



*A Web-Based Entry System for
National Weather Service
Cooperative Observers*

User's Guide

**Version 0.1
December 2007**



WxCoder Users Guide Introduction

The NWS will be transitioning from WxCoder 2 to WxCoder 3 on February 1, 2008. WxCoder 3 includes enhanced web-based capabilities that will allow observers to provide us data more quickly and accurately while also reducing costs.

WxCoder 3 offers a number of improvements for both the observer and also the NWS, RCC, and NCDC offices who work to collect, quality control, and redistribute the COOP data.

Improvement of the new WxCoder 3 system includes a user-friendly web interface including new help menus. Monthly forms also now automatically sum and average temperature, precipitation and snowfall observations. WxCoder 3 provides immediate data quality assurance through several routine functions and also provides more space for the observer remarks. There is also an advanced WFO administrative interface. NWS supervising offices can customize observer inputs and ensure easy & timely two-way communication with observers.

WxCoder 3 also provides enhanced front-end data quality control features, which significantly reduce data errors from manual entry of daily data, keypunch errors, and incorrect administrative information. Examples of these quality control checks include (but are not limited to):

- Temperature consistency checks (*e.g.*, maximum temperature cannot be less than minimum temperature for the same observing period, *etc.*);
- Precipitation consistency checks (*e.g.*, precipitation values cannot be negative);
- Winter precipitation consistency checks (*e.g.*, if snowfall exceeds three inches, snow depth must increase, *etc.*);
- Gross limits checks (values cannot exceed physical limits).
- Provide efficient, ***easy-to-use data entry system*** for participating COOP observers,
- Ensure ***timely*** availability of COOP data for all customers,
- Improve data ***quality*** through automated near-real-time data QA/QC,
- Achieve a ***paperless*** electronic data collection, transmission, and archiving system.
- Allow system ***flexibility*** to meet demands of integrating data from future observing systems and parameters (including phenology)

Obtaining a WxCoder account

To use WxCoder you must have a WxCoder account. Your account will be established by the person you normally contact at your local NWS office. Your account enables WxCoder to identify you when you login, to customize the information on the pages it presents to you, and to provide access to WxCoder's other features.

To establish an account you will need to provide your NWS contact with the username you want to use to login into WxCoder. You will also need to provide an email address. The username you choose must be between 3 and 255 characters in length. It can contain any combination of upper and lower case letters, numbers, the 'at' sign (@), and the period. Your username must be unique within WxCoder. If the username you have chosen already exist in WxCoder, you will have to choose a different one.

The email address you provide to your local NWS contact is used to send you a welcoming message that includes an 'access code.' This access code is needed, along with your username, to complete the login process. Your access code will be generated at random by WxCoder. It will consist of a random set of upper and lower case letters and numbers. After you first login to WxCoder, you may change your access code to one that is easier for you to remember or that matches passwords you use with other Internet accounts.

Hardware/software requirements

WxCoder has no special hardware requirements. WxCoder uses your normal cable, DSL or dial-up Internet connection. WxCoder is a user-friendly interface that can be accessed through an internet-ready computer with a functioning web browser like Netscape, Microsoft Internet Explorer, Firefox, or Safari.

WxCoder uses a 'cookie' to save information that makes it easy to move from page to page and remember what you had done on previous pages. Cookies must be enabled on your browser to be able to use WxCoder.

WxCoder also uses JavaScript to enable some of its features. Like cookies, JavaScript must be enabled within your browser to be able to use WxCoder. If either cookies or JavaScript are disabled on your computer, WxCoder will send a special message page. The page includes information about cookies or JavaScript along with instructions on how to enable either/both for WxCoder operation.

Signing in

If you have access to the Internet, go to the WxCoder Sign In page: (<http://wxcoder.org>). Once at the WxCoder Sign In page (**Figure 1**), you can enter your *username* and *access code* to enter the interface. These are provided by your local NWS contact. If you forget your access code, you can click on 'Having trouble?' in the Sign In box and provide a username or e-mail that

matches your profile at the local NWS office (WFO, etc.). An e-mail will then be sent to the address on file with a new access code. You should take care to protect your username and access code from being shared, and reset them if they are revealed to others. Both your username and access code are case-sensitive – be sure to use upper and lower case letters as they were provided in your welcoming email. For example, if your username is *smith*, entries such as *SMITH* or *Smith* will fail and your sign in will be unsuccessful.

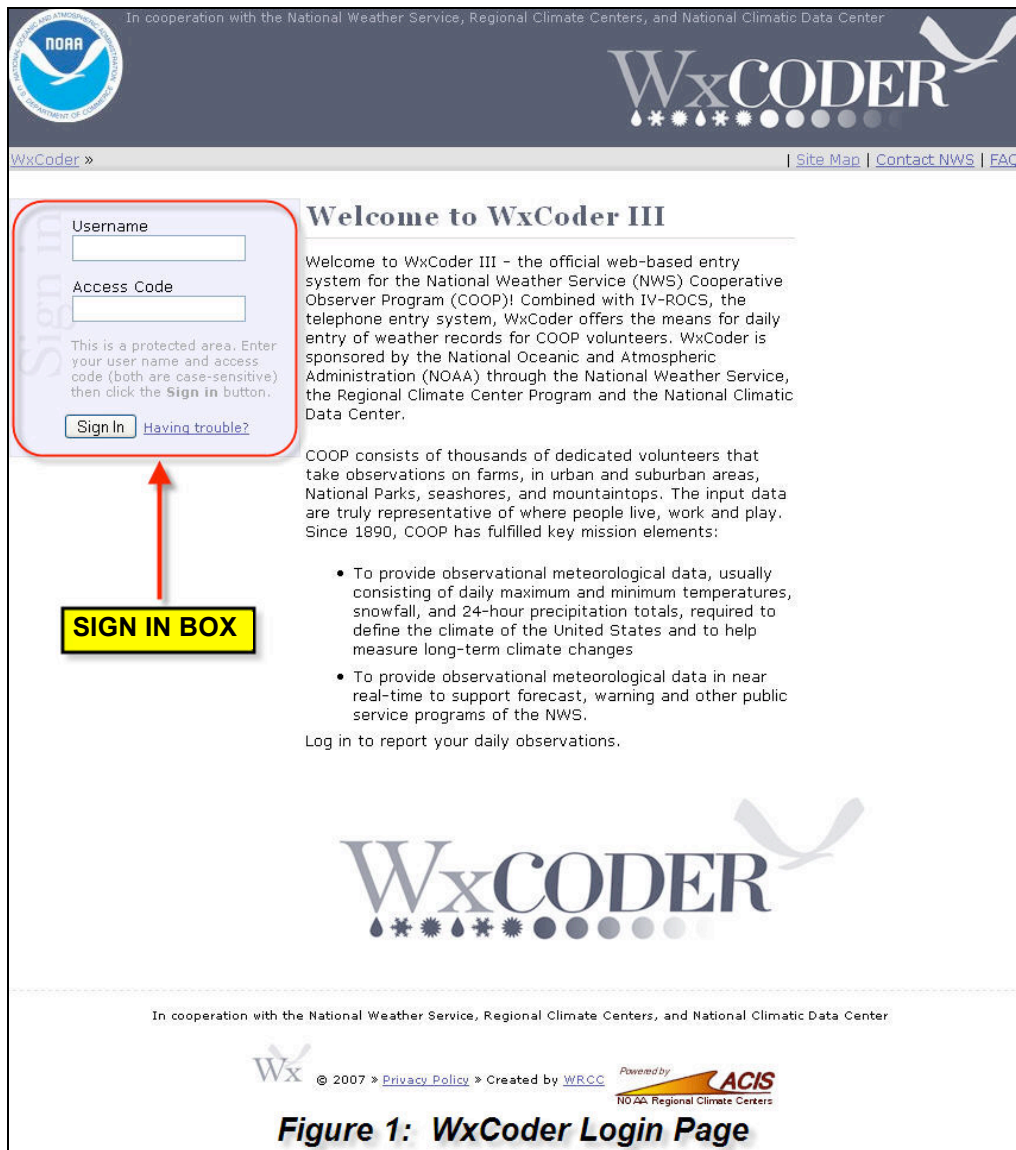


Figure 1: WxCoder Login Page

WxCoder Home Page (managing your account)

Once signed in to WxCoder, you will first encounter the active session home page. While signed in, your customized cooperative station information will be displayed and/or available. There are a number of key navigation features (**Figure 2**):

- 1.) **Main Menu:** Provides access to observation and information pages.
- 2.) **Time Stamp:** Three times are provided: i.) current data and time, ii.) last sign in, and iii.) last observation. These serve as a reminder of your frequency of interface use.
- 3.) **Bread Crumb:** This provides a quick snapshot of where you are within the hierarchy of the WxCoder interface.
- 4.) **Additional Help:** Additional help is available throughout the active session pages, including a Site Map, Contact NWS, Frequently Asked Questions (FAQ), and Sign Out. Question marks (?) also provide help for individual entry boxes and pull-down menus.
- 5.) **Interface Acknowledgments:** Background information on interface collaboration between NOAA and its Regional Climate Center Program, along with reference to RCC Applied Climate Information System (ACIS), the data backbone of WxCoder, are provided here.

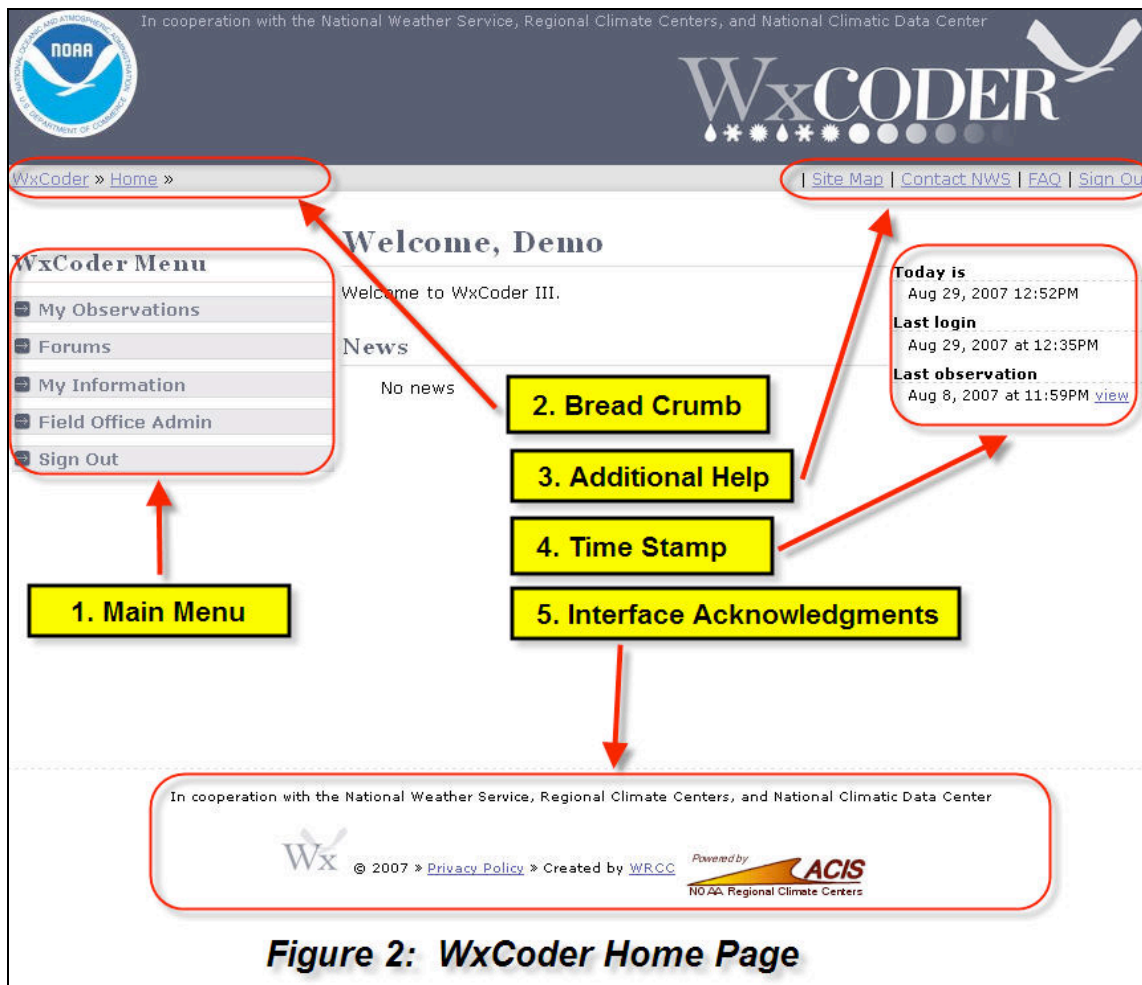


Figure 2: WxCoder Home Page

To sign out of an active session of WxCoder, click on ‘Sign Out’ in the upper right-hand corner of the page. You will be returned to the WxCoder home page with a message in red indicating that you have successfully signed out.

To contact your local WFO cooperative administrator, click on 'Contact NWS'. You will be provided with e-mail and/or other contact information for the local NWS office, determined by the County Warning Area (CWA) in which you take observations.

WxCoder Observations Page

From the WxCoder home page, you can select 'My Observations' from the main menu. This will take you to your 'My Observations' page (**Figure 3**). Most observers enter data for only one cooperative station. For those with multiple stations a 'Change Site' box is provided to allow toggling of the default station referenced throughout the interface.

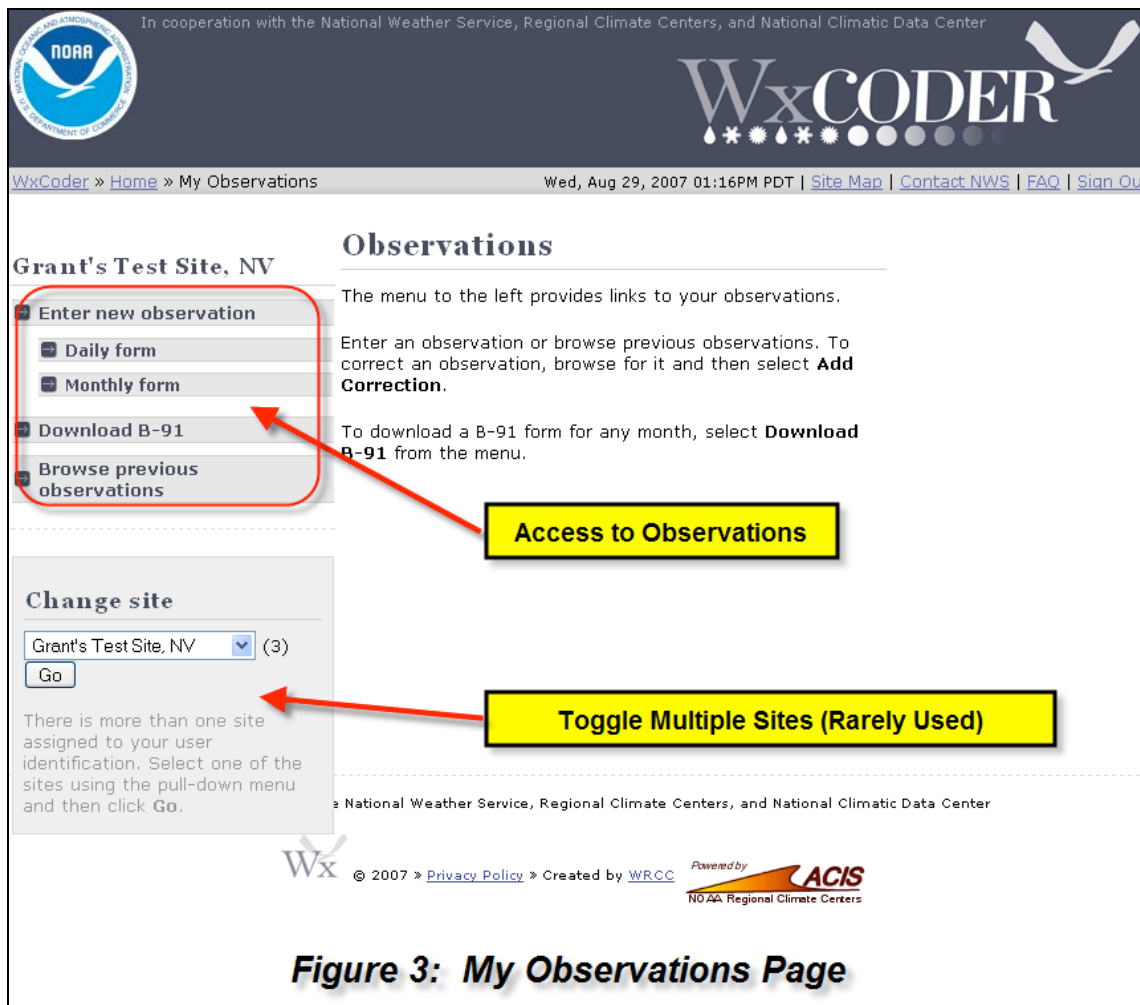


Figure 3: My Observations Page

In **Figure 3**, access to observations for cooperative station 'Grant's Test Site, NV' is provided through the highlighted menu. Clicking on 'Enter new observation' or 'Daily form' will take you to the daily entry page, while 'Monthly form' will take you to the monthly entry page.

At any time, you can obtain access to your observations on a NWS B-91 form, either for the current month or for any previous month entered through WxCoder (version 3). You can also download a blank B-91 form (**Figure 4**). These downloads can be performed in the following

image formats (*.PDF, *.PNG, *.JPEG, or *.GIF). The download can be printed using Windows, Linux, or Macintosh operating system capabilities.

STATION (Classification)			(River Station, # of River)			MONTH		WS FORM B-91 (12-93)		U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE																													
STATE		COUNTY		RIVER						RECORD OF RIVER AND CLIMATOLOGICAL OBSERVATIONS																													
TIME (year) OF OBSERVATION RIVER				TEMPERATURE	PRECIPITATION			STANDARD TIME IN USE																															
TYPE OF RIVER GAGE		ELEVATION OF RIVER GAGE ZERO		FLOOD STAGE			NORMAL POOL STAGE																																
TEMPERATURE		PRECIPITATION			WEATHER (Calendar Day)				RIVER STAGE																														
24 HRS ENDING AT OBSERVATION		24 HR AMOUNTS AT CH			Draw a straight line (—) through hours precipitation was observed, and a wavy line (~~~~) through hours precipitation probably occurred unobserved							Max 'X' for all boxes covering each day																											
MAX MIN		AT OBSN			A.M.		NOON			P.M.			Fog			Ice pellets		Clouds		Thunder		Hail		Outgoing wind		Incoming wind		Pressure		Relative Humidity		Condition		Gage reading at AM		Tide/stage		REMARKS (SPECIAL OBSERVATIONS, ETC.)	
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30																																							
31																																							
SUM																																							
CONDITION OF RIVER AT GAGE		READING		DATE		Fog		Ice pellets		Clouds		Thunder		Hail		Outgoing wind		Incoming wind		Pressure		Relative Humidity		Condition		Gage reading at AM		Tide/stage		REMARKS (SPECIAL OBSERVATIONS, ETC.)									
A. Obstructed by rough ice																																							
B. Frozen, but open at gage																																							
C. Upper surface smooth ice																																							
D. Ice gage above gage																																							
E. Ice gage below gage																																							
F. Shove ice																																							
G. Floating ice																																							
H. Pool stage																																							
SUPERVISING OFFICE																																							
STATION INDEX NO.																																							

Figure 4: Downloaded Blank B-91 Form

Entering your data

Figure 5 shows the ‘Daily Observation Page.’ This page is where you will most likely go to enter your observation. The following key features will assist you in entering your observation:

- 1.) **Station Information:** Provides key metadata (data about the station), including ID, official time of observation, location, elevation, and supervising local NWS office.
- 2.) **Date and Time of Observation:** Defaults with the previous day and official observation time. Contrast with the *Current Time*, which will be some period between the observation and entry into the interface (this period should be minimized as much as possible).
- 3.) **Type of Observation:** Most observers will provide information for the 24-hour period preceding the official time of observation. However, additional reporting is permissible using this pull-down menu – mainly to provide supplementary information in cooperation with your supervising local NWS office.

- 4.) **On-Screen Help:** Help is available throughout the interface wherever entries can be made. These are indicated by a question mark (?), ‘What is this?’, or ‘help’. **Appendix A** provides a complete listing of all on-line help language.
- 5.) **Observation Entry Areas:** The seven numbered observation entry areas in **Figure 5** correspond to entry areas on the NWS B-91 form, as shown in **Figure 6**.
- **Temperature:** Separate entry boxes for maximum, minimum, and at-observation temperatures. All must be entered in whole degrees Fahrenheit.
 - **Precipitation:** For the measurement period (usually the last 24-hour period), enter the total accumulation of rain and/or melted hail, ice pellets, glaze or snow in inches and hundredths, including the decimal point. Trace observations should be recorded with a capital ‘T’.
 - **Snowfall:** For the measurement period, enter the total of newly fallen snow in inches and tenths, including the decimal point. Trace observations should be recorded with a capital ‘T’.
 - **Snow Depth:** For the measurement period, enter the average depth of all snow and other frozen, accumulated precipitation on the ground at the time of observation in the vicinity of the station in whole inches. Trace observations should be recorded with a capital ‘T’ (for an average depth greater than zero but less than 0.5”).
 - **Precipitation Time:** Indicate the hourly periods when precipitation was observed or known likely occurred (estimated but uncertain) over the course of the CALENDAR day – NOT THE PREVIOUS 24-HOUR PERIOD UNLESS YOU ARE A MIDNIGHT OBSERVER. The number in each block indicates the start of the hour (e.g., 6 AM represents the period 6:00 am - 6:59 am). First, select the appropriate radio button above as to whether the precipitation was observed or estimated. Next, click the block for each hour corresponding to the precipitation occurrence. Hours can also be added by selecting a start and end time from the dropdown lists, and pressing the add button.
 - **Weather Elements:** Occurrence within the measurement period of the following should be noted by clicking on the square check box to the left of the wording: Fog, Hail, Ice pellets, Damaging wind, glaze, and thunderstorm. A visible check indicates selection.
 - **Remarks:** This space is available for you to enter any additional notes about phenomena that are not a part of the B-91 form. Common examples include sky condition (cloud coverage, cloud type, optical phenomena), astronomical (e.g., eclipses), seismological (e.g., earthquakes), or phenological (e.g., killing frost, status of leaves, blooms, pollens, etc.) conditions of note, river conditions, details about weather entries (e.g., hail size), or other observations of the natural environment.
- 6.) **Submit:** When your observation is completely entered, click the ‘Submit’ button. Your complete entry will be evaluated for its quality, as outlined in the Quality Control section. Errors or omissions requiring your feedback will be instantly provided.

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WxCODER

WxCoder » Home » My Observations » Enter (Thu, Aug 30, 2007 06:16AM PDT) Site Map | Contact NWS | FAQ | Sign Out

On-Screen Help
Precipitation Time of Occurrence:
 Please indicate the hourly periods when precipitation was observed or known likely occurred (estimated but uncertain) over the course of the CALENDAR day. The number in each block indicates the start of the hour (e.g., 6 AM represents the period 6:00 am - 6:59 am). First, select the appropriate radio button above as to whether the precipitation was observed or estimated. Next, click the block for each hour corresponding to the precipitation occurrence. Hours can also be added by selecting a start and end time from the dropdown lists, and pressing the *add* button.

 An hour can be unselected or changed by clicking the block again. All blocks can be unselected by clicking the *clear all* button.

Station Information

Supervising WFO
Reno, NV ?

Site ID
GMKN2 (SHEF) ?

Site Number
(COOP) ?

Time of observation
Midnight ?

Lat/Lon (N/W positive)
39.26.54, 118.20.54 ?

Elevation
4668 ft

Observation for Grant's Test

Site

Date and Time of Observation
 Aug / 29 / 2007 at Midnight (11:59PM)

Type of Observation
 Type of observation daily (24 hr values/totals) ?

Air Temperature

Max temperature x of [help](#)

Min temperature x of [help](#)

At observation x of [help](#)

Precipitation

Precipitation x in [help](#)

Snowfall x,x in [help](#)

Snow depth x in [help](#)

Precipitation Time of Occurrence

On-Screen Help (Active)
 What is this?
 Choose Observed Estimated

AM
 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3

Start 12 AM End 12 AM [add](#) | [clear all](#) ?

Key Observation Entry Areas:

1. Temperature (WHOLE degrees Fahrenheit)
2. Precipitation (HUNDREDTHS of an Inch)
3. Snowfall (TENTHS of an Inch)
4. Snow Depth (WHOLE Inches)

Weather

Present weather ? **Present Weather**

Calendar day weather

Fog
 Hail
 Ice pellets
 Damaging wind
 Glaze
 Thunderstorm

(check for any occurrence) [help](#)

7. Remarks

Remarks

Observation Remarks

Submit Observation

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 NOAA Regional Climate Centers

Figure 5: Daily Observation Entry Page

STATION (Name/location)	(River Station, if different)		MONTH	WS FORM B-91 (2025)			U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE														
STATE	COUNTY		RIVER	RECORD OF RIVER AND CLIMATOLOGICAL OBSERVATIONS																	
TIME (local) OF OBSERVATION	TEMPERATURE	PRECIPITATION	STANDARD TIME IN USE																		
TYPE OF RIVER GAGE	ELEVATION OF RIVER GAGE ZERO	FLOOD STAGE	NORMAL POOL STAGE																		
TEMPERATURE			PRECIPITATION						WEATHER (Mark with X)			RIVER STAGE			REMARKS (SPECIAL OBSERVATIONS, ETC.)						
24 HRS ENDING AT OBSERVATION		24 HR AMOUNTS		AT 05		Do not strike line through hours precipitation was observed, and a wavy line through hours precipitation probably occurred undisturbed												Gage reading at			
MAX		MIN		AT CROSS		Mark X by all hours counting each row												AM			
MAY		JUN		JUL		Fog												Tide gauge			
AUG		SEP		OCT		Ice patch												Outflow			
NOV		DEC		JAN		Clear												Tide gauge			
FEB		MAR		APR		Thunder												Tide gauge			
MAY		JUN		JUL		Rain												Tide gauge			
AUG		SEP		OCT		Snow												Tide gauge			
NOV		DEC		JAN		Thunder												Tide gauge			
FEB		MAR		APR		Rain												Tide gauge			
MAY		JUN		JUL		Snow												Tide gauge			
AUG		SEP		OCT		Thunder												Tide gauge			
NOV		DEC		JAN		Rain												Tide gauge			
FEB		MAR		APR		Snow												Tide gauge			
MAY		JUN		JUL		Thunder												Tide gauge			
AUG		SEP		OCT		Rain												Tide gauge			
NOV		DEC		JAN		Snow												Tide gauge			
FEB		MAR		APR		Thunder												Tide gauge			

- 1. Temperature**
- 2. Precipitation**
- 3. Snowfall**
- 4. Snow Depth**
- 5. Precipitation Time**
- 6. Weather Elements**
- 7. Remarks**

Figure 6: WxCoder Observation Categories on B-91 Form

Retrieving your data

Figure 7 shows the top portion of the ‘Monthly Observation Page.’ This page allows you to view your data from a monthly viewpoint while editing daily values. The form can be converted into a filled B-91 at any time.

The screenshot displays the WxCoder interface for the 'Monthly Observation Page' for 'Grant's Test Site, NV (GMKN2)'. The page includes a navigation bar with 'Home', 'My Observations', and 'Monthly'. A 'Download this B-91 as pdf' button is circled in red. A yellow box highlights 'Click to Download B-91 With Data'. Another yellow box points to 'Active Day - Unlocked for Edit' on day 7. A third yellow box points to 'Observed Precipitation from 8 am to 12 noon local standard time.' on day 8. A fourth yellow box points to 'Accumulated Precipitation (Rare)' on day 8. A fifth yellow box at the bottom indicates 'More Data Below (not shown)'. The main data table shows columns for Temperature (24 HRS Max, Min, At obs), Precipitation (Rain, Snow, Depth), and Weather (F, IP, G, T, H, DW). A detailed B-91 form is shown at the bottom, including fields for State (NV), County (Washoe), River, and various observation parameters like 24 HRS ENDING AT, TYPE OF RIVER GAGE, and WEATHER (Clouds, Fog, etc.).

Figure 7: Monthly Observation Entry Page

Observation Confirmation:

Once the observation has been submitted from either the daily or monthly observation entry page, a confirmation is required. This confirmation ensures that typographical errors are corrected. You should take care to review all elements and make appropriate corrections before submission. **Figure 8** shows a sample observation for confirmation.

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WxCODER

WxCoder » Home » My Observations » Confirm observation Thu, Aug 30, 2007 11:10AM PDT | Site Map | Contact NWS | FAQ | Sign Out

Carefully review your observation. If everything looks good, click the **Confirm** button below. Otherwise, click **Make corrections** to go back and make changes.

On-Screen Help
Click on a question mark on this page to display helpful information.

Accumulation
(multiple periods for precipitation total; rare)

Confirm observation

Observation Time	August 29, 2007 at 11:59PM
Max temperature	92 degrees F
Min temperature	64 degrees F
At observation	73 degrees F
Precipitation	0.48 inch
Accumulation	No
Snowfall	0.0 inch
Snow depth	0 inch
Precipitation Time of Occurrence	Observed: 3 pm - 4 pm
Present weather	00
Calendar day weather	Hail, Damaging wind, Thunderstorm
Remark	Penny-sized hail from 3:15-3:25 pm

Make corrections Confirm **Confirm**

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NOAA Regional Climate Centers

Figure 8: Confirm Observation Page

Once the confirmation is made by clicking the 'Confirm' button, you will be returned to the 'My Observations' page with a box as shown in **Figure 9** that allows you to quickly view the observation or enter the next or previous day's observation.

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WxCODER

WxCoder » Home » My Observations Thu, Aug 30, 2007 11:29AM PDT | Site Map | Contact NWS | FAQ | Sign Out

Grant's Test Site, NV

- Enter new observation
 - Daily form
 - Monthly form
- Download B-91
- Browse previous observations

Change site

Grant's Test Site, NV (3)

Go

There is more than one site assigned to your user identification. Select one of the sites using the pull-down menu and then click Go.

Your observation for **Aug 29, 2007** has been saved. [View it](#)

OR

[Enter previous day](#) | [Enter next day](#)

Observations

The menu to the left provides links to your observation

Enter an observation or browse previous observations. To correct an observation, browse for it and then select **Add Correction**.

To download a B-91 form for any month, select **Download B-91** from the menu.

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Confirmation of Observation Box

Figure 9: My Observations Page (with Confirmation)