Forecast Production Assistant Version 8

User's Manual

Contents

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Chapter 1

What is the Forecast Production Assistant (FPA)?

1.1 FPA: A Productivity Tool for Meteorologists

There is an ongoing discussion regarding automation of weather forecasting, and whether automation can replace human forecasters. It is true that the tools available to a meteorologist certainly influence what happens during a forecasting shift. It is equally true that some automated processes are relatively inaccessible to human intervention. However, the FPA was designed to enhance the role of the human forecaster, not decrease it. It is very difficult to program sufficient contextual information into a computer, and so far humans routinely outperform pure automation if the weather information needs of end users are relatively specialized. Humans can adapt in the face of uncertainty and synthesize highly variable compact messages depending on what is happening and what end users need to know. There are many economic cases where human decisions are valued, and it is in those scenarios that the FPA will be of most interest.

The FPA is a "representation" tool, and so it is similar to but different from visualization and drawing tools. It has a graphical interface and users can interact with meteorological "objects". The "objects" exist as discrete or continuous fields within the system and can be "queried" as to their state, essentially making it possible to think of any collection of "objects" as a "database". Once forecasters are satisfied with their "database" (or "depiction" set) automated processes can be invoked to generate products.

It is important to note that the FPA is not a monolithic program that all forecast processes must feed through. There are certainly visualization and analysis tasks that can and possibly need to be performed by other software. The question is, "What happens *after* visualization and analysis?" Hopefully the results of visualization and analysis lead to an improved mental model of current weather conditions as they relate to the needs of end users. Before FPA, this mental or conceptual model was inaccessible to computerized processes. Now with FPA, forecasters can construct their own (or shared) representation of what needs to be communicated to end users as products.

The object representation technique in FPA is not somehow anti-numeric-model, nor does it necessarily imply model "modification". The choice of models available is a weather office policy decision. The FPA philosophy simply reflects the reality that not all models come up with the same result, and forecasters may have extra information inaccessible to numeric models. The optimal mix of human-machine interaction is still a subject of debate, and the debate will continue to evolve as technology progresses. Meanwhile, there are real end users of forecast information that need reasonably-priced, high quality, expert advice *now*. FPA is best used when communication goals are kept in mind.

Design choices in the FPA are frequently the result of feedback from operational forecasters, and so further and ongoing feedback is encouraged. It is hoped that over time, FPA technology will simply be seen as a way to get things done.

1.2 The FPA philosophy

The Forecast Production Assistant (FPA) puts numerical weather *element* prediction products directly in the hands of forecasters in a graphical format on computers.

The FPA gives you tools to:

- overlay and compare fields
- prepare typical subjective prognoses in a graphical format
- prepare animation loops
- generate end-user products like public, aviation, and marine forecasts directly from the graphical prognoses.

One of the goals of the FPA is to separate the forecasting function (the meteorology) from the product generation function. Product generation applications include systems to produce graphical and tabular forecast products (*SVGMet*, *PSMet* and *TexMet*).

A strong advantage to using the FPA to produce forecasts is the ability to generate a variety of products in different formats from one common working medium: the meteorological object database. This ensures consistent products for a variety of users.

The FPA is a popular platform for running local models (*Allied Models*). You can view and edit the input fields used by the model; then, after the model has run, you can import the results back into the FPA for visualization. The FPA-Allied Model interface is designed to be a generic black box. The FPA System Administrators Manual gives instructions for users who wish to implement their own Allied Models into the FPA.

Chapter 2

The FPA Model

2.1 Fields and depictions

In the FPA, a weather *element* at a specific *level* (for example, pressure at msl) is called a *field*.

A field is classified as one of three types:

Normal
Fields which change frequently over time and whose representation is valid only at a specific time. These are typically valid on an hourly basis but can be set to minutes as well. Examples are msl pressure or system weather.

Daily
Fields which have values valid for a specific day or portion of a day, for example, maximum temperature or minimum temperature.

Static
Fields which change slowly enough to be considered to remain unchanged over a considerable period of time, for example, sea ice.

Normal fields are grouped into *depictions*, a collection of fields valid at the same time.

2.2 The depiction sequence

Fields can be grouped into depictions, a collection of fields at a specific time. A *depiction sequence* is a collection of depictions that shows how the different fields change over time. A field does not have to exist in every depiction.

Daily and static fields are in independent time sequences since they may begin or end in the middle of a day and span over several depictions. For example, maximum temperature could be defined as the highest temperature between early morning and late evening on a particular day.

Note that normal fields are grouped as depictions in one time *sequence*, but that individual daily and static fields each have separate time sequence.

Figure 2.1: Depiction sequence with Normal fields

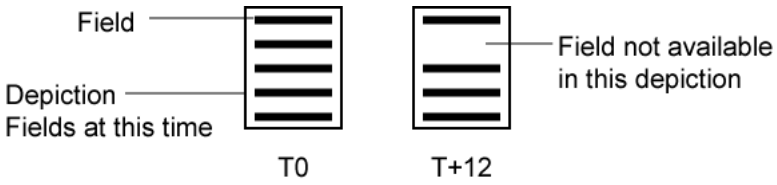
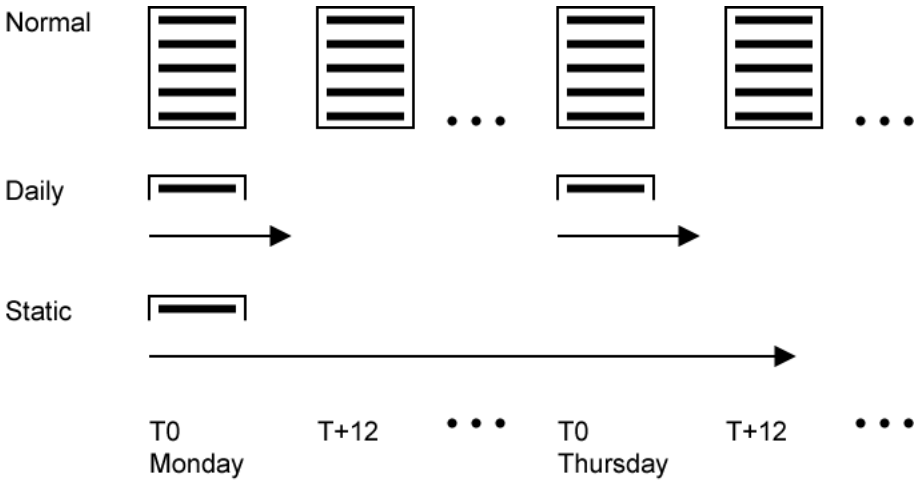


Figure 2.2: Depiction sequence with Normal, Daily and Static fields



2.3 The FPA process

As a meteorologist, you add input to the FPA by using the field editors to identify and modify significant *features* on depictions and to link the features through a depiction series. This process, *time linking*, allows the FPA to interpolate the depictions through time. For many forecasts, the FPA needs more than a few depictions to reasonably describe changes in weather parameters over time.

In the FPA, you have access to any field in the time sequence, but you can only work in (that is, edit or link) one field at a time.

This is a brief overview of the FPA process:

1. Previously produced working depictions are automatically loaded into your active time sequence.

   You can use current information (new model predictions, observations, etc.) to modify or replace fields and you can use field editors and forecast tools to edit the fields.

2. You link the significant points on normal depictions to show how the weather parameters evolve over time.

   Use the Time Link tool to do this.

   Note: If you are producing only graphical products, you may not need interpolated depictions.

3. The FPA interpolates the depictions to create a set of intermediate depictions.

4. The FPA creates forecast products or runs *Allied Models* based on the series of interpolated depictions. You can edit the resulting forecast products if desired.

2.4 Example process

1. Load any needed normal, daily or static fields into your active time sequence.

   Loading Normal fields into a depiction, (Section 5.1.1)
   Loading Normal fields into a depiction at a different time, (Section 5.1.2)
   Loading Daily fields into a time sequence, (Section 5.1.3)
   Loading Static fields into a time sequence, (Section 5.1.4)

2. Use Options to define the way you want your depictions to appear.

   Displaying map overlays, (Section 4.3.2)
   User Interface Preferences, (Section 4.7.2)
   Defining T0 depiction, (Section 4.4)

3. Select one or more *guidance* products.

   Selecting guidance fields, (Section 6.4)
   Changing or restoring the appearance of a field, (Section 6.8)

4. Use the scratchpad to make notes on the depiction if desired. You can overlay a scratchpad on any depiction to make notes that you do not want to remain permanently on the depiction.

   The scratchpad, (Chapter 8)

5. Use the surface editor to label the main features in the depiction (e.g., label the highs and lows).

   Editing continuous fields, (Chapter 10)

6. Adjust the position of the contours if desired (e.g., you may want to deepen a low or sharpen a trough).

   Editing continuous fields, (Chapter 10)

7. Use the line editor to add fronts to your depiction.

   Editing lines, (Chapter 14)

8. Use the area editor to create weather areas and use weather attributes to define current weather parameters. The guidance annotations help you in defining the weather areas.

   Editing areas and wind areas, (Chapter 12)
   Defining area values, (Section 12.1)

9. Use Time Link to link the depictions through time. The links are used to interpolate the forecast over a specified period. Selected link chains can also be transferred to a feature motion field to be used in output products.

   Time linking and interpolation, (Section 16.1)
   Editing link chains, (Chapter 13)

10. Interpolate the depictions.

    Interpolating the linked depictions, (Section 16.3)

11. Run an allied model.

    Running Allied Models, (Section 17.3)

12. Generate the forecasts.

    Generating Forecasts and Other Products, (Chapter 17)

The exact procedure followed is individual and evolves for each person with experience.

2.5 The FPA components

2.5.1 Field editors

The FPA provides six different editors. Each is suited to a particular type of field.

continuous surface editor
: for single value grid point fields (such as pressure, temperature and wave height) - allows you to manipulate surfaces by moving, dragging, poking, stomping or merging and enables the labelling of contours and maxima and minima points.

vector field editor
: for component grid point fields with both magnitude and direction (such as wind and ocean waves) - allows you to change surfaces by moving, dragging, poking, stomping or merging and enables you to change either the magnitude or direction of the field or both.

area editor
for discrete features (such as weather and ice cover) - allows you to outline areas and divide, modify, move, merge and label the areas.

link chain editor
for time sequences (such as feature motion or travel routes) - allows you to add, move, modify, merge and adjust nodes for link chain features.

line editor
for line features (such as fronts and jet axes) - allows you to draw lines and modify, move, merge and label line features.

point editor
for point values (such as snow depth or precipitation totals) - allows you to add, move, modify, merge and sample points on your depiction.

2.5.2 Tools

Customization
You can specify which elements to display, add map overlays, change the colour of the map, set the location for dialogs on multi-headed systems, set the T0 depiction and change the appearance of the cursor.

Creating a Sequence of Weather Depictions
The FPA allows you to easily load (and then modify) a sequence of depictions. You can choose *normal*, *daily* or *static* fields from NWP, from previously archived depictions, from existing depictions, from allied model output or from any analysis or forecast process that produces grid point data (**Fields → Load**). These depictions and fields serve as the base for the creation of the forecast.

The existing depiction(s) could be from any other depiction sequence in your office or from another weather centre.

Scratchpad
The FPA provides a scratchpad to use with your depictions. This is like a clear piece of Plexiglas that you lay over your depictions. Any notations you make are on the scratchpad only. This can be useful for noting the position of a guidance feature as a function of time throughout the forecast period.

Guidance
Displays guidance fields. You can check if new guidance is available, update guidance or add guidance products, display guidance and sample guidance fields.

Time Linking and Interpolating a Sequence
You link the significant points on a normal field through time using Time Link, then interpolate them. The links define how the depictions are time interpolated. You can then animate the interpolated sequence to view the movement. You can also animate the depictions before you link to see what features on the continuous fields are significant and therefore should be linked through time.

Creating a Forecast

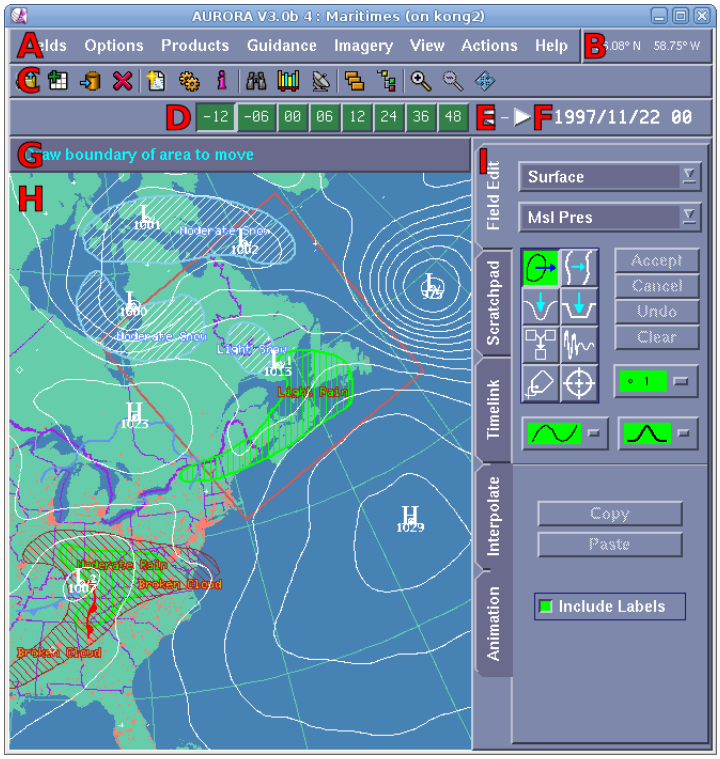
Using the FPA, you can easily create graphical and tabular displays of a forecast (**Products** → **Graphics**). You have done all the work you need to do through your analysis and creation of the depictions. Now all you have to do to create the display for a forecast is select the forecast you want from a list. The graphical or tabular product is created from the interpolated depictions. (Examples of forecast products are provided and can be modified as desired by forecast offices.)

Chapter 3

Interacting with the FPA

3.1 Tour of FPA interface

Figure 3.1: FPA Graphical Editor interface



Elements of the FPA Graphical Editor interface

A. Main Menu.

B. Lat/Lon co-ordinates of cursor on map. (see General Preferences, (Section 4.7.1))

C. The command icon bar are short-cut buttons to frequently used menu items. Hover the mouse over an icon to see which menu item it launches. (see General Preferences, (Section 4.7.1))

D. *Depiction Sequence* select time of working depiction. Part of the time selection bar (see General Preferences, (Section 4.7.1)). (see Defining T0 depiction, (Section 4.4) and Limiting the start and end time in the time sequence, (Section 4.6)),

E. Forward/backward arrows step through the depictions. Part of the time selection bar (see General Preferences, (Section 4.7.1)).

F. Date and time of the currently selected depiction. Part of the time selection bar (see General Preferences, (Section 4.7.1)).

G. Message bar displays context sensitive information. (see General Preferences, (Section 4.7.1))

H. Graphical *depiction* editing window.

I. Side panel provides access to database editing tools. (see chapters 8 through 16.)

3.2 Using pointer and keyboard devices

Selecting and picking can be done equally well with any pointing device, such as a mouse or stylus. However, a tablet with stylus is recommended for drawing. The tablet does not require you to pick up your hand while moving the cursor. Therefore, both tracing and freehand drawing are more accurate.

The left mouse button is used to pick, select and draw features. The right mouse button is used to open context sensitive menus that change functions, make choices and end or cancel actions.

3.2.1 Using the tablet with stylus

Touching the stylus to the tablet is equivalent to the left mouse button and pressing the button closest to the tip of the stylus is equivalent to the right mouse button.

3.3 Interacting with the interface

3.3.1 Selecting menu items

To select menu items:

1. Position the cursor on a menu title (such as **Guidance**).
2. Click the left mouse button.
   A list drops down.
3. Position the highlight on the menu item to select.
4. Click with the left mouse button to select.
   When you release the mouse button, the menu item is selected.

3.3.2 Selecting from a list

Using the left mouse button:

Single select
Click the item.

Block select
Click and drag over the range, or ...

Hold the **SHIFT** key down. Select the first item in the block. Select the last item in the block. Everything in between is selected as well.

Multiple select or deselect
Hold the **CTRL** key down and select each item. If you click on an item that is already selected it will be deselected. This option is useful when you want to select a number of items but not every item in a block.

3.3.3 Editing text

You can edit text in a number of areas in the FPA such as the weather entry menu or the problem report area.

Position the cursor
Click in the desired spot.

Select a word
Double-click in the word. The word is highlighted.

Select a line
Triple-click in the line. The line is selected.

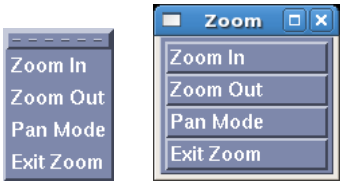
Select a block
Click four times in the block (paragraph). The block is selected.

Replace text
Click and hold to highlight the text to replace. Start typing and the text is replaced.

3.3.4 Using tear off menus

Some menus can be turned into a separate window which can be repositioned as desired. Menus of this type have a dashed line across the top of the menu. Clicking on the dashed line turns the menu into a separate window.

Figure 3.2: Example tear-off menu



(a) *Before* (b) *After*

Figure 3.3: Example Slider-bar for finely tuned value selection

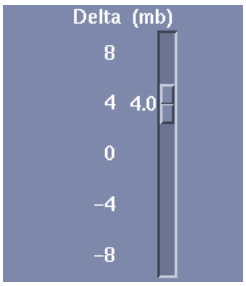
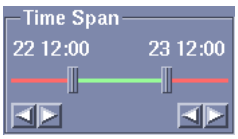


Figure 3.4: Example Slider-bar for selecting subset of depictions



3.3.5 Using slider-bars

Slider-bars serve two functions in the FPA the first is to allow finely tuned value selection, as in the stomp and poke tools (see Figure 3.3), the second is to select a subset of depictions to loop through, as on the Animation panel (see Figure 3.4).

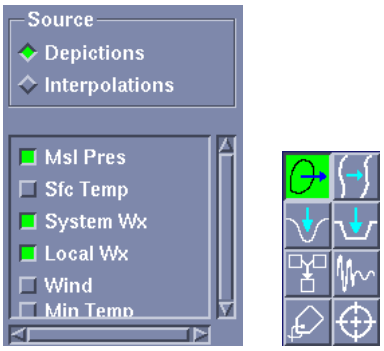
To position the slider on a slider-bar:

- Click and hold the left mouse button on the slider. Drag the slider to the desired value.
- If the slider-bar has arrow buttons associated with it, click the left mouse button on an arrow button to move the slider in the direction indicated.
- Click the left mouse button inside the slider-bar. The slider will move towards the position of the mouse click in constant increments.

3.3.6 Using radio buttons

There are two types of radio button used in the FPA:

Figure 3.5: Example radio buttons



(a) (b)

The first type of radio button can be used in groups of one or more. None, some or all buttons may be selected in a group. Click the left mouse button on a radio button to turn it on or off.

The second type of radio button must be used in groups of two or more. Exactly one button is selected in a group. Click the left mouse button on a radio button to turn it on. The previously selected button will be turned off.

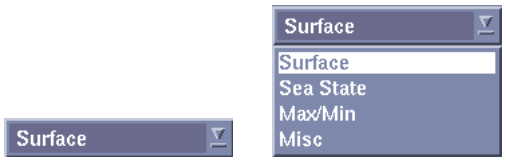
When a radio button is on it is green and appears depressed, when it is off it is gray and appears raised.

3.3.7 Using drop-down and pop-up lists

Drop-down (Figure 3.6) and pop-up (Figure 3.7) lists allow you to chose from a preset list of options.

To use a drop-down list:

Figure 3.6: Example drop-down list

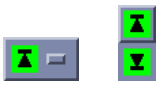


(a) (b)

1. Click the left mouse button on the icon to the right-hand side of the list button. The list appears.
2. Click the left mouse button on the item you wish to select.

You may also click on the list button, then hold and drag the mouse. Release the mouse button while over the item you wish to select. If the mouse is not over the list when you release the mouse button, then no selection is made.

Figure 3.7: Example pop-up list



(a) (b)

To use a pop-up list:

1. Click the left mouse button anywhere on the list button. The list appears.
2. Click the left mouse button on the item you wish to select.

You may also click on the list button, then hold and drag the mouse. Release the mouse button while over the item you wish to select. If the mouse is not over the list when you release the mouse button, then no selection is made.

3.3.8 Using spin-boxes

Spin-boxes allow you to specify a real or integer number. (see Figure 3.8) Set the value of a spin-box by

Figure 3.8: Example spin-box

clicking the left mouse button on the up arrow to increase the value or on the down arrow to decrease the value. You may click and hold on the up or down arrow to move through the spin values quickly. You may also click on the text and type in a new value.

3.4 Interacting with depictions

3.4.1 Picking a point on a depiction

When you are editing a depiction, the left mouse button is usually used to pick a point or weather object.

The right mouse button opens a context sensitive menu.

Warning

Previous versions of FPA have used the right mouse button for functions such as deleting objects, ending selection of a list of features, or initiating an action. Though such functionality still exists, the functions are now part of a context sensitive menu that appears when the right mouse button is clicked. (Click and hold with the right mouse button can also be used.) The context menu when in ***Field Edit*** allows the user to change tools (or even the current edit field) without having to move to the right panel. The menu changes if the user chooses functionality (such as point-by-point drawing) that requires a response to complete the action, or functionality (such as choosing objects to move) that requires a choice of what to do (such as translate or rotate or remove the chosen objects).

Some edit functions (for example, the move function) require *click and drag* interaction:

To perform a "click and drag" operation:

1. Click with the left mouse button at the first location and continue to hold down the mouse button.
2. Drag (while still holding the mouse button down) to the new location.
3. Release the mouse button.

3.4.2 Drawing with the "Freehand" tool

The "Freehand" drawing tool  draws a smooth line along the path you trace with the pointer.

To draw with the "Freehand" tool:

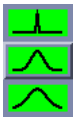
1. Move the pointer to the beginning of the curve and press and hold the left button. The cursor appears as a pencil while the button is held down.
2. Move the pointer along the path you want the curve to follow. As you move, a dotted line appears.
3. When you wish to end the curve, release the left button. The line is then shown in the appropriate colour and line style.

   Note: When drawing a closed area, stop drawing a short distance before closing the gap. The FPA automatically closes the curve for you when appropriate. If you try to draw right up to the start point, you may introduce an extraneous loop on the closed outline.

3.4.3 Drawing with the "Curve" tool

The "Curve" drawing tool  interpolates a smooth line through points that you click with the pointer or draws straight line segments between the points if the smoothing parameter is set to "sharp".

To draw with the "Curve" tool:

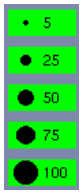
1. Choose a smoothing mode. 
2. Move the pointer to the beginning of the curve and click the left button at the beginning of the path.
3. Move the pointer along the path you want the curve to follow and click at points. The points that you click appear.
4. When you wish to end the curve, click the right mouse button and select **Done**. The line is then smoothed and shown in the appropriate colour and line style.

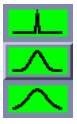
   Note: When drawing a closed area, stop drawing a short distance before closing the gap. The FPA automatically closes the curve for you when appropriate. If you try to duplicate the last point at the location of the first point, you may introduce an extraneous loop on the closed outline.

   Note: The smoothing parameter controls the extent of smoothing which occurs when the "Curve" tool is used. The "sharp" mode will result in straight line segments drawn between the chosen points. The "smooth" mode fits a smooth curve through the chosen points.

3.4.4 Modifying with the "Sculpt" tool

The "Sculpt" tool allows you to modify a line or outline interactively.

1. Choose the size of the sculpting tool (the "*puck*" size). 

   The cursor appears as concentric circles while inside the map area.
2. Choose a smoothing mode. 
3. Press and hold the left mouse button.
4. As you move the puck along the line or outline, the shape changes to fit the edge of the puck.
5. Release the left button when you have finished, or when the puck loses contact with the line or outline.

   The modified shape is displayed.

   Note: The smoothing parameter controls the extent of smoothing which occurs when the "Sculpt" tool is used. The smoothing is indicated by a second circle around the sculpting puck. The area between the circle and the puck is where smoothing occurs.

3.5 Using the Zoom feature

3.5.1 Magnifying (zooming into) a depiction

Use **Zoom In** to magnify the depiction for fine-tuning.

Note: You can tear off the zoom menu, but be careful not to overlap (obscure) the map area with the tear off Zoom palette.

To magnify (zoom into) a depiction:

1. Choose **Actions** → **Zoom** → **Zoom In** or click the  icon from the "Command Icon Bar".

   The cursor changes to a magnifying glass.

2. Click and drag the left mouse button and outline the area that you want to magnify.

   After you click and you hold down the mouse button, the cursor changes to a pointing finger and a box outlines the area that you've selected. When you release the mouse button, the map is magnified.

   Note: The beginning corner of the zooming box must be inside the map area, but the ending corner can extend outside the map area.

3.5.2 Moving around (panning) in a depiction

After you magnify an image, use the Pan Mode of the Zoom function to move around (pan) magnified areas of a zoom. When you *pan* a map, you choose the centre of a window that slides around the magnified image.

To move around in a magnified depiction:

1. After you have used the Zoom In function, choose **Actions** → **Zoom** → **Pan Mode** or click the  icon from the "Command Icon Bar".

   The cursor changes to an arrow cross.

2. Click in the centre of your new viewing window.

   The display moves in the direction that you chose. The point that you selected becomes the centre.

3. Use the scroll bars to pan around a zoomed depiction image.

4. When you are finished panning, click the right mouse button and select **End Pan Mode**.

3.5.3 Expanding (zooming out from) a magnified depiction

If you have already magnified a depiction, you can zoom out from it.

To expand (zoom out) a depiction:

1. Choose **Actions** → **Zoom** → **Zoom Out** or click the  icon from the "Command Icon Bar".

   The map resizes in the display.

2. Repeat the previous step until you are at the magnification you want to view.

3.5.4 Exiting the Zoom feature

When you have finished viewing your magnified depiction, you can exit from the Zoom function and return to your original view.

To exit the zoom feature:

1. Choose **Actions** → **Zoom** → **Exit Zoom**.

   Your original depiction view appears.

   or

   Click the  icon from the "Command Icon Bar" until you reach your original view. The icon will become inactive when you are no longer in Zoom mode.

Chapter 4

Preparing to use the FPA

4.1 Installation and maintenance

The installation and maintenance of the FPA is handled by a site System Administrator. The documentation required by the administrator is provided in a separate manual, FPA Administrator's Guide.

Many of the functions of the FPA can be configured specifically for your site. If you have questions or concerns about the system configuration contact your System Administrator.

4.2 Running the FPA

The principal FPA program name is **xfpa** and may be launched with various run time parameter switches (see Setting command line parameters in the FPA, (Appendix A)). How the program is run is specific to your site. Some sites will have the users run the program directly using the run time parameters. Some will launch the program through the use of an "application launcher" button located on a panel, or from a menu in a master control program. Documentation on the procedure used at your site should be provided by your System Administrator.

However the FPA is run, the configuration for any run is set through the use of a setup file. This file determines the permitted field sources, the map projection, the set of products to be generated and much more. The setup files for your office are configured locally by your site, so if you have any questions you should again contact your System Administrator.

4.3 Customizing FPA display layers

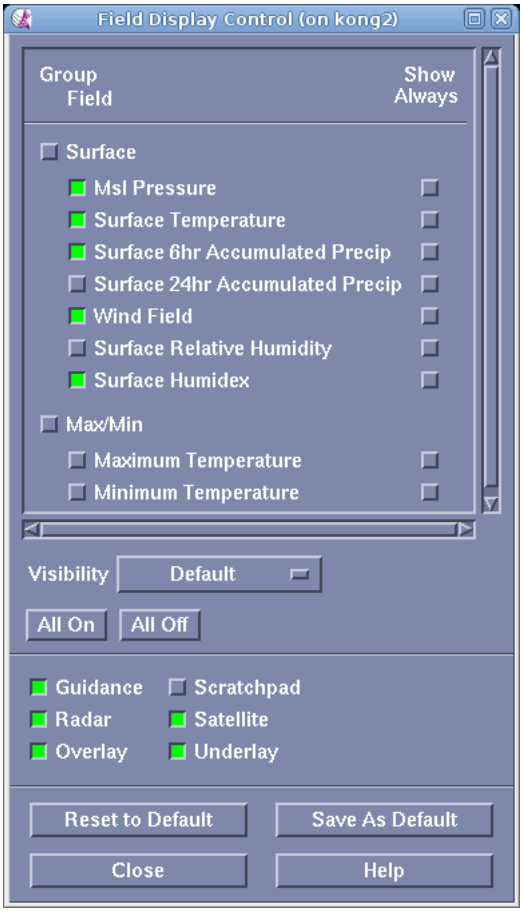
4.3.1 Displaying fields

You can select the fields you want to display at all times on your depiction. The visibility settings can be either preset by the System Administrator or customized by the user.

To change the fields overlayed on the depiction:

1. Choose **View** → **Field Display Control...** or click the  icon in the "Command Icon Bar".
   The ***Field Display Control*** dialog box appears. (see Figure 4.1)

Figure 4.1: Field Display Control



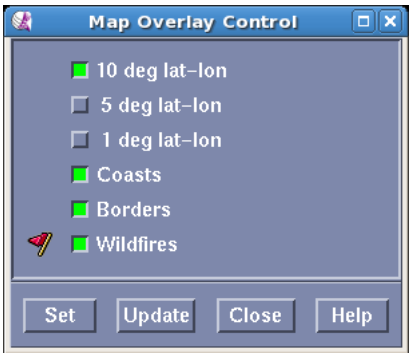
2. • Click the radio buttons on or off to turn a field (or field group) on or off.
   If a group (e.g., Surface fields, Sea State fields, etc.) is turned on then the selected fields in the group are visible. If the ***Show Always*** box is selected the field is always visible. If the group is not selected, but the field is, then the field is only visible when the group is active.
   - Click the **Guidance**, **Scratchpad**, **Radar**, **Satellite**, **Overlay** or **Underlay** radio buttons on or off to turn those layers on or off.
   - Click **All On** to turn all the fields on.
   - Click **All Off** to turn all the fields off.
   - Click **Reset to Default** to reset radio buttons to current default field visibility (custom or preset)
   - Choose a custom (Default) or preset setting from the ***Visibility*** drop-down.
3. If you like a particular setup may save is as your default by clicking the **Save As Default** button.
4. When you are satified with the fields displayed. Click the **Close** button. Your settings will persist.

4.3.2 Displaying map overlays

To display one or more map overlays:

1. Choose **View** → **Map Overlay Control...** or click the icon in the "Command Icon Bar".
2. The ***Map Overlay Control*** dialog box appears. (see Figure 4.2)

Figure 4.2: Map Overlay Control



3. Click the radio buttons on or off to select the map overlays you want to display.
4. Click **Set** to display the selected overlays.
5. Click **Close**.

The ***Map Overlay Control*** may be left open while you work in the depiction editor. Normally a map *metafile* is read only once (when it is first displayed). If the contents of a map metafile change then a icon appears next to it.

To re-read modified map metafiles:

6. Click **Update**.

4.4 Defining T0 depiction

This option allows you to select the T0 depiction time. This is the zero point against which all other depiction times in this time *sequence* will be determined.

To define the T0 depiction time:

1. Choose **Options** → **T0 Depiction**.

   A cascading list appears. You can pull this list off as a tear-off list. (see Using tear off menus, (Section 3.3.4))

Options → T0 Depiction → Set to Active Depiction.
Defines the *active depiction* as the T0 (zero) depiction.

Options → T0 Depiction → Nearest to System Clock.
Defines the depiction prior to the system clock as the T0 depiction. (Even if the system clock is closer to the next depiction, the *prior* depiction is selected as T0.)

Options → T0 Depiction → Set to System Clock.
Defines T0 as the system clock time. Note that if none of the depictions matches the system clock, there will not be a T0 depiction if this setting is chosen.

The time offset of the other depictions shifts accordingly after you choose the T0 depiction.

or

1. Click and hold the right mouse button on a time in the depiction sequence, and select **Set as T0** from the context menu.

4.5 Minimum Time Step

The usual behaviour of the forward/backward arrows to the right of the time sequence is to step through the depictions one by one, regardless of the time between depictions.

To step through the depictions based on time:

1. Choose **Options** → **Minimum Time Step** and select the desired time step.

To revert to the default:

1. Choose **Options** → **Minimum Time Step** and select ***Step Through All***.

Note: The available time steps (and an associated label which appears between the forward/backward arrows) can be set by the System Administrator with *sequenceIncrements* in the `.XFpa` resource file.

4.6 Limiting the start and end time in the time sequence

To temporarily limit the range of depictions:

1. Click and hold the right mouse button on a time in the depiction sequence, and select **Set as Sequence Start** from the context menu.
2. Click and hold the right mouse button on a time later in the depiction sequence, and select **Set as Sequence End** from the context menu.

To remove the limits:

1. Click and hold the right mouse button on a time and select **Remove Start Limit** from the context menu, or click the left mouse button on the red **<** button at the start of the sequence.
2. Click and hold the right mouse button on a time and select **Remove End Limit** from the context menu, or click the left mouse button on the red **>** button at the end of the sequence.

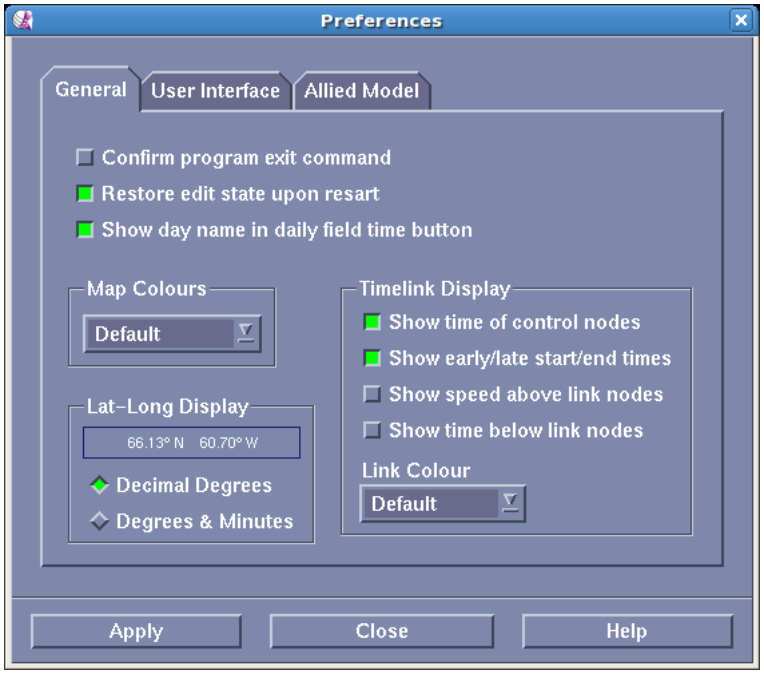
4.7 Customizing FPA preferences

You can customize the FPA interface so that it is easier to use.

4.7.1 General Preferences

1. Choose **Options** → **Preferences**, and select the ***General*** tab. (see Figure 4.3)

Figure 4.3: Preferences - General



There are a number of miscellaneous options that can be set:

Confirm program exit command
: The FPA depiction editor will require a confirmation before exiting.

Restore edit state upon restart
: The FPA depiction editor will remember the state it was in when you last quit. When you restart it will return that state.

Show day name in daily field time button
: Will include the day of the week in the daily field depiction sequence

Map Colours
: You can choose a colour scheme for the FPA map layer.

  Note: The colour schemes can be modified in the FPA setup file by your System Administrator.

Lat-Long Display
: There is a latitude/longitude display in the upper right corner that tracks the cursor position on the FPA map. The latitude and longitude can be displayed in ***decimal degrees*** or ***degrees & minutes***.

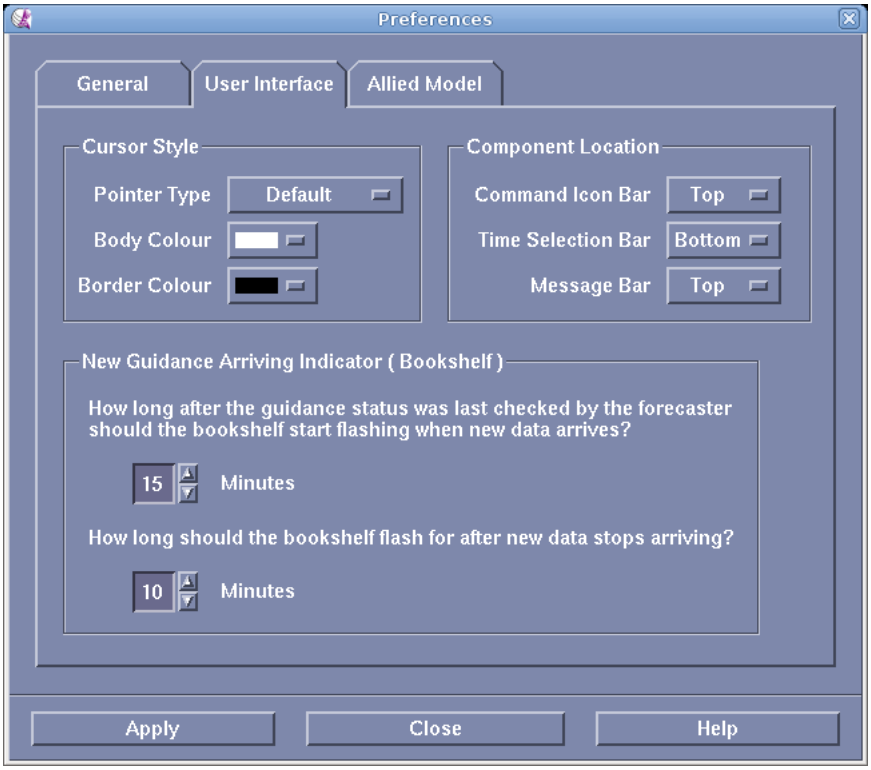
Timelink Display
Allows you to customize the look of the timelink display

2. Click **Apply** to register your changes.
3. Click **Close**.

4.7.2 User Interface Preferences

1. Choose **Options** → **Preferences**, and select the ***User Interface*** tab. (see Figure 4.4)

Figure 4.4: Preferences - User Interface



There are a number of user interface options that can be set:

Cursor Style
You can set the ***Style***, ***Body*** colour and ***Border*** colour of the cursor.

Component Location
The ***Command Icon Bar***, ***Time Selection Bar*** and ***Message Bar*** can be positioned at the top or bottom of the display.

New Guidance Indicator (Bookshelf)
Allows you to manage when and for how long the "Bookshelf" flashes when new guidance arrives.

2. Click **Apply** to register your changes.

3. Click **Close**.

4.7.3 Setting dialog locations

You can set the location for various dialogs if you have a multi-headed system.

1. Choose **Options** → **Preferences...** and select the ***Dialog Location*** tab.
2. Select which monitor a dialog should appear on.
3. Click **Apply** to register your changes.
4. Click **Close**.

Note: The alignment of the columns should correspond to the locations of your monitors. Contact your System Administrator if this is not the case.

4.8 Introducing FPA profiles

A profile controls the look of the FPA interface and the layout of FPA windows that the user wishes to remain open. Once a named profile is created, the same profile can be chosen the next time FPA is started. From the command line type: **xfpa -profile *`profile_name`***. If at least one named profile exists and no profile is specified in the command line then the ***Startup Profile Selection*** dialog is displayed. You must choose a profile to continue the FPA startup. (see Figure 4.5)

Figure 4.5: Startup Profile Selection

Even if there are no named profiles there will always be a *Default* profile. The default profile saves the interface and layout of FPA upon quiting and restores that state when it is started again. If at least one named profile exists, you may still use the default profile by typing: **xfpa -profile default**

4.8.1 Creating a profile

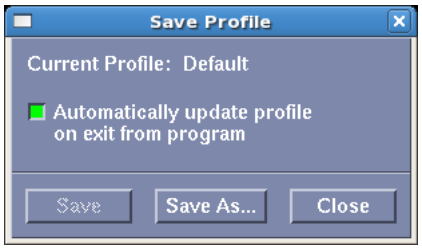
To create a profile:

1. Customize the FPA interface. (see Customizing FPA preferences, (Section 4.7))

2. Open and position all the windows you prefer to have open when you start FPA.
3. Choose **Options** → **Save Profile...**.

   The ***Save Profile*** dialog box appears. (see Figure 4.6)

Figure 4.6: Save Profile dialog



4. Deselect ***Automatically update profile on exit from program*** if you *DO NOT* want to update the profile on exiting FPA. Otherwise, any changes made to customize the FPA interface or any changes to the windows will be saved in the profile on exiting FPA
5. Click **Save As...**.

   The ***Save As Profile*** dialog box appears. (see Figure 4.7)

Figure 4.7: Save Profile As dialog

6. Enter a profile name.
7. Click **Apply**.

   Note: The new profile becomes the active profile.

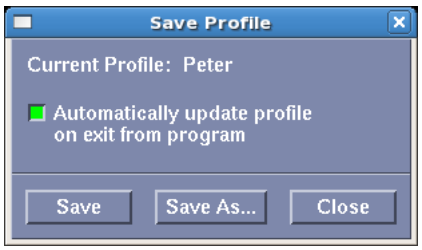
4.8.2 Saving a profile

To save the active profile:

1. Change the layout and interface options to suit your new requirements.
2. Choose **Options** → **Save Profile...**.

   The ***Save Profile*** dialog box appears. (see Figure 4.8)

Figure 4.8: Save Profile dialog



3. Set the ***Automatically update profile on exit from program*** option to your desired behaviour. (see Creating a profile, (Section 4.8.1))
4. Click **Save**.

4.8.3 Managing profiles

Named profiles can be deleted, or copied to another named profile.

To copy a profile:

1. Choose **Options** → **Manage Profiles...**.

   The ***Manage Profiles*** dialog box appears. (see Figure 4.9)

Figure 4.9: Manage Profiles dialog

2. Select the profile you wish to copy from the list of profiles.
3. Click **Copy**.

   The ***Save As Profile*** dialog box appears. (see Figure 4.7)
4. Enter a profile name.
5. Click **Apply**.

   Note: The new profile DOES NOT become the active profile.
6. Click **Close**.

To delete a profile:

1. Choose **Options** → **Manage Profiles...**.
   The ***Manage Profiles*** dialog box appears. (see Figure 4.9)
2. Select the profile you wish to delete from the list of profiles.
   Note: you may not delete the active profile!
3. Click **Delete**.
4. Click **Close**.

Chapter 5

Maintaining Fields and Depictions

The Fields menu allows you to load, save, check, delete and print fields in your *depiction sequence*.

5.1 Loading fields

5.1.1 Loading Normal fields into a depiction

1. Choose **Fields** → **Load...** or click the  icon in the "Command Icon Bar".

   The ***Load Fields*** dialog box appears.

2. Click the ***Normal*** tab.

   The Load Normal Fields information appears. (see Figure 5.1)

3. Select the ***Source*** for the field. (Unavailable sources are greyed out.) When you select ***External Depictions*** you can import FPA databases from another location.

4. Select the ***Model*** and ***Issue Time***, if required.

5. Select ***Valid Time***.

6. Select one or more ***Fields*** to load.

   The ***Automatically select all fields in list*** preference highlights all fields available for a valid time.

   Note: Some fields may not be available in every time.

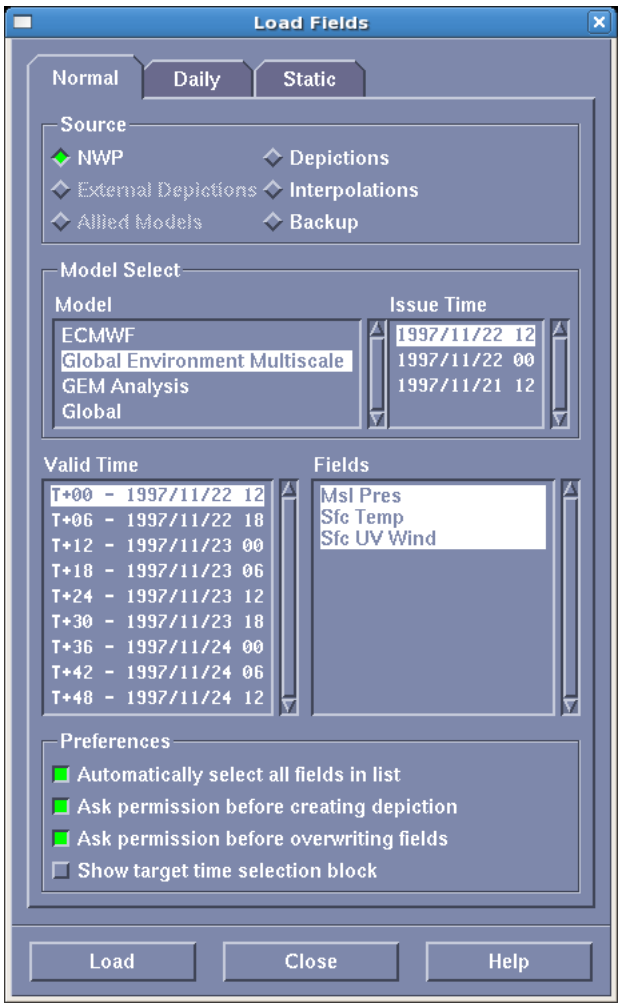
7. Click **Load** to load the field(s).

   If a depiction does not exist at the given target time and if the ***Ask permission before creating depiction*** checkbox is selected, the FPA prompts for permission to create the depiction.

   If the field exists in the depiction sequence and if the ***Ask permission before overwriting fields*** checkbox is selected, the FPA prompts for permission to save the depiction before overwriting the field.

8. Click **Close**.

Figure 5.1: Load Fields - Normal



5.1.2 Loading Normal fields into a depiction at a different time

The target time is the valid time of the selected field. If you want to load fields into a depiction at a different time, use the ***Target Time*** area to select the target time.

To load fields into a depiction at a different time:

1. Choose **Fields** → **Load...** or click the  icon in the "Command Icon Bar".

   The ***Load Fields*** dialog box appears.

2. Click the ***Normal*** tab.

   The Load Normal Fields information appears.

3. In the Preferences area, select ***Show target time selection block***.

   The ***Target Time*** area appears in the dialog box. (see Figure 5.2)

Figure 5.2: Load Fields - Target Time

4. Select the ***Source*** for the field.

5. Select the ***Model*** and ***Issue Time***, if required.

6. Select ***Valid Time***.

7. Select one or more ***Fields*** to load.

   The ***Automatically select all fields in list*** preference highlights all fields available for a valid time.

   Note: Some fields may not be available in every time.

8. Select the ***Target Time*** for the selected fields.

   You can select an ***Existing Depiction*** or specify a new ***Target Time***.

9. Click **Load** to load the field(s).

   If a depiction does not exist at the given target time and if the ***Ask permission before creating depiction*** checkbox is selected, the FPA prompts for permission to create the depiction.

   If the field exists in the depiction sequence and if the ***Ask permission before overwriting fields*** checkbox is selected, the FPA prompts for permission to save the depiction before overwriting the field.

10. Click **Close**.

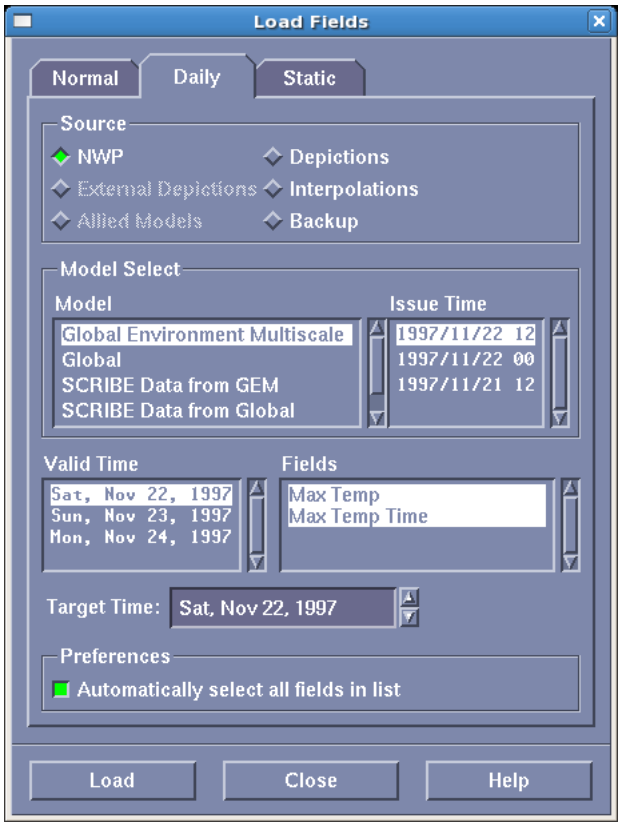
5.1.3 Loading Daily fields into a time sequence

Daily fields may display in multiple depictions if those depictions are within the time window of the daily field. See The FPA Model, (Chapter 2).

To load daily fields into your active time sequence:

1. Choose **Fields** → **Load...** or click the  icon in the "Command Icon Bar".
   The ***Load Fields*** dialog box appears.
2. Click the ***Daily*** tab.
   The Load Daily Fields information appears. (see Figure 5.3)

Figure 5.3: Load Fields - Daily



3. Select the ***Source*** for the field. Unavailable sources are greyed out.
4. Select the ***Model*** and ***Issue Time***, if required.
5. Select ***Valid Time***.
6. Select one or more ***Fields*** to load.
   The ***Automatically select all fields in list*** preference highlights all fields available for a valid time.
   Note: Some fields may not be available in every time.

7. If you wish to load the field in a target time other than the current depiction, select a different day in ***Target Time***.

8. Click **Load** to load the field(s).

9. Click **Close**.

5.1.4 Loading Static fields into a time sequence

Static fields may appear in multiple depictions if those depictions are within the time window of the static field. See The FPA Model, (Chapter 2).

To load static fields into your active time sequence:

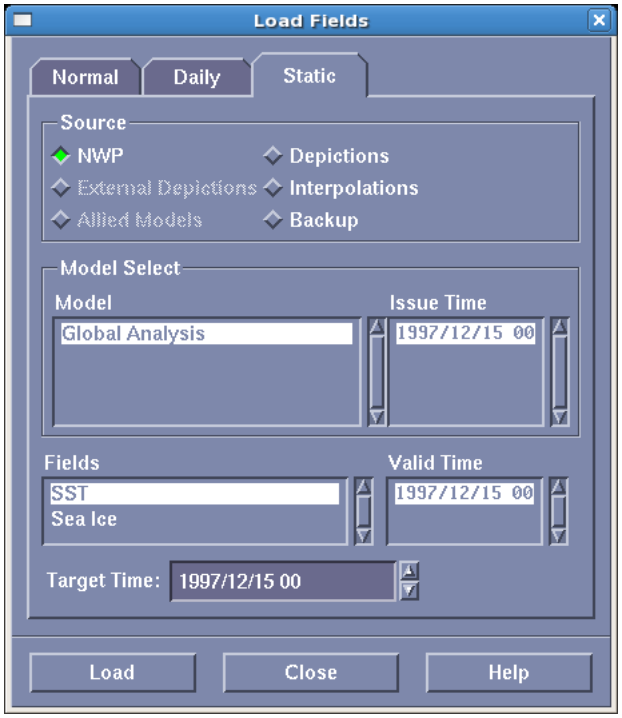
1. Choose **Fields** → **Load...** or click the  icon in the "Command Icon Bar".

   The ***Load Fields*** dialog box appears.

2. Click the ***Static*** tab.

   The Load Static Fields information appears. (see Figure 5.4)

Figure 5.4: Load Fields - Static



3. Select the ***Source*** for the field. Unavailable sources are greyed out.

4. Select the ***Model*** and ***Issue Time***, if required.

5. Select one or more ***Fields*** to load.
6. Select ***Valid Time***.
7. Set the ***Target Time***.

   The static field is valid from this time until infinity, or until the next field of the same type in the *sequence*.
8. Click **Load** to load the field(s).
9. Click **Close**.

5.2 Creating fields

You can create empty discrete, wind, line or point fields in your active time sequence.

Note: Daily and Static fields may display in multiple depictions if those depictions are within the time window of the daily field. See The depiction sequence, (Section 2.2).

1. Choose **Fields** → **Create...**.

   The ***Create Fields*** dialog box appears. (see Figure 5.5)

Figure 5.5: Create Fields

2. Select the type of field to create.

   A list of depiction fields appears.
3. Select a field.

4. Select the field valid time.
   The valid time will default to the current depiction time. This can be changed as desired.
5. Click **Create**.
   If the field already exists at this time, the FPA asks if you wish to replace it.
6. Click **Close**.

5.3 Updating fields

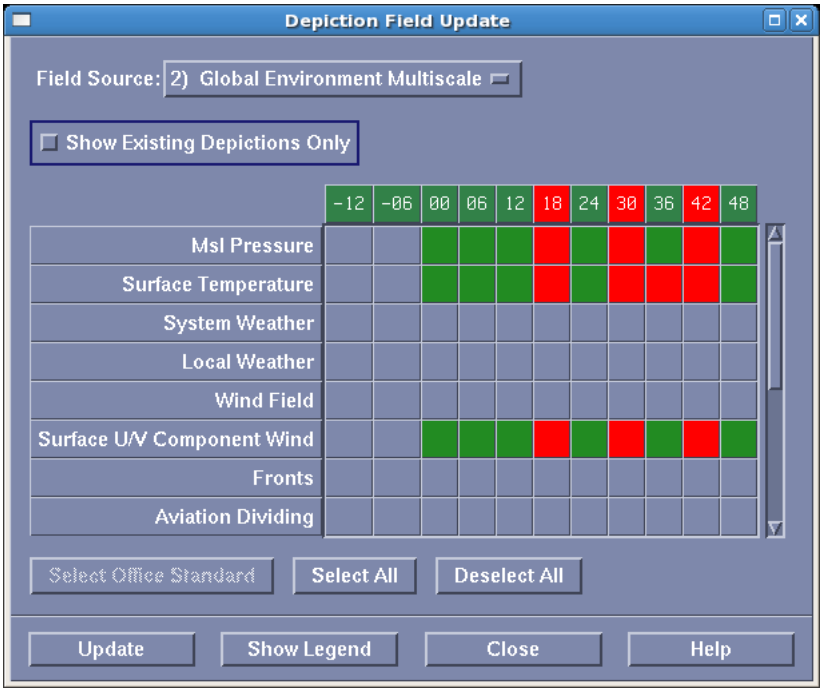
You can update fields in your depictions. This has the same effect as the ***Load Field*** selection but is faster and more convenient if:

- only the most recent issue time is required,
- the field is loaded into the same time (no target time selection),
- only a Normal field is required.

To update depiction fields:

1. Choose **Fields** → **Update...** or click the  icon in the "Command Icon Bar".
   The ***Depiction Field Update*** dialog box appears. (see Figure 5.6)

Figure 5.6: Depiction Field Update dialog



2. From the drop-down menu, select a ***Field Source***

3. Select the fields to update.

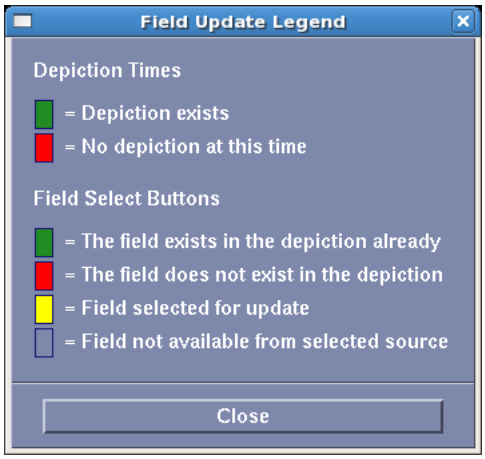
To select...	**Click...**
a field	the field box at the appropriate time
all fields in one depiction	the time (00, 12, 24, etc.) of depiction (the column header)
a field in all depictions	the field name (the row header)
the office standard	**Select Office Standard**
all fields	**Select All**

To deselect...	**Click...**
a field	the field box at the appropriate time again
all fields in one depiction	the time (00, 12, 24, etc.) of depiction (the column header) again
a field in all depictions	the field name (the row header) again
all fields	**Deselect All**

4. Click **Update**.

5. To see an explanation of the different colours, click **Show Legend**.

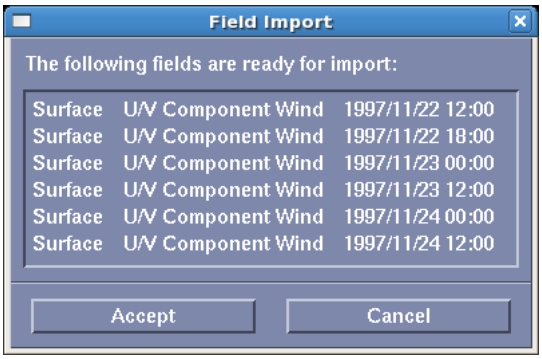
Figure 5.7: Field Update Legend



6. Click **Close**.

5.4 Importing fields

Your System Administrator, can arrange for a computer process to generate metafiles for the FPA. A pop-up window will alert you when the metafiles are ready. When it is convenient to do so, you may import the new files using **Fields** → **Import ...**.



5.5 Saving (and retrieving) depictions and fields

You can choose to save the *active depiction* or time sequence or save all depictions and fields.

1. Choose **Fields** → **Save Active** or **Fields** → **Save All**.

To retrieve saved fields:

1. Choose **Fields** → **Load...** or click the icon in the "Command Icon Bar".
   The ***Load Fields*** dialog box appears. (see Figure 5.1)
2. Click the tab for: ***Normal***, ***Daily*** or ***Static*** fields.
3. Choose ***Backup*** as the ***Source***.
4. Select a field. (see Loading fields, (Section 5.1))

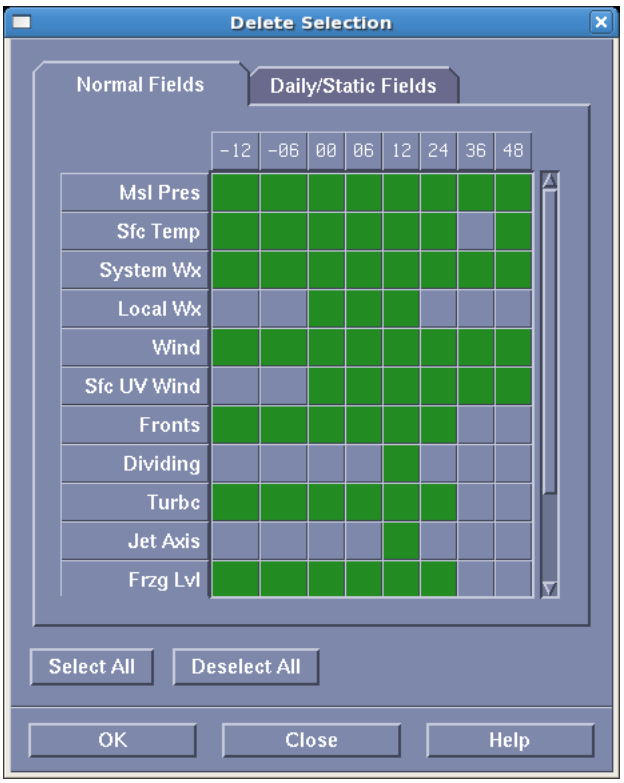
5.6 Deleting fields from a time sequence

To delete any fields in a sequence:

1. Choose **Fields** → **Delete...** or click the icon in the "Command Icon Bar".
   The ***Delete Selection*** dialog box appears. (see Figure 5.8)
2. Select the ***Normal Fields*** tab.
3. Select the Normal field(s) to delete.

To delete...	**Click...**
a field	the field box at the appropriate time
all fields in one depiction	the time (00, 12, 24, etc.) of depiction (the column header)
a field in all depictions	the field name (the row header)
all fields	**Select All**

Figure 5.8: Delete Depiction Fields - Normal



To deselect...	Click...
a field	the field box at the appropriate time again
all fields in one depiction	the time (00, 12, 24, etc.) of depiction (the column header) again
a field in all depictions	the field name (the row header) again
all fields	**Deselect All**

4. Select the ***Daily/Static Fields*** tab.
5. Select the Daily and/or Static field(s) to delete.
6. Click **OK** to delete the selected Normal, Daily and Static fields.

5.7 Printing a depiction

You can choose to print the map area (the active depiction plus the static or daily fields with guidance showing) to an output destination such as a laser printer or file.

1. Choose **Fields** → **Print Active**.

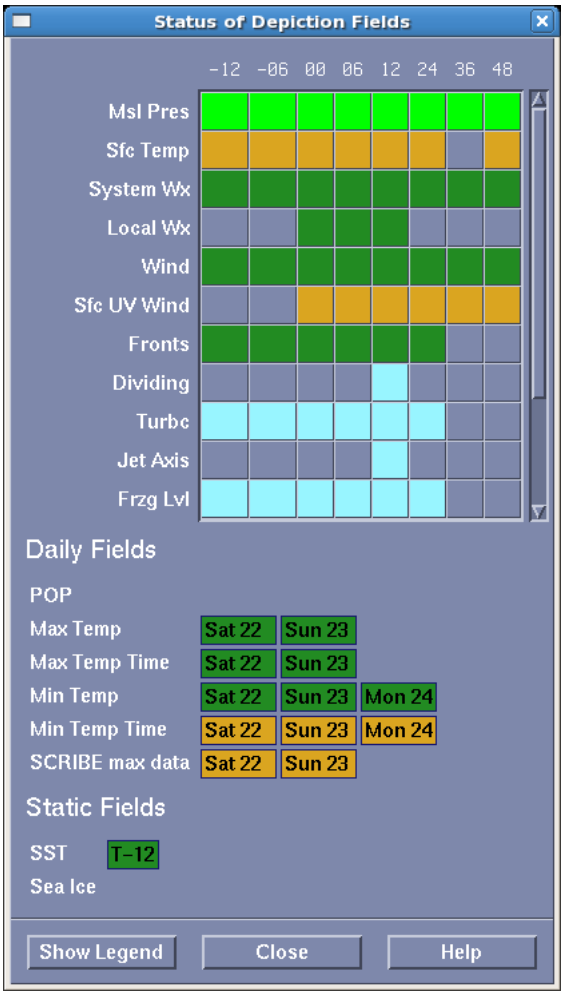
   The Destination menu appears to the right.

2. Select the destination. The cursor turns into an hourglass until the printing is complete.

5.8 Checking the depiction status

You can display the status of your depictions' daily and static fields. A table indicates what Normal fields are contained in each depiction, as well as the Daily and Static fields at each time.

Figure 5.9: Status of Depiction Fields



To check the status:

1. Choose **Fields** → **Status...**.

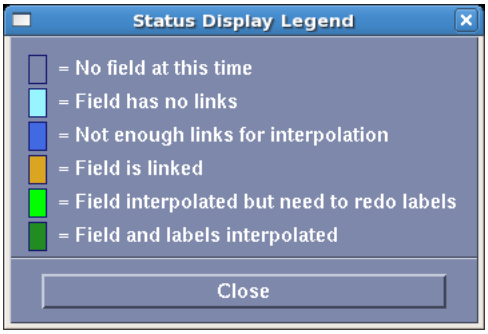
   The ***Status of Depiction Fields*** dialog box appears. Coloured boxes indicate existence of a field within a sequence. (see Figure 5.9)

   The colour describes the field's time link status. See Interpolating the linked depictions, (Section 16.3).

2. To see an explanation of the different colours, click **Show Legend**. (see Figure 5.10)

3. Click **Close**.

Figure 5.10: Depiction Status Legend



5.9 Viewing another depiction simultaneously

You can bring up another FPA display to view the workspace of another weather sequence using the *CoView* function of the FPA. All of the display options are available, but you cannot edit the depictions or fields in the other sequence.

Use this option to share your work with other FPA users.

To view another depiction:

1. Choose **Actions** → **CoView**.

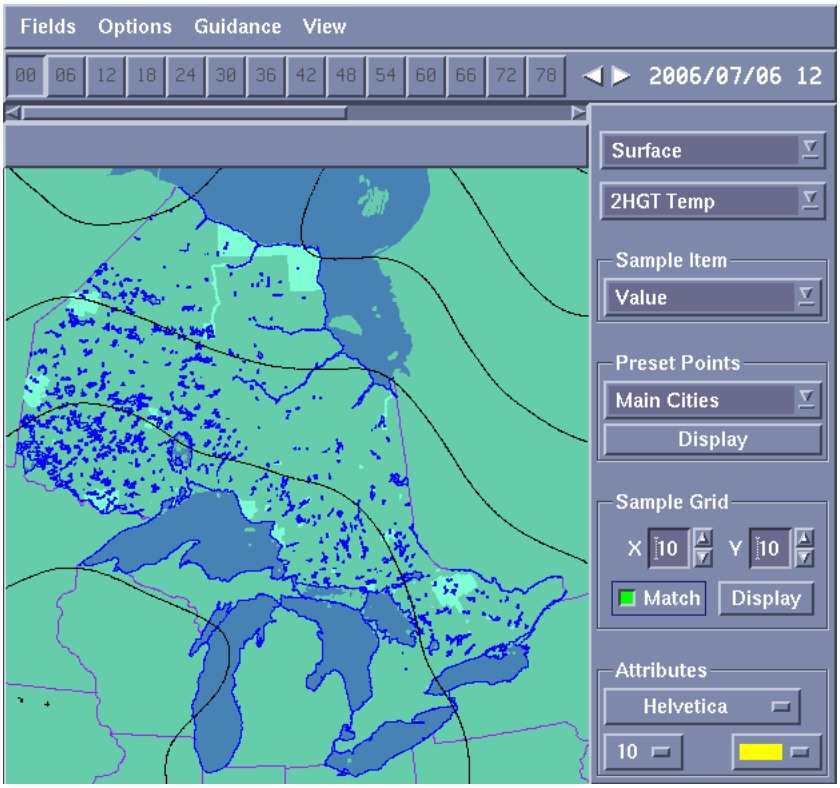
   A menu appears listing the available sequences to view.

2. Select a sequence from the list.

   The FPA displays the other sequence. It may take some time to load the sequence.

   Note: The CoView sequence refreshes every few minutes, which allows viewing changes made to the other FPA database in real time.

Figure 5.11: Coview



Chapter 6

Guidance

This chapter describes how to use the FPA *Guidance* feature.

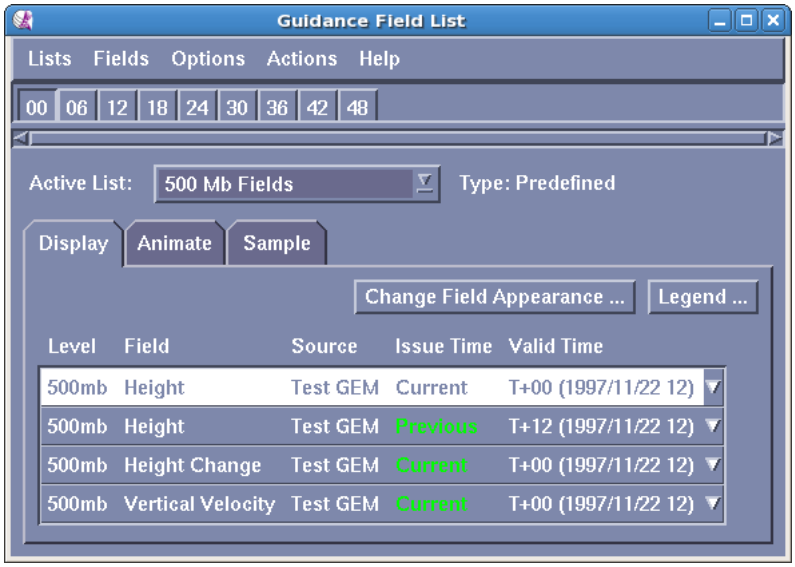
Guidance allows you to display fields to *guide* your manipulation of other fields in the FPA. You can view, overlay, animate and sample guidance fields, but you cannot edit them.

There could be hundreds, possibly thousands, of guidance fields that the user might wish to view. The fields are arranged in lists to minimize the time it would take to browse through all of the fields to find the one of interest.

Some lists are predetermined by the System Administrator; they are identified as "***Predefined***". The user cannot modify these lists. Other lists can be modified by users as desired, that is, fields can be added or deleted from the lists. These lists are identified as "***User Defined***".

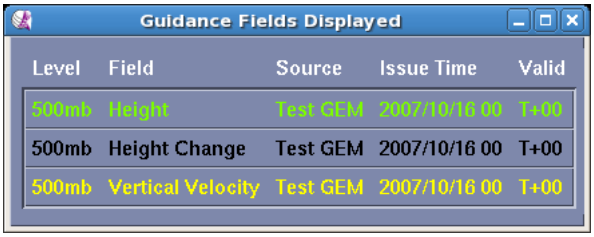
To manage guidance fields, you arrange them in guidance field lists in the ***Guidance Field List*** dialog box (see Figure 6.1). Note that the choice of which fields to include in each list is arbitrary; the users decide which fields to include.

Figure 6.1: Guidance Field List - Display



Note that whenever you open the Guidance Field List dialog, the Guidance Fields Display box is also displayed (see Figure 6.2). This box lists all the guidance fields that are currently displayed. This box will

Figure 6.2: Guidance Fields Displayed



remain displayed even if the Guidance Field List dialog is closed.

Many guidance fields have an issue time associated with them, such as the run time for an NWP field. Two "magic" issue times are ***Current*** and ***Previous***, which refer to the most recent issue time and the next most recent issue time. When new data arrives during updates, the FPA will check if the issue time has changed for displayed Guidance fields. If new data is available, the FPA will search the Guidance display lists for an entry corresponding to the currently displayed field (with an issue time of ***Previous*** rather than ***Current***, for example), and switch the displayed field to this entry. If no entry is available, the field is removed from display. A red flag icon appears in the top right corner of the depiction editor if this should happen.

6.1 Checking guidance status

You can check the last update date and time for all of the guidance sources.

To check guidance status:

1. Choose **Guidance** → **Status** or click the icon in the upper right-hand corner of your screen.

   The ***Guidance Status*** dialog box appears. (see Figure 6.3)

   Note: The bookshelf icon flashes when new source is coming in. The bookshelf icon stops flashing after you check the status.

2. Click **Close**.

6.2 Checking available guidance fields

To check available fields:

1. Choose **Guidance** → **Availability**.

   The ***Guidance Availability*** dialog box appears. (see Figure 6.4)

Figure 6.3: Guidance Status

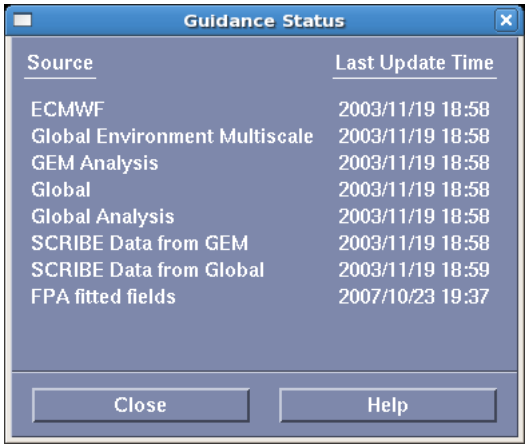


Figure 6.4: Guidance Availability

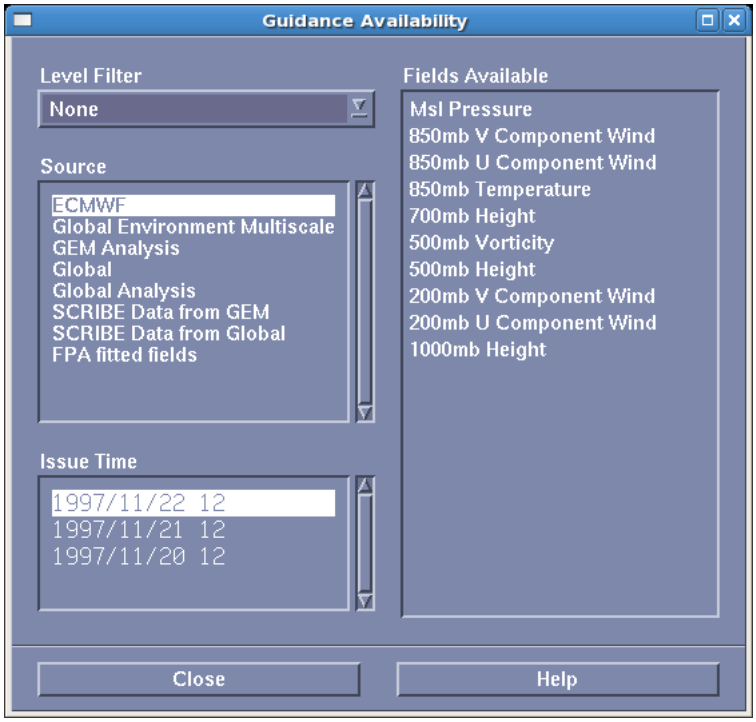
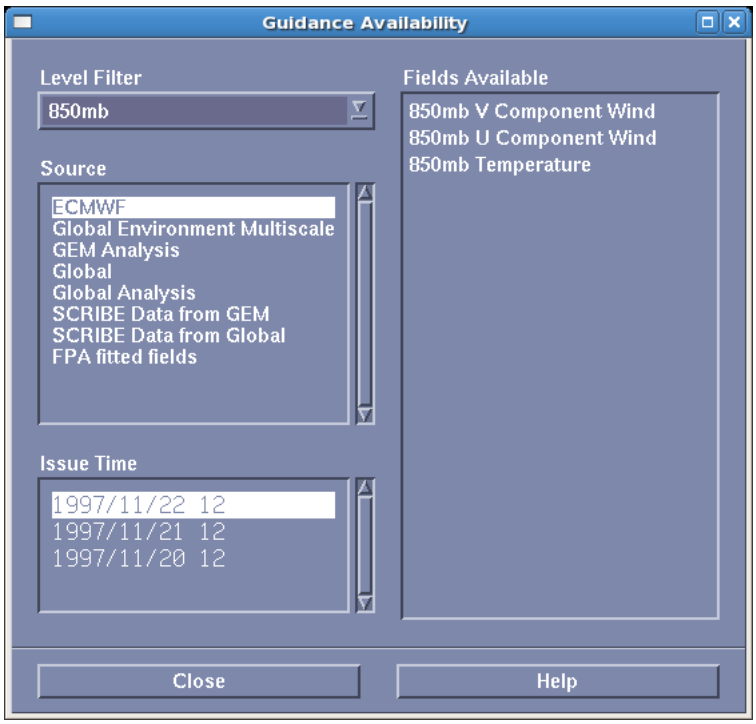


Figure 6.5: Guidance Availability - Level Filter



2. You can use the ***Level Filter*** to selectively display guidance field availability information.

   If you select a ***Level Filter***, only the fields from the selected level will be displayed in the ***Fields Available*** list. If you select ***None***, all available fields will be displayed.

3. Select ***Source***.

4. Select ***Issue Time***.

   The ***Fields Available*** list displays the fields available from the selected ***Source*** and ***Issue Time***.

5. Click **Close**.

6.3 Adding fields to guidance field lists

Note: You can not add a guidance field to a ***Predefined*** type list.

To add a field to a guidance field list:

1. Choose **Guidance** → **Select...** or click the  icon in the "Command Icon Bar".

   The ***Guidance Field List*** dialog box appears. (see Figure 6.1)

2. Click the ***Display*** tab.

   You can either put guidance fields in a temporary guidance field list or create a new list.

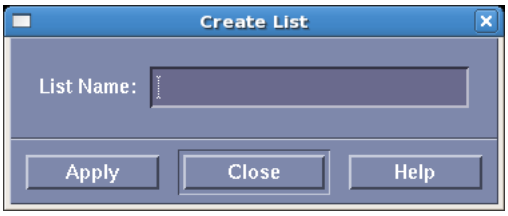
   Note: If you choose the * ***Temporary*** * field list the FPA DOES NOT save the list for the next run of the FPA.

6.3.1 Copying an existing list to a new guidance field list

To copy an existing field list (including the temporary field list):

1. In the ***Guidance Field List*** dialog box, select an ***Active List*** to display.
2. Choose **Lists** → **Save as...**.
   The ***Create List*** dialog box appears. (see Figure 6.6)

Figure 6.6: Guidance Create List



3. In the ***List Name*** field, type the name of the new list.
4. Click **Apply**.
   The contents of the new list automatically appear in the Display tab.
   Now you can add fields to this list. See Adding fields to a guidance field list, (Section 6.3.3).

6.3.2 Creating a new, empty guidance field list

To create a new list:

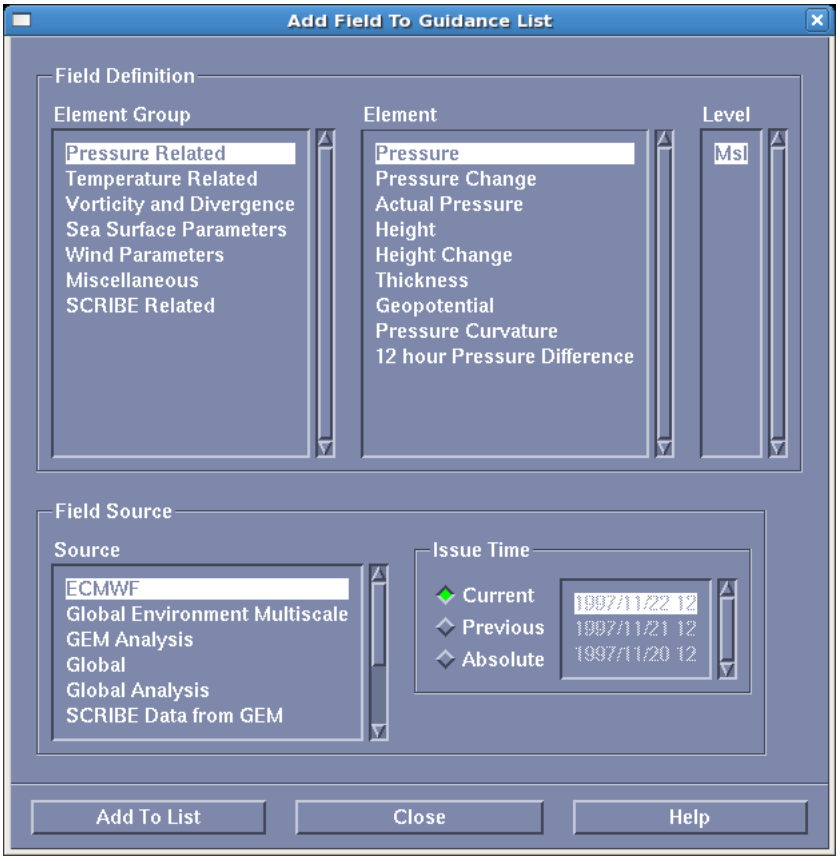
1. From the menu in the ***Guidance Field List*** dialog box, select **Lists** → **New...**.
   The ***Create List*** dialog box appears. (see Figure 6.6)
2. In the ***List Name*** field, type the name of the new list.
3. Click **Apply**.
   Now you can add fields to this list. See Adding fields to a guidance field list, (Section 6.3.3).

6.3.3 Adding fields to a guidance field list

To add fields to a guidance field list:

1. In the ***Guidance Field List*** dialog box, select **Fields** → **Add...**.
   The ***Add Field to List*** dialog box appears. (see Figure 6.7)

Figure 6.7: Add Field to Guidance List



2. Select ***Element Group***. Note: the fields in each ***Element Group*** can be changed by your System Administrator.
3. Select ***Element*** and ***Level***.
4. Select ***Source***.
5. Depending on the source, select the ***Issue Time***.

   Current and ***Previous*** are not absolute times, but relative times. The FPA checks the current and previous issue times for the source and indicates in the guidance field list whether the source that is displaying is the current or previous source or whether you need to update the guidance because a more recent source is available.
6. Click **Add to List**.
7. Repeat until you have added all the desired fields to the list.
8. Click **Close**.

   The fields should be listed in the guidance field list.

   Note: You can add more fields to the list at a later time.

6.4 Selecting guidance fields

To select one or more fields to view:

1. Choose **Guidance** → **Select...** or click the  icon in the "Command Icon Bar".

   The ***Guidance Field List*** dialog box appears. (see Figure 6.1)
2. Select an ***Active List***.
3. Click the ***Display*** tab.

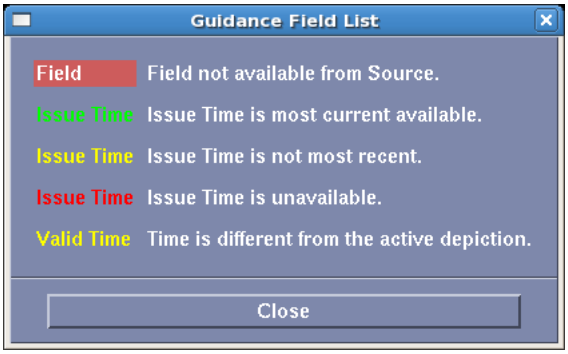
   Note: You can add fields if the field you want is not in an available list. See Adding fields to guidance field lists, (Section 6.3).
4. Click the fields that you want to select.

   Note: If the valid time for the guidance field is not the same as for the *active depiction* , a yellow box may appear around the valid time for that field in the list. Whether or not this happens depends on the Display option settings that you choose. See Using the displaying options for guidance fields, (Section 6.5)

   For an explanation of box colours around various list entries, click **Legend** in the ***Display*** tab. (see Figure 6.8)
5. Click the field again to deselect it.

   Note: you can deselect all fields by choosing **Actions** → **Turn All Fields Off**.

Figure 6.8: Guidance Field List Legend



6.5 Using the displaying options for guidance fields

There are a number of options that affect how guidance fields are displayed.

1. Choose **Guidance** → **Select...** or click the icon in the "Command Icon Bar".
   The ***Guidance Field List*** dialog box appears. (see Figure 6.1)
2. From the menu bar within the ***Guidance Field List*** dialog box select:

   Options → **Synchronize with depictions**
   To set guidance fields to change with the depictions. They will be exactly the same times as your depictions. (Note that if there is no guidance field at exactly the same time as your depiction, you will not be able to see a guidance field at that time.)

   Options → **Show Field Nearest Depiction Time**
   To set guidance fields to always display, showing the field nearest to the time of the depiction.

   Options → **Display Long Form Description**
   To set guidance fields to show full-word descriptions in the field name list instead of shortened names. (Note that your System Administrator can change the full-word or shortened names if desired.)

   Options → **Show Depictions With Guidance**
   To show depiction fields along with the guidance fields.

6.6 Updating issue times for guidance

A yellow box around the issue time for a guidance field in the guidance field list indicates that there is a more current issue time available.

To load the latest available issue time:

1. Choose **Guidance** → **Select...** or click the icon in the "Command Icon Bar".
   The ***Guidance Field List*** dialog box appears. (see Figure 6.1)

2. Click the ***Display*** tab.
3. Select an ***Active List***.

   Note: the issue time is ***Previous*** or ***Current*** you can check the actual time by clicking and holding the ***Issue*** display.
4. Choose:

   Actions → Refresh Selected Fields
   To redraw the selected fields

   Actions → Set Selected to Current Issue Time
   Allow FPA to switch the display to the most current issue time when new guidance arrives.

6.7 Removing fields from guidance field lists

Note: You cannot remove a field from a predefined list.

To remove a field from a guidance field list:

1. Choose **Guidance → Select...** or click the  icon in the "Command Icon Bar".

   The ***Guidance Field List*** dialog box appears. (see Figure 6.1)
2. In the ***Guidance Field List*** dialog box, select **Fields → Remove...**.

   The ***Remove Fields From List*** dialog box appears. (see Figure 6.9)
3. Select one or more fields to remove. Click once to select a field click again to deselect it.
4. Click **Remove**.

6.8 Changing or restoring the appearance of a field

You can define how you want the selected fields to appear in the map display area.

To change the appearance of a field:

1. Choose **Guidance → Select...** or click the  icon in the "Command Icon Bar".

   The ***Guidance Field List*** dialog box appears. (see Figure 6.1)
2. On the ***Display*** tab, click **Change Fields Appearance**.

   The ***Guidance Field Appearance*** dialog box appears. (see Figure 6.10)
3. From the ***Field*** list, select the field for which you want to set the appearance.
4. From the ***Colour and Style*** area, select a colour and line style for the appearance of the guidance field.

   As you modify the colour or line style, the map automatically changes.

Figure 6.9: Remove Field From Guidance

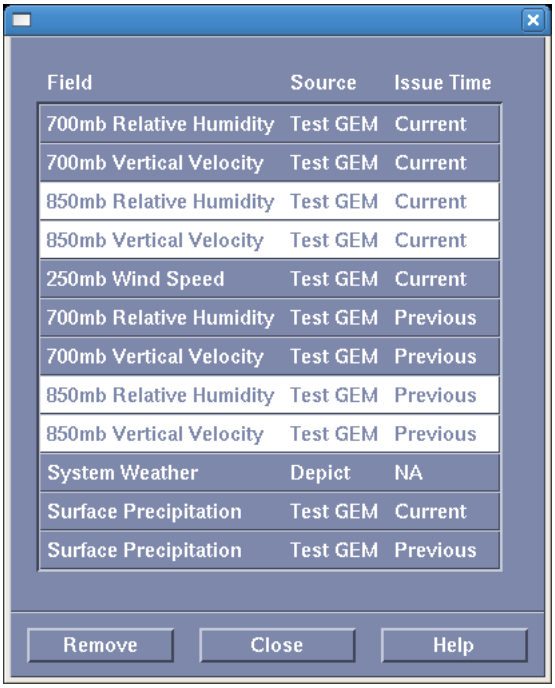
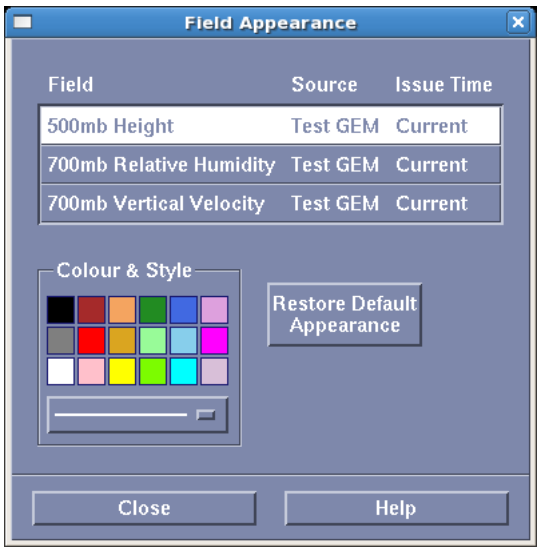


Figure 6.10: Guidance Field Appearance



5. Click **Close**.

To restore an altered field to its default line style and colour:

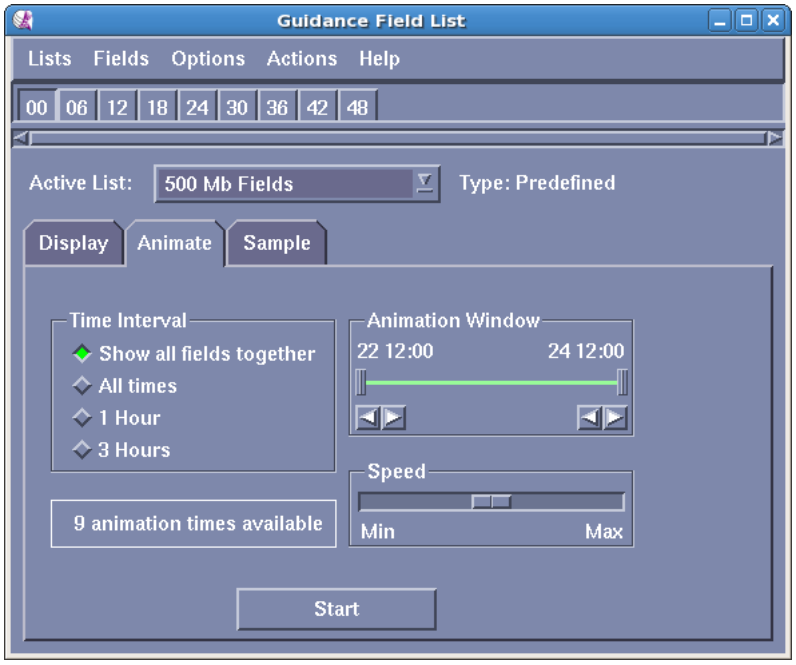
1. On the ***Display*** tab, click **Change Fields Appearance**.
   The ***Guidance Field Appearance*** dialog box appears. (see Figure 6.10)
2. From the ***Field*** list, select the field for which you want to restore the appearance.
3. Click **Restore Default Appearance**.
   The field is restored to its default style and colour.

6.9 Animating Guidance

To animate guidance fields:

1. Choose **Guidance** → **Select...** or click the  icon in the "Command Icon Bar".
   The ***Guidance Field List*** dialog box appears. (see Figure 6.1)
2. Select the guidance fields for the animation set. (see Selecting guidance fields, (Section 6.4))
3. Click the ***Animate*** tab.

Figure 6.11: Guidance Field List - Animate



4. Select a ***Time Interval***.

Show all fields together
Only display times that are common to all fields in the animation set.

All times
Display all times available. Each animation frame will contain at least one field in the animation set.

Predefined interval
The System Administrator may define time intervals that are convenient for the office.

The number of frames in the animation set is calculated based on the ***Time Interval***, and displayed.

5. Set the ***Animation Window*** (see Animation Window, (Section 6.9.1))
6. Set the ***Speed*** (see Animation Speed, (Section 6.9.2))
7. Click ***Start***.

To end the animation

1. Click ***Stop***.

6.9.1 Animation Window

You may wish to limit the range of time frames in the animation set. This can be done using the ***Animation Window*** slider-bar. To limit the animation to a subset of available guidance:

1. Move the left-hand slider to the desired start time. (see Using slider-bars, (Section 3.3.5))
2. Move the right-hand slider to the desired end time. (see Using slider-bars, (Section 3.3.5))

6.9.2 Animation Speed

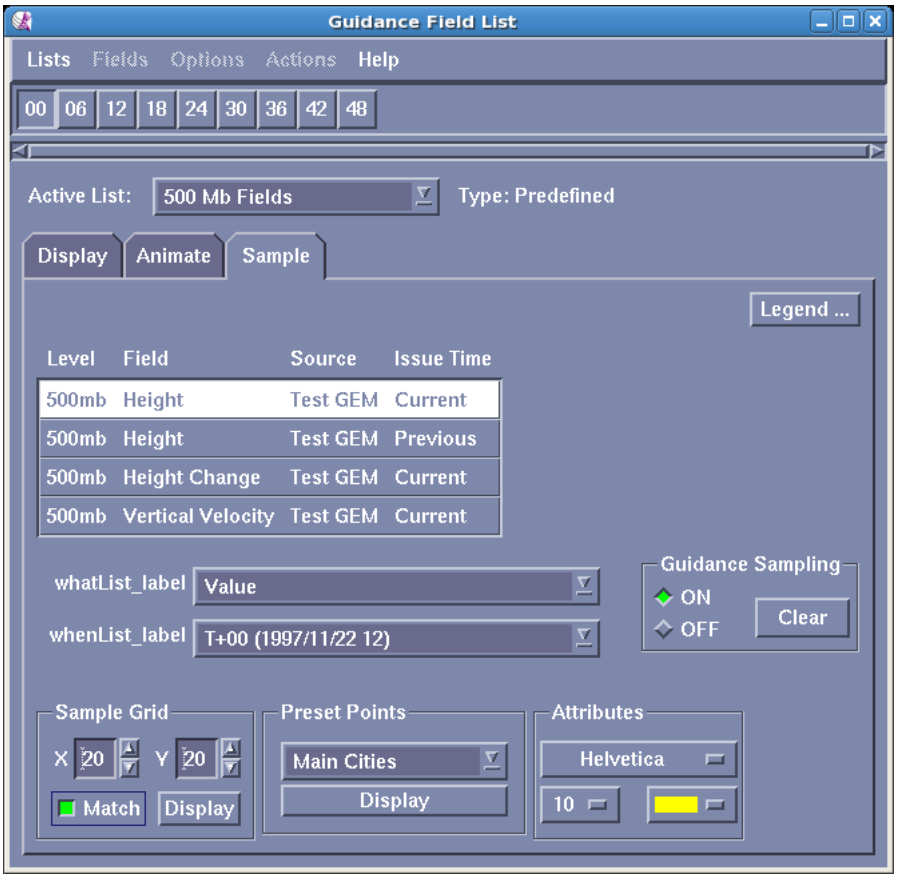
You may adjust the speed of the animation by moving the slider in the ***Speed*** slider-bar left to slow the animation and right to speed it up. (see Using slider-bars, (Section 3.3.5))

6.10 Sampling a field

To sample a guidance field:

1. Choose **Guidance** → **Select...** or click the  icon in the "Command Icon Bar".
   The ***Guidance Field List*** dialog box appears. (see Figure 6.1)
2. Click the ***Sample*** tab.
3. Select the field you want to sample.
   The ***Display*** list fills with appropriate values.

Figure 6.12: Guidance Field List - Sample



4. Select a type of sample from the ***Display*** list.
5. Select a time from the ***Time*** list.

   Note: If the time in the ***Time*** list is not the same as the depiction time, a yellow box will appear around the ***Time*** selection.
6. Select the display attributes: the colour, size and font of the sample(s).

   Note: Size is relative and not in actual points; if you resize the display, the font sizes re-scale accordingly.
7. Click in the desired map area.

   The sampled value appears.
8. Repeat as desired.

Instead of sampling multiple individual locations, you can select a grid of sampling locations. To select a set of grid sample locations:

9. Enter the ***X*** and ***Y*** parameters in the ***Sample Grid*** area and click **Display**

   Note: If you select ***Match***, the ***X*** and ***Y*** parameters change together.

Instead of sampling multiple individual locations, you can select a preset list of sampling locations that your System Administrator has already created. To select a set of preset sample locations:

10. Choose one of the preset options in the ***Preset Points*** area and click **Display**.

Note: You cannot sample from guidance at the same time as editing or sampling fields in the interface. To temporarily suspend guidance sampling click **OFF** in the ***Guidance Sampling*** area. Clicking the **ON** will restore guidance sampling.

11. Click **Clear** in the ***Guidance Sampling*** area to remove all samples.

6.11 Showing or hiding the guidance fields

To display the fields you selected in the guidance list in the active map area:

1. Select the guidance fields from a guidance field list.
2. Choose **Guidance** → **Show Selected Fields**.

To turn off the display:

1. Choose **Guidance** → **Hide Fields**.

There is also an option in the ***Field Display Control*** to turn guidance on and off. (see Displaying fields, (Section 4.3.1))

Chapter 7

Imagery

Because radar and satellite images tend to come in shorter time intervals than depictions, the Imagery Control menu contains its own time control. (see Figure 7.1) The slider-bar at the top of the display allows the user to step through each time for which there is an image (from the selected products) to view. This control does not affect the depiction time.

To step through images in order:

1. Choose **Imagery** → **Select** or click the  icon in the "Command Icon Bar".
   The ***Image Control*** dialog box appears. (see Figure 7.1)
2. Move the slider in the slider-bar. (see Using slider-bars, (Section 3.3.5))

7.1 Image Select

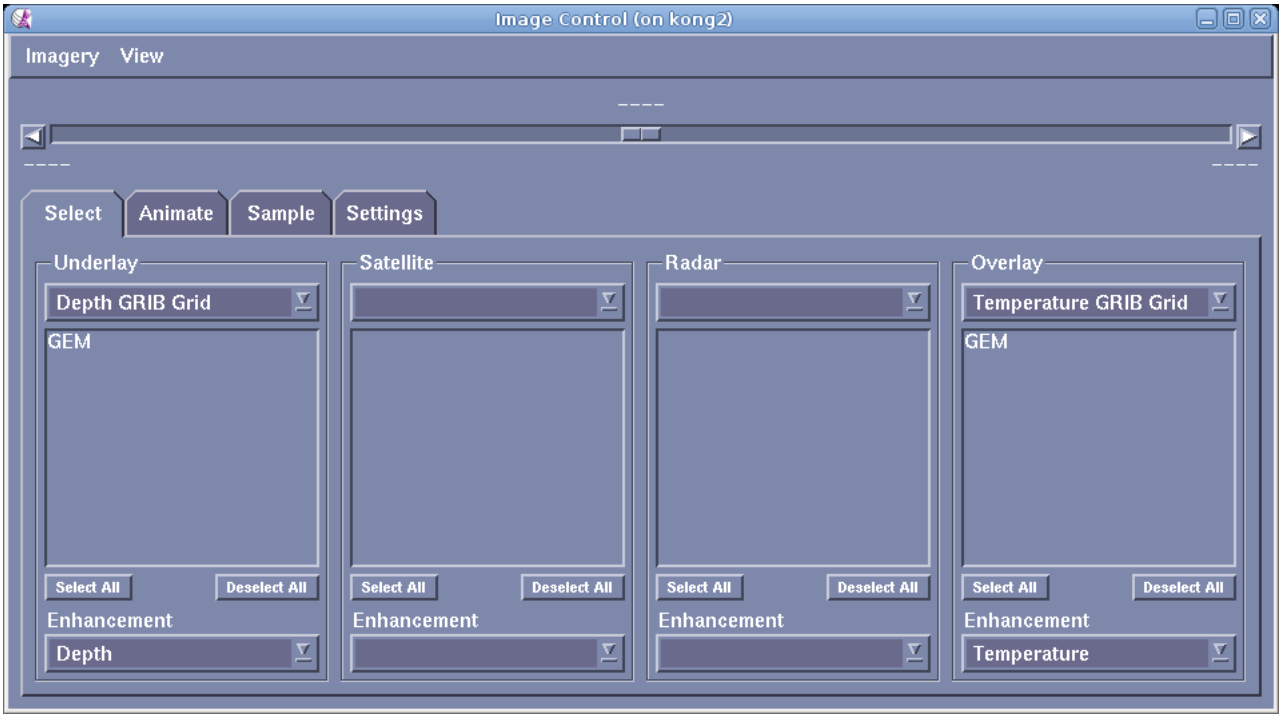
The *Image Select* tab controls selection of Satellite, Radar and data imagery to display, based on parameters set in the `Image` configuration file. (see Figure 7.1) Gridded date can be displayed as imagery either under or over satellite and radar. This is desirable when the gridded data is not well represented by B-spline interpolation. The gridded data cannot be edited but it can be sampled and included in graphical products.

7.1.1 Data Underlay

To display a data grid as imagery under satellite and radar:

1. Choose **Imagery** → **Select** or click the  icon in the "Command Icon Bar".
   The ***Image Control*** dialog box appears. (see Figure 7.1)
2. Choose a data underlay product from the drop-down list.
3. Select data underlay sources from the list. (see Selecting from a list , (Section 3.3.2))
   Note that multiple data underlay images can be displayed at the same time. The image nearest to the top of the list is displayed on top of the others.
4. Choose an ***Enhancement*** colour scheme for the underlay images from the drop-down list.

Figure 7.1: Imagery Control - Select Tab



7.1.2 Satellite

To display Satellite imagery:

1. Choose **Imagery** → **Select** or click the icon in the "Command Icon Bar".
   The ***Image Control*** dialog box appears. (see Figure 7.1)
2. Choose a satellite product from the drop-down list.
3. Select satellite sources from the list. (see Selecting from a list , (Section 3.3.2))
   Note that multiple satellite images can be displayed at the same time. The image nearest to the top of the list is displayed on top of the others.
4. Choose an ***Enhancement*** colour scheme for the satellite images from the drop-down list.

7.1.3 Radar

To display radar imagery:

1. Choose **Imagery** → **Select** or click the icon in the "Command Icon Bar".
   The ***Image Control*** dialog box appears. (see Figure 7.1)
2. Choose a radar product from the drop-down list.

3. Select the radar sites from the list. (see Selecting from a list , (Section 3.3.2))

   Note that multiple radar images can be displayed at the same time. The image nearest to the top of the list is displayed on top of the others.

4. Choose an ***Enhancement*** colour scheme for the radar images from the drop-down list.

7.1.4 Data Overlay

To display a data grid as imagery over satellite and radar:

1. Choose **Imagery** → **Select** or click the  icon in the "Command Icon Bar".

   The ***Image Control*** dialog box appears. (see Figure 7.1)

2. Choose a data overlay product from the drop-down list.

3. Select data overlay sources from the list. (see Selecting from a list , (Section 3.3.2))

   Note that multiple data overlay images can be displayed at the same time. The image nearest to the top of the list is displayed on top of the others.

4. Choose an ***Enhancement*** colour scheme for the overlay images from the drop-down list.

7.2 Image Options

The *Image Options* tab controls the brightness, blending ratio (making the Radar imagery semi-transparent), and time window for displaying imagery. The display of radar range rings can also be set. (see Figure 7.2)

7.2.1 View Menu

Some options can be turned on or off. They are located in the **View** menu.

View → Depiction Sync
Synchronize the images with the depictions.

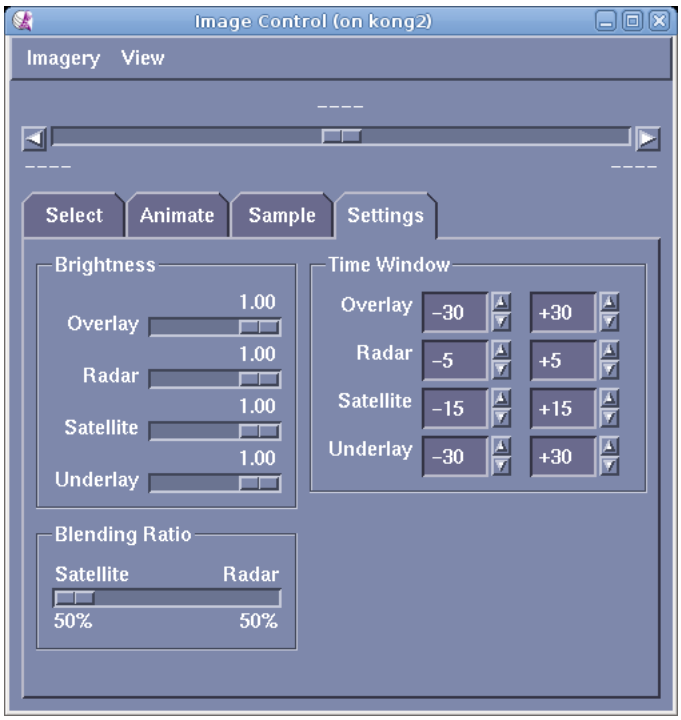
View → Use Time Window
Use the time window specified in the *Image Options* tab when synchronizing with depictions. (see Time Window, (Section 7.2.4).)

View → Blend Images
Blend the satellite and radar images using the ratio specified in the *Image Options* tab. (see Blending Ratio, (Section 7.2.3).)

View → Apply Brightness
Apply the brightness factor specified in the *Image Options* tab. (see Brightness, (Section 7.2.2).)

View → Show Colour Table
Show the colour tables associated with the selected ***Enhancement***.

Figure 7.2: Imagery Control - Options



View → Radar data view

If your radar images do not already contain range rings, they can be added using the ***Radar Data View*** options.

No Range Rings

Do not display range rings.

Limit Ring Only

Display a ring which displays the limit of the radar range only.

All Rings

Display the limit ring as well as rings spaced according to the value set in **View → Spacing (Km)**.

7.2.2 Brightness

To adjust the brightness of radar images:

1. Choose **Imagery → Select** or click the  icon in the "Command Icon Bar".

   The ***Image Control*** dialog box appears.

2. Select the ***Options*** tab. (see Figure 7.2)

3. Move the slider for the ***Rad*** slider-bar to the right to increase brightness, to the left to decrease brightness. (see Using slider-bars, (Section 3.3.5))

To adjust the brightness of satellite images:

1. Choose **Imagery** → **Select** or click the  icon in the "Command Icon Bar".
   The ***Image Control*** dialog box appears.
2. Select the ***Options*** tab. (see Figure 7.2)
3. Move the slider for the ***Sat*** slider-bar to the right to increase brightness, to the left to decrease brightness. (see Using slider-bars, (Section 3.3.5))

7.2.3 Blending Ratio

When satellite and radar are displayed together they are "blended" to display a single image. The radar appears over the satellite image, obscuring the satellite information below. You can adjust the opacity of the radar so that you can see some satellite data through the radar data.

To adjust the blend ratio:

1. Choose **Imagery** → **Select** or click the  icon in the "Command Icon Bar".
   The ***Image Control*** dialog box appears.
2. Select the ***Options*** tab. (see Figure 7.2)
3. Move the slider in the slide-bar to the left to decrease the opacity of the radar (making the radar imagery semi-transparent), and move the slider to the right to increase the opacity of the radar. (see Using slider-bars, (Section 3.3.5))

7.2.4 Time Window

The times associated with radar and satellite images will not usually match up exactly with the depiction times or with each other. Also sometimes a radar or satellite image may be missing for a particular time. However, you can step through the *depiction sequence* and have the nearest image (in time) displayed if one exists within a specified window. The window is specified in (negative) minutes before the depiction and (positive) minutes after the depiction.

To adjust the radar time window:

1. Choose **Imagery** → **Select** or click the  icon in the "Command Icon Bar".
   The ***Image Control*** dialog box appears.
2. Select the ***Options*** tab. (see Figure 7.2)
3. Adjust the ***Rad*** spin-boxes using the up and down arrows.

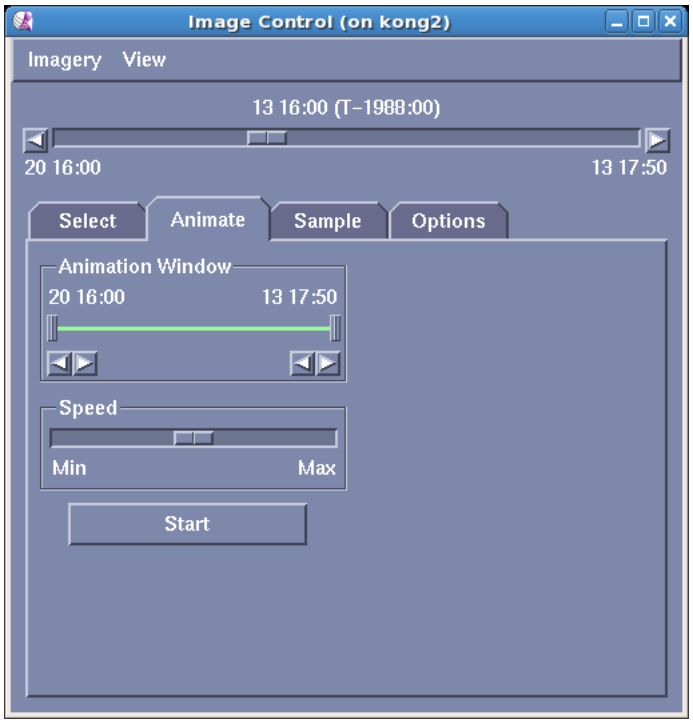
To adjust the satellite time window:

1. Choose **Imagery** → **Select** or click the  icon in the "Command Icon Bar".
   The ***Image Control*** dialog box appears.
2. Select the ***Options*** tab. (see Figure 7.2)
3. Adjust the ***Sat*** spin-boxes using the up and down arrows.

7.3 Image Animation

The *Image Animation* tab controls animation loops for imagery, independent of the depictions. (see Figure 7.3) (Note that moving through the depictions will display matching radar and satellite data depending on the time window set with *Image Options*, but may not display all the radar or satellite imagery that is available between the depictions.)

Figure 7.3: Imagery Control - Animate



To start the animation:

1. Choose **Imagery** → **Select** or click the  icon in the "Command Icon Bar".
   The ***Image Control*** dialog box appears.
2. Select images to animate. (see Image Select, (Section 7.1))
3. Select the ***Animate*** tab. (see Figure 7.3)
4. Set the ***Animation Window*** (see Animation Window, (Section 7.3.1)).

5. Set the ***Speed*** of the animation (see Animation Speed, (Section 7.3.2)).
6. Click **Start**.

To end the animation:

7. Click **Stop**.

7.3.1 Animation Window

It is possible to accumulate a large number radar and satellite images over the course of a day. Sometimes you want to animate only a few hours of imagery. This can be done using the ***Animation Window*** slider bar.

To limit the animation to a subset of the available images:

1. Move the left-hand slider to the desired start time. (see Using slider-bars, (Section 3.3.5))
2. Move the right-hand slider to the desired end time. (see Using slider-bars, (Section 3.3.5))

7.3.2 Animation Speed

You may adjust the speed of the animation by moving the slider in the ***Speed*** slider-bar left to slow the animation or right to speed it up. (see Using slider-bars, (Section 3.3.5))

7.4 Image Sampling

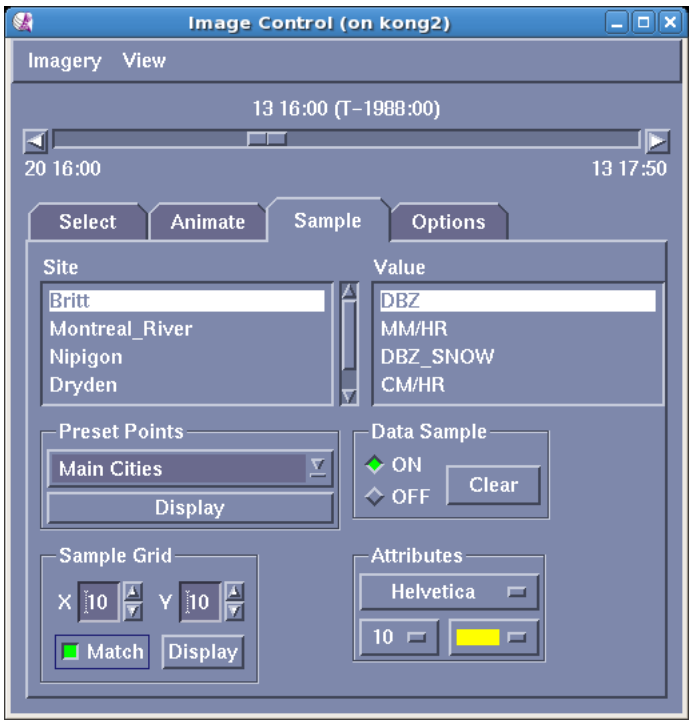
The *Image Sampling* tab controls sampling data type imagery. (see Figure 7.4)

You can add temporary labels to the FPA window with the Sample tool, as you can with continuous fields.

To sample a value:

1. Choose **Imagery** → **Select** or click the  icon in the "Command Icon Bar".
   The ***Image Control*** dialog box appears.
2. Select the ***Sample*** tab. (see Figure 7.4)
3. Select an image to sample from the ***Site*** list.
4. Select a type of sample from the ***Value*** list.
5. Select the display: colour, size and font from the ***Attributes*** section.
6. Pick a point on the depiction. (Point should be within the range of the site chosen)
   A temporary label appears.
   You can sample as many points as you want.

Figure 7.4: Imagery Control - Sample



7. Click the right mouse button and select **Clear** to clear the labels from the depiction.

Instead of sampling multiple individual locations, you can select a grid of sampling locations. To select a set of grid sample locations:

8. Enter the ***X*** and ***Y*** parameters in the ***Sample Grid*** area and click **Display**

   Note: If you select ***Match***, the ***X*** and ***Y*** parameters change together.

Instead of sampling multiple individual locations, you can select a preset list of sampling locations that your System Administrator has already created. To select a set of preset sample locations:

9. Choose one of the preset options in the ***Preset Points*** area and click **Display**.

Chapter 8

The scratchpad

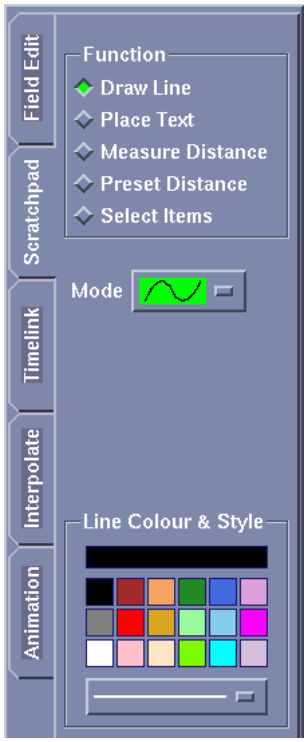
This chapter describes how to use the Scratchpad feature of the FPA.

Use the scratchpad as an overlay on your depiction, like a piece of Plexiglas that you can write on and see through. You can use it to make notations that you do not want to remain permanently on the depictions.

To display the scratchpad controls, click the ***Scratchpad*** tab.

The scratchpad ***Function*** area determines the function used. (see Figure 8.1)

Figure 8.1: Scratchpad panel



8.1 Using the scratchpad

8.1.1 Drawing on your scratchpad

You can use the ***Draw Line*** function to draw lines on the scratchpad in a variety of colours and styles.

To draw on the Scratchpad:

1. From the ***Function*** area, select **Draw Line**. Scratchpad line draw menus appear. (see Figure 8.1)
2. From the ***Mode*** menu, select a drawing mode by clicking the rectangle to the right of the icon.
3. From the ***Line Colour & Style*** area, select a colour. The colour bar indicates the selection.
4. From the ***Line Colour & Style*** area, select a line style.
5. Draw a line. (See Drawing with the "Freehand" tool, (Section 3.4.2) or Drawing with the "Curve" tool, (Section 3.4.3).)

   When you are finished, the line appears in the chosen colour and style.

8.1.2 Placing text

To place text on your scratchpad:

1. From the ***Function*** area, select **Place Text**. Scratchpad text menus appear (see Figure 8.2)

Figure 8.2: Scratchpad text menus

2. Select the text size, font type and colour for the text.

   Note: The point sizes are relative; if you resize a window, the size of the text scales accordingly.
3. Click **Set**.

   An entry dialog box appears.
4. Type your text.
5. Click **Set**.
6. Click where you want the text to appear on the scratchpad.

   The text appears, centred at the point where you clicked.

8.1.3 Measure a distance

To measure a "Great Circle" distance on your scratchpad:

1. From the ***Function*** area, select **Measure Distance**. Scratchpad measure distance menus appear. (see Figure 8.3)

Figure 8.3: Scratchpad measure distance menus

2. From the ***Distance Value*** area, select the text size and font type and colour for the distance label.

   Note: The point sizes are relative; if you resize a window, the size of the text scales accordingly.

3. From the ***Line Colour & Style*** area, select a colour and line style for the distance line.

4. Click the left mouse button on the map where you would like to start the measure.

5. Click the left mouse button on the map where you would like to end the measure.

   Note: You can left click, hold and drag the distance measure. Release the left mouse button when you have the desired distance.

   The distance and bearing appear on the scratchpad.

8.1.4 Measure a preset distance

To measure a preset "Great Circle" distance on your scratchpad:

1. From the ***Function*** area, select **Preset Distance**. Scratchpad preset distance menus appear. (see Figure 8.4)

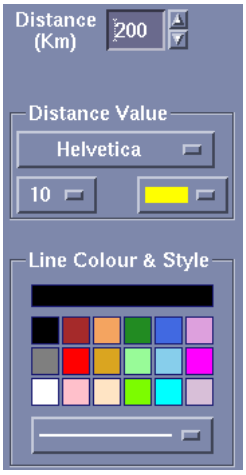
2. Set the ***Distance*** value in kilometres. Use the up and down arrows to increase or decrease the distance by a set amount or click inside the text area and type a specific value.

3. From the ***Distance Value*** area, select the text size and font type and colour for the distance label.

   Note: The point sizes are relative; if you resize a window, the size of the text scales accordingly.

4. From the ***Line Colour & Style*** area, select a colour and line style for the distance line.

Figure 8.4: Scratchpad preset distance menus



5. Click the left mouse button on the map where you would like to start the measure.
6. Click the left mouse button on the map to indicate the bearing.

   Note: You can left click, hold and drag the distance measure to the desired bearing.

   The distance and bearing appear on the scratchpad.

8.1.5 Deleting scratchpad items

To delete Scratchpad items:

1. From the ***Function*** area, select **Select Items**.
2. Point to the item and click the left mouse button to select it. Selected items turn yellow. (Click the left mouse button near the item again to deselect it.)
3. Click the right mouse button and select **Delete**.

To delete all Scratchpad items:

1. From the ***Function*** area, select **Select Items**.
2. Click the right mouse button and select **Select All** or click **Select All** on the right panel.
3. Click the right mouse button and select **Delete**.

8.1.6 Displaying the scratchpad

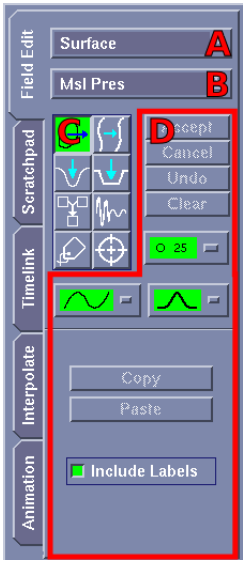
To display the scratchpad while viewing a depiction:

1. Choose **View** → **Show Scratchpad**.
   The scratchpad appears on top of your depiction.
2. To remove the scratchpad, deselect **View** → **Show Scratchpad**.

Chapter 9

Editing Fields

Figure 9.1: Edit tools



Elements of the Field Edit interface

A. *Field Group* drop-down list.

B. *Field* drop-down list.

C. Field editor radio buttons. Allows you to select an edit function.

D. These interface elements are context sensitive. The content changes depending on the type of the active field, the selected edit function and even on what stage of the current edit function you are on.

There are six different types of editors which you can use to change your depiction: continuous, area, link chain, line, vector, and point. Each editor has unique features as well as sharing a number of similar features with the other editors.

All the field editors share some common procedures. These include:

9.1 Accepting, undoing and canceling an action

When you perform an edit, **Accept** and **Undo** become available. At this point, you may undo the last edit by clicking **Undo** or accept the last edit by clicking **Accept**. Once accepted, this edit cannot be undone.

Otherwise, if you proceed with some other action (another edit, change fields, change time, exit, etc.) the last edit is automatically accepted.

Some edits are performed in several steps (e.g., the *Drag* tool). In these cases, **Cancel** becomes available after the first step. This gives you the chance to cancel the current operation. Depending on the type of edit, **Cancel** causes the FPA to go back to the previous step, rather than canceling the edit entirely.

9.2 Clearing the active editing field

Clear allows you to remove labels or samples from the currently active editing field.

For example, if you click **Clear** in *Label* mode, all of the labels disappear.

9.3 Select a portion of a continuous or vector field

Some edit tools for continuous or vector fields require you to "Select" a portion of the field.

To select a portion of a surface:

1. Click the right mouse button and select:

   Select by → Draw an outline
   Use a drawing tool to draw the outline. (see Drawing with the "Freehand" tool, (Section 3.4.2) or Drawing with the "Curve" tool, (Section 3.4.3))

   Select by → Use last drawn outline
   Reuse the last drawn outline.

   Select by → Last moved outline
   Reuse the last moved outline.

   Select by → *`Predefined outline`*
   Your System Administrator may configure some predefined outlines.

9.4 Picking an object for area, line or point fields

Some edit tools for area, line or point fields require you to "Pick" an object. Sometimes you can select only one object other times you may select multiple objects.

9.4.1 Pick an object

To select an object:

1. Position the mouse near to the object.
   For discrete objects, position the mouse near the edge of the object.
2. Click the left mouse button.
   The picked object turns yellow.

9.4.2 Unpick an object

To deselect an object:

1. Position the mouse near the selected object.
   For discrete objects, position the mouse near the edge of the object.
2. Click the left mouse button.
   The object is no longer yellow.

9.4.3 Select all objects in a depiction

1. Click the right mouse button and select **Select all**.

9.4.4 Select all objects in an outline

1. Click the right mouse button and select:

   Select by → Draw an outline
   Use a drawing tool to draw an outline around the objects to be selected. (see Drawing with the "Freehand" tool, (Section 3.4.2) or Drawing with the "Curve" tool, (Section 3.4.3))

   Select by → Use last drawn outline
   Reuse the last drawn outline to select objects.

   Select by → *`Predefined outline`*
   Your System Administrator may configure some predefined outlines.

Chapter 10

Editing continuous fields

The continuous field editor allows you to edit gridded fields in your depiction. Here are some examples of different continuous fields:

- MSL pressure
- surface temperature
- wave height
- sea temperature
- maximum temperature

The continuous field editor controls appear when you choose to edit a continuous field.

Figure 10.1: Continuous field edit tools

10.1 Moving a feature on a continuous field

You can move a *feature* with a minimum of distortion occurring within an outlined area using the *Move* tool.

To move a feature:

Figure 10.2: Move menus

1. Select the move tool. 

   The *move* menus appear. (see Figure 10.2)

2. Select ***Include Labels*** if you want to include labels.

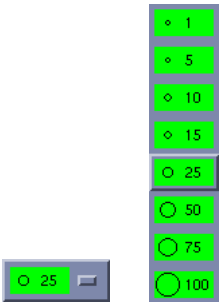
3. Draw the boundary around the feature you want to move.

   (see Select a portion of a continuous or vector field, (Section 9.3))

   This becomes the area of minimum distortion.

4. Select a *radius of influence*. (see Figure 10.3)

Figure 10.3: Radius of influence



(a) (b)

   The percentage indicates the affected area surrounding the point of edit.

   Note: Percentages range from 1 to 100 where 1 is the minimum radius of influence and 100 is approximately one quarter of the map area. Your System Administrator establishes the exact percentage increments.

   The cursor appears with the chosen radius of influence while inside the map area.

5. Click the right mouse button and select **Translate**.

6. Pick a reference point inside the feature and hold the left mouse button down.

   The reference point can be anywhere in the feature; however, if you are moving a portion of the feature off the depiction it is important to pick a point that will remain on the depiction after the move. The line shimmers indicating you can now move it.

7. Drag the feature to the new location.

   The FPA recomputes the field and re-displays the new field contours in white. The original contours remain in the normal field colour.

   Note: You can still restore the field if you click **Undo** at this point.

10.2 Rotating a feature on a continuous field

You can rotate a *feature* with a minimum of distortion occurring within an outlined area using the *Move* tool.

To rotate a feature:

1. Select the move tool. 

   The *move* menus appear. (see Figure 10.2)

2. Select ***Include Labels*** if you want to include labels.

3. Draw the boundary around the feature you want to move.

   (see Select a portion of a continuous or vector field, (Section 9.3))

   This becomes the area of minimum distortion.

4. Select a *radius of influence*. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.

   Note: Percentages range from 1 to 100 where 1 is the minimum radius of influence and 100 is approximately one quarter of the map area. Your System Administrator establishes the exact percentage increments.

   The cursor appears with the chosen radius of influence while inside the map area.

5. Click the right mouse button and select **Rotate**.

6. Press the left mouse button at the point you want to rotate around (the centre of rotation).

7. Select a second point to form a *handle* to rotate the feature and hold the left mouse button down. This is your rotation handle (like the handle of a car window).

   A line displays between the two chosen points.

   The handle point can be anywhere; however, it is important to pick a point that will remain on the depiction after the rotate. The line shimmers indicating you can now rotate it.

8. Turn the handle to a new location.

9. When you have reached the point where the rotation should end, release the left mouse button.

   The FPA recomputes the field and re-displays the new field contours in white. The original contours remain in the normal field colour.

   Note: You can still restore the field if you click **Undo** at this point.

10.3 Copying a feature

You can copy a feature by using **Copy** and **Paste** with the *Move* tool.

To copy a feature:

1. Select the *Move* tool. 

   The *move* menus appear. (see Figure 10.2)

2. Select ***Include Labels*** if you want to include labels.

3. Draw the boundary around the feature you want to copy.

   (see Select a portion of a continuous or vector field, (Section 9.3))

   This becomes the area of minimum distortion.

4. Select a radius of influence. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.

5. Click the right mouse button and select **Copy**.

6. Click the right mouse button and select **Cancel** to cancel the current move action, or move to another depiction.

   Paste is now available.

7. Click the right mouse button and select **Paste**.

8. Click the right mouse button and select **Translate** to enter translation mode (see Moving a feature on a continuous field, (Section 10.1) steps 6-7) or **Rotate** to enter rotation mode (see Rotating a feature on a continuous field, (Section 10.2) steps 6-9).

10.4 Changing the value at a given point (Poke)

The *Poke* tool allows you to pick a point on the depiction and change its value. The field within the radius of influence is altered to smooth the resulting field. In the case of pressure, you can change the pressure value at a given point by a delta amount to deepen a low or increase a high.

To change the value at a given point:

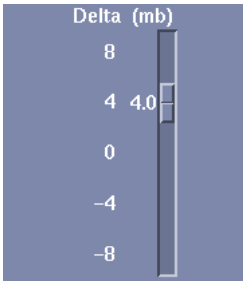
1. Select the *Poke* tool. 

   The *Poke* menus appear. (see Figure 10.4)

2. Move the slider on the slider-bar to adjust the delta amount. (see Using slider-bars, (Section 3.3.5))

   Positive values increase the value at the specified point by that value and negative values decrease the value by that amount. (If you select zero, nothing happens.)

Figure 10.4: Continuous field edit poke menus



3. Select a radius of influence. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.

   The cursor appears with the chosen radius of influence while inside the map area.

4. Pick the point on the depiction you want to change.

   The FPA recomputes the field and re-displays the new field contours in white. The original contours remain in the normal field colour.

Remember to select your delta value first. If you forget and select the point to change first, the existing value is applied.

10.5 Changing the value in a given area (Stomp)

The *Stomp* tool allows you to specify an area on the depiction and change all values within the area. This is similar to the *Poke* tool, but is like poking with an area rather than a point.

To change the value in a given area:

1. Select the **Stomp** tool. 

   The *Stomp* menus appear. (see Figure 10.5)

2. Draw the outline of the area to stomp on the depiction or click the right mouse button and select **Boundary from** and choose **Use Last Stomp Outline** or a preset outline if your System Administrator has configured some predefined outlines.

   The boundary is shown on the depiction.

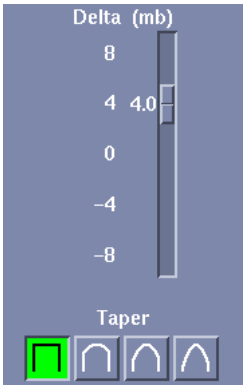
3. Move the slider on the slider-bar to adjust the delta amount. (see Using slider-bars, (Section 3.3.5))

   Positive values increase the value at the specified area by that value and negative values decrease the value by that amount. (If you select zero, nothing happens.)

4. Select the amount of taper to determine the shape of the Stomp area.

   Note: The taper parameter allows you to change the shape of the field adjustment. A flat topped taper applies the same adjustment over the interior of the selected area. A curved taper applies a larger adjustment at the centre of the selected area, and smaller adjustments towards the edges.

Figure 10.5: Continuous field edit stomp menus



5. Select a radius of influence. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.

6. Click the right mouse button and select **Proceed**.

   The FPA recomputes the field and re-displays the new field contours in white. The original contours remain in the normal field colour.

10.6 Dragging a feature on a continuous field

The *Drag* tool allows you to drag values of the continuous field to another position.

To drag a feature:

1. Select the *Drag* tool. 

2. Select a radius of influence. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.

   The cursor appears with the chosen radius of influence while inside the map area.

3. Pick the point you want to drag and hold the left mouse button down.

   The point is shown with a blue box.

4. Drag the pointer to a new location and release.

   A yellow line indicates the path of the drag and the end point.

5. Repeat the previous two steps for the remaining points to drag.

6. Click the right mouse button and select **Proceed** when you have finished picking points to drag.

   The FPA recomputes the field and re-displays the new field contours in white. The original contours remain in the normal field colour.

10.6.1 Tightening a gradient

The *Drag* tool can be used to tighten a gradient or to extend a trough or ridge. You can use radius of influence (see Figure 10.3) to control the area of effect of the edit tool.

To tighten a gradient:

1. Specify one set of drags that anchors one line by picking a point on the line and releasing the button in the same place.
2. Specify a second set of drags that moves the second line towards the first.
3. Click the right mouse button and select **Proceed** to indicate that you have completed the selection.

   The gradients are tightened.

   Note: The numerical solution to multiple drags is non-linear. Predicting the effect of multiple drags comes with experience.

10.7 Smoothing information on a continuous field

To smooth a continuous field:

1. Select the *Smoothing* tool. 

   The *Smoothing* menus appear. (see Figure 10.6)

Figure 10.6: Continuous/Vector field edit smooth menus

2. Select a portion of the surface to smooth.

   (see Select a portion of a continuous or vector field, (Section 9.3))

3. Select a radius of influence. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.

   The cursor appears with the chosen radius while inside the map area.

4. Select a smoothing factor (a multiple of the current grid spacing)
5. Click the right mouse button and select **Proceed**.

   The FPA recomputes the field and re-displays the new field contours in white. The original contours remain in the normal field colour.

10.8 Merging information in a continuous field

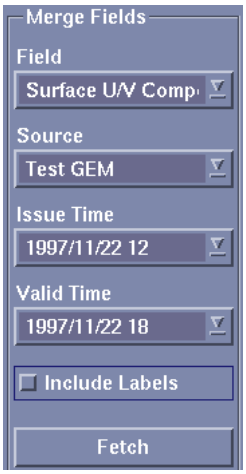
You can bring a field from another source and time and merge it into the depiction using the *Merge* tool.

To merge information:

1. Select the *Merge* tool. 

   The *Merge* menus appear. (see Figure 10.7)

Figure 10.7: Merge menus



2. Select the ***Source***, ***Issue Time*** and ***Valid Time*** of the other field you wish to merge with your current depiction.

   Note: Your System Administrator may configure a field to accept merges from another "compatible" field. If this is the case, there will be a ***Field*** list in the ***Merge Fields*** area.

3. Click **Fetch**.

   The field information from the other source is laid over top of your depiction.

4. Select ***Include Labels*** if you want to include labels.

5. Draw the boundary of the area you want to adopt from the new source.

   (see Select a portion of a continuous or vector field, (Section 9.3))

6. Select a radius of influence. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.

   The cursor appears with the chosen radius while inside the map area.

7. Click the right mouse button and select **Merge** to merge in place, **Translate** to enter translation mode (see Moving a feature on a continuous field, (Section 10.1) steps 6-7), or **Rotate** to enter rotation mode (see Rotating a feature on a continuous field, (Section 10.2) steps 6-9).

   The new field merges.

10.9 Labelling your depiction

The *Labelling* tool allows you to label the field contours, maxima and minima and set label attributes. You can also delete labels.

To label your depiction:

1. Select the *Labelling* tool. 
2. Click the right mouse button and select a ***Label Type***.
3. Click the right mouse button and select a ***Label Action***:

Click...	**To...**
Label Action → Add	add a label at a specified point
Label Action → Move	facilitate clicking and dragging a label from one location to another (if applicable)
Label Action → Modify	change label attributes
Label Action → Show	display a list of attributes of the particular label selected
Label Action → Delete	delete a label

   Note: some labels have fixed attributes and cannot be modified. In these cases the *Modify* tool does not appear.

4. Pick a point to label using the left mouse button.
5. If you have picked **Add...**.

   With automatic labelling, the label appears on the nearest contour or at the nearest high or low.

   All other types of labels appear directly where you click.

   Note: If your label type requires additional information, an entry menu may appear. You can modify the information as required. Clicking on **Set Attributes** will add the label.

6. If you have picked **Move**, **Modify**, **Show** or **Delete** ...

   The nearest label is chosen.

7. To delete all the labels, click the right mouse button and select **Clear**.

10.10 Sampling values on a continuous field

You can add temporary labels to the FPA window with the *Sample* tool.

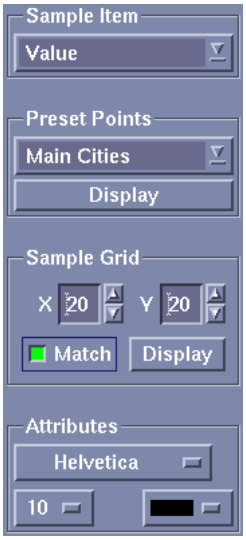
To sample a value:

1. Select the *Sample* tool. 

   The *Sample* menus appear. (see Figure 10.8)

   The cursor appears as cross-hairs while inside the map window.

Figure 10.8: Sample menus



2. Select the type of sample you want from the ***Sample Item*** area.
3. Select the display ***Attributes***: colour, size and font.
4. Pick a point on the depiction.

   A temporary label appears.

   You can sample as many points as you want.
5. Click the right mouse button and select **Clear** to clear the samples from the depiction.

Instead of sampling multiple individual locations, you can select a grid of sampling locations. To select a set of grid sample locations:

6. Enter the ***X*** and ***Y*** parameters in the ***Sample Grid*** area and click **Display**

   Note: If you select ***Match***, the ***X*** and ***Y*** parameters change together.

Instead of sampling multiple individual locations, you can select a preset list of sampling locations that your System Administrator has already created. To select a set of preset sample locations:

7. Choose one of the preset options in the ***Preset Points*** area and click **Display**.

Chapter 11

Editing vector fields

The vector field editor allows you to edit fields with magnitude and direction components, such as wind and ocean waves in your depiction.

The vector field editor controls appear when you choose to edit a vector field. (see Figure 11.1)

Figure 11.1: Vector field edit tools

11.1 Moving a feature on a vector field

To move a feature in your depiction:

1. Select the *Move* tool. 

   The *Move* menus appear. (see Figure 10.2)

2. Select ***Include Labels*** if you want to include labels.

3. Draw the boundary around the feature you want to move.

   (see Select a portion of a continuous or vector field, (Section 9.3))

   This becomes the area of minimum distortion.

4. Select a radius of influence. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.

Note: Percentages range from 1 to 100 where 1 is the minimum radius of influence and 100 is approximately one quarter of the map area. Your System Administrator establishes the exact percentage increments.

The cursor appears with the chosen radius of influence while inside the map area.

5. Pick a reference point inside the feature and hold the left mouse button down.

   The reference point can be anywhere in the feature; however, if you are moving a portion of the feature off the depiction it is important to pick a point that will remain on the depiction after the move. The line shimmers indicating you can now move it.

6. Drag the feature to the new location.

   The FPA recomputes the field and re-displays the new field contours and direction barbs or arrows in white. The original contours remain in the normal field colour.

11.2 Rotating a feature on a vector field

You can rotate a *feature* with a minimum of distortion occurring within an outlined area using the *Move* tool.

To rotate a feature:

1. Select the move tool. 

   The *move* menus appear. (see Figure 10.2)

2. Select ***Include Labels*** if you want to include labels.

3. Draw the boundary around the feature you want to move.

   (see Select a portion of a continuous or vector field, (Section 9.3))

   This becomes the area of minimum distortion.

4. Select a *radius of influence*. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.

   Note: Percentages range from 1 to 100 where 1 is the minimum radius of influence and 100 is approximately one quarter of the map area. Your System Administrator establishes the exact percentage increments.

   The cursor appears with the chosen radius of influence while inside the map area.

5. Click the right mouse button and select **Rotate**.

6. Press the left mouse button at the point you want to rotate around (the centre of rotation).

7. Select a second point to form a *handle* to rotate the feature and hold the left mouse button down. This is your rotation handle (like the handle of a car window).

   A line displays between the two chosen points.

   The handle point can be anywhere; however, it is important to pick a point that will remain on the depiction after the rotate. The line shimmers indicating you can now rotate it.

8. Turn the handle to a new location.
9. When you have reached the point where the rotation should end, release the left mouse button.

   The FPA recomputes the field and re-displays the new field contours in white. The original contours remain in the normal field colour.

   Note: You can still restore the field if you click **Undo** at this point.

11.3 Copying a feature

You can copy a feature by using **Copy** and **Paste** with the *Move* tool.

To copy a feature:

1. Select the *Move* tool. 

   The *move* menus appear (see Figure 10.2).
2. Select ***Include Labels*** if you want to include labels.
3. Draw the boundary around the feature you want to copy.

   (see Select a portion of a continuous or vector field, (Section 9.3))

   This becomes the area of minimum distortion.
4. Select a radius of influence. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.
5. Click the right mouse button and select **Copy**.
6. Click the right mouse button and select **Cancel** to cancel the current move action, or move to another depiction.

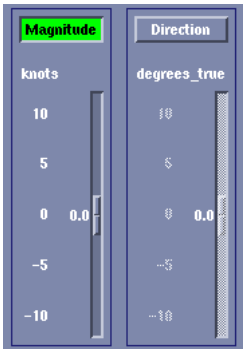
   Paste is now available.
7. Click the right mouse button and select **Paste**.
8. Click the right mouse button and select **Translate** to enter translation mode (see Moving a feature on a vector field, (Section 11.1) steps 6-7) or **Rotate** to enter rotation mode (see Rotating a feature on a vector field, (Section 11.2) steps 6-9).

11.4 Changing the value at a given point (Poke)

The *Poke* tool allows you to pick a point on the depiction and change its value. The field within the radius of influence is altered to smooth the resulting field.

To change the value at a given point:

Figure 11.2: Vector field edit poke menus



1. Select the *Poke* tool. 

   The *Poke* menus appear. (see Figure 11.2)

2. Move the slider on the magnitude and/or direction slider-bars to adjust the delta amount. (see Using slider-bars, (Section 3.3.5))

   Positive values increase the value at the specified point by that value and negative values decrease the value by that amount. (If you select zero, nothing happens.)

   Note: You can select or deselect magnitude and direction by clicking on the button at the top of each column.

3. Select a radius of influence. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.

   The cursor appears with the chosen radius of influence while inside the map area.

4. Pick the point on the depiction you want to change.

   The FPA recomputes the field and re-displays the new field contours in white. The original contours remain in the normal field colour.

Remember to select your delta values first. If you forget and select the point to change first, the existing value is applied.

11.5 Changing the value in a given area (Stomp)

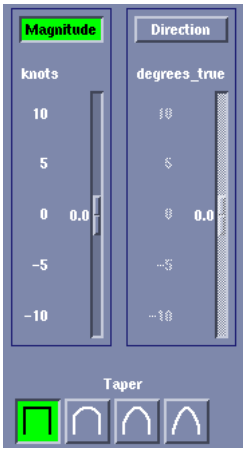
The *Stomp* tool allows you to specify an area on the depiction and change all values within the area. This is similar to the *Poke* tool, but is like poking with an area rather than a point.

To change the value in a given area:

1. Select the **Stomp** tool. 

   The *Stomp* menus appear. (see Figure 11.3)

Figure 11.3: Vector field edit stomp menus



2. Draw the outline of the area to stomp on the depiction or click the right mouse button and select **Boundary from** and choose **Use Last Stomp Outline** or a preset outline if your System Administrator has configured some predefined outlines.

   The boundary is shown on the depiction.

3. Move the slider on the magnitude and/or direction slider-bars to adjust the delta amount. (see Using slider-bars, (Section 3.3.5))

   Positive values increase the value at the specified area by that value and negative values decrease the value by that amount. (If you select zero, nothing happens.)

   Note: You can select or deselect magnitude and direction by clicking on the button at the top of each column.

4. Select the amount of taper to determine the shape of the Stomp area.

   Note: The taper parameter allows you to change the shape of the field adjustment. A flat topped taper applies the same adjustment over the interior of the selected area. A curved taper applies a larger adjustment at the centre of the selected area, and smaller adjustments towards the edges.

5. Select a radius of influence. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.

6. Click the right mouse button and select **Proceed**.

   The FPA recomputes the field and re-displays the new field contours in white. The original contours remain in the normal field colour.

11.6 Dragging a feature on a vector field

The *Drag* tool allows you to drag values of the vector field to another position.

To drag a feature:

1. Select the *Drag* tool. 

2. Select a radius of influence. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.

   The cursor appears with the chosen radius of influence while inside the map area.

3. Pick the point you want to drag and hold the left mouse button down.

   The point is shown with a blue box.

4. Drag the pointer to a new location and release.

   A yellow line indicates the path of the drag and the end point.

5. Repeat the previous two steps for the remaining points to drag.

6. Click the right mouse button and select **Proceed** when you have finished picking points to drag.

   The FPA recomputes the field and re-displays the new field contours in white. The original contours remain in the normal field colour.

11.7 Smoothing information on a vector field

To smooth a vector field:

1. Select the *Smoothing* tool. 

   The *Smoothing* menus appear. (see Figure 10.6)

2. Select a portion of the surface to smooth.

   (see Select a portion of a continuous or vector field, (Section 9.3))

3. Select a radius of influence. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.

   The cursor appears with the chosen radius while inside the map area.

4. Select a smoothing factor (a multiple of the current grid spacing)

5. Click the right mouse button and select **Proceed**.

   The FPA recomputes the field and re-displays the new field contours in white. The original contours remain in the normal field colour.

11.8 Merging information in a vector field

You can bring a vector field from another source and time and merge it into the depiction using the *Merge* tool.

To merge information:

1. Select the *Merge* tool. 

   The *Merge* menus appear. (see Figure 10.7)

2. Select the ***Source***, ***Issue Time*** and ***Valid Time*** of the other field you wish to merge with your current depiction.

   Note: Your System Administrator may configure a field to accept merges from another "compatible" field. If this is the case, there will be a ***Field*** list in the ***Merge Fields*** area.

3. Select ***Include Labels*** if you want to include labels.

4. Click **Fetch**.

   The field information from the other source is laid over top of your depiction.

5. Draw the boundary of the area you want to adopt from the new source.

   (see Select a portion of a continuous or vector field, (Section 9.3))

6. Select a radius of influence. (see Figure 10.3)

   The percentage indicates the affected area surrounding the point of edit.

   The cursor appears with the chosen radius of influence while inside the map area.

7. Click the right mouse button and select **Merge** to merge in place, **Translate** to enter translation mode (see Moving a feature on a vector field, (Section 11.1) steps 6-7), or **Rotate** to enter rotation mode (see Rotating a feature on a vector field, (Section 11.2) steps 6-9).

   The new field merges.

11.9 Labelling your depiction

The *Labelling* tool allows you to label the vector field and set label attributes. You can also delete labels.

To label your depiction:

1. Select the *Labelling* tool. 

2. Click the right mouse button and select a ***Label Type***.

3. Click the right mouse button and select a ***Label Action***:

Click...	To...
Label Action → Add	add a label at a specified point
Label Action → Move	facilitate clicking and dragging a label from one location to another (if applicable)
Label Action → Modify	change label attributes
Label Action → Show	display a list of attributes of the particular label selected
Label Action → Delete	delete a label

   Note: some labels have fixed attributes and cannot be modified. In these cases the *Modify* tool does not appear.

4. Pick a point to label using the left mouse button.

5. If you have picked **Add...**.

   With automatic labelling, the label appears on the nearest contour or at the nearest high or low.

   All other types of labels appear directly where you click.

   Note: If your label type requires additional information, an entry menu may appear. You can modify the information as required. Clicking on **Set Attributes** will add the label.

6. If you have picked **Move**, **Modify**, **Show** or **Delete** ...

   The nearest label is chosen.

7. To delete all the labels, click the right mouse button and select **Clear**.

11.10 Sampling values on a vector field

You can add temporary labels to the FPA window with the *Sample* tool.

To sample a value:

1. Select the *Sample* tool. 

   The *Sample* menus appear. (see Figure 10.8)

   The cursor appears as cross-hairs while inside the map window.

2. Select the type of sample you want from the ***Sample Item*** area.

3. Select the display ***Attributes***: colour, size and font.

4. Pick a point on the depiction.

   A temporary label appears.

   You can sample as many points as you want.

5. Click the right mouse button and select **Clear** to clear the samples from the depiction.

Instead of sampling multiple individual locations, you can select a grid of sampling locations. To select a set of grid sample locations:

6. Enter the ***X*** and ***Y*** parameters in the ***Sample Grid*** area and click **Display**

   Note: If you select ***Match***, the ***X*** and ***Y*** parameters change together.

Instead of sampling multiple individual locations, you can select a preset list of sampling locations that your System Administrator has already created. To select a set of preset sample locations:

7. Choose one of the preset options in the ***Preset Points*** area and click **Display**.

Chapter 12

Editing areas and wind areas

The area editor allows you to draw and manipulate discrete areas on your depiction. These areas may overlap. This includes fields such as:

- system weather
- probability of precipitation
- ice cover
- wind (adjustment area)

  Note: Wind areas are a special case. You can define how to calculate a wind rather than setting the wind itself.

The area editor controls appear when you choose to edit a discrete field. (see Figure 12.1)

Figure 12.1: Area edit tools

12.1 Defining area values

Each area in a discrete field contains values for a list of attributes. (The attributes have been determined by the System Administrator.) You can set the values for attributes to use when drawing a new area, or when modifying or dividing an existing area. These values can also be saved as a template to use later, if desired. The currently active values for attributes are stored in the ***Area*** section. The discrete field also contains values for attributes that are used as default or background values, for regions where no areas have been drawn. These background values are stored in the ***Background*** section, and may also be changed.

12.1.1 Selecting and modifying a template

You can select a previously defined template of *attribute* values from the ***Memory*** section, and modify the values as desired.

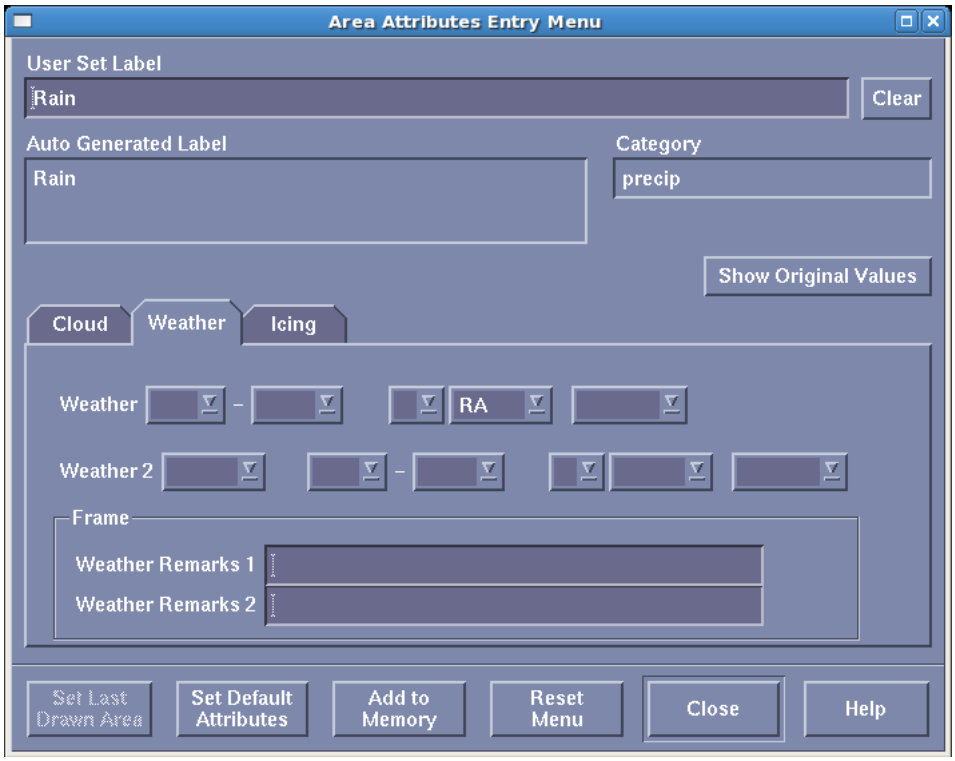
To select and modify a template:

1. Select the *Draw* tool. 
2. From the ***Memory*** section, choose a template.

   The values for this template move to the ***Area*** section.
3. In the ***Area*** section, click **Set**.

   The ***Area Attribute*** dialog box appears. (see Figure 12.2) You can change the attribute values as

Figure 12.2: Area attribute entry menus



desired. Some entries allow for free format typing, some entries have pop-up or scrolled lists of acceptable values, and some numeric entries have spin boxes. Attributes which cannot be modified have a greyed out background.

Click...	To...
Show Original Values	Temporarily display the attribute values before changes were made.
Reset Menu	Revert back to the original attribute values, before changes were made.

Click...	To...
Add to Memory	Save the attribute values as a new template in the ***Memory*** section.
Close	Close the ***Area Attribute*** dialog box, without saving any changes.

12.1.2 Deleting a template

Templates created by the System Administrator cannot be deleted from within the FPA. If user templates have been added, **Delete** under the ***Area*** section will be active.

To delete a template:

1. Select the *Draw*, *Modify* or *Divide* tool.
2. Under the ***Area*** section, click **Delete**.

   A ***Delete Memory*** dialog box appears.
3. Choose the templates to delete.
4. Click **Delete**, or click **Cancel** to close the dialog box without deleting.

12.1.3 Setting area values

If you are drawing a new area, then the currently active attribute values stored in the ***Area*** section are used as the values for the new area.

To set area values:

1. Select the *Draw* tool. 

   or

   Select the *Modify* tool  , and pick inside an area.

   or

   Select the *Divide* tool  , pick an area and divide the area.
2. Under the ***Area*** section, click **Set**.

   The ***Area Attribute*** dialog box appears. (see Figure 12.2)

   You can change the attribute values as desired. Some entries allow for free format typing, some entries have pop-up or scrolled lists of acceptable values, and some numeric entries have spin boxes. Attributes which cannot be modified have a greyed out background.

Click...	To...
Show Original Values	Temporarily display the attribute values before changes were made.

Click...	To...
Reset Menu	Revert back to the original attribute values, before changes were made.
Set Default Attributes	Save the attribute values to the ***Area*** section.
Set Last Drawn Area or **Set Selected Area**	Apply the attribute values to the last drawn area, if you did not set new values before drawing.
Add to Memory	Save the attribute values as a new template in the ***Memory*** section.
Close	Close the ***Area Attribute*** dialog box, without saving any changes.

The new values are applied to the area when you click **Set Selected Area** or **Set Last Drawn Area**.

Note: You can display the currently active attribute values in the ***Area*** section by clicking ***Show***.

12.1.4 Setting background values

You may be able to set default or background values for the attributes for a discrete field. The background attribute values are the same at every time in the time *sequence*. Modifying the background attribute values at any time changes the background values at all other times as well.

To set background values:

1. Select the *Draw*, *Modify* or *Divide* tool.
2. Under the ***Background*** section, click **Set**.

   The ***Background Area Attribute*** dialog box appears.

   You can change the attribute values as desired. Some entries allow for free format typing, some entries have pop-up or scrolled lists of acceptable values, and some numeric entries have spin boxes. Attributes which cannot be modified have a greyed out background.

Click...	To...
Show Original Values	Temporarily display the attribute values before changes were made.
Reset Menu	Revert back to the original attribute values, before changes were made.
Set Default Attributes	Save the attribute values to the ***Background*** section.
Cancel	Close the ***Background Area Attribute*** dialog box, without saving any changes.

The new background values are applied to all times in the time sequence when you click **Set Default Attributes**.

Note: You can display the background attribute values in the ***Background*** section by clicking **Show**.

12.2 Defining wind values

Each area in a wind field contains a model for calculating the wind, and optional adjustments to this model direction, wind speed, and gust speed. (The models for calculating wind have been determined by the System Administrator.) You can set the adjusted wind model to use when drawing a new area, or when modifying or dividing an existing area. The adjusted wind model can also be saved as a template to use later, if desired. The currently active adjusted wind model is stored in the ***Area Value*** section. The wind field also contains an adjusted wind model that is used as a default or background model, for regions where no wind areas have been drawn. This background adjusted wind model is stored in the ***Background Value*** section, and may also be changed.

12.2.1 Selecting and modifying a wind template

You can select a previously defined wind template containing an adjusted wind model from the ***Memory*** section, and modify the values as desired.

To select and modify a wind template:

1. Select the *Draw* tool. 

   The *Draw* menus appear.

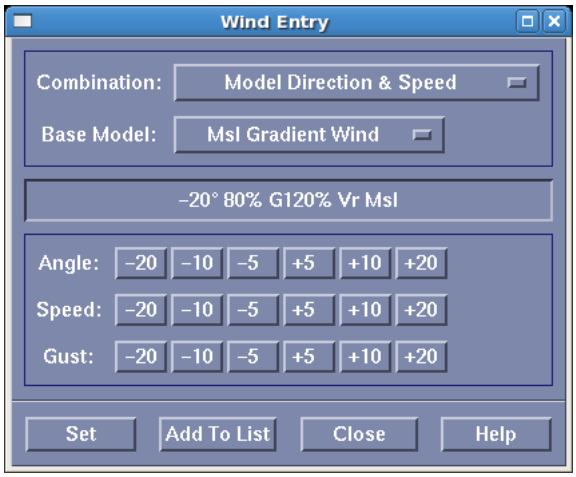
2. From the ***Memory*** section, choose a wind template.

   The values for this wind template move to the ***Area Value*** section.

3. Under the ***Area Value*** section, click **Set**.

   The ***Wind Entry*** dialog box appears. (see Figure 12.3) You can choose a wind model from which

Figure 12.3: Wind entry dialog



   to calculate winds from the ***Base Model*** list. (Models for calculating winds are determined by the System Administrator.)

You can use the wind direction calculated from the chosen model, with an additional adjustment in degrees (***Model Direction***), or you can set the wind direction to an absolute value in degrees (***Absolute Direction***).

You can use the wind speed and gust speed calculated from the chosen model, with an additional percentage adjustment (***Model Speed***), or you can set the wind speed and gust speed to an absolute value in knots (***Absolute Speed***).

Click...	To...
Add to List	Save the adjusted wind model as a new wind template in the ***Memory*** section.
Close	Close the ***Wind Entry*** dialog box, without saving any changes.

12.2.2 Deleting a wind template

Wind templates created by the System Administrator cannot be deleted from within the FPA. If user wind templates have been added, **Delete** under the ***Area Value*** section will be active.

To delete a wind template:

1. Select the *Draw*, *Modify* or *Divide* tool.
2. Under the ***Area Value*** section, click **Delete**.

   A ***Delete Memory*** dialog box appears.
3. Choose the wind templates to delete.
4. Click **Delete**, or click **Cancel** to close the dialog box without deleting.

12.2.3 Setting wind area values

If you are drawing a new wind area, then the currently active adjusted wind model stored in the ***Area Value*** section is used as the adjusted wind model for the new wind area.

To set wind area values:

1. Select the *Draw* tool. 

   or

   Select the *Modify* tool  , and pick inside a wind area.

   or

   Select the *Divide* tool  , pick a wind area and divide the area.
2. Under the ***Area Value*** section, click **Set**.

   The ***Wind Entry*** dialog box appears. (see Figure 12.3)

You can choose a wind model from which to calculate winds from the ***Base Model*** list. (Models for calculating winds are determined by the System Administrator.)

You can use the wind direction calculated from the chosen model, with an additional adjustment in degrees (***Model Direction***), or you can set the wind direction to an absolute value in degrees (***Absolute Direction***).

You can use the wind speed and gust speed calculated from the chosen model, with an additional percentage adjustment (***Model Speed***), or you can set the wind speed and gust speed to an absolute value in knots (***Absolute Speed***).

Click...	To...
Set	Save the adjusted wind model to the ***Area Value*** section.
Add to List	Save the adjusted wind model as a new wind template in the ***Memory*** section.
Close	Close the ***Wind Entry*** dialog box, without saving any changes.

The new adjusted wind model is applied to the wind area when you click **Set**.

Note: You can display the currently active adjusted wind model in the ***Area Value*** section by clicking **Show**.

12.2.4 Setting background wind values

You may be able to set a default or background adjusted wind model for a wind field. The background adjusted wind model is the same at every time in the time sequence. Modifying the background adjusted wind model at any time changes the background adjusted wind model at all other times as well.

To set background wind values:

1. Select the *Draw*, *Modify* or *Divide* tool.
2. Under the ***Background Value*** section, click **Set**.

   The ***Background Wind*** dialog box appears. (see Figure 12.4) You can choose a wind model from which to calculate winds from the ***Base Model*** list. (Models for calculating winds are determined by the System Administrator.)

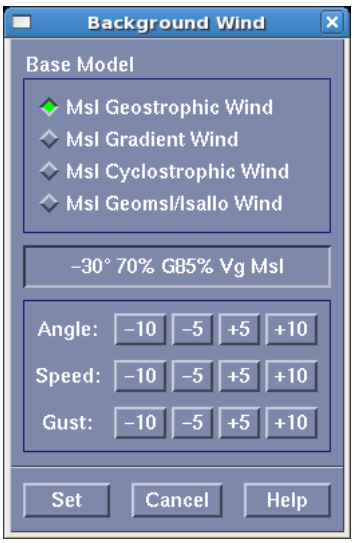
   You can set an adjustment in degrees to be applied to the wind direction calculated from the chosen model, and set percentage adjustments to the wind speed and gust speed calculated from the chosen model.

Click...	To...
Set	Save the adjusted wind model to the ***Background Value*** section.
Cancel	Close the ***Background Wind*** dialog box, without saving any changes.

The new background adjusted wind model is applied to all times in the time sequence when you click **Set**.

Note: You can display the background adjusted wind model in the ***Background Value*** section by clicking

Figure 12.4: Background wind entry dialog



Show.

12.3 Drawing an area

To draw an area:

1. Select the *Draw* tool 
   The *Draw* menus appear. (see Figure 12.5)
   The cursor appears as a pencil while inside the map area.
2. Select the stacking order.
   If you draw overlapping areas, you can order them using the stacking order feature. Use the guiding arrows to allocate your area to the top  or bottom  of overlapping areas.
3. From the ***Memory Display*** area, select a template or create a new one.
4. Draw the area.

12.4 Deleting an area

To delete an area:

1. Select the *Modify* tool. 
2. Pick the area to delete. (see Pick an object, (Section 9.4.1))

Figure 12.5: Area draw menus

3. Click the right mouse button and select **Delete Area**.
4. To restore the area, click the right mouse button and select **Undo**.

To delete multiple areas:

1. Select the *Move* tool. 
2. Pick the area(s) to delete. (see Pick an object, (Section 9.4.1))
3. Click the right mouse button and select **Cut**.
4. To restore the area(s), click the right mouse button and select **Undo** or **Paste**.

12.5 Moving an area

To move one or more areas.

1. Select the *Move Area* tool. 
   The *move* menus appear. (see Figure 12.6)
2. Select ***Include Labels*** if you want to include labels.
3. Pick the area(s) to move. (see Pick an object, (Section 9.4.1))
4. Click the right mouse button and select **Translate**.
   The picked areas turn blue.

Figure 12.6: Move menus

5. Pick a reference point on the map and hold the left mouse button down.

   The reference point can be anywhere; however, if you are moving a portion of the area(s) off the depiction it is important to pick a point that will remain on the depiction after the move. The area boundaries shimmer indicating you can now move them.

6. Drag the feature to the new location and release the button.

   The FPA then recomputes the field and re-displays the new areas in white.

Note: The areas remain selected until you deselect them, so you may continue to use the *Move* tools. (see Unpick an object, (Section 9.4.2))

12.6 Rotating an area

To rotate an area in the Area editor:

1. Select the *Move* tool. 

   The *move* menus appear. (see Figure 12.6)

2. Select ***Include Labels*** if you want to include labels.

3. Pick the area(s) to rotate. (see Pick an object, (Section 9.4.1))

4. Click the right mouse button and select **Rotate**.

   The picked areas turn blue.

5. Press the left mouse button at the point you want to rotate around (the centre of rotation).

6. Select a second point to form a *handle* to rotate the area(s) and hold the left mouse button down. This is your rotation handle (like the handle of a car window).

   A line displays between the two chosen points.

7. Turn the handle to a new location.

8. When you have reached the point where the rotation should end, release the left mouse button.

   The FPA displays the rotated area(s).

   Note: You can still restore the field if you click **Undo** at this point.

Note: The areas remain selected until you deselect them, so you may continue to use the *Move* tools. (see Unpick an object, (Section 9.4.2))

12.7 Copying an area

You can copy an area by using **Copy** and **Paste** with the *Move Area* tool.

To copy an area:

1. Select the *Move Area* tool. 

   The *Move* menus appear. (see Figure 12.6)

2. Select ***Include Labels*** if you want to include labels.

3. Pick the area(s) to copy. (see Pick an object, (Section 9.4.1))

4. Click the right mouse button and select **Copy**.

5. Click the right mouse button and select **Cancel** to deselect all areas, or move to another depiction.

   Paste is now available.

   Note: if pasted to the same depiction the areas will be automatically offset to avoid inadvertent duplication.

6. Click the right mouse button and select **Paste**.

7. The areas remain selected until you deselect them, thus **Translate** and **Rotate** are available in the right mouse button context menu. (see Moving an area, (Section 12.5) and Rotating an area, (Section 12.6))

   Note: You can still remove the copied field if you click **Undo** at this point.

12.8 Dividing an area

Divide allows you to divide an area. It is often easier to draw the large area and then subdivide it (for example, rain or snow boundary). Divide can also be used to rejoin divided areas.

12.8.1 Dividing areas

To divide an area:

1. Select the *Divide* tool. 

   The *Divide* menus appear. (see Figure 12.7)

   The cursor appears as a knife while inside the map area.

2. Pick the area to divide. (see Pick an object, (Section 9.4.1))

3. Select a drawing tool and draw the dividing line.

   The start and end points extrapolate to fit in the boundary of the area. One of the new subareas turns blue.

Figure 12.7: Area divide menus

4. Select values for the first area from the ***Memory*** section, or by clicking the right mouse button and selecting **Set**. (see Setting area values, (Section 12.1.3))

   or

   If the value is to remain the same, click the right mouse button and select **Leave as is**.

   The other subarea turns blue.

5. Select values for the second area from the ***Memory*** section, or by clicking the right mouse button and selecting **Set**. (see Setting area values, (Section 12.1.3))

   or

   If the value is to remain the same, click the right mouse button and select **Leave as is**.

6. If an area consists of a number of subareas, repeat the divide process until all the areas are defined.

12.8.2 Rejoining divided areas

You can use the Divide tool to rejoin the last divided subareas.

To rejoin divided areas:

1. Select the *Divide* tool. 

2. Pick the subarea to rejoin. (see Pick an object, (Section 9.4.1))

   If the selected subarea can be rejoined, the message indicates that the right button can be used to rejoin and the subarea that can be joined turns green.

3. Click the right mouse button and select **Rejoin**.

   Note: The values for the rejoined subareas are taken from those of the first subarea chosen.

12.9 Drawing area holes

The extent of an area may be modified by drawing area holes. The holes can intersect the area boundary or be entirely enclosed by the area boundary. (Holes outside the area boundary are automatically deleted.)

12.9.1 Drawing area holes

To draw an area hole:

1. Select the *Holes* tool. 
2. Pick the area on which to draw holes. (see Pick an object, (Section 9.4.1))
3. Select a drawing tool and draw the hole.

12.10 Modifying an area

Modify allows you to change the shape of an area boundary or the position of dividing lines, or to change the value of the area or any divided subarea.

You can modify areas or dividing lines with two type of drawing tools.

Select...	**To...**
a drawing tool	draw a new line segment
one of the *puck* sizes	sculpt the existing area or dividing line

12.10.1 Drawing a new boundary

To draw a new boundary:

1. Select the **Modify** tool. 
2. Pick the area to modify. (see Pick an object, (Section 9.4.1))

   The area boundary turns yellow and the area is covered with a white grid.

   Note: You can pick inside or outside an area to modify the area boundary. If you pick outside the area boundary you will not be able to **Set** the area attributes.
3. Select the "Freehand" or "Curve" drawing tool.
4. Draw the new boundary segment. Start and end the line as close to the existing boundary as possible.

   The new segment boundary becomes blue and the rest of the original boundary remains yellow.
5. If the segment shown in yellow is the segment you want to delete, click the right mouse button and select **Confirm**. If you want to delete a different segment, select it and then click the right mouse button and select **Confirm**.

12.10.2 Sculpting an existing boundary

To sculpt an existing boundary:

1. Select the *Modify* tool. 
2. Pick the area to modify. (see Pick an object, (Section 9.4.1))

   The area boundary turns yellow and the area is covered with a white grid.
3. Select a puck size. (see Modifying with the "Sculpt" tool, (Section 3.4.4))

   The number indicates the proportional size of the puck.

   The cursor appears as concentric circles while inside the map window.
4. Choose a smoothing mode. (see Modifying with the "Sculpt" tool, (Section 3.4.4))
5. Click and hold the left mouse button to activate the sculpting puck.

   The boundary is modified when the puck comes in contact with it.
6. Release the button when finished.

   You can repeat the previous step as often as you wish.
7. Click the right and select **Cancel** button to complete the edit and deselect the area.

12.10.3 Redrawing a dividing line or area hole

To re-draw a dividing line or area hole:

1. Select the *Modify* tool. 
2. Pick the dividing line or area hole to modify. (see Pick an object, (Section 9.4.1))

   The line turns yellow.
3. Select the "Freehand" or "Curve" drawing tool.
4. Draw the new line. Start or end the line as close to the existing line as possible.

   The new line turns blue and the original line remains yellow.

   Note: If the start and end points of the new line are too far away from the existing line, the new line will replace the existing one.
5. If the line is acceptable, click the right mouse button and select **Confirm**. If the line is not acceptable select **Cancel** and the line will remain selected you can attempt the edit again.

12.10.4 Sculpting an existing dividing line or area hole

To sculpt an existing dividing line or area hole:

1. Select the *Modify* tool. 
2. Pick the dividing line or area hole to modify. (see Pick an object, (Section 9.4.1))
   The line turns yellow.
3. Select a puck size. (see Modifying with the "Sculpt" tool, (Section 3.4.4))
   The number indicates the proportional size of the puck.
   The cursor appears as concentric circles while inside the map area.
4. Choose a smoothing mode. (see Modifying with the "Sculpt" tool, (Section 3.4.4))
5. Click and hold the left mouse button to activate the sculpting puck.
   The line is modified when the puck comes in contact with it.
6. Release the button when finished.
   You can repeat the previous step as often as you wish.
7. Click the right mouse button and select **Cancel** to complete the edit and deselect the line.

Note
Sculpting the entire dividing line to the edge of the area (or subarea) that the dividing line is within will delete the dividing line.

Note
Sculpting the boundary of an area hole so that it lies completely outside the area to which it belongs will delete the hole.

12.10.5 Deleting an area hole

To delete an area hole:

1. Select the *Modify* tool. 
2. Pick the area hole to delete. (see Pick an object, (Section 9.4.1))
   The hole boundary turns yellow.
3. Click the right mouse button and select **Delete Hole**.

12.10.6 Changing the template for an area or subarea

To redefine the value of an area or the value of a subarea of a divided area:

1. Select the *Modify* tool. 
2. Pick inside the area or subarea to modify. (see Pick an object, (Section 9.4.1))

   The boundary turns yellow and the area or subarea is covered with a white grid.
3. Change the values by selecting a template from the ***Memory*** section, or modify the values by clicking the right mouse button and selecting **Set**. (see Setting area values, (Section 12.1.3))
4. Click the right mouse button and select **Cancel** to complete the edit and deselect the area.

12.10.7 Changing the stacking order of an area

To change the stacking order of an area:

1. Select the *Modify* tool. 
2. Pick the area to restack. (see Pick an object, (Section 9.4.1))
3. Click the stacking tool  (or )

Select...	To...
up arrow with line	move area to the top of the stack
up arrow	move area up one level
down arrow	move area down one level
down arrow with line	move area to the bottom of the stack

4. Click the right mouse button and select **Cancel** to complete the edit and deselect the area.

12.11 Merging information in an area field

You can bring a field from another source and time and merge it into the depiction using the *Merge* tool.

To merge information:

1. Select the *Merge* tool. 

   The *merge* menus appear. (see Figure 10.7)
2. Select the ***Source***, ***Issue Time*** and ***Valid Time*** of the other field you wish to merge with your current depiction.

   Note: Your System Administrator may configure a field to accept merges from another "compatible" field. If this is the case, there will be a ***Field*** list in the ***Merge Fields*** area.

3. Select ***Include Labels*** if you want to include labels.
4. Click **Fetch**.

   The field information from the other source is laid over top of your depiction.
5. Pick the area(s) to merge. (see Pick an object, (Section 9.4.1))
6. Finish your selection by pressing the right mouse button and select

Select...	To...
Merge	merge information in place
Translate	move and merge the information
Rotate	rotate and merge the information

   Note: the picked information remains selected, so you may perform multiple translate and rotate operations.
7. Click the right mouse button and select **Cancel** to complete the merge.

12.12 Labelling your depiction

To label any point on the depiction:

1. Select the *Labelling* tool. 
2. Click the right mouse button and select a **Label Type**.
3. Click the right mouse button and select a ***Label Action***:

Select...	To...
Label Action → Add	add a label at a specified point
Label Action → Move	facilitates clicking and dragging a label from one location to another (if applicable)
Label Action → Show	display a list of attributes of the particular label selected
Label Action → Modify	change label attributes
Label Action → Delete	delete a label

   Note: some labels have fixed attributes and cannot be modified. In these cases the *Modify* tool does not appear.
4. Pick a point to label using the left mouse button.
5. If you have picked **Add**...

   Labels appear directly where you click.

   Note: If your label type requires additional information, an entry menu may appear. You can modify the information as required. Clicking on **Set Attributes** will add the label.

6. If you have picked **Move**, **Show**, **Modify** or **Delete** ...

   The nearest label is chosen.

7. To delete all the labels, click the right mouse button and select **Clear**.

12.13 Sampling values from an area fields

You can add temporary labels to the FPA window with the *Sample* tool.

To sample a value:

1. Select the *Sample* tool. 

   The *Sample* menus appear. (see Figure 12.8)

Figure 12.8: Sample menus

   The cursor appears as cross-hairs while inside the map window.

2. Select the type of sample you want from the ***Sample Item*** area. You can choose to sample ***All Attributes*** or a single attribute from the list.

3. Select the display attributes: colour, size and font.

4. Pick a point on the depiction.

   A temporary label appears.

   You can sample as many points as you want.

   Note: If you select ***All Attributes*** from the ***Sample Item*** area, a dialog box appears displaying All Attributes for the point.

5. Click the right mouse button and select **Clear** to clear the samples from the depiction.

Instead of sampling multiple individual locations, you can select a preset list of sampling locations that your System Administrator has already created. To select a set of preset sample locations:

6. Choose one of the preset options in the ***Preset Points*** area and click **Display**.

Note: if you select ***All Attributes*** from the ***Sample Item*** area, the ***Preset Points*** option cannot be used. Only single attributes can be displayed with this option.

12.14 Labelling wind

When you label wind, you can label individual points just as you would any other field (see Labelling your depiction , (Section 12.12)).

Note: Wind labels appear as a wind barb or arrow.

12.15 Sampling wind from a wind field

Sampling wind is like sampling values but with a few more options (see Sampling values from an area fields, (Section 12.13)).

You may sample All Attributes, which will display the parameters the FPA would use to calculate the wind at a given point. You may also sample the actual adjusted wind calculated from these parameters, or the wind calculated from a number of other models. The adjusted winds or model winds are usually displayed as wind barbs.

To sample a wind:

1. Select the *Sample* tool. 

   The *Sample* menus appear. (see Figure 10.8)

   The cursor appears as cross-hairs while inside the map window.

2. Select the type of sample you want from the ***Sample Item*** area.

   You can choose to sample ***All Attributes***, an adjusted wind, or a model wind.

3. Select the display attributes: colour, size and font.

4. Pick a point on the depiction.

   A temporary label appears.

   You can sample as many points as you want.

   Note: If you selected ***All Attributes***, a dialog box appears displaying All Attributes for the point.

5. Click the right mouse button and select **Clear** to clear the samples from the depiction.

Instead of sampling multiple individual locations, you can select a grid of sampling locations. To select a set of grid sample locations:

6. Enter the ***X*** and ***Y*** parameters in the ***Sample Grid*** area and click **Display**

   Note: If you select ***Match***, the ***X*** and ***Y*** parameters change together.

Note: if you select ***All Attributes*** from the ***Sample Item*** area, the ***Sample Grid*** option cannot be used. Only single attributes can be displayed with this option.

Instead of sampling multiple individual locations, you can select a preset list of sampling locations that your System Administrator has already created. To select a set of preset sample locations:

7. Choose one of the preset options in the ***Preset Points*** area and click **Display**.

Note: if you select ***All Attributes*** from the ***Sample Item*** area, the ***Preset Points*** option cannot be used. Only single attributes can be displayed with this option.

Chapter 13

Editing link chains

The link chain editor allows you to draw and manipulate link chain features on your depiction. Link chains can be used for fields with time sequences, such as travel routes or feature motion.

TODO: Better describe the concept of a link chain and what it can be used for.

TODO: Add explanation of Link Node types.

Figure 13.1: Link chain edit tools

13.1 Adding tracks

To add a track:

1. Select the *Add track* tool. 

   The *Add track* menus appear. (see Figure 13.2)

   The cursor appears as a pencil while inside the map area.

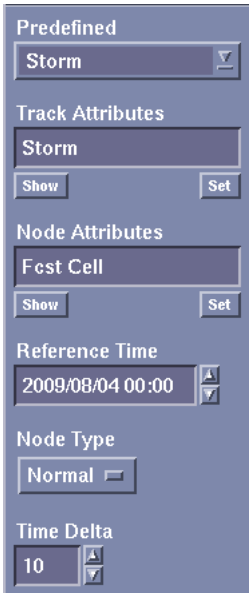
2. Use the link chain add menus to set the attributes of your new link chain.

   (a) Set ***Track Attributes*** by clicking the **set** button. These attributes apply to the whole link chain.

   (b) Set ***Node Attributes*** by clicking the **set** button. These attributes apply to the next node to be added. These may be updated as you add more nodes to the track.

   (c) Set the ***Reference Time*** (time associated with first node in the track) for the link chain using the spin-box.

Figure 13.2: Link chain add menus



(d) Set the ***Node Type*** from the drop-down menu. This attribute applies to the next node to be added. It may be updated as you add more nodes to the track.

(e) Set the ***Time Delta*** (time between nodes) for the link chain using the spin-box. Intermediate values will be represented as interpolation nodes.

3. Move the pointer to where you wish to begin the track and click the left button to add the first node of the link chain.

4. Adjust ***Node Attributes***, ***Node Type*** and ***Time Delta*** as necessary, then move the pointer to where you wish to place the next node in the track and click the left button to add it.

5. Repeat the previous step until your link chain is the desired length. Click the right mouse button and select **End Chain**.

13.2 Deleting link chains

To delete a link chain:

1. Select the *Modify* tool. 

2. Pick the link chain to delete. (see Pick an object, (Section 9.4.1))

3. Click the right mouse button and select **Delete**.

To delete multiple link chains:

1. Select the *Move* tool. 

2. Pick the link chain(s) to delete. (see Pick an object, (Section 9.4.1))
3. Click the right mouse button and select **Cut**.
4. To restore the link chain(s), click the right mouse button and select **Undo** or **Paste**.

13.3 Moving a link chain

To move one or more link chains.

1. Select the *Move* tool. 
2. Pick the link chain(s) to move. (see Pick an object, (Section 9.4.1))
3. Click the right mouse button and select **Translate**.

   The picked link chain(s) turn blue.
4. Pick a reference point on the map and hold the left mouse button down.

   The reference point can be anywhere; however, if you are moving a portion of the link chain(s) off the depiction it is important to pick a point that will remain on the depiction after the move. The link chains shimmer indicating you can now move them.
5. Drag the link chain(s) to the new location and release the button.

   The FPA then recomputes the field and re-displays the new link chain(s) in white.

Note: The link chains remain selected until you deselect them, so you may continue to use the *Move* tools. (see Unpick an object, (Section 9.4.2))

13.4 Rotating a link chain

To rotate a link chain:

1. Select the *Move* tool. 
2. Pick the link chain(s) to rotate. (see Pick an object, (Section 9.4.1))
3. Click the right mouse button and select **Rotate**.

   The picked link chain(s) turn blue.
4. Click the left mouse button at the point you want to rotate around (the centre of rotation).
5. Select a second point to form a *handle* to rotate the link chain(s) and hold the button down.

   A line displays between the two chosen points. This is your rotation handle (like the handle of a car window).

6. Turn the handle to a new location.

7. When you have reached the point where the rotation should end, release the left mouse button.

   The FPA displays the rotated link chain(s).

   Note: You can still restore the field if you click **Undo** at this point.

Note: The link chain(s) remain selected until you deselect them, so you may continue to use the *Move* tools. (see Unpick an object, (Section 9.4.2))

13.5 Copying a link chain

You can copy a link chain by using **Copy** and **Paste** with the *Move* tool.

To copy a link chain:

1. Select the *Move* tool. 

   The *move* menus appear. (see Figure 12.6)

2. Pick the link chain(s) to copy. (see Pick an object, (Section 9.4.1))

3. Click the right mouse button and select **Copy**.

4. Click the right mouse button and select **Cancel** to deselect all link chains, or move to another depiction.

   Paste is now available.

   Note: if pasted to the same depiction the link chains will be automatically offset to avoid inadvertent duplication.

5. Click the right mouse button and select **Paste**.

6. The link chain(s) remain selected until you deselect them, thus **Translate** and **Rotate** are available in the right mouse button context menu. (see Moving a link chain, (Section 13.3) and Rotating a link chain, (Section 13.4))

   Note: You can still remove the copied field if you click **Undo** at this point.

13.6 Modifying a link chain

Modify allows you to change the attributes of a link chain, change the reference time of a link chain and to extend or shorten a link chain by changing its start or end times.

Figure 13.3: Link chain modify menus

13.6.1 Changing a link chain's attributes

To change a link chain's attributes:

1. Select the *Modify* tool. 

   The *Modify* menus appear. (see Figure 13.3)

2. Pick the link chain to modify. (see Pick an object, (Section 9.4.1))

   The picked link chain turns yellow.

3. Select the **set** button, an entry menu appears.

4. Adjust the attributes as necessary. Choose **Set Attributes** to accept your changes and close the entry menu. Clicking **Reset** button will cause the attributes to return to the value they had when the entry menu first opened. Clicking **Cancel** will abandon your changes and close the entry menu.

or ...

1. Select the *Modify* tool. 

   The *Modify* menus appear. (see Figure 13.3)

2. Pick the link chain to modify. (see Pick an object, (Section 9.4.1))

   The picked link chain turns yellow.

3. Chose a ***Predefined*** set of attributes from the memory list.

13.7 Merging information in a link chain field

You can bring a field from another source and time and merge it into the depiction using the *Merge* tool.

To merge information:

1. Select the *Merge* tool. 

   The *Merge* menus appear. (see Figure 10.7)

2. Select the ***Source***, ***Issue Time*** and ***Valid Time*** of the other field you wish to merge with your current depiction.

   Note: Your System Administrator may configure a field to accept merges from another "compatible" field. If this is the case, there will be a ***Field*** list in the ***Merge Fields*** area.

3. Click **Fetch**.

   The field information from the other source is laid over top of your depiction.

4. Pick the link chain(s) to merge. (see Pick an object, (Section 9.4.1))

5. Finish your selection by pressing the right mouse button and select

Select...	To...
Merge	merge information in place
Translate	move and merge the information
Rotate	rotate and merge the information

   Note: the picked information remains selected, so you may perform multiple translate and rotate operations.

6. Click the right mouse button and select **Cancel** to complete the merge.

13.8 Editing a link node

You can move, modify, delete, sample or copy and paste nodes on a link chain using the *Edit Node* tool.

13.8.1 Moving a link node

To move a link node:

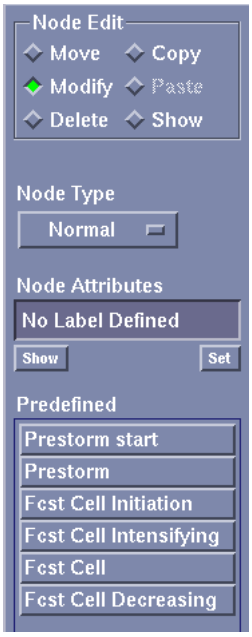
1. Select the *Edit Node* tool. 

   The *Edit Node* menus appear. (see Figure 13.4)

2. Select the ***Move*** option.

3. Select a link chain to work on. The track turns yellow, and the nodes blue.

Figure 13.4: Link node edit menus



4. Click the left mouse button on the node you want to move. Hold the mouse button down and drag the node to a new location. FPA will recalculated the field and display the resulting changes.

   Only *Normal* and *Control* type nodes may be moved. The position of *Interpolated* and *Floating* type node positions are calculated by FPA

5. You may repeat the previous step on all *Normal* and *Control* type nodes on the selected link chain. Click the right mouse button and select **Cancel** to complete the action and deselect the link chain.

   Note: You can still restore the link chain if you click **Undo** at this point.

13.8.2 Modifying a link node

To modify a link node's attributes:

1. Select the *Edit Node* tool. 

   The *Edit Node* menus appear. (see Figure 13.4)

2. Select the ***Modify*** option.

3. Select a link chain to work on. The selected track turns yellow, and the nodes blue.

4. Select a link node to work on. The selected node turns yellow and the modify menus are enabled.

5. You may: change the ***Node Type*** by selecting it from the drop-down menu;

   set the node attributes using the entry menu;

   or select a ***Predefined*** set of attributes from the memory list.

6. Click the right mouse button and select **Cancel** to complete the action and deselect the link node.

7. You may repeat the previous 3 steps on any of the nodes on the selected link chain. Click the right mouse button and select **Cancel** to complete the action and deselect the link chain.

   Note: You can still restore the link chain if you click **Undo** at this point.

13.8.3 Deleting a link node

You may delete a node's attributes by using the ***Delete*** option. The node itself will not be removed, but it's *Node Type* and all of it's attributes will be deleted. The node will become an *Interpolated* type node. To delete a link node's attributes:

1. Select the *Edit Node* tool. 

   The *Edit Node* menus appear. (see Figure 13.4)

2. Select the ***Delete*** option.

3. Select a link chain to work on. The selected track turns yellow, and the nodes blue.

4. Click the left mouse button over or near the node you wish to delete.

5. You may repeat the previous step on any of the nodes on the selected link chain. Click the right mouse button and select **Cancel** to complete the action and deselect the link chain.

   Note: You can still restore the link chain if you click **Undo** at this point.

13.8.4 Sampling a link node

To sample a link node's attributes:

1. Select the *Edit Node* tool. 

   The *Edit Node* menus appear. (see Figure 13.4)

2. Select the ***Show*** option.

3. Select a link chain to work on. The selected track turns yellow, and the nodes blue.

4. Click the left mouse button over or near the node you wish to sample. A menu listing the link node's attributes appears.

5. You may repeat the previous step on any of the nodes on the selected link chain. Click the right mouse button and select **Cancel** to complete the action and deselect the link chain.

13.8.5 Copying a link node

To copy and paste a link node:

1. Select the *Edit Node* tool. 

   The *Edit Node* menus appear. (see Figure 13.4)

2. Select the ***Copy*** option.

3. Select a link chain to work on. The selected track turns yellow, and the nodes blue.

4. Select a link node to copy. The selected node turns yellow temporarily and the ***paste*** becomes available.

5. Select the ***Paste*** option.

6. If you wish to paste to a different link chain, click the right mouse button and select **Cancel** to complete the action and deselect the link chain. Select a new link chain to work on (possibly in a differnt depiction). The selected track turns yellow, and the nodes blue.

7. Select a link node to paste to. The selected node turns yellow temporarily. The ***paste*** option continues to be available.

8. You may repeat the previous step on any of the nodes on the selected link chain. Click the right mouse button and select **Cancel** to complete the action and deselect the link chain.

   Note: You can still restore the link chain if you click **Undo** at this point.

9. You may repeat the previous 3 steps on any link chain you like.

13.9 Sampling values from a link chain field

You can add temporary labels to the FPA window with the *Sample* tool.

To sample a value:

1. Select the *Sample* tool. 

   The *Sample* menus appear. (see Figure 12.8)

   The cursor appears as cross-hairs while inside the map window.

2. Select the type of sample you want from the ***Sample Item*** area.

   You can choose to sample ***Track*** attributes or ***Link node*** attributes from the list.

3. Select the display attributes: colour, size and font.

4. Pick a point on the depiction.

   A dialog box appears displaying all attributes for the nearest track or link node.

   You can sample as many points as you want.

5. Click the right mouse button and select **Clear** to clear the samples from the depiction.

Note: The ***Preset Points*** option cannot be used for link chains.

Chapter 14

Editing lines

You can use the line editor for features such as fronts and jet axes to add additional details to your depictions.

Figure 14.1: Line edit tools

14.1 Drawing lines

To draw a line:

1. Select the *Draw* tool. 

   The *Draw* menus appear. (see Figure 14.2)

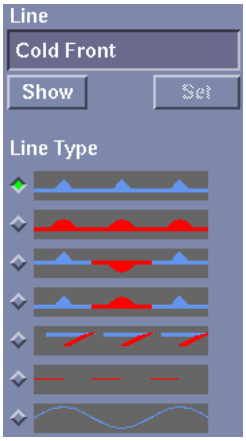
   The cursor appears as a pencil while inside the map area.

2. Select a ***Line Type*** from the list.

3. Draw the line. (see Drawing with the "Freehand" tool, (Section 3.4.2) or Drawing with the "Curve" tool, (Section 3.4.3))

   The selected line type appears.

Figure 14.2: Line draw menus



14.2 Deleting lines

To delete a line:

1. Select the *Modify* tool.
2. Pick the line to delete. (see Pick an object, (Section 9.4.1))
3. Click the right mouse button and select **Delete**.

To delete multiple lines:

1. Select the *Move* tool.
2. Pick the line(s) to delete. (see Pick an object, (Section 9.4.1))
3. Click the right mouse button and select **Cut**.
4. To restore the line(s), click the right mouse button and select **Undo** or **Paste**.

14.3 Moving a line

To move one or more lines.

1. Select the *Move* tool.
2. Pick the line(s) to move. (see Pick an object, (Section 9.4.1))
3. Click the right mouse button and select **Translate**.
   The picked lines turn blue.

4. Pick a reference point on the map and hold the left mouse button down.

   The reference point can be anywhere; however, if you are moving a portion of the line(s) off the depiction it is important to pick a point that will remain on the depiction after the move. The lines shimmer indicating you can now move them.

5. Drag the line(s) to the new location and release the button.

   The FPA then recomputes the field and re-displays the new line(s) in white.

Note: The lines remain selected until you deselect them, so you may continue to use the *Move* tools. (see Unpick an object, (Section 9.4.2))

14.4 Rotating a line

To rotate a line:

1. Select the *Move* tool. 
2. Pick the line(s) to rotate. (see Pick an object, (Section 9.4.1))
3. Click the right mouse button and select **Rotate**.

   The picked lines turn blue.

4. Click the left mouse button at the point you want to rotate around (the centre of rotation).
5. Select a second point to form a *handle* to rotate the line(s) and hold the button down.

   A line displays between the two chosen points. This is your rotation handle (like the handle of a car window).

6. Turn the handle to a new location.
7. When you have reached the point where the rotation should end, release the left mouse button.

   The FPA displays the rotated line(s).

   Note: You can still restore the field if you click **Undo** at this point.

Note: The lines remain selected until you deselect them, so you may continue to use the *Move* tools. (see Unpick an object, (Section 9.4.2))

14.5 Copying a line

You can copy a line by using **Copy** and **Paste** with the *Move* tool.

To copy a line:

1. Select the *Move* tool. 

   The *move* menus appear. (see Figure 12.6)

2. Select ***Include Labels*** if you want to include labels.
3. Pick the line(s) to copy. (see Pick an object, (Section 9.4.1))
4. Click the right mouse button and select **Copy**.
5. Click the right mouse button and select **Cancel** to deselect all lines, or move to another depiction.

   Paste is now available.

   Note: if pasted to the same depiction the lines will be automatically offset to avoid inadvertent duplication.
6. Click the right mouse button and select **Paste**.
7. The lines remain selected until you deselect them, thus **Translate** and **Rotate** are available in the right mouse button context menu. (see Moving a line, (Section 14.3) and Rotating a line, (Section 14.4))

   Note: You can still remove the copied field if you click **Undo** at this point.

14.6 Flipping a line

Some line styles are not symmetrical. You can use this tool to flip the line across its width or along its length.

To flip a line:

1. Select the *Flip* tool. 
2. Pick the line to flip. (see Pick an object, (Section 9.4.1))
3. Click the right mouse button and select:

Select...	To...
Flip	to flip it across its width.
Reverse	to flip the line along its length.
Flip & Reverse	to flip it across its width and along its length.

14.7 Modifying a line

Modify allows you to change the shape of a line, to extend or shorten a line, or to change a line type.

You can modify lines with two types of drawing tools.

Select...	To...
a drawing tool	draw a new line segment
one of the puck sizes	sculpt an existing line or extend/shorten a line

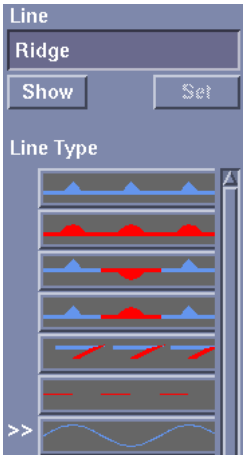
14.7.1 Drawing a new line

To draw a new line:

1. Select the *Modify* tool. 

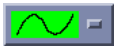
   The *Modify* menus appear. (see Figure 14.3)

Figure 14.3: Line modify menus



2. Pick the line to modify. (see Pick an object, (Section 9.4.1))

   The picked line turns yellow, with blue boxes at both ends.

3. Select the "Freehand"  or "Curve" drawing tool. 

4. Draw the new line segment. Start or end the line as close to the existing line as possible.

   The way the line gets redrawn depends on how the new segment was drawn.

   - If the new segment starts and ends on the existing line, the new line segment adopts the direction of the existing line. (see Figure 14.4)

Figure 14.4: New segment starts and ends on the existing line

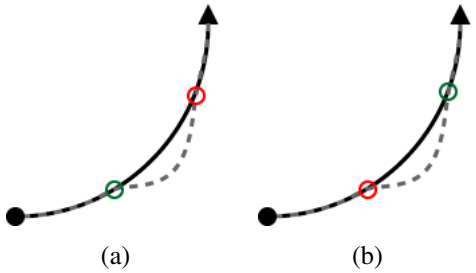
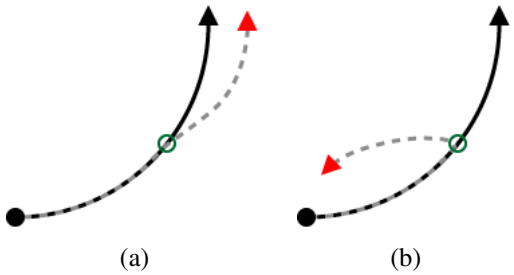
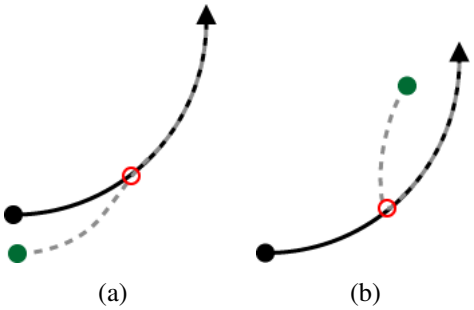


Figure 14.5: New segment starts, but does not end, on the existing line



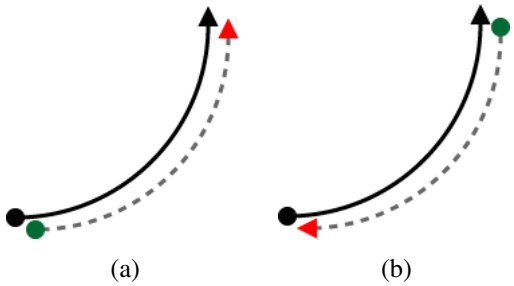
- If the new segment starts, but does not end, on the existing line, the new line segment connects to the existing line in the direction it was drawn. Thus the end of the existing line is replaced by the new segment. (see Figure 14.5)
- If the new segment ends, but does not start, on the existing line, the new line segment connects to the existing line in the direction it was drawn. Thus the start of the existing line is replaced by the new segment. (see Figure 14.6)

Figure 14.6: New segment ends, but does not start, on the existing line



- If the new segment starts and ends too far away from the existing line, the new line segment will replace the existing line. (see Figure 14.7)

Figure 14.7: New segment starts and ends too far away from existing line



The new line turns blue and the original line remains yellow.

5. If the line is acceptable, click the right mouse button and select **Confirm**. If the line is not acceptable select **Cancel** and the line will remain selected you can attempt the edit again.

14.7.2 Sculpting an existing line

To sculpt an existing line:

1. Select the *Modify* tool. 
   The *Modify* menus appear. (see Figure 14.3)
2. Pick the line to modify. (see Pick an object, (Section 9.4.1))
   The picked line turns yellow, with blue boxes at both ends.
3. Select a puck size. (see Modifying with the "Sculpt" tool, (Section 3.4.4))
   The number indicates the proportional size of the puck.
   The cursor appears as concentric circles while inside the map window.
4. Choose a smoothing mode. (see Modifying with the "Sculpt" tool, (Section 3.4.4))
5. Click and hold the left mouse button to activate the sculpting puck.
   The line is modified when the puck comes in contact with it.
6. Release the button when finished.
   You can repeat the previous step as often as you wish.
7. Click the right mouse button and select **Cancel** to complete the edit.

14.7.3 Extending or shortening a line

To extend or shorten a line by sculpting:

1. Select the *Modify* tool. 
2. Pick the line to modify. (see Pick an object, (Section 9.4.1))
   The picked line turns yellow, with blue boxes at both ends.
3. Select a puck size. (see Modifying with the "Sculpt" tool, (Section 3.4.4))
   The number indicates the proportional size of the puck.
4. Choose a smoothing mode. (see Modifying with the "Sculpt" tool, (Section 3.4.4))
5. Click and hold the left mouse button inside one of the blue boxes.
   The cursor changes to a pencil while the button is held down.

6. Drag the cursor to a new location.

   If you drag the cursor along the line towards the opposite end, the line will be shortened. If you drag the cursor away from the line, the line will be extended.

7. Release the button when finished.

   You can repeat the previous step as often as you wish.

8. Click the right mouse button and select **Cancel** to complete the edit.

To extend a line by redrawing:

1. Select the *Modify* tool. 

2. Pick the line to modify. (see Pick an object, (Section 9.4.1))

   The picked line turns yellow, with blue boxes at both ends.

3. Select a drawing tool. (see Drawing with the "Freehand" tool, (Section 3.4.2))

4. Start or end the extension inside one of the a blue boxes.

   With the "Freehand" tool click and hold the left mouse button. The cursor changes to a pencil while the button is held down.

   With the "Curve" tool click the left mouse button. The cursor changes to a pencil while in "Curve" draw mode.

   Draw the extension.

5. Click the right mouse button and select **Cancel** to complete the edit.

14.7.4 Joining lines

To join two lines:

1. Select the *Join* tool. 

2. Pick two lines to join.

   Note
   The lines must be of the same type.

   (see Pick an object, (Section 9.4.1))

   The picked lines turn yellow.

3. Click the right mouse button and select **Join**.

   The new line remains selected until you deselect it, thus you may continue to join another line to the new one.

4. Click the right mouse button and select **Cancel** to deselect all lines, or move to another depiction.

14.7.5 Breaking lines

To break one line into two lines:

1. Select the *Join* tool. 
2. Pick a line to break. (see Pick an object, (Section 9.4.1))
   The picked line turns yellow.
3. Click the right mouse button and select **Break**.
4. Pick a break point on the line.

14.7.6 Changing the line type

To change the type of line:

1. Select the *Modify* tool. 
   The *Modify* menus appear. (see Figure 14.3)
2. Pick the line to modify. (see Pick an object, (Section 9.4.1))
3. From the line list, pick a line type.
   The line is redrawn as the selected type.

14.8 Merging information in a line field

You can bring a field from another source and time and merge it into the depiction using the *Merge* tool.

To merge information:

1. Select the *Merge* tool. 
   The *Merge* menus appear. (see Figure 10.7)
2. Select the ***Source***, ***Issue Time*** and ***Valid Time*** of the other field you wish to merge with your current depiction.
   Note: Your System Administrator may configure a field to accept merges from another "compatible" field. If this is the case, there will be a ***Field*** list in the ***Merge Fields*** area.
3. Select ***Include Labels*** if you want to include labels.
4. Click **Fetch**.
   The field information from the other source is laid over top of your depiction.
5. Pick the line(s) to merge. (see Pick an object, (Section 9.4.1))
6. Finish your selection by pressing the right mouse button and select

Select...	To...
Merge	merge information in place
Translate	move and merge the information
Rotate	rotate and merge the information

Note: the picked information remains selected, so you may perform multiple translate and rotate operations.

7. Click the right mouse button and select **Cancel** to complete the merge.

14.9 Labelling your depiction

To label points on some lines:

1. Select the *Labelling* tool. 
2. Click the right mouse button and select a **Label Type**.
3. Click the right mouse button and select a ***Label Action***:

Select...	To...
Label Action → Add	add a label at a specified point
Label Action → Move	facilitate clicking and dragging a label from one location to another (if applicable)
Label Action → Show	display a list of attributes of the particular label selected
Label Action → Modify	change label attributes
Label Action → Delete	delete a label

Note: some labels have fixed attributes and cannot be modified. In these cases the *Modify* tool does not appear.

4. Pick a point to label using the left mouse button.
5. If you have picked Add...

   Labels appear on the closest line object.

   Note: If your label type requires additional information, an entry menu may appear. You can modify the information as required. Clicking on **Set Attributes** will add the label.

6. If you have picked **Move**, **Show**, **Modify** or **Delete** ...

   The nearest label is chosen.

7. To delete all the labels, click the right mouse button and select **Clear**.

14.10 Sampling values from a line field

You can add temporary labels to the FPA window with the *Sample* tool.

To sample a value:

1. Select the *Sample* tool. 

   The *Sample* menus appear. (see Figure 12.8)

   The cursor appears as cross-hairs while inside the map window.

2. Select the type of sample you want from the ***Sample Item*** area.

   You can choose to sample ***All Attributes*** or a single attribute from the list.

3. Select the display attributes: colour, size and font.

4. Pick a point on the depiction.

   A temporary label appears.

   You can sample as many points as you want.

   Note: If you selected ***All Attributes***, a dialog box appears displaying All Attributes for the point.

5. Click the right mouse button and select **Clear** to clear the samples from the depiction.

Instead of sampling multiple individual locations, you can select a preset list of sampling locations that your System Administrator has already created. To select a set of preset sample locations:

6. Choose one of the preset options in the ***Preset Points*** area and click **Display**.

Note: if you select ***All Attributes*** from the ***Sample Item*** area, the ***Preset Points*** option cannot be used. Only single attributes can be displayed with this option.

Chapter 15

Editing points

The point editor allows you to edit fields containing information at scattered locations. Some examples of these would be:

- snowfall depth
- total precipitation

The point editor controls appear when you choose to edit a scattered point field.

Figure 15.1: Point edit tools

15.1 Adding a point

To add a point to your depiction:

1. Select the *Add* tool. 
2. Click the spot on your depiction where you want your point to appear.

   A dialog box appears for you to fill in the attributes you want to display for this point.
3. Enter the attributes and click **Set Attributes** to save the point to your depiction.

15.2 Deleting points

To delete a point:

1. Select the *Modify* tool. 
2. Pick the point to delete. (see Pick an object, (Section 9.4.1))
3. Click the right mouse button and select **Delete**.

To delete multiple points:

1. Select the *Move* tool. 
2. Pick the point(s) to delete. (see Pick an object, (Section 9.4.1))
3. Click the right mouse button and select **Cut**.
4. To restore the line(s), click the right mouse button and select **Undo** or **Paste**.

15.3 Moving a point

You can move one or more points on your depiction use the *Move* tool.

To move a point:

1. Select the *Move* tool. 

   The *Move* menus appear. (see Figure 12.6)
2. Pick the point(s) to move. (see Pick an object, (Section 9.4.1))
3. Click the right mouse button and select **Translate**.

   The picked points turn blue.
4. Pick a reference point on the map and hold the left mouse button down.

   The reference point can be anywhere; however, if you are moving the point(s) off the depiction it is important to pick a reference point that will remain on the depiction after the move. The point(s) attributes shimmer indicating you can now move them.
5. Drag the point(s) to the new location and release the button.

   The FPA then recomputes the field and re-displays the new point(s) in white.

Note: The points remain selected until you deselect them, so you may continue to use the *Move* tools. (see Unpick an object, (Section 9.4.2))

15.4 Copying a point

You can copy a point by using **Copy** and **Paste** with the *Move* tool.

To copy a point:

1. Select the *Move* tool. 

   The *Move* menus appear. (see Figure 12.6)

2. Pick the point(s) to copy. (see Pick an object, (Section 9.4.1))

3. Click the right mouse button and select **Copy**.

4. Click the right mouse button and select **Cancel** to deselect all points, or move to another depiction.

   Paste is now available.

   Note: if pasted to the same depiction the points will be automatically offset to avoid inadvertent duplication.

5. Click the right mouse button and select **Paste**.

6. The points remain selected until you deselect them, thus **Translate** is available in the right mouse button context menu. (see Moving a point, (Section 15.3))

   Note: You can still remove the copied field if you click **Undo** at this point.

15.5 Modifying a point

To change the attributes of a point using the *Modify* tool:

1. Select the *Modify* tool. 

   The *Modify* menus appear. (see Figure 15.2)

Figure 15.2: Point modify menus

2. Pick the point to modify. (see Pick an object, (Section 9.4.1))

3. Click the right mouse button and select **Set**.

   The attribute dialog box appears.

4. Change the attributes of the point.

   Note: Attributes that cannot be changed are greyed out.

5. Click **Set Attributes**.

15.6 Merging information in a point field

You can bring a field from another source and time and merge it into the depiction using the *Merge* tool.

To merge information:

1. Select the *Merge* tool. 

   The *Merge* menus appear. (see Figure 10.7)

2. Select the ***Source***, ***Issue Time*** and ***Valid Time*** of the other field you wish to merge with your current depiction.

   Note: Your System Administrator may configure a field to accept merges from another "compatible" field. If this is the case, there will be a ***Field*** list in the ***Merge Fields*** area.

3. Click **Fetch**.

   The field information from the other source is laid over top of your depiction.

4. Pick the point(s) to merge. (see Pick an object, (Section 9.4.1))

5. Finish your selection by pressing the right mouse button and select

Select...	**To...**
Merge	merge information in place
Translate	move and merge the information

   Note: the picked information remains selected, so you may perform multiple translate operations.

6. Click the right mouse button and select **Cancel** to complete the merge.

15.7 Sampling values from a point field

You can add temporary labels to the FPA window with the *Sample* tool.

To sample a value:

1. Select the *Sample* tool. 

   The *Sample* menus appear. (see Figure 12.8)

   The cursor appears as cross-hairs while inside the map window.

2. Select the type of sample you want from the ***Sample Item*** area.

   You can choose to sample ***All Attributes*** or a single attribute from the list.

3. Select the display attributes: colour, size and font.

4. Pick a point on the depiction.

   A temporary label appears.

   You can sample as many points as you want.

   Note: If you selected ***All Attributes***, a dialog box appears displaying All Attributes for the point.

5. Click the right mouse button and select **Clear** to clear the samples from the depiction.

Instead of sampling multiple individual locations, you can select a preset list of sampling locations that your System Administrator has already created. To select a set of preset sample locations:

6. Choose one of the preset options in the ***Preset Points*** area and click **Display**.

Note: if you select ***All Attributes*** from the ***Sample Item*** area, the ***Preset Points*** option cannot be used. Only single attributes can be displayed with this option.

Chapter 16

Time Linking, Interpolation & Animation

16.1 Time linking and interpolation

With the FPA, you can use the ***Time Link*** feature to track significant locations through time. The links are used to indicate movement of *features* in the depictions and allow the depictions to be interpolated through time.

For a chosen field, you select a point on the field which identifies a common feature in each depiction; then you select a point identifying the same feature at a different time. The feature is now *linked* between the depictions.

Any feature on one field which is common to a feature on the same field at a consecutive time (either before or after) may be linked.

Note: It is the shape of the feature, not its value, that is important.

You can link depictions forward in time or backwards. (See Linking forward, (Section 16.2.1) and Linking backward, (Section 16.2.2).)

16.1.1 Optional time link information

To modify optional time link information:

1. Choose **Options** → **Preferences...**.
2. Select the ***General*** tab.
3. Select the time link information to display, and the colour palette for the link chains.
4. Click **Apply**.
5. Click **Close**.

16.1.2 Examples of time linking

16.1.2.1 Time linking continuous or vector fields

Choose the significant features on continuous or vector fields to provide the link. For example, links can identify locations of the maximum or minimum values of a field (such as highs and lows in an msl pressure field) or the location of axes (such as troughs or ridges in an msl pressure field).

It is important to link features that appear stationary over time as well as features that move. This guarantees that such features remain stationary relative to other moving features.

16.1.2.2 Time linking line fields

Choose the most significant points on each line. Link at approximately the same *relative* locations on each line through all depictions.

For example, if the line moves or rotates, pick the same feature on the line in each depiction, such as a kink in the line or a location close to one end of the line.

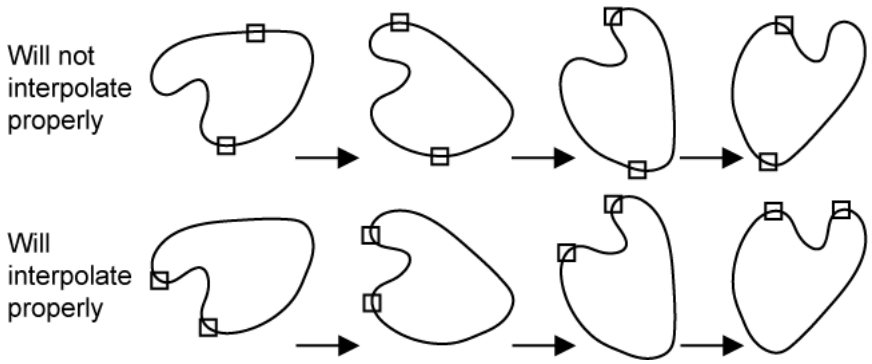
Note that the line pattern is often used to determine which end of the line is which.

16.1.2.3 Time linking area fields

Choose the most significant points on the area perimeter. In the subsequent times, click on approximately the same *relative* spots on the perimeter. See Figure 16.1.

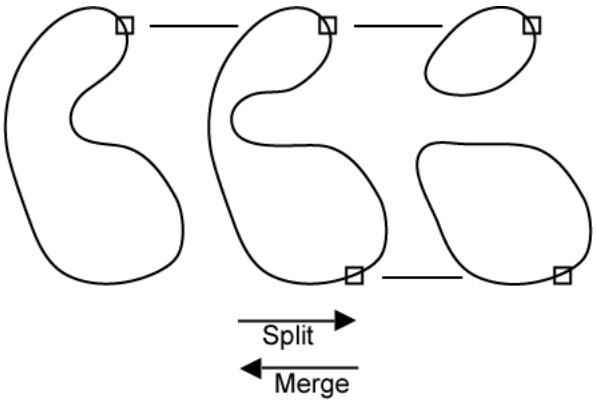
Note that the first set of links will cause the area to change shape between each panel in a distorted manner, whereas the second set of links will cause the area to rotate.

Figure 16.1: Linking areas



Even if the area changes shape, it will interpolate properly as long as you choose distinguishable features on the area and link consistently.

Figure 16.2:



16.1.2.4 Linking an area that splits into two areas (or two areas that merge into one)

When an area field splits, you need to maintain consistency. See Figure 16.2

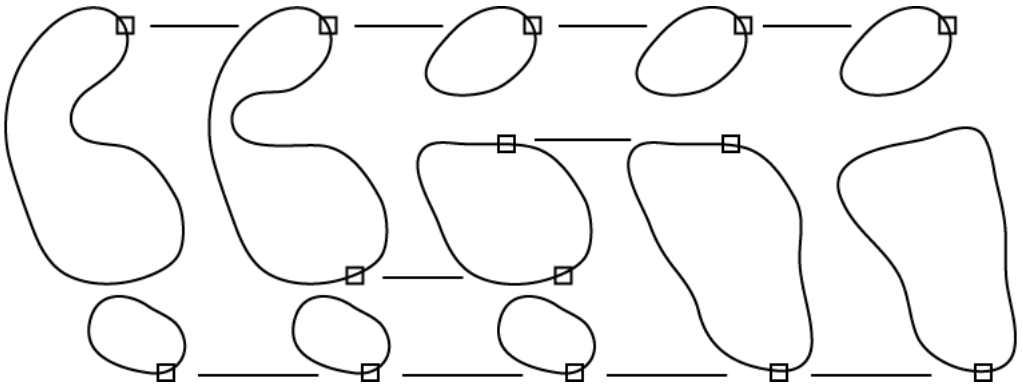
Start another chain at the depiction just before the split. After the two areas split, each field has its separate time chain. For a merge, which is this scenario backwards in time, end the second chain at the depiction where the two areas merge.

16.1.2.5 Linking "split and merge" areas

This example is a more complicated case of splitting and merging. There are initially two areas, then one area splits (now there are three areas) and then the newly-split area merges with the other area (now there are two areas again).

The same principles apply as explained in Linking an area that splits into two areas (or two areas that merge into one), (Section 16.1.2.4). Start the new chain at the depiction right before the split and end the third chain at the depiction where the two areas merge. See Figure 16.3

Figure 16.3:



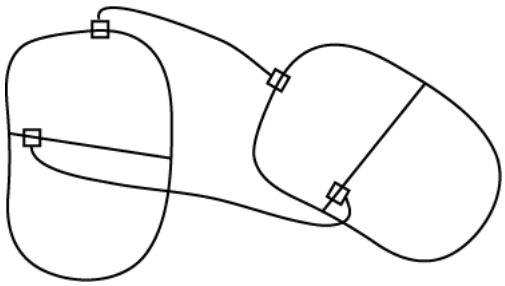
Note: At the moment when there are three areas, there are four chains; one chain starts in this depiction and one is ending.

16.1.2.6 Linking a divided area

You must link dividing lines in a divided area to another divide line in the next depiction. If there are two dividing lines, link each one.

Note that the position of the link on the dividing line matters. If the dividing line has only a single link, position it towards one end of the dividing line. This will ensure that the divided areas do not switch places unexpectedly. See Figure 16.4 (Dividing lines can be drawn left-to-right or right-to-left and the direction of drawing is important in the time link process, especially when the dividing line is drawn in different directions in different depictions. With two or more links, the direction of the dividing line can be determined by the locations of the links, but with a single link, the direction is determined by which end of the line is closest. Single links should therefore be placed close to the same end of the dividing line.)

Figure 16.4:



Note that dividing lines are interpolated separately from the areas they divide. If the extrapolated position of the dividing line moves outside of the extrapolated position of the area, then the area will no longer be divided, and the values of the area will depend on which side of the interpolated dividing line the area is on.

16.1.2.7 Early starts, late starts, early ends and late ends

Discrete, wind and line fields can be linked so that the features appear at times different from the depiction times. (See the time selection section in Linking forward, (Section 16.2.1) or Linking backward, (Section 16.2.2).) If link times are chosen so as to begin before the first depiction time in the link chain (an early start) or after the last depiction time in the link chain (a late end), then the feature is extrapolated to the earlier or later times. If the link times are chosen so as to begin after the first depiction time in the link chain (a late start) or before the last depiction time in the link chain (an early end), then the feature is interpolated to the in between times, and the feature may not appear at the depiction times in the interpolations.

16.1.3 Guess Nodes

Changes in the depiction sequence can affect the status of linked fields. For example, removing an area or line from a depiction panel may result in a link node that is no longer associated with a feature, and inserting a field into the depiction sequence will create link nodes on link chains that span the new depiction but are not connected to any feature. In these cases, the FPA will create guess link nodes (usually identified by a pink block) which must be moved to the appropriate location for the field to be linked. (see Moving a guess node in a link chain, (Section 16.2.9))

16.1.4 Link criteria

There are certain link criteria that the FPA expects to be met before it considers a field to have been appropriately linked. If there are no links for a given field, the square beside the field is red. If there are links, but there are not enough for the FPA to interpolate, the square turns blue. When the field is sufficiently linked the square turns yellow. When a field has been linked and interpolated the square turns green.

Daily or *static* fields are indicated as a group.

When linking continuous or vector fields you need one or more links that together span from the beginning to the end across all the depictions.

When linking line fields, all lines must be linked.

When linking discrete or wind fields, all boundaries and any dividing lines or holes must be linked.

This represents the minimum link information required to interpolate, that is, the necessary number of links.

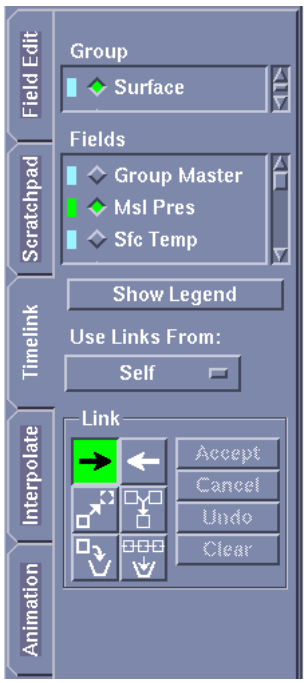
Additional links may be needed to describe all the important aspects of the motion of features in the field, that is, the sufficient number of links.

16.2 Using the Time Link function

Use ***Time Link*** to link significant points on fields at different times so that the depictions can be interpolated through time.

To display the Time Link controls, click the ***Time Link*** tab. (see Figure 16.5)

Figure 16.5: Time link controls



16.2.1 Linking forward

To link forward:

1. From the ***Field*** list, select the field you wish to link.

   If you are linking a continuous field (such as pressure, temperature or wave height) the field displays white on the depiction to indicate that it is the active field.

   If you are linking a discrete field (such as weather, wind or freezing spray) the discrete areas and any dividing lines turn yellow if they have not yet been linked or white if they have been linked.

   If you are linking a line field (such as fronts or jet axes) the curves turn yellow if they have not yet been linked or white if they have been linked.

   (see also Using one set of links to link another field, (Section 16.2.4))

2. Select the *Link Forward* tool. 

   A forward (right) arrow appears on the depiction bar indicating what depiction you are beginning on and the direction of the link.

   Note: You can begin your linking procedure in the middle of the depiction bar by clicking the desired time box.You will maintain your previously established link direction.

3. Pick a point on the current depiction to link. (see also Examples of time linking, (Section 16.1.2))

   A yellow box appears at the link node you picked. You are automatically moved to the next depiction. The arrow moves to show that the current depiction has been advanced.

   For discrete or line fields: If you start the link chain at the first depiction, you are given the option of beginning the link at some time after the depiction in which the link chain starts. (see Figure 16.6)

Figure 16.6: Start a link chain after the current depiction

The cyan square represents the current depiction. The green squares represent times between the current depiction and the next depiction.

   If you start the link chain after the first depiction you are given the option of beginning the link chain at some time before or after the depiction in which the link chain starts. (see Figure 16.7)

4. Pick the next point of the link.

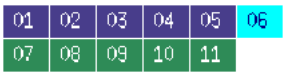
5. Repeat the previous step until you reach the end of your depictions

   or

   Click the right mouse button and select **End chain** to end the link chain if the link does not extend across all depictions.

   For discrete or line fields: If you end the link chain at the last depiction you are given the option of ending the link chain before the time of the depiction in which the link chain terminates. (see Figure 16.8)

Figure 16.7: Start a link chain before or after the current depiction



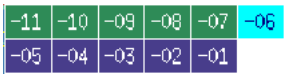
The blue squares represent times between the previous depiction and the current depiction. The cyan square represents the current depiction. The green squares represent times between the current depiction and the next depiction.

Figure 16.8: End a link chain before the current depiction

The green squares are times between the previous depiction and the current depiction. The cyan square is the current depiction.

If you end the link chain before the last depiction you are given the option of ending the link chain before or after the time of the depiction in which the link chain terminates. (see Figure 16.9)

Figure 16.9: End a link chain before or after the current depiction



The green squares are times between the previous depiction and the current depiction. The cyan square is the current depiction. The blue squares are times between the current depiction and the next depiction.

6. The link chain turns light blue to indicate it is complete. You are automatically returned to the depiction you started to link from.

   Note: If the ***Show early/late start/end times*** option in selected (**Options** → **Preferences...**, ***General*** tab) and the start (or end) time is not at one of the depiction times, the actual start (or end) time is shown to the left (or right) of the node.

7. Check the colour of the square beside the field name in the list. It should be yellow. If it is blue, you do not have enough links to interpolate the depictions.

   or

   Check the colour of the depiction boxes. They should all be green. If any are blue, you do not have enough links at the those times to interpolate the depictions.

16.2.2 Linking backward

To link backward:

1. From the ***Field*** list, select the field you wish to link.

   If you are linking a continuous field (such as pressure, temperature or wave height) the field displays white on the depiction to indicate that it is the active field.

   If you are linking a discrete field (such as weather, wind or freezing spray) the discrete areas and any dividing lines turn yellow if they have not yet been linked or white if they have been linked.

   If you are linking a line field (such as fronts or jet axes) the curves turn yellow if they have not yet been linked or white if they have been linked.

   (see also Using one set of links to link another field, (Section 16.2.4))

2. Select the *Link Backward* tool. 

   A backward (left) arrow appears on the depiction bar indicating what depiction you are on and the direction of the link.

   Note: You can begin your linking procedure in the middle the of the depiction bar by clicking the desired time box.You will maintain your previously established link direction.

3. Pick a point on the depiction to link. (see also Examples of time linking, (Section 16.1.2))

   A yellow box appears at the link node you picked. You are automatically moved to the previous depiction. The arrow shows that you have moved.

   For discrete or line fields: If you start the link chain at the last depiction, you are given the option of beginning the link at some time before the depiction in which the link chain starts. (see Figure 16.10)

Figure 16.10: Start a link chain before the current depiction

The green squares are times between the previous depiction and the current depiction. The cyan square is the current depiction.

If you start the link chain before the last depiction you are given the option of beginning the link chain at some time before or after the depiction in which the link chain starts. (see Figure 16.11)

Figure 16.11: Start a link chain before or after the current depiction

The green squares are times between the previous depiction and the current depiction. The cyan square is the current depiction. The blue squares are times between the current depiction and the next depiction.

4. Pick the next point of the link.

5. Repeat the previous step until you reach the beginning of your depictions

   or

   Click the right mouse button and select **End chain** to end the link chain if the link chain does not extend across all depictions.

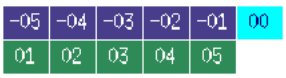
   For discrete or line fields: If you end the link chain at the first depiction you are given the option of ending the link chain after the time of the depiction in which the link chain terminates. (see Figure 16.12)

Figure 16.12: End a link chain after the current depiction

The cyan square is the current depiction. The green squares are times between the current depiction and the next depiction.

   If you end the link chain after the first depiction you are given the option of ending the link chain before or after the time of the depiction in which the link chain terminates. (see Figure 16.13)

Figure 16.13: End a link chain before or after the current depiction



The blue squares are times between the previous depiction and the current depiction. The cyan square is the current depiction. The green squares are times between the current depiction and the next depiction.

6. The link chain turns light blue to indicate it is complete. You are automatically returned to the depiction you started to link from.

   Note: If the ***Show early/late start/stop times*** option in selected (**Options** → **Preferences...**, ***General*** tab) and the start (or end) time is not at one of the depiction times, the actual start (or end) time is shown to the left (or right) of the node.

7. Check the colour of the square beside the field name in the list. It should be yellow. If it is blue, you do not have enough links to interpolate the depictions.

   or

   Check the colour of the depiction boxes. They should all be yellow. If any are blue, you do not have enough links at the those times to interpolate the depictions.

16.2.3 Extending a link chain

To extend a link forward in time:

1. From the ***Field*** list, select the field you wish to link.

   If you are linking a continuous field (such as pressure, temperature or wave height) the field displays white on the depiction to indicate that it is the active field.

   If you are linking a discrete field (such as weather, wind or freezing spray) the discrete areas and any dividing lines turn yellow if they have not yet been linked or white if they have been linked.

   If you are linking a line field (such as fronts or jet axes) the curves turn yellow if they have not yet been linked or white if they have been linked.

2. Select the *Link Forward* tool. 

   A forward (right) arrow appears on the depiction bar indicating what depiction you are beginning on and the direction of the link.

3. Go to the time of the end of the link chain.

4. Click inside the box at the end of the link chain.

   The link chain turns yellow.

5. Click the left mouse button to continue the chain, or click the right mouse button and select **New chain** to start a new chain.

   You are automatically moved to the next depiction. The arrow moves to show that the current depiction has been advanced.

6. Pick the next point of the link.

7. Repeat the previous step until you reach the end of your depictions

   or

   Click the right mouse button and select **End chain** to end the link chain if the link does not extend across all depictions.

   For discrete or line fields: If you end the link chain at the last depiction you are given the option of ending the link chain before the time of the depiction in which the link chain terminates. (see Figure 16.8) If you end the link chain before the last depiction you are given the option of ending the link chain before or after the time of the depiction in which the link chain terminates. (see Figure 16.9)

8. The link chain turns light blue to indicate it is complete. You are automatically returned to the depiction you started to extend the link from.

   Note: If the ***Show early/late start/end times*** option in selected (**Options** → **Preferences...**, ***General*** tab) and the start (or end) time is not at one of the depiction times, the actual start (or end) time is shown to the left (or right) of the node.

9. Check the colour of the square beside the field name in the list. It should be yellow. If it is blue, you do not have enough links to interpolate the depictions.

   or

   Check the colour of the depiction boxes. They should all be green. If any are blue, you do not have enough links at the those times to interpolate the depictions.

To extend link chain backwards in time:

1. From the ***Field*** list, select the field you wish to link.

   If you are linking a continuous field (such as pressure, temperature or wave height) the field displays white on the depiction to indicate that it is the active field.

   If you are linking a discrete field (such as weather, wind or freezing spray) the discrete areas and any dividing lines turn yellow if they have not yet been linked or white if they have been linked.

   If you are linking a line field (such as fronts or jet axes) the curves turn yellow if they have not yet been linked or white if they have been linked.

2. Select the *Link Backward* tool. 

   A backward (left) arrow appears on the depiction bar indicating what depiction you are on and the direction of the link.

3. Go to the time of the start of the link chain.

4. Click inside the box at the start of the link chain.

   The link chain turns yellow.

5. Click the left mouse button to continue the chain, or click the right mouse button and select **New chain** to start a new chain.

   You are automatically moved to the previous depiction. The arrow moves to show that the current depiction has been moved.

6. Pick the next point of the link.

7. Repeat the previous step until you reach the beginning of your depictions

   or

   Click the right mouse button and select **End chain** to end the link chain if the link chain does not extend across all depictions.

   For discrete or line fields: If you end the link chain at the first depiction you are given the option of ending the link chain after the time of the depiction in which the link chain terminates. (see Figure 16.12) If you end the link chain after the first depiction you are given the option of ending the link chain before or after the time of the depiction in which the link chain terminates. (see Figure 16.13)

8. The link chain turns light blue to indicate it is complete. You are automatically returned to the depiction you started to extend the link from.

   Note: If the ***Show early/late start/stop times*** option in selected (**Options → Preferences...**, ***General*** tab) and the start (or end) time is not at one of the depiction times, the actual start (or end) time is shown to the left (or right) of the node.

9. Check the colour of the square beside the field name in the list. It should be yellow. If it is blue, you do not have enough links to interpolate the depictions.

   or

   Check the colour of the depiction boxes. They should all be yellow. If any are blue, you do not have enough links at the those times to interpolate the depictions.

16.2.4 Using one set of links to link another field

If you are linking a continuous field, you may be able to reduce the amount of linking you need to do by using one set of links as a *master*.

In Time Link, the link chain for a field uses either one of:

- the links for the field
- the links of another field
- a *group* or *master* set of links.

For example, you could couple surface temperature links to MSL pressure links. Also, often in upper air fields, several fields at a given level can have the same links.

16.2.5 Using the links of another field

If you are linking a continuous field, you may be able to use links from another field:

1. From the ***Field*** list, select the field you wish to link.
2. From the ***Use Links From:*** option, choose the name of the field from which you want to use the links.

16.2.6 Creating and using a set of master links

To create a set of master links:

1. From the Field list, select ***Group Master***.
2. Link forward or backward as you would for a field. (See Linking forward, (Section 16.2.1) or Linking backward, (Section 16.2.2).)

   See Creating and using a set of master links, (Section 16.2.6).

To use master links:

1. From the ***Field*** list, select the continuous field you wish to link.
2. From the ***Use Links From:*** option, select ***Group Master***.

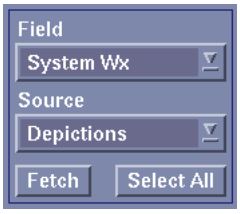
16.2.7 Merging links from another field

You may import links from another FPA database or from another field with the merge tool.

To merge a link chain from another field or database:

1. Select the *Merge* tool.  The *Merge* menus appear. (see Figure 16.14)

Figure 16.14: Merge menus



2. Select the ***Field*** and ***Source*** of the other field you wish to import links from.
3. Click **Fetch**.

   The link chains from the other field appear in green.
4. Pick the point(s) to merge. (see Pick an object, (Section 9.4.1))
5. Finish your selection by pressing the right mouse button and select

Select...	To...
Merge	merge information in place
Translate	move and merge the information
Rotate	rotate and merge the information

   Note: the picked information remains selected, so you may perform multiple translate operations.
6. Click the right mouse button and select **Cancel** to complete the merge.

   Note: You can still restore the field if you click **Undo** at this point.
7. All merged link nodes become pink guess nodes which have to be repositioned (or at least touched) with the move tool.(see Moving a guess node in a link chain, (Section 16.2.9).)

16.2.8 Moving a node in a link chain

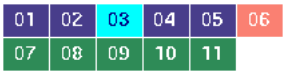
You can move a node in a link chain. You can only move the node in the current depiction, though you can see the entire link chain. The node is indicated by a white box. Sometimes links converge on a single node and you cannot distinguish which node you want to move. The FPA makes it possible for you to click on any node on the link chain and it will automatically pick the current node.

To move a node in a link chain:

1. Select the *Move* tool. 
2. Pick the node to move and hold the left mouse button down. The cursor changes to an X.
3. Drag the node to its new position and release the button.

   For discrete or line fields: If the node is at either end of a chain you are also given the option of modifying the start or end time. (see Figure 16.15.)

Figure 16.15: Move a link chain start or end time



The blue squares represent times between the previous depiction and the current depiction. The cyan square represents the current choice for start or end time. The Salmon square represents the current depiction (if it is not the start or end time). The green squares represent times between the current depiction and the next depiction.

4. The link chain is redisplayed.

16.2.9 Moving a guess node in a link chain

Changes in the depictions can result in the creation of guess links (usually identified by a pink box), which are not yet attached to a feature in the field. These guess nodes must be moved to an appropriate feature.

To move a guess node in a link chain:

1. Select the *Move* tool. 
2. Pick the guess node to move and hold the left mouse button down. The cursor changes to an X.
3. Drag the node to its new position and release the button.

   For discrete or line fields: If the node is at either end of a chain you are also given the option of modifying the start or end time. (see Figure 16.6 or Figure 16.7 for modifying the start time, and Figure 16.8 or Figure 16.9 for modifying the end time.)

4. The link chain is redisplayed.

16.2.10 Adding a control node

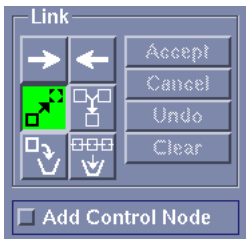
You can add a control node to your link chain which you can use to change the link chain path.

Note: Control nodes can only be used in discrete area or line fields.

To add a control node:

1. Select the *Move Node* tool. 
   The *Move* menus appear. (see Figure 16.16)

Figure 16.16: Move menus



2. Select the **Add Control Node** checkbox.
3. Pick the link chain you want to add a control node to. The picked chain turns yellow.
4. If the links are too close together, a list of possible control times is displayed.
   Choose the time at which you want to add the control node.
5. Click the link you want to become the control node and hold the button down.
6. Drag the link to its new position and release the button.
7. The link chain is redisplayed.

16.2.11 Removing a node

You can remove the first and last nodes in a link chain as well as control nodes with the *Delete Node* tool.

To remove a node from your link chain:

1. Select the *Remove Node* tool. 
2. Pick the link node you want to remove.
3. The link node is removed.

Note: The **Undo** is available if you accidentally delete the wrong node.

16.2.12 Removing link chains

To remove a link chain from your depiction:

1. Select the *Remove Chain* tool. 
2. Pick the link chain to remove. The chain is deleted.

Note: The **Undo** is available if you accidentally delete the wrong chain.

16.2.13 Removing all link chains

To remove all link chains from your depiction:

1. Select the *Remove Chain* tool, or the *Remove Node* tool
2. Click the right mouse button and select **Clear**.

Note: The **Undo** is available if you accidentally clear all the link chains.

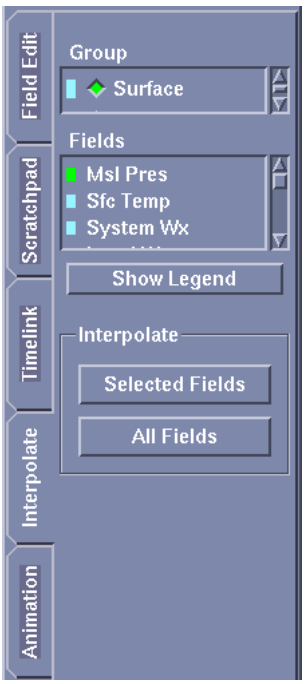
16.3 Interpolating the linked depictions

The FPA can interpolate the set of depictions to smaller time increments (e.g., 1 hour) using the links you have specified.

To interpolate linked depictions:

1. Click the ***Interpolate*** tab. (see Figure 16.17)

Figure 16.17: Interpolation menus



Note: The coloured boxes within the Group and Fields boxes. Each colour represents the state of the links in that area. (see Figure 5.10)

2. To interpolate, click either **Selected Fields** or **All Fields**.

   If you choose **All Fields** the interpolation begins.

   If you choose **Selected Fields**, a Field Selection dialog box appears allowing you to choose which field to interpolate. When you have selected which fields you want to interpolate, click **Accept** to begin the Interpolation.

16.4 Animating the depiction sequence

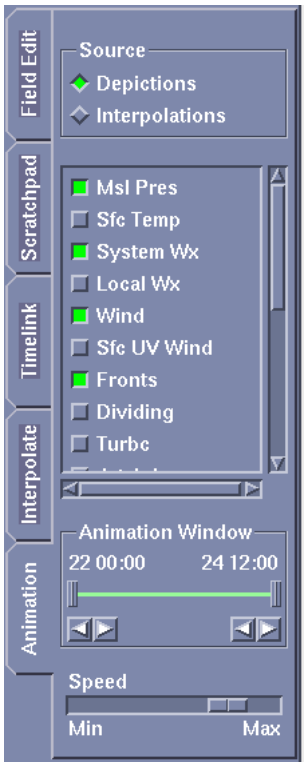
16.4.1 Animating your depictions

You can animate your depictions to view the pattern. You can animate the basic depictions or the interpolated depictions.

To animate your depiction:

1. Click the ***Animation*** tab. (see Figure 16.18)

Figure 16.18: Animation menus



2. Select ***Depictions*** or ***Interpolations*** as the ***Source***.
3. From the list in the ***Animation*** area, select the fields to animate.
4. Move the ***Time Span*** sliders to set the start and end times for the animation. (see Using slider-bars, (Section 3.3.5))
5. Move the ***Speed*** slider to the left or right to set the speed of the animation. (see Using slider-bars, (Section 3.3.5))
6. Click **Start**.

   The depiction automatically starts animating until you click **Stop**. However, you can change the source, fields and speed while it is running.

16.4.2 Viewing your animated depictions

You can choose to view a particular time from your animated depictions by using the sliding time bar and arrows near the top of your window. (see Figure 16.19)

Figure 16.19: Animation timebar

To change your animation:

1. Click **Stop** to stop the animation.
2. Click the sliding bar and drag it to the time you wish to view

   or

   click the arrows to single-step forward or backwards through the animation sequence.
3. Take note of the date and specific time so you can load it as a new depiction. See Maintaining Fields and Depictions, (Chapter 5).

Chapter 17

Generating Forecasts and Other Products

The Products menu has been designed to generate output products in the form(s) your office requires.

Note: Not all of these product generation options may be available, depending on your local office configuration.

17.1 Creating graphics products

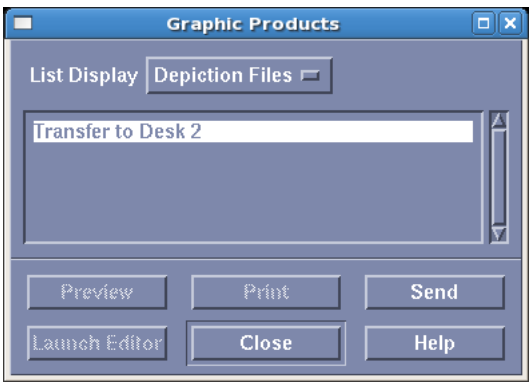
17.1.1 Transferring the FPA depiction files

You can send some database information to other locations.

To transfer the FPA *depiction* files:

1. Choose **Products** → **Graphics...** or click the  icon in the "Command Icon Bar".
   The ***Graphics Products*** dialog box appears.
2. From the ***List Display***, select ***Depiction Files***.

Figure 17.1: Graphic Products - Depictions



3. Select any of the target locations listed.
4. Click **Send** to transfer a copy of your depiction database to the selected target location.

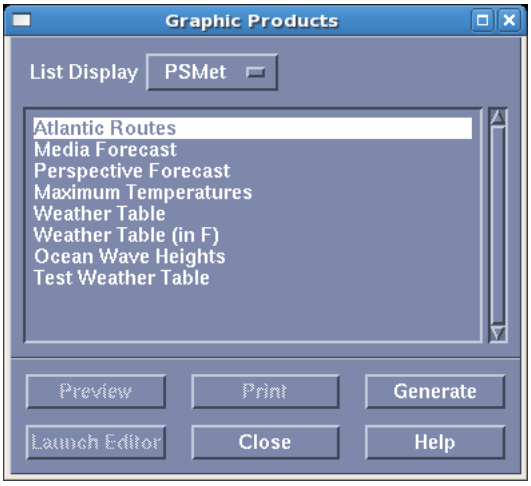
17.1.2 Creating a graphic

Some information can be displayed graphically through the *PSMet* or *SVGMet* system.

To create a graphic:

1. Choose **Products** → **Graphics...** or click the  icon in the "Command Icon Bar".
   The ***Graphics Products*** dialog box appears.
2. From the ***List Display***, select ***PSMet*** or ***SVGMet***.

Figure 17.2: Graphic Products - PSMet



3. Select one of the listed products.
4. Click **Generate** to produce a graphical representation of the selected information.

17.1.3 Creating a tabular product

Some information can be displayed in a tabular format using the *TexMet* system.

To create a tabular product:

1. Choose **Products** → **Graphics...** or click the  icon in the "Command Icon Bar".
   The ***Graphics Products*** dialog box appears.
2. From the ***List Display***, select ***TexMet***.

Figure 17.3: Graphic Products - TexMet

3. Select any of the listed products.
4. Click **Generate** to create a table displaying the selected information.

   Note: If you have the required text editor on your system you may be able to click **Launch Editor** to edit this table.

17.2 Displaying products status

To display the status of all available products:

1. Choose **Products** → **Status...** or click the clock icon in the upper right-hand corner of the screen.

   The ***Product Status*** dialog box appears listing all the products available. The status displays "No Previous Run", "Running" or the time at which the product was last generated.

17.3 Running Allied Models

The available models are determined by your System Administrator. This button is greyed out and not selectable if there are no models available to run.

To run *Allied Models*:

1. Choose **Products** → **Allied Models...** or click the icon in the "Command Icon Bar".

   The ***Allied Model Run Select*** dialog box appears. (Figure 17.4)
2. Select the models to be run.
3. Click **Run**.

Figure 17.4: Allied Model Run Select Dialog

Appendix A

Setting command line parameters in the FPA

To run the FPA depiction editor use the **xfpa** command.

`xfpa` [-askForTimes] [-profile ***name***] [-s[etup] ***filename***] [-stateDir ***directory***] [-t0 ***YYYY:JJJ:HH***] [-v[isible] ***key***] [+viewerMode]

Table A.1: Explanation of **xfpa** optional arguments

arg...	**meaning...**
-askForTimes	Puts up a dialog box asking which range of depiction times are to be read into the FPA
-profile ***key***	Start using the specified profile instead of putting up a dialog asking the user for a profile. "none" is a valid input.
-s[etup] ***filename***	Specifies the name of the file to use as the setup file. This may be an absolute path name or relative to the default setup directories.
-stateDir ***directory***	The directory to use to store the state store file. This is only used if in viewer mode.
-t0 ***YYYY:JJJ:HH***	Specifies the time to use as T0 for the depiction sequence. ***YYYY*** = 4 digit year, ***JJJ*** = julian day of the year, ***HH*** = hour of the day
-v[isible]***key***	Bring up FPA with fields visible as specified by the block of data indicated by the ***key*** in the preset field visibility config file.
+viewerMode	Runs the FPA in viewer mode. All loading, deletion, saving and editing commands are not available so that only sequence viewing is possible.

Appendix B

Terminology

A

Active Depiction

The current depiction you are working on.

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Allied Models

Models which are run by the FPA, using data from the FPA, to generate other data (for example, ocean wave models). The models are usually developed elsewhere.

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Attributes

Attributes are optional parameters which can be attached to any feature in an FPA field. For example, a minimum in the pressure field could be identified as a tropical storm, with a name and a radius of influence. Similarly, one could indicate the speed and intensity of a cold front.

The ability to assign attributes to areas is particularly useful in aviation forecasting. For example, forecasters can attach attributes to a cloud area such as cloud amount, cloud type, base of cloud, top of cloud, surface weather and visibility, icing or any other desired parameter.

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B

Backup

A backup is created every time you save a field. The number of days for which the field is retained is set in the setup file (contact System Administrator to change this).

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C

CoView

This feature lets you view the workspace of another depiction. (You cannot edit the other depiction, however.) Use this to share your work with other FPA users.

This feature lets you view the workspace of another depiction. (You cannot edit the other depiction, however.) Use this to share your work with other FPA users.

D

Daily Fields

Daily fields are fields which are valid for a specific day (for example, maximum temperature). The time range of a daily field may span more than one depiction. See The FPA Model, (Chapter 2). Daily fields are not interpolated, but can be edited.

The FPA Model, (Chapter 2)

Daily fields are fields which are valid for a specific day (for example, maximum temperature). The time range of a daily field may span more than one depiction. See The FPA Model, (Chapter 2). Daily fields are not interpolated, but can be edited.

Depiction

A depiction is your workspace; it is a graphic image of the geographic area overlaid with specific weather fields. Load fields into depictions and then modify a sequence of depictions to describe the forecast weather. Each depiction is valid for a specific date and time. See The FPA Model, (Chapter 2).

The FPA Model, (Chapter 2)

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Depiction Sequence

A depiction sequence is a time ordered set of depictions. A depiction can be thought of as a keyframe in a movie.

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E

Elements

Elements are atmospheric parameters such as pressure, temperature or u/v component wind.

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F

Features

A feature is a recognizable shape or pattern in a data field. For example, the shape of contours that delineate a low pressure centre represent a "feature" of the pressure field. Similarly, the shape of an area of rain represents a feature of the precipitation field. Forecasters rely heavily on the remarkable ability of the human mind to recognize features in data.

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Fields

Fields are elements at a specific level, for example msl pressure. Any given instance of a normal field can only exist in one depiction (See The FPA Model, (Chapter 2).) There are different types of fields:

- Continuous fields (e.g., pressure surface heights, humidity, etc.) are modeled with splines on the FPA, instead of using the more common grid-point methods.
- Vector fields are component fields like winds or waves that have both magnitude and direction.
- Two-dimensional fields are areas or polygons. Areas of clouds and weather are represented as areas on the FPA.
- One-dimensional fields are lines like fronts, ridge lines, etc.
- Point fields or plot-objects, are used to display point values like surface observations.

Different graphical editors are used to manipulate one-dimensional, two-dimensional and continuous fields.

The FPA Model, (Chapter 2)

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Different graphical editors are used to manipulate one-dimensional, two-dimensional and continuous fields.

See Also "Daily Fields", "Static Fields".

Field Group

Fields are grouped to make them easier to work with. Groups are defined by your system administrator. Speak to your system administrator if you prefer to see them grouped differently.

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G

Gridded Binary files (GRIB)

Major NWP centres (CMC, NCEP, ECMWF, etc.) distribute their model output as GRIB files that you can load into the FPA. In Canada, CMC distributes GRIB message from the GEM model. Each Weather Centre receives the national distribution as well as a set of Regional GRIB messages that contain subsidiary data that the Region has specifically requested.

NWPNCEPECMWFGEM

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Groups

Groups are field classifications. The classification of fields into groups is a matter of office preference.

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Guidance

Guidance comprises fields or data (e.g., NWP model output) that the FPA gets from remote system(s) or from allied models. You can display, overlay and even annotate (label or draw lines on) guidance, but you cannot edit it. Note that you can use depictions as guidance-that is, you can overlay one depiction over another to act as reference; this is useful for drawing areas of clouds and weather.

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I

Interpolation

The intermediate depictions obtained by interpolating between the depictions in the sequence to some constant time interval. Each interpolated depiction (interpolation) is a complete weather depiction itself. In this way, you can work on charts that are spaced arbitrarily in time (e.g., 9 hours, 12 hours, etc.) and produce hourly charts. See Sequence.

- Interpolations can be imported back into the depiction sequence and re-linked if necessary. This allows you to accelerate or decelerate weather systems.
- Some functions (e.g., text generation) require interpolated depictions.
- Interpolations can be animated (see Animating your depictions, (Section 16.4.1))

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Animating your depictions, (Section 16.4.1) "Sequence".

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See Also "Sequence".

L

Levels

Levels are vertical parameters in the atmosphere such as msl, surface, 850mb or 500-1000mb.

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Link

A link is the segment joining two link nodes.

"Time Link".

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See Also "Time Link".

Link Chain

A link chain is comprised of one or more links.

"Time Link".

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See Also "Time Link".

Link Node

Link node is a point which indicates a significant feature on a depiction.

"Time Link".

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M

Metafile

A metafile is a file containing "higher-order" information. In a computer graphics context, metafiles usually contain some kind of display independent data format. FPA metafiles are display independent, but also presentation independent. For example, an FPA metafile would store the outline of a rain area but not what colour should be used to draw the outline. Objects in an FPA metafile also have the geographical reference information needed to have spatial meaning on a map.

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N

Normal Fields

"Fields".

See Also "Fields".

O

Object Database

An object oriented paradigm organizes data such that characteristics of an entity are encapsulated and methods of access are defined. The objects stored in the FPA are the various meteorological fields. It is important to note that the FPA is first and foremost a database tool with a graphical user interface (GUI) attached. This fact separates the FPA from most drawing tools.

GUI The FPA does not use relational database technology to store objects. When the FPA was first developed, there was virtually no commercial spatial database technology available. Instead a very robust system was built from the ground up for reading and writing proprietary graphics metafiles. Specifications for the FPA metafiles are available on request.

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P

Presentation

Presentation refers to the ways things look when displayed. For example, line style, colour, and contour intervals are all presentation parameters. The FPA design takes special care in making sure that users can set their own presentation parameters by means of configuration files.

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PSMet

A program to produce graphical products for end-users. Use this to design your own graphical products quickly; use any graphics package to do touch-ups.

psmet ***setup_file psmet_sub_directory pdf_filename run_time***

psmet ***setup_file psmet_sub_directory pdf_filename run_time*** psmet ***setup_filesetup_psmet_sub_directorypsmet_sub_directory pdf_filenamepdf_filename run_timerun_tim***

A program to produce graphical products for end-users. Use this to design your own graphical products quickly; use any graphics package to do touch-ups.

psmet ***setup_file psmet_sub_directory pdf_filename run_time***

Puck

A rubber disc used in the game of ice hockey, an extremely popular sport in Canada. In the context of the FPA, a puck describes a circular sculpting tool.

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R

Radius of influence

The radius of influence controls the extent of smoothing which occurs when the *move* tool is used on a continuous or vector field.

move The percentage indicates the affected area surrounding the point of edit.

Note: Percentages range from 1 to 100 where 1 is the minimum radius of influence and 100 is approximately one quarter of the map area. Your System Administrator establishes the exact percentage increments.

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S

Sequence

A depiction sequence refers to the collection of depictions.

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Sculpting

Modifying a line or outline using the puck tool.

Modifying a line or outline using the puck tool.

Static Fields

Static fields are elements which have values that are approximately constant until another static field is specified (for example, sea ice). Static fields usually span more than one depiction. They are not interpolated, but can be edited.

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SVGMet

A program to produce graphical products for end-users. Use this to design your own graphical products quickly; use any vector graphics package to do touch-ups.

svgmet ***setup_file svgmet_sub_directory pdf_filename run_time***

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A program to produce graphical products for end-users. Use this to design your own graphical products quickly; use any vector graphics package to do touch-ups.

svgmet ***setup_file svgmet_sub_directory pdf_filename run_time***

T

Target Depiction

Target Depiction defines the date and time that you want the depiction to appear in the sequence.

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TexMet

A program to produce tabular products for end-users. Use this to design your own tabular products quickly; use any text editor to do touch-ups.

texmet ***setup_file texmet_sub_directory pdf_filename run_time***

texmet ***setup_file texmet_sub_directory pdf_filename run_time*** texmet ***setup_fileset texmet_sub_directorytexmet_sub_directory pdf_filenamepdf_filename run_timerun_t***

A program to produce tabular products for end-users. Use this to design your own tabular products quickly; use any text editor to do touch-ups.

texmet ***setup_file texmet_sub_directory pdf_filename run_time***

Time Link

When you create a time link you are indicating that a significant feature on one depiction evolved from a significant feature on another depiction so that the FPA knows they are the same. The FPA uses these link chains to interpolate the depictions through time. See The FPA Model, (Chapter 2).

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Z

Zoom

Lets you magnify and expand the map area graphically and pan the magnified area. This makes it easier to work on depictions close up.

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Appendix C

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