



The World Area Forecast System (WAFS) Internet File Service (WIFS) Users Guide

By

WAFC Washington

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Document Change History

Date	Author	Version	Description ¹
02/24/10	Solomon	1.0	Initial draft release.
03/26/10	Solomon	1.1	Incorporated user feedback including: new document change history section, correction to Table 2 GRIB/GRIB2 description, additional descriptions where necessary, section heading changes, and more.
03/30/10	Solomon	1.2	Based on feedback from reviewers, made some changes to the User Authentication fields.
04/05/10	Solomon	1.2	Based on feedback from reviewers, added “WAFC Washington” wording to title, footer, and the Introduction.
04/26/10	Solomon	1.2	Based on feedback from reviewers: (1) section 2 was renamed “Service Overview and Responsibilities of U.S. Government Agencies”, (2) section 3 was renamed “Data Retrieval Process”, (3) backup information was added to section 4, (4) section 7 “Responsibilities of U.S. Government Agencies” was renamed “WIFS Customer Support” and is now section 8, and (5) more information was added to the WIFS Customer Support section including information on a trouble ticket system.
05/20/10	Solomon	1.3	Based on technical interchange with customers, the GRIB data is now being served in a concatenated file format. The description of the file formats in Section 6 reflects this change. Based on feedback from reviewers: (1) Appendix A was added to describe the Gnu Wget utility, (2) Section 3 was modified to include a reference for Appendix, (3) minor changes were made in Section 4 to clarify back-up roles and responsibilities, and (4) Section 4.2 title was modified.
07/15/10	Solomon	2.0	Folded in the contents of the WIFS Interface Control Document; added Appendix B, Reference Documents; expanded the Gnu Wget description in Appendix A; updated Section 3 Data Retrieval Process; added Appendix C WIFS Registration; changed link to software providers in Section 3; reorganized Section 4 based on reviewer comments; added new Section 4.3 Suspension of Access; added note to Section 5 that mentions potential harmonization of directory structures.

¹ Minor corrections and cosmetic changes are not recorded.

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1. Introduction

The World Area Forecast System (WAFS) Internet File Service (WIFS) is provided by the Washington World Area Forecast Center (WAFC). The Washington WAFC is operated by the United States National Weather Service (NWS) Aviation Weather Center (AWC) for the purpose of providing WAFS products and related services as defined in *International Civil Aviation Organization (ICAO) Annex 3*. The WIFS is in compliance with *Federal Aviation Administration (FAA) Advisory Circular 00-62 Internet Communications of Aviation Weather and NOTAMS* dated November 1, 2002, and supports the dissemination of WAFS products via the Internet in accordance with *ICAO Annex 10*. The WIFS is an integral part of the AWC's Consolidated Aviation Web Services (CAWS) system.

2. Service Overview and Responsibilities of U.S. Government Agencies

The WIFS is a real-time data repository integrated within the CAWS system and accessible over the Internet to authorized users. For the purposes of adhering to the guidelines in *ICAO Document 9855 Guidelines on the Use of the Public Internet for Aeronautical Applications* and the *FAA Advisory Circular 00-62* requirements, there are three geographically remote web farms that house the WIFS data. WIFS is available for use 24x7. Note that WIFS is an Internet file server. WIFS does not deliver ("push") data to the user; the user will have to collect ("pull") data by initiating an HTTPS session over the Internet.

The FAA, as the U.S. Meteorological Authority, identifies the requirements for the products and services provided by the Washington WAFC. The National Oceanic and Atmospheric Administration (NOAA) NWS is the provider of the WAFS products and has responsibility for the management and operation of the WIFS.

3. Data Retrieval Process

To help evenly distribute the load amongst the three web farms, the CAWS web farms use a globally load balanced URL (<https://aviationweather.gov/wifs/data>). However, owing to network latencies, there are unavoidable differences between the file modification times at each of the three sites. If a client system relies on the file modification time, they may be better served going to a single farm thereby bypassing the load balancer. Users that choose to bypass the load balancer and go to specific farms are asked to access data from their **designated primary** web farm. The primary web farm assigned for each user depends on the first letter in the State name based on the U.S. English spelling. In the event the primary farm is inaccessible, users should employ a round robin approach, attempting to retrieve the data from the other two farms. The web farm URLs and primary web farm assignments are shown in Table 1.

Table 1 WIFS Primary URL for HTTPS Access

Web Farm	First Letter of State²	Base WIFS URL¹
NWS National Headquarters	A, B, C, D, E, F, G, H, I	https://hq.aviationweather.gov/wifs/data
NWS Southern Region Headquarters	J, K, L, M, N, O, P, Q, R, S	https://srh.aviationweather.gov/wifs/data
NWS Central Region Headquarters	T, U, V, W, X, Y, Z	https://crh.aviationweather.gov/wifs/data

1 Specific data are stored in separate subdirectories. See Table 2.

2 State name spelling in U.S. English.

Users will need a user ID and password to access the WIFS via the Internet. The minimum recommended Internet connection speed is 64 kbps, bursting to 512 kbps. Once the data is retrieved from the WIFS, users will need software that is capable of ingesting and displaying the WAFS data. A list of WAFS software providers can be found at <http://aviationweather.gov/wifs>. Users should contact specific providers for cost and availability.

Per QICP requirements, log files will be kept monitoring usage of the WIFS. Log files will contain the user's ID and what data they accessed. Users are encouraged to use the Gnu Wget utility to access the data. More information about Gnu Wget can be found in Appendix A.

4. User Authorization

WIFS is available to all current International Satellite Communications System (ISCS) users, and future users whose primary WAFS provider is designated as the Washington WAFS. See section 4.1 for details.

WIFS will not be available as a *primary* means of obtaining WAFS data to current SADIS (2G or FTP) users, or future users whose primary WAFS provider is designated as the London WAFS. However, SADIS (2G or FTP) users can request access to WIFS as a *back-up* means to obtain WAFS products when the SADIS FTP is in degraded or failure mode. See section 4.2 for details.

SADIS will not be available as a *primary* means of obtaining WAFS data to current ISCS and WIFS users, or future users whose primary WAFS provider is designated as Washington WAFS. However, ISCS or WIFS users can request access to SADIS as a *back-up* means to obtain WAFS products when WIFS is in degraded or failure mode. See section 4.2 for details.

4.1 WIFS Access for Current ISCS Users and Future Eligible Users

Requests for authorization to access WIFS must be approved by the FAA. Users will complete and submit a form online at <http://aviationweather.gov/wifs>. Once the WIFS approving official authorizes access, the Washington WAFS will issue a user

name and password which will be required to access the data. Please see Appendix C for more information.

4.2 Backup Operations

4.2.1 SADIS Access by ISCS, WIFS Users

When WIFS is in degraded or failure mode, access to SADIS for back-up purposes will be available to authorized ISCS and WIFS users. Authorized ISCS and WIFS users must request SADIS back-up access through the designated WIFS approving authority at the Washington WAFC. Requests for backup access to SADIS must be sent to wifs.reg@noaa.gov. WIFS officials will coordinate access with the appropriate SADIS authorizing official at the London WAFC for all ISCS and WIFS users who explicitly request to have SADIS back-up service. ISCS and WIFS users should not contact the SADIS authorizing official at the London WAFC directly. Once approved, SADIS officials will issue the requesting WIFS user with a user ID and password directly. SADIS user ID and password information will not route through WIFS officials. Each WIFS user requires a unique SADIS user ID and password. Users can not use their WIFS user ID and password to access SADIS.

4.2.2 WIFS Access by SADIS (2G and FTP) Users

When the SADIS FTP service is in degraded or failure mode, access to WIFS for back-up purposes will be available to authorized SADIS users. Authorized SADIS users must request WIFS back-up access through the designated SADIS approving authority at the London WAFC. SADIS officials will coordinate access with the appropriate WIFS authorizing official at the Washington WAFC for all SADIS users who explicitly request to have WIFS back-up service. SADIS users should not contact the WIFS authorizing official at the Washington WAFC directly. Once approved, WIFS officials will issue the requesting SADIS user with a user ID and password directly. WIFS user ID and password information will not route through SADIS officials. Each SADIS user requires a unique WIFS user ID and password. Users can not use their SADIS user ID and password to access WIFS.

4.3 Suspension of Access

WIFS access may be suspended by the WIFS approving authority for unauthorized use of WIFS. Access to SADIS and WIFS as back-up services may be suspended by the WIFS and SADIS approving authorities if user's primary WIFS or SADIS accounts are suspended.

5. Directory Structure

The WIFS directory structure, with respect to the base URL (e.g., <https://aviationweather.gov/wifs/data>), is shown in Figure 1. **Note: at the time of this writing the directory structure is under review by the FAA and the United Kingdom Met Office and the possibility of future harmonization of the directory structures between WIFS and SADIS is possible.**

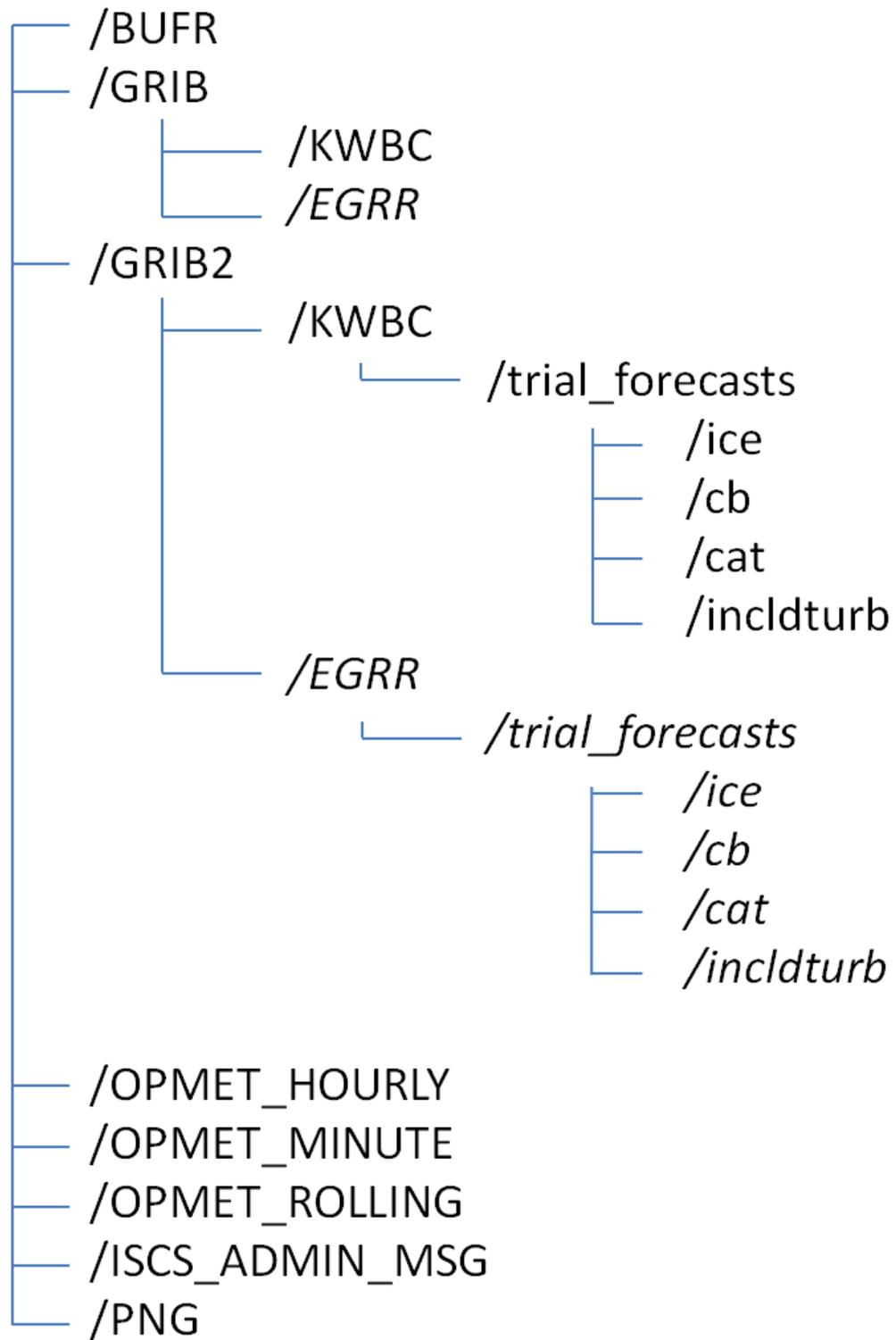


Figure 1 WIFS Directory Structure

Table 2 lists the subdirectory name, the file format, and a description of the data in the directory. The detailed description of each product including file format is provided later in the document.

Table 2 WIFS Data Description

<i>WIFS Subdirectory¹</i>	<i>File Format</i>	<i>Data Description</i>
BUFR	Binary Universal Form for the Representation of meteorological data (BUFR)	Significant Weather
GRIB	GRIB Edition 1	Model Forecast Grids
GRIB2²	GRIB Edition 2	Model Forecast Grids
OPMET-HOURLY	ASCII	Files containing one hour's worth of METARs/SPECIs, TAFs, SIGMETs, Advisories, Air Reports, NOTAMs, ASHTAMs
OPMET-MINUTE	ASCII	Files containing one minute's worth of METARs/SPECIs, TAFs, SIGMETs, Advisories, Air Reports, NOTAMs, ASHTAMs
OPMET-ROLLING	ASCII	5/30/60 minute window files containing METARs/SPECIs, TAFs, SIGMETs, Advisories, Air Reports, NOTAMs, ASHTAMs
ISCS_ADMIN_MSG	ASCII	Administrative Notices
PNG	Portable Network Graphics (PNG)	Significant Weather Images

¹ The subdirectory name should be appended to the base URL shown in Table 1.

² The GRIB2 directory will contain KWBC and EGRR subdirectories indicating the data are from the Washington WAFC or the London WAFC. Those subdirectories will contain concatenated files corresponding to the valid time for the data they contain. There will also be separate subdirectories under KWBC and EGRR containing trial forecast data. See Section 4 Directory Structure for details.

6. File Formats

All files follow WMO standards. Category-specific format details are shown below.

6.1 Concatenated ASCII Data Files

OPMET-MINUTE file naming convention:

YYYYMMDD_hhmm_OPMET

OPMET-HOURLY file naming convention:

YYYYMMDD_hh_OPMET

OPMET-ROLLING file naming convention:

Five minute file = "M05_OPMET"

Thirty minute file = "M30_OPMET"

Sixty minute file = "M60_OPMET"

Except for the very first line of the file, the first line of each new product in a concatenated file begins with a **^C** character. The example below contains the first three concatenated products in a OPMET file.

Example OPMET-MINUTE file:

```
^A^M
000^M
SACN94 CWA0 162045^M
WSK SA 2045 AUTO8 M M M M/07/05/0000/M/M M 52MM=^M
^M
^M
^C^A^M
000^M
SPCN48 CWA0 162045^M
SPECI CYHA 162045Z 32015KT 3/8SM -SG DRSN -FZDZ OVC006 RMK ST8=^M
^M
^M
^C^A^M
000^M
SPCN43 CWA0 162047^M
SPECI CYBU 162047Z AUTO 18002KT 1SM -SN FEW002 BKN010 BKN025
OVC069^M
M05/M06 A3005=^M
^M
^M
```

Example OPMET-HOURLY file:

```
^A^M^M
000^M^M
SAUS44 KMOB 291759^M^M
MTR0J4^M^M
METAR K0J4 291758Z AUTO 36008KT 10SM SCT037 BKN047 17/06 A2989 RMK
^M^M
```

AO2 SLP120 T01670056 10172 20111 58009 \$^M^M
 ^M^M
 ^C^A^M^M
 000^M^M
 SAKN64 HKMO 291730^M^M
 METAR HKJK 291730Z 15008KT 9999 TS SCT012 FEW018CB BKN080 18/16
 Q1022^M
 NOSIG=^M
 ^M^M
 ^C^A^M^M
 000^M^M
 FTAF31 KWBC 291800^M^M
 TAF^M^M
 TAF DNAA 291550Z 2918/3024 14009KT 5000 HZ NSC^M^M
 TEMPO 3003/3009 06008KT 3000=^M^M
 TAF DNCA 291550Z 2918/3024 25005KT 6000 SCT012 FEW020CB^M^M
 BECMG 2923/3001 VRB02KT SCT008^M^M
 TEMPO 3003/3006 4000 BR^M^M
 BECMG 3008/3010 19007KT 9999 BKN012=^M^M
 TAF DNIL 291550Z 2918/3024 27004KT 5000 HZ NSC^M^M
 TEMPO 2918/2923 7000 FEW014^M^M
 TEMPO 3003/3009 18008KT 5000 HZ=^M^M
 TAF DNKA 291550Z 2918/3024 09024KT 5000 HZ NSC^M^M
 TEMPO 3004/3010 2000=^M^M
 TAF DNPO 291550Z 2918/3024 20005KT 6000 BKN012 FEW020CB PROB30^M^M
 TEMPO 5000 TSRA BKN010^M^M
 BECMG 3000/3002 00000KT SCT008^M^M
 TEMPO 3004/3007 5000 BR^M^M
 FM300900 26010KT 9999 BKN013=^M^M
 ^M^M

Example OPMET-ROLLING file:

^A^M^M
 000^M^M
 SACN91 CWAO 291800 RRB^M^M
 WIY SA 1800 AUTO8 M M M 125/04/03/1515+21/M/M PK WND 1624 1734Z^M^M
 8027 83MM=^M^M
 ^M^M
 ^M^M
 ^C^A^M^M
 000^M^M
 SACN90 CWAO 291800 RRB^M^M
 WFF SA 1800 AUTO8 M M M 931/07/01/2210/M/ 8007 15MM=^M^M
 ^M^M
 ^M^M
 ^C^A^M^M
 000^M^M
 SACN66 CWAO 291800 RRB^M^M
 PIF SA 1800 AUTO8 M M M 878/12/-03/2606/M/ 5001 12MM=^M^M
 WDC SA 1800 AUTO8 M M M 851/04/-05/2204/M/ SOG 27 8001 65MM=^M^M
 ZHB SA 1800 AUTO8 M M M 921/12/-01/2309/M/ 1002 60MM=^M^M
 ^M^M

6.2 GRIB

WIFS will offer upper-air gridded forecasts in two formats, GRIB1 and GRIB2. GRIB1 is the format that has been used for many years. Due to a need to expand the data sets and increase the resolution, the ICAO approved the use of GRIB2 for encoding WAFS data sets. GRIB2 offers significant advantages over GRIB1 including increased self-description, flexibility, and expandability. In addition, GRIB2 supports more compression schemes, including JPEG 2000 which is the scheme used by the National Centers for Environmental Prediction (NCEP) and used in the GRIB2 products on WIFS. The appropriate decoders and associated libraries needed to decode the WIFS GRIB2 files can be found on the NCEP web page (<http://www.nco.ncep.noaa.gov/pmb/codes/GRIB2/>). Both GRIB1 and GRIB2 files available on WIFS are concatenated together according to the forecast valid time.

The file naming convention for GRIB Edition 1 files is:

```
YYYYMMDD_HHFF.grib
```

where

```
YYYY = 4-digit year  
MM = 2-digit month  
DD = 2-digit day  
HH = 2-digit hour of model run  
FF = 2-digit forecast hour
```

The file naming convention for GRIB Edition 2 files is:

```
YYYYMMDD_HHFF.grib2
```

where

```
YYYY = 4-digit year  
MM = 2-digit month  
DD = 2-digit day  
HH = 2-digit hour of model run  
FF = 2-digit forecast hour
```

Both the GRIB and GRIB2 files are retained in the WIFS system for 8 hours.

The first line of each concatenation begins with a **^C** character **except the very first line** in a concatenated file which does not have the **^C** character. The examples below contain samples of concatenated GRIB and GRIB2 files.

Concatenated GRIB Edition 1 file format:

```
^A^M^M  
000^M^M  
HTPF85 KWBC 051200^M^M  
GRIB^@^QÃ°^A^@^@^@^B^G` ,<80>^Kd^CR  
^C^E^L^@^A^@^^  
... ..  
^C^A^M^M  
000^M^M
```


6.4 ISCS_ADMIN_MSG

File naming convention:

```
YYYYMMDD_hhmm_NOUSii_CCCC.adm
```

where

```
YYYY = 4-digit year  
MM = 2-digit month  
DD = 2-digit day  
hh = 2-digit hour of message issuance time  
mm = 2-digit minute of message issuance time  
NOUSii_CCCC = WMO header and site identifier
```

Administrative messages are retained on WIFS for 36 hours.

6.5 PNG

File naming convention:

```
YYYYMMDD_HH00_TTAAii_CCCC.png
```

where

```
YYYY = 4-digit year  
MM = 2-digit month  
DD = 2-digit day  
HH = 2-digit hour of forecast package valid time  
TTAAii_CCCC = WMO header and site identifier
```

Portable Network Graphic (PNG) images of the Significant Weather ICAO area charts are stored in the PNG directory of the WIFS file system. The WMO messages in Table 3 are retained in the PNG directory for 36 hours.

Table 3 Significant Weather PNG files

WMO Header	Area
PGEE05 KKCI	ICAO A
PGIE05 KKCI	ICAO B1
PGGE05 KKCI	ICAO F
PGAE05 KKCI	ICAO H
PGBE05 KKCI	ICAO I
PGJE05 KKCI	ICAO J
PGDE29 KKCI	ICAO M
PGNE14 KKCI	North Atlantic Ocean Region

For more detailed information on the PNG format, see the W3C Portable Network Graphics (PNG) Specification (Second Edition) (<http://www.w3.org/TR/PNG>).

7. Web Site

To access the WIFS web site, open the following link in a web browser:

<http://aviationweather.gov/wifs>. The WIFS web pages contain user documentation, instructions for reporting problems, contact information, important advisory postings, and more.

8. WIFS Customer Support

The WIFS Customer Support Desk is available to address operational issues Monday through Friday between the hours of 13:00 to 22:00 UTC. To contact the WIFS Customer Support Desk use the following e-mail address and phone number:

E-mail: wifs.admin@noaa.gov

Phone: 1(816) 584-7200

If a user experiences operational issues outside of normal WIFS Customer Support Desk hours, they can generally expect a response within 3 hours after the Customer Support Desk re-opens. For each operational issue identified, a trouble ticket will be generated and users will be sent an e-mail with the trouble ticket number. Users should refer to this ticket number in all follow-up correspondence with the WIFS Customer Support Desk.

9. User Troubleshooting Guidelines

Symptom	Probable Cause	Actions to Take
Data out of date, cannot be retrieved, or is not being properly displayed on the workstation	WAFS data retrieve process failed	Test the internet connection ¹
		Check the data retrieve log file for errors ²
		Contact the WAFS workstation support team
	Data on WIFS is out of date	Test the internet connection ¹
		Browse to the WIFS online file list and check to see if data is up to date ³
	There is a WIFS data ingest problem	If data is out of date send an email to wifs.admin@noaa.gov and contact the NWSTG to report the problem. ⁴
Check the Advisories page for new advisories pertaining to data outages.		
		If data is out of date send an email to wifs.admin@noaa.gov and contact the NWSTG to report the problem. ⁴

1. To test your internet connection, try to “ping” your primary WIFS URL (i.e., “ping <http://srh.aviationweather.gov/wifs>”). If the ping is successful you have a working internet connection. If it is not, contact your system administrator or your Internet Service Provider for assistance.
2. If you don’t know where this file is or how to access it, contact the WAFS Workstation Support Team.
3. In your browser type in the URL of your primary WIFS location (i.e., <http://srh.aviationweather.gov/wifs>). Click on the appropriate category and find the data you are looking for. Take note of the file name with the latest date/time.
4. The National Weather Service Telecommunications Gateway (NWSTG) Helpdesk phone number is (301) 713-0902.

Appendix A. Gnu Wget

GNU Wget is a free software package for retrieving files using HTTP, HTTPS and FTP, the most widely-used Internet protocols. It is a non-interactive command-line tool that can be executed from programs, scripts, and cron jobs. GNU Wget has many features to make retrieving large files easy, including:

- Can resume aborted downloads, using `REST` and `RANGE`
- Can use filename wild cards and recursively mirror directories
- NLS-based message files for many different languages
- Optionally converts absolute links in downloaded documents to relative, so that downloaded documents may link to each other locally
- Runs on most UNIX-like operating systems as well as Microsoft Windows
- Supports HTTP proxies
- Supports HTTP cookies
- Supports persistent HTTP connections
- Unattended / background operation
- Uses local file timestamps to determine whether documents need to be re-downloaded when mirroring
- GNU Wget is distributed under the GNU General Public License.

To download Wget, navigate to <http://ftp.gnu.org/gnu/wget/>.

Detailed GNU Wget documentation can be found at <http://www.gnu.org/software/wget/manual/>. For other manuals, please see <http://www.gnu.org/manual/>.

The structure of the command including only the **required** arguments is described below. The Wget utility is powerful and includes the capability of performing recursion, statistics, logging, and much more. For a complete description of the GNU Wget utility see the references given in Appendix A.

```
wget --user=<user> --password=<password> --no-check-certificate <URL>
```

where

```
user = your WIFS login name  
password = your WIFS password  
no-check-certificate = required argument
```

A.1 Use Case

Below is a use-case scenario for how a fictitious user (John Smith) might identify a file he wants and use `wget` to download the file from WIFS. In this case John knows he wants a Significant Weather PNG chart.

1. John identifies the file he wants (20100715_0600_PGEE05_KKCI.png). He does this in one of two ways:
 - A. Using his browser
 - He navigates to <http://aviationweather.gov/wifs/data>

- He enters his WIFS user ID and password
 - He clicks on the PNG folder
 - He locates the file of interest in the listing
- B. Using a Wget file listing
- John issues the following command:

```
wget --user=johnsmith --password=wxdude --no-check-certificate  
https://crh.aviationweather.gov/wifs/data/PNG/
```
 - The “index.html” file for the PNG data directory will be downloaded to the current working directory on John’s computer. John can then open this file in his browser to see the directory listing.
 - The following directories can be listed:
 - BUFR
 - GRIB
 - GRIB2
 - ISCS_ADMIN_MSG
 - OPMET-HOURLY
 - OPMET-MINUTE
 - OPMET-ROLLING
 - PNG

2. John downloads the file using Wget

- A. On the command line from his computer, John types the following command:

```
wget --user=johnsmith --password=wxdude --no-check-certificate  
https://crh.aviationweather.gov/wifs/data/PNG/20100715\_0600\_PGE05\_KKCI.png
```

- B. John’s file will be downloaded to the current working directory on his computer.

Appendix B. Reference Documents

B.1 Government Standards

- Federal Aviation Administration Advisory Circular 00-62 Internet Communications of Aviation Weather and NOTAMS, November 1, 2002

B.2 International Standards

- International Standard ISO 8802-2: 1998 Part 2: Logical Link Control
- WMO Publication 306 Manual on Codes
- WMO Publication FM92 GRIB Edition 1
- WMO Publication FM92 GRIB Edition 2
- WMO Publication FM94 BUFR
- ISO/IEC 15444-1:2004, JPEG 2000 Compression
- International Civil Aviation Organization Annex 3
- International Civil Aviation Organization Annex 10
- International Civil Aviation Organization Document 9855 Guidelines on the Use of the Public Internet for Aeronautical Applications

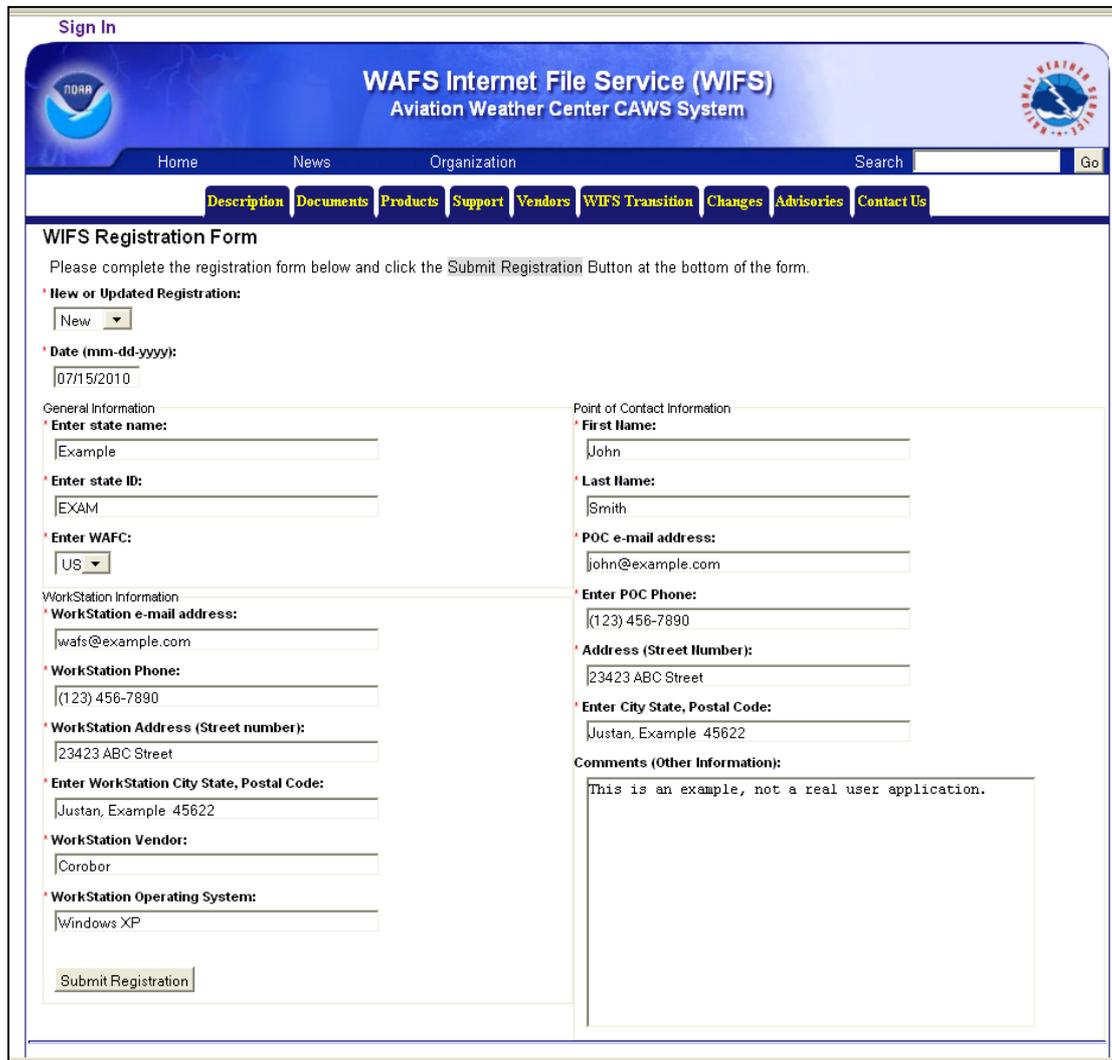
B.3 Industry Standards

- Institute of Electrical and Electronics Engineers (IEEE) 802.3: Ethernet Local Area Network Specification
- GNU Free Documentation License (<http://www.gnu.org/software/wget/manual/wget.html#GNU-Free-Documentation-License>)
- GNU Wget 1.12 Manual (<http://www.gnu.org/software/wget/manual/wget.html>)
- RFC 791: Internet Protocol (IP)
- RFC 793: Transmission Control Protocol (TCP)
- W3C Portable Network Graphics (PNG) Specification (Second Edition)

Appendix C. WIFS Registration

Figure 2 shows a snapshot of the WIFS Registration Form available on the WIFS home page (<http://aviationweather.gov/wifs/>). The form should be completed and submitted online.

Figure 3 shows a snapshot of the screen that will be seen upon successful form submission.



The screenshot displays the WIFS Internet File Service (WIFS) registration form. The page header includes the NOAA logo, the text "WAFS Internet File Service (WIFS) Aviation Weather Center CAWS System", and a search bar. A navigation menu contains links for Home, News, Organization, Description, Documents, Products, Support, Vendors, WIFS Transition, Changes, Advisories, and Contact Us. The form itself is titled "WIFS Registration Form" and includes a "Sign In" link. It contains several sections: "New or Updated Registration" with a dropdown menu set to "New" and a date field "07/15/2010"; "General Information" with fields for state name ("Example"), state ID ("EXAM"), and WAFS ("US"); "WorkStation Information" with fields for email address ("wafs@example.com"), phone number ("(123) 456-7890"), address ("23423 ABC Street"), city/state/postal code ("Justan, Example 45622"), vendor ("Corobor"), and operating system ("Windows XP"); "Point of Contact Information" with fields for first name ("John"), last name ("Smith"), email address ("john@example.com"), phone number ("(123) 456-7890"), and address ("23423 ABC Street", "Justan, Example 45622"); and a "Comments (Other Information)" section with a text area containing "This is an example, not a real user application." A "Submit Registration" button is located at the bottom left of the form.

Figure 2 WIFS Online Registration Form

Sign In

 **WAFS Internet File Service (WIFS)**
Aviation Weather Center CAWS System 

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WIFS Registration Form

Thank you for applying for WIFS registration. Your information will be e-mailed to the POC e-mail provided within five (5) business days.

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<i>7220 NW 101st Terr., Room 118</i>		
<i>Kansas City, MO 64153-2371</i>		
<i>Contact AWC Internet Services</i>		
<i>Page last modified: January 15, 2010</i>		

Figure 3 WIFS Registration Confirmation Screen