SNOW

(***S***ystem for ***N***owcasting ***O***f ***W***inter Weather)

Users' Guide
AWIPS OB8.1 Release

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Table of Contents

1 Introduction 3
2 What's New in OB8.1? 3
3 SNOW Functional Overview 4
3.1 SNOW Localization 4
3.2 SNOW Monitor Description 5
3.3 SNOW D-2D Plan-View Plot Description 6
3.4 SNOW Tabular Display Description 6
3.5 SNOW Set-up/Configuration GUI Descriptions 7
4 Operation and Configuration of SNOW 8
4.1 The SNOW Monitoring Area 8
4.2 The SNOW Monitor 9
4.2.1 Configuring the SNOW Monitoring Area 9
4.2.1.1 Zone Mode 10
4.2.1.2 Station Mode 15
4.2.1.3 Modifying the SNOW Button Time Window Value 18
4.2.1.4 Saving Editing Changes to the Monitoring Area 18
4.2.2 Configuring the Monitor Thresholds 20
4.3 The SNOW Plot 23
4.4 The Zone Table 24
4.5 The Station Table 29
4.5.1 The Trend Plot 34
4.5.2 Observation History Table. 36
4.6 Editing Zone/Station Table Display Thresholds 38
5 Getting Help 41

1 *Introduction*

SNOW is an AWIPS application suite which continuously monitors surface observations for winter weather hazards. It automatically alerts the forecasters whenever such conditions are detected. SNOW provides capabilities to display observed winter weather threats in ways that help forecasters focus on what they consider most important.

This application's design was based on that of the SAFESEAS tool already running at maritime WFO's, so users of SAFESEAS will find SNOW familiar.

Table 1-1 defines key terms used throughout this document.

Table 1-1: Key Terms for SNOW descriptions.

monitoring area	An office's "monitoring area" consists of all the area watched by the SNOW monitor. By default, the monitoring area for most WFO will consist of the home CWA and bordering CWAs. Different default definitions will apply to WFOs whose area of responsibility borders Canada or Mexico, to WFOs not in the contiguous 48 states, and to non-WFO offices. Each office may modify its monitoring area definition; see "The Editor for the SNOW Set-Up" below for details.
report	A "report" is an external product which contains observed values of weather variables for a specific time and station location. An example of a report is a METAR.
station	A "station" in the SNOW context is an ASOS or mesonet platform.
zone	In this context, the words zone and county are used interchangeably. As in SAFESEAS, Alaskan WFOs will be able to view forecast zones instead of counties; based on feedback from Regional contacts, this option may be extended nationally in a future build.
variable	A SNOW "variable" corresponds to a single meteorological state variable. Examples include wind speed and temperature.
product	A SNOW "product" corresponds to a specific NWS winter weather product which relies on the presence of several variables. Conditions defining a product may require that thresholds be independently met for possibly more than one variable. A Blizzard Warning, for example, requires the presence of snow or blowing snow, high winds, and low visibility.

2 *What's New in OB8.1?*

OB8.1 is a quiet build for SNOW. Users will notice one upgrade – scrolling over county/zone/station IDs in the table will reveal the actual name of the area/station.

3 SNOW Functional Overview

SNOW consists of four monitoring/display components and four set-up/configuration components. The monitoring/display components are the:

a) SNOW monitor,
b) SNOW D-2D plan-view plots,
c) SNOW tabular display, and the
d) SNOW trend plot.

The set-up/configuration components are the:

a) localization script,
b) Graphical User Interface (GUI) for editing the SNOW monitoring area,
c) GUI for editing the SNOW monitor thresholds, and the
d) GUI for editing the SNOW tabular display thresholds.

The localization script will not be further discussed in this user's guide.

3.1 SNOW Localization

SNOW localization uses the following files to produce your default monitoring area:

a) US county "shape" files;
b) the "metarStationInfo.txt" file.

It is the responsibility of each office to make sure that it has the current versions of these files *before* localization is run. In addition, for mesonet stations, SNOW localization uses the following files in directory "/awips/fxa/ldad/data/":

a) "LDADinfo.txt";
b) one location information file for each external data source. These files have names of the form "xxxStation.txt, where "xxx" is a "data_root" value from file "LDADinfo.txt".
c) one dataset information file for each external data source. These files have names of the form "yyy.desc", where "yyy" is a "data_type" value from file "LDADinfo.txt".

It is the responsibility of each office to make sure these files are correct and up-to-date before localization is run. See documentation in file "/awips/fxa/data/localization/scripts/SS_mesonetStationInfo.sh" for more information.

SNOW localization is automatically run as a part of the full AWIPS localization that is done after an AWIPS build is installed. An office should not need to run SNOW localization manually unless unusual, severe problems (such as the corruption of the files produced by SNOW localization) occur.

In the event that running SNOW localization really becomes necessary, here is how to do it:

1) close all D-2D SNOW table displays on all lx workstations.
2) log on to the px1 system as user “fxa”.
3) run the “stopSNOWprocessor” script.
4) change to directory “/awips/fxa/localization/scripts/”.
5) enter the command “mainScript.csh -snow”.
6) run the “startSNOWprocessor” script.
7) log off.

3.2 SNOW Monitor Description

The SNOW monitor automatically monitors observations in the WFO-configured monitoring area for conditions that are hazardous conditions, as defined by the users through configuration. It regularly evaluates and updates a single, overall threat level for the monitoring area. This threat level is displayed in the Guardian panel as a colored-coded icon containing an anchor (Figure 3.2-1). The icon’s background color represents the threat level. The threat levels and their colors are as defined in Table 3.2-1.

Figure 3.2-1: Guardian icon indicating the SNOW monitor threat level.

Table 3.2-1: Threat level/color definitions for SNOW monitor and tables.

COLOR	THREAT LEVEL DESCRIPTION
TAN	SNOW processor on px1 has been shut down or has crashed.
GRAY	no data available for determining the threat level (often seen briefly upon D-2D startup)
GREEN	conditions throughout the monitoring area are well below hazardous levels
YELLOW	conditions somewhere in the monitoring area are approaching hazardous levels
RED	conditions somewhere in the monitoring area are within hazardous levels

The SNOW monitor checks for new observations and updates the threat level display approximately every fifteen minutes. At any point in time, the displayed overall threat level represents the maximum threat level over:

- all monitored variables
- all zones/counties in the monitoring area
- all stations linked to zones/counties in the above area
- all reports for stations with valid times within a time window specified by the user

Caesar Cioppi says:

Within the user-specified time window of observation evaluated by the monitor, newer reports from a station have no precedence over older reports still within the time window. The observation with the highest threat level, regardless of station, valid time, or variable, is the observation that determines the overall threat level displayed by the icon.

The SNOW monitor compares individual meteorological variables (sustained wind speed, wind gusts, peak wind, visibility, temperature, wind chill, and snow depth) against thresholds defining the threat levels. A default set of monitor threshold values for each threat level of each variable is provided with SNOW. The SNOW monitor threat-level thresholds can be modified by the user, and may be specified individually by county and by variable. Instructions for modifying the SNOW monitor thresholds are described in Section 4.2.2.

3.3 SNOW D-2D Plan-View Plot Description

The SNOW D-2D plan-view plot (Figure 4.3-2) consists of a METAR plot and a mesonet plot. The SNOW plots differ from their non-SNOW counterparts in that the SNOW plots include only

Caesar Cioppi says:

The SNOW plan-view plots for a given frame time (nominal hour) include reports from 20 minutes before the hour to 40 minutes past the hour. The plotted report is always the report nearest the top of the hour (D-2D default behavior), regardless of whether a newer report has been received. Thus, the plotted observations do not necessarily correspond to the threat level displayed by the monitor icon or by the zone/station table.

those reports within the WFO-configured monitoring area. This is some additional text cursor sampling available in the SNOW plot. Both SNOW D-2D plots are loaded together as a multi-load graphic.

3.4 SNOW Tabular Display Description

The SNOW tabular display consists of two types of display GUIs: the configurable zone/station table, and the trend plot. In both the zone and the station configuration, individual columns of the table display the current threat level for each product, and both the observed value and the threat level for each variable. In the zone configuration (Figure 4.4-1), each row of the table shows these threat levels for a zone or county, for all zones and counties in the monitoring area. In the station configuration (Figure 4.5-1), each row of the table shows these threat levels for the stations within (or related to) a single user-selected zone or county. The trend plots (Figures

4.5.1-1, 4.5.1-2, 4.5.1-3) display a meteogram of a selected variable, or a composite meteogram of the values of the variables comprising a selected product, for single stations. The trend covers the most recent 24 hours.

Caesar Cioppi says:

The SNOW zone/station table for a given frame time (nominal hour) considers reports from 20 minutes before the hour to 40 minutes past the hour. For a given station, the threat level is determined using only the most recent report within this period. When multiple stations are associated to a zone, the zone threat level is the highest threat level from among these individual threat levels for stations in the zone, regardless of which station's latest report is more recent. Thus, the threat level displayed by the zone/station table may differ from the threat level shown by the monitor icon, and may not correspond to the data values of the station in the plotted reports.

3.5 SNOW Set-up/Configuration GUI Descriptions

The SNOW monitoring area set-up GUI allows the user to configure the zones and counties included in the SNOW monitoring area, and to specify the fixed-location stations associated with each zone or county.

The SNOW monitor thresholds editing GUI allows the user to specify the variable thresholds used by the SNOW monitor to determine the threat level for each variable. The thresholds are zone-specific, that is, they may vary from zone to zone. ***The monitor thresholds do not control the threat level computation for the SNOW zone/station table display.***

The SNOW zone/station display thresholds editing GUI allows the user to (1) enter and save new sets of display thresholds, (2) select and apply a previously-defined set of display thresholds for current use, and (3) edit a set of display thresholds. The zone/station table display thresholds are used in the zone and station tables when determining threat levels. The thresholds are zone-specific, that is, they may vary from zone to zone. ***The zone/station table display thresholds do not control the threat level computation for the SNOW monitor.***

4 Operation and Configuration of SNOW

4.1 The SNOW Monitoring Area

The default monitoring area is defined by the SNOW localization. During localization, the counties or forecast zones of the home CWA and the neighboring CWA's are identified. Then the METAR and Mesonet stations in the area are related to individual counties/zones.

> *a note from Windsor Gusti:*
>
> Fixed stations known to AWIPS are those in "$FXA_HOME/data/metarStationInfo.txt", and "$FXA_HOME/data/localizationDataSets/$FXA_LOCAL_SITE/SSmesonetStationInfo.txt".

If the office's AOR borders Canadian or Mexican space, an additional step is taken. SNOW localization defines three new "imaginary" zones. A location is in:

- the first imaginary zone if it is less than 25 statute miles from the centroid of the closest actual zone within the monitoring area as defined in the paragraph above;
- the second imaginary zone if it is between 25 and 75 statute miles from the centroid of the closest actual zone within the monitoring area as defined in the paragraph above; or
- the third imaginary zone if it is between 75 and 125 statute miles from the centroid of the closest actual zone within the monitoring area as defined in the paragraph above.

Now for each non-US fixed station known to AWIPS, localization determines its distance from the centroid of the nearest zone in the monitoring area as defined in the paragraph above. If the distance is less than 125 statute miles, then that station is considered to be in the fictitious zone corresponding to that distance.

When SNOW determines the threat level for a zone, it compares the observations for all the stations associated with that zone with the zone's thresholds. The default zone-station associations produced by localization are that each station is associated only with the zone in which it is located. In other words, the only stations that localization associates with a zone are those located within that zone.

> *a note from Windsor Gusti:*
>
> Station and zone border locations are known to AWIPS only approximately. So a few default zone-station associations may not be what you expect, especially for stations on or very close to zone boundaries. Also, in the default set-up, a station located sufficiently close to a zone boundary may be associated with more than one zone.

To improve the monitoring for hazards advecting toward a zone, you may wish to associate stations from other nearby zones with that zone. You do this by customizing the monitoring area.

A set-up editor is provided for this purpose. See Section 4.2.1, "Configuring the SNOW Monitoring Area", for instructions on how to do this.

4.2 The SNOW Monitor

The SNOW monitor process runs continuously on the px1 system, and is launched automatically by AWIPS when the startIngest.px1 script is run. It requires no interactive user input. Its only output to users is the small SNOW threat indicator near the upper right corner of the D-2D display. The threat indicator is a small rectangle containing a black anchor (Figure 3.2-1). It is color-filled, with the color corresponding to the threat level for the office's area of responsibility.

The monitor is a clock-driven process. At regular time intervals (currently four minutes), the monitor obtains new reports received by AWIPS in the preceding interval. The reports that are within the monitoring area are extracted from the METAR, and mesonet netCDF files by the monitor, and saved in hourly SNOW netCDF files for access by the SNOW D-2D zone table, the station table, and the trend graphs. The monitor determines an individual threat level for each newly received report within a user-defined time window and within the monitoring area. This threat level is determined by comparing the reports' observations to the monitor thresholds for the zones to which the observation is linked. The monitoring area's overall threat level is then computed as the highest threat level from the previously processed reports and the threat levels for the reports just processed, over those reports within the time window. The monitor now updates the color of the SNOW threat indicator near the upper right corner in Guardian, then waits to be signaled for more updates.

The SNOW localization process produces a default county/station monitoring area set up, and a default set of monitoring thresholds for these zones/counties. The first-guess monitoring area is described in section 3.1 ("The SNOW Monitoring Area") above. Editors are provided to allow the forecaster to modify: (1) the default monitoring area counties, zones, and stations and their associations, and (2) the default monitoring thresholds for the monitored variables for these counties.

4.2.1 Configuring the SNOW Monitoring Area

The editor for the SNOW monitoring area is launched from the AWIPS menu icon. It is located in the Panel along the edge of the screen background, along with such menu items as IFPS and Start D-2D. Left click the AWIPS menu icon to bring up the AWIPS Startup Menu. At the bottom of the AWIPS Startup Menu, left-click "SNOW Apps" to bring up the menu of SNOW applications. Click the "Configure Zone/Station Setup" entry to start the editor for the SNOW monitoring area.

There are two options on how to edit the monitoring area. In the zone mode, you specify which zones/counties are in the monitoring area, and then associate observing stations with the zones/counties. In the station mode, you specify which stations are in the monitoring area and

then associate zones and counties with the stations. The edit mode is selected via the "Zone" and "Station" buttons in the "Configure" area, which is near the upper left corner of the GUI.

4.2.1.1 Zone Mode

To enter the zone mode of the SNOW Monitor Area Set Up GUI (Figure 4.2.1.1-1), select the "Zone" pushbutton in the "Configure" area near the top of the GUI. When editing in zone mode, the GUI's upper left list (the "Monitor Area Zones" list) consists of the IDs for all the zones and counties currently comprising the monitoring area, and the lower left list (the "Additional Zones" list) consists of the IDs for other nearby zones/counties. The one-line window near the GUI's upper right corner, just above the list title "Associated Stations", gives the name of the active zone whose associated stations list is being edited. The GUI's "Associated Stations" list shows the IDs for the fixed stations currently associated with the active zone.

The contents of the GUI's lower right list are configured by the "MA Stns" and "Regional Stns" pushbuttons. If "MA Stns" is selected, the IDs for all fixed stations associated with one or more zones/counties in the monitoring area are listed. In essence, "**MA Stns" is the list of all fixed stations whose reports are monitored by SNOW** (i.e., players on the field). When "Regional Stns" is selected, the IDs for all the fixed stations within the regional area not currently associated with any zone or county in the monitoring area are shown. **Fixed stations in the "Regional Stns" list are not monitored by SNOW** (i.e., they are players on the bench waiting for the call).

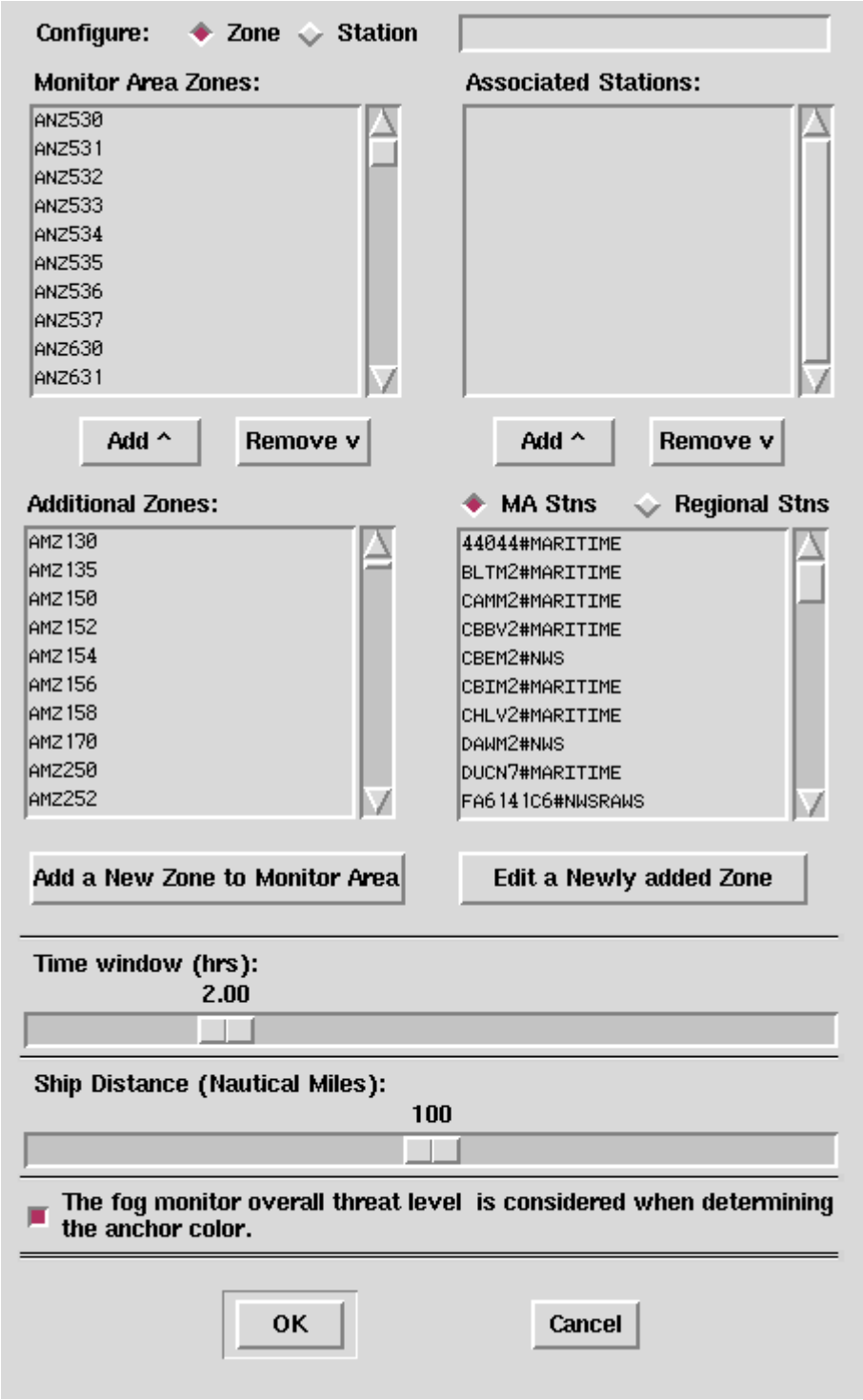


Figure 4.2.1.1-1: Monitoring Area Editor, in zone mode.

To Add Counties from the Additional Zones list:

In addition to generating a first-guess monitoring area, SNOW localization also builds additional lists of counties and stations outside the monitoring area, but still within the regional area (defined by the D-2D regional scale). Counties may be added to the monitoring area by selecting them from the "Additional Zones" list, then clicking the "Add" button above the list to move the selected zones into the "Monitor Area Zones" list. Zone selection capabilities are as follows:

- to select a zone, left-click on its ID. Multiple zones may be selected in this manner.
- to select a contiguous range of zones within the list, first left-click on the zone ID on one end of the desired range, and while holding down the mouse button, drag the cursor across the zone IDs in the desired range. Release the mouse button. The selected range of zones is added to any zones already selected.
- to de-select a zone, left click on its ID. De-selection can only be done one zone at a time.

To Remove a County from the Monitoring Area:

To remove a zone from the monitoring area, click on the zone's ID in the "Monitor Area Zones" list. Then click the "Remove" button located between the "Monitor Area Zones" list and the "Additional Zones" list. This can only be done one zone at a time. When a zone or county is removed from the monitoring area, its associated fixed stations are also removed from the list of monitored stations, except for those stations associated with another zone still contained in the monitoring area.

To associate Fixed Stations with a County in the Monitoring Area:

To edit the list of stations associated with a zone, first double-left-click the zone's ID in the "Monitor Area Zones" list. The stations currently associated with the zone will then be loaded into the "Associated Stations" list. The list may be empty, indicating no fixed stations are currently associated with the zone. Note that a given station may be associated with zero, one, or several counties. To associate additional stations to the zone, first select their IDs from the "MA Stns" list or the "Regional Stns" list (whichever you are using). This is done the same way you selected zones from the "Additional Zones" list to add to the monitoring area. When you are done selecting stations, click the "Add" button located below the "Associated Stations" list.

To remove Fixed Stations associations from a Zone or County in the Monitoring Area:

To remove the association of a fixed station to a given zone, first double-left-click the zone's ID in the "Monitor Area Zones" to load the stations currently associated with the zone into the "Associated Stations" list. To remove a station association from the zone, click on the station's ID in the "Associated Stations" list, then click the "Remove" button located below the "Associated Stations" list. This can only be done one station at a time.

To Define and Add Zones/Counties not present in the Additional Zones list:

Zones not present in the "Additional Zones" list may be defined and added to the monitoring area. For example, for WFOs bordering on Canada or Mexico, there are no zone/county definitions available to AWIPS from which to build those portions of the first-guess monitoring area and the additional zones/counties list outside the U.S. borders. To define and add a zone to the monitoring area that is not contained in the "Monitoring Area" or "Additional Zones" lists, click the "Add a New Zone to Monitor Area" button located just below the "Additional Zones" list. This will bring up an "Add a New Zone" GUI (Figure 4.2.1.1-2).

Enter the zone's ID, the latitude of the zone's centroid, and the longitude of the zone's centroid. Latitude is positive in the northern hemisphere, and negative in the southern hemisphere. East longitude values are positive; west longitude values are negative. When all the fields are filled in, click the "Add" button to add the new zone to the monitoring area. To abort the addition, click the "Close" button before pressing the "Add" button. After adding a zone, the GUI remains open so you can add additional zones. When you are done adding zones, click the "Close" button.

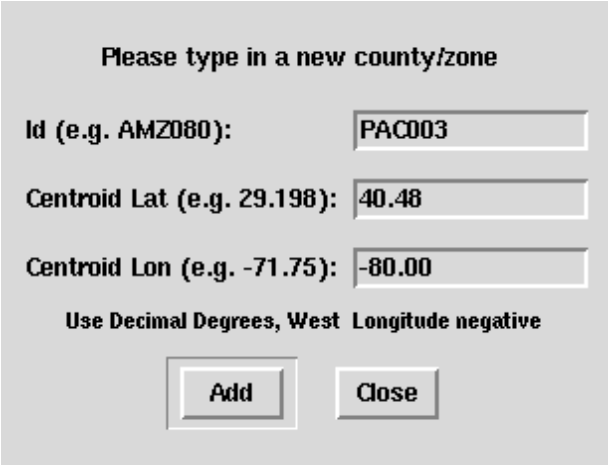


Figure 4.2.1.1-2: GUI for manually defining and adding a new zone to the monitoring area.

To Modify or Delete a User-Defined Zone/County:

To edit zones added to the monitoring area via the “Add a New Zone” GUI, click the “Edit a Newly Added Zone” button located above the “Cancel” button in the Configure Monitor Area main GUI. This will bring up another smaller GUI (Figure 4.2.1.1-3) for editing zone information. The left part of this GUI contains a list of zones added to the monitoring area lists via the “Add a New Zone” GUI. Select the zone to be edited by double-left-clicking on its ID within the list. The GUI will fill in the “ID”, “Lat”, and “Lon” editing boxes with the zone’s current values. To correct these values, change them in the editing boxes, then click the “Save” button. To delete the selected zone from both the “Monitor Area Zones” and the “Additional Zones” lists (in the parent GUI), click the “Delete” button. When finished deleting zones and/or editing zone information, click the “Close” button.

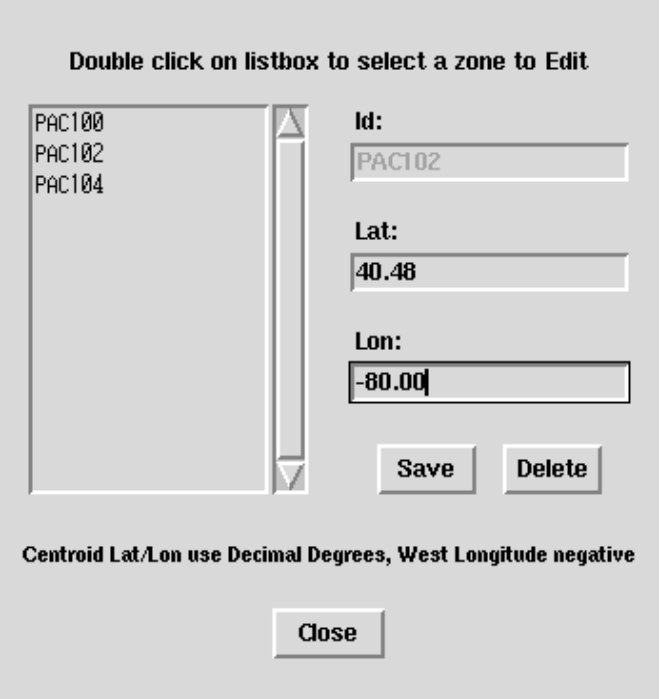


Figure 4.2.1.1-3: GUI for editing manually-added zones.

4.2.1.2 Station Mode

When editing in station mode (Figure 4.2.1.2-1), the GUI's "Monitor Area Stns" list contains the IDs for all the fixed stations currently located within the monitoring area, and the "Additional Stations" list consists of the IDs for other stations located within the regional area. The one-line window near the GUI's upper right corner, just above the list title "Associated Zones", gives the ID of the "active" fixed station whose associated zones list is being edited. The GUI's upper right list (the "Associated Zones" list) consists of the IDs for the zones associated with the active fixed station. You have a choice as to what the GUI's lower right list is. If "MA Zones" is selected, the list consists of the IDs for all the zones in the monitoring area. If "Regional Zones" is selected, the list consists of the IDs for all the zones within the broader region. The contents of the GUI's lower right list are configured by the "MA Zones" and "Regional

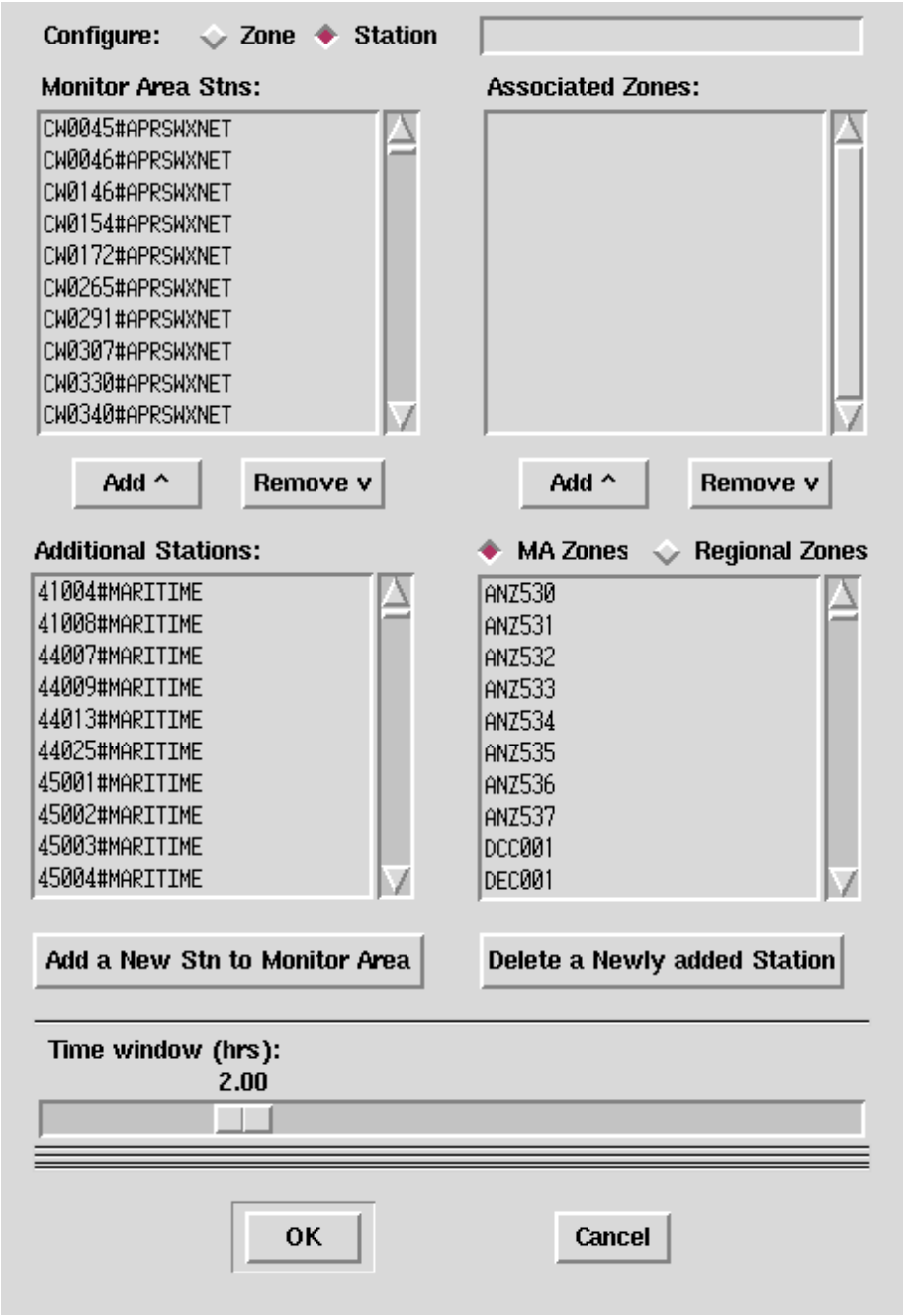


Figure 4.2.1.2-1: Monitoring Area Editor, in station mode.

Zones" pushbuttons. If "MA Zones" is selected, the IDs for all zones/counties currently configured to be contained in the monitoring area are listed. The list of fixed stations associated with a given zone/county contained in the monitoring area may be empty. When "Regional Zones" is selected, the IDs for all the zones/counties within the regional area not currently in the monitoring area are shown.

Caesar Cioppi says:

A county may be configured to be contained in the monitoring area, whether or not a fixed station is associated with the zone or county.

A fixed station cannot be configured to be contained in the monitoring area unless it is associated to a zone or county in the area, since all monitoring thresholds are associated to counties, not stations.

To Add Stations to the Monitoring Area:

In addition to generating a first-guess monitoring area, SNOW localization also builds additional lists of zones/counties and stations outside the monitoring area, but still within the regional area (defined by the D-2D regional scale). Stations may be added to the monitoring area by selecting them from the "Additional Stations" list, then clicking the "Add" button above the list to move the selected zones into the "Monitor Area Stns" list. Station selection capabilities are as follows:

- to select a station, left-click on its ID. Multiple stations may be selected in this manner.
- to select a contiguous range of stations within the list, first left-click on the station on one end of the desired range, and while holding down the mouse button, drag the cursor across the stations in the desired range. Release the mouse button. The selected range of stations is added to any stations already selected.
- to de-select a station, left click on its ID. De-selection can only be done one item at a time.

To Remove a Station from the Monitoring Area:

To remove a fixed station from the monitoring area, click on the station's ID in the "MA Stns" list to select it. Then click the "Remove" button located between the "MA Stns" list and the "Additional Stations" list. This can only be done one station at a time. The removed station is disassociated from any zones in the monitoring area to which it was previously associated.

To associate a Zone or County with a Fixed Station in the Monitoring Area:

To edit the set of zones associated with a fixed station, first double-left-click the station's ID in the "MA Stns" list to make the station "active". The zones currently associated with the active station are then displayed in the "Associated Zones" list. Note the list may be empty, indicating no zones are currently associated with the station. To add zones to the set of zones associated with the station, first select from the "MA Zones" list or the "Regional Zones" list (whichever

you are using) the IDs for the zones to be added. This is done the same way you selected stations from the "Additional Stations" list to add to the monitoring area. When you are done selecting zones, click the "Add" button located below the "Associated Zones" list.

To remove Zone or County associations from a Station in the Monitoring Area:

To remove a zone from the set of zones associated with a fixed station, click on the zone's ID in the "Associated Zones" list. Then click the "Remove" button located below the "Associated Zones" list. This can only be done one zone at a time.

To Define and Add Fixed Stations not present in the Additional Stations list:

To add to the monitoring area a station that is not in the "Additional Stations" list, click the "Add a New Stn to Monitor Area" button located just below the "Additional Stations" list. This will bring up an "Add a New Station" GUI (see figures 4.2.1.2-2 and 4.2.1.2-3). Near the top of the GUI, there are two buttons: "Metar" and "Mesonet". Click only one of these buttons.

- Click the "Metar" button if the new station is a METAR station;
- Click the "Mesonet" button if the new station is a mesonet platform.

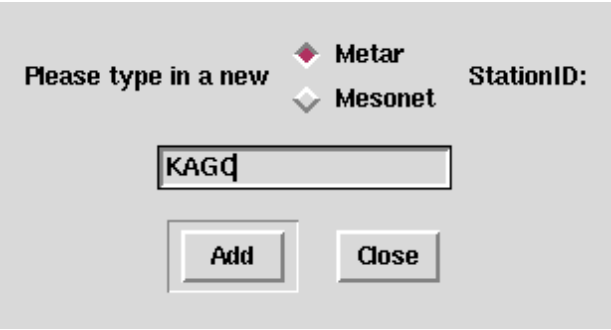


Figure 4.2.1.2-2: GUI for adding a new fixed station for the SNOW monitoring area.

Now enter the station's ID (the ID as contained in the body of the report, e.g., KSTL, 44001, etc.). Then click the "Add" button to add the new station to the monitoring area. To abort the addition, click the "Close" button. After adding a station, the GUI remains open so you can add additional stations. When you are done, click the "Close" button. Note that for METAR stations, you should enter only the station's ID. But for a mesonet station, you must follow the station's ID with the '#' character and the station's "provider" (see Figure 4.2.1.2-3). This "provider" is the name or identifier of the mesonet to which the station belongs. The "provider" must match that found for the station in file "$FXA_HOME/data/localizationDataSets/$FXA_LOCAL_SITE/SSmesonetStationInfo.txt".

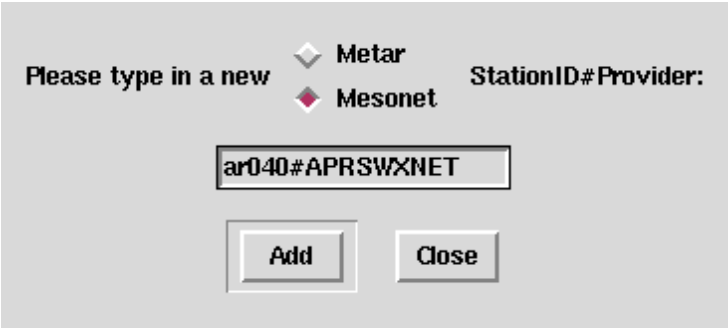


Figure 4.2.1.2-3: GUI for adding a new fixed mesonet station for the SNOW monitoring area.

To Delete a User-entered Station:

To delete any station you added to the monitoring area via the "Add a New Station" GUI, click the "Delete a Newly added Station" button located above the "Cancel" button in the monitoring area editor. This will bring up a "Delete a Newly Entered Station" GUI (Figure 4.2.1.2-4). The left part of this GUI contains a list of stations added to the monitoring area via the "Add a New Station" GUI. To select a station to delete, click its ID in the list. To add a station to the set of stations selected for deletion, click its ID in the list. To deselect a station, click its ID in the list. To delete all selected stations, click the "Delete" button. When you are done deleting stations, click the "Close" button. A deleted station is disassociated from any zones in the monitoring area to which it was previously associated.

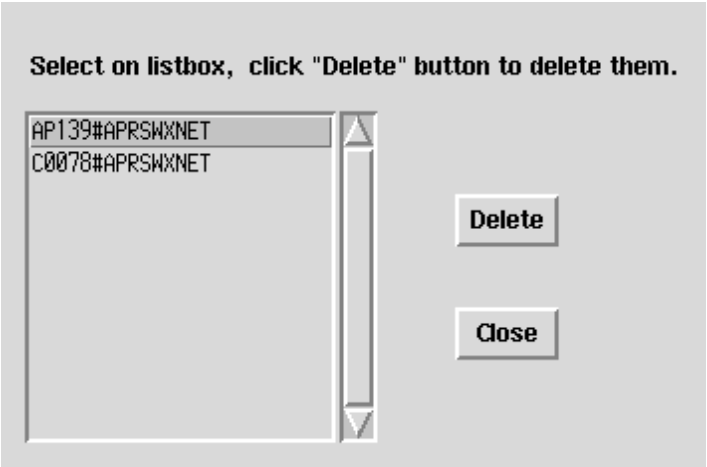


Figure 4.2.1.2-4: GUI for deleting a newly added station.

4.2.1.3 Modifying the SNOW Button Time Window Value

Near the bottom of the setup GUI, a scroll bar is available to select the time widow for the monitoring button (see Fig. 3.2-1). The color of the button will reflect the highest threat level detected within the time window.

4.2.1.4 Saving Editing Changes to the Monitoring Area

When you are done editing the monitoring area in station or zone mode, click the "OK" button at the bottom of the "Configure Monitor Area Set Up Data" GUI to save the changes, or "Cancel" to abandon the changes and abort the editor. If you click "OK", a confirmation box (Figure 4.2.1.6-1) will appear. If you click the "Update" button in the confirmation box to save the changes, then the user may have to take special actions depending on whether zones were added to the monitoring area.

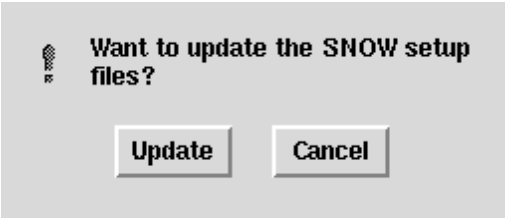


Figure 4.2.1.6-1: First monitor area setup change confirmation.

If Zones were added to the Monitoring Area:

The SNOW zone/station configuration files are read once by the SNOW D-2D tabular displays, when SNOW is loaded into D-2D. If the SNOW set-up is changed, the SNOW displays must be cleared from D-2D, and then reloaded to pick up the new zone/station configuration. When you click the "Update" button in the first confirmation box, a second confirmation box (Figure 4.2.1.6-2) will appear. As indicated in the confirmation message, if the SNOW display is running on any workstation in the office, bring SNOW into the main D-2D panel and clear it by clicking the "Clear" button in the D-2D menu bar.

Figure 4.2.1.6-2: Display thresholds status confirmation box, for setup changes where new zones were added. "Continue" will proceed to monitor thresholds notification (Figure 4.2.1.6-3).

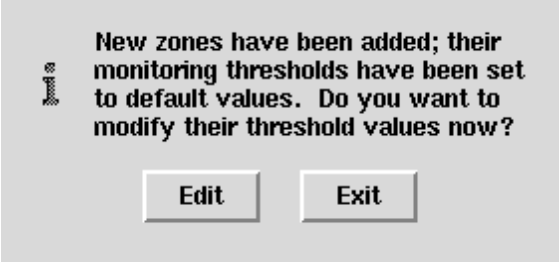


Figure 4.2.1.6-3: Monitor thresholds status confirmation box, for setup changes where new zones were added. "Edit" button will launch the monitor thresholds editor (Figure 4.2.2-1).

Once you are certain the SNOW display is not running anywhere in the office, click the "Continue" button. A third confirmation box (Figure 4.2.1.6-3) will appear. As noted in the confirmation message, any new zones/counties added to the SNOW monitoring area will be assigned with factory-default monitoring and display thresholds. If you click the "Edit" button for this confirmation, then the editor for the monitor thresholds will be launched automatically at this point to allow the user to customize the monitoring thresholds for the added zones. Note that zones newly added to the monitoring area are highlighted when the editor for the monitor thresholds is launched. See Section 4.2.2 ("Configuring the Monitor Thresholds") below for instructions on how to use this editor.

Display thresholds for the zone table (also used by the station table and the trend plot) will be set to default values, and must be manually edited if other thresholds are desired. Unlike in the

monitor thresholds editor, new zones will not be highlighted in the display thresholds editor. It will be up to the user to make note of which new zones have been added to the monitoring area so that their display thresholds may be configured. Refer to Section 4.6 for procedures to edit display thresholds.

If Zones were Not Added to the Monitoring Area:

If no new zones were added to the SNOW zone/county/station (i.e., if the only changes were to the station associations to zones, and/or removal of zones from the monitoring area), then the only action SNOW takes is to send a signal to alert the SNOW monitoring process of the setup changes.

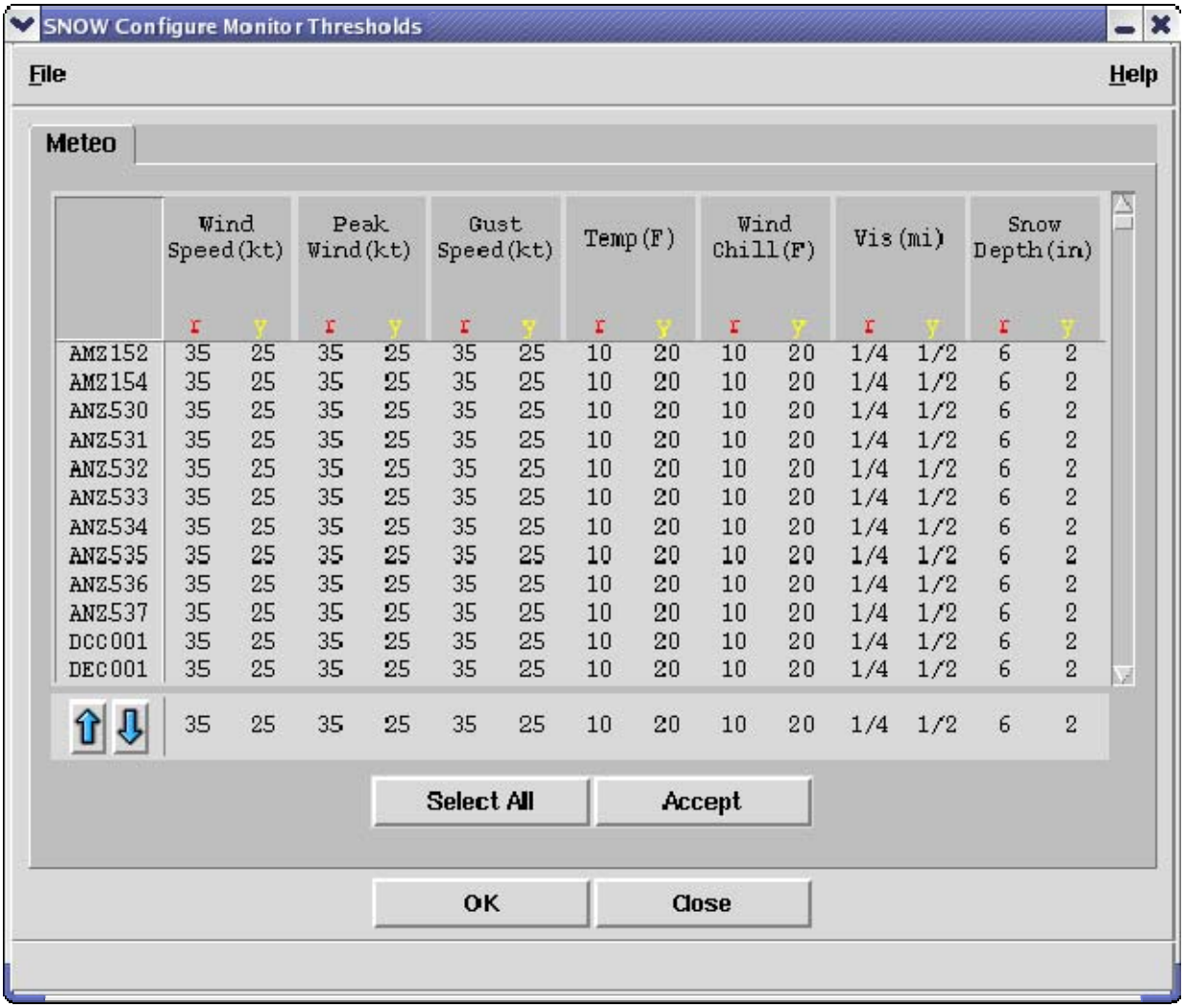
4.2.2 Configuring the Monitor Thresholds

The SNOW monitor compares observation values (within the user-specific time window) against thresholds for alert levels to determine a single, overall threat level for the entire monitoring area. The most severe individual observation value threat level becomes the threat level for the entire monitoring area. The thresholds for the alert levels are both variable- and zone/county-specific. The editor for the monitor thresholds allows each site to customize the thresholds.

The SNOW monitoring thresholds editor (Figure 4.2.2-1) is launched from the AWIPS menu icon. It is located in the Panel along the edge of the screen background, along with such menu items as IFPS and Start D-2D. Left click the AWIPS menu icon to bring up the AWIPS Startup menu. At the bottom of the AWIPS Startup menu, left-click "SNOW Apps" to bring up the SNOW editors menu. Click the "Configure Monitor Thresholds" entry to start the editor for the SNOW monitoring area thresholds. The thresholds include wind speed, gust speed, peak wind, temperature, visibility, and snow depth. The **Meteo** tab is useful in the display thresholds interface (described in Section 3.6) but has no function in this monitor interface.

Monitoring threshold levels may be set for multiple zones simultaneously, or for a single zone. Selection of zones in the monitor thresholds editor is similar to the same feature in the monitor area setup GUI, with additions as follows:

- to select a zone, left-click on its ID. Multiple zones may be selected in this manner.
- to select a contiguous range of zones within the list, first left-click on the zone ID on one end of the desired range, and while holding down the mouse button, drag the cursor across the zone IDs in the desired range. Release the mouse button. The selected range of zones is added to any zones already selected.
- to select all zones when no zones are yet selected, click the "Select All" button near the bottom of the GUI. This button is enabled only when no zones are currently selected.



	Wind Speed(kt)		Peak Wind(kt)		Gust Speed(kt)		Temp(F)		Wind Chill(F)		Vis(mi)		Snow Depth(in)	
	r	y	r	y	r	y	r	y	r	y	r	y	r	y
AMZ152	35	25	35	25	35	25	10	20	10	20	1/4	1/2	6	2
AMZ154	35	25	35	25	35	25	10	20	10	20	1/4	1/2	6	2
ANZ530	35	25	35	25	35	25	10	20	10	20	1/4	1/2	6	2
ANZ531	35	25	35	25	35	25	10	20	10	20	1/4	1/2	6	2
ANZ532	35	25	35	25	35	25	10	20	10	20	1/4	1/2	6	2
ANZ533	35	25	35	25	35	25	10	20	10	20	1/4	1/2	6	2
ANZ534	35	25	35	25	35	25	10	20	10	20	1/4	1/2	6	2
ANZ535	35	25	35	25	35	25	10	20	10	20	1/4	1/2	6	2
ANZ536	35	25	35	25	35	25	10	20	10	20	1/4	1/2	6	2
ANZ537	35	25	35	25	35	25	10	20	10	20	1/4	1/2	6	2
DCC001	35	25	35	25	35	25	10	20	10	20	1/4	1/2	6	2
DEC001	35	25	35	25	35	25	10	20	10	20	1/4	1/2	6	2
	35	25	35	25	35	25	10	20	10	20	1/4	1/2	6	2

Figure 4.2.2-1: Monitoring thresholds editor. Note that Wind Speed, Gust Speed, Peak Wind, and Snow Depth give priority to higher values, while Temperature, Wind Chill and Visibility give priority to lower values.

- to de-select a zone, left click on its ID. De-selection can only be done one zone at a time.
- to de-select all selected zones, click the "De-Select All" button near the bottom of the GUI. This button is enabled only when at least one zone is already selected.

Once the zones have been selected, their thresholds may be set. First, in the selection row near the bottom of the GUI (to the right of the arrows), click on the threshold value to be changed. Click the up or down to raise or lower the threshold's value. Repeat this procedure for each threshold value you wish to change for the selected zones. The GUI will not allow a red level threshold to be set to a less hazardous value (higher or lower, depending on variable) than the yellow level threshold's value. You also cannot set a yellow level threshold to a value more severe than the red level threshold's value. When all the thresholds for the selected zones are set, click the "Accept" button to hold the changes until they are ready to be saved, and select the next set of zones whose thresholds are to be specified.

Monitoring thresholds for wind direction must be handled in a special fashion. Those parameters each have “From” and “To” thresholds for red and yellow levels. Those two thresholds are used to define an arc of azimuth values which can be alerted for. There are two rules to follow when choosing these azimuthal limits:

- The “From” and “To” bearings will be assumed by SNOW to be in a clockwise order. For Example: A “From” value of 359 and a “To” value of 1 will produce an arc of 2 degrees, while a “From” value of 1 and a “To” value of 359 will produce a near-circle of 358 degrees.
- The red alerting area must always be contained within the yellow alerting area. The settings will not be accepted by SNOW otherwise.

Once the thresholds have been set to the desired values and accepted for all zones and variables, click the “OK” button near the bottom of the GUI to commit and save the editing changes. When the changes are saved by pressing OK, then:

- the old threshold values will be permanently overwritten by the new ones,
- the SNOW monitor will re-evaluate observations (within the user-selected time window) using the new threshold values, update the threat level on the D-2D, and continue to use the new thresholds until they are changed again, and
- the threshold editor GUI will be closed.

To abandon the changes without saving, click the “Close” button near the bottom of the GUI.

4.3 The SNOW Plot

The SNOW plot is launched from the "Obs" tear-away submenu (Figure 4.3-1) in the D-2D menu bar. Clicking on "SNOW" at the bottom of the "Hazards" section of the "Obs" menu loads the SNOW plan-view plots in the D-2D main panel, and loads the SNOW zone table in its own window (Figure 4.3-2).

This graphic behaves just like any other AWIPS D-2D plan-view display, such as the METAR plot. You can zoom, re-center, loop, etc. just as you can with the METAR plot. See the AWIPS User's Manual for more information.

The SNOW plot consists of two AWIPS D-2D station plots packaged together, and nearly identical to their D-2D counterparts: a "METAR" plot and a "Mesonet" plot. The SNOW plots differ from the D-2D plots only in that SNOW plots only those reports within the office's monitoring area, as defined by the monitoring area station setup.

Figure 4.3-1: D-2D Obs submenu with SNOW option.

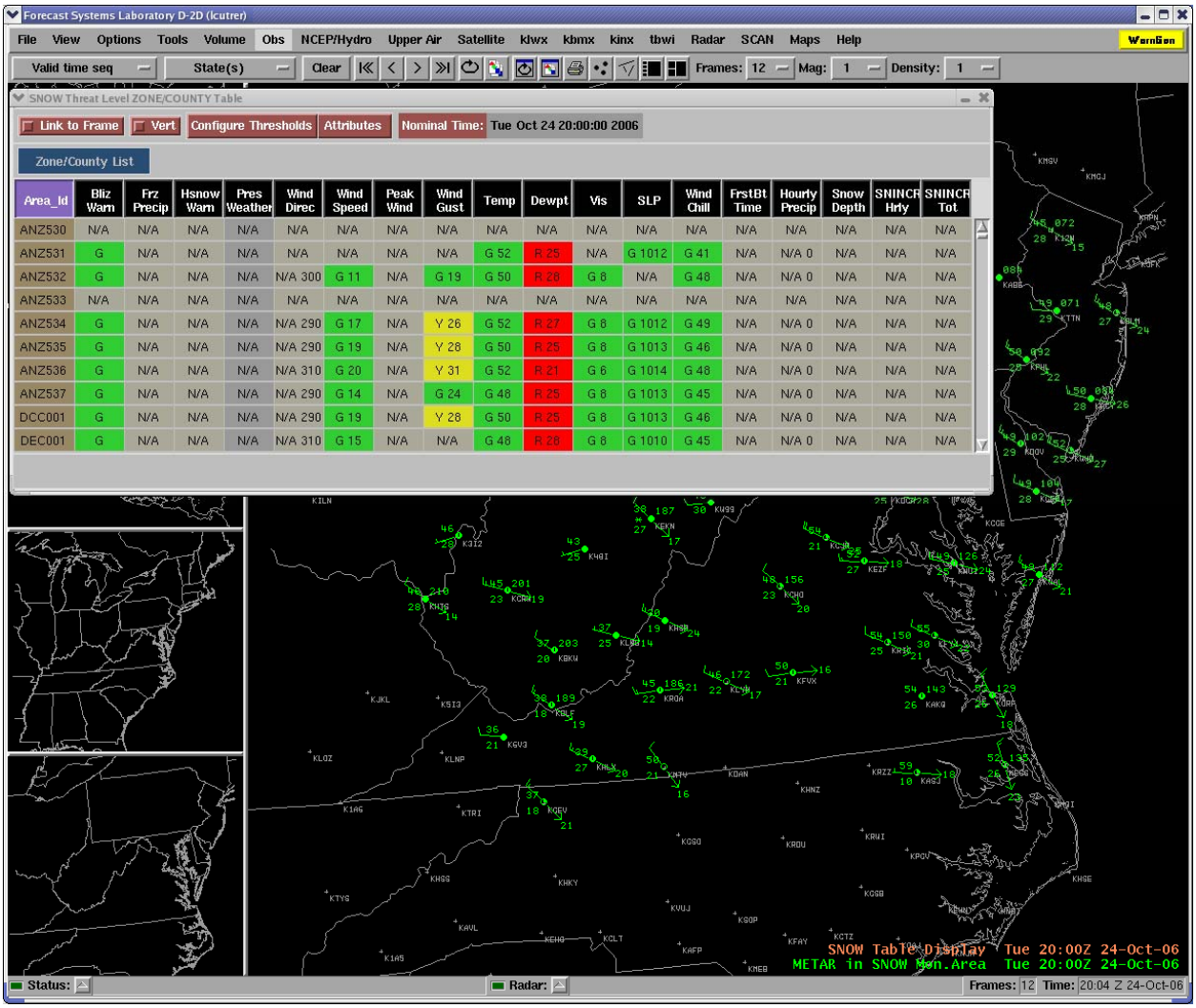


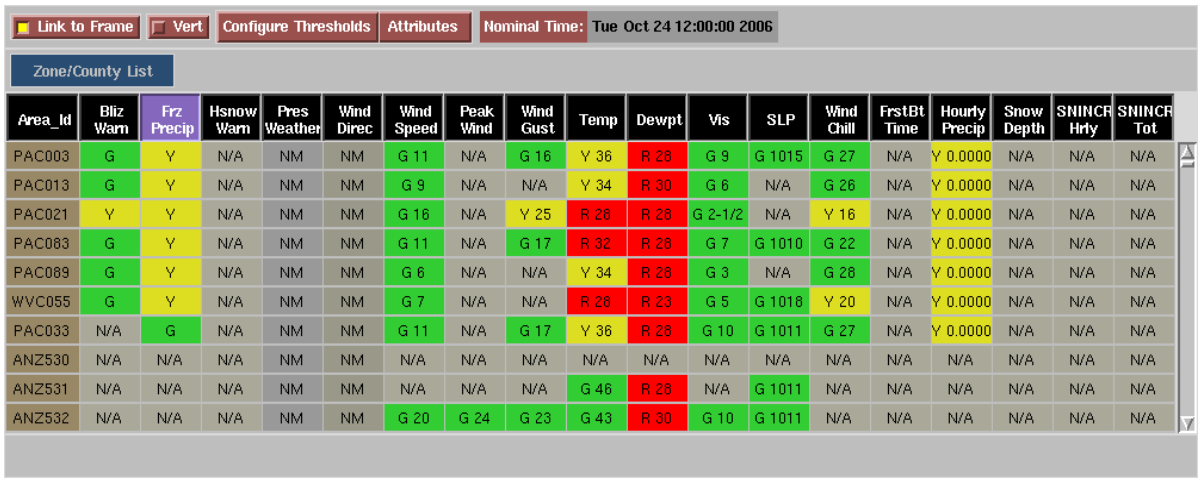
Figure 4.3-2: D-2D display with SNOW plan-view plots loaded in the main panel, showing the automatically-loaded SNOW zone table in a separate window.

4.4 The Zone Table

To launch the zone table (Figure 4.4-1), select the SNOW multiload (see above). The zone table is automatically constructed and displayed when the SNOW plot is launched. Each column shows the most hazardous conditions reported in the zone. Red, yellow, and green colors represent the variables' status compared to display thresholds (Section 3.6). The letters "**G**,", "**Y**", and "**R**" will be present to the left of the value, and will correspond respectively to the green, yellow, or red color level. This is to aid colorblind users. Missing data is represented by "**N/A**". The Wind Direction parameters are not monitored ("**NM**") at the zone level until the user configures specific thresholds (this approach is taken because of the arbitrary nature of how "hazardous" wind direction is defined – any 0 to 360 degree range may be chosen.) Present Weather also appears as "not monitored" at this level – the user must descend to the table's

station level to see reports from individual stations. The three Product columns – "**Bliz Warn**", "**Frz Precip**", and "**Hsnow Warn**" – will be discussed in more detail in the station table section.

If the station table is displaying, you can return to the zone table by left-clicking the "Zone/County" button which is located directly above the column headings in the GUI. The definitions of the columns and cell contents in the zone and station tables are as defined in Table 4.4-1. Table 4.4-2 summarizes the features and actions available in the zone table display.



Area_Id	Bliz Warn	Frz Precip	Hsnow Warn	Pres Weather	Wind Direc	Wind Speed	Peak Wind	Wind Gust	Temp	Dewpt	Vis	SLP	Wind Chill	FrstBt Time	Hourly Precip	Snow Depth	SNINCR Hrly	SNINCR Tot
PAC003	G	Y	N/A	NM	NM	G 11	N/A	G 16	Y 36	R 28	G 9	G 1015	G 27	N/A	Y 0.0000	N/A	N/A	N/A
PAC013	G	Y	N/A	NM	NM	G 9	N/A	N/A	Y 34	R 30	G 6	N/A	G 26	N/A	Y 0.0000	N/A	N/A	N/A
PAC021	Y	Y	N/A	NM	NM	G 16	N/A	Y 25	R 28	R 28	G 2-1/2	N/A	Y 16	N/A	Y 0.0000	N/A	N/A	N/A
PAC083	G	Y	N/A	NM	NM	G 11	N/A	G 17	R 32	R 28	G 7	G 1010	G 22	N/A	Y 0.0000	N/A	N/A	N/A
PAC089	G	Y	N/A	NM	NM	G 6	N/A	N/A	Y 34	R 28	G 3	N/A	G 26	N/A	Y 0.0000	N/A	N/A	N/A
WVC055	G	Y	N/A	NM	NM	G 7	N/A	N/A	R 28	R 23	G 5	G 1018	Y 20	N/A	Y 0.0000	N/A	N/A	N/A
PAC033	N/A	G	N/A	NM	NM	G 11	N/A	G 17	Y 36	R 28	G 10	G 1011	G 27	N/A	Y 0.0000	N/A	N/A	N/A
ANZ530	N/A	N/A	N/A	NM	NM	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ANZ531	N/A	N/A	N/A	NM	NM	N/A	N/A	N/A	G 46	R 28	N/A	G 1011	N/A	N/A	N/A	N/A	N/A	N/A
ANZ532	N/A	N/A	N/A	NM	NM	G 20	G 24	G 23	G 43	R 30	G 10	G 1011	N/A	N/A	N/A	N/A	N/A	N/A

Figure 4.4-1: SNOW Zone Table. In this example, the Frozen Precip.table is highlighted for sorting.

Table 4.4-1: Contents of the zone and station table displays, by column.

COLUMN LABEL	DEFINITION	UNITS
Area_Id	Identifier for zone/county or station.	none (alphanumeric)
Bliz Warn	Blizzard Warning. This is based on wind speed/gust/peak, visibility, and present weather.	none (letter indicating threat level)
Frz Precip	Freezing Precip. Based on temperature, present weather, and hourly precip	none (letter indicating threat level)
Hsnow Warn	Heavy Snow Warning. Based on Snow Depth, SNINCR Hourly, and SNINCR Total.	none (letter indicating threat level)
Wind Direc	Wind direction	degrees
Wind Speed	Wind speed	knots
Peak Wind	Max Hourly Wind Speed (a.k.a. Peak Wind)	knots

COLUMN LABEL	DEFINITION	UNITS
Wind Gust	Speed of wind gust	knots
Vis	visibility	statute miles
Temp	Temperature	degrees Fahrenheit
Dewpt	Dewpoint	degrees Fahrenheit
Vis	visibility	statute miles
SLP	Sea Level Pressure	mb
Wind Chill	Wind Chill Temperature	degrees Fahrenheit
Frostbt Time	Frostbite Time	minutes
Hourly Precip	Hourly Precip	inches
Snow Depth	Snow Depth	inches
SNINCR Hrly	Snow Increasing Rapidly (Hourly)	inches
SNINCR Tot	Snow Increasing Rapidly (Total)	inches

Table 4.4-2: Features and Action options for the zone table display.

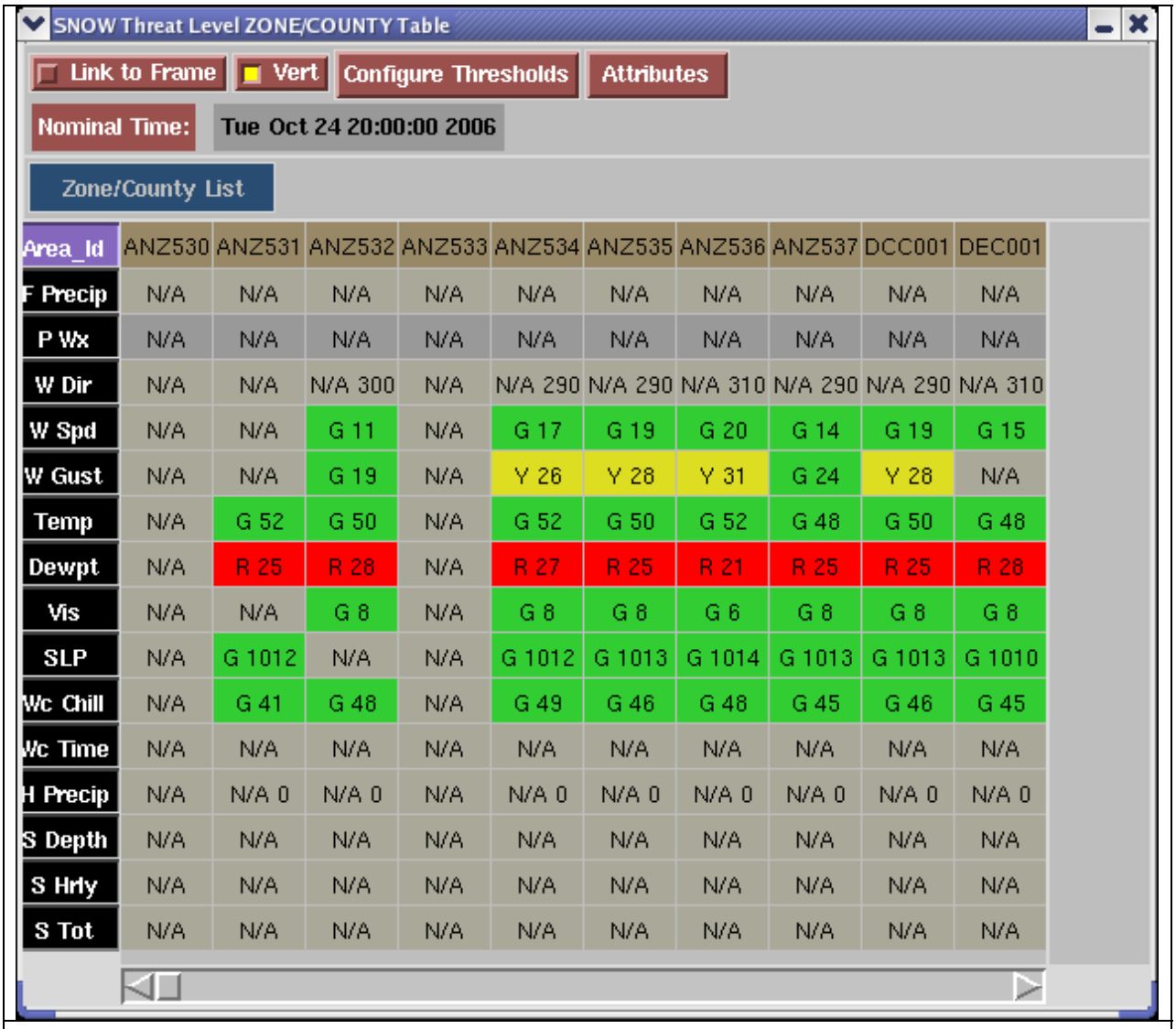
Link to Frame	Clicking the "Link to Frame" button toggles link-to-frame behavior. When link-to-frame is active, the nominal time in the zone and station tables always matches the valid time in the D-2D frame, and the data in the tables animates with the D-2D looping. Otherwise, the nominal time of the zone table remains unchanged at the last frame time in the D-2D display, until either you cause the table to be redrawn, or the D-2D frame advances to a new nominal hour valid time. No matter what the "Link to Frame" mode is, the zone table will auto-update to display new data in the current frame(s), and/or with a new frame time when the next hour's observation data begins to become available.
Configure Thresholds	Left-clicking the "Configure Thresholds" button near the top of the GUI brings up the editor for the display thresholds. Refer to Section 4.6.
Zone Detail (Zoom/Recenter D-2D, and show station table)	Left-clicking on a zone ID (in the first (leftmost) column) causes the SNOW plots to zoom in and re-center on the selected zone, and the zone table to be replaced by a station table (a table showing threat levels and variable values for the latest report for each station in the zone). Refer to Section 4.5 for the station table.
Sort by Threat Level	Left-clicking on a product or variable name causes the table to be sorted by the threat levels in that column. Zones are first sorted into decreasing order based on the selected product's or variable's threat level values. Zones with the same threat level for the selected column are secondarily sorted alphabetically by zone ID.

Vert	Selecting this button will cause the Zone Table to align itself vertically, with the highest-ranking values on the left hand side. De-selecting the button will cause the table to realign itself back to its horizontal configuration. See Figure 4.4-2.
Attributes	This button will allow users to enable or disable the display of individual attributes in the SNOW table. Note that all the attributes appear by default when the table is first loaded (see Figure 4.4-3).
Resize Table	Users can grab the bottom of the table with the mouse to resize the table to alter the number of visible row (see Figure 4.4-3). This feature, along with the Attributes button, will enable users to have greater control over the size of the SNOW pane.

A Note about Wind Chill and Frostbite Time……..

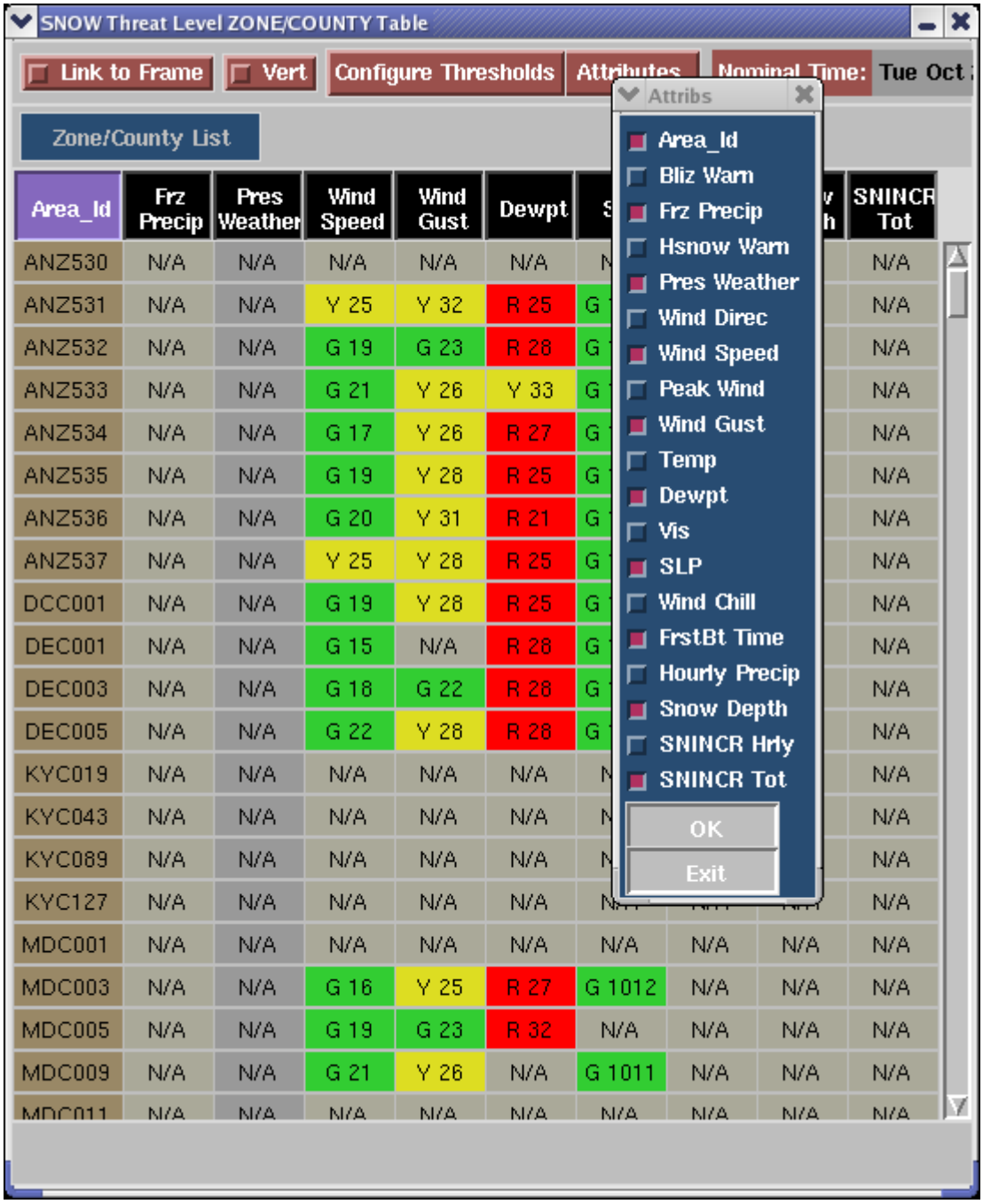
Wind Chill and Frostbite time are calculated as defined in the "**Report on Wind Chill Temperature and Extreme Heat Indices: Evaluation and Improvement Projects" (FCM-R19-2003).**

Wind chill will only be calculated if the temperature is at or below 40F. Frostbite time will only be calculated if the temperature is at or below 23F, and if the wind speed is between 14kts and 43kts.



Area_Id	ANZ530	ANZ531	ANZ532	ANZ533	ANZ534	ANZ535	ANZ536	ANZ537	DCC001	DEC001
F Precip	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P Wx	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W Dir	N/A	N/A	N/A 300	N/A	N/A 290	N/A 290	N/A 310	N/A 290	N/A 290	N/A 310
W Spd	N/A	N/A	G 11	N/A	G 17	G 19	G 20	G 14	G 19	G 15
W Gust	N/A	N/A	G 19	N/A	Y 26	Y 28	Y 31	G 24	Y 28	N/A
Temp	N/A	G 52	G 50	N/A	G 52	G 50	G 52	G 48	G 50	G 48
Dewpt	N/A	R 25	R 28	N/A	R 27	R 25	R 21	R 25	R 25	R 28
Vis	N/A	N/A	G 8	N/A	G 8	G 8	G 6	G 8	G 8	G 8
SLP	N/A	G 1012	N/A	N/A	G 1012	G 1013	G 1014	G 1013	G 1013	G 1010
Wc Chill	N/A	G 41	G 48	N/A	G 49	G 46	G 48	G 45	G 46	G 45
Wc Time	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
H Precip	N/A	N/A 0	N/A 0	N/A	N/A 0	N/A 0	N/A 0	N/A 0	N/A 0	N/A 0
S Depth	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S Hrly	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S Tot	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Figure 4.4-2: SNOW Zone Table, in vertical mode (Vert button active).



Area_Id	Frz Precip	Pres Weather	Wind Speed	Wind Gust	Dewpt				SNINCR Tot
ANZ530	N/A	N/A	N/A	N/A	N/A				N/A
ANZ531	N/A	N/A	Y 25	Y 32	R 25				N/A
ANZ532	N/A	N/A	G 19	G 23	R 28				N/A
ANZ533	N/A	N/A	G 21	Y 26	Y 33				N/A
ANZ534	N/A	N/A	G 17	Y 26	R 27				N/A
ANZ535	N/A	N/A	G 19	Y 28	R 25				N/A
ANZ536	N/A	N/A	G 20	Y 31	R 21				N/A
ANZ537	N/A	N/A	Y 25	Y 28	R 25				N/A
DCC001	N/A	N/A	G 19	Y 28	R 25				N/A
DEC001	N/A	N/A	G 15	N/A	R 28				N/A
DEC003	N/A	N/A	G 18	G 22	R 28				N/A
DEC005	N/A	N/A	G 22	Y 28	R 28				N/A
KYC019	N/A	N/A	N/A	N/A	N/A				N/A
KYC043	N/A	N/A	N/A	N/A	N/A				N/A
KYC089	N/A	N/A	N/A	N/A	N/A				N/A
KYC127	N/A	N/A	N/A	N/A	N/A				N/A
MDC001	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MDC003	N/A	N/A	G 16	Y 25	R 27	G 1012	N/A	N/A	N/A
MDC005	N/A	N/A	G 19	G 23	R 32	N/A	N/A	N/A	N/A
MDC009	N/A	N/A	G 21	Y 26	N/A	G 1011	N/A	N/A	N/A
MDC011	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Figure 4.4-3: SNOW Zone Table. Several attributes have been removed via the attributes menu (invoked by clicking the Attributes button). The table also has been resized in the vertical direction (showing more zones) by grabbing the bottom edge and dragging it.

4.5 The Station Table

To launch the station table (Figure 4.5-1), left-click on the zone ID in the first (leftmost) column of the zone table. Only those stations associated in the monitoring area with the selected zone

will be shown in the station table. Table 4.5-1 summarizes the features and actions available in the station table display.

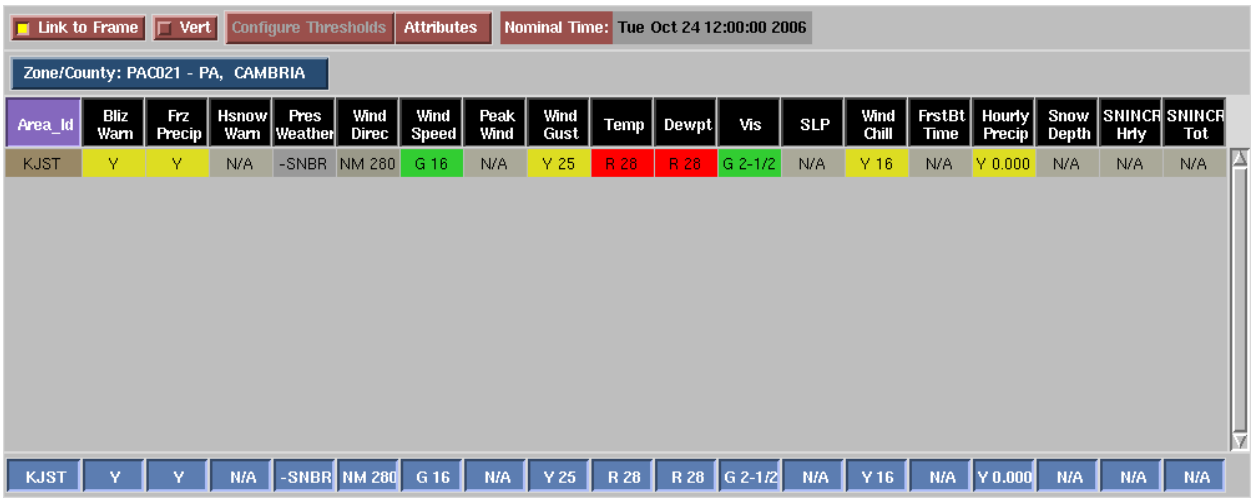


Figure 4.5-1: SNOW Station Table. As shown, the table is sorted by Area ID. Right-clicking on a cell in the table will launch a 24-hour trend (meteogram) plot (see figures 4.5.1-1, 4.5.1-2, and 4.5.1-3) for the station and the product or variable corresponding to the cell.

Table 4.5-1: Features and Action options for the station table display.

Link to Frame	Clicking the "Link to Frame" button toggles link-to-frame behavior. When link-to-frame is active, the nominal time in the zone and station tables always matches the valid time in the D-2D frame, and the data in the tables animates with the D-2D looping. Otherwise, the nominal time of the station table remains unchanged at the last frame time in the D-2D display, until either you cause the table to be redrawn, or the D-2D frame advances to a new nominal hour valid time.
Zoom/Recenter D-2D	Left-clicking on a station ID in the "Area ID" column causes the SNOW plots to zoom in and re-center on the selected station.
Configure Thresholds	This feature is inactive at the station level, since the display thresholds are configured on a zone by zone or county by county basis.
Sort by Threat Level	Left-clicking on a product or variable name causes the table to be sorted by the threat levels in that column. Stations are first sorted into decreasing order based on the selected product's or variable's threat level values. Stations with the same threat level for the selected column are secondarily sorted alphabetically by station ID.
Display Trend	Right-clicking on a threat-level cell within the table produces a 24-hour trend for the station and variable/product corresponding to the cell. See Section 4.5.1.

Revert to Zone Table	The "Zone/County" button immediately above the column headings in the station table indicates which zone or county's stations are being displayed in the table. Left click on this button to return to the zone table mode.
Vert	Selecting this button will cause the Zone Table to align itself vertically, with the highest-ranking values on the left hand side. De-selecting the button will cause the table to realign itself back to its horizontal configuration.
Attributes	This button will allow users to enable or disable the display of individual attributes in the SNOW table.
Resize Table	Users can grab the bottom of the table with the mouse to resize the table to alter the number of visible row (see Figure 4.4-3). This feature, along with the Attributes button, will enable users to have greater control over the size of the SNOW pane.

The three leftmost columns on the station table – "**Bliz Warn**", "**Frz Precip**", and "**Hsnow Warn**" – represent combinations of individual parameters already in the table. The purpose of these columns is to allow the user to monitor for conditions which may require the issuance of a warning or advisory. "Bliz Warn" will evaluate the present weather, visibility, and wind conditions at each site, in order to detect conditions which may warrant a Blizzard Warning or a Blowing Snow Advisory. "Frz Precip" tracks icing conditions by evaluating the present weather, temperature, and hourly precip. "Hsnow Warn" brings together the three snowfall accumulation parameters on the right side of the table – **Snow Depth**, **SNINCR Hourly**, and **SNINCR Total** – to evaluate potential Heavy Snow Warning conditions. Table **4.5-2** describes how the SNOW table evaluates the individual parameters to determine a product threat level.

Table 4.5-2: Product column threat level criteria

PRODUCT COLUMN	THREAT CONDITION	COMMENTS
Bliz Warn	Turns RED if: • Snow or Blowing snow is observed, *and* • Any of the three wind parameters (speed, peak, gust) reach RED threshold level, *and* • Visibility falls to RED threshold level. Turns YELLOW if: • Snow or Blowing Snow is observed, *and* • Any of the three wind parameters (speed, peak, gust) reaches YELLOW threshold level, *and* • Visibility falls to YELLOW threshold level. Turns GREEN if: • Snow or Blowing Snow is observed, *and* • The visibility OR the highest of the wind speed parameters are only at GREEN level. Turns GRAY if: • Snow or Blowing Snow is not observed (regardless of the wind/visibility criteria).	The key parameter is the present weather observation-- the box will be gray if neither snow nor blowing snow is reported. This prevents other types of obscuration (e.g., fog, dust storms) from coloring the box. If SN or BLSN is occurring, then the wind and visibility conditions help determine the green/yellow/red threat level.

PRODUCT COLUMN	THREAT CONDITION	COMMENTS
Frz Precip	Turns RED if: • Freezing rain or freezing drizzle is reported. Turns RED if: • Rain or drizzle is reported *and* • Temperature is RED (presumably the red temperature threshold is set at or near 32F). Turns RED if: • Neither rain nor drizzle is being reported *and* • Temperature is RED *and* • Hourly Precip is RED. Turns YELLOW if: • Rain or drizzle is reported, *and* • Temperature is YELLOW. Turns YELLOW if: • Neither rain nor drizzle is being reported *and* • Temperature and Hourly Precip are both at YELLOW threat level or are a combination of RED and YELLOW. Turns GREEN if: • Rain or drizzle is reported, *and* • Temperature is GREEN. Turns GREEN if: • Neither rain nor drizzle is being reported *and* • Temperature or Hourly Precip is GREEN. Turns GRAY if: • Neither rain nor drizzle is being reported *and* • Temperature is GRAY (missing) *and* • Hourly Precip is GRAY (missing)	The observation of FZDZ or FZRA is enough to turn the box red. If RA or DZ is reported, then the temperature threshold will determine the color. If no rain or drizzle (frozen or otherwise) is reported, then SNOW will check the Hourly Precip value, to potentially catch precip that fell earlier in the hour. Note that the GREEN threat level will be fulfilled (assuming no FZRA or FZDZ.) if either precip or temperature is GREEN, even if the other parameter is RED. This helps to guard against nonsensical outcomes (e.g.,the Frz Precip box should not turn RED during a summer thunderstorm, with a RED hourly precip and a GREEN temperature).

PRODUCT COLUMN	THREAT CONDITION	COMMENTS
Hsnow Warn	Turns RED if: • Any of the three snow parameters is RED. Turns YELLOW if: • Any of the three snow parameters is YELLOW, but none reach RED. Turns GREEN if: • Any of the three snow parameters is GREEN, but none reach RED or YELLOW. Turns GRAY if: • All three snow parameters are GRAY (missing).	The three snow parameters are Snow Depth, Snow Increasing Rapidly (Hourly) and Snow Increasing Rapidly (Total).

4.5.1 The Trend Plot

A trend can only be launched from the station table (Figure 4.5-1). Within the station table, right-click on the cell in the row/column corresponding to the station and variable or product of interest. The trend plot for the selected data will be displayed. When you are finished viewing the plot, click the "Exit" button below the graph.

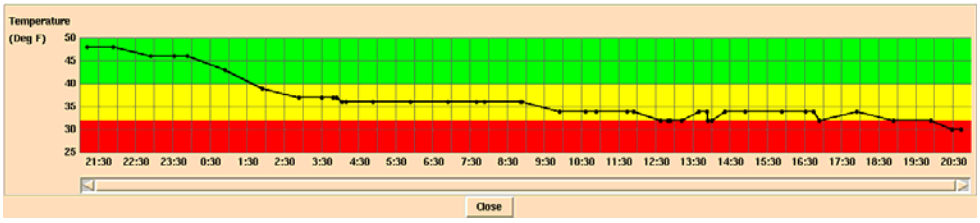


Figure 4.5.1-1: Trend plot for a variable (temperature in the example shown).

A variable's trend (Figure 4.5.1-1) consists of a plot (meteogram) of the selected variable's values versus time for the past 24 hours. The background within the plot is colored to show where the plotted values lay within the display table's threat levels. Dots representing individual observations are not connected when there are known to be other observations missing between the plotted points. A product's trend (Figure 4.5.1-2) consists of a stacked set of variable trends, with a separate trend displayed for each variable comprising the product.

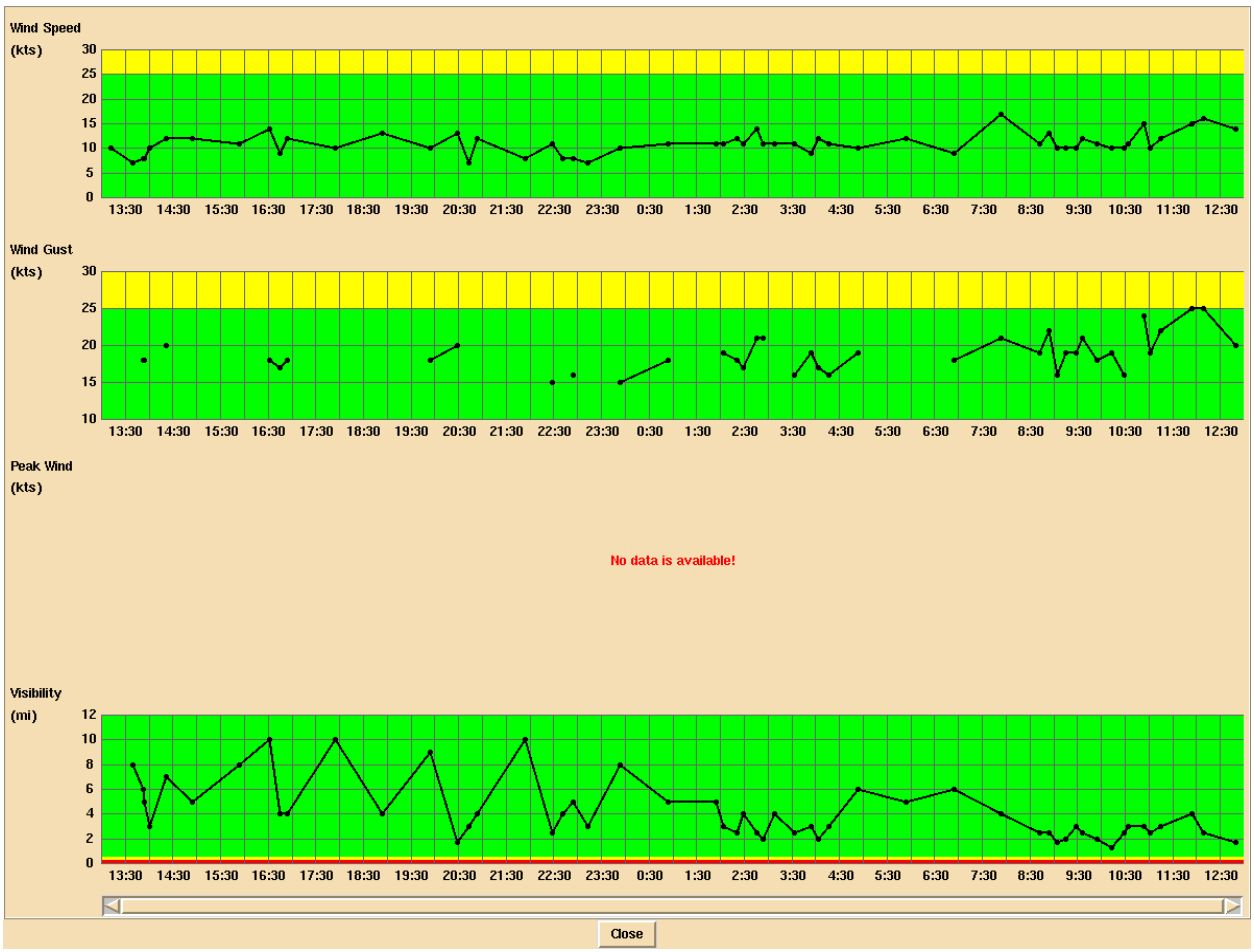


Figure 4.5.1-2: Trend plot for a product (Blizzard Warning). Note that, as in the table column rankings, the wind thresholds go from green to yellow to red as they get higher, while visibility goes to red as it gets lower.

A right-click on wind direction will bring up a hodograph-type chart to represent directional trends (see **4.5.1-3**). The wind direction is represented by a point's bearing on a polar plot. Concentric circles represent the observation times. Azimuthal alert thresholds (discussed in the next section) are colored in red and yellow arcs. Present Weather has no trend plot, but a time line graph is planned.

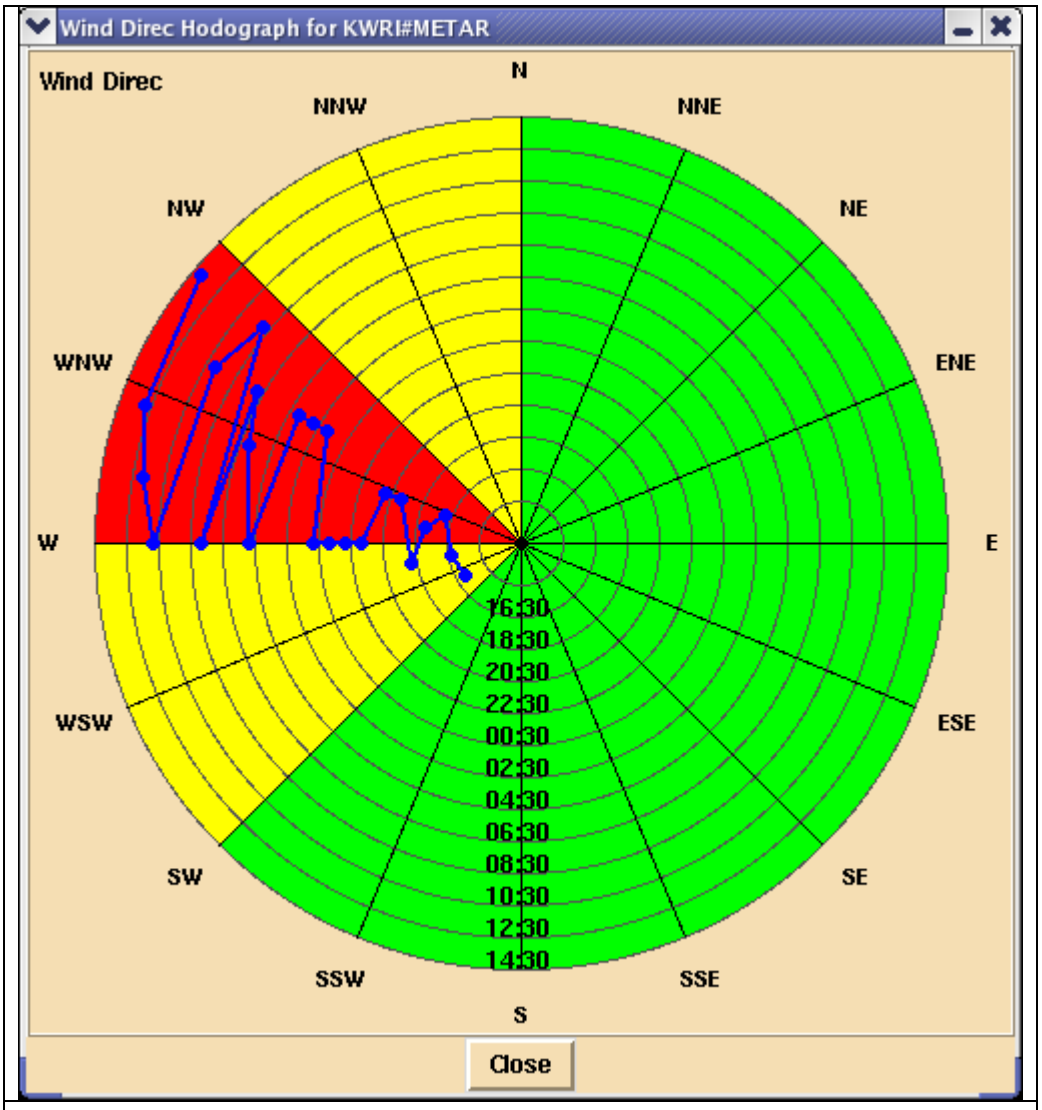


Figure 4.5.1-3: Trend plot for a wind direction. The outermost circle represents the latest time. The points indicate that the winds have mostly been coming from the W-WNW direction. The yellow threat area ranges from about 225 to 345 degrees. The red threat area is always contained inside the yellow area.

4.5.2 Observation History Table.

In the SNOW stations table, right-clicking on a station ID will produce a 24 hour observation history table (see Fig 4.5.2-1). The user can choose which fields will appear by clicking on the **Configure** button on the top right of the table. The OH Table configuration GUI will appear (Fig. 4.5.2-2)

Station ID: KNAK#METAR Configure Update Close

Time (UTC)	Wind Dir (deg)	Wind Spd (kt)	Wind Gust (kt)	P (in)
20:54 Oct 24	300	7	16	1013
19:54 Oct 24	290	8	18	1012
18:54 Oct 24	310	13	21	1012
17:54 Oct 24	310	16	23	1012
16:54 Oct 24	290	17	24	1012
15:54 Oct 24	290	13	22	1012
14:54 Oct 24	320	11	24	1012
13:54 Oct 24	300	15	25	1012
12:54 Oct 24	300	8	17	1012
11:54 Oct 24	290	7	N/A	1011
10:54 Oct 24	280	8	N/A	1011
09:54 Oct 24	290	7	N/A	1010
08:54 Oct 24	290	8	N/A	1010
07:54 Oct 24	290	7	N/A	1011
06:54 Oct 24	290	8	15	1011
05:54 Oct 24	300	7	N/A	1011
04:54 Oct 24	290	7	N/A	1012
03:54 Oct 24	290	7	14	1012
02:54 Oct 24	300	9	N/A	1012
01:54 Oct 24	290	9	22	1012
00:54 Oct 24	290	7	N/A	1012
23:54 Oct 23	290	7	16	1012
22:54 Oct 23	300	9	21	1011
21:54 Oct 23	280	11	19	1011

Figure 4.5.2-1. Observation History Table. The parameters in the table will change depending on whether the site is land or sea-based, and also by how the user configures it.

Caesar Cioppi says…..

Unlike the SNOW zone/station table, the OH table's columns cannot sort by value. The latest values are always at the top, the oldest at the bottom.

Inside the configuration GUI will be two columns of parameters, one for METAR stations and one for maritime stations. The **Maritime** button is an artifact from SAFESEAS which is not functional in SNOW (it will be removed in a future build). Selecting or de-selecting each

individual variable will determine whether the parameter appears in the OH Table. Select the **Save** button to store the configuration, and select the OH Table's **Update** button (which will have turned white) to see the new configuration in the OH Table.

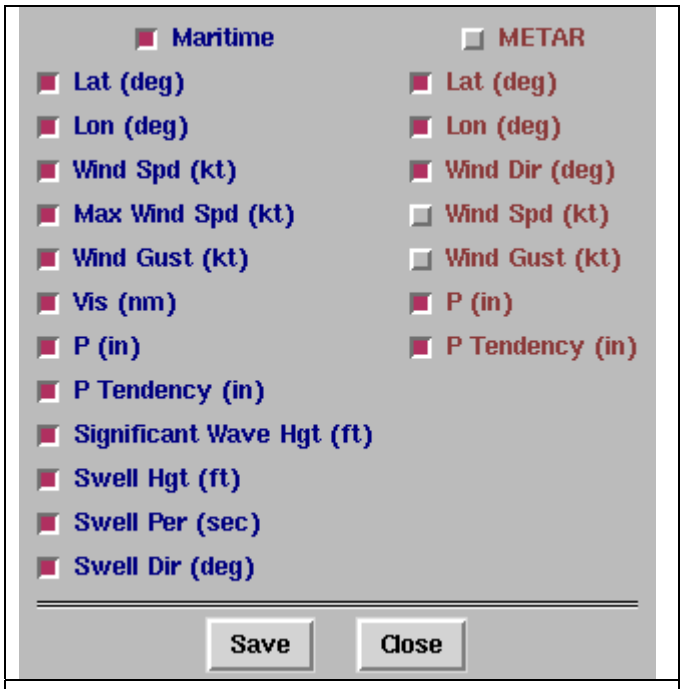


Figure 4.5.2-2. The OH Table configuration GUI. The Maritime selections on the left are a SAFESEAS holdover which have no effect on SNOW. On the right side, wind speed and wind gust have be de-selected, so they will not be seen in the OH Table.

4.6 Editing Zone/Station Table Display Thresholds

To determine the threat level for a cell in the zone table, SNOW compares observation values for the most recent report for each station within the zone against thresholds for two alert levels. The most severe individual observation value threat level becomes the threat level for the zone. The thresholds for the two alert levels are both variable- and zone-specific. The editor for the display thresholds allows each site to customize the thresholds.

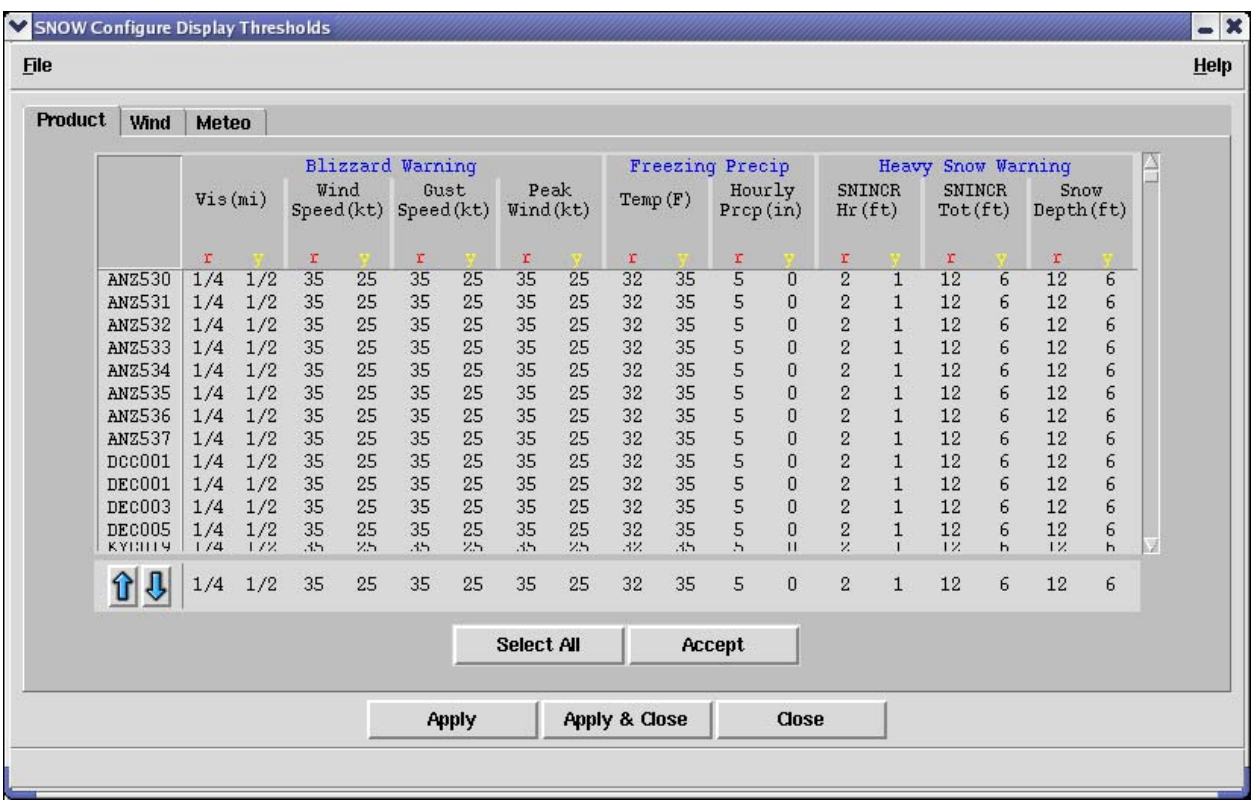
The editor for the display thresholds can be launched from the zone table only. Click the "Configure Thresholds" button near the top of the zone table (Figure 4.4-1) to bring up the editor

for the display thresholds (Figure 4.6-1). The display thresholds for each variable and product, for each zone in the monitoring area, are shown in the scrolling list in the center of the editor. To conserve space, the thresholds have been organized into multiple pages, with the selectable tabs for each page on the top left hand side:

- The **Product** page includes thresholds for the Blizzard Warning, Frozen Precipitation, and Heavy Snow Warning columns.
- The **Wind** page includes Wind Speed, Wind Gust, Peak Wind, and Wind Direction.
- The **Meteo** page includes Visibility, Temperature, Dewpoint, Pressure, Wind Chill, Frostbite Time, Snow Depth, SNINCR Hourly, and SNINCR Total.

To change display threshold values, first choose one of the pages above. Then select the zones to which the new threshold values will apply.

- to select a zone, left-click on its ID. Multiple zones may be selected in this manner.
- to select a contiguous range of zones within the list, first left-click on the zone ID on one end of the desired range, and while holding down the mouse button, drag the cursor across the zone IDs in the desired range. Release the mouse button. The selected range of zones is added to any zones already selected.
- to select all zones when no zones are yet selected, click the "Select All" button near the bottom of the GUI. This button is enabled only when no zones are currently selected.
- to de-select a zone, left click on its ID. De-selection can only be done one zone at a time.
- to de-select all selected zones, click the "De-Select All" button near the bottom of the GUI. This button is enabled only when at least one zone is already selected.



	Blizzard Warning								Freezing Precip				Heavy Snow Warning					
	Vis(mi)		Wind Speed(kt)		Gust Speed(kt)		Peak Wind(kt)		Temp(F)		Hourly Prcp(in)		SNINCR Hr(ft)		SNINCR Tot(ft)		Snow Depth(ft)	
	r	y	r	y	r	y	r	y	r	y	r	y	r	y	r	y	r	y
ANZ530	1/4	1/2	35	25	35	25	35	25	32	35	5	0	2	1	12	6	12	6
ANZ531	1/4	1/2	35	25	35	25	35	25	32	35	5	0	2	1	12	6	12	6
ANZ532	1/4	1/2	35	25	35	25	35	25	32	35	5	0	2	1	12	6	12	6
ANZ533	1/4	1/2	35	25	35	25	35	25	32	35	5	0	2	1	12	6	12	6
ANZ534	1/4	1/2	35	25	35	25	35	25	32	35	5	0	2	1	12	6	12	6
ANZ535	1/4	1/2	35	25	35	25	35	25	32	35	5	0	2	1	12	6	12	6
ANZ536	1/4	1/2	35	25	35	25	35	25	32	35	5	0	2	1	12	6	12	6
ANZ537	1/4	1/2	35	25	35	25	35	25	32	35	5	0	2	1	12	6	12	6
DCC001	1/4	1/2	35	25	35	25	35	25	32	35	5	0	2	1	12	6	12	6
DEC001	1/4	1/2	35	25	35	25	35	25	32	35	5	0	2	1	12	6	12	6
DEC003	1/4	1/2	35	25	35	25	35	25	32	35	5	0	2	1	12	6	12	6
DEC005	1/4	1/2	35	25	35	25	35	25	32	35	5	0	2	1	12	6	12	6
	1/4	1/2	35	25	35	25	35	25	32	35	5	0	2	1	12	6	12	6

Figure 4.6-1: Threshold editor for the SNOW zone/station table displays. Editor is shown with the Product tab activated.

Once the desired zone(s) are selected, set their thresholds. In the row of threshold values below the zone thresholds scrolling list, click on the threshold value you wish to change. Then click the up or down arrows (on left edge of the thresholds) to change the threshold's value. Repeat this procedure for each threshold value you wish to change for the selected zones. The GUI will not allow you to set a red level threshold to a value less hazardous than the yellow level threshold's value. You also cannot set a yellow level threshold to a value more severe than the red level threshold's value.

Setting thresholds for wind direction must be handled in a special fashion. Those parameters each have "From" and "To" columns for red and yellow levels. The "From/To" selections are used to define an arc of azimuth values which will be colored in red or yellow on the trend hodograph. The wind direction cells in the station table will take on the red/yellow colors if the values lay inside those arcs. As was discussed in section 4.2.2, there are two rules to follow when choosing these azimuthal limits:

- The "From" and "To" bearings will be assumed by SNOW to be in a clockwise order. For Example: A "From" value of 359 and a "To" value of 1 will produce an arc of 2 degrees, while a "From" value of 1 and a "To" value of 359 will produce a near-circle of 358 degrees.
- The red alerting area must always be contained within the yellow alerting area. The settings will otherwise not be accepted by SNOW.

When all the thresholds for the variables' threat levels are as desired, click the "Accept" button to change the values for the selected zones in the scrolling zone thresholds list.

Previewing Threshold Changes:

To get a preview of how the new thresholds will affect the zone table, click the "Apply" button. The zone table will be redrawn with threat levels based on the new threshold values, but the editor will remain open for further editing. Clicking the "Apply & Close" button will cause the zone table to be redrawn with threat levels based on the new threshold values, and close the editor. Note that changes made to threshold values in this manner are not saved permanently. Pressing "Close" will close the editor without applying any changes that have not yet been applied.

Permanently Saving Display Threshold Changes:

Multiple sets of customized display thresholds may be saved, recalled, and deleted. For these capabilities, use the File menu options accessed on the menu bar of the editor. The "File" menu offers the following actions:

Open	Open a file holding an existing set of thresholds and load the set into the editor.
Save As	A list of display threshold file names is presented. Select an existing file name from the list, or enter a new file name manually. The threshold values displayed in the editor are saved in the user-specified file.
Select As Default	A list of display threshold file names is presented. Select a file name from the list, or enter a file name manually. The threshold values stored in the selected file will be the threshold values subsequently used each time the zone table is launched. The threshold values in the selected file are not loaded into editor.
Load Default	The threshold values in the display thresholds file currently specified to be the default are loaded into editor.
Delete	Permanently delete a display thresholds file. Select a file name from the list, or enter the file name manually.
Exit	Closes the editor without saving or applying any additional editing changes.

Caesar Cioppi says:

None of the “File” menu actions affect a currently-displayed zone table until either the “Accept” button or “Accept & Close” button is clicked.

When new Zones/Counties have been added to the Monitoring Area:

As noted in Section 4.2.1.6, default display thresholds for each product and variable are assigned to any new zone or county added to the monitoring area via the monitor area editor. If different display thresholds are desired, they must be manually changed by opening the file containing the display thresholds data set, editing the display thresholds for each newly-added zone and county, and then saving the file under the desired name. This process must be repeated separately for each display thresholds file where the default display thresholds are to be modified.

5 *Getting Help*

To report problems or ask questions about the operation of SNOW in general, please use the new SNOW list server. To join:

1. Go to “http://infolist.nws.noaa.gov/read/login/”

2. Select "all forums".

3. Scroll down to the SNOW list, and click "subscribe" on the right column.

4. Enter your email address, name, and password.

Your membership will be approved by the list administrator, and then once approved, you can send, view, and receive messages.

Please visit the SNOW homepage at:

“http://www.nws.noaa.gov/mdl/snow”

for more information, including the latest SNOW news, troubleshooting tips, and version release information.