

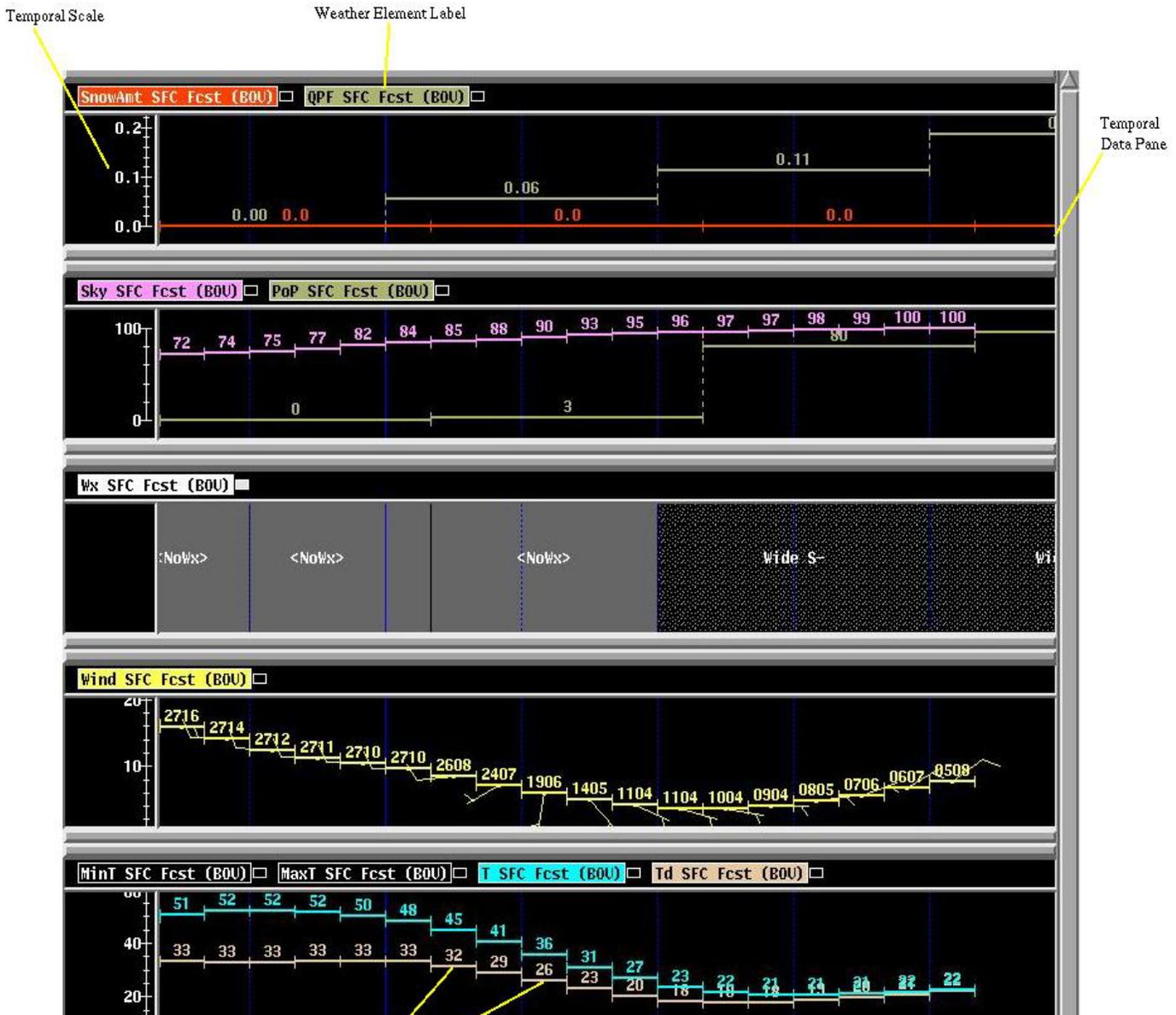
# Temporal Editor Training Guide

## Temporal Editor

The Temporal Editor is another editor on the Graphical Forecast Editor (GFE). It presents data as a time-series and provides viewing and editing capabilities. Since time series presentations are typically based on a point, and the GFE uses grids, there must be a mapping between the grids and the time-series. The selected area on the spatial editor is sampled and then presented as a time-series.

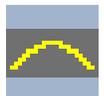
## Temporal Editor Appearance

Up to this point you have been using tools in the Grid Manager and Spatial Editor to edit data spatially. There is, however, a different type of editor in the GFE, called the Temporal Editor, that edits data temporally. In the editor, the gridded data is presented data time-series format. This time-series represents the average value over an area that you define (the current edit area) as a function of time. An example of the Temporal Editor display can be found below.



The table below briefly describes the components of the Temporal Editor.

Object	Purpose
Time Scale	Displays the time in GMT
Scale	Displays the data scale for that Temporal Pane
Selected TimeRange	Displays the currently selected TimeRange
Temporal Data Selector	Controls the visibility of the corresponding weather element
TimeSeries Display	A plot of the time series for that weather element over the selected area
Image Toggle	Toggles the display from image to graphic
Temporal Pane Sizer	Changes the vertical size of individual temporal panes.

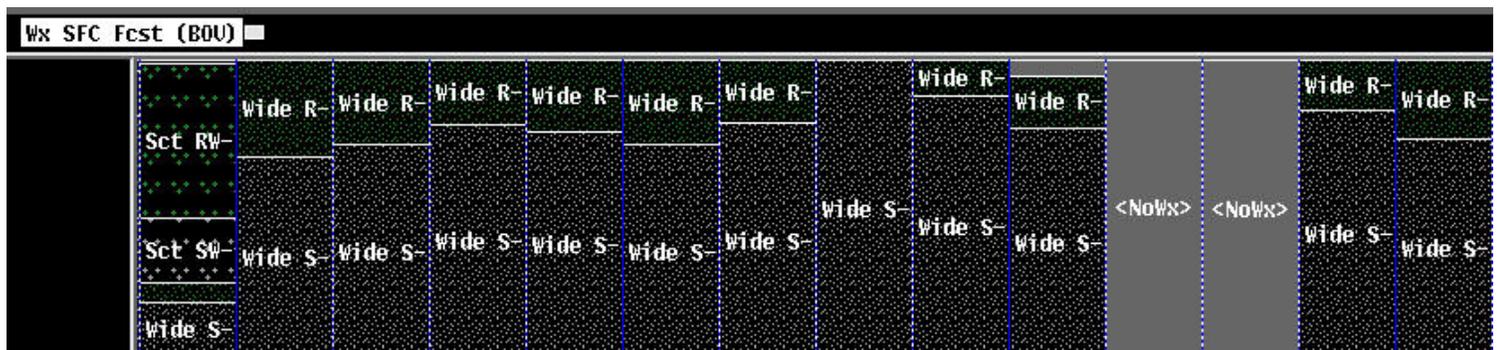


To get to the Temporal Editor, select the button in the button bar that looks like the picture at the right.

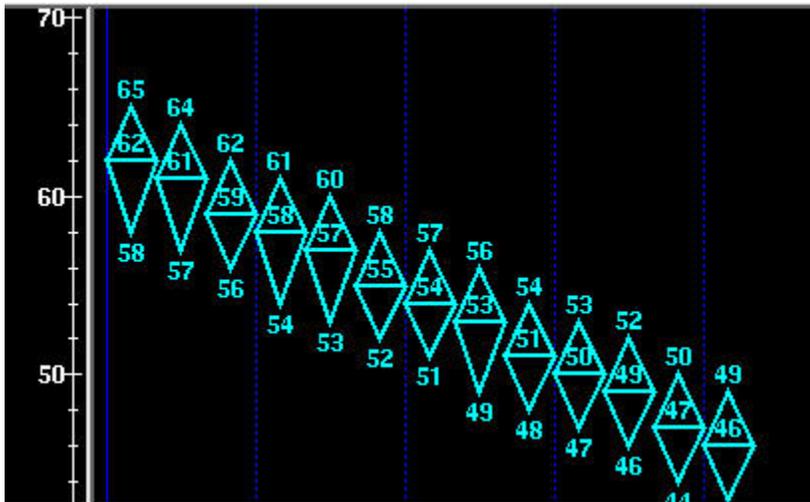
When you select this button the Grid Manager will disappear and the Temporal Editor will replace it. To get back to the Grid Manager, just press the same button again. Note that the button will change in appearance each time it is selected. If you see no data displays in the Temporal Editor, use the Select Points tool to define an edit area on the Spatial Editor. The edit area that you select in the Spatial Editor is sampled and averaged to produce the time series display.

The weather elements displayed in the Temporal Editor depend upon the state of weather elements in the Grid Manager, and the Temporal Editor Weather Element Mode.

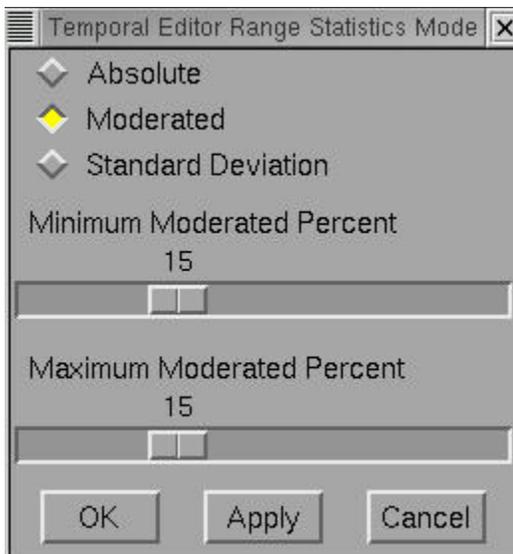
The different type of visualizations are shown here. Several of the visualizations, such as the TimeBar, show the average value as determined from sampling the grid data over the current edit area. For WEATHER and DISCRETE type of weather elements, the TEColorBar visualization will show the various ratios of different weather and discrete values in the sampling area, as shown below:



Some of the visualizations, such as the RangeBar as shown below, will show you data distribution information across the edit area. The user can control the statistics chosen to be displayed, from absolute maximum/minimum, to moderated values, and to standard deviation values.



The TE Statistics Dialog, available from the GFE->Viewing Preferences->Temporal Editor Statistics Mode menu, controls the type of statistics that are presented:



### Temporal Editor Tools

Each pane of the temporal editor contains one tool that depends on the type of the data displayed. For example, temperature is a scalar, so the temporal Adjust Scalar tool is the only tool available when temperature is displayed. The Adjust Vector tool edits wind data and the temporal Set Value tool edits weather and obstructions. The table below lists each of the tools, mouse actions, and functions. Note that you do not select a tool icon when using the Temporal Editor as you did with the Spatial Editor since the tool is implied by the specific data type displayed in the data pane.

Data Type	Action	Function
Scalar	MB1 Click & MB1 Drag	Adjust Gridpoint Values

Vector	MB1 Click & Drag	Adjust Vector Magnitude
Vector	Shift MB1 Click & Drag	Adjust Vector Direction
Weather	MB1 Click	Set Wx Value to current pickup value
Discrete	MB1 Click	Set Wx Value to current pickup value

Button 3 popups are available when using the Temporal Editor tools. Refer to the Button 3 Popup Reference Guide for more details.

### Temporal Editor Scale Tools

In addition to the tools that modify data, there's a zoom tool associated with the vertical scale located just to the left of the time series display. The next table shows how you can manipulate the vertical scale with the mouse. An exercise follows that will help you familiarize yourself with the manipulating the temporal editor scale. Note that the scale tools only apply to Scalar and Vector data types.

Action	Function
MB1 click	Zoom out
MB2 click	Zoom in
MB1 drag	Pan (slide scale up or down)

**Purpose:** To manipulate the Temporal Editor Scale

1. Select an edit area in the Spatial Editor so that one of the Temporal Editor pane contains some data.
2. Move the cursor to the far left of the Temporal Editor pane and MB2 click. Note that the scale zooms in.
3. Now MB1 click. Note that the scale zooms out.
4. Now MB2 click two or three times. Then MB1 press and drag up and down. Note that the scale and the data pan vertically to match your mouse movements.

The Temporal Editor scale pane offers options via the button 3 popup menu. These options control the scaling to fit to data and full view. The full set of Temporal Editor popups are described in the Button 3 Popup Reference Guide.

Now that you know how to manipulate the Temporal Editor pane, it's time to edit some data temporally.

For the next set of exercises, it is best to set up your GFE so that both the spatial and temporal editors are visible simultaneously. For all of the exercises, you'll be asked to define an edit area then edit the data using the temporal editor. Using the temporal editor is similar to using the grid point tools. First you define the area over which you want to edit using edit areas, then, you perform the operation.

### Editing Data Temporally

## Editing Scalar Data Temporally

**Purpose:** Modify a scalar grid values using the temporal editor

Before you begin: Set up your GFE so that the spatial and temporal editors are visible. Load T (temperature) via the Weather Element->Weather Element Browser... dialog.

1. Make or find a temperature grid and display it as an image in the spatial editor.
2. Clear the edit area by clicking MB1 on the Clear button.
3. Use the Select Points tool to define an edit area the size of a few counties.
4. Find the T (temperature) weather element in the temporal editor. Vertically stretch the size of the temporal editor pane so that there's plenty of room to see the time series display.
5. In the temporal scale, located to the left of the time series display, click MB2 to zoom in until the minimum and maximum values are about 20 degrees F apart.
6. Find the data point in the time series that represents the grid displayed in the spatial editor. This point is identified by the dotted yellow line.
7. Click MB1 about 10 degrees F above the data point. Note the change in the spatial editor display. All the points you identified in the spatial editor have been assigned the value you selected in the temporal editor. This is called the "absolute" mode for temporal editing.
8. Initialize about 12 hours worth of temperature data from you favorite model. Use the interpolation facility (Grids->Interpolate) to fill in the gaps and get a smooth time-series curve.
9. Back in the temporal editor pane, move the cursor to somewhere near left side of the time-series display. Move the cursor over one of the horizontal lines that display the temporal values and press and hold MB1 and slowly drag horizontally to define a new temperature curve. As you move the cursor to the next data point, it should snap to your cursor position. Each time this happens, you are modifying data in a different grid. Note that you **MUST** start the edit operation over one of the displayed values. Starting the operation in a gap will not modify any data.
10. Release MB1.
11. Step through your newly-modified grids using the Grid Manager or the Step Forward / Step Backwards buttons to see that you modified a series of grids with one edit operation.

Repeat this exercise until you are comfortable using the Adjust Scalar temporal tool. This and all the temporal tools are capable of modifying a large quantity of data with only a few edit operations. Used properly, these tools can save you lots of time.

## Editing Vector Data Temporally

**Purpose:** Modify a vector grid values using the temporal editor

Before you begin: Set up your GFE so that the spatial and temporal editors are visible. Load Wind via the Weather Element->Weather Element Browser... dialog. Make sure that the GFE->Editing Preferences->Temporal Edit Mode: Relative is deselected..

1. Make or find a Wind grid and display it as an image in the spatial editor.
2. Set the Vector edit mode located main menu bar GFE->Editing Preferences->Vector Edit Mode->Both to edit both magnitude and direction.
3. Use the Select Points tool to define an edit area the size of a few counties.
4. Find the Wind weather element in the temporal editor. Vertically stretch the size of the temporal editor pane so that there's plenty of room to see the time series display.
5. In the temporal scale, located to the left of the time series display, click MB2 to zoom in until the minimum and maximum values are about 20 knots F apart. Clicking MB1 zooms out. Dragging MB1 pans the scale.
6. Find the data point in the time series that represents the grid displayed in the spatial editor. This point is identified by the dotted yellow line.
7. Click MB1 about 10 knots above the data point. Note the change in the spatial editor display. All the points you identified in the spatial editor have been assigned the value you selected in the temporal editor.

8. Release MB1.
9. Press and hold MB1 and move the cursor up or down to adjust the vector data point again. Note how the wind barb updates as you adjust the magnitude.
10. Release MB1.

If you're editing wind magnitude only, the vector adjust tool works just like the scalar adjust tool. It's when you edit the direction that things get interesting.

1. Press and hold down the Shift key on your keyboard.
2. Move the cursor over any wind data point, press and hold MB1 and adjust. Note that the wind direction is changing while the magnitude remains constant. The wind direction shifts from North clockwise and back to North as you move from the lower extreme of the temporal pane to the upper extreme of the temporal pane.
3. Release MB1.

This exercise demonstrates that with the Shift button up, the temporal adjust vector tool changes the magnitude. With the Shift button down, the tool changes the wind direction.

## Editing Weather Data Temporally

**Purpose:** Modify a weather grid values using the temporal editor

Before you begin: Set up your GFE so that the spatial and temporal editors are visible. Load Wx via the Weather Element->Weather Element Browser... dialog. Make sure that the TE Edit Mode: Relative button is still deselected.

1. Make or find a Wx grid and display it as an image in the spatial editor.
2. Use the Select Points tool to define an edit area the size of a few counties.
3. Find the Wx weather element in the temporal editor. Vertically stretch the size of the temporal editor pane so that there's plenty of room to see the time series display.
4. In the Spatial Editor legend, select a pickup value by clicking MB2. You may need to invoke the set value dialog to add additional weather types.
5. Find the data point in the time series that represents the grid displayed in the spatial editor. This point is identified by the dotted yellow line.
6. Click MB1 on this data point in the Wx pane of the temporal editor. You should see the temporal editor paint the same color/pattern as you selected in the spatial editor legend. The spatial editor will show you that the area that you selected in Step 2 has been set to this new value. Even if there were multiple weather types displayed previously, when the MB1 action is executed, all grid points in the edit area will be set to the new value.

There are several other ways to change the data in the temporal editor for Wx. A MB3 popup menu over a data point in the time series will bring up a menu containing several items. The items that will edit the data are Set..., Set to Recent Value..., and Set to Common Value.... The Set... brings up the Set Weather Dialog. The Set to Recent Value brings up a cascade menu of recently set pickup values for weather, and the Set to Common Value... brings up a cascade menu of commonly set pickup values. Unlike the color bar on the spatial editor, these menu entries set not only the pickup value, but also modify the data.

The set of common weather values are site-configurable through the gfe configuration file's common weather values entry.

The temporal Set Value tool does not support drag operations as with the scalar and vector tools. Only MB1 clicks, or selection of a common value, recent value, or using the Set... will modify data in the Wx pane.

MB2 click on a weather value in the temporal editor display can also be used to set the pick-up value.

## Editing Discrete Data Temporally

**Purpose:** Modify a discrete grid values using the temporal editor

Before you begin: Set up your GFE so that the spatial and temporal editors are visible. Load Wx via the Weather Element->Weather Element Browser... dialog. Make sure that the TE Edit Mode: Relative button is still deselected.

1. Make or find a DISCRETE grid, such as Headlines, and display it as an image in the spatial editor.
2. Use the Select Points tool to define an edit area the size of a few counties.
3. Find the DISCRETE weather element in the temporal editor. Vertically stretch the size of the temporal editor pane so that there's plenty of room to see the time series display.
4. In the Spatial Editor legend, select a pickup value by clicking MB2. You may need to invoke the set value dialog to add additional discrete types for the weather element you have chosen.
5. Find the data point in the time series that represents the grid displayed in the spatial editor. This point is identified by the dotted yellow line.
6. Click MB1 on this data point in the Discrete pane of the temporal editor. You should see the temporal editor paint the same color/pattern as you selected in the spatial editor legend. The spatial editor will show you that the area that you selected in Step 2 has been set to this new value.

There are several other ways to change the data in the temporal editor for discrete weather elements. A MB3 popup menu over a data point in the time series will bring up a menu containing several items. The items that will edit the data are Set..., Set to Recent Value..., and Set to Common Value.... The Set... brings up the Set Discrete Dialog. The Set to Recent Value brings up a cascade menu of recently set pickup values for weather, and the Set to Common Value... brings up a cascade menu of commonly set pickup values. Unlike the color bar on the spatial editor, these menu entries set not only the pickup value, but also modify the data.

The set of common discrete values are site-configurable through the gfe configuration file's common discrete values entry.

The temporal Set Value tool does not support drag operations as with the scalar and vector tools. Only MB1 clicks, or selection of a common value, recent value, or using the Set... will modify data in the pane containing the Discrete weather element.

MB2 click on a discrete value in the temporal editor display can also be used to set the pick-up value.

## Editing Temporal Data in Relative Mode

**Purpose:** Modify scalar grid values in Relative Edit mode

The previous temporal editor exercises demonstrated how TE Absolute mode works. Every time you make a change to the temporal value, that value is assigned to the entire area you selected in the spatial editor. TE Relative mode works differently in that the relative change is applied to the selected area. For example, if you made a +5 degree change to your temperature time-series, 5 degrees is added to every point in the selected area. This preserves the relative gradients in the area which is sometimes very desirable.

Before you begin: Set up your GFE so that the spatial and temporal editors are visible. Load T (temperature) via the Weather Element->Weather Element Browser... dialog if T is not loaded already.

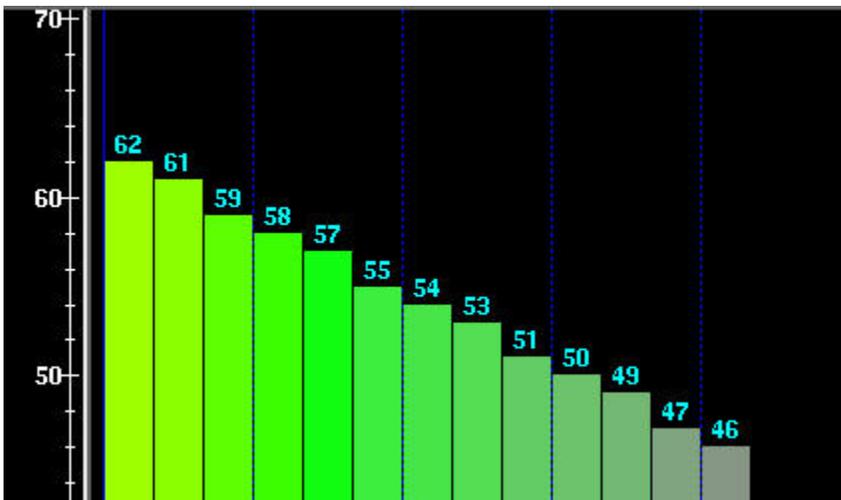
From the main menu, check to make sure that GFE->Editing Preferences->Temporal Editor Mode: Relative is on.

1. Make or find a temperature grid and display it as an image in the spatial editor.
2. Use the Select Points tool to define an edit area the size of a few counties. Try to select an area where there is a temperature gradient.

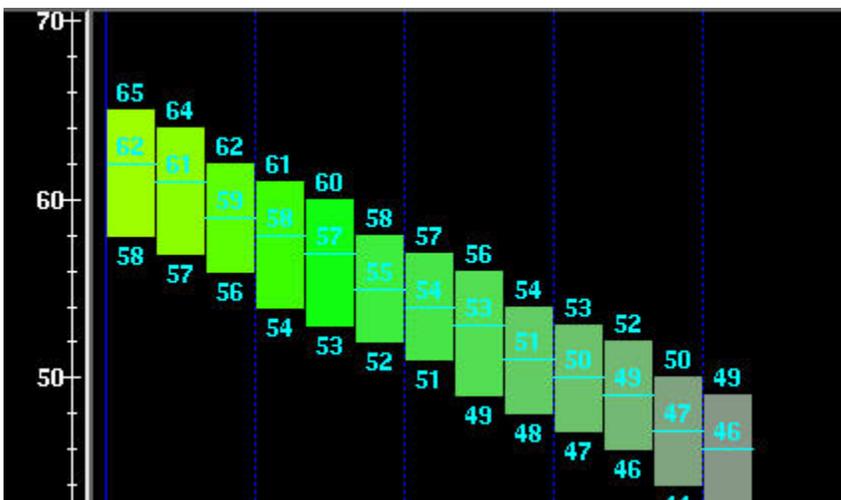
- Find the T (temperature) weather element in the temporal editor. Vertically stretch the size of the temporal editor pane so that there's plenty of room to see the time series display.
- In the temporal scale, located to the left of the time series display, click MB2 to zoom in until the minimum and maximum values are about 20 degrees F apart.
- Find the data point in the time series that represents the grid displayed in the spatial editor. This point is identified by the dotted yellow line.
- Adjust this data point about 5 to 10 degrees higher. Note the change in the spatial editor display. The 5-10 degree change you applied to the time-series point has been applied to all of the points inside the selected area. The gradient that was present before the temporal edit should still exist.
- Use the MB1 drag operation in the temporal editor to modify several grids with the same operation. Step through these edited grids to verify that the data were modified inside the selected area.

## Temporal Editor Visualizations

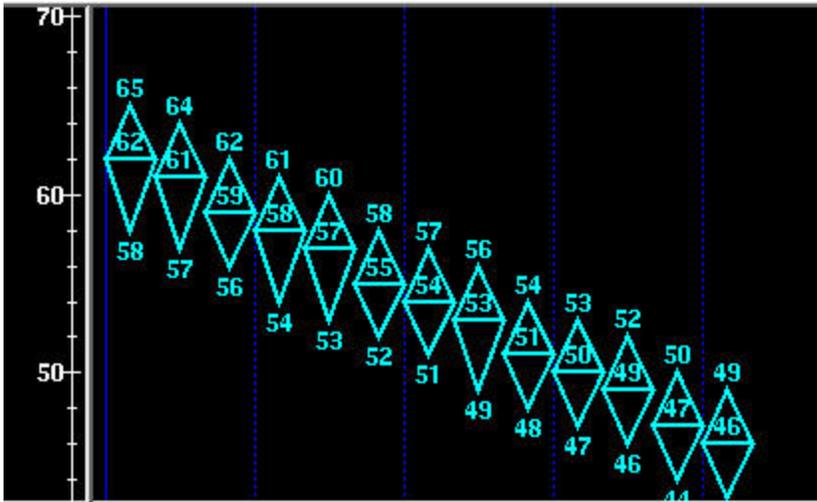
The following show examples of each of the available visualizations; the names of the visualization are those that appear in the [Display Attributes Dialog](#) as well as the name in the configurable item [we\\_temporalGraphicType](#) and [we\\_temporalImageType](#):



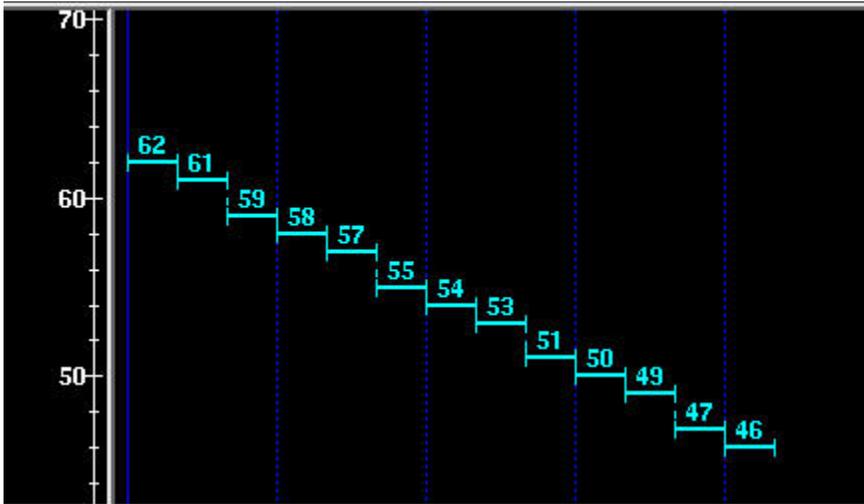
TEColorBar



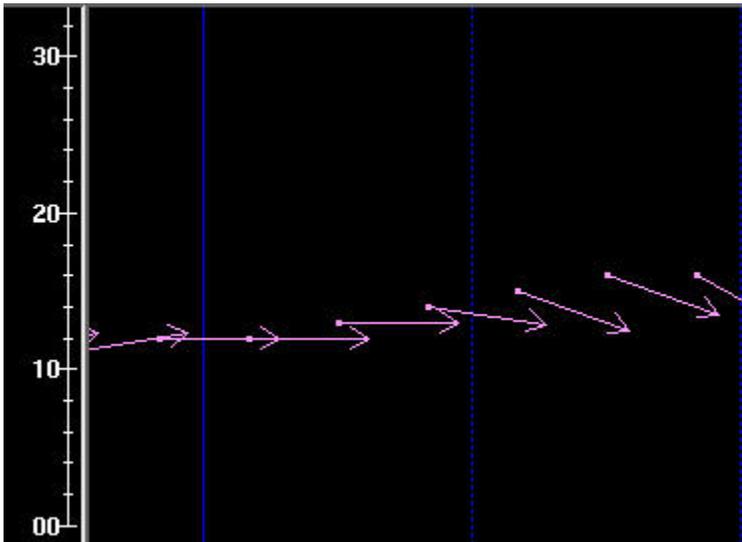
TEColorRangeBar



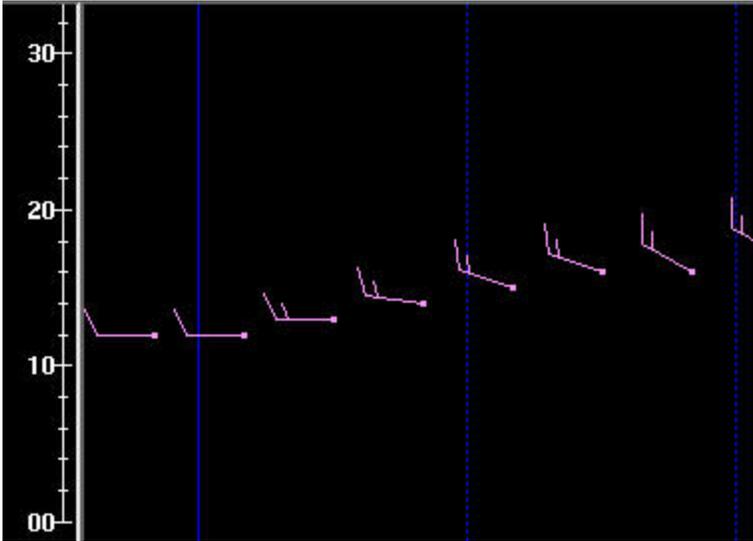
RangeBar



TimeBar



WindArrow



WindBarb