

WxCODER II

A Web-based data entry system for observers

ADMINISTRATIVE USERS GUIDE



Web Xmitted Cooperative Observer Data Encoded Report

Version 1.0

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Cooperative observer data has traditionally been collected and transmitted to the National Weather Service by telephone. While the method has been effective, it not only requires significant time but also fails to take advantage of more sophisticated methods of data entry and transmission generally available through use of the Internet.

In 1999 WFO Chicago took a significant step in opening the use of the Internet to cooperative observers across the central United States. The result of the effort was the introduction of an Internet-enabled data entry system called WxCoder (*Web Xmitted Cooperative Observer Data Encoded Report*). Though an advancement, WxCoder only made the first step. Entry forms were cumbersome, error feedback was confusing, and data retrieval was non-existent..

WxCoder II is a major and substantial enhancement to previous methods of data entry for observers. While addressing the shortcomings of its predecessors, WxCoder II breaks new ground with the introduction of a multi-function database. By combining the power of relational database technology with the Internet, WxCoder II provides information services that neither can deliver alone. Major improvements are provided for both the observer and the NWS; significant new features for both are added.

For the coop observer, WxCoder II provides substantial improvements in data entry. The entry form is clean and concise. Through the use of the WxCoder database and dynamic content technology, data entry now occurs through a one-page, customized form – no need for the observer to muddle through pages of non-pertinent entry blanks. Persistent, site-specific data is automatically presented on the form; no need for repetitious, daily entry.

For the NWS, the introduction of the WxCoder database is a major enhancement to coop observer data collection, processing, analysis, and presentation. The collected data no longer serves one purpose. It is available for multiple uses – automatically generating summaries and reports, direct forwarding to NCDC.

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Application Architecture

WxCoder is a Web-based data entry system for National Weather Service observers. Its architecture and implementation are driven by two design considerations: a friendly, multi-featured interface and the need to maintain ‘state’ through a user’s session.

The requirement for a friendly user interface is easily met by implementing the interface using HTML/DHTML forms, CSS style sheets and JavaScript. The need for features such as customized forms and historic data retrieval requires the use of a database to store information relevant to each user.

A more difficult feature to incorporate is the need to maintain ‘state.’ It is not uncommon for an application such as WxCoder to span several pages that are logically grouped and considered part of a larger unit, defined as a *session*. Unfortunately, the HTTP protocol used in Web-based applications is not well suited for session management; it’s a stateless protocol that makes no provision for allowing a Web server to associate one request with any other request. WxCoder requires maintaining state to help identify the user as he proceeds from page to page and to ‘remember’ data entered or actions requested. Of the methods available for maintaining state, a backend database is the best approach for WxCoder. In this scheme, the client announces itself to the server on each request using an identifier (session ID). The server associates the identifier with the appropriate state information that it maintains for each client in the database.

The architecture solution for the WxCoder application is built using a three tier approach: a client browser at the front, a middle tier web server(s), and a backend database server (Figure 1).

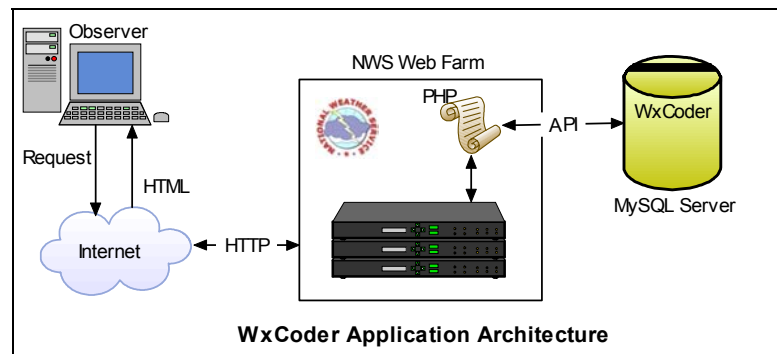


Figure 1

The front end comprises the human interface to WxCoder – normal Web pages. It is implemented through HTML/DHTML forms using CSS style sheets and JavaScript support.

The middle tier consists of Apache running on a web server or in a web farm. A PHP module running as a plug-in performs the processing done in the middle tier and includes support for interacting with the MySQL database backend (additional plug-ins provide support for generating PDF files and graphics). PHP scripting provides the flexibility needed for page customization; pages are generated as requested and to specifications required for the specific client being serviced. PHP scripts process form input, generate SQL queries, process query results, and generate HTML documents for return to the client via the Internet.

The backend tier consists of the database server, not necessarily running on the same server as Apache or even in the same web farm. MySQL is used for this application providing a high performance, flexible database.

All software used to generate and support the WxCoder application is open source with one exception -- a commercially licensed PDF-generating software package.

Application Flow

Though the user's initial encounter with WxCoder is generally considered to be the appearance of the login page, WxCoder begins its internal housekeeping before it generates the page. Upon receiving a request for the login page, WxCoder generates initial state information consisting of a session ID (a 32-character string of alphanumeric characters), a session expiration time (5 minutes into the future), and an initial set of session data (the preferred language, determined by the URL used to get to the login page) and stores it in its MySQL database in table *wxsamSessions*. The HTML page is then generated and returned along with the session ID as an in-memory cookie.

Upon presentation of the login page (Figure 6, Appendix C), the user is asked to enter his username and user identifier. The page is returned to the web server with the data attached as an HTTP POST request. The receiving script reads the username and user identifier and constructs a SQL query used to determine if a user exists that corresponds to the information passed. If no user exists who matches the unique combination of username and user identifier, an error message is returned along with the login page allowing another attempt at successful login. If the username exists but the user identifier does not match the one stored in the database for the user, the login page is returned with an error messages noting the problem; two more attempts at successful login are allowed before the user account corresponding to username is locked and unavailable.

WxCoder grants access to its pages based on a system of user rights – rights that are dependent on the class of user and are assigned when a new user account is established. WxCoder currently defines nine classes of users: guest, cooperative observer, marine observer, WFO-lite user, WFO user, NWS regional user, NWS national user, support/maintenance user, and superuser. Based on the username and user identifier, WxCoder 'knows' which class of user has logged in and generates an appropriate page to return to the user. If a user attempts to access a page to which he does not have rights, he will be denied access and a *no-rights* page will be returned.

The nine classes of users noted above can be divided into two general classes – observers and administrative users. These two classes define the two broad interfaces presented by WxCoder after login – the user interface and the administrative interface. Further determination on the pages presented is made based on the actual class of user.

The discussion below describes the application flow (Figure 2) for an observer user. The same principles outlined below apply to administrative users though the actual pages displayed and functions performed are different.

Application Flow: User Interface

Having successfully logged in, an observer class user is presented with a data entry page (Figure 7, Appendix C) – the default page presented on login for an observer. Because WxCoder knows both who the observer is and what site is associated with him through entries in the database, it customizes the page presented through those and other database entries. Customizations include pre-filled entries for site name

and ID, date and time of observation, type of observation. The form is generated to include only those data elements (with information retrieved from the 'forms' series of tables in the database) observed by the user.

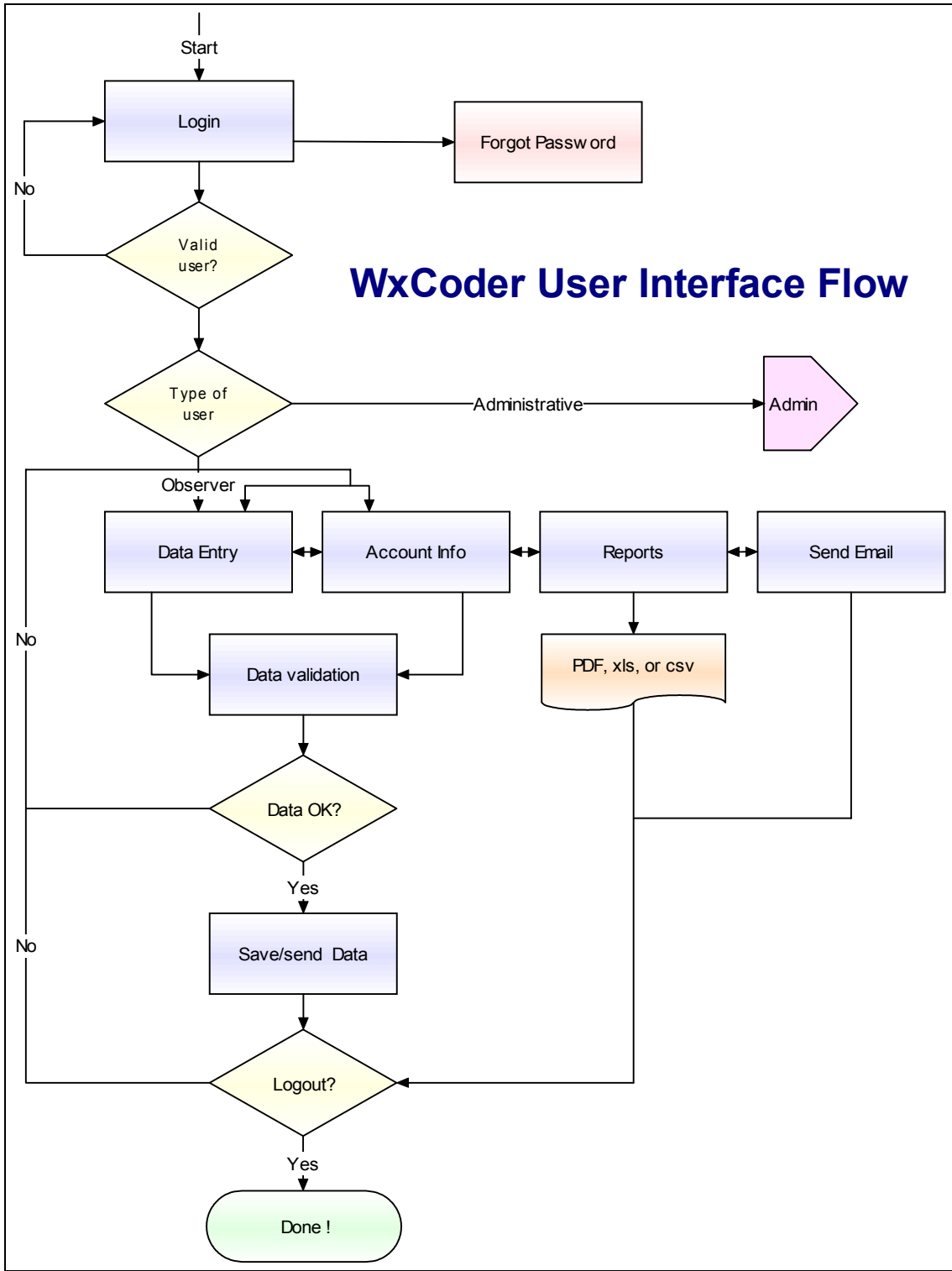


Figure 2

Further customizations include information/links on the page related to the observer's local NWS office/contact. This is accomplished in the PHP files *dataEntryCoop.php* and *dataEntryMarine.php* as appropriate.

With many portions of WxCoder's pages being common (page header/footer, menus, general page layout.), it would be burdensome and time-consuming to maintain these features on every page. Instead WxCoder pages are generated using templates. The use of templates separates the commonly used portions of a page from the rest of the page code. For those portions of a page that only need minor changes, templates also support the use of variables. At runtime, the page's template is retrieved, template variables are replaced with either plain text (HTML) or the output of other templates, and the page is generated. The PHP package **FastTemplate** is used to implement this feature.

When the user submits the data entry page, data validation begins (file *validateDataCoop.php*). The data is first read from the HTTP POST variables returned to the server and stored in an arrayed session variable. Data quality checks (Table 1) are then performed on the data.

- blank form
- ob entry no earlier than 30 minutes before nominal observation time (*regular observation only*)
- invalid characters
- correct number of digits in each field
- data within valid range (WFO settable)
- precipitation entered, if required
- cross checks between data
 - must report precipitation with snowfall (*reg ob only*)
 - must report snow depth with snowfall (*reg ob only*)
 - must report snow depth with snow core (*reg ob only*)
 - don't report snow core with snow depth less than 2 in
 - must report snow core if is on/after last Monday in January
 - must report precipitation type, if reporting, with precipitation
 - must report frozen precipitation type, if reporting precipitation type, with snowfall
 - min temperature must be \leq max temperature (air and soil temperatures)
 - temperature at observation must be \leq max temperature
 - max temperature must be \geq yesterday's temperature at observation and min temperature must be \leq yesterday's temperature at observation

Table 1

If no errors are encountered, the data are encoded in SHEF and stored in the WxCoder database. A 'success' message (Figure 9, Appendix C) is returned to the user along with a summary of the observation just entered. At this point the users may logout or choose another Wxcoder function (including entering data again). If an error(s) is encountered, the data entry page is returned to the user with his data still in the entry boxes and a message(s) noting the error encountered (Figure 8, Appendix C). The errors must be corrected before WxCoder will accept the observation.

WxCoder to AWIPS Data Transmission

WxCoder accommodates two methods of transmitting its collected data to AWIPS – through LDAD and by direct ftp. Transmitting through LDAD is the method currently in use.

Transmission through LDAD

Wxcoder transmits its data to AWIPS by appending its output to files in a pre-defined directory (defined in *_congif.php*) on the web server. The specific file appended to mimics the AFOS PIL specified at the time the site was established (e.g., data to be stored using AFOS PIL *CHIRR3CHI* is appended to file *COOPCHIRR3CHI* on the web server). At this point WxCoder no longer controls the flow of data.

A shell script, running at regular intervals as a cron job on the web server, reads the files in the pre-defined directory. If a file contains data (i.e., is not zero length), it is sent by ftp to one of four Central Region LDAD sites: Central Region Headquarters, WFO Bismarck, WFO Sioux Falls, or WFO Milwaukee. (Files that are successfully read are 'zeroed out'.) Upon being received by LDAD, entry into AWIPS is controlled by LDAD's AFOS2AWIPS.txt (A2A) file. This file contains a listing of acceptable AFOS PILs (9-character product identifiers) and WMO headers that AWIPS recognizes as valid products. ***It is critical that the receiving LDAD site's A2A file be complete and correct to insure transmission through this link.***

When successfully transmitted, a site's observation will appear in AWIPS with the appropriate AFOS identifier.



WxCoder provides a convenient web-based data entry method for cooperative observers based on user accounts. As in all such systems, setup and maintenance of those accounts become administrative tasks. WxCoder provides a second user interface in addition to its observer interface to handle those tasks.

WxCoder's administrative interface is based on user rights – rights granted that are dependent on the type of administrative functions that need to be performed for the class of user. WxCoder grants distinct administrative rights to a WFO, a NWS region, a NWS national user, and the superuser. As rights increase from WFO to superuser, the functions available generally become a superset of those available at a lower rights level. WxCoder 'knows' about the administrative rights appropriate for a user at login. The menu and features available in WxCoder are determined by the rights granted to the user when his account is established.

In maintaining its database, WxCoder makes a distinction between a user and a site. A site is the place where data is taken. The data elements observed along with site-specific information (e.g., time and frequency of observation, location information, etc.) are associated with the site. An observer is assigned to a site. Information about the observer is not information about the site and vice versa. This is a subtle distinction but one that is critical to the way WxCoder handles information. Thus, for example, you may have a site with no observer but you cannot have an observer without a site. This distinction between observer and site information is carried forward to the distinct WxCoder functions available to the administrative user.

Since its inception WxCoder has been expanded to be a data entry system for any type of observation. The processing and transmission of data is the same whether an observer is entering cooperative observer data, marine data, or spotter information. Currently, WxCoder supports data entry for both cooperative observer data and marine data (i.e., Coast Guard reports). Several administrative functions require that you specify the type of site you are administering.

WFO Administrative Operation

Logging in

To log in to a WxCoder WFO administrative account, point your browser to the address provided in your welcoming email. You will be presented with WxCoder's login page. Enter your username and user identifier in the appropriate boxes and click the *Login* button. Both your username and user identifier 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 login will be unsuccessful.

If your login is successful, WxCoder will present its initial administrative page with a menu along the left edge of the page. If unsuccessful, WxCoder will display an error

message above the login area of the page explaining the problem encountered and you will be asked to try again.

WxCoder only allows a user four attempts at login before it locks the account. Locking the account means that no further access to the account will be granted until your next higher rights contact (e.g., a WFO contacts a region) is notified of the problem and takes the steps necessary to unlock the account.

If you forget your user identifier, click on **I forgot my user identifier!** near the bottom of the page. You will be taken to a page which asks you to enter your username. WxCoder will lookup your user identifier and send it to your email address on record immediately.

A WxCoder session times out in five minutes. If there is no input from you within that time, WxCoder will automatically log you off. When you try to proceed with some task, you will be returned to the login page with a note that **Your session has timed out! You must login again!** You will be required to log back in. Any data or information that was not submitted/saved will be lost.

The WxCoder administrative menu

Along the left edge of each WxCoder administrative page is a menu (Figure 6) that allows you to navigate to WxCoder's various features. In general, the functions may be divided into three categories:

- *User Management*: functions related to maintaining a user/observer's WxCoder account information
- *Site Management*: functions related to maintaining the users/observer's site information
- *WxCoder Options*: functions related to the way WxCoder works for you

Within each category WxCoder lists the functions which may be performed. Click on the desired function and WxCoder will take you to the appropriate page.

The following sections detail the operations associated with each of the menu selections.

User Management

Add a new user and site

This menu option provides the interface for the primary method of 'signing up' a new WxCoder user. In order to use this option effectively, you will want to have the new user's username (you may have asked for this when making contact with the observer about using WxCoder) and email address.

Upon clicking the menu option, you will be taken to a page that presents several entry boxes for information such as name, address, etc., in addition to username and email address. Only username and email address are required entries. All other entries are for your/the user's use (the user has access to this same page from his menu).

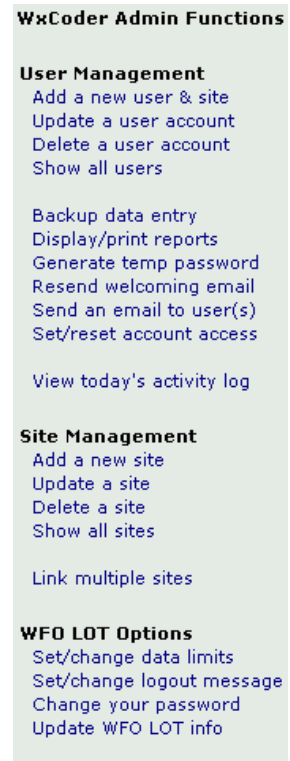



Figure 3

 WxCoder may obtain the capability to send bulk US mail; the optional entries on this page could be useful for such a purpose.

The last item on the page requests that you select whether the new user will be assigned to a new site (signing up a user and initializing site information) or just assigning this user to a pre-existing site. If you select the latter, WxCoder will store the user information in its database and send a welcoming email (Figure 7) to the user that contains his username and user identifier. If you are also initializing a new site, WxCoder will take you to a page appropriate for that function.

The section *Add a new site* under **Site Management** below details the information needed to establish the site associated with the new user.

Update a user account

To add, change or delete information about a user's account, choose this menu selection. You will be asked to

enter either the user's username or the associated site's ID. WxCoder will retrieve the user's account information and present it on the next page. After having made any necessary changes, click *Submit*. The changes will be posted to the WxCoder database. An email will be sent to the user notifying him that changes have been made to his account information.

Delete a user account

If you would like to delete a user account from the WxCoder database, make this menu selection. You must enter the user's username or the associated site's site ID. WxCoder will ask you to confirm your desire to delete the user account before committing the deletion to the database.

Deleting a user account does not automatically delete the site associated with the user from the WxCoder database. To delete both the user and the site, check the *Delete both user and site* box.

Show all users

To obtain a list of all users under your office's supervision, click this menu entry. You will be presented with a listing for each user that includes username, name, associated site ID, and indication whether the account is locked.

To the right of the user information are three buttons that provide quick access to user details (a popup window that lists user, account, and site information), the user account update page, and user deletion (with confirmation).

The listing is initially presented in ascending alphabetical order sorted by username (note the arrow in the listing header). WxCoder allows ascending/descending sorts on any column. Simply click on the column heading to obtain a sort based on that column. To reverse-sort the column, click on the column again.

Backup data entry

To be implemented.

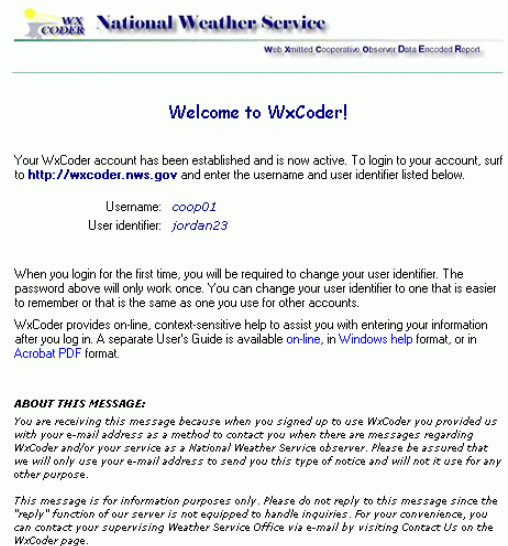



Figure 4

Display/print reports

When you select this option WxCoder will display a list of reports that it can produce for you. Select the report you would like WxCoder to generate and click *Next*.

 *Your may select more than one station by holding down the Ctrl key while clicking your selections with the mouse.*

Daily activity log: *a log showing all reports received over a selected time period*

WxCoder will display a page that allows you to select the station(s) you would like the report to display along with the time period to be covered by the report. After you have made your selections WxCoder will query its database and generate and display its report. The report will include the site ID and the time the observation was entered. When the time period of the reports spans multiple days, the report will be sorted by site ID and within each site by date. A *display ob* button on the right will open a popup window when clicked that displays the encoded observation as it is stored in the database.

Clicking Printable version will open a popup window that does not have the main window's header and menu. This window will be sent to your printer when *Print* is clicked.

User paper forms: *copies of user paper forms (e.g., B-91)*

To be implemented.

Monthly totals/averages: *a report totaling temp and precip for the month for all sites*


To be implemented.

View system log: *the system log showing all WxCoder transactions*

To be implemented

Generate temp user identifier


There may be instances when the user cannot access his account because he not only forgot his user identifier but he may not be able to receive the user identifier through the "I forgot my user identifier" feature. Click this menu options to remedy the situation.

 *The temporary user identifier is only good for one login.*

WxCoder can generate a temporary user identifier after you enter the user's username or associated site ID in the box provided and click *Generate Temp User Identifier*. You may give the user identifier to the observer however you wish (e.g., telephone, email). Upon login the user will be immediately required to change his user identifier.

Send an email to user(s)

You can send an email to one, some, or all of the users under your office's supervision by selecting this menu option.

 *To select more than one site, click each site while holding down the CTRL key.*

When the page is presented, the default 'To' address for the message is selected to be all observers under your office's supervision. You may choose to select only one observer or a combination of some but not all observers instead. The default 'From' address is taken from your WxCoder WFO information; you may change it as appropriate. Fill in the 'subject' line.

WxCoder allows you to include an attached file with your email. You must specify the full path and name of the file to be 'attached.' Click on the *Browse* button to the right of the 'Attachment' box to select the file using a normal Windows file dialog if you are uncertain of the files correct pathname or location.

You may type your message in the box provided on the page. The *Clear Message* button will clear all the text from the entry box and allow you to start over.

When you click *Send*, WxCoder will email your messages to the observers specified. The message will be sent as text (non-HTML).

Set/reset account access

WxCoder only allows a user four attempts at login before it locks the account. Locking the account means that no further access to the account will be granted until the local NWS contact is notified of the problem and takes the steps necessary to unlock the account. This page permits accounts to be both unlocked and locked.

You will be requested to enter the username or site ID of the account whose access you wish to change. Then you can select the function to perform – mark the account inactive or clear the account lockout. Clicking the *Set/Reset Access* button makes the requested change in the WxCoder database. An email is sent to the observer informing him of the change.

View today's activity log

This option is a one-click shortcut for viewing the day's activity log. It is comparable to selecting the three-step sequence *Display/print reports* | *Daily Activity Log* | *Display Log*. The result of choosing this menu item is the same as described above under *Display/print reports*.

Site Management

Add a new site

This menu option provides the interface for initializing information about an observing site.

After clicking this menu option, you will be asked to select the type of site you are adding. You will then be presented with a page appropriate to establish information for the site. You will need to enter identifying information for the site, information about the observation made at the site, and the types of data observed at the site.

Site Information section

You must enter a unique site ID for the new site. The name of the site and the state the site is located in are also required. Other information in this section is optional. You may find it useful for future reference purposes to complete the remaining entry boxes in this section.

Observation Information section

This section allows you to enter information about the type of regular observation taken at the site and the normal time it is taken (required). Change the time zone and daylight time information as appropriate.

Elements Observed section


Select the data elements observed from the list provided in the Elements Observed section of the form by checking the appropriate boxes. Entries for soil temperature depths require additional information about the depth(s) at which the temperature is observed. If the temperature is observed at only a single depth, enter the depth. If soil temperature is observed at multiple depths, enter all the depths in the text box separating them using an ampersand ('&'). For example, if temperatures are observed at 4 and 8 inches, enter **4&8**.

Transmission Info section

Finally, be sure to enter the AFOS PIL you want this site's observation to be transmitted under. You may change it from the default for your office but be aware that the PIL must be valid – in use in AWIPS – in order for the data to be successfully transmitted from WxCoder to AWIPS.

Update a site

To add, change or delete information about a site, choose this menu selection. You will be asked to enter the site's ID. WxCoder will retrieve the site's information and present it on the next page. After having made any necessary changes, click *Submit*. The changes will be posted to the WxCoder database.

 *Deleting a site automatically deletes the user account associated with the site from the WxCoder database.*

Delete a site

If you would like to delete a site from the WxCoder database, choose this menu selection. You must enter the site's site ID on the page presented. WxCoder will ask you to confirm your desire to delete the site before committing the deletion to the database.

Show all sites

To obtain a list of all sites under your office's supervision, click this menu entry. You will be presented with a listing for each site that includes the site ID, site name, and associated username.

To the right of the site information are three buttons that provide quick access to site details (a popup window that lists site and associated user information), the site account update page, and user deletion (with confirmation).

The listing is initially presented in ascending alphabetical order sorted by username (note the arrow in the listing header). WxCoder allows ascending/descending sorts on any column. Simply click on the column heading to obtain a sort based on that column. To reverse-sort the column, click on the column again.

Link multiple sites

Linking multiple sites allows one user to enter observations for several sites. With sites linked to one user account, the user can enter data in a near-seamless, one login process -- no logging on/off to enter each site's data.

To establish multiple site linking, you must have previously established a user account/site pair (generally by selecting the *Add a new user & site* from the admin menu). With the master account/site pair established, you can then initialize information about each additional site using the *Add a site* menu option (if it is not already setup in WxCoder). So you now have a master user/site account and one or more sites without a user assigned to them. Finally, by coming to this page and entering the username and site IDs (separated by commas, e.g. LOT, MDWI2) for all the linked accounts in the spaces below.

To unlink a site from a master username, reenter the site IDs of only those sites that you wish to remain linked. You cannot unlink all sites; there must always be at least one site associated with a user account.

WxCoder Options

Set/change data limits

When a user enters an observation, WxCoder will perform a check to insure that each datum is within a valid range. You may set the range of the parameters to

values appropriate for your portion of the country and/or your area's climatology on this page.

All values entered must be whole numbers; negative values are permissible. Where only a max value is settable, the min value is zero by default. Any blank values will revert to the WxCoder default.

Set/change logout message

WxCoder allows a degree of local customization to the pages the users view. This gives WxCoder a local flavor while at the same time allowing the uniformity necessary in a national program. Among the customizations that you may specify are the small 'bug' that appears at the bottom of each user page and the message that appears when a user logs out.

The logout message is specified on this page. The text box allows entry of a message tailored to your site and your observers when the user logs out of WxCoder. The message may contain plain text, HTML, or a combination of the two.

If your message is HTML, you may include up to three images in the message. With your HTML complete, list the path to each image in the appropriate boxes on the page. You may click the 'Browse' button to search for and select the images.

Clicking the *Preview* button allows you to see your message as it will appear on the logout page before it is committed to WxCoder. This is particularly helpful if your message is in HTML.

When you are satisfied with your message, click *Save* to place it on the WxCoder server.

To delete your current logout message, choose the *Set/change logout message* menu option. Your message will be displayed in the text box. Click *Clear* to clear the text in the box, then *Save* to save the blank logout message. When you have no logout message stored on the server, WxCoder will use its own default logout message.

Change your user identifier

Although WxCoder generates a user identifier for your first login, you may change it at any time. Simply enter your old user identifier and new user id in the appropriate entry boxes on the page. You must verify the user identifier by entering it again in the *Confirm new user identifier* entry box. When you are finished making the change, click *Change User Identifier*. The change is effective immediately. You may use your new user identifier the next time you login.

Update WFO info

This page allows you to update information about your office.

Site Information section

The name entry in this section is used by WxCoder whenever it needs to identify your office to the user. (e.g., in the *label I'd like to send an email to the program manager at NWS...*).

Product Transmission Information section

Enter the CCC, NNN, and XXX of the AFOS PIL you want WxCoder to use when it transmits its data to AWIPS for your observers. Be aware that the PIL must be valid – in use in AWIPS – in order for the observer's data to be successfully transmitted from WxCoder to AWIPS.

Email Addresses section

There are times when WxCoder will send an email to observers -- with a user identifier when they are 'signed up', in a mass mailing. The 'from' address entry should reflect the address you want to appear in the "from" portion of the email that is sent. Keep in mind that this address may be used by the observer to send you a reply or comment from the original email.

WxCoder allows the observer to email comments along with their observation. You may list the addresses you would like to receive these emails. You can specify the routing for the email:

- to: - this is the main recipient of the email
- cc: - send a copy of the email to this recipient
- bcc: - send a blind copy of the email to this recipient (the recipient is not listed in the email header)

You can enter multiple to, cc, and bcc addresses for messages sent by the observer. Separate each address with a comma, e.g.,
john.doe@noaa.gov,jane.doe@hotmail.com.

Regional Administrative Operation

Most of the features described above for a WFO administrative account are available to a regional administrative user. The functions generally operate in the same manner as those described for a WFO user. The primary enhancement to WFO operations is the addition of operations to manage WFO accounts. These functions are detailed below.

WFO Site Management

Initialize a WFO site

This menu option provides the interface for initializing information about a WFO account. The page presented is divided into three sections that require input.

Select a WFO section

Using the dropdown combo box, select the identifier for the WFO you are initializing. You will only be able to select WFOs in your region. The WFO's name will be automatically filled in below your selection.

Login Information section

This section describes the login information that will be assigned to the WFO. The username is standardized; it is the characters 'wfo' followed by the specific WFO's identifier (all in lower case). The WFO's user identifier will be generated automatically by WxCoder. Upon successful completion of the initialization process, WxCoder will automatically send a welcoming email to the WFO that contains both the username and user. The email will be sent to the 'from' address as noted below.

Email Addresses section

Messages Sent From WxCoder: There are times when WxCoder will send an email to observers (e.g., with a user identifier when they are entered into the database, in a mass mailing). This entry should reflect the address you want to appear in the "from" portion of the email that is sent. Keep in mind that this address may be used by the observer to send a reply or comment from the original email.

Messages Sent To WxCoder: WxCoder allows the observer to email comments along with their observation. You may list the addresses you would like to receive these emails. You can specify the routing for the email

- to: - this is the main recipient of the email
- cc: - send a copy of the email to this recipient
- bcc: - send a blind copy of the email to this recipient (the recipient is not listed in the email header)

You may enter multiple to, cc, and bcc addresses for messages sent by the observer. Separate each address with a comma, e.g.,
john.doe@noaa.gov,jane.doe@hotmail.com

Update a WFO site

To add, change or delete information about a WFO, choose this menu selection. You will be asked to enter the WFO's ID. WxCoder will retrieve the WFO's information and present it on the next page. This page allows you to change email addresses, point of contact, etc. After having made any necessary changes, click *Submit*. The changes will be posted to the WxCoder database.

Delete a WFO site

If you would like to delete a WFO from the WxCoder database, choose this menu selection. You must enter the WFO's ID on the page presented. WxCoder will ask you to confirm your desire to delete the WFO before committing the deletion to the database.

Show all WFO sites

To obtain a list of all WFOs in your region, click this menu entry. You will be presented with a listing for each WFO that includes the WFO's ID, its name, and the associated WxCoder 'point of contact.'

To the right of the site information are three buttons that provide quick access to WFO details (a popup window that lists WFO information), the WFO account update page, and WFO deletion (with confirmation).

The listing is initially presented in ascending alphabetical order sorted by WFO (note the arrow in the listing header). WxCoder allows ascending/descending sorts on any column. Simply click on the column heading to obtain a sort based on that column. To reverse-sort the column, click on the column again

Superuser Administrative Operation

All of the features described above for a WFO administrative account are available to the superuser.

Technical information and support features

Technical information/support interfaces were developed in WxCoder to allow system-wide monitoring of several significant operational parameters. For WFO, regional, and national users, WxCoder provides access to information through the left-margin menu presented at login. At a higher level, WxCoder provides detailed information about the receipt and transmission of observations through its maintenance (<http://www.crh.noaa.gov/wxcoder/include/maintStatus.php>) page.

The first portion of the page details the time of receipt, sender ID, and transmission ID of the last observation received along side the transmission time, sender ID, and

transmission ID of the last observation posted to the server directory for ‘pick-up” and forwarding to AWIPS through LDAD. The transmission times are color-coded for a quick-glance status – green meaning ‘normal’ transmission (within 5 minutes of receipt); orange indicating a possible transmission problem (no transmission within 5 minutes of receipt); red indicating a definite transmission problem (no transmission within 10 minutes of receipt).

The second portion of the page details the number of observations entered through WxCoder for the current UTC calendar day listed by NWS region.

The graphic in the third portion of the page shows the number of observations entered through WxCoder by hour for the past 30 hours (Figure 5).

30 Hour transmission load...

The graphic below displays the number of observations transmitted by WxCoder during the past 30 hours by hour.

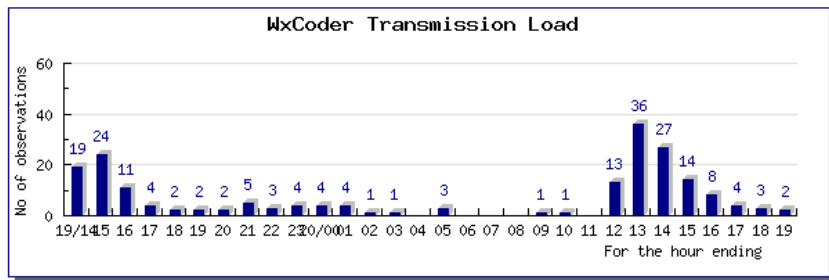


Figure 5

Administrative FAQ

Q: *What if I forget my user identifier?*

A: If you forget your user identifier, go to the WxCoder login page. Near the bottom of the page you will see the phrase **I forgot my user identifier!** Click on it. You will be taken to a page which asks you to enter your username. WxCoder will lookup your user identifier and send it to your email address on record immediately.



Appendix A: WxCoder User Page Screenshots

WxCoder National Weather Service
Web Xnitted Cooperative Observer Data Encoded Report

Access to WxCoder requires that you login...

Username:
User Identifier:
 Remember me
Login

This is a protected area. Please enter your user name and identifier (both are case-sensitive) then click the 'Login' button.

[I forgot my user identifier!](#)

WxCoder is best view using IE 5.5/NS 7.0 at a resolution of 800 x 600 or more.

Figure 6: The WxCoder login page

WxCoder National Weather Service
Web Xnitted Cooperative Observer Data Encoded Report

[Enter your observation](#) [Reports](#) [Your WxCoder account](#) [Contact us](#) [Help](#)

About your observation...

Location: [Burr Ridge, IL \(BURI2\)](#) Date/time of observation: 09/30/2003 0700 AM CDT ?
Type of observation: daily [24 hr values/totals] ?

Enter your data...

Precipitation
Precipitation: x.xx in ?
Snowfall: x.x in ?

Remarks for Form B-91

I'd like to send an email to the program manager at NWS Chicago ?

Reset Submit Data Logout

CHICAGO

Figure 7: A WxCoder data entry page

WxCODER National Weather Service
Web Xmitted Cooperative Observer Data Encoded Report

Enter your observation! Reports Your WxCoder account Contact us Help

About your observation...
Location: Burr Ridge, IL (BURI2) Date/time of observation: 09/17/2003 0700 AM CDT
Type of observation: daily (24 hr values/totals)

Enter your data...

You must report precipitation with snowfall

Precipitation
Precipitation: 0.00 x.xx in
Snowfall: 1.00 x.x in

Remarks for Form B-91

I'd like to send an email to the program manager at NWS Chicago

Figure 8: A WxCoder data entry page with errors

WxCODER National Weather Service
Web Xmitted Cooperative Observer Data Encoded Report

Enter your observation! Reports Your WxCoder account Contact us Help

**Your data has been entered and transmitted!
Thanks!**

Your Burr Ridge, IL report...

Precipitation: 0.00 inch

Logout

CHICAGO

Figure 9: A WxCoder 'success' page



Figure 10: A WxCoder reports page

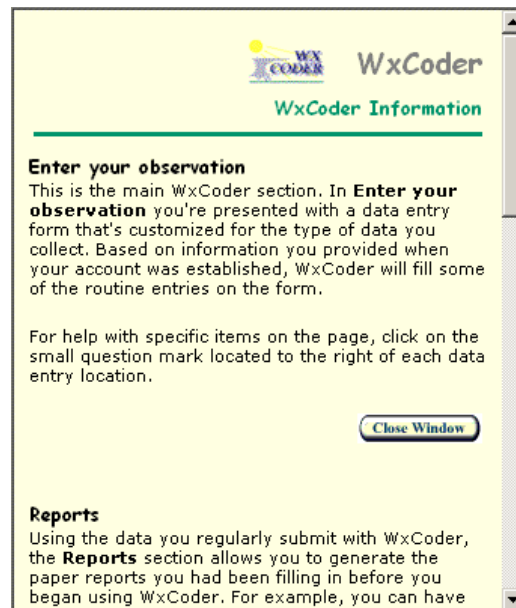


Figure 11: WxCoder top level help



Lightning Facts

- Lightning causes an average of 80 fatalities and 300 injuries each year
- Lightning occurs in all thunderstorms; each year lightning strikes the Earth 20 million times!
- Most lightning fatalities and injuries occur when people are caught outdoors in the summer months
 - Lightning can occur from cloud-to-cloud, within a cloud, cloud-to-ground, and cloud-to-air

Have a great and safe summer!

Login again



Figure 12: A WxCoder logout page