



Federal Aviation  
Administration

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

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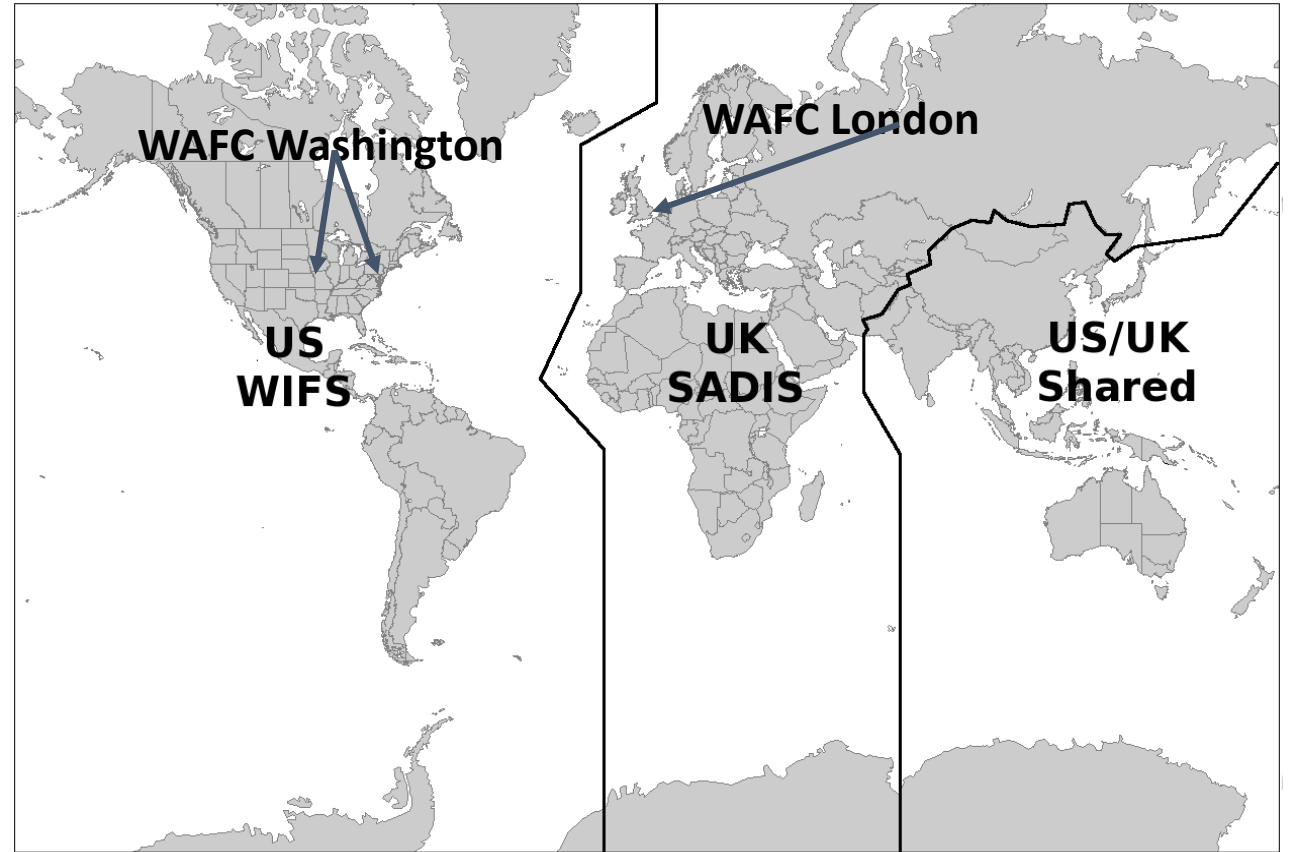
# Agenda

- 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 intervals<sup>1</sup>
- T+54 to T+120 at 6-hourly intervals<sup>2</sup>

<sup>1</sup>Icing, Turbulence and Cumulonimbus Clouds stops at T+48

<sup>2</sup>WAFS 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

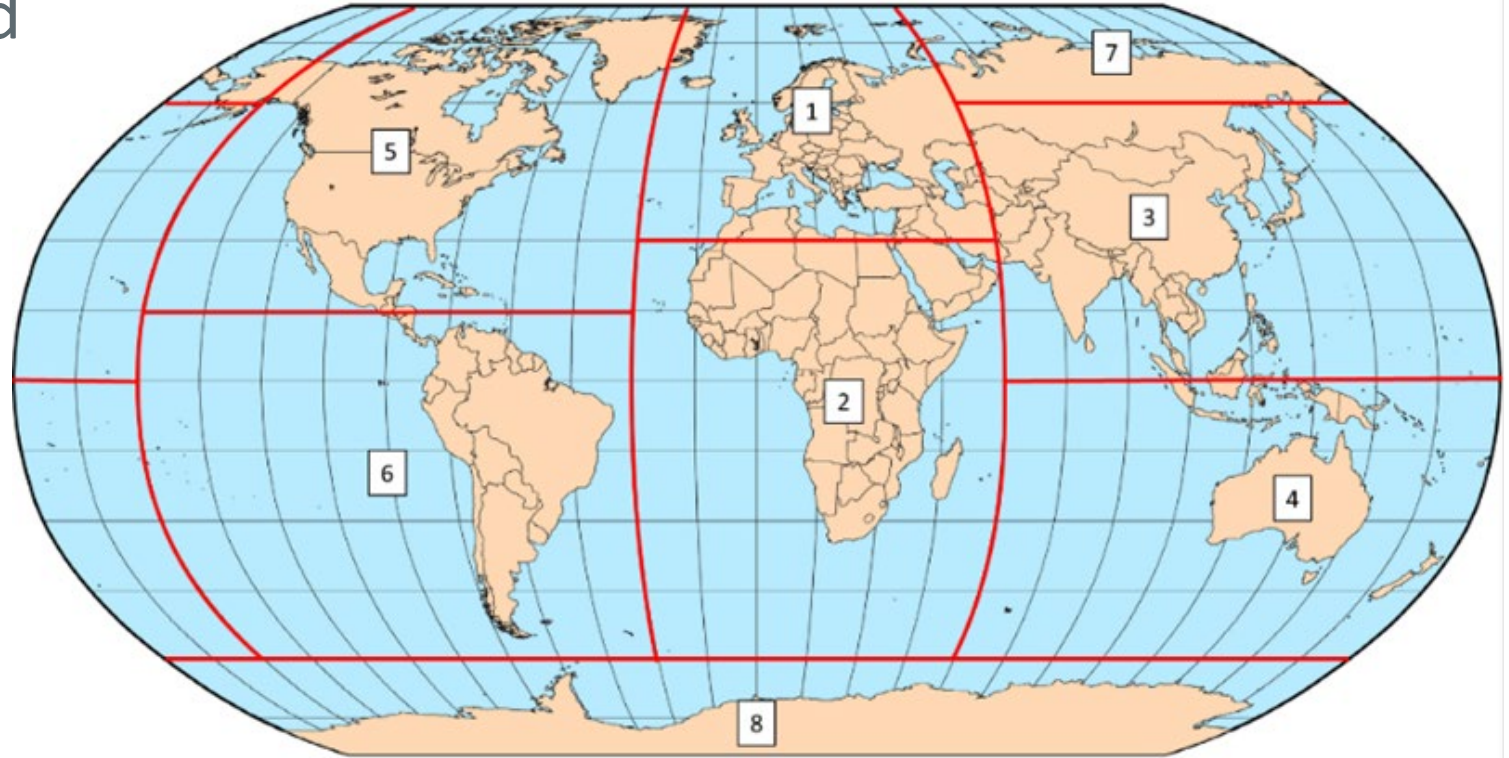
- New multi-timestep SIGWX forecast available
- SIGWX IWXXM dataset available
- BUFR data will be retired by 2027

	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

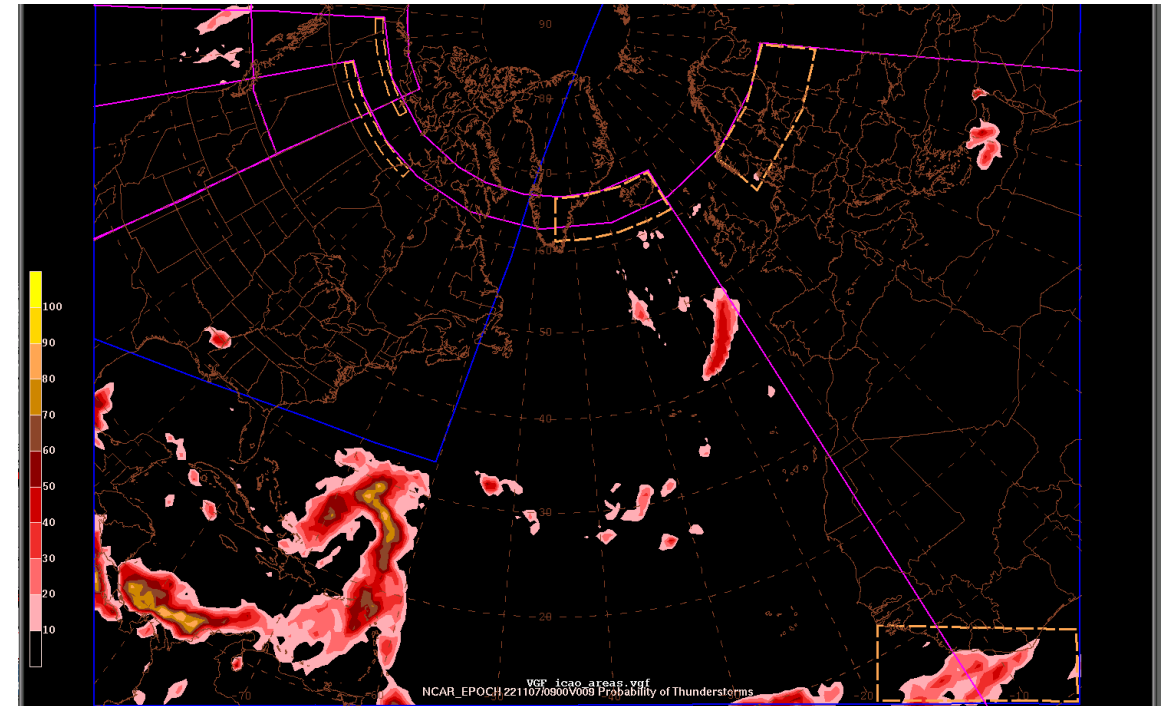
- WAFS SIGWX forecasts in BUFR form will be retired by 2027
- The existing WIFS and SADIS Internet FTP systems will be retired in November 2028
- The WAFCs recommend that users talk to their technical team or software provider about migrating over to use the new SADIS API and WIFS API services



# 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



# Access to US WIFS API

WIFS is granted on a case by case basis and the determination of authorized users shall meet one or both of the following requirements:

- Applicant performs international flight operations.
- Applicant supports international flight operations by providing and/or developing aviation weather information for such operations (i.e. flight document folder).

To apply for a WIFS account, access the link: <https://aviationweather.gov/wifs> and select the button, “REGISTER”.

