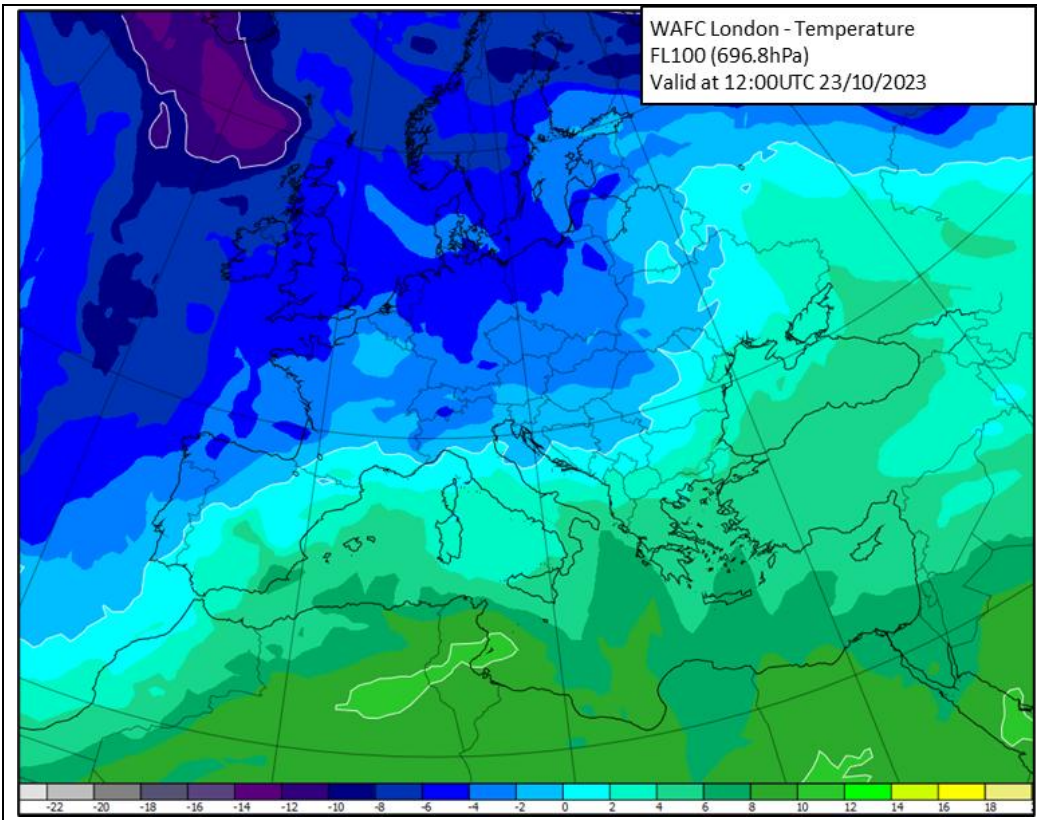
- a) display all OPMET data types in alphanumeric format on a map or as lists;
- b) update automatically as new data becomes available;
- c) sort OPMET by Flight Information Region (FIR), country or route;
- d) alert users when advisory messages are received
- e) print lists of OPMET data in a human readable form

7.2.5. IWXXM format OPMET data is available on the SADIS API, but data with full global coverage is not available yet. Nevertheless, SADIS users are encouraged to start looking at the processing and display of the IWXXM data.

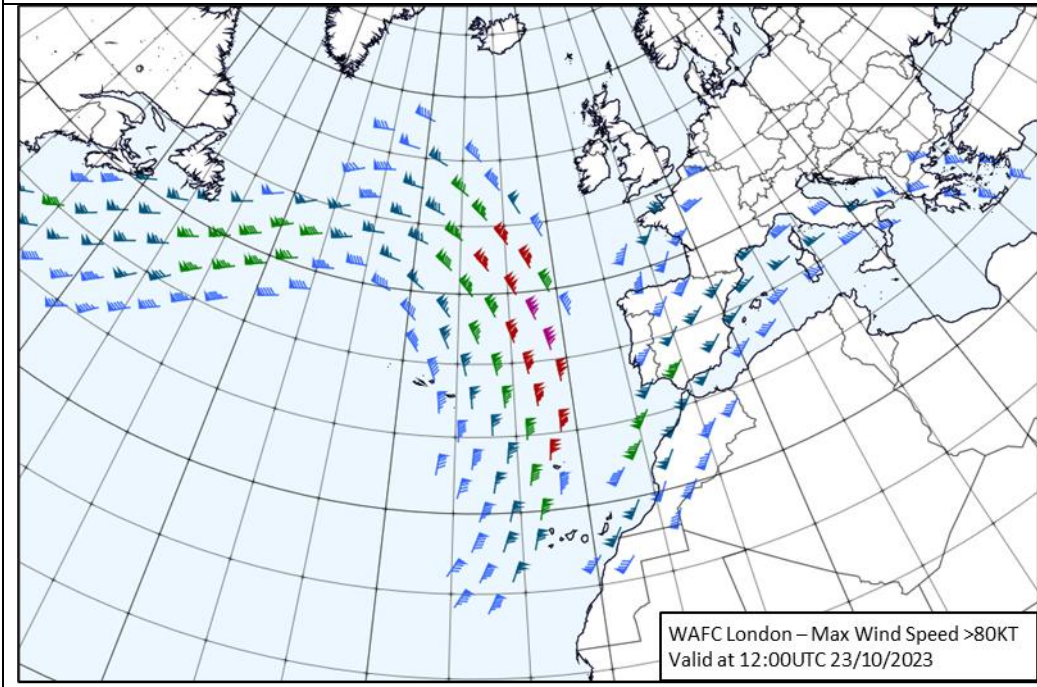
### 7.3. Gridded Data

7.3.1. Examples of ways in which the wind, temperature, geopotential altitude, relative humidity and tropopause data sets can be visualized are shown below. Users are free to choose the presentation style, colour scheme, and map projection that fits their organisational needs but should take into account the guidance in the PANS-MET Model SN.

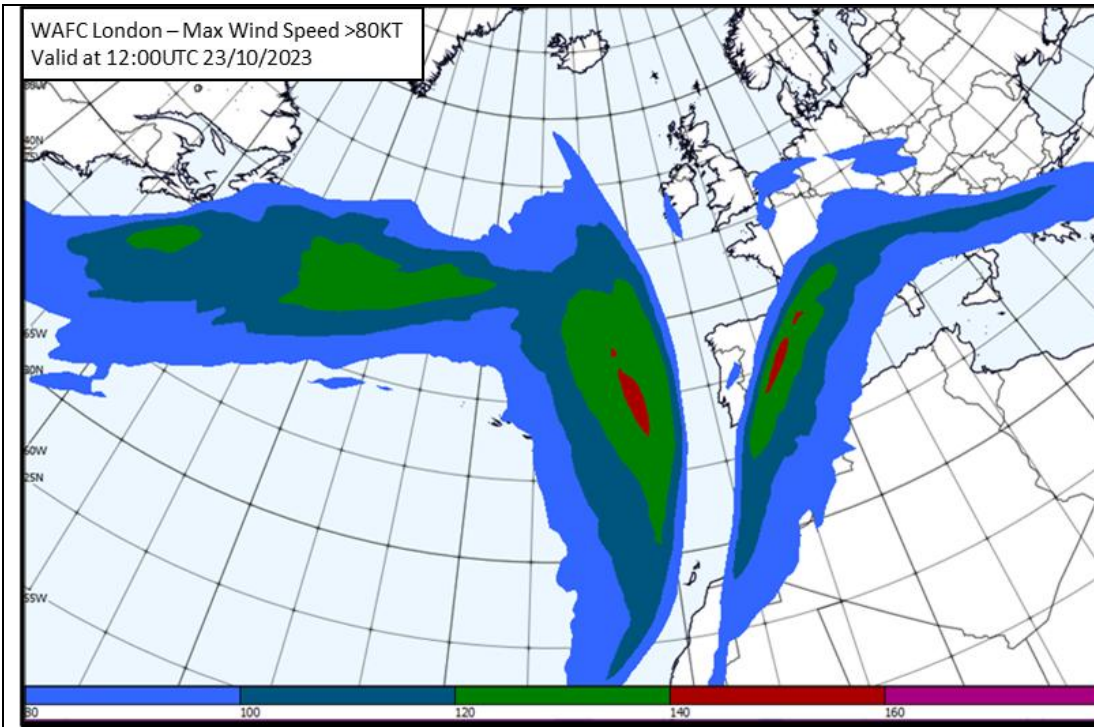




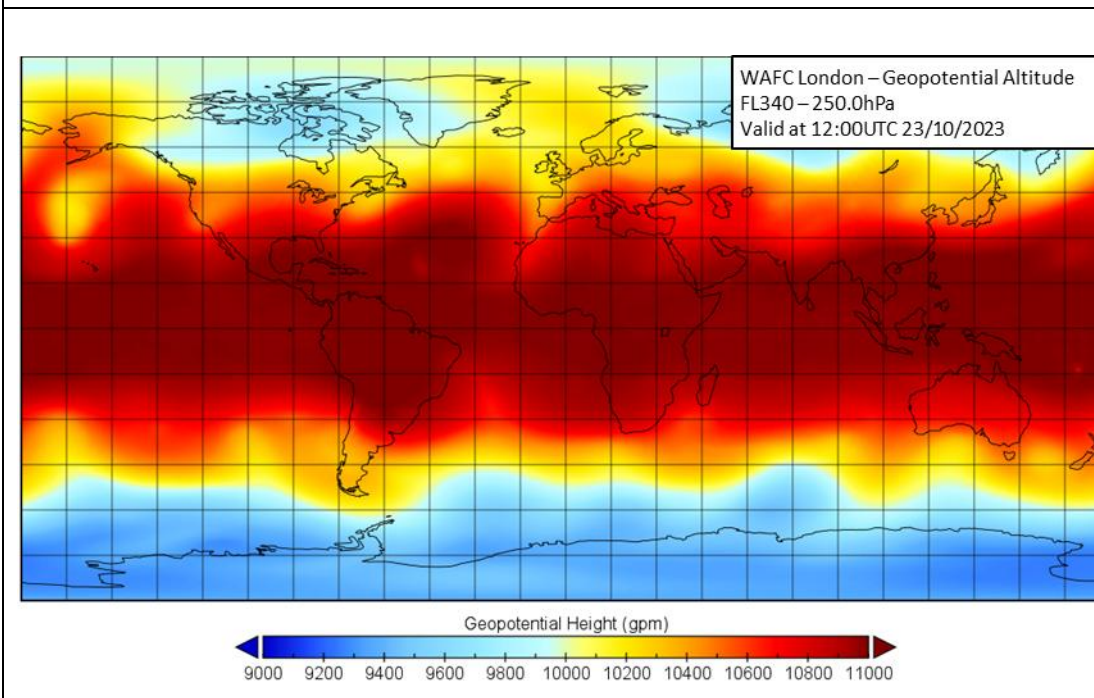
*Example 2,  
Temperature in  
Celsius at FL100  
(696.8hPa)*



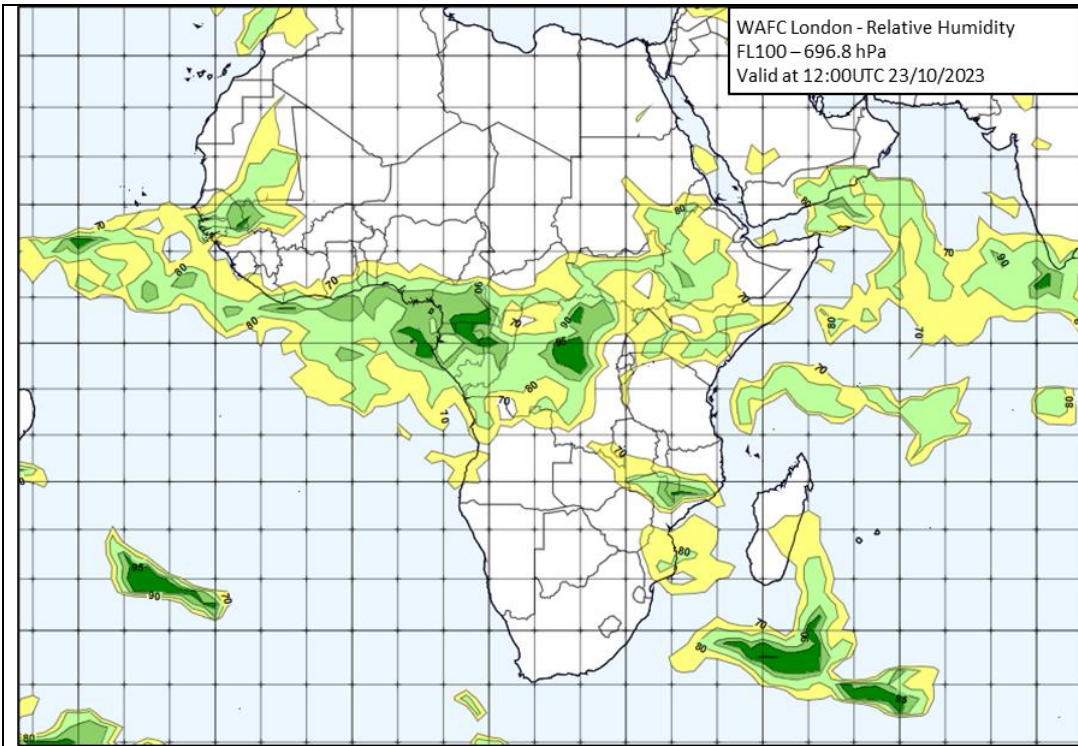
*Example 3,  
Maximum wind  
speed and  
direction shown as  
wind fletches.  
Only wind speeds  
of 80KT or more  
are displayed.*



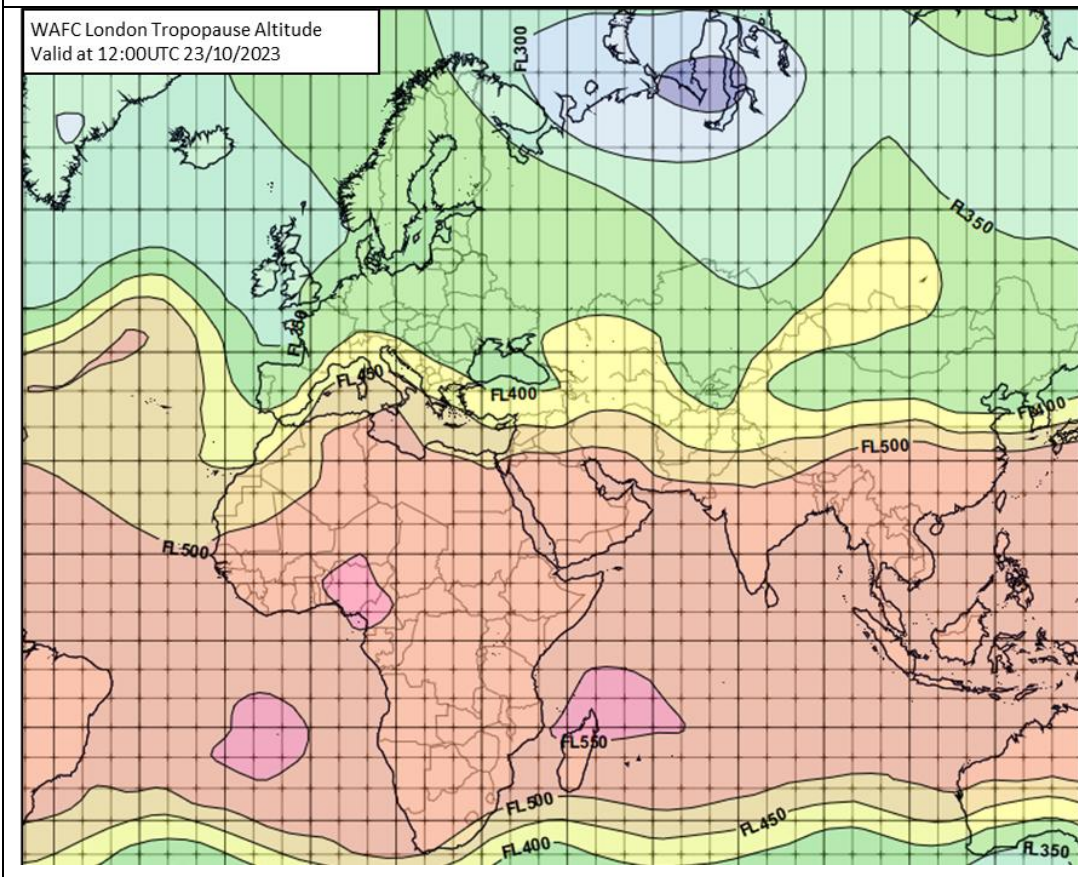
*Example 4,  
Maximum wind  
speed shown as  
wind contours.  
Only wind speeds  
of 80KT or more  
are displayed.*



*Example 5,  
Geopotential  
Altitude at FL340  
(250.0hPa)*



*Example 6,  
Relative Humidity  
at FL250  
(250.0hPa)*



*Example 7,  
Tropopause  
Altitude displayed  
as Flight levels.*

7.3.2. The WAFS turbulence severity data set provides a forecast of clear air and orographic turbulence as an Eddy Dissipation Rate (EDR) which is defined in the PANS-MET as follows:

Chapter 3 – 3.1.4.6

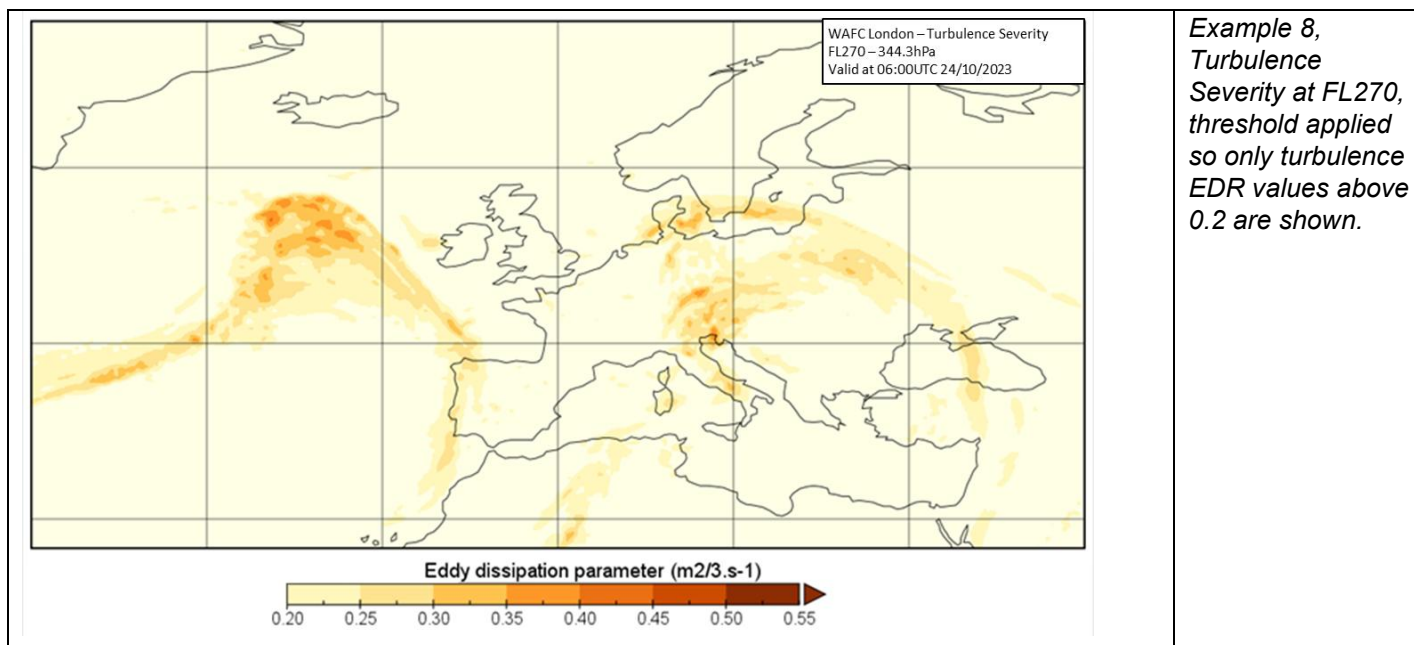
“EDR is an aircraft-independent measure of turbulence. However, the relationship between the EDR value and the perception of turbulence is a function of aircraft type, and the mass, altitude, configuration and airspeed of the aircraft. The EDR values given below describe the severity levels for a medium-sized transport aircraft under typical en-route conditions (i.e. altitude, airspeed and weight).

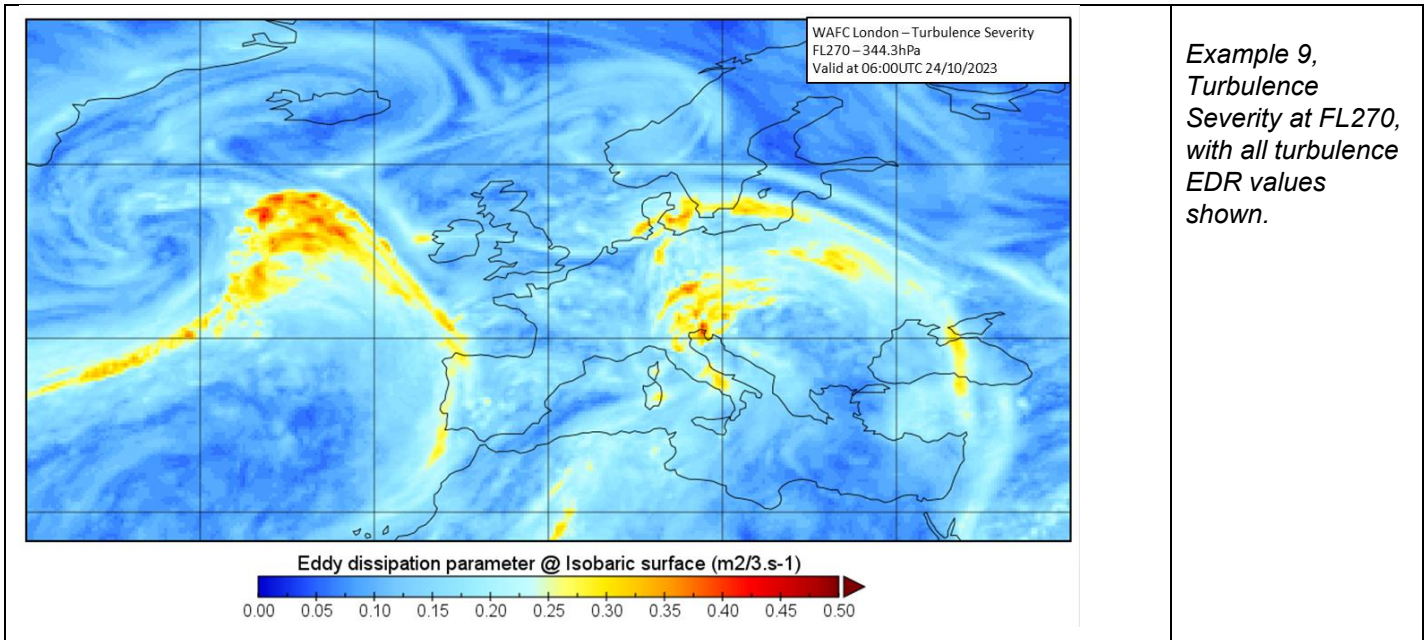
Turbulence shall be considered:

- a) severe when the peak value of EDR equals or exceeds 0.45;
- b) moderate when the peak value of EDR is equal to or above 0.20 and below 0.45;
- c) light when the peak value of EDR is above 0.10 and below 0.20; and
- d) nil when the peak value of EDR is below or equal to 0.10.

7.3.3. Severity levels for other sizes of transport aircraft are not defined in the PANS-MET, but you would expect that for a “heavy” aircraft type to experience moderate and severe turbulence would require higher EDR values than is shown in the PANS-MET.

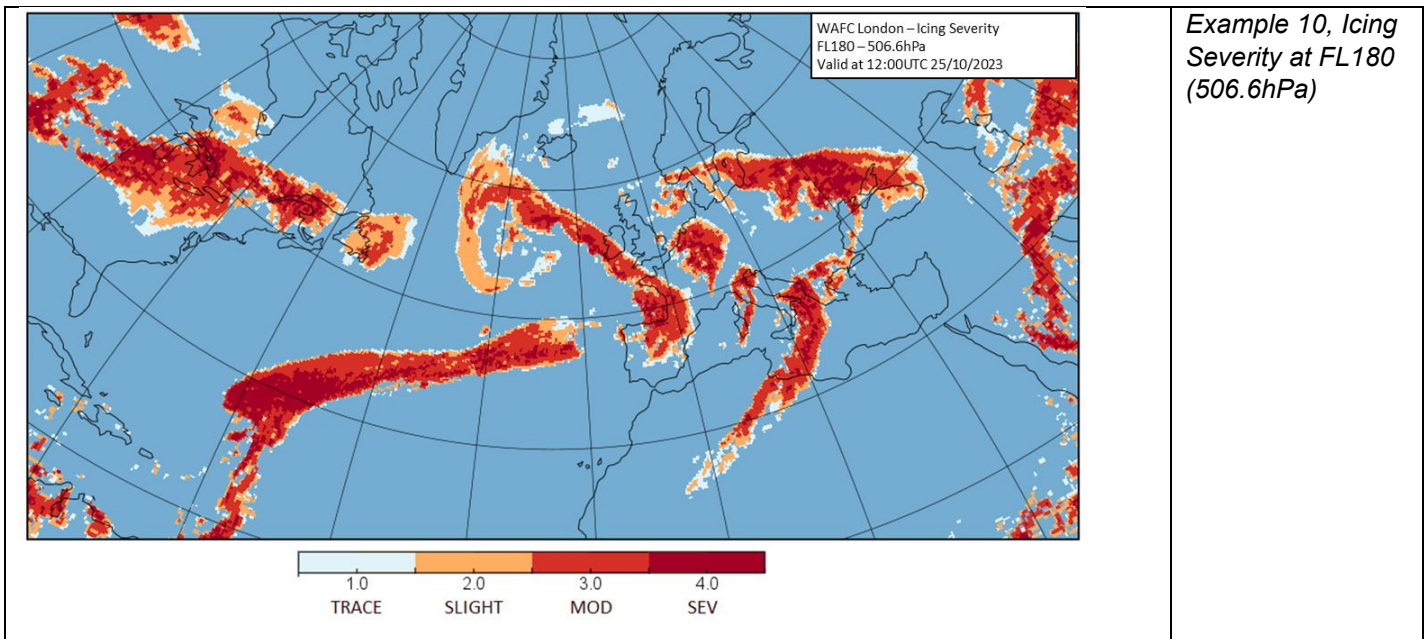
7.3.4. Example 8 and 9 show two different ways that the turbulence could be visualised. Example 8 has thresholding applied so that only EDR values above 0.2 are shown, and example 9 shows all forecast values. If the EDR values that relate to a specific type of aircraft are known, then these could be used for aircraft specific turbulence forecasts instead of the values shown in the PANS-MET.





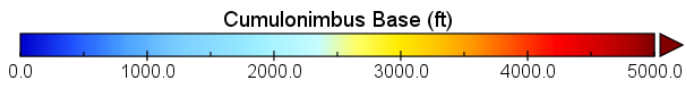
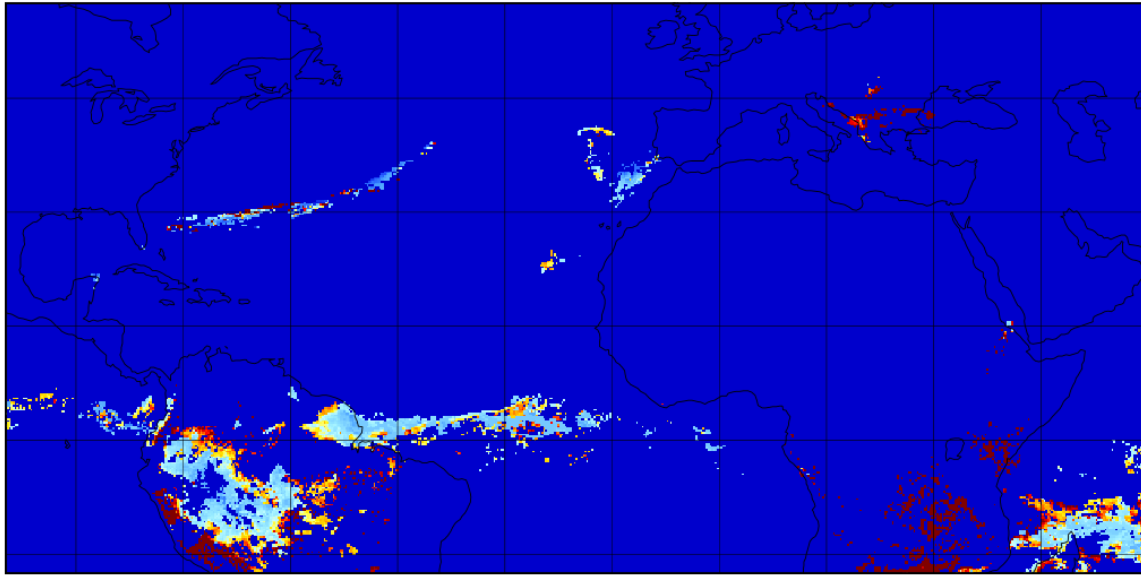
*Example 9, Turbulence Severity at FL270, with all turbulence EDR values shown.*

7.3.5. Icing Severity is a categorical assessment of icing where 0=NIL, 1=trace, 2=light, 3=moderate and 4=severe.

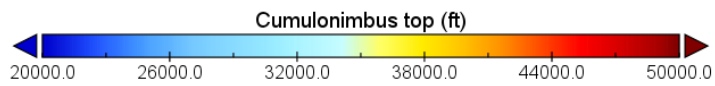
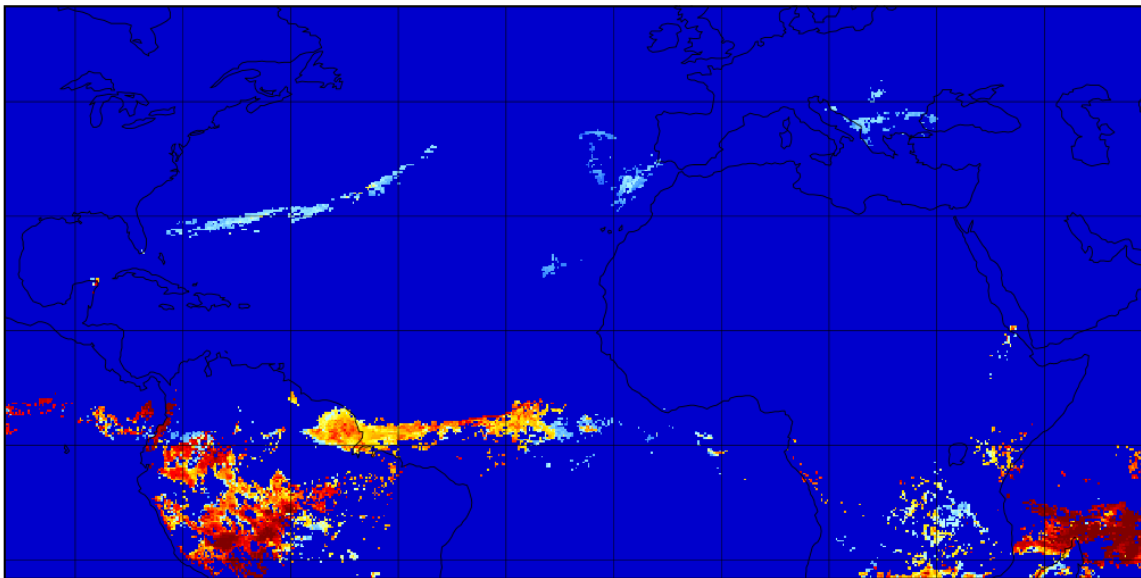


*Example 10, Icing Severity at FL180 (506.6hPa)*

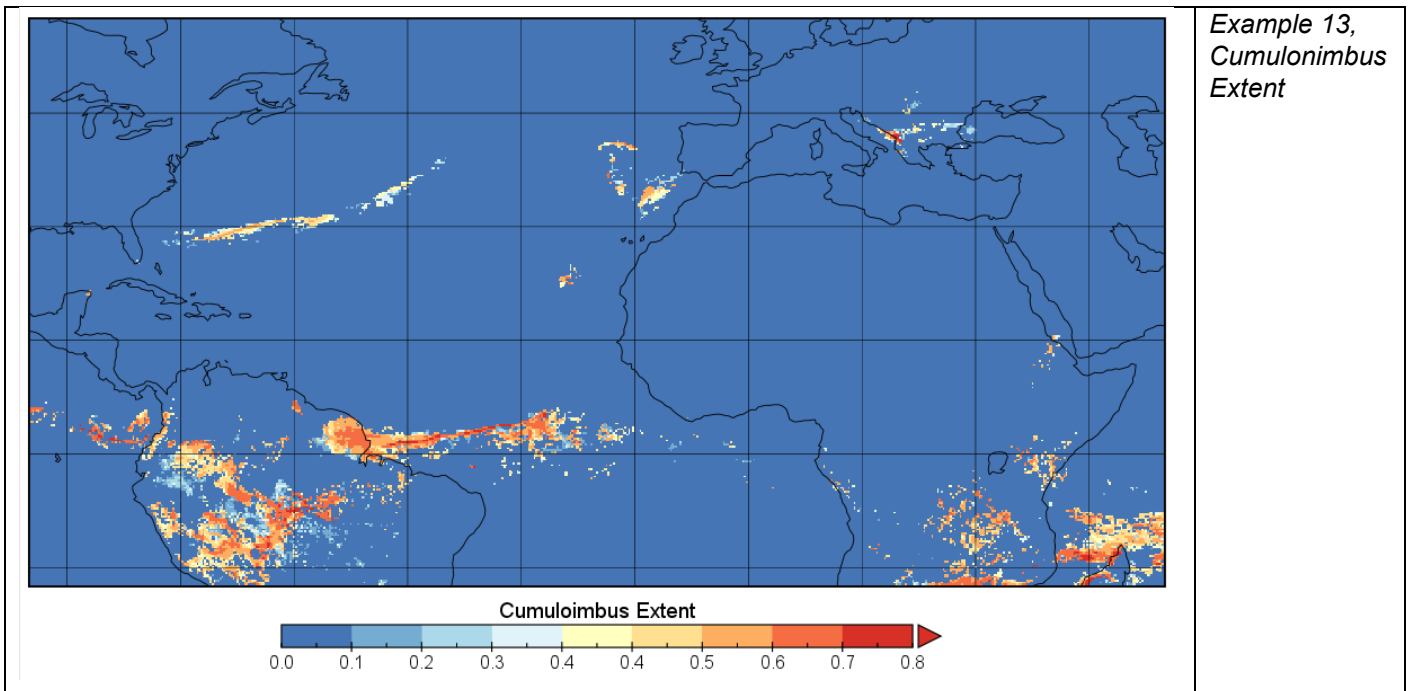
7.3.6. Cumulonimbus Base top and extent is also provided. Cumulonimbus bases and tops are given in metres, and should be converted to feet for display purposes. Cumulonimbus extent is a value between 0 and 1, with higher values indicating a greater spatial coverage. The cumulonimbus extent value should not be used literally, i.e. a value 0.5 doesn't directly equate to the lower boundary for the "OCNL" coverage categorisation.



Example 11,  
Cumulonimbus  
base



Example 12,  
Cumulonimbus  
Top



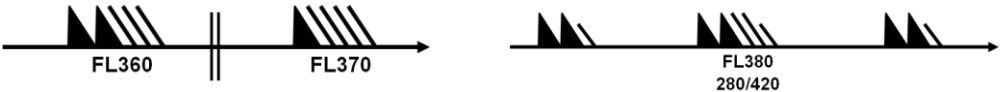
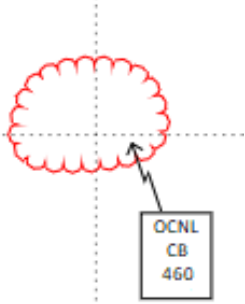
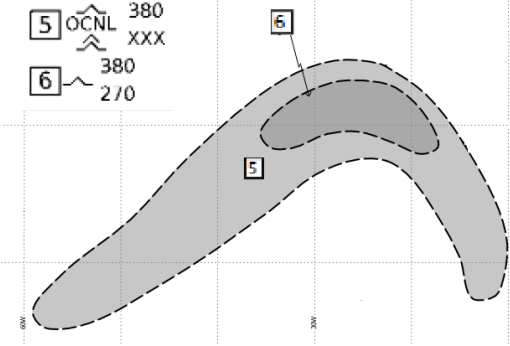
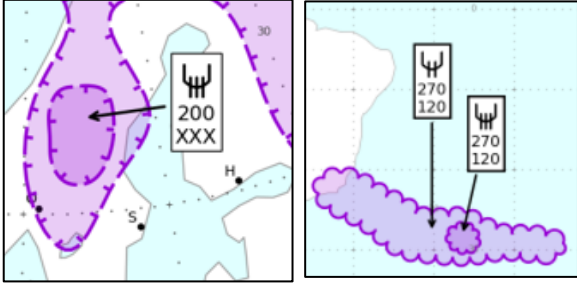
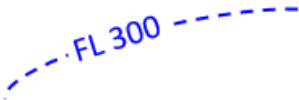
## 7.4. WAFS SIGWX forecasts

7.4.1. All the position/shape information for necessary for each SIGWX feature type is included within the IWXXM file itself, however information on colour scheme and presentation style is not.

7.4.2. Guidance on the presentation of WAFS SIGWX forecasts can be found in ICAO Doc 10157 – PANS-MET in the following sections: Model SWH – Significant Weather Chart and MODEL SN – Sheet of notifications used in flight documentation.

7.4.3. Charts can be produced according to the ICAO fixed areas that are defined in the PANS-MET (Figure A5-1, A5-2 and A5-3), but by using the IWXXM data set users are able to customize the map coverage area and map projection to whatever meets the needs of their operation.

7.4.4. A summary of SIGWX presentation styles as well as a suggested colour scheme is shown in table 15.

| Parameter                 | Visualisation Style  |
|---------------------------|--|
| <p>Jet Stream</p>         | <p>Black arrow used to indicate direction, with pennants and feathers to indicate speed. Change bars can be used where there is insufficient space for full pennants/feathers. If the max wind speed along the jet core is 120 knots or more, then the vertical extent (depth over which the wind speed is 80kt or more) should be marked.</p>                                 |
| <p>Cumulonimbus cloud</p> | <p>Areas of OCNL or FRQ CB cloud should be marked by a scalloped area. Amount and CB top information shown as a label or call out. Suggested colour: Red</p> <p>Note: CB base information is not included as part of the IWXXM information as it is almost always below the lower boundary of the SIGWX (i.e. below FL100).</p>   |
| <p>Turbulence</p>         | <p>Areas of moderate (MOD) or severe (SEV) turbulence should be marked with a thick dashed line. Two tone shading can be used to differentiate between the different turbulence intensities. Suggested colour: Grey</p> <p>Areas can be labelled with either the turbulence information on the label, or using a numbered box that links to the information in a legend.</p>  |
| <p>Icing</p>              | <p>Areas of MOD or SEV icing, and the base and top of the hazard can be marked by a scalloped area, a "T" line or another distinct line style. Suggested colour: Purple</p> <p>The icing object could be shaded in purple, with two different tones used to differentiate between areas of MOD and SEV icing.</p>    |
| <p>Tropopause Height</p>  | <p>Tropopause information is provided as contours 5000ft intervals. They should be marked by a thin dashed line with the flight level shown (prefixed with "FL"). Suggested colour: Blue</p>    |









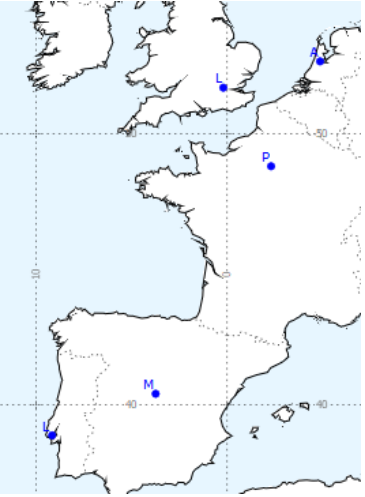
|                            |  |
|----------------------------|--|
| <p>Tropical Cyclones</p>   | <p>Tropical cyclones should be marked with a tropical cyclone symbol (for the appropriate hemisphere) and the name of the TC.</p> <p>  Northern hemisphere symbol.              Southern hemisphere symbol         </p> <p>Tropical cyclone position information is provided up to and including T+24 if a Tropical Cyclone Advisory (TCA) has been issued for it and the mean speed is &gt;34kt.</p> <p>IMPORTANT : the chart legend for timesteps past T+24 will need to reflect that no tropical cyclone information is provided</p> <p>If no TCA was issued (or was not received by the WAFCs) but a TC SIGMET was received then the position of the tropical cyclone will be taken from the TC SIGMET and “nearby” will be added to its name.</p>  |
| <p>Volcanic Eruptions</p>  | <p>Position information is provided for all timesteps if a Volcanic Ash Advisory has been issued for it.</p> <p>They should be marked on all timesteps with a volcano symbol and a call out box with that shows the name and location.</p>     |
| <p>Radioactive Release</p> | <p>Position information is provided for all timesteps if a nuclear emergency message has been issued.</p> <p>They should be marked on all timesteps with a radioactive release symbol and a call out box with the name and location.</p>     |
| <p>Map background</p>      | <p>Land: White or pale brown/green colour, with major city locations or airports marked</p> <p>Ocean/Sea: Pale blue</p>   |

Table 15, WAFS SIGWX visualisation styles

7.4.5. A legend should be included on SIGWX visualisations that describes the validity date/time of the forecast data. A suggested style/format is shown below:

```

ISSUED BY WAFC {WAFC NAME}
PROVIDED BY {PROVIDER ORGANISATION}

FIXED TIME PROGNOSTIC CHART
ICAO AREA X SIGWX
FL100-FL600

FORECAST ISSUE TIME: <HH> UTC <DD> <MMM> <YYYY>

T+XX FORECAST VALID AT <HH> UTC ON <DD> <MMM> <YYYY>

CB IMPLIES TS, GR, MOD OR SEV TURB AND ICE

UNITS USED: HEIGHTS IN FLIGHT LEVELS
CHECK SIGMET, ADVISORIES FOR TC AND VA, AND ASHTAM AND
NOTAM FOR VA

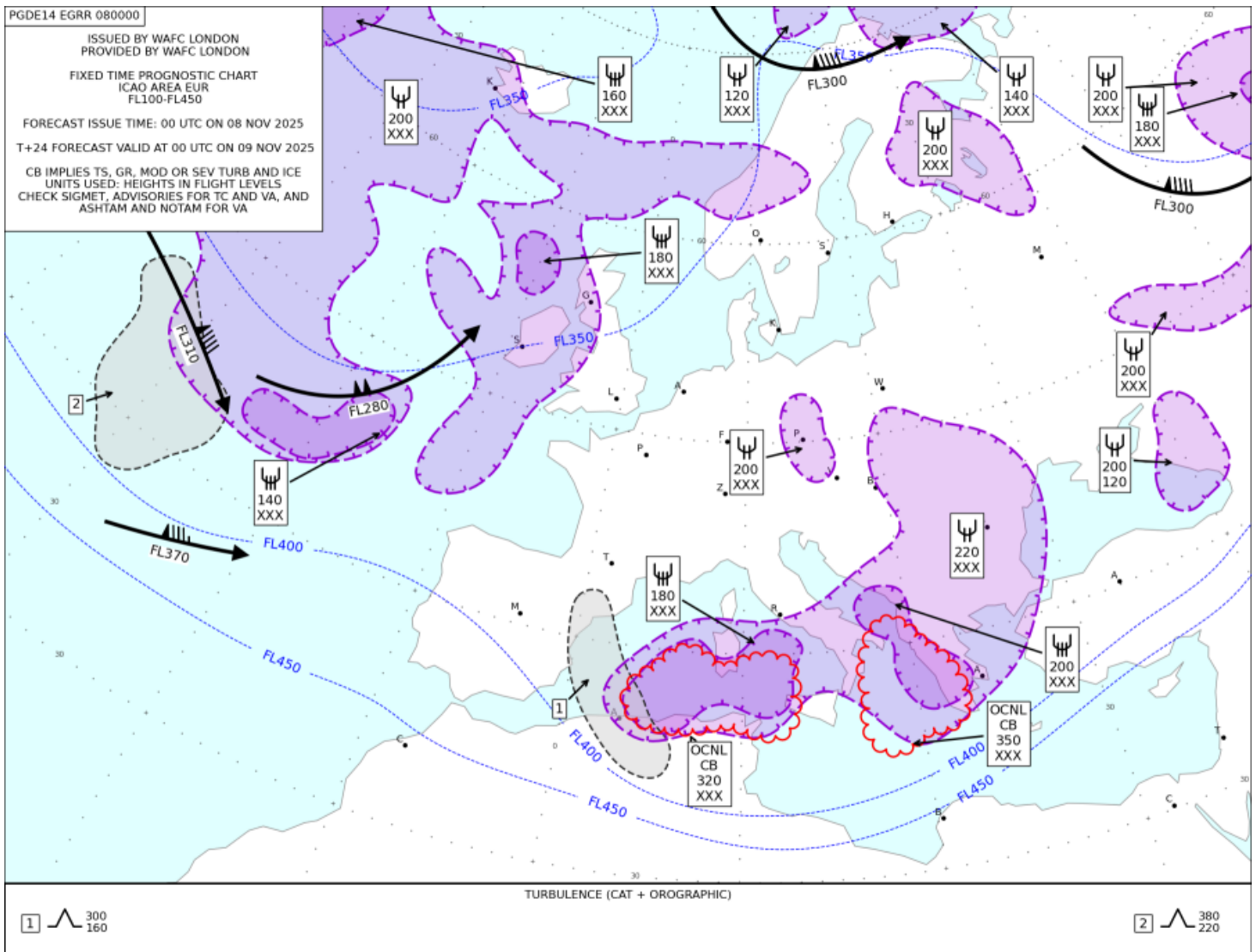
<ADDITIONAL STATEMENT>

```

7.4.6. Within the legend:

- ICAO Area can be omitted for custom area charts.
- As a full set of SIGWX forecast timesteps will be issued every 6 hours, it should be made clear what the issue time, and the validity of the chart is so that users can be certain they have the most recently published data.
- The legend should contain a statement that states the units used, and advises users to check SIGMETs, Tropical Cyclone Advisories, Volcanic Ash Advisories, ASHTAM and NOTAMs for Volcanic Ash.
- The “Additional Statement” should say: “TC INFORMATION IS NOT PROVIDED FOR THIS TIMESTEP” for data for T+27 onwards
- In the event that a radiological incident is occurring the “Additional statement” should urge users to “CONSULT SIGMET and NOTAM RELATING TO THE RADIOLOGICAL INCIDENT”

7.4.7. Example 14 shows a whole visualised SIGWX chart using the presentation suggestions given within this chapter.



Example 14 – visualised IWXXM SIGWX data.

## Chapter 8. Support

### 8.1. Support

8.1.1. End users of the SADIS are encouraged to contact the SADIS Provider in the event of problems. The SADIS Provider staff will assist where possible to resolve problems experienced by users if the fault lies within the SADIS. It may of course be the case that the fault is with the user's own software, equipment or internet connection. Under such circumstances, the supplier of the original hardware/software or the user's Internet service provider should be contacted.

8.1.2. If support is required, please report the issue to:

#### **24-HOUR HELPLINE/FAULTS DESK**

**Tel.: +44 (0) 330 135 4444**

**E-mail: [servicedesk@metoffice.gov.uk](mailto:servicedesk@metoffice.gov.uk)**

8.1.3. The SADIS manager may also be able to offer support, but please note that this is only during normal working hours. Typically 9am – 5pm UK time, Monday to Friday.

SADIS MANAGER (Monday-Friday 9am-5pm UK time)

Tel: +44 (0) 330 135 0000 (and ask to be put through to the SADIS Manager)

E-mail: [SADISmanager@metoffice.gov.uk](mailto:SADISmanager@metoffice.gov.uk)

8.1.4. A [SADIS Workstation Evaluation Guide](#) is available to enable users to check that their software or workstation is functioning to the required standard, and if deficiencies are detected to report the issue to the software provider. The guide will be updated to take account of the new WAFS data sets at the end of 2024.

8.1.5. The SADIS provider is able to evaluate workstation providers software against a set of criteria <https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/services/transport/aviation/sadis/workstationevalsfourthroundupdmog-3.pdf> . These criteria will be updated to encompass the new WAFS data sets in due course. The evaluation is a paid service. Please contact the SADIS manager for information.

### 8.2. Backup

8.2.1. In the unlikely event of a failure of the Secure SADIS API service, the SADIS provider will endeavour to issue an administrative message advising users to switch over to the backup WIFS API service.

8.2.2. The WIFS API hosts the same WAFS gridded and WAFS SIGWX data sets, and similar OPMET content. Both the SADIS and WIFS API's use the same framework and a consistent design which should make it straightforward to switch across in the event of an outage.

8.2.3. Authorized SADIS users wishing to access the WIFS API should contact the WIFS Provider via <https://www.aviationweather.gov/wifs/> to organise an account.

8.2.4. WIFS API access will be provided for backup purposes on condition that:

- a SADIS account has been authorized and provided;
- there are no outstanding balances in respect of the SADIS cost recovery scheme; and
- use is restricted to backup purposes and periodic testing.

8.2.5. It is the users own responsibility to set up their system to switch to WIFS in the event of a backup event, and it is advised that users to periodically test that their system is able to switch over effectively.

8.2.6. The WIFS Provider monitors their system to ensure that authorized SADIS users only make use of the service during times of a SADIS outage. Outside of these periods the WIFS backup should not be used more frequently than one day per week.

### **8.3. Differences between SADIS API and WIFS API**

8.3.1. The Met Office and NOAA worked closely together when designing and building the SADIS and WIFS API's to ensure a high degree of harmonisation in both systems. There are some differences:

8.3.2. The authentication process and keys/tokens are different between systems,

8.3.3. Responses to the SADIS API use a pre-signed URL (redirect) whilst the WIFS API will return the requested data sets directly as a response payload.

8.3.4. There will be minor differences in the TAC OPMET data sets due to the way data is routed to the systems.

8.3.5. There will be significant differences initially in the available IWXXM data, as the inter-regional exchange of data is not fully in place, so SADIS and WIFS initially will have access to different geographical regions.

## Appendix A - Gridded data specification

*Items marked with a blue X are also available at 1.25 degree horizontal resolution.*

| Flight Level | Geopotential Altitude (FT) | ICAO Standard Atmosphere pressure level (hPa) | Wind | Temperature | Geopotential height | Relative Humidity | Turbulence Severity | Icing Severity |
|--------------|----------------------------|---|------|-------------|---------------------|-------------------|---------------------|----------------|
| FL050        | 5000                       | 843.1   | X    | X           | X                   | X                 |                     | X              |
| FL060        | 6000                       | 812.0   | X    | X           | X                   | X                 |                     | X              |
| FL070        | 7000                       | 781.9   | X    | X           | X                   | X                 |                     | X              |
| FL080        | 8000                       | 752.6   | X    | X           | X                   | X                 |                     | X              |
| FL090        | 9000                       | 724.3   | X    | X           | X                   | X                 |                     | X              |
| FL100        | 10000                      | 696.8   | X    | X           | X                   | X                 | X                   | X              |
| FL110        | 11000                      | 670.2   | X    | X           | X                   | X                 | X                   | X              |
| FL120        | 12000                      | 644.4   | X    | X           | X                   | X                 | X                   | X              |
| FL130        | 13000                      | 619.4   | X    | X           | X                   | X                 | X                   | X              |
| FL140        | 14000                      | 595.2   | X    | X           | X                   | X                 | X                   | X              |
| FL150        | 15000                      | 571.8   | X    | X           | X                   | X                 | X                   | X              |
| FL160        | 16000                      | 549.2   | X    | X           | X                   | X                 | X                   | X              |
| FL170        | 17000                      | 527.2   | X    | X           | X                   | X                 | X                   | X              |
| FL180        | 18000                      | 506.0   | X    | X           | X                   | X                 | X                   | X              |
| FL190        | 19000                      | 485.5   | X    | X           | X                   |                   | X                   | X              |
| FL200        | 20000                      | 465.6   | X    | X           | X                   |                   | X                   | X              |
| FL210        | 21000                      | 446.5   | X    | X           | X                   |                   | X                   | X              |
| FL220        | 22000                      | 427.9   | X    | X           | X                   |                   | X                   | X              |
| FL230        | 23000                      | 410.0   | X    | X           | X                   |                   | X                   | X              |
| FL240        | 24000                      | 392.7   | X    | X           | X                   |                   | X                   | X              |
| FL250        | 25000                      | 376.0   | X    | X           | X                   |                   | X                   | X              |
| FL260        | 26000                      | 359.9   | X    | X           | X                   |                   | X                   | X              |
| FL270        | 27000                      | 344.3   | X    | X           | X                   |                   | X                   | X              |
| FL280        | 28000                      | 329.3   | X    | X           | X                   |                   | X                   | X              |
| FL290        | 29000                      | 314.9   | X    | X           | X                   |                   | X                   | X              |
| FL300        | 30000                      | 300.9   | X    | X           | X                   |                   | X                   | X              |
| FL310        | 31000                      | 287.4   | X    | X           | X                   |                   | X                   |                |
| FL320        | 32000                      | 274.5   | X    | X           | X                   |                   | X                   |                |
| FL330        | 33000                      | 262.0   | X    | X           | X                   |                   | X                   |                |
| FL340        | 34000                      | 250.0   | X    | X           | X                   |                   | X                   |                |
| FL350        | 35000                      | 238.4   | X    | X           | X                   |                   | X                   |                |
| FL360        | 36000                      | 227.3   | X    | X           | X                   |                   | X                   |                |

| Flight Level | Geopotential Altitude (FT) | ICAO Standard Atmosphere pressure level (hPa) | Wind | Temperature | Geopotential height | Relative Humidity | Turbulence Severity | Icing Severity |
|--------------|----------------------------|---|------|-------------|---------------------|-------------------|---------------------|----------------|
| FL370        | 37000                      | 216.6   | X    | X           | X                   |                   | X                   |                |
| FL380        | 38000                      | 206.5   | X    | X           | X                   |                   | X                   |                |
| FL390        | 39000                      | 196.8   | X    | X           | X                   |                   | X                   |                |
| FL400        | 40000                      | 187.5   | X    | X           | X                   |                   | X                   |                |
| FL410        | 41000                      | 178.7   | X    | X           | X                   |                   | X                   |                |
| FL420        | 42000                      | 170.4   | X    | X           | X                   |                   | X                   |                |
| FL430        | 43000                      | 162.4   | X    | X           | X                   |                   | X                   |                |
| FL440        | 44000                      | 154.7   | X    | X           | X                   |                   | X                   |                |
| FL450        | 45000                      | 147.5   | X    | X           | X                   |                   | X                   |                |
| FL460        | 46000                      | 140.6   | X    | X           | X                   |                   |                     |                |
| FL470        | 47000                      | 134.0   | X    | X           | X                   |                   |                     |                |
| FL480        | 48000                      | 127.7   | X    | X           | X                   |                   |                     |                |
| FL490        | 49000                      | 121.7   | X    | X           | X                   |                   |                     |                |
| FL500        | 50000                      | 116.0   | X    | X           | X                   |                   |                     |                |
| FL510        | 51000                      | 110.5   | X    | X           | X                   |                   |                     |                |
| FL520        | 52000                      | 105.3   | X    | X           | X                   |                   |                     |                |
| FL530        | 53000                      | 100.4   | X    | X           | X                   |                   |                     |                |
| FL540        | 54000                      | 95.7  | X    | X           | X                   |                   |                     |                |
| FL550        | 55000                      | 91.2  | X    | X           | X                   |                   |                     |                |
| FL560        | 56000                      | 87.0  | X    | X           | X                   |                   |                     |                |
| FL570        | 57000                      | 82.8  | X    | X           | X                   |                   |                     |                |
| FL580        | 58000                      | 79.0  | X    | X           | X                   |                   |                     |                |
| FL590        | 59000                      | 75.2  | X    | X           | X                   |                   |                     |                |
| FL600        | 60000                      | 71.7  | X    | X           | X                   |                   |                     |                |

In addition to the data sets listed above, the following is also available:

- Tropopause height and temperature
- Maximum u and v wind, and height of the maximum wind
- Cumulonimbus extent, base, and top.

## Appendix B – OPMET Data sets

The following TAC format data sets are routed to SADIS API:

|                                 | <b>WMO headers<br/>(T<sub>1</sub>T<sub>2</sub>A<sub>1</sub>A<sub>2</sub>ii CCCC)</b> |  |
|---------------------------------|--|--|
| METAR                           | SA////<br>SP////   | All METARs and SPECIs routed internationally   |
| TAF                             | FC////<br>FT////   | All TAFS routed internationally                |
| SIGMET                          | WS////<br>WC////<br>WV////   | All SIGMETs routed internationally             |
| AIRMET                          | WA////   | All AIRMET bulletins routed internationally    |
| GAMET                           | FA////   | All AIRMET bulletins routed internationally    |
| Special AIREP                   | UA//6/   | Special AIREP other than for volcanic ash      |
|                                 | UA//7/   | Volcanic Ash Special AIREP                     |
| Volcanic Ash Advisory (VAA)     | FVAK (21-25) PAWU  | Anchorage VAAC                                 |
|                                 | FVAG (01-05) SABM  | Buenos Aires VAAC                              |
|                                 | FVAU (01-10) ADRM  | Darwin VAAC                                    |
|                                 | FVXX (01-03,05) EGRR   | London VAAC                                    |
|                                 | FVCN (01-04) CWAO  | Montreal VAAC                                  |
|                                 | FVFE01 RJTD  | Tokyo VAAC                                     |
|                                 | FVXX (01-05) LFPW  | Toulouse VAAC                                  |
|                                 | FVXX (20-27) KNES  | Washington VAAC                                |
|                                 | FVPS (01-05) NZKL  | Wellington VAAC                                |
| Tropical Cyclone Advisory (TCA) | FKAU (01-06) ADRM  | TCAC Darwin                                    |
|                                 | FKIN (20-21) VIDP  | TCAC New Delhi                                 |
|                                 | FKIO20 FMEE  | TCAC La Réunion                                |
|                                 | FKNT (21-25) KNHC  | TCAC Miami                                     |
|                                 | FKPZ (21-25) KNHC  | TCAC Miami                                     |
|                                 | FKPA (21-25) PHFO  | TCAC Honolulu                                  |
|                                 | FKPQ (30-33) RJTD  | TCAC Tokyo                                     |
|                                 | FKPS 01 NFFN   | TCAC Nadi                                      |
| Space Weather Advisory          | FNXX (01-04) KWNP  | Washington Space Weather Centre, United States |
|                                 | FNXX (01-04) EFKL<br>FNXX (01-04) EGRR   | PECASUS Space Weather Consortium               |
|                                 | FNXX (01-04) LFPW and<br>FNXX (01-04) YMMC   | ACFJ Space Weather Consortium                  |
|                                 | FNXX (01-04) ZBBB<br>FNXX (01-04) UUAG   | China-Russia Space Weather Consortium          |
|                                 | VA NOTAM and ASHTAM  | NWXX01 EGRR                                    |

Where “/” represents any character at the appropriate position (wildcard routing).

The following IWXXM format data sets are routed to SADIS API:

**IMPORTANT:** the time this guide was published, only data for the EUR/NAT, ASI-PAC, and MID regions is available, and within the ASI-PAC and MID regions not all States are yet producing data in IWXXM format.

|                                 | <b>WMO headers<br/>(T<sub>1</sub>T<sub>2</sub>A<sub>1</sub>A<sub>2</sub>ii CCCC)</b> |  |
|---------------------------------|--|--|
| METAR                           | LA//// ////<br>LP//// ////   | METARs and SPECIs routed internationally                   |
| TAF                             | LC//// ////<br>LT//// ////   | TAFS routed internationally                                |
| SIGMET                          | LS//// ////<br>LY//// ////<br>LV//// ////  | SIGMETs routed internationally                             |
|                                 | LY//// ////  | Tropical cyclone SIGMETs routed internationally            |
|                                 | LV//// ////  | Volcanic ash SIGMETs routed internationally                |
| AIRMET                          | LW//// ////  | All AIRMET bulletins that are routed to the SADIS gateway. |
| Volcanic Ash Advisory (VAA)     | <del>LUAK (21-25) PAWU</del>   | <del>Anchorage VAAC</del>                                  |
|                                 | <del>LUAG (01-05) SABM</del>   | <del>Buenos Aires VAAC</del>                               |
|                                 | LUAU (01-10) ADRM  | Darwin VAAC  |
|                                 | LUXX (01-03, 05) EGRR  | London VAAC  |
|                                 | <del>LUCN (01-04) CWAQ</del>   | <del>Montreal VAAC</del>                                   |
|                                 | LUFE01 RJTD  | Tokyo VAAC   |
|                                 | LUXX (01-05) LFPW  | Toulouse VAAC  |
|                                 | <del>LUXX (20-27) KNES</del>   | <del>Washington VAAC</del>                                 |
|                                 | LUPS (01-05) NZKL  | Wellington VAAC  |
| Tropical Cyclone Advisory (TCA) | LKAU (01-06) ADRM  | TCAC Darwin  |
|                                 | LKIN (20-21) VIDP  | TCAC New Delhi   |
|                                 | LKIO20 FMEE  | TCAC La Réunion  |
|                                 | <del>LKNT (21-25) KNHC</del>   | <del>TCAC Miami</del>                                      |
|                                 | <del>LKPZ (21-25) KNHC</del>   | <del>TCAC Miami</del>                                      |
|                                 | <del>LKPA (21-25) PHEQ</del>   | <del>TCAC Honolulu</del>                                   |
|                                 | LKPQ (30-33) RJTD  | TCAC Tokyo   |
|                                 | LKPS 01 NFFN   | TCAC Nadi  |
| Space Weather Advisory          | <del>LNXX (01-04) KWNP</del>   | <del>Washington Space Weather Centre, United States</del>  |
|                                 | LNXX (01-04) EFKL  | PECASUS Space Weather Consortium                           |
|                                 | LNXX (01-04) EGRR  |  |
|                                 | LNXX (01-04) LFPW and<br>LNXX (01-04) YMMC   | ACFJ Space Weather Consortium                              |
|                                 | FNXX (01-04) ZBBB<br>FNXX (01-04) UUAG   | China-Russia Space Weather Consortium                      |

*Bulletins shown with strikethrough are not available at the time this user guide was published, but will become available once the inter-regional IWXXM exchange is fully in place.*

The following graphical format advisories are routed to SADIS API:

|   | <b>WMO headers<br/>(T<sub>1</sub>T<sub>2</sub>A<sub>1</sub>A<sub>2</sub>ii CCCC)</b> |                   |
|---|--|-------------------|
| Volcanic Ash Advisory graphics (VAG)    | PFXD (21-25) PAWU  | Anchorage VAAC    |
|   | PFXD (01-05) SABM  | Buenos Aires VAAC |
|   | PFXD (01-10) ADRM  | Darwin VAAC       |
|   | PFXD (01-03,05) EGRR   | London VAAC       |
|   | PFXD (01-04) CWAO  | Montreal VAAC     |
|   | PFXD 01 RJTD   | Tokyo VAAC        |
|   | PFXD (09) LFPW   | Toulouse VAAC     |
|   | PFXD (20-27) KNES  | Washington VAAC   |
| PFXD (01-05) NZKL                       | Wellington VAAC  |                   |
| Tropical Cyclone Advisory graphic (TCG) | PZXD (01-05) FMEE  | TCAC La Réunion   |

*Note. 1— Volcanic Ash Advisory graphics and Tropical Cyclone advisory graphics are only available on SADIS FTP when they are forwarded to the WAFIC London messages switch by the TCAC concerned and following notification of the WMO AHL by the originator. Currently only one of the seven TCACs provide tropical cyclone advisories in graphical format for distribution via SADIS.*

The following Notices sets are routed to SADIS API:

| <b>Bulletin Header</b>                                   | <b>Contents</b>  |
|--|--|
| NOUK31 EGGY  | SADIS Gateway (ROC London) advisory messages   |
| NOUK32 EGGY  | SADIS Gateway automatic monitoring messages.   |
| NOUK33 EGGY<br>NOUK34 EGGY                               | SADIS Gateway advisory messages to inform data providers and communications centres on missing data, and problems. |
| NOBX99 EBRR  | European Data Management Group (DMG) METNOs describing changes to bulletins promulgated in the EUR Region          |
| NOFR01 LFPW<br>NOOS01 LOWM<br>NORS01 UUUJ<br>NOUK01 EGGY | European ROC administrative messages.  |



## Appendix C – permissible “id” codes for gridded data sets

| <b>Data in the egrr_wafs_windtempgeo_0p25 and kwbc_wafs_windtempgeo_0p25 collections</b>  |  |
|---|--|
| <p>Y[UV,T, or H]DYG006_008FLALL<br/> Y[UV,T, or H]DYG009_011FLALL<br/> Y[UV,T, or H]DYG012_014FLALL<br/> Y[UV,T, or H]DYG015_017FLALL<br/> Y[UV,T, or H]DYG018_020FLALL<br/> Y[UV,T, or H]DYG021_023FLALL<br/> Y[UV,T, or H]DYG024_030FLALL<br/> Y[UV,T, or H]DYG033_039FLALL<br/> Y[UV,T, or H]DYG042_048FLALL<br/> Y[UV,T, or H]DYG054_066FLALL<br/> Y[UV,T, or H]DYG072_084FLALL<br/> Y[UV,T, or H]DYG090_102FLALL<br/> Y[UV,T, or H]DYG108_120FLALL</p> | <p>Use:<br/> “UV” for wind data<br/> “T” for temperature data<br/> “H” for geopotential height data</p> <p>Data for 072_084, 090_102 and 108_120 will not be available for the 06UTC and 18UTC EGRR data sets.</p>                             |
| <b>Data in the egrr_wafs_humidity_0p25 and kwbc_wafs_humidity_0.25 collections</b>  |  |
| <p>YRDYG006_008FLALL<br/> YRDYG009_011FLALL<br/> YRDYG012_014FLALL<br/> YRDYG015_017FLALL<br/> YRDYG018_020FLALL<br/> YRDYG021_023FLALL<br/> YRDYG024_030FLALL<br/> YRDYG033_039FLALL<br/> YRDYG042_048FLALL<br/> YRDYG054_066FLALL<br/> YRDYG072_084FLALL<br/> YRDYG090_102FLALL<br/> YRDYG108_120FLALL</p>  | <p>Use:<br/> “R” for relative humidity data</p> <p>Data for 072_084, 090_102 and 108_120 will not be available for the 06UTC and 18UTC EGRR data sets.</p>   |
| <b>Data in the egrr_wafs_trop_jet_0p25 and kwbc_wafs_trop_jet_0p25 collections</b>  |  |
| <p>Y[H or T]DYG006_008FL999<br/> Y[H or T]DYG009_011FL999<br/> Y[H or T]DYG012_014FL999<br/> Y[H or T]DYG015_017FL999<br/> Y[H or T]DYG018_020FL999<br/> Y[H or T]DYG021_023FL999<br/> Y[H or T]DYG024_030FL999<br/> Y[H or T]DYG033_039FL999<br/> Y[H or T]DYG042_048FL999<br/> Y[H or T]DYG054_066FL999<br/> Y[H or T]DYG072_084FL999<br/> Y[H or T]DYG090_102FL999<br/> Y[H or T]DYG108_120FL999</p>   | <p>FL999 indicates it is tropopause data<br/> Use:<br/> “H” for tropopause height data<br/> “T” for tropopause temperature data</p> <p>Data for 072_084, 090_102 and 108_120 will not be available for the 06UTC and 18UTC EGRR data sets.</p> |
| <p>Y[H or UV]DYG006_008FL998<br/> Y[H or UV]DYG009_011FL998<br/> Y[H or UV]DYG012_014FL998<br/> Y[H or UV]DYG015_017FL998<br/> Y[H or UV]DYG018_020FL998<br/> Y[H or UV]DYG021_023FL998<br/> Y[H or UV]DYG024_030FL998</p>  | <p>FL998 indicates it is maximum wind data<br/> Use:<br/> “H” for the height of the maximum wind<br/> “UV” for max v and v wind data</p>   |

|  |   |
|--|---|
| Y[H or UV]DYG033_039FL998<br>Y[H or UV]DYG042_048FL998<br>Y[H or UV]DYG054_066FL998<br>Y[H or UV]DYG072_084FL998<br>Y[H or UV]DYG090_102FL998<br>Y[H or UV]DYG108_120FL998 | Data for 072_084, 090_102 and 108_120 will not be available for the 06UTC and 18UTC EGRR data sets. |
|--|---|

|  |   |
|--|---|
| <b>Data in the egrr_wafshzds_blended_ice_0p25 and kwbc_wafshzds_blended_ice_0p25 collections</b>   |   |
| YIDYG006_008FLALL<br>YIDYG009_011FLALL<br>YIDYG012_014FLALL<br>YIDYG015_017FLALL<br>YIDYG018_020FLALL<br>YIDYG021_023FLALL<br>YIDYG024_030FLALL<br>YIDYG033_039FLALL<br>YIDYG042_048FLALL  | Use:<br>"I" for icing data  |
| <b>Data in the egrr_wafshzds_blended_turb_0p25 and kwbc_wafshzds_blended_turb_0p25 collections</b>   |   |
| YLDYG006_008FLALL<br>YLDYG009_011FLALL<br>YLDYG012_014FLALL<br>YLDYG015_017FLALL<br>YLDYG018_020FLALL<br>YLDYG021_023FLALL<br>YLDYG024_030FLALL<br>YLDYG033_039FLALL<br>YLDYG042_048FLALL  | Use:<br>"L" for turbulence data   |
| <b>Data in the egrr_wafshzds_blended_cb and kwbc_wafshzds_blended_cb collections</b>   |   |
| YBDYG006_008[FL001-FL002 or FL003]<br>YBDYG009_011[FL001-FL002 or FL003]<br>YBDYG012_014[FL001-FL002 or FL003]<br>YBDYG015_017[FL001-FL002 or FL003]<br>YBDYG018_020[FL001-FL002 or FL003]<br>YBDYG021_023[FL001-FL002 or FL003]<br>YBDYG024_030[FL001-FL002 or FL003]<br>YBDYG033_039[FL001-FL002 or FL003]<br>YBDYG042_048[FL001-FL002 or FL003] | Use:<br>"B" for cumulonimbus data<br>and<br>"FL001" for cumulonimbus extent data<br>"FL002" for cumulonimbus base data<br>"FL003" for cumulonimbus top data |

For all 0.25 degree files The "G" can be replaced with "A1", "A2", "A3", "A4", "A5", "A6", "A7" or "A8" to get a regional data set instead of the global file.

| <b>Data in the egrr_wafs_windtempgeo_1p25 and kwbc_wafs_windtempgeo_1p25 collection</b> |  |
|---|--|
| Y[UV,T, or H]DXG006_012FLALL  | Use:<br>"UV" for wind data<br>"T" for temperature data<br>"H" for geopotential height data |
| Y[UV,T, or H]DXG015_021FLALL  |  |
| Y[UV,T, or H]DXG024_030FLALL  |  |
| Y[UV,T, or H]DXG033_036FLALL  |  |
| <b>Data in the egrr_wafs_humidity_1p25 and kwbc_wafs_humidity_1p25 collection</b>       |  |
| YRDYG006_012FLALL   | Use:<br>"R" for relative humidity data   |
| YRDYG015_021FLALL   |  |
| YRDYG024_030FLALL   |  |
| YRDYG033_036FLALL   |  |
| <b>Data in the egrr_wafs_trop jet_1p25 and kwbc_wafs_trop jet_1p25 collection</b>       |  |
| Y[H or T]DXG006_012FL999  | FL999 indicates it is tropopause data  |
| Y[H or T]DXG015_021FL999  | Use:   |
| Y[H or T]DXG024_030FL999  | "H" for tropopause height data   |
| Y[H or T]DXG023_036FL999  | "T" for tropopause temperature data  |
| Y[H or UV]DXG006_012FL998   | FL998 indicates it is maximum wind data  |
| Y[H or UV]DXG015_021FL998   | Use:   |
| Y[H or UV]DXG024_030FL998   | "H" for the height of the maximum wind   |
| Y[H or UV]DXG033_036FL998   | "UV" for max v and v wind data   |