



Clarus System **USER GUIDE**

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Revision History

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0200	October 2008	Updated	QRM	Updated to reflect new GUI.
0300	January 2009	Updated	QRM	Updated to reflect changes to <i>Clarus</i> System.
0400	June 2011	Updated	QRM	Updated to reflect changes to <i>Clarus</i> System.

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The *Clarus* System is an experimental product and is being used for evaluation and demonstration purposes only. This is provided as a public service.

No warranties on accuracy of data are intended or provided. See link to contributor's data disclaimer in metadata file contrib.csv.

INTRODUCTION

Overview

This document describes the *Clarus* System user interface. *Clarus* is an initiative sponsored by the U.S. Department of Transportation (U.S. DOT) to organize and make more effective environmental and road condition observation capabilities in support of four primary motivations:

- 1) Provide a North American resource to collect, quality check, and make available surface transportation weather and road condition observations so that State Departments of Transportation (DOTs) and other transportation agencies can be more productive in maintaining safety and mobility on all roads and surface transportation platforms.
- 2) Surface transportation-based weather observations will enhance and extend the existing weather data sources that support general purpose weather forecasting for the protection of life and property.
- 3) Collection of real-time surface transportation-based weather observations will support real-time operational responses to weather.
- 4) Surface transportation-based weather observations integrated with existing observation data will permit broader support for the enhancement and creation of models that make better predictions in the atmospheric boundary layer and near the earth's surface to support more accurate forecasts.

Modes of Operation

There are three ways to retrieve weather observations from the *Clarus* System:

- 1) Subscribing to a report that is updated periodically;
- 2) Viewing the latest quality-checked observations using the map interface; and
- 3) Retrieving an on-demand report for weather observations.

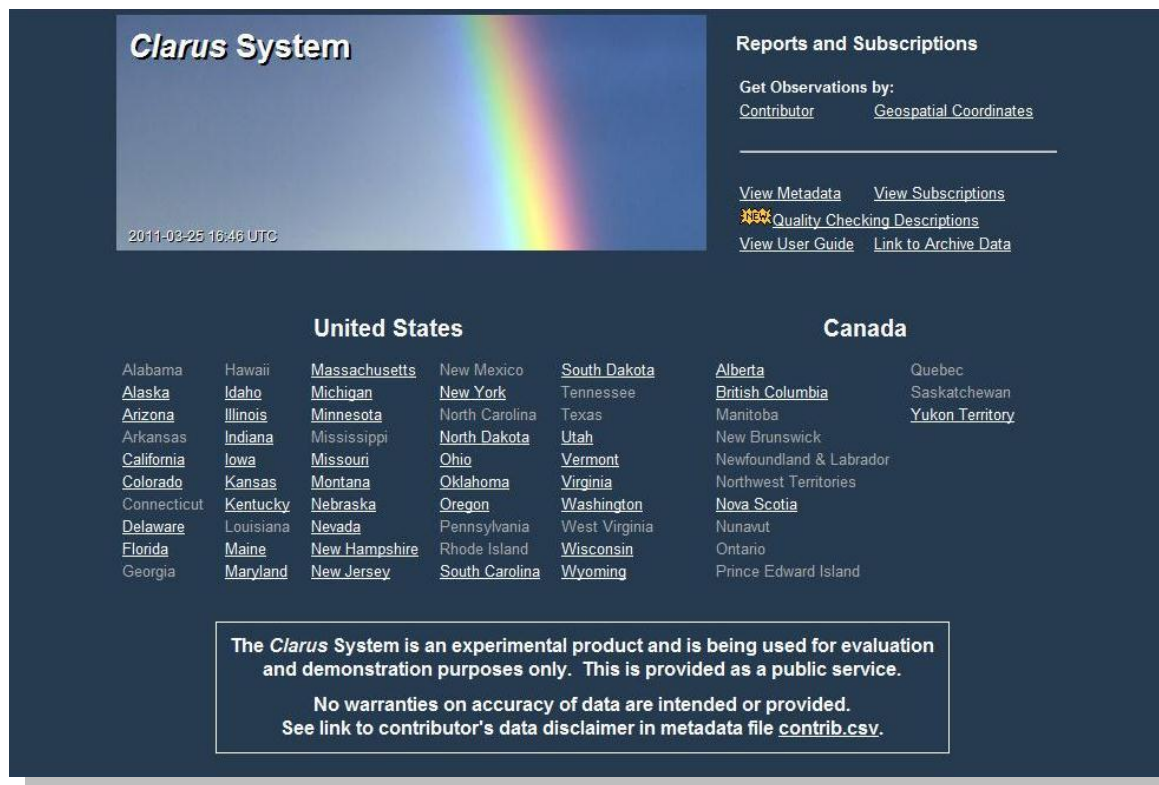
What Does “*Clarus*” Mean?

The word “*Clarus*” is Latin for “clear”. The tools within the *Clarus* System can help you see clearly through the enormous amounts of data generated by Environmental Sensor Stations across North America.

USER INTERFACE

Clarus Home Page

To access the *Clarus* home page, open a web browser and set the address to: <http://www.clarus-system.com>.



Clarus System

2011-03-25 16:46 UTC

Reports and Subscriptions

Get Observations by:
[Contributor](#) [Geospatial Coordinates](#)

[View Metadata](#) [View Subscriptions](#)
[Quality Checking Descriptions](#)
[View User Guide](#) [Link to Archive Data](#)

United States

Alabama Hawaii [Massachusetts](#) New Mexico [South Dakota](#)
[Alaska](#) [Idaho](#) [Michigan](#) [New York](#) Tennessee
[Arizona](#) [Illinois](#) [Minnesota](#) North Carolina Texas
Arkansas [Indiana](#) Mississippi [North Dakota](#) [Utah](#)
[California](#) [Iowa](#) [Missouri](#) [Ohio](#) [Vermont](#)
[Colorado](#) [Kansas](#) [Montana](#) [Oklahoma](#) [Virginia](#)
Connecticut [Kentucky](#) [Nebraska](#) [Oregon](#) [Washington](#)
[Delaware](#) Louisiana [Nevada](#) Pennsylvania West Virginia
[Florida](#) [Maine](#) [New Hampshire](#) Rhode Island [Wisconsin](#)
Georgia [Maryland](#) [New Jersey](#) [South Carolina](#) [Wyoming](#)

Canada

[Alberta](#) Quebec
[British Columbia](#) Saskatchewan
Manitoba [Yukon Territory](#)
New Brunswick
Newfoundland & Labrador
Northwest Territories
[Nova Scotia](#)
Nunavut
Ontario
Prince Edward Island

The *Clarus* System is an experimental product and is being used for evaluation and demonstration purposes only. This is provided as a public service.
No warranties on accuracy of data are intended or provided.
See link to contributor's data disclaimer in metadata file [contrib.csv](#).

The links in the upper-right corner of the page provide access to the observation retrieval process by two methods: contributors and geospatial coordinates. In addition, links are provided to the Quality Checking Descriptions, existing metadata, subscriptions, Users Guide, and archived data.

The bottom portion of the screen contains a list of the states and provinces of North America that are eligible to participate in the *Clarus* System network.

Those states and provinces that are contributors to the *Clarus* System are shown as white-colored links in the lower portion of the page. These links provide access to the map interface, which shows the Environmental Sensor Stations (ESS) for a selected location. From the map interface, the latest quality-checked observations can be accessed for each station.

Time Display

Time within the *Clarus* System is stored in Coordinated Universal Time (UTC), which is five hours ahead of Eastern Standard Time. The current time in UTC is shown on every webpage. The time is updated every minute.

The list of time zones in North America with their Standard and Daylight Saving Times as offsets from UTC is shown below.

Time Zone Description	UTC Offset (Hours)	
	Standard	Daylight Saving
Newfoundland	-3.5	-2.5
Atlantic	-4.0	-3.0
Eastern	-5.0	-4.0
Central	-6.0	-5.0
Mountain	-7.0	-6.0
Pacific	-8.0	-7.0
Alaska	-9.0	-8.0
Hawaii	-10.0	-9.0

Reports and Subscriptions

The *Clarus* System polls its list of contributors for new observations based on each contributor's configured schedule. These observations are stored for seven days. During that time, observations can be retrieved in two ways: either as an on-demand report or as a subscription.

In both cases, you will define the area from which you want to retrieve observations and the specific observation types in which you are interested. For an on-demand report, you will also specify the time range (one hour at a time) for which you wish to retrieve the observations.

Subscriptions differ from on-demand reports in that a subscription is fulfilled periodically (such as every 5, 10, 15, 20, 25, or 30 minutes). Subscriptions contain all observations received by the system since the last subscription delivery.

A few examples of how to retrieve observations for on-demand reports and subscriptions are shown on subsequent pages.

Get Observations by Contributor

This first example will demonstrate how to create a report or subscription based on observations from one or more contributors.

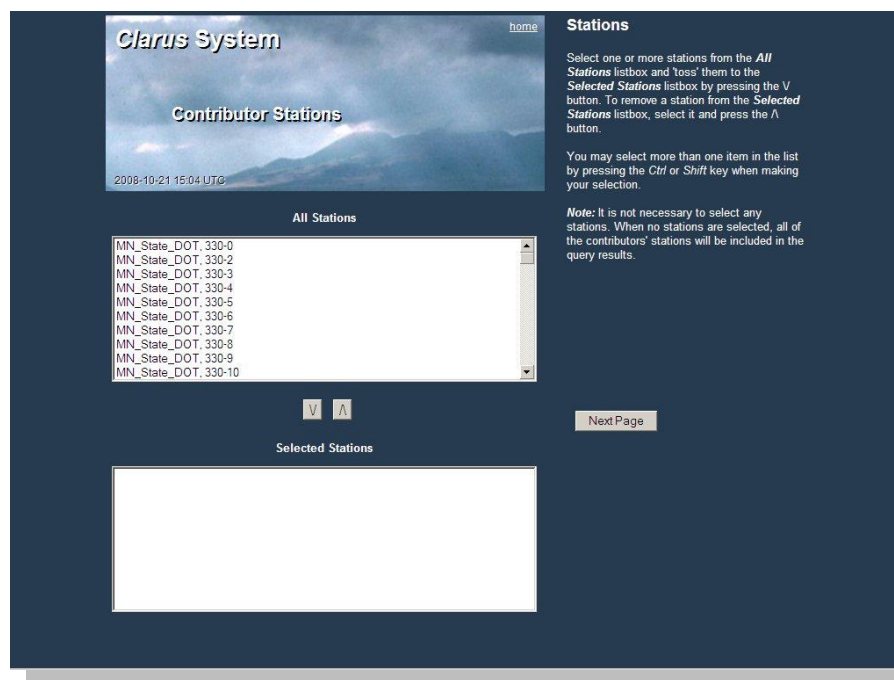
- 1 Go to the *Clarus* home page (if you are not already there) and select the **Contributor** link under the **Get Observations by:** heading. The **Observations by Contributor** screen will be displayed.



- 2 The **All Contributors** list box contains the entities that are contributing data to the *Clarus* System. You must select at least one contributor before going to the next page. You can move an entity from one list to the other by selecting it and pressing the **>>** or **<<** button. Double-clicking an entity name will also move it from one list to the other. You may select more than one item in the list by pressing the *Ctrl* or *Shift* key when making your selection. In the image shown above, **MN_State_DOT** has been chosen.
- 3 When you have selected the desired contributors, press the **Next Page** button to continue.

Contributor Stations

The **Contributor Stations** page presents the list of all stations for the contributors selected on the **Observations by Contributors** page. If desired, you can choose to limit the observations to a subset of the stations for the selected contributors. In the image below, only the Minnesota stations are displayed.



- 1 Similarly to the Observations by Contributor interface, you can move the stations from one list to the other by double-clicking or by selecting the name from a list box and pressing the appropriate **A** or **V** button.

If you wish to retrieve observations for all stations for the selected contributors, you can simply leave the **Selected Stations** list box empty.

- 2 When you are ready to continue, press the **Next Page** button.

Observations

The **Observations** page allows you to choose which observation type you wish to retrieve. The **Observation Type** pull-down list contains the list of all observation types currently available to the system. When the page is first displayed, the “All Observations” entry is selected.

You may choose to retrieve all observations for the filters selected in the previous steps, or you may retrieve a specific type of observation.

Clarus System [home](#)

Observations

Specify the observation type to retrieve by selecting it from the **Observation Type** listbox, or leave it on "All Observations" to retrieve all observations.

When you select a specific observation type, you will be presented with optional entry fields for the minimum and maximum values, as well as listboxes for each of the Quality Checks that are valid for that observation type. Supplying values for the minimum and/or maximum will filter the observations retrieved to those values that are within the specified range.

You may also filter an observation based on its Quality Checks by selecting "P" (Pass) or "N" (Not Pass) from its respective drop-down list.

NOTE: Reports allow up to seven (7) days of observations to be retrieved. However, only one (1) hour of observations may be viewed at a time.

If you need more continuous data, it is recommended that you create a subscription instead of running a report.

Observation Type

All Observations

Run Report **Subscribe**

- To select a specific observation type, select it from the drop-down list. You will then be presented with more options, similar to the image shown below.

Observation Type **Minimum** **Maximum**

essAirTemperature

Quality Checks

Complete **Manual Flag** **Sensor Range**

Climate Range **Step Test** **Persistence**

IQR **Barnes Spatial**

P
N
(Clear)

Each observation type is configured for a series of quality checks. Some observation types are subjected to several quality checks, while other observation types may be configured for only two or three quality checks.

- 2 For each quality check, you may further limit the observations retrieved to just those that have Passed ("P") or Not Passed ("N") that particular quality check.

In the example above, the user is contemplating retrieving only those air temperature observations that have passed the **Barnes Spatial** quality check.

Selecting "N" filters the observations to only those that did not pass the quality check. Selecting "(Clear)" will reset that quality check filter.

- 3 If you have selected a specific observation type, you may also choose to limit the observations retrieved to a specific range by entering values into the **Minimum** and/or **Maximum** entry fields. These entry fields are interpreted as follows:

- Leaving both **Minimum** and **Maximum** empty retrieves all observations of that type.
- Specifying values for both the **Minimum** and **Maximum** retrieves observations that are between the two values specified.
- Specifying a **Minimum** value without a **Maximum** value retrieves observations that are greater than or equal to the value specified.
- Specifying a **Maximum** value without a **Minimum** value retrieves observations that are less than or equal to the value specified.

What's the Difference?

Note that if you specify both values, the observations retrieved will not include the values specified.

However, if you only specify one of the two value filters (either the **Minimum** or the **Maximum**), the observations retrieved will include the value specified.

- 4 When you have made all your selections, press **Run Report** to run the on-demand report. (Subscriptions are described in the **Creating a Subscription** section.)

In this example, the user is choosing to generate the report immediately by pressing the **Run Report** button without filtering the quality check results or specifying a Minimum or Maximum value for the air temperature observations.

Time Range and Format

The **Time Range and Format** page allows you to select the desired time interval for the observation retrieval and the output format for the report.

Clarus System [home](#)

Time and Format

Specify which hour within the last seven days for the observations you wish to retrieve. Note, that if you select the current hour, you will receive only the observations processed up to now.

You may also select the output format for the report. The default is a comma separated value report.

2011-06-16 15:02 UTC

Select Hour Output Format

2011-06-16 14:00 CSV

[Run Query](#)

- 1 The **Select Hour** pull-down list contains an hour-by-hour list of the past seven days, starting with the current hour in UTC.

Select the hour interval you wish to retrieve. The default is to retrieve those observations received during the current hour. In the example, the current time is after 15:00, and the time selection is for the hour 14:00 to 14:59.

- 2 The **Output Format** pull-down list contains the supported output formats for the report. The supported formats are:
 - Comma-separated value (CSV), with a header row followed by data rows, and the fields delimited by commas. This format is ideally suited for processing using a spreadsheet or database tool.
 - eXtensible Markup Language (XML), with each data row containing a series of attributes describing the data values. This format is ideally suited for processing by programmatic means.
 - Canadian Meteorological Markup Language (CMML), which presents the observations formatted in an easy-to-read manner, sorted by station. This format is well-suited for software processing, but is also somewhat more readable for human perusal.

- 3 When you have made your selections, press **Run Query** to retrieve the results. In this example, the output format is the default, “CSV”.

Get Observations by Geospatial Coordinates

In addition to retrieving observations by contributor and station, you can also create a report or subscription by specifying geospatial coordinates.

- 1 To create a report or subscription using geospatial coordinates, go to the *Clarus* home page (if you are not already there) and select the **Geospatial Coordinates** link. The **Define Geospatial Coordinates** page will be displayed.

- 2 You can specify a geospatial area as a bounding box by entering corner coordinates or circular area by specifying a center-point and a radius.

To specify a bounding box, you must enter the latitudes and longitudes of two opposite—typically the northeast and southwest—corners.

For the point and radius, simply specify the latitude and longitude for the center of the region and the radius, in kilometers.

The allowable value ranges are -90 to 90 decimal degrees for latitude entries and -180 to 180 degrees for longitude entries, with no more than six digits of precision. All latitudes for North America will be positive (+) and all longitudes will be negative (-). The radius must be between 1 and 20,000 kilometers.

NOTE: You can use the map view to find your desired coordinates.

- 3 When you have entered the desired coordinates, press the **Next Page** button to continue on to the **Observations** page. Subsequent steps follow the same process used to retrieve observations by contributor. Please refer to the **Observations** section for those instructions.

Creating a Subscription

Creating a subscription is similar to running an on-demand report. The only difference is that you won't specify a time range. Subscription fulfillment doesn't need a time range because each subscription delivery will contain the latest observations since the previous subscription delivery.

- 1 To create a subscription, go to the *Clarus* home page and repeat the steps described in the **Get Observations by Contributor** section. Select the desired contributors and stations, and then finally, specify the observation type for the subscription. (You can also create a subscription by specifying geospatial coordinates. For more information, please see **Get Observations by Geospatial Coordinates**.)
- 2 On the **Observations** page, press the **Subscribe** button. The **Create Subscription** page will be displayed, as shown below.

Create Subscription

The Security Code is a mechanism that helps prevent external automated abuse of the *Clarus* System resources. Simply enter the six-digit number shown in the picture in the **Security Code** field. There is no need to memorize or write down the Security Code, as it is only used to verify the presence of a human operator.

The **Password** field is used to prevent unauthorized access to your subscription's observations. You may leave the **Password** field empty if you do not wish to protect your subscription's observations.

You may also select the output format for the subscription.

*Contact information is optional and is used only to send notifications when the *Clarus* System has maintenance or enhancement activities planned.

- 3 The distorted numbers are a randomly-generated security code. Its purpose is to make sure a human has initiated the subscription creation process, rather than an automated script. If you have difficulty discerning the numbers, you may refresh your browser window to generate a new set.

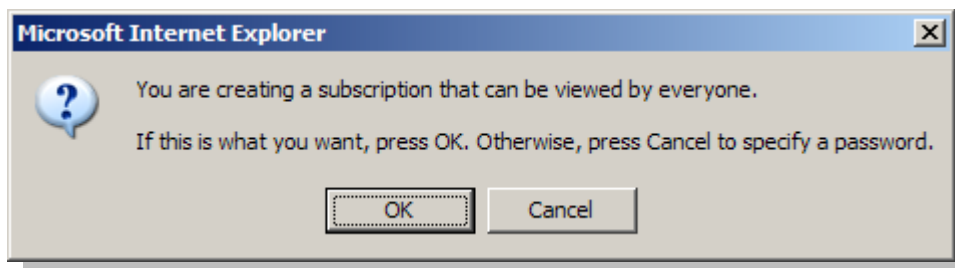
There is no need to memorize or write down the security code. The security code is only used to validate the legitimacy of your request and prevent automated abuse of the system. Simply enter the numbers you see into the **Security Code** entry field.

- 4 If you wish to keep your observation results private, you may enter a password in the **Password** field. If you specify a password, you will need to supply the password each time you access a report for that subscription. If you leave the **Password** field empty, your observation results will be viewable by anyone who accesses the *Clarus System*.

NOTE: Be careful when choosing a password. It is not recommended to reuse a password that you use for more secure systems. Interactions with the *Clarus System* have the potential to send the password in clear text.

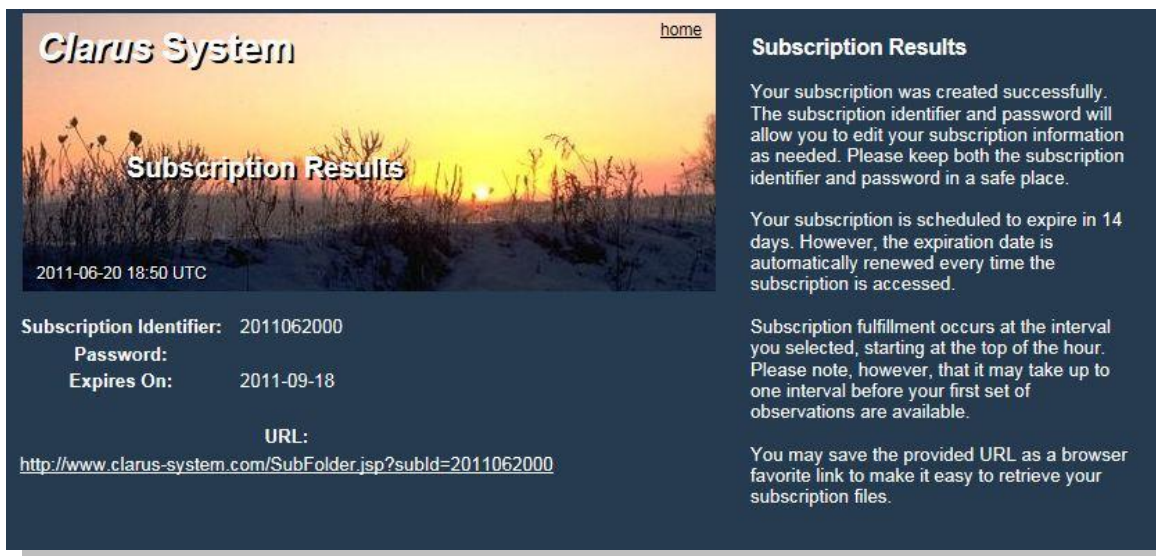
A subscription is not associated with the individual who created it. No personal information will be displayed in subscription reports. If you want someone to view your subscription results, you must supply the subscription identifier—and password, if applicable—to them.

- 5 The default interval for the subscription is 20 minutes, but you may change it if desired. The intervals available for a subscription are every 5, 10, 15, 20, 25, or 30 minutes. Once the subscription is created, you will not be able to modify the interval.
- 6 The default output format for the subscription is “CSV”, but you may change it if desired. Once the subscription is created, though, you will not be able to modify the output format.
- 7 Contact information may be entered if desired. This information is only used to send notifications of *Clarus System* upgrade or maintenance activities.
- 8 Once you are ready, press the **Subscribe** button. If you have left the **Password** field empty, you will be prompted to make sure this is acceptable, as in the figure below. Press **OK** to create the subscription without a password, or press **Cancel** to enter a password.



Subscription Results

The **Subscription Results** page confirms that your subscription was created. Your Subscription Identifier, Password, and Expiration Date are displayed along with a web link that can be used to directly access your subscription output.



Subscription Results

Your subscription was created successfully. The subscription identifier and password will allow you to edit your subscription information as needed. Please keep both the subscription identifier and password in a safe place.

Your subscription is scheduled to expire in 14 days. However, the expiration date is automatically renewed every time the subscription is accessed.

Subscription fulfillment occurs at the interval you selected, starting at the top of the hour. Please note, however, that it may take up to one interval before your first set of observations are available.

You may save the provided URL as a browser favorite link to make it easy to retrieve your subscription files.

Subscription Results

2011-06-20 18:50 UTC

Subscription Identifier: 2011062000
Password:
Expires On: 2011-09-18

URL:
<http://www.clarus-system.com/SubFolder.jsp?subId=2011062000>

Subscriptions are designed to expire after 14 days. This helps keep the system tidy and to maintain peak performance by eliminating accidentally created subscriptions and subscriptions that are not needed long-term. However, **every** time a subscription is viewed, the 14-day expiration is renewed. Thus, a subscription will only expire if it is not viewed for 14 days.

- 1 You will only see this page once. Therefore, you should make a note of your Subscription Identifier; it will make it easier to access your subscription in the future. If you specified a password on the **Create Subscription** screen, you may want to make a note of it, as well.
- 2 The Uniform Resource Locator (URL) for your subscription is also displayed. Clicking on this link will take you to your subscription folder. However, the folder will most likely be empty, since it may take up to the collection interval

Write Down My Password?

Generally, writing down passwords is not a safe practice. However, in this situation, the passwords are simply to keep people from outside your organization from easily viewing your subscription results.

If you don't want anyone viewing your results, then just memorize your password or keep it in a safe place.

time you specified before the first subscription file is written.

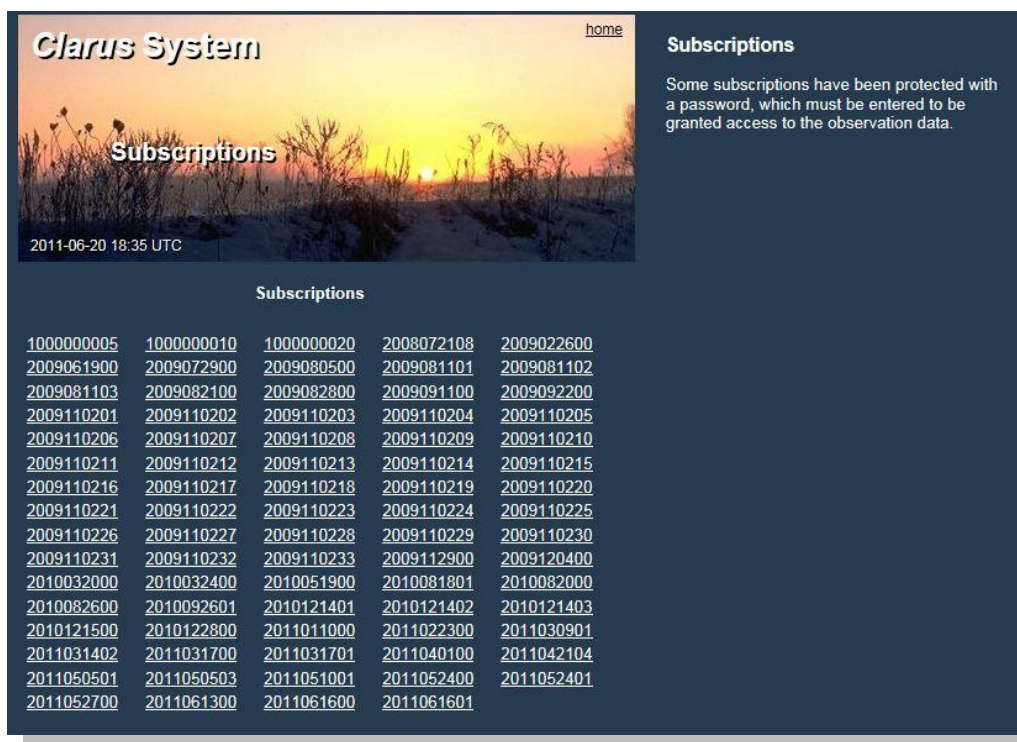
Once you are in your subscription folder, you can bookmark the page in your browser, if you desire.

Viewing Subscription Files

Subscriptions are stored in folders that correspond to the Subscription Identifier produced when the subscription is created. Within each folder is a file containing the set of observations that match the subscription's filters. Subscriptions are fulfilled based on the user's defined interval (every 5, 10, 15, 20, 25, or 30 minutes); the files will contain new observations or those observations that have been updated since the last subscription delivery time.

When a subscription expires, its subscription folder and all its files will be deleted automatically. Subscriptions are automatically renewed for 14 days every time the subscription folder is accessed.

- To view a subscription, return to the *Clarus* home page and select the **View Subscriptions** link. The ***Subscriptions*** page will be displayed.



Clarus System [home](#)

Subscriptions

Some subscriptions have been protected with a password, which must be entered to be granted access to the observation data.

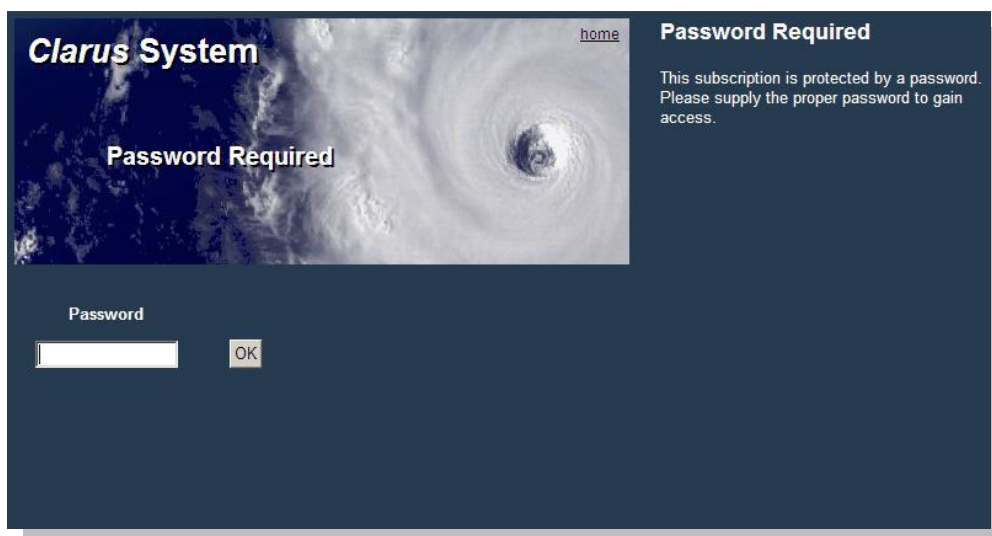
2011-06-20 18:35 UTC

Subscriptions

1000000005	1000000010	1000000020	2008072108	2009022600
2009061900	2009072900	2009080500	2009081101	2009081102
2009081103	2009082100	2009082800	2009091100	2009092200
2009110201	2009110202	2009110203	2009110204	2009110205
2009110206	2009110207	2009110208	2009110209	2009110210
2009110211	2009110212	2009110213	2009110214	2009110215
2009110216	2009110217	2009110218	2009110219	2009110220
2009110221	2009110222	2009110223	2009110224	2009110225
2009110226	2009110227	2009110228	2009110229	2009110230
2009110231	2009110232	2009110233	2009112900	2009120400
2010032000	2010032400	2010051900	2010081801	2010082000
2010082600	2010092601	2010121401	2010121402	2010121403
2010121500	2010122800	2011011000	2011022300	2011030901
2011031402	2011031700	2011031701	2011040100	2011042104
2011050501	2011050503	2011051001	2011052400	2011052401
2011052700	2011061300	2011061600	2011061601	

Note: If you access your subscription via the subscription URL, you will bypass this screen.

- 2 To view a subscription, select its link from the list displayed. If the subscription is protected by a password, you will be presented with the following screen:



You must enter the proper password to gain access to the subscription. **If you have forgotten your password, you will need to recreate the subscription.**

- 3 Once you have supplied the proper password—or if your subscription was not protected by a password—the contents of your subscription folder will be displayed.

Observations	Size (bytes)
20080318_2020.csv	50
20080318_2000.csv	1,567
20080318_1940.csv	44,837
20080318_1920.csv	11,641
20080318_1900.csv	50
20080318_1840.csv	44,815
20080318_1820.csv	7,222
20080318_1800.csv	4,870
20080318_1740.csv	89,073
20080318_1720.csv	50
20080318_1700.csv	50
20080318_1640.csv	46,367
20080318_1620.csv	42,977
20080318_1600.csv	50
20080318_1540.csv	47,773
20080318_1520.csv	10,048
20080318_1500.csv	34,805

Subscription: 2008031700

Subscription Information:
 DateCreated = 2008-03-17
 Lat1 = not used
 Lon1 = not used
 Lat2 = not used
 Lon2 = not used
 PointRadiusLat = not used
 PointRadiusLon = not used
 PointRadiusRadius = not used
 ObsType = 0 (all)
 MinValue = -Infinity
 MaxValue = Infinity
 RunFlags = not applicable
 PassNotPass = not applicable
 Contributors = WI_State_DOT
 StationIds = 101000, 101001, 101002, 101003, 101004, 101005, 101006, 101007, 101008, 101009, 101010, 101011, 101012, 101013, 101014, 101015, 101016, 101017, 101018, 101019, 101021, 101022, 101023, 101024, 101025, 101026, 101027, 101028, 101029, 101031, 101032, 101033, 101034, 101035, 101036, 101037, 101038, 101039, 101040, 101041, 101042, 101043, 101044, 101045, 101046, 101047, 101048, 101049, 101050, 101051, 101052, 101053, 101054, 101055, 101056, 101057, 101058

On the right side of the screen, you will see a brief description of the parameters and filters that were used to create the subscription. The subscription files themselves are listed on the left side, with the most recently created file at the top of the list.

A subscription folder will only retain subscription files for the last seven days. Any files older than seven days will be automatically deleted each time the subscriptions are fulfilled.

New subscription files are published every 5, 10, 15, 20, 25, or 30 minutes, and the filename reflects the UTC date and time the file was written. For example (utilizing a subscription timeframe of 20 minutes), a filename of 20080318_1120.csv gives the complete date of the subscription in year (2008), month (03), and day (18), followed by the time in 24-hour notation (1120). The next fulfillment of the subscription would be published 20 minutes later. The filename would consist of the same date, reading 20080318_1140.csv, to reflect March 18, 2008 at 1140. The timestamps for the observations within the file are provided by the contributor(s).

- 4** It is possible to create a script to automatically retrieve fulfilled subscriptions. The URL elements are described below.

The entire URL will be similar to this one:

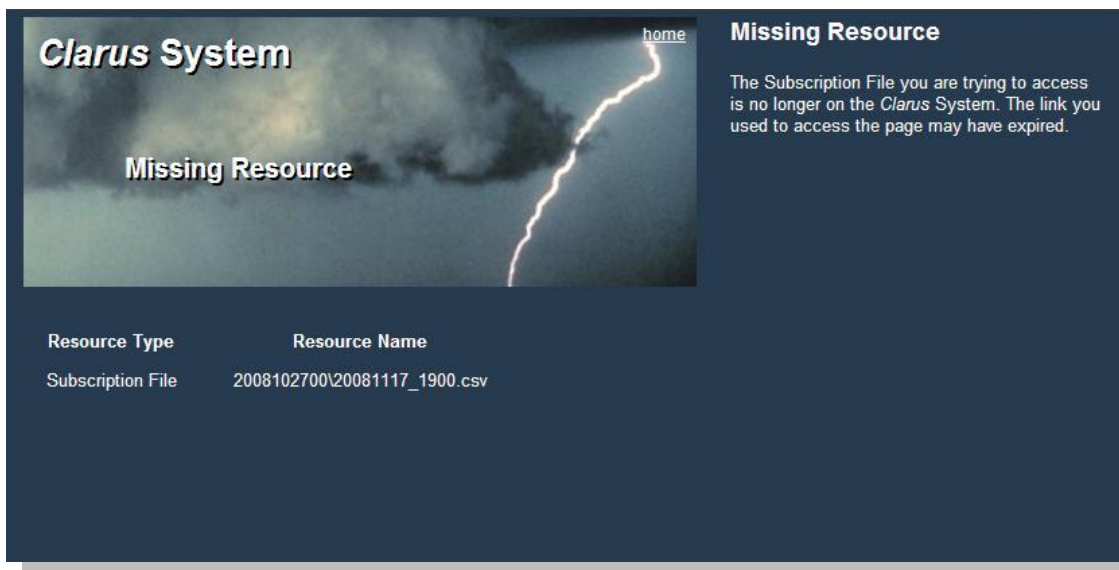
http://www.clarus-system.com/
SubShowObs.jsp?subId=2008112100&file=20090115_1700.csv&secretAttempt=brenda

http://www.clarus-system.com/	This is the host name for the subscriptions.
SubShowObs.jsp?subId=2008112100	This is the subscription identifier supplied when initially created. See the Subscription Results section.
&file=20090115_1700.csv	This is the file name. Depending on the frequency of the subscription, the script should increment the date and time appropriately.
&secretAttempt=brenda	If a password was established, include this element with the appropriate password. Otherwise, leave it off.

Missing Resource

As has been noted, subscriptions will expire after 14 days if the subscription folder is not accessed.

Once a subscription expires, any bookmarks you may have saved in your browser favorites will be obsolete. If you try to access a subscription or file that has been deleted, you will be shown a **Missing Resource** screen similar to the following:



The **Resource Type** and **Resource Name** will be displayed on the page, as shown below:

Resource Type	Resource Name
Subscription File	2008102700\20081117_1900.csv

Metadata

To minimize demand on the *Clarus System* database, certain metadata (data about the data) files are created every four (4) hours. These metadata files are in CSV format.

- 1 To view the metadata files, return to the *Clarus* home page and select the **View Metadata** link. The ***Metadata Files*** page will be displayed.

Metadata Files	Last Update (UTC)
climateRecord.csv	2011-06-24 12:00
contrib.csv	2011-06-24 12:00
image.csv	2011-06-24 12:00
obsType.csv	2011-06-24 12:00
obsValueMap.csv	2011-06-24 12:00
organization.csv	2011-06-24 12:00
qchparm.csv	2011-06-24 12:00
sensor.csv	2011-06-24 12:00
sensorType.csv	2011-06-24 12:00
site.csv	2011-06-24 12:00
station.csv	2011-06-24 12:00

- 2 You may examine a metadata file by clicking on its link.

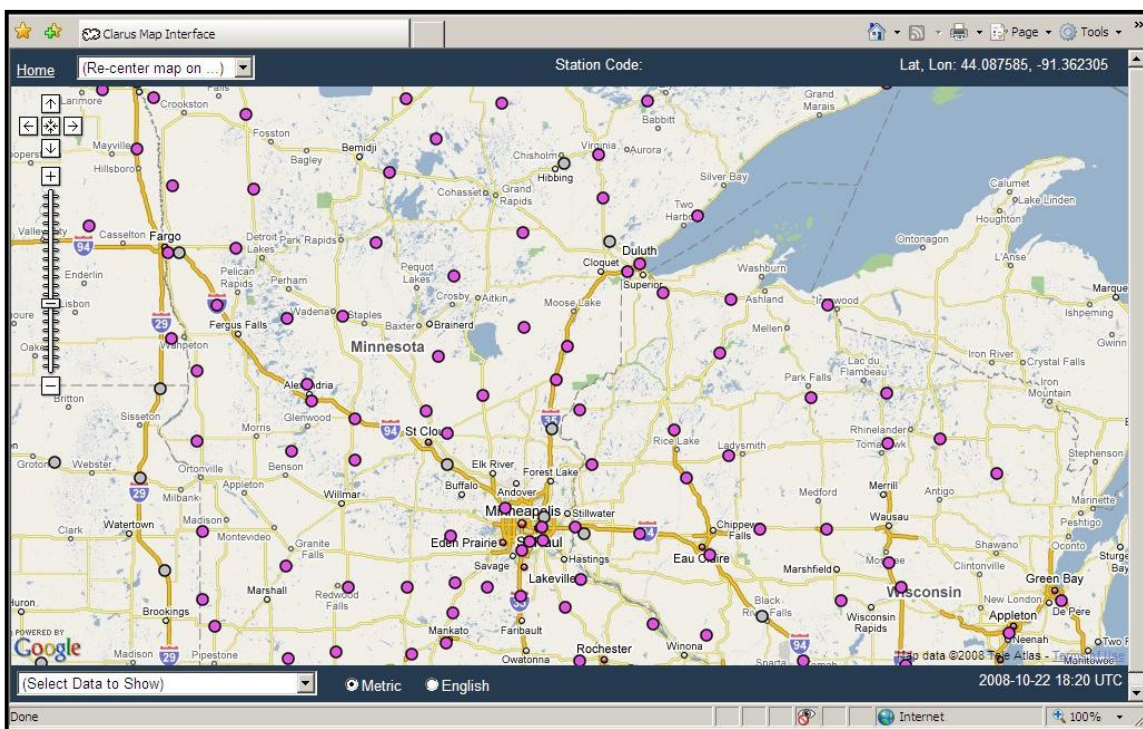
Metadata Files

The metadata files that are currently published are:

- climateRecord.csv
- contrib.csv
- image.csv
- obsType.csv
- obsValueMap.csv
- organization.csv
- qchparm.csv
- sensor.csv
- sensorType.csv
- site.csv
- station.csv

Map Interface

The map interface displays the latest quality-checked observations. To access the map interface, go to the *Clarus* home page and select a contributor state or province link. The **Map Interface** page will be displayed with the selected location as the center point.



When you first select your location, all of the stations will be populated across North America and you will see the following message.

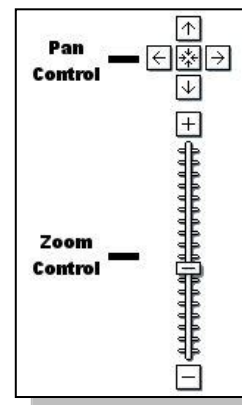


The stations for the selected area—and any adjacent areas—will be displayed using a color-coded station marker pin. A purple pin (●) indicates a station with observation data, while a gray pin (●) indicates a station without observations or with observations that are over 8 hours old.

Map Controls

You can drag the map around by pressing and holding your mouse button while you move your mouse. As you drag the map, new stations will come into view.

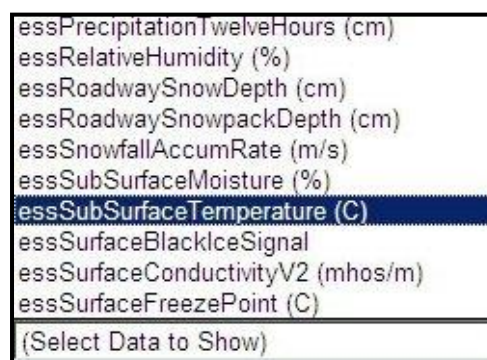
The map Zoom Control allows you to zoom the map in and out. Pressing the + button will zoom into the map, while pressing the - button will zoom out. The Pan Control will move the map, just as if you had dragged the map with your mouse. Pressing the button in the center of the Pan Control will return the map to the current URL.



Map Control Bars

As you move your mouse around, the corresponding **Latitude** and **Longitude** under your cursor will be updated in the control bar on the upper right of the map. If you place the cursor over a station marker, the **Station Code** will be displayed on the control bar, as well.

You may choose to display the values for all of the stations that have an observation for a particular observation type. Simply select the desired observation type from the **(Select Data to Show)** list box in the control bar on the lower left of the map.



If a station has an observation of that type, the observation value will be displayed under the station marker. Otherwise, no label will be displayed. You may find zooming into the map useful if there are many stations close together. In this example, two of the three stations shown to the left have an air temperature observation.



If a station has more than one sensor of a particular type, it will have multiple values for that observation value. For example, in the image to the right, the “essSubSurfaceTemperature” was selected. One station has two subsurface temperature sensors, and so both values are shown. In this case, the units are in degrees Celsius.

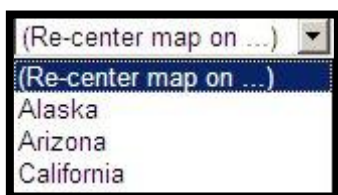
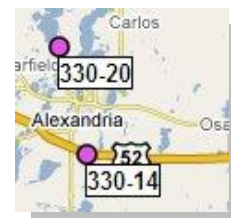


The Clarus map interface displays observation values in the metric system by default. However, you may display values in English units by pressing the **English** radio button. The labels will automatically display the

converted value. In the image at right, the “essSubSurfaceTemperature” is displayed in degrees Fahrenheit.



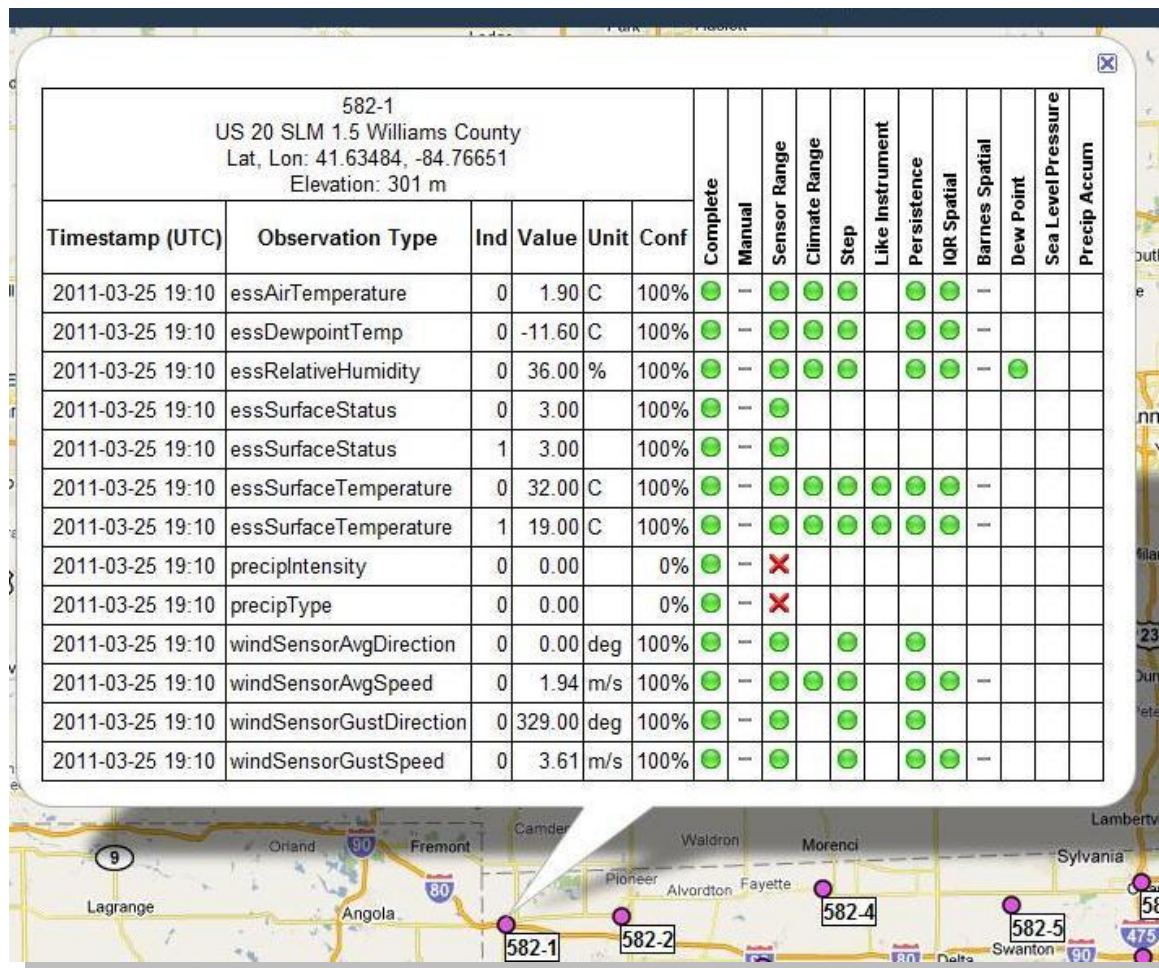
Although it is not an observation value, you can also choose to display the agency-defined **Station Code** under the station by selecting it from the end of the list box. This can help you locate a particular station on the map. In the image shown to the right, the station labeled “330-20” is the station that has the two subsurface temperature sensors.



Finally, you may jump to another contributor state or province by selecting it from the **(Re-center map on ...)** list box on the upper left of the map. This will reset the map centered on the desired area at a zoom level that is appropriate for that location.

Displaying Station Observations

You can display all the latest quality-checked observations for a particular ESS by clicking on the station marker. Each observation value is followed by an icon that indicates the result of the quality check for that observation.



582-1 US 20 SLM 1.5 Williams County Lat, Lon: 41.63484, -84.76651 Elevation: 301 m						Complete	Manual	Sensor Range	Climate Range	Step	Like Instrument	Persistence	IOR Spatial	Barnes Spatial	Dew Point	Sea Level Pressure	Precip Accum
Timestamp (UTC)	Observation Type	Ind	Value	Unit	Conf												
2011-03-25 19:10	essAirTemperature	0	1.90	C	100%	✓	—	✓	✓	✓	✓	✓	—	—	—	—	—
2011-03-25 19:10	essDewpointTemp	0	-11.60	C	100%	✓	—	✓	✓	✓	✓	✓	—	—	—	—	—
2011-03-25 19:10	essRelativeHumidity	0	36.00	%	100%	✓	—	✓	✓	✓	✓	✓	—	—	—	—	—
2011-03-25 19:10	essSurfaceStatus	0	3.00		100%	✓	—	✓	✓	✓	✓	✓	—	—	—	—	—
2011-03-25 19:10	essSurfaceStatus	1	3.00		100%	✓	—	✓	✓	✓	✓	✓	—	—	—	—	—
2011-03-25 19:10	essSurfaceTemperature	0	32.00	C	100%	✓	—	✓	✓	✓	✓	✓	—	—	—	—	—
2011-03-25 19:10	essSurfaceTemperature	1	19.00	C	100%	✓	—	✓	✓	✓	✓	✓	—	—	—	—	—
2011-03-25 19:10	precipIntensity	0	0.00		0%	✓	—	✗	✓	✓	✓	✓	—	—	—	—	—
2011-03-25 19:10	precipType	0	0.00		0%	✓	—	✗	✓	✓	✓	✓	—	—	—	—	—
2011-03-25 19:10	windSensorAvgDirection	0	0.00	deg	100%	✓	—	✓	✓	✓	✓	✓	—	—	—	—	—
2011-03-25 19:10	windSensorAvgSpeed	0	1.94	m/s	100%	✓	—	✓	✓	✓	✓	✓	—	—	—	—	—
2011-03-25 19:10	windSensorGustDirection	0	329.00	deg	100%	✓	—	✓	✓	✓	✓	✓	—	—	—	—	—
2011-03-25 19:10	windSensorGustSpeed	0	3.61	m/s	100%	✓	—	✓	✓	✓	✓	✓	—	—	—	—	—

The top left corner of the display provides the contributor's station identifier and name with its associated latitude, longitude, and elevation.

Each column is described below:



- **Timestamp (UTC):** The date and time that the observation was recorded by the ESS.
- **Observation Type:** The type of observation that was taken. More information can be obtained in the obsType.csv metadata file.
- **Ind:** The sensor index assigned to a particular sensor. The sensor index is typically used when more than one sensor of the same type is deployed from a single station. As shown in the picture above, there are two surface sensors with sensor indices of 0 and 1.
- **Value:** The observation received.

- Unit: The observation's standard of measurement.
- Conf: The confidence value assigned based on the results of the quality checking.

The quality checking algorithms are described in detail in the *Clarus* Quality Checking Documentation Report located on the *Clarus* home page or at the following address:

http://ntl.bts.gov/lib/38000/38500/38545/TOPR2_508_FHWA-JPO-11-075.pdf

The quality checking indicators are as follows:

-  The observation did not pass the quality check.
-  The observation passed the quality check.
- The quality check was not run for the observation.

An empty cell indicates that the quality check does not apply to that observation.

In the image above, most of the observations passed the quality checks. However, the precipIntensity and the precipType did not pass the “Sensor Range” quality check, as indicated by the “X”.

Note that while many of the observations are configured to run the “Like Instrument” quality check, the check was run only on the two identical observation types: “essSurfaceTemperature”.

SUMMARY

The *Clarus* System can help you monitor the overall health of your ESS network.

With the *Clarus* map interface, you can quickly see which stations have stopped reporting observations. Or, you can check which stations are reporting abnormal results for a particular weather observation.

The report and subscription interfaces can help you determine which stations are not passing various quality checks. You can also import the data from *Clarus* into third-party analysis and trending tools.

If you experience any problems with the *Clarus* System, please contact the *Clarus* System Administrator at clarus@mixonhill.com.

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