International Civil Aviation Organization

MIDANPIRG Meteorology Sub-Group
Twelfth Meeting (MET SG/12)

(Virtual, 12 – 13 November 2024)

Agenda Item 4: MET Planning and Implementation

SADIS AND WAFS MATTERS

(Presented by the SADIS Provider)

SUMMARY

This paper provides an update on matters that relate to the WAFC London operated Secure Aviation Data Information System (SADIS) and the World Area Forecast System (WAFS) data sets.

Action by the meeting is at paragraph 6.

1. INTRODUCTION

1.1 This paper reports on SADIS operational matters as well as recent and upcoming changes in the provision of WAFS data on SADIS. These changes have been agreed though the ICAO Met Panel Meteorological Operations Group (MOG) at its annual meetings.

2. WAFS Gridded data

Changes to the operational data sets

2.1 On 24 January 2024, after the 06 UTC model run, the 1.25 degree cumulonimbus, clear air turbulence (CAT) and cumulonimbus data sets were retired. These data sets were removed from ICAO Annex 3 in November 2020.

2.2 On 30 January, WAFC London switched over the systems used for the production of WAFS gridded data to entirely new infrastructure. This new system creates both the new high resolution gridded data that is published on the SADIS API and the lower resolution data that is available on SADIS FTP. The new production system has a higher level of resilience with automatic monitoring and alerting in place to detect any issues.

2.3 Data production through the new infrastructure means that there has been a change in the time at which data is published on the SADIS FTP. The non-hazard data sets (wind, temperature etc) are now 20 minutes later than they were, and the hazard data sets (turbulence, cumulonimbus and icing) are now 20 minutes earlier.

2.4 The new higher resolution WAFS data sets were made available for the first time on the new SADIS API on 7 February 2024 in pre-operational mode, and the SADIS API became fully operational

on 19 March 2024.

Verification

2.5 Verification data for WAFC London is available here http://www.metoffice.gov.uk/aviation/responsibilities/icao. WAFC London is now able to provide turbulence verification data which uses the IATA Turbulence Aware data sets. These observations are reported as an Eddy Dissipation Rate (EDR) which is the same as what the WAFS Turbulence forecasts, but it is important to note that the IATA data doesn't differentiate between turbulence types and can therefore include convective turbulence which WAFC turbulence data is not trying to forecast.

2.6 Verification data for WAFC Washington is mostly available here: https://www.emc.ncep.noaa.gov/users/verification/aviation/wafs/prod/. Wind direction verification plots are available here: http://www.emc.ncep.noaa.gov/gmb/icao/.

2.7 Both WAFCs verify their own wind and temperature forecasts. WAFC London provides verification data for the harmonized/blended cumulonimbus cloud forecasts, and turbulence forecasts. Unfortunately, verification data is not currently available for turbulence, but it is hoped that this will be published in 2024. WAFC Washington provide verification data for the harmonized/blended icing data sets.

2.8 With the introduction of the new WAFS gridded data sets additional verification metrics will be provided in 2026 to account for the higher resolution data and timesteps. A new addition will be to show performance metrics for different wind speed categories/"bins". An example plot is shown in figure 1.

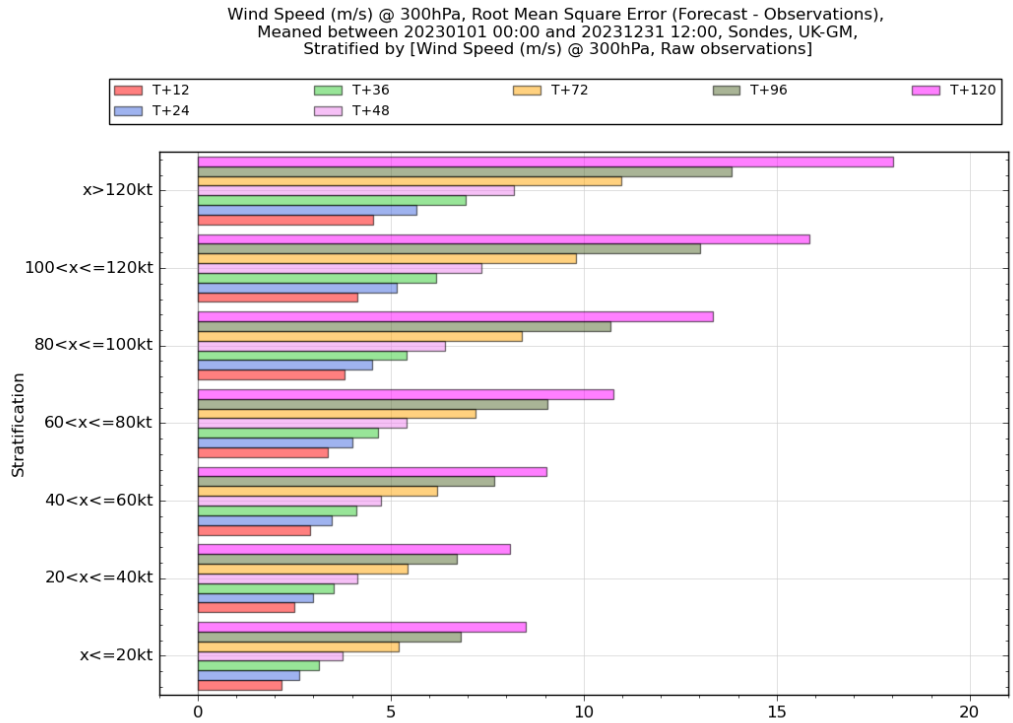

Figure 1, stratified or "binned" wind speed verification plot which shows the Root Mean Square Error for 20KT wind speed "bins" and a range of forecast timesteps. This plot is valid for the Northern Hemisphere and FL300 and was compiled using data from 1 January 2023 to 31 December 2023.

2.9 The WAFCs will also commence verification of the new SIGWX forecasts once they become operational, and these will be published in 2026.

3. WAFS SIGWX data

3.1 No changes have been made to the operational SIGWX forecasts since the MET SG/11 meeting.

3.2 On 23 January 2025 both WAFC London and WAFC Washington will be making changes to the T+24 SIGWX charts and BUFR data at the same time as introducing the new multi-timestep SIGWX forecasts. The changes are summarized in a separate information paper.

4. SADIS API

4.1 The SADIS API comprises of three elements, one for provision of the higher resolution WAFS gridded data sets, one for the provision of WAFS SIGWX forecasts, and one for the provision of OPMET data.

4.2 The Elements providing WAFS gridded data and OPMET became operational on 19 March 2024. The WAFS SIGWX element has also been available since then in a beta/pre-operational mode and gives access to the new IWXXM format SIGWX data to enable users to set up their systems ready to use it.

4.3 Appendix A shows the users set up with access to the SADIS API.

4.4 Information on the operation of the SADIS API is available here: https://www.metoffice.gov.uk/services/transport/aviation/regulated/international-aviation/sadis/sadis-api/index. It is SWIM compliant, published in the EUROCONTROL SWIM registry (https://eur-registry.swim.aero/services) and uses the Open Geospatial Consortium Environmental Data Retrieval framework. Registration for the SADIS API includes agreeing a set of terms and conditions, and getting set up onto the developer portal used by the Met Office.

5. General SADIS Matters

Efficacy Survey

5.1 The annual SADIS efficacy survey for 2024 commenced on 1 July 2024 and users are being notified of it by SADIS administrative messages and, in due course, a letter from ICAO letter to focal points. The survey can also be accessed here: https://response.questback.com/metoffice/0ijy4bztzu. The SADIS provider would like to thank those who responded last year and would like to encourage all SADIS users to participate in the 2023 Survey.

5.2 A separate mini-survey will be also sent out to everyone who has signed up for the SADIS API towards the end of 2024 to seek feedback.

SADIS Data Catalogue

5.3 A catalogue of data usually present on SADIS has been created (from data obtained during the February 2024 monitoring period) so that missing TAF and METAR data can be more easily identified. The latest edition of the catalogue is hosted on SADIS in the /DOCUMENTATION/ folder and within the SADIS and WIFS documentation section on the Met Panel public webpages https://www.icao.int/airnavigation/METP/Pages/METP%20Public%20Documents.aspx

- If a SADIS user identifies that some METAR, TAF or SIGMET data is absent from SADIS, the catalogue should be consulted to see if it is usually present before reporting it to the SADIS Manager (sadismanager@metoffice.gov.uk) who will raise the issue with ROC London. ROC London who will investigate and work with the other ROCs to try and restore missing data, or advise on next steps if there is a request for new data to be added to the feed.

SADIS Workstation Evaluations

5.4 The SADIS provider has put together a SADIS evaluation guide which users can use to evaluate their own systems. The intention of this guide is to assist users in identifying problems with their SADIS data visualization system/software by clearly showing what constitutes an acceptable standard. Users can then feedback any "non-compliance" issues to their software provider. There are two versions of this guide, one for SADIS FTP and one for SADIS API.

5.5 These guides can be found in the SADIS and WIFS documentation section on https://www.icao.int/airnavigation/METP/Pages/METP%20Public%20Documents.aspx

5.6 Individual SADIS Workstation evaluations can still be carried out by the SADIS provider if required, however this work will be chargeable. Please contact the SADIS to discuss costs and an evaluation schedule should this be required.

Status of Implementation of SADIS

5.7 At the end of February each year an updated "Status of Implementation of SADIS" document is published on the Met Panel Public Webpages (in the SADIS/WIFS reference documentation section). An excerpt of this document is included in Appendix A and it also includes a couple of new additions (grey highlighted text) that will get published next year. The table also shows the SADIS FTP users within the MID region who have completed the registration and initial set up which enables them to use the SADIS API.

6. ACTION BY THE MEETING

6.1 The meeting is invited to note the contents of this paper and undertake the SADIS efficacy survey if their organization is a SADIS user.

APPENDIX A

STATUS OF IMPLEMENTATION OF SADIS FTP
(30 August 2024)

Note. ─ Non-operational approved users, and those who no longer take the service (for whatever reason) or who have not used SADIS for a period of at least two years are indicated in italics

Key:
SADIS FTP = operational user ('X') of SADIS FTP or SADIS API service
** = approved SADIS hardware and/or software supplier*

ICAO Contracting State		***User***		***Location***	***SADIS FTP***	***SADIS API***
No	***Name***	***No***	***Name***	***Name***		
	EUR REGION					
105	Bahrain	199	Ministry of Transportation Civil Aviation Affairs	Bahrain International Airport	X	
106	Egypt	200.	Meteorological Authority	Cairo Airport	X	
	Egypt	201.	Egyptian Ministry of Defence	Cairo	X	
	Iran (Islamic Republic of)		*National Meteorological Service*	*Teheran*		
	Iraq		*Iraq Meteorological Organization and Seismology*	*Baghdad Airport*		
107	Jordan	202.	Meteorological Department	Queen Alia Airport	X	
108	Kuwait		Meteorological Department	Kuwait	X	
109	Libya	203.	National Meteorological Centre	NMC - Eswani	X	
	Libya	204.	National Meteorological Centre	Tripoli Int. Airport	X	
	Libya	205.	National Meteorological Centre	Binena Int. Airport	X	
110	Oman	206.	Public Authority for Civil Aviation/ Meteorological Department	Salalah Airport	X	
	Oman	207.	Public Authority for Civil Aviation/ Meteorological Department	Seeb Airport	X	
111	Qatar	208.	Civil Aviation Authority - Meteorology Department	Doha Airport	X	X
112	Saudi Arabia	209.	General Authority of Meteorology and Environmental Protection (GAMEP)	Jeddah	X	
	Saudi Arabia	210.	General Authority of Meteorology and Environmental Protection (GAMEP)	Jeddah Airport	X	
	Saudi Arabia	211.	General Authority of Meteorology and Environmental Protection (GAMEP)	Riyadh Airport	X	
	Saudi Arabia	212.	*Saudi Airlines*	*Jeddah Airport*		
113	Sudan	213.	Sudan Meteorological Authority	Headquarter, Khartoum	X	
	Syrian Arab Republic		*National Meteorological Service*	*Damascus*		
	Syrian Arab Republic		*National Meteorological Service*	*Aleppo*		
114	United Arab Emirates	214.	National Centre for Meteorology and Seismology (NCMS)	Abu Dhabi	X	X
	United Arab Emirates	215.	National Centre for Meteorology and Seismology (NCMS)	Dubai International Airport	X	
	United Arab Emirates	216.	National Centre for Meteorology and Seismology (NCMS)	Dubai International Airport	X	

ICAO Contracting State		*User*		*Location*	*SADIS FTP*	*SADIS API*
No	***Name***	***No***	***Name***	***Name***		
	United Arab Emirates		*Civil Aviation Authority*	*Headquarters, Abu Dhabi*		
	United Arab Emirates		*Air Force and Air Defence Meteorological Department*	*Abu Dhabi (Al-Dhafra Air Base)*		
115	Yemen	217.	Civil Aviation and Meteorological Authority (CAMA)	Sana'a Airport	X	
	Yemen	218.	National Meteorological Service (YMS/CAMA)	Sana'a	X	

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