

StS2- GPS V COMPUTER INTERFACE

LESSON PLAN

TIME FRAME: 60-minute Lecture

MATERIALS: PowerPoint Slides
Overhead Computer and Projection
Equipment

References*:

*A Introduction to Using a Garmin GPS with Paper
Maps for Land
Navigation*, Garmin Corporation, 2003.

GPS Personal Navigator: Quick Start Guide,
Garmin Corporation, 2001-2002.

GPS Training—Garmin GPS V, Instructional
Video, Garmin Corporation, 2003.

What is WAAS: Wide Area Augmentation System,
Web Site:
<http://www.garmin.com/aboutGPS/waas.html>,
Garmin Corporation, 1996-2004.

*MapSource: User's Guide and Reference
Manual*, Garmin Corporation, 1999-2003.

Terminal Objective:

At the conclusion of this session, the participant will be familiar with MapSource and other mapping software programs and be able to exchange information between a computer and the Garmin GPS receiver.

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Enabling Objectives:

Upon completion of this unit, participants will:

- Using mapping software, be able to:
 - Establish Waypoints
 - Establish Routes
 - Use Map Sets
- Demonstrate data transfer between the Garmin V GPS receiver and a laptop computer
- Be able to use the MapSource toolbar

Outline:

A. Computer Overview

- System Requirements
- MapSource Toolbars

B. Understanding Waypoints

- Waypoint properties
- Creating waypoints
- Waypoint tool

C. Understanding Routes

- Creating routes
- Using the Route tool
- Auto Route with the Route tool
- Route properties

D. Using Map Sets

- What is a Map Set
- Selecting regional maps
- Creating a Map Set
- Naming a Map Set

E. Describe Data Transfer

- From MapSource to GPS
- From GPS to MapSource

F. Using MapSource Toolbar

- Menu function
- File function
- Edit function
- View function
- Tools function

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INTRODUCTION

The purpose of this module is to familiarize the students with MapSource, proprietary mapping software by Garmin that allows users to view a wide variety of mapping programs and exchange information between a computer and the Garmin GPS receiver.

There are many mapping software programs available on the market that provides a wealth of mapping information, some highly customized. This information can be downloaded to a GPS receiver by US&R members to increase accuracy, locate waypoints and establish routes prior to responding to an impact area. Information secured by Search teams can also be uploaded after a search assignment from the GPS unit back to a computer. Critical information, such as victim location, hot zone and hazard areas, can be forwarded to Logistics or Command.

However, one limitation of GPS receivers is their ability to hold information. For example, the Garmin V is limited to 19 megabytes of information. In contrast, a laptop computer has a much larger processor and storage capacity and can handle a much greater degree of information.

To overcome the storage limitation of the GPS unit, a user generally first views map information on a computer, decides what information is important, then links the computer to the GPS receiver and download the desired information. One links a Garmin GPS unit to a computer using the MapSource mapping software. The following discusses how to do that.

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Computer Overview

Minimum System Requirements

The minimum system requirement to use MapSource includes:

- IBM-compatible PC with Pentium processor or equivalent
- 16-32 Megabytes RAM
- CD-ROM drive
- Mouse or other pointing device
- 256-color display adapter (24-bit color recommended)
- Monitor resolution of 640 x 480 or higher
- 20 Megabytes to 1.5 Gigabytes of free hard drive space (depending on the map data)

MapSource also requires a 32-bit operating system such as Windows 95/98/2000/ME/XP or Windows NT 4.0. An available serial port or USB port (if applicable) is required for interfacing with a Garmin GPS unit. If a MapSource product comes with “locked” data, one needs Internet access to unlock the data to access the software.

Connecting the GPS UNIT to a Computer

To connect the GPS unit to a computer via a Serial Interface Cable:

1. Using a PC Interface Cable, connect the GPS unit to a serial communications port on the computer.
2. To ensure a good connection, MapSource automatically detects a GPS connection to the COM port. Check that the GPS unit is powered on and the Serial Data Format is set to Garmin.
3. Select “Get Unit ID” from the Tools menu.
4. Click”Auto Detect.” MapSource will verify that the GPS unit is properly connected to the computer.
5. Click “OK” to set the COM port and exit.

Computer Overview & Introduction

System Requirements

Windows 95 or later
32 MB minimum RAM
300 MB hard disk space
CD-ROM drive
256-color display adapter and monitor
Internet access required for optional registration

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Computer Overview (continued)

MapSource Toolbars

Like a standard windows environment, the MapSource screen interface uses four toolbars: File, Edit, View, and Tools. These toolbars also have shortcut icons that allow quicker access to many of the MapSource features. Therefore, the File, Edit, View, and Tools icons also appear in the Menu Bar, along with Right-Click menus, and will receive a more thorough description in the last section of this lesson plan.

Before using the Toolbars, a user may prefer customize the location of the Toolbars icons around the page. To do this, one must undock the toolbar. To do this, place the mouse pointer over an open area on the toolbar, click and hold the left mouse button, and move the toolbar to a different location. To return a toolbar to its starting location, move it back to the top of the application.

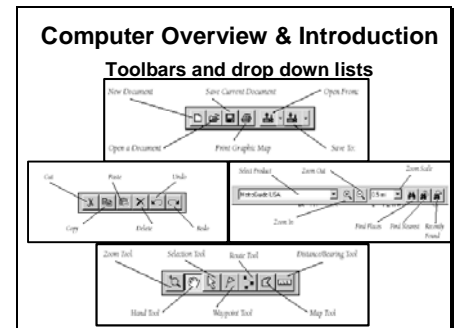
The screen interface also includes Data tabs, Graphic Map, Status Bar. Each of these will be described below.

File—Use these features to create a New Document, Open a Document, Save the Current Document, and Print the Graphic Map. One can also transfer data between MapSource and a GPS unit or a storage card by selecting Open From (Device), or Save To (Device).

Edit—Use these editing features to Cut, Copy, and Paste in MapSource, Delete selected items, and Undo the last user action. After an Undo is performed, the Redo button is activated, allowing one to revert to the last user action, or Redo the Undo.

View—Use these features for viewing maps. One can select a Product to view, Zoom In/Out, select a specific Zoom Scale, or activate the Find features.

The Find feature allows one to search for a city and view it on the Graphic Map. Some MapSource products include the Find Places feature, allowing one to search for a city, point of interest, or an address and view it on the Graphic Map.



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MapSource Toolbars (continued)

Tool—Use these features to search for locations and plan routes. Directly select the Zoom, Hand, Selection, Waypoint, Route, Map, and Distance/Bearing tools.

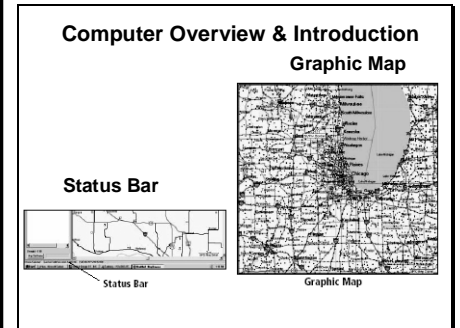
Graphic Map—The Graphic Map displays the area of the world that is currently selected from the MapSource product. One can zoom in and out and move to different parts of the selected area. At large zoom scales (ZOOM OUT), less detail is displayed. At smaller zoom scales (ZOOM IN), one can see the actual detailed map features that can be transferred to the GPS unit. When this occurs, “GPS Map Detail” is displayed below the zoom scale in the lower right-hand corner of the Graphic Map.

One can pan the Graphic Map in many ways: by using the on-screen scroll bars, the keyboard’s arrow keys, or the “Hand” tool. In addition, the Page Up and Page Down keys move the map window up or down by the length of the window. Hold the Ctrl key and press an arrow key to move the map by the width of the window in that direction (up, down, left, or right).

Moving Around the Graphic Maps—Before selecting map sets or creating waypoints and/or routes, one must first learn how to move around the Graphic Map.

Use any of the following methods to quickly reach a desired destination on the Graphic Map.

- Use the Hand tool. The mouse cursor changes to a hand over the graphic map. Press and hold the left mouse button and move the mouse in the direction desired on the map.
- Use the scroll bars on the right-hand side and at the bottom of the map.
- Use the Up, Down, Left, and Right arrow keys on the keyboard. Hold the Ctrl button down while pressing a directional key to move a full screen in length.



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MapSource Toolbars (continued)

To ZOOM IN and OUT of the map:

- Press the ZOOM IN or ZOOM OUT buttons on the View toolbar.
- Select the Zoom tool from the Tools menu or press the z button on the keyboard to activate the zoom. Click the left mouse button once on the map to ZOOM IN and right click once to ZOOM OUT. Click and hold the left mouse button and drag the mouse to create a box over the desired area.
- Use the Zoom Scale menu on the View toolbar to zoom straight to the desired level.
- Press the Plus (+) or Minus (-) keys on the number pad of the keyboard.

Status Bar—The Status Bar extends across the bottom of the MapSource window. The Status Bar displays information relating to the current action. The Status Bar can show:

- The number of tab items selected in the tab list.
- The current Position Format and Map Datum set in Preferences.
- Latitude and Longitude of the mouse pointer when the mouse is positioned on the Graphic Map, regardless of which tool is selected.
- The name and approximate data size of the geographical map boundary currently highlighted on the Graphic Map is displayed (if using the Map tool).
- The distance and bearing from a beginning point is displayed (if using the Distance/Bearing tool).

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UNDERSTANDING Waypoints

A waypoint is a geographic location stored in memory. Waypoints can be created in MapSource using the Waypoint tool or the “Waypoint Properties” dialog box. When a waypoint is created, MapSource automatically assigns a name to the waypoint based on its location. If a waypoint is created on a map feature, the waypoint name will be an abbreviation of the name of the feature. If the waypoint is created on an open location, MapSource will assign a numeric name to the waypoint. All waypoint properties can be changed, allowing one to customize the waypoint for display and use.

Creating a Waypoint with the Waypoint Tool

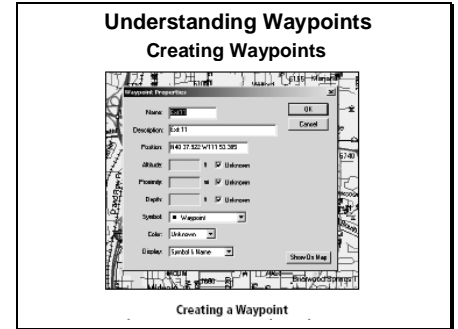
The Waypoint tool can be selected three ways: by choosing “Waypoint” in the Tools menu, by clicking on the Waypoint tool icon in the Tools toolbar, or by using the keyboard shortcut, w. Using Ctrl+w creates a waypoint in the center of the map and the “Waypoint Properties” window automatically appears.

When the Waypoint tool is selected, a flag similar to the Waypoint tool icon will appear beside the mouse pointer on the Graphic Map.

Creating a Waypoint on the Graphic Map—To create a Waypoint on the Graphic Map:

1. With the Waypoint tool selected, position the mouse pointer at a location on the Graphic Map.
2. Click the left mouse button, or click the right mouse button and select “New Waypoint.” In either case, the “Waypoint Properties” dialog box appears.
3. Make any desired changes to the “Waypoint Properties,” then click “OK” to save the new waypoint or click “Cancel” to exit the dialog box.

When a Waypoint is created on the Graphic Map, the “Waypoint Properties” dialog box is displayed. To accept the new waypoint as is, click “OK.” To reject the waypoint click “Cancel.”



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Creating A Waypoint with the Waypoint Properties

A waypoint can also be created based on the center of the Graphic Map display by using the Waypoint Properties. To create a Waypoint with the Waypoint Properties:

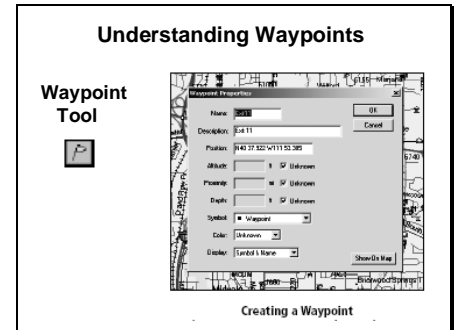
1. Select “New Waypoint” from the Edit menu. This displays the “Waypoint Properties” dialog box. MapSource assigns a name and location based on the center of the Graphic Map.
2. Make any desired changes to the “Waypoint Properties,” then click “OK” to save the new waypoint. To reject the waypoint, click “Cancel.”

Waypoint Cautions

When changing the name or description, remember that Garmin GPS products can only display a limited number of characters. The name or description is truncated in the GPS Unit if it exceeds the unit’s limit. If multiple waypoints have identical names after truncation, only one of the waypoints will be stored in the GPS Unit. Refer to the GPS Owner’s manual to determine the GPS unit’s limitations.

All MapSource waypoints can contain proximity information. If the GPS unit is capable of using proximity waypoints and new waypoints that contain a proximity range are saved to the GPS unit, then all waypoints in the GPS unit’s proximity list will be deleted and replaced with the new MapSource waypoints.

If the symbol selected does not exist in the GPS unit, the waypoint will be represented by a square when transferred to the GPS unit.



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Editing Waypoints

Most editing features for waypoints can be performed in the “Waypoint Properties” dialog box. To activate the “Waypoint Properties,” do one of the following:

- Double-click a waypoint name in the Waypoints tab list
- Double-click a waypoint on the Graphic Map
- Highlight a waypoint in the Waypoints tab list or on the Graphic Map, and then select “*Waypoint Properties*” from the Edit menu
- Highlight a waypoint in the Waypoints tab list or on the Graphic Map, then click the right mouse button and select “*Waypoint Properties*”

Waypoint Properties

Nine properties can be modified for the selected waypoint: Name, Description, Position, Altitude, Proximity, Depth, Symbol, Color, and Display. The waypoint can also be entered on the Graphic Map by clicking “Show on Map.”

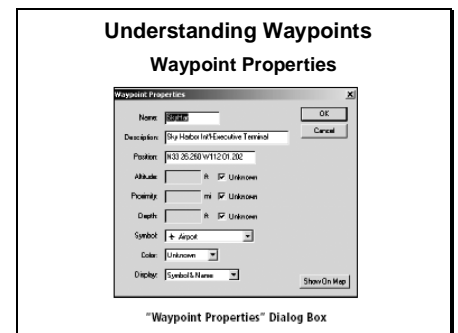
Name— Most Garmin GPS systems limit the name to six characters. If the length of the name exceeds the limitations of the unit, the name is truncated when transferred.

Description— Enter a description to help identify the waypoint. Garmin GPS units have a maximum number of characters allowed in the description field. If the description that is entered exceeds the unit limitation, the description is truncated. Refer to the GPS unit’s Owner’s manual to determine the GPS unit’s limitations.

Position— The coordinates of the waypoint are displayed in the “Position” field. The coordinates are displayed according to the Position Format set up in Preferences. Enter new coordinates to change the position of the waypoint.

Altitude— If known, enter an altitude for the waypoint.

Proximity— Enter a range for a proximity warning.



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Waypoint Properties (continued)

Depth— Enter a depth for underwater waypoints. This is only compatible with GPS/Sounder combination units.

Symbol—Allows one to choose from over 100 different symbols. If a symbol is selected that is not supported by the GPS system, it will be represented with a square symbol.

Color—This property allows the user to select from 16 colors for the waypoint. This property does not apply to all Garmin GPS systems. Refer to the GPS Owner's manual to determine if the GPS unit is capable of displaying waypoint colors.

Display— Allows one to choose how the waypoint will be displayed, selecting from one of three settings: Symbol only, Symbol and Name, or Symbol and Description.

Show On Map— Enters the waypoint on the Graphic Map while keeping the "Waypoint Properties" window open. This action also centers the new waypoint on the Graphic Map.

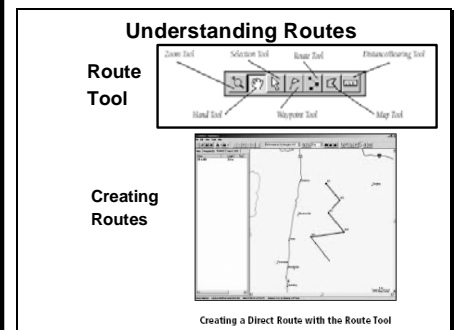
UNDERSTANDING Routes

One can create a route in MapSource by using the Route tool on the Tools bar, or by using the "Route Properties" dialog box. Using CitySelect, one can create a direct route (a straight-line route or "as the crow flies"), or an automatic route (turn-by-turn). Note:

Using the Route Tool

The Route tool can be selected in several ways: by choosing *Route* from the Tools menu, by clicking the Route tool icon in the Tools toolbar, and by using the keyboard shortcut, Ctrl+r. One can also start a route by clicking the right mouse button on the desired starting point on the Graphic Map and then selecting *Begin Route*. To create a direct route with the Route Tool:

1. After selecting the Route tool, click the waypoints or map locations in the sequence they are wanted to appear in the route. If a waypoint does not exist where one clicks on the map, a new waypoint will be created at that location. As one continues, route legs are created in a direct line from one point to the next.



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Using the Route Properties (continued)

5. Repeat steps 1-4 to add Via Points to the end of the route. When finished, click "OK" to save the new route.

To create an automatic route with the Route Properties:

1. Follow the previous directions: "To create a direct route with the Route Properties."
2. Using CitySelect, MapSource automatically calculates a turn-by-turn route. As points are added, the directions and turns are listed between each waypoint in the "Directions" tab of the "Route Properties" dialog box. The automatic route displays the roads it follows on the Graphic Map instead of showing a direct line from one point to the next.

To add a map location to an automatic route with the Route Properties:

1. Under the "Via Points" tab, select a point in the route where a map location is wanted. To add a map location at the end of the route, highlight the blank space at the end of the route list. To add a point anywhere else, click the Via Point in the list that follows the location added.
2. Click "Find." The "Find Places" dialog box appears, allowing one to search, if applicable, for a city, point of interest, address, or waypoint to add to the route.
3. When the desired map location is found, click "Find" to add it to the "Places" list.
4. Click "Add to Route" in the advanced "Find Places" dialog box. The map location is added directly before the point selected in the route.
5. Click "OK." MapSource automatically calculates the new location into the route.

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Naming a Route

If the “Autoname” checkbox is marked, MapSource automatically names the route using the names of the first and last waypoints entered in the route. To enter a different name, remove the mark from the “Autoname” checkbox in the “Route Properties” window and enter a name in the “Name” field.

Inverting a Route

One can reverse the order of the route waypoints by clicking “Invert.” This feature is convenient when one wants to navigate a route in the reverse direction. When finished, click “OK” to save the route.

Viewing and Printing Directions of an Auto-Route (Turn-by-Turn)

Using CitySelect, one has the opportunity to view and print the directions of the auto-route created. After selecting the “Directions” tab in the Route Properties, the information displayed is “Directions/Name,” “Distance,” “Leg Length,” and “Leg Time.” Click “Print Directions” to send the turn-by-turn directions to a printer.

Editing Routes

Routes can be edited on the Graphic Map using the Selection tool in one of three ways. Choose the Selection tool by clicking the Selection tool icon from the Tools toolbar, choose “*Selection*” from the Tools menu, or use the keyboard shortcut, Ctrl+s. The Selection tool allows one to add waypoints to the beginning, middle, or end of a route; to remove a waypoint from a route; and to move a waypoint to a new location in a route. Note: when using a routable product, the “Route Properties” dialog box shows directions and turns from one waypoint to the next in the selected route. It also allows one to print the directions to a local printer.

Inserting Waypoints—To insert a waypoint in an existing route:

1. With the Selection tool activated, select the route in the Routes tab list or on the Graphic Map by clicking on it with the left mouse button. When the route is selected, it is highlighted in yellow.

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Inserting Waypoints (continued)

2. Click the left mouse button on the route leg desired, or click the right mouse button on the route leg and select "Insert Route Section." The mouse pointer now has the "plus sign" (+) and a small icon of the Route tool below it. The route leg will "rubber band," allowing one to stretch it to an existing waypoint or a map location.
3. Place the mouse pointer at the desired position, click the right mouse button and select "Add to Route," or click the left mouse button to add the point to the route leg.
4. Repeat these steps to insert additional waypoints. Click the left mouse button away from the route or press the Esc key on the keyboard to quit and save the changes to the route.

Extend a Route—To extend a route (adding a waypoint to the beginning or end of a route):

1. With the Selection tool activated, select the route in the Routes tab list or on the Graphic Map by clicking on it with the left mouse button. When the route is selected, it is displayed in yellow.
2. Left-click the first or last waypoint in the route, or right-click the first or last waypoint in the route and select "Resume Route." The mouse pointer will now have the "plus sign" (+) and a small icon of the Route tool below it.
3. Move the extension line to an existing waypoint or a map location. Click the right mouse button and select Add to Route, or click the left mouse button to anchor the route leg.
4. Repeat these steps to add more waypoints. Click the right mouse button and select Cancel, or press the Esc key on the keyboard to quit and save the changes to the route.

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Remove a Waypoint—To remove a waypoint from a route:

1a. With the mouse pointer located on the route waypoint desired, click the right mouse button and select "Remove Waypoint From Route."

Or:

1b. Click the left mouse button on the waypoint (highlighted in yellow). Select "Remove Waypoint From Route" from the Edit menu.

Move a Waypoint—To move a waypoint to another location in a route:

1. With the Selection tool activated, select the route in the Routes tab list or on the Graphic Map by clicking on it with the left mouse button. When the route is selected, it is highlighted in yellow.
2. Left-click the waypoint desiring to move, or right-click the waypoint and select "Replace Route Section." The mouse pointer will now have a curved arrow and a small icon of the Waypoint tool below it. The route leg will "rubber band," allowing one to move the waypoint to a new location.
3. Position the mouse pointer where desired, then click the right mouse button and select "Add to Route," or click the left mouse button to move the waypoint.

Editing Routes with the Route Properties

Many editing functions for routes can be performed in the "Route Properties" dialog box.

Edit a Route –To edit a Route with the Route Properties:

1. Select the route in the Routes tab list or on the Graphic Map.
2. Choose "Route Properties" from the Edit menu, or click the right mouse button and select "Route Properties."
3. Make the desired changes and click "OK" to save the changes and exit.

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Editing Route Terminology

The following terminology is used when editing a route.

Name— To change the route name, make sure the Autoname checkbox is not marked and type in a new name.

Center Map on Selected Item— With this box checked, when a Via Point is selected in the route, it is automatically centered on the map while viewing the “Route Properties.”

OK— Select this button to save changes to the route and exit the “Route Properties” window.

Cancel— Select this button to cancel any changes made to the route and exit the “Route Properties” window.

Cut/Copy/Paste/Delete/Undo/Redo— Editing buttons that also appear in the Edit menu. These options let the user cut, copy, paste, and delete Via Points in the current route. One can also undo and redo these editing actions. These options can be used for the following purpose:

- To move one Via Point from its current location to another location within the route. One can also use the yellow up and down arrows to the left to adjust the Via Point up or down one level.
- To remove a Via Point from the current route.
- To undo the last action. The Redo option is available after an Undo action. This option is simply “Redo the Undo.”

Via Point Properties— Select the waypoint in the route list and click “Via Point Properties.” The “Via Point Properties” for the selected waypoint appears, allowing one to review and edit the waypoint.

Find— This button allows one to search for a city, point of interest (if applicable), address (if applicable), or another waypoint to add to the route.

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Selecting Regional Maps

One can select maps from more than one MapSource data source, however, if these maps “overlap”, they will not appear at the same time on the GPS unit because it is only possible to see data from one data source. When this occurs, it is necessary to turn the overlapping map off in order to see the other map underneath. (Refer to the GPS Owner’s Manual to see how to turn MapSource downloaded maps on or off.)

As an example, if one selects both “Topographical” and “Roads & Recreational” data for the same geographical area, only the Roads and Recreational data will display. The unit WILL NOT display a combination of topographic and road data. Therefore, to see the Topographical data, turn the Roads & Recreational data off.

After selecting map sets from the Graphic Map, the names of the maps are placed in a list form under the Maps data tab on the left side of the screen. One can view the name of the map area, what MapSource program the map comes from, and how much memory it requires for download.

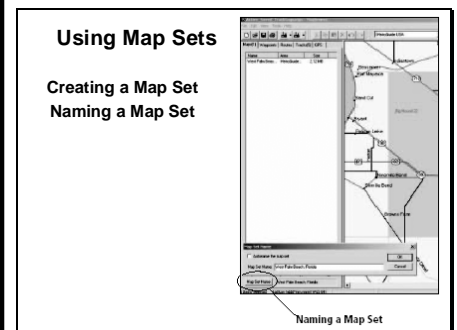
Using the Map Tool—To Select Areas Using the Map Tool:

1. Select a Zoom Scale to view the boundaries of the desired area map (most can be seen at the 30 mile/50 km zoom scale).
2. Choose “Map” from the Tools menu. When the Map tool is located within a detailed map, the borders of the area are outlined in yellow and the map name/memory requirement will be displayed in the Status Bar. The MapSource data loaded determines the geographical map boundaries; note that each product has different boundary areas.

Add a Map—To add a map to the Map Set:

1. Click the left mouse button in the selected area. To choose several maps, click and drag the mouse to draw a box through the different areas on the Graphic Map. As maps are added, they are shaded in pink. The number of maps and the memory required to store the maps is displayed at the bottom of the Maps tab on the left of the screen.

At the bottom of the Maps tab list, the number of selected maps and the required memory for the Map Set are displayed.



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Remove a Map—To remove a map from the Map Set/Maps Tab List:

1a. Place the Map tool inside the border of the region to deselect and click the left mouse button. To remove several maps at once, hold the Ctrl key and click and drag the mouse to draw a box through the regions on the Graphic Map.

Or...

1b. Highlight the desired regional map in the Maps tab list. To select several maps, hold down the Shift key on the keyboard and highlight the desired maps. Click the right mouse button and select “Delete Map,” or select “Delete Map” from the Edit menu, or press the Delete key on the keyboard.

Using CitySelect, check the “Include route calculation data” box located at the bottom of the Maps tab list.

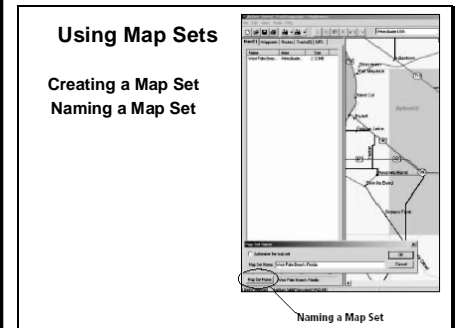
Naming/Renaming a Map Set

MapSource automatically names a Map Set when it is created. If one wants to name or rename a map, go to the Maps tab list. At the bottom of the tab, click “Map Set Name” and enter a new name in the “Name” field. Click “OK.”

Map Properties

The name, type of coverage area, and size of the map can be viewed in the “Map Properties” window by doing one of the following:

- Double-click the map name in the Maps tab list
- Highlight the map name and press Enter
- Right-click the map name and select “Map Properties”



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Transferring Data

Map sets, waypoints, and routes can be transferred in two ways: from the MapSource program to a Garmin GPS unit or storage card using the Save To command, or from a Garmin GPS unit or storage card to the MapSource program using the Open From command. Data is transferred in a variety of methods, as shown in the general list below.

When a Garmin GPS unit connects to a computer, the maps, waypoints and routes can be transferred from MapSource (Save To) to a Garmin GPS unit and vice versa (Open From).

Data Transfer from MapSource to the GPS Unit

Before transferring data from MapSource to the GPS unit, in the “Serial Connection Settings” dialog box, one can modify the communication settings by selecting a different Port or Baud Rate, or have MapSource automatically detect the Port and Baud Rate of the connection by clicking “Auto Detect.”

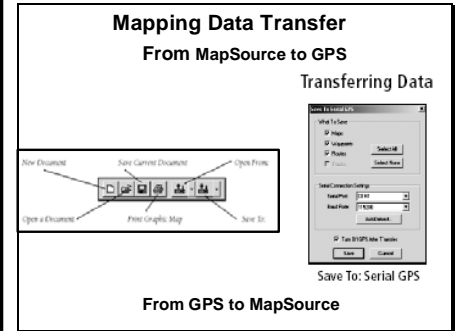
If transferring maps from MapSource to a GPS unit Select “Open From” in the File menu and choose the device type. In the “What To Open” dialog box, select the data type for transfer by placing a check mark in the box (es) next to the type of data desired to open, or click “Select All.”

Under these settings, one can also choose to “Turn Off GPS After Transfer” by placing a check mark in the box. Click “Save” to begin data transfer. As the transfer takes place, MapSource displays a progress indicator and the GPS unit displays a message indicating that the data is transferring.

Data Transfer from a GPS Unit to MapSource:

Before transferring data by Serial GPS to MapSource, in the “Serial Connection Settings” dialog box, one can modify the communication settings by selecting a different Port or Baud Rate, or have MapSource automatically detect the Port and Baud Rate of the connection by clicking “Auto Detect.”

Under these settings, one can also choose to “Turn Off GPS After Transfer” by placing a check mark in the box. Click “Open” to begin data transfer. As the transfer takes place, MapSource displays a progress indicator and the GPS unit displays a message indicating that the data is transferring.



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MapSource Toolbar Menu

As previously mentioned, the MapSource screen interface uses four toolbars: File, Edit, View, and Tools. This section describes in greater detail how these same functions work using shortcut icons that allow quicker access to many of the MapSource features. These icons appear under the Menu Bar, along with Right-Click menus.

File Menu

This feature is used to create a New Document, Open a Document, Save the Current Document, and Print the Graphic Map. One can also transfer data between MapSource and a GPS unit. The File Menu has the following commands:

New— Opens a new MapSource document that contains empty data tabs.

Open— Opens a previously saved MapSource document.

Save/Save As— Saves the current MapSource document.

Print— Prints the current Graphic Map display.

Print Preview— Shows a preview of what will be printed. To print the preview, click the “Print” button that appears on the preview page.

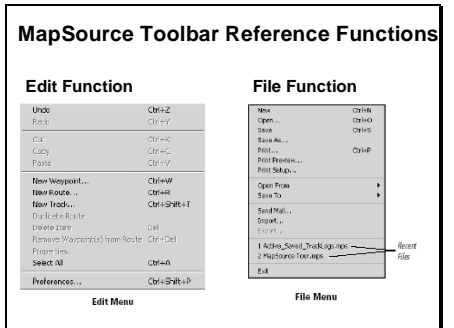
Print Setup— Activates the setup page for printing the MapSource Graphic Map display.

Open From— Transfers selected data (Maps, Waypoints, Routes, and Tracks) from a GPS unit.

Save To— Transfers selected MapSource data to a GPS unit.

Send Mail— Sends an e-mail with the current MapSource document as an attachment. The recipient must own a MapSource program and the version must be equal to or greater than the version of the file sent.

Import— Opens data stored using Garmin’s PCX5 Version 2.09 software. MapSource displays waypoints (.wpt), routes (.rte), or one of the maps (.grm) provided with PCX5.



StS2- GPS V COMPUTER INTERFACE

File Menu (continued)

Export— Allows the user to export MapSource data in a tab-delimited text format (.txt)--for use in a word processor or spreadsheet--or in a .dxf format.

Recent Files— Shows the four most recently used MapSource documents.

To quickly reopen one of these files, click the document name.

Exit— Closes the MapSource application.

Edit Menu

Use these editing features to Cut, Copy, and Paste in MapSource, Delete selected items, and Undo the last user action. After an Undo is performed, the Redo button is activated, allowing one to revert to the last user action, or Redo the Undo.

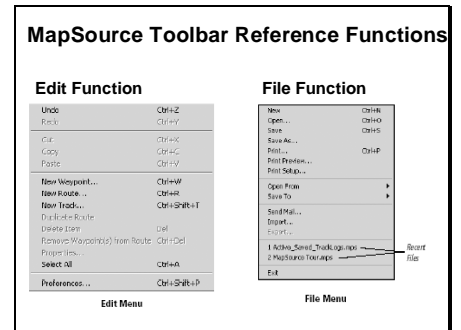
Undo— Reverts to the most recent previous action taken by the user.

Redo— After an Undo action is performed, the Redo button is activated, allowing one to revert to the last user action, or Redo the Undo.

Cut, Copy, Paste— These functions work like many other Windows programs to cut or copy any MapSource list information in the Data tabs to the Windows clipboard for the following purposes:

- To paste data from one active MapSource document to another active MapSource document.
- To paste MapSource information into a word processor, simple text editor, or a spreadsheet program in tab-delimited text format.

New Waypoint— Automatically creates a new waypoint in the center of the Graphic Map, assigns a waypoint name, description, and displays the “Waypoint Properties” dialog box. One can change the waypoint name, description, and/or position as well as assign an altitude, enter a proximity distance, enter a depth, choose a symbol, select display colors and set the display options for the waypoint.



StS2- GPS V COMPUTER INTERFACE

New Waypoint (continued)

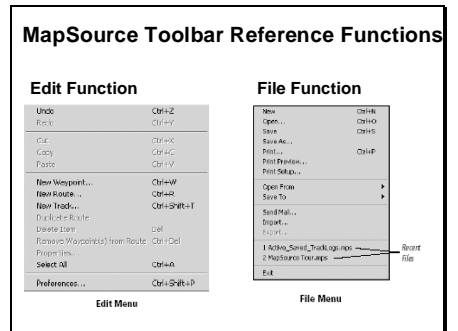
1. To center the waypoint on the Graphic Map, click “Show on Map.”
2. When finished, click “OK” to save or “Cancel” to remove the waypoint. For more detailed information, see “Creating Waypoints” in the Reference section of this manual.

New Route— Displays the “Route Properties” dialog box. To create a new route:

1. Click the “Find” button. In the “Find Places” window under the Waypoint tab, select a waypoint by typing the name of the waypoint, or select from a list of waypoints by clicking the “Select” button (The waypoints must have already been created and saved waypoints to choose from a list).
2. After selecting the waypoint, click “Find” to locate the waypoint. Click Add to Route” to add the waypoint to the route. With some MapSource products, one can search for a city, point of interest, or an address to add to the route by clicking the appropriate tab button (City, Feature, or Address). Continue inserting route points in the order to create the route desired. When the last point has been inserted, click “OK” to save and add the new route to the Routes tab list.
3. To view the new route on the Graphic Map, click “Show on Map.” When a route is created, MapSource automatically assigns a name based on the names of first and last route waypoints. To change the route name, uncheck the “Autoname” box. This will activate the name field so one can type in a new route name.

Duplicate Route— Duplicates the selected route in the route list. The name of the new, duplicated route is followed by a numerical value to indicate duplication.

Delete Item— Deletes Waypoint(s), Route(s), or Map(s) selected in the tab list or on the Graphic Map.



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Edit Menu (continued)

Remove Waypoint(s) from Route— Removes a selected waypoint from the selected route.

Properties— Activates the “Map,” “Route,” or “Waypoint,” dialog box, depending on the data item that is selected.

Select All— Highlights all data in the active tab list and on the Graphic

Edit Menu: Preferences

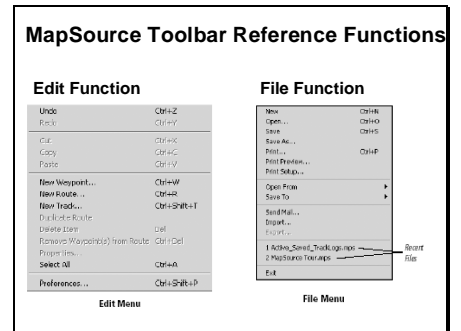
Use this section to change the original (default) preferences that will apply each time a MapSource product is used. Click “Apply” when any of the Preferences settings are changed to see the immediate effect, or click “OK” to apply the changes and exit. (Note: if one leaves all preferences at their original settings, Map Source will still function correctly for general use.)

Display Tab—Use the slider control to adjust the amount of detail that will be displayed on the Graphic Map (this setting does not affect the amount of detail transferred to the GPS unit) as well as options for displaying “Services,” “Spot Soundings” (for Blue Chart users), and “Light Sectors” (for Blue Chart users) on the Graphic Map. To change the font of the labels on the map, click “Change Map Font.”

Distance/Speed: Select Metric, Nautical, or Statute. All distance or speed measurements will reflect this setting.

Heading: Choose one of the following

- True—Displays true North headings.
- Automatic Magnetic Variation— Automatically calculates the magnetic variation for the geographical area.
- User—Allows user to enter a magnetic variation.
- Grid—Provides a true North heading as determined by the Position Format.
- Cardinal Direction—Displays the heading and/or course as N (orth), S, (outh), E (ast), and W (est). (Course information is found in the Data tab section under Routes.)



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Display Tab (continued)

Altitude/Elevation: Select Feet or Meters.

Depth: Select Feet, Meters, or Fathoms.

Area: Select Acres, Hectares, Square Feet, Square Miles, Square Meters, or Square Kilometers.

Position Tab—Select from the available default grid formats or manually enter information for a user-defined grid.

Grid: Select a grid format from the drop-down list.

Datum: Select from over 100 available map datums—allowing MapSource to easily match up with just about any paper chart or map--or manually enter information for a user-defined map datum.

File Location Tab—Allows user to set up a default location on their computer for saving and opening MapSource files, importing PCX5 data, and exporting .txt and .dxf data. Manually enter the location or click “Browse” to select the folder for the default file location.

Waypoint Tab—Sets up the preferences for creating waypoints in MapSource.

Characters: Use the drop-down menu or manually enter a number to limit the number of characters in waypoint names.

Creating a Waypoint on a Map Feature: To use your own settings, check the “Use the choices above,” option. Otherwise, MapSource can use its default settings.

Time Tab—Sets up displayed time either by the computer’s local time zone or by entering a Universal Time Conversion (UTC) offset.

Find Tab—Allows user to set the maximum number of places MapSource should find during a search as well as how many “Recently Found” places one desires to hold in MapSource memory.

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Edit Menu: Preferences (continued)

Routing Tab—To set up preferences for automatic routing calculations, select or deselect the autorouting option. This option enables or disables the automatic calculation of turn-by-turn directions for a destination when establishing a route.

Select, deselect, or set up the following for MapSource to automatically calculate a route. (Note: These features only apply to routable MapSource products. For more information, see “Creating Routes” in the Reference section of this manual.)

- Calculation Style (Faster Time/Shorter Distance)
- Type of Vehicle
- Avoid Highways
- Avoid Toll Roads
- Avoid U-Turns
- Average Driving Speeds

View Menu

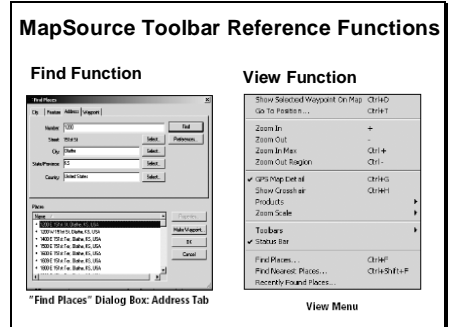
As previously mentioned, these features are used for viewing maps. One can select a Product to view, Zoom In/Out, select a specific Zoom Scale, or activate the Find features. The Find features allow one to search for a city and view it on the Graphic Map. Some MapSource products include the Find Places feature, allowing one to search for a city, point of interest, or an address and view it on the Graphic Map.

Show Selected Item on Map— When Waypoints or Routes or Map are selected in the tab list, selecting this feature displays the selected item in the center of the Graphic Map. The menu heading changes to reflect the item(s) selected in the tab list. For example, if a waypoint is selected in the Waypoints tab list, the menu will read “*Show Selected Waypoint on Map.*”

Go To Position— Enters a latitude/longitude position to view on the Graphic Map.

Zoom In— Decreases the zoom scale, showing a smaller area in more detail.

Zoom Out— Increases the zoom scale, showing a larger area in less detail.



StS2- GPS V COMPUTER INTERFACE

View Menu (continued)

Zoom In Max— Decreases the zoom scale to the smallest setting, showing the most detail.

Zoom Out Region— Increases the zoom scale to center on the region that is currently selected.

GPS Map Detail— Shows the actual map information that will be loaded into the GPS unit. Unchecking this option will enable faster map drawing.

Show Crosshair—Re-draws the map display to show a center point on the Graphic Map. A check mark next to this feature in the View menu indicates that it is selected.

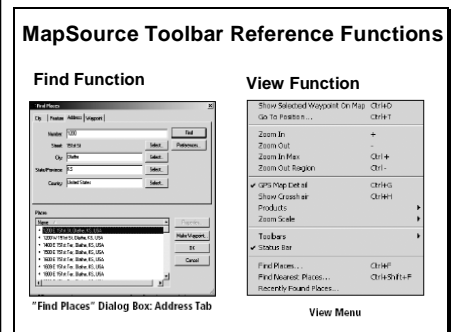
Products— If more than one MapSource product has been purchased, select a MapSource product to display on the Graphic Map. Any coverage area on the Graphic Map from any MapSource product can be selected if it has been installed on the computer and is unlocked (if required). For some MapSource products a message will prompt the user to insert the proper CD if one selects an area to be installed but the corresponding CD is not in the computer’s CD-ROM drive.

Zoom Scale— Quickly selects a zoom scale from a list.

Toolbars— One can individually select/deselect the File, Edit, View, and Tools toolbars to be shown or hidden on the PC screen. A check mark next to the toolbar name indicates those currently selected. One can also “*Hide All*” or “*Show All*” toolbars.

Status Bar— Allows one to show or hide the Status Bar at the bottom of the MapSource window. When this menu item is checked, the Status Bar is displayed.

Find Places— Allows one to search for a city, feature (point of interest), address or street, or a waypoint and view it on the Graphic Map. MapSource products include a “Find Places” dialog box with additional criteria to help narrow the search. The number of choices to search is determined by which MapSource product used. With MapSource products that are installed by region, “Find Places” only locates items within the regions installed.



StS2- GPS V COMPUTER INTERFACE

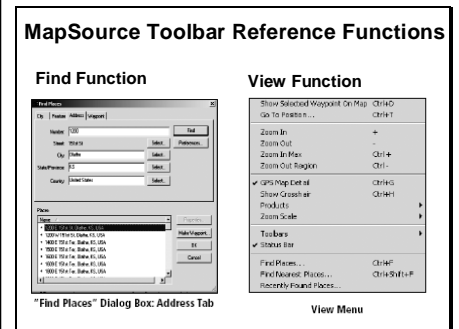
View Menu (continued)

Find Nearest Places— Allows one to find the nearest features relative to the center position of the map. Right-click on any location, feature, or waypoint (including waypoints in the Waypoint tab list), to search for the nearest features relative to that specific position on the map.

Recently Found Places— Allows one to select places recently found from the initial search.

To find a City with the “Find Places” feature and view it on the Graphic Map:

1. Select “Find Places” from the View menu. The “Find Places” dialog box appears.
2. Under the City tab, enter a city name in the “City” field (information can be entered in the other fields to narrow the search). If unsure of the city name, click the “Select” button to the right of the “City” field to show a list of city “matches.” Highlight the desired city and click “Select City.”
3. With the desired city name entered in the “City” field, click “Find” to show a list of city/state matches in the search results list. The first match is displayed in the center of the Graphic Map and is highlighted in the search results list.
4. Highlight the desired city and click “OK” to keep the selected city centered on the Graphic Map. To return to the previous map display, click “Cancel.” To make this city a waypoint, click “Make Waypoint.” In the Waypoint Properties menu, click “OK” to accept the city as a waypoint. (Note: Only cities in the selected region are listed. For example, if the selected region is Hawaii, cities in the continental U.S. will not be listed.)



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To find a Feature/Point of Interest (POI), with the “Find Places” feature:

1. Select “Find Places” from the View menu. The “Find Places” dialog box appears.
2. In the Feature tab, use the drop-down list in “Place Category” and, if necessary, a “Place Subcategory.”
3. Enter the name of a Point of Interest in the “Name” field. If desired, click the “Select” button next to the “Name” field to select from a list of matches for that name to help narrow the search. To narrow the search, use the “Place Category.” If the category that this feature is located is unknown, keep “All Points of Interest” selected.
4. Enter the city, state, or both and then click “Find.” All possible Point of Interest items will appear in the “Places” section at the bottom of the “Find Place” dialog box.
5. Highlight the desired Point of Interest.
6. To view the address and telephone number of the Point of Interest, click “Properties” (this can be helpful in distinguishing multiple Points of Interest with the same name). Click “OK” to exit the “Properties” window. To make this feature a waypoint, click “Make Waypoint.” In the Waypoint Properties menu, click “OK” to accept the city as a waypoint.
7. To keep the selected point displayed in the center of the screen, click “OK.” To return to the previous map display, click “Cancel.” (Note: If using a MapSource product with unlocked data, the “Find Places” feature only locates points of interest within the unlocked region, but it will locate cities both within and outside the region.)

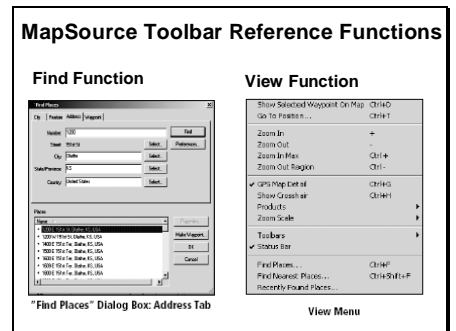
StS2- GPS V COMPUTER INTERFACE

To find an Address or Street with the “Find Places” feature:

1. Select “Find Places” from the View menu. The “Find Places” dialog box appears.
2. Under the Address tab, enter the number of the address in the “Number” field.
3. Click “Select” in the “Street” field and enter the primary street name. A list of street name “matches” appears to narrow the search. Highlight the desired street name from the list and click “Select Street.”
4. The full address (or the street name) appears in the “Street” field. Enter the city, state, or both and then click “Find.” One or more numerous addresses will appear in the search results list. The first match will be displayed in the center of the Graphic Map and it will be highlighted in the search results list.
5. Highlight the desired location to view it on the map. If “No items found” appears, try using another matched street name from the “Street” field.
6. To return to the previous map display, click “Cancel.” Select “OK” to exit the advanced “Find Places” window and keep the map centered on the highlighted address or street. To make this address a waypoint, click “Make Waypoint.” In the Waypoint Properties menu, click “OK” to accept the address as a waypoint.

To find a Waypoint with the “Find Places” feature:

1. Select “Find Places” from the View menu. The “Find Places” dialog box appears.
2. Under the Waypoint tab, type the name of the waypoint desired in the “Name” field. If the name of the waypoint is unknown, press the “Select” button to the right and choose the waypoint from the available list. Click “Select Waypoint” to select the highlighted waypoint and then click “Find.”



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To find a Waypoint with the “Find Places” feature:

3. The first matching location is centered on the Graphic Map and highlighted under “Places.” Highlight the desired location to view it on the map.
4. To return to the previous map display, click “Cancel” or select “OK” to exit the advanced “Find Places” window and keep the map centered on the highlighted waypoint.

Tools Menu

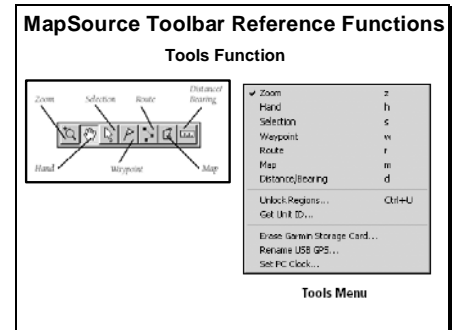
These features are used to search for locations and plan routes. Directly select the Zoom, Hand, Selection, Waypoint, Route, Map, and Distance/Bearing tools. The tools available in the Tools menu can be accessed through toolbar shortcuts or keyboard shortcuts. To activate a tool, click the shortcut on the toolbar or enter the shortcut on the keyboard (Note: When using the single letter keyboard shortcut, the graphic map must be selected in order to see the tool on the mouse cursor. One can also toggle between the data tabs panel and the graphic map panel by using the F6 key on the keyboard.)

Zoom Tool— Enables one to quickly zoom to a specific area on the Graphic Map. The Zoom Scale feature can be changed by clicking the ZOOM IN or ZOOM OUT buttons, or by using the drop-down Zoom Scale list, all located in the View toolbar, or pressing the “+” and “-” keys on the keyboard also allows one to ZOOM IN and OUT.

In addition, holding the Ctrl key while clicking the left mouse button will center the Graphic Map without changing the zoom level.

To ZOOM IN on the Graphic Map:

1. With the Zoom tool selected, click the left mouse button to ZOOM IN by one level and re-center the Graphic Map on that point.
2. To ZOOM IN on a defined area, click and hold the left mouse key and draw a box around the area.



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To ZOOM OUT on the Graphic Map:

1. With the Zoom tool selected, click the right mouse button to decrease the zoom scale by one step.

Hand Tool— Allows one to quickly pan around the Graphic Map.

To pan around the Graphic Map:

1. Place the Handtool on the Graphic Map, click and hold the left mouse button, and drag the hand around the Graphic Map to view different areas. Release the mouse button to view the area. One can also use the Arrow Keys (Up, Down, Left, Right) on the keyboard as a shortcut to pan the Graphic Map in the desired direction.

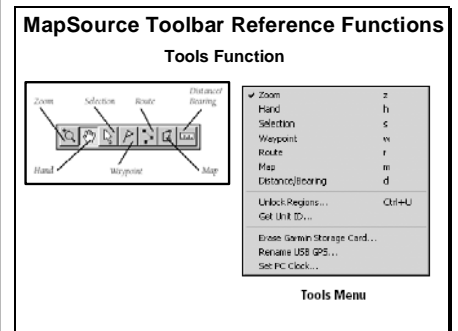
Selection Tool— Allows one to select map features, waypoints, routes and tracks directly on the Graphic Map.

To select an item on the Graphic Map:

1. Place the Selection tool on the desired item. The item becomes highlighted in white and the name of the item is displayed in a white box. To view details about a map feature, click the right mouse button on the item and select “Feature Properties” from the options menu.
2. To select a waypoint or route for editing, click the left mouse button on the item. The route or waypoint is highlighted in yellow and can be edited.

Waypoint Tool— Allows one to quickly create waypoints on the Graphic Map. For detailed information on creating waypoints using the Waypoint tool, see “Creating Waypoints” in the Reference section of the MapSource manual.

Route Tool— Allows one to quickly create or use existing waypoints on the Graphic Map to determine a route. For detailed information on creating routes using the Route tool, see “Creating Routes” in the Reference section of the MapSource manual.



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Tools Menu (continued)

Map Tool— Allows one to select maps to be added to and removed from the Map Set. For more information, see “Creating and Using Map Sets” in the Reference section of the MapSource manual.

Distance/Bearing Tool— Allows one to measure the distance and bearing from one point to another on the Graphic Map. When using the Distance/Bearing tool, the distance and bearing from a beginning point to the cursor will be displayed in the Status Bar at the bottom of the MapSource application window.

To determine a distance and bearing:

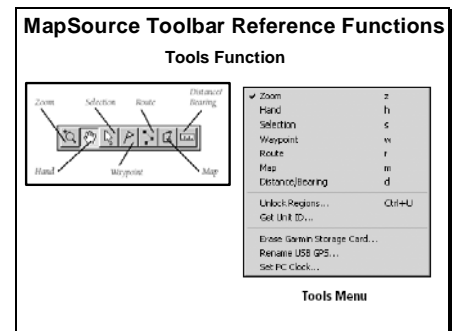
1a. Place the Distance/Bearing tool at a “beginning” point on the Graphic Map and click the left mouse button.

Or..

1b. With any tool selected (except the Zoom tool), place the cursor at a “beginning” point on the Graphic Map, click the right mouse button and select “Begin Measurement.”

2. Move the tool/cursor to an “end” point and click the left mouse button. The distance and bearing from the starting point to the finishing point is displayed in the Status Bar.

3. Continue to another “end” point, or click the right mouse button to end the operation. Select “Cancel” to stop measuring and keep the measurement displayed on the Graphic Map. Select “Clear Measurement” to stop measuring and clear the measurement from the Graphic Map.



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Tools Menu (continued)

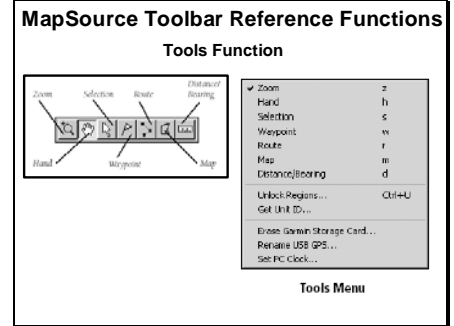
Unlock Regions— Activates the Unlock Regions window, where one can:

- View a list of unlocked map data
- Add, delete, and view the unlock code properties
- Backup and restore unlock codes

If map data is unlocked during installation, the unlock code will show in the list. If one chooses not to unlock maps during installation or wants to unlock another MapSource region, or wants to unlock maps for a second Garmin GPS unit, use the “Unlock Regions” window. See “Unlocking Maps” in the Getting Started section of the MapSource manual.

Get Unit ID— Retrieves the Unit ID from the GPS unit. Select either Serial Port or USB GPS. Click “OK” to get the Unit ID. Make sure the GPS unit is connected to an available serial communication port or USB port on a computer. Check communication settings if error message “The GPS is not responding” appears.

Set PC Clock— Allows one to synchronize the clock on the computer with the GPS clock. Click “OK” to set the PC Clock. Make sure the GPS unit is connected to a serial communication port or a USB port (if applicable) on a computer. Check the Connection Settings if the error message “The GPS is not responding” appears.



Review Enabling Objectives

- Computer Overview & Introduction
- Understanding Waypoints
- Understanding Routes
- Using Map Sets
- Describe data transfer
- Using Mapsource Toolbar Reference