



**Federal Aviation
Administration**

World Area Forecast System (WAFS) – Transition to a new model and high- resolution products

By Karen-Shelton-Mur, FAA

Larry Burch, AvMet Applications

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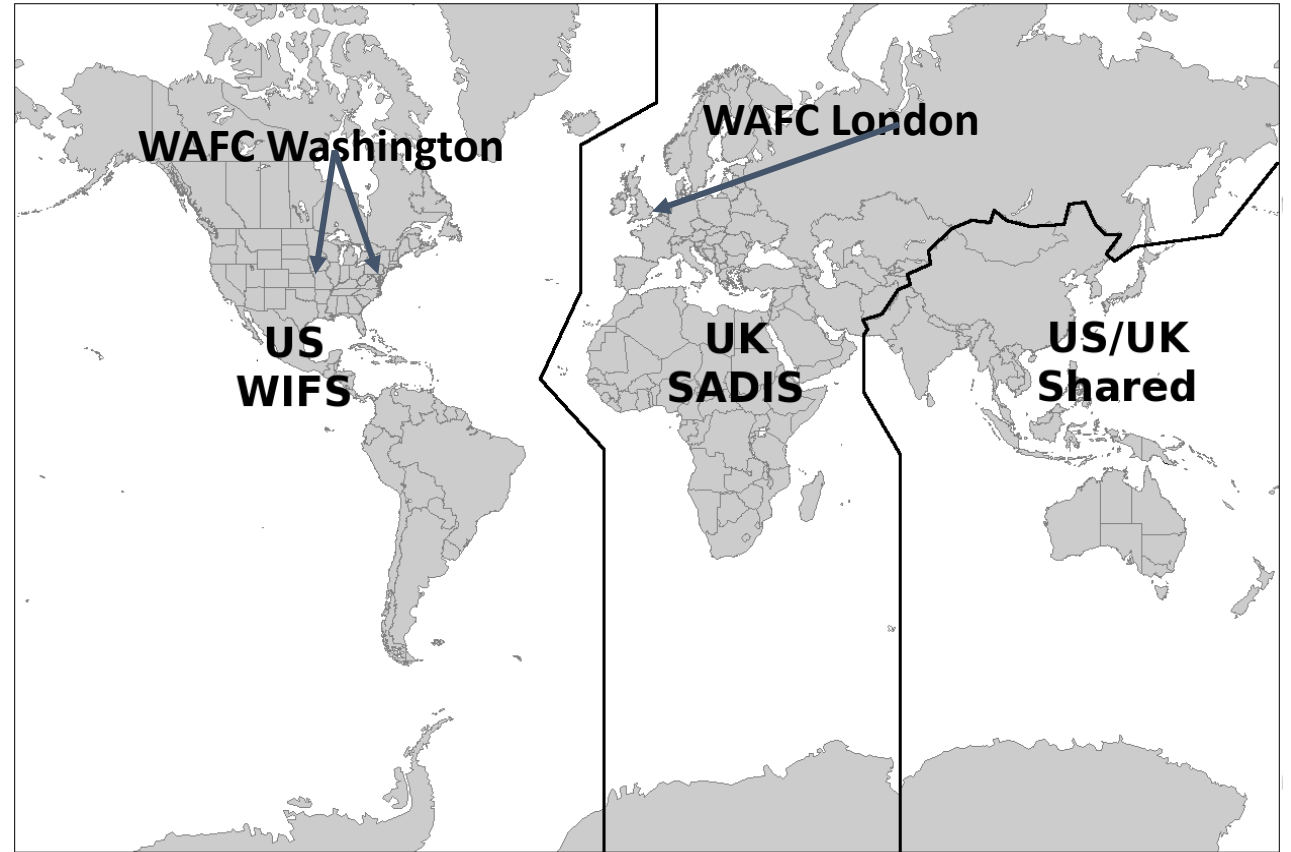
Agenda

- History of ICAO's World Area Forecast System (WAFS)
- WAFS upgrades with Annex 3, Amendment 82, and the new PANS-MET
 - New WAFS data sets
 - New WAFS forecasts
 - New dissemination networks for the WAFS information
- Retirement of old (legacy) WAFS information and dissemination systems
- Future upgrades
- Additional information



History of WAFS developments

- World Area Forecast System (WAFS) was firstly implemented in 1984.
- Transitioned from a network of Regional Area Forecast Centres (RAFC) to two World Area Forecast Centres (WAFC) since early 2000s.
- Two WAFCs:
 - **WAFC Washington** (NOAA/NWS Aviation Weather Center and NWS Central Operations)
 - WAFS Internet File Service (WIFS)
 - **WAFC London** (UK Met Office)
 - Secure Aviation Data Information Service (SADIS)
- Data distribution evolutionized
 - Originally via satellite and facsimile
 - Transitioned to WIFS and SADIS Internet (FTP) services in the early 2010s
 - Now transitioning to WIFS and SADIS Application Programming Interface (API) services



WAFS updates with Annex 3, Amd. 82, and PANS-MET

WAFS Upgrades

- *Annex 3, Amendment 82, and the new Procedures for Air Navigation Services – Meteorology (PANS-MET), introduce higher resolution WAFS gridded data and Significant Weather (SIGWX) forecasts into the SARPs and provisions on 27 November 2025.*
- *Due to computer system replacement and staffing issues at the WAFCs, the upgrades were completed early and have been implemented.*



WAFS updates with Annex 3, Amd. 82, and PANS-MET

WAFS Gridded Data Upgrades

Finer resolution WAFS gridded data

New 0.25 degree latitude/longitude data sets:

Forecast Timesteps:

- T+06 to T+24 at 1-hourly intervals
- T+27 to T+48 at 3-hourly intervals¹
- T+54 to T+120 at 6-hourly intervals²

¹Icing, Turbulence and Cumulonimbus Clouds stops at T+48

²WAFS London data past T+66 is only produced for the 00Z and 12Z model runs

Wind U/V - 56 vertical levels from FL050 to FL600

Temperature - 56 vertical levels from FL050 to FL600

Geospatial Height - 56 vertical levels from FL050 to FL600

Relative Humidity - 14 vertical levels from FL050 to FL180

Tropopause height and Tropopause temperature

Maximum wind height, and maximum wind u/v

Icing Severity - 26 vertical levels from FL050 to FL300

Turbulence Severity - 36 vertical levels from FL100 to FL450

Cumulonimbus Cloud Extent, Base and Top



WAFS updates with Annex 3, Amd. 82, and PANS-MET

WAFS Gridded Data Upgrades

The legacy 1.25-degree latitude/longitude data sets have been retained for those who need them:

Forecast Timesteps:

T+06 to T+36 at 3-hourly intervals

Wind U/V - 17 vertical levels from FL050 to FL600

Temperature - 17 vertical levels from FL050 to FL600

Geospatial Height - 17 vertical levels from FL050 to FL600

Relative Humidity - 5 vertical levels from FL050 to FL180

Tropopause height and Tropopause temperature

Max wind height, and max wind u/v



WAFS updates with Annex 3, Amd. 82, and PANS-MET

WAFS Significant Weather (SIGWX) Forecast Upgrades

New multi-timestep WAFS SIGWX forecasts.

Multi-timestep SIGWX:

- *SIGWX forecasts valid from 6-hours through 48-hours at 3-hourly intervals (i.e., 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48-hours)*
- *New IWXXM format*



WAFS updates with Annex 3, Amd. 82, and PANS-MET

Where to get the updated WAFS data?

New SADIS/WIFS APIs

- Contains the full, new, higher resolution WAFS data sets
- Contains the new multi-timestep WAFS SIGWX forecasts

Original SADIS and WIFS Internet FTP services

- Contains the 1.25-degree WAFS gridded data sets and a limited set of 0.25 degree hazard data (fewer levels and timesteps).
- Contains the T+24 SIGWX forecast charts and BUFR data
- Will be retired in November 2028



Upcoming changes - Gridded Data

Legacy SADIS/WIFS Internet FTP

- 9 levels of 1.25° non-hazard data and limited set of 0.25° hazard data remain available
- Will be retired in November 2028

WIFS & SADIS FTP	Hourly	3-hourly	6-hourly
1.25° Non-Hazard Grids	n/a	T+6 to T+36 (9 levels)	n/a
0.25° Hazard Grids	n/a	T+6 to T+36 (9 levels)	n/a
0.25° Non-Hazard Grids	n/a	n/a	n/a

WIFS API and SADIS API

- Full set of higher-resolution 0.25° Grids available

WIFS API & SADIS API	Hourly	3-hourly	6-hourly
1.25° Non-Hazard Grids	n/a	T+6 to T+36 (9 levels)	n/a
0.25° Hazard Grids	T+6 to T+24 (36 levels)	T+27 to T+48 (36 levels)	n/a
0.25° Non-Hazard Grids	T+6 to T+24 (56 levels)	T+27 to T+48 (56 levels)	T+54 to T+120 (56 levels)



Upcoming changes - SIGWX Forecasts

Legacy SADIS/WIFS Internet FTP

- T+24 SIGWX forecast charts and BUFR data remain available
- Will be retired in November 2028

WIFS API and SADIS API

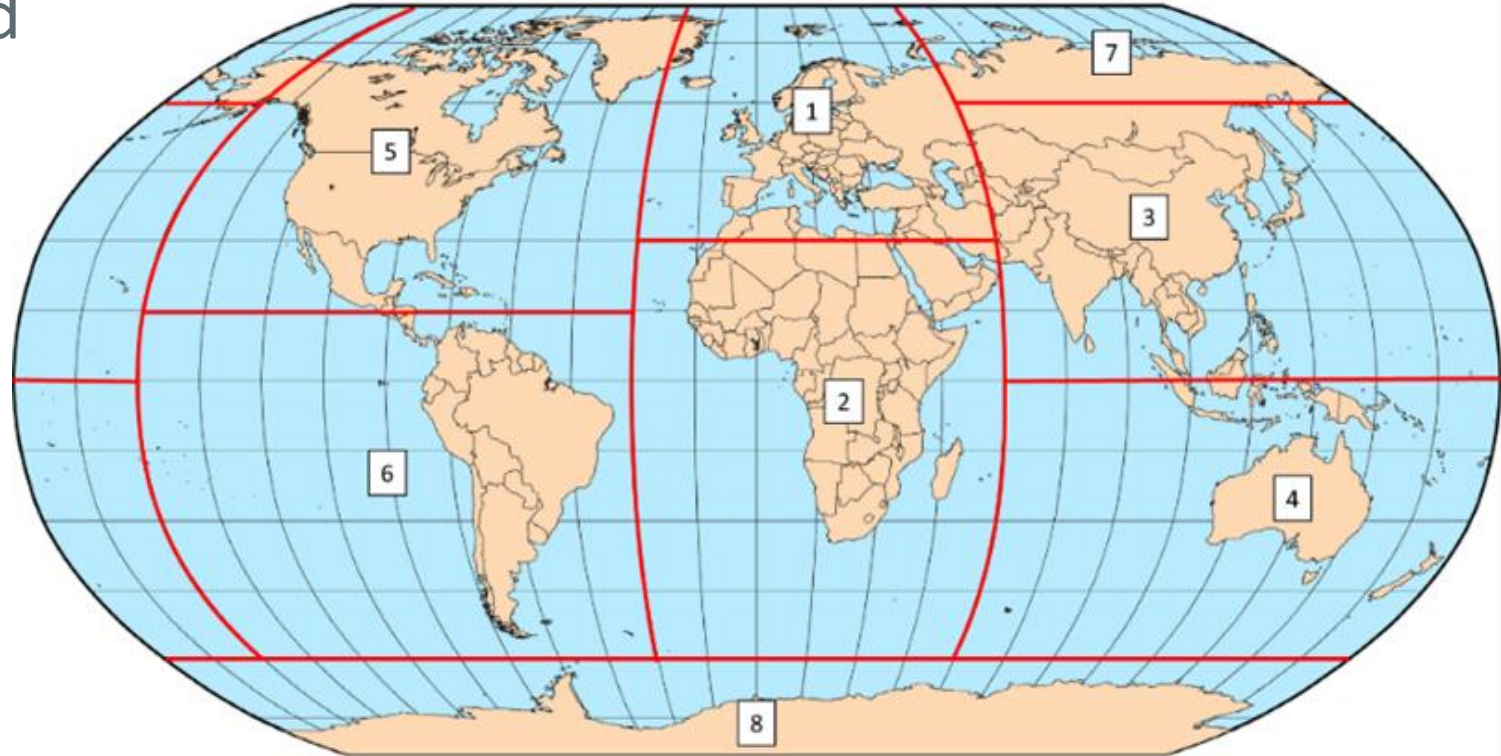
- New multi-timestep SIGWX forecast available
- SIGWX IWXXM dataset available
- BUFR data will be retired by 2027

	SADIS/WIFS FTP	SADIS/WIFS API
WAFS SIGWX PNG	T+24	T+6 to T+48 3-hourly
WAFS SIGWX BUFR	T+24 (to be retired by 2027)	n/a
WAFS SIGWX IWXXM	n/a	T+6 to T+48 3-hourly



SADIS and WIFS AIPs

- There are three parts to data available on the SADIS API and WIFS API:
 - WAFS Gridded data
 - WAFS OPMET data
 - WAFS SIGWX data
- Data will be available globally and in regional sections (tiles)
- Regional tiles provides for smaller data sets



Retirement of old (legacy) WAFS data and systems

IMPORTANT

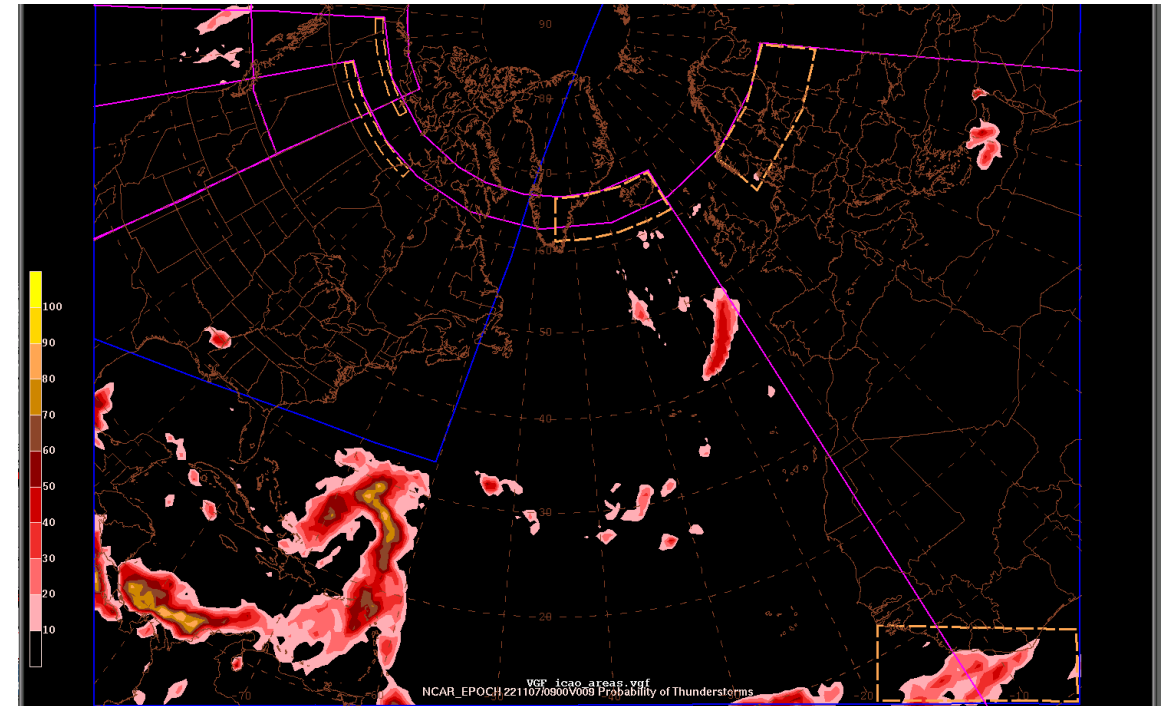
- WAFS SIGWX forecasts in BUFR form will be retired by 2027
- The existing WIFS and SADIS Internet FTP systems will be retired in November 2028
- The WAFCs recommend that users talk to their technical team or software provider about migrating over to use the new SADIS API and WIFS API services



Future WAFS upgrades

WAFS Probability Forecast & Turbulence Type Forecast

- Probability of exceedance for target phenomena; Turbulence, Icing Severity and Cumulonimbus Clouds
- Turbulence type to be distinguished (i.e. Clear Air Turbulence and Mountain Wave)
- 0.5° data for T+6 – T+48 on fewer levels
- Planned to start in November 2028
- To be provided via SADIS/WIFS APIs



Summary

- Upcoming changes to WAFS information for Annex 3 Amendment 82 and PANS-MET
 - WAFS Gridded data and SIGWX Forecasts will have increasing temporal, horizontal and vertical resolutions
 - IWXXM files for SIGWX Forecasts will become a standard
 - WIFS API and SADIS API will become the standard data distribution
 - Legacy formats, WIFS and SADIS FTP will be sunset by 2028
 - SIGWX BUFR format will retire by the end of 2027
- WAFCs plans further update in future Annex 3 and PANS-MET amendments, including the introduction of WAFS Probability Forecast and Turbulence Type Forecast in November 2028.
- New high-resolution WAFS data will enable timely and accurate flight planning, data integration into operational decision-making support, and flexible visualization at end-user applications.
 - Smoother transition to SADIS/WIFS API service will be a key milestone



Additional Information

Additional information can be found in the Information Paper (IP) titled *World Area Forecasts System (WAFS) Update* for the NACC/WG/10 Meeting

Contact WAFC Washington at:

Ms. Debra BLONDIN debra.blondin@noaa.gov

