Landscape Explorer

Landscape Explorer is an application for all those interested in the way the world's surface looks.   It enables the user to translate a flat, two dimensional map into a full three dimensional representation which can be examined from any viewpoint - go exploring without ever leaving your PC!

The application uses the MDI (Multiple Document Interface) model, and consists of two sub-applications, the Landscape Viewer module which is used to examine a surface, and the Map Definition module   which is used to define the characteristics of the surface to be explored.   The items enabled in the application menus are dependent upon which module is currently active.

Landscape Explorer is a fairly complex program, but to get a quick idea of it's capabilities it's worthwhile having a look at a few sample landscapes first.

This application is Shareware.   If you find it useful you should register the product with WoolleySoft.   There are significant benefits to doing so - see How to Register for details. WoolleySoft also offers a range of other services.   We are also members of the Association of Shareware Professionals (ASP) - please take a few seconds to view the ASP's Ombudsman statement.   We also produce an enhanced non-shareware version - Landscape Explorer Professional.

This version of Landscape Explorer was officially released on 1st December 1994.   If you are using this software on or after the 1st December 1995 you do not have the current version and will be missing out on features and functionality.

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Memory Issues

Landscape Explorer requires fairly large amounts of memory in order to run properly.   If you have less than 8Mb of RAM you should have a windows swapfile installed.   If you do not , and this is a good idea generally for all windows systems, you can add one using the virtual memory option in the control panel '386 enhanced' utility.   Microsoft recommend using the 'permanent' option, and 8 - 12Mb seems to be optimal on most computers.

Even so, when allocating memory it must be available in RAM (possibly making space by swapping out data to disk) and in a continous block.   To facilitate this Landscape Explorer does a memory defrag before allocation, but it is still possible for a call to fail due to fragmentation of the internal Windows selector table.   In practise you are unlikely to see this unless you are running in high resolution/high colour mode (say 1024x768 in 256 colours), when Landscape Explorer may be looking for several 1Mb memory blocks.   If you do experience problems consider closing other applications, removing any complex wallpaper, or running with lower resolution or number of colours.

This program was developed on a 486SX25 with 8Mb RAM and an 8Mb swapfile running in 800x600x256, and has been tested on a variety of other computers with varying amounts of memory.   I would recommed at least 12Mb of total (RAM + Virtual swapfile) memory for routine use.

What's new in version 1.25

Support for USGS DEM file import.   This includes all 7.5-minute and 30-minute DEMs, and 1-degree DEMs south of 50 degrees north.   7.5-minute and 15-minute Alaskan DEMs are notsupported.

Various other minor improvements to the Map definition tools.   Minor bug fix to map status tool.

What's new in version 2.00

Support for British Ordnance Survey PANORAMA Digital Terrain Model Data.

Support for MapInfo derived data.   This uses a general x,y,z,terrain attribute file that could also be used to import data from other packages.   Full file format description is included.

Auto-trace contour tool.   Allows the map definition module to automatically define spot heights from an identified contour.

Colour Schemas and user-definable terrain colours.   Up to 16 additional terrain types may be defined and stored.   This is particularly useful for users wishing to plot soil types etc. You can associate schemas with maps   See Colour settings for details.

New drawing schemes - Framework and contour II.   Optional inclusion of grid in all terrains.   See View Parameters for details.

Copy data to clipboard in metafile format.

Better printing.

Various changes to user interface, particularly in the View Parameters dialog.

IMPORTANT

IMPORTANT: To avoid conflict with MapInfo files, which also have use the .map suffix, Landscape Explorer map files have been renamed to *.lem.   There is no format change, and all you need to do to read your old files is to rename them.

WoolleySoft

WoolleySoft is run by Kevin Woolley, a professional Information Technology specialist with over 10 years experience of computer systems and applications at all levels from programming to systems and business analysis.   Particular areas of expertise include Windows development, graphics processing, GIS and database systems, and scientific applications. Kevin is an author member of the Association of Shareware Professionals (ASP) - please take a few seconds to view the ASP's <u>Ombudsman</u> statement.

WoolleySoft is commited to developing stimulating and informative shareware applications.   However we can also undertake custom software development and offer consultancy on many aspects of computer systems and business.   If you are interested please contact WoolleySoft at

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Kevin can also be reached by e-mail at 100332,2104 on CompuServe, or 100332.2104@compuserve.com from the internet.

When not working with computers Kevin's time is taken up looking after his young son and daughter and climbing all the mountains in Scotland.   One day he hopes to move to the end of a ISDN line on the west coast and combine all three!

Quickstart Sample Landscapes

Landscape explorer comes with maps for the following landscapes already defined.   You may like to go exploring!

Crater Lake - crater.lem

Crater Lake. Oregan. USA.   This shows the eastern half of the lake, including Wizard island, at fairly low resolution.   Crater lake was created when the top of Mount Mazama collapsed during volcanic eruptions 7000 years ago.   The lake, 8km across, is surrounded by cliffs which rise steeply from the water to form a jagged rim in places 600m high.   The area was designated as the USA's 5th national park in 1902.
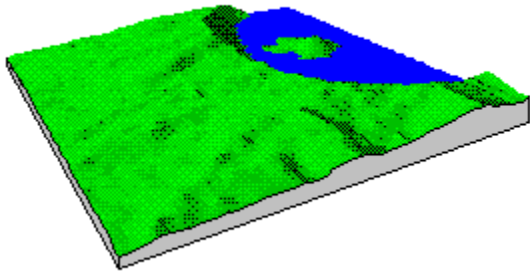
This map was created by importing a 7.5-minute DEM file into a 7 x 7km map with 90m gridpoints (i.e. every third DEM elevation).   See Import DEM for more details about DEM files.

Ben Lomond - lomond.lem

Loch Lomond is Britain's largest expanse of fresh water, and the east side of the loch is dominated by Ben Lomond.   Relatively easy to climb, and near the population centres of the Scottish central belt, it receives a lot of attention from walkers.   It remains however a superb mountain.
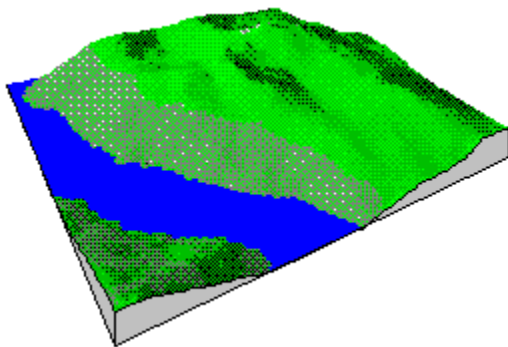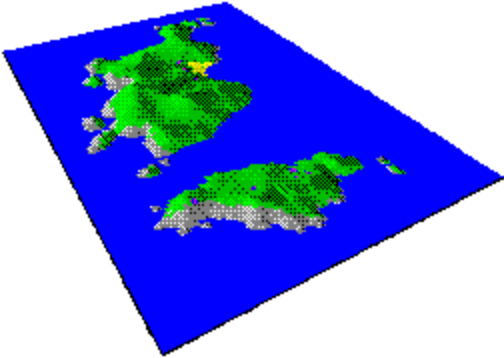
This map was created using a scanned image from the Ordnance Survey Landranger sheet 56.

Hebridean Islands - mingulay.lem

Mingulay and Berneray are the southmost inhabitable islands in the outer Hebrides, and two of the most dramatic.   Both have steep sea cliffs facing into the Atlantic gales.
The last inhabitants left Mingulay (the larger island) in 1934, in a similar manner to the more famous St Kilda further west - indeed the lives of the inhabitants must have been

very similar both centred around crofting and harvesting the seabirds on the cliffs. Berneray now has nothing beyond a few old lighthouse keepers cottages.

This map was created using a scanned image from the Ordnance Survey Landranger sheet 31.

How To Register

This application is Shareware.   If you find it useful you should register the product with WoolleySoft.   Why register?   Well, here are a few good reasons:

1.   To bypass the sign-on and sign-off dialogs without a key press.
2.   To get a short 'Getting Started with Landscape Explorer' printed manual.
3.   To get rid of "reminder text" in the program title bar.
4.   To get rid of "reminder text" on printouts, clipboard output, and output files.
5.   To get additional drawing schemes - 256 Colours, Winter, Desert , Polar, Contour etc.
6.   To get a viewer for DIB <u>animation</u> files.
7.   To get full technical support.
8.   To get the latest version of the program, which may have new features that you need.
9.   To get notice of program upgrades.
10.   To get additional DEM and LEM files (optional).
11.   To be able to convert existing maps if the map file format changes.   The unregistered version of Landscape Explorer lacks the conversion routines required to read files created by earlier versions.
12.   To influence they way Landscape Explorer develops.

13.   It's the right thing to do.

<u>Product support</u> is available by e-mail on the internet and CompuServe as well as by telephone and standard mail.   Please see the <u>Product Support</u> topic for full details of our Support Policy.

This program was developed by an author member of the Association of Shareware Professionals (ASP) - please take a few seconds to view the ASP's <u>Ombudsman</u> statement.

You can register directly with WoolleySoft, or if you are not in the UK you may prefer to use one of the agents in the countries listed below.   If you have a CompuServe account you can register directly on-line using the <u>SWREG</u> facility.

<u>Australia</u>
<u>Austria/Germany</u>
<u>Italy</u>
<u>The Netherlands/Belgium</u>
<u>USA/North America</u>

Registering with WoolleySoft

Direct registration with WoolleySoft costs £40 or $65 including shipping.   Send your order to

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WoolleySoft,
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Scotland FK15 0BA

</div>

We cannot accept credit/debit cards (but our Australian and North American agents can). Non-British orders should pay by a cheque drawn against a British bank (foreign banks can easily arrange this), international money order or equivalent, or travellers cheques.
Please make your cheque etc. payable to WoolleySoft.

An order from is included with the distributed files.   We can also provide consultancy and other services - see <u>WoolleySoft Services</u> for details.   You may also like to consider our professional version of the program - <u>Landscape Explorer Pro</u>.

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View Projection

Opens a window to display a map using the <u>Landscape Viewer module</u>.   The map to be loaded, and initial <u>view parameters</u> are prompted for.

Multiple copies of this window may be opened, subject to system resource constraints. See also the entry for <u>Application Menu</u>.

Define Map

Opens a window containing the Map Definition module.   Only one copy of this window may be opened at once.

Exit

Exits Landscape Explorer.

Introduction to the Map Definition Module

Before viewing a landscape you must define the topography of the surface that you wish to examine.   Landscape explorer holds surface information in the form of a rectangular grid.   The grid (sample) points hold the heights, whilst the grid (terrain) squares the type of terrain.

The grid dimensions may be defined in kilometres, miles, or metres, with grid point spacing in metres, feet, or tenths of a metre respectively.   Maps must be defined with between 400 and 16,300 sample points.   Realistic looking landscapes usually require 10,000 sample points or more.

To create a map for a landscape surface each sample point must have its height set. There are two main ways of doing this: data may be imported directly from digital files, such as Ordnance Survey NTFs, or alternatively the information may be captured from a scanned image of a topographic map.   Both methods use the Map Definition Module to enter and display data.

The Map Definition Module is activated by choosing Define Map from the Options menu. Only one copy of this window may be open at any one time.

The displayed window has three main parts: a Toolbar that gives access to the tools you will require to define the map;   a Parameter Display area down the left hand side of the window which shows the current colour coding for heights and terrain types; and an initially blank area representing the 'Canvas' used to define the map.

The Canvas can display three types of information: sample point heights, terrain types, and a background bitmap loaded using the Load Bitmap tool.

Defining a Map from Imported Data

This is probably the easiest and most accurate method of generating a map although, with the exception of the xyz file import, only height data can be imported.

The procedure for importing data differs in detail according to the source file being used. However, in general the steps are:

1.   Start the Map Definition module by selecting Define Map from the Define Map menu.

2.   Select Import... from the Define Map menu. This displays a File Open dialog.

3.   Select the type of data source you wish to use from the File Type drop down list box.

4.   Select the import file.   Depending on the type of data source to be used an Import Parameters dialog box may be displayed.   See Import for file-specific details. Set any required parameters and click on OK.   The data is then imported and displayed on the map canvas.

5.   Once displayed imported data is handled in exactly the same way as directly enter data.   You will probably want to add terrain information or possibly edit the imported heights data using the tools available from the toolbar.

6.   Save the map and view using the landscape viewer module.

In most cases you will let Landscape Explorer create a map of the correct size and grid point spacing using the data from the import file.   Sometimes however it is necessary to import into a previously defined map (particularly with USGS DEM files).   See the Create New Map topic later in   this chapter for details.

Defining a Map from a Scanned Image

One of the most powerful features of Landscape Explorer is its ability to create a three dimensional model using information obtained from a topographic map (i.e. one with contour lines).

Capturing sufficient information from a map to define how a landscape surface looks is

obviously a considerably more difficult problem than simply importing data from a file.   As all points in the map grid must be defined, creating a typical map involves defining the heights at over 10,000 grid points

Fortunately Landscape Explorer has been designed to address and simplify this problem.   The strategy used is to define a sub-set of heights, typically along a set of contour lines, then use a set of interpolation functions to calculate the undefined heights.   Remarkably good results can be achieved using this approach.

To help define the original sub-set of heights Landscape Explorer allows the use of a scanned image as a template.   The quality of this scan is of crucial importance in obtaining good results and you should attempt to produce the clearest image you can.   If you intend to use the <u>auto-trace contour</u> tool without having a colour scanner, some time spent 'cleaning up' the image using a program such as paintbrush is recommended.

See the topic on Map Definition Module Tools for a full description of the tools available. However to define a <u>new map</u> the user would typically go through the following steps...

1.   Enter the map definition module by choosing define map from the define map menu.

2.   Create a <u>new map</u> of the appropriate size and grid spacing using the <u>new map</u> tool.

3.   Use the <u>display parameters</u> tool to display a full range of colours for the variation in heights expected.

4.   Import and size a bitmap of the original paper map using <u>load bitmap</u>, <u>move bitmap</u>,   and <u>set bitmap magnification</u> tools.   This would typically be created as a .bmp file using a scanner.

5.   Define a sufficient set of heights to give a reasonable definition of the shape of the landscape surface - typically by using the contour, spot and block height tools - all available from the <u>toolbar</u>

6.   Use the <u>interpolate heights</u> tool to fill in undefined points.

7.   Define any areas that do not contain the default terrain type (low vegetation) using the terrain tools.

8.   Save the map and view using the <u>landscape viewer module</u>.

Sample Point Heights Display

When enabled (see Map Function Status) the height of each sample point is displayed as a small solid square.   The precise size of the square will vary depending on the display size of the map canvas area, but should be optimised to display a large enough square for the colour to be apparent whilst remaining small enough so as not to obscure any background bitmap.   No squares are shown for undefined heights, and sample points at sea level (zero metres/feet) are always shown as single points.

Landscape explorer uses a range of 15 solid colours to indicate into what range the height of a sample point falls.   The current ranges and associated colours are shown in the Parameter Display area to the left of the map canvas.   You may adjust the total displayed range using the Display Parameters tool.   The scale self-adjusts when loading or importing data.

Terrain Type Display

There are eight different types of terrain, default or base, water, wood, town, road, rock, sand and snow/ice.

The unless explicitly defined otherwise, all grid squares are assumed to have the default terrain (in most colour schemes used by the Landscape Viewer this corresponds to low vegetation) which is not displayed on the canvas.   Any group of grid squares that does not have the default terrain is shown outlined with the appropriate colour.

Import Facilities

Besides providing tools for capturing data from a bitmap image, Landscape Explorer can also import data from a variety of other sources, and this feature is expected to expand in the future - we are also looking at DDE - but please provide feedback as to what you would like to see!

Import can be selected from the menu or the Map Definition Module tool bar.   An 'open file' dialog box is presented with a drop-down list containg the import types available. Current facilities provided are as follows:-

ASCII Text Files

Import ASCII is a basic method that can be used when all else fails!   Useful for Lotus 1-2-3 and other spreadsheet data.

US Geological Society DEM files

The Import DEM function allows the user to import a set of heights data from a US Geological Survey digital elevation model (DEM) file. Further information about DEM file formats is also available under the Analyse DEM function.

UK Ordnance Survey NTF files

The Import NTF facility can be used to import data from files produced by   the UK Ordnance Survey.   Currently this is limited to DTM files derived from the Landranger series of maps.

X,Y,Z,Attribute - MapInfo etc.

The Import XYZ facility is designed to import data exported from commercial GIS programs, such as MapInfo and Arc/Info.   It allows a complete map to be defined including size, terrain and heights information.

Map Tools

All map definition tools are available from the toolbar.   Select the item of interest from the toolbar or the following list.

Magnify
Map Function Status
Display Parameters
Load Bitmap
Set Bitmap Magnification
Move Bitmap
Set Spot Height
Manual Trace Contour
Auto-Trace Contour
Set Heights Level
Set Heights to Null
Interpolate Heights
Set Terrain (by square)
Set Terrain (by area)
Flood with Water

New Map

Creates a new map.   A dialog box prompts for the following items:

Units

Select the appropriate units from the drop-down list modifies the dialog to correspond to your choice.   The following are available:

Metric: Map side lengths in kilometers.   Grid point spacing and heights in metres.

Imperial: Map side lengths in miles.   Grid point spacing and heights in feet.

Size

Enter the required length and width of the map, and the distance between grid points. Note that integer values are accepted for Metric and Imperial maps.

Terrain Configuration

The colour schema edit box allows you to set a default colour schema to be used by the map.   This should be entered as a single word of up to 8 characters - for example 'standard' would be an acceptable schema name.   You will probably wish to set up a number of standard schemes to cover sets of maps showing common types of data, for example you may have a set called 'glacial' to cover maps showing glacial soil types, 'aluvial' for aluvial soil types etc.   Your schema name should correspond to that of a .CFG file set up using the Colour Settings dialog.   For further details see the explanation about 'Saving and Using Colour Schemas' under the Colour Settings topic.

Open Map

Opens an existing map file.   A dialog box prompts for a *.LEM file to be selected.

Save Map

Saves changes to the map you have been working on.

When you choose Save, the map remains open so you can continue working on it.

Save Map As

Saves a new or existing picture as a .LEM file.

When you choose Save As, the map remains open so you can continue working on it.

Map Function Status

Displays a dialog box showing the map name, size, sample point spacing, grid size, associated colour schema and the bitmap displayed (if any).

The colour schema edit box allows you to set a default colour schema to be used by the map.   This should be entered as a single word of up to 8 characters - for example 'standard' would be an acceptable schema name.   You will probably wish to set up a number of standard schemes to cover sets of maps showing common types of data, for example you may have a set called 'glacial' to cover maps showing glacial soil types, 'aluvial' for aluvial soil types etc.   Your schema name should correspond to that of a .CFG file set up using the Colour Settings dialog.   For further details see the explanation about 'Saving and Using Colour Schemas' under the Colour Settings topic.

A set of check boxes allows the user to choose which of the background bitmap, height and terrain data to display.   However as the data type manipulated by the currently selected tool must be displayed, one of these check boxes may be disabled.

Display Parameters

Displays a dialog box that allows the user to set the height range for colour display.   This defaults to 0 - 1000 metres/feet.

This dialog also allows the user to set the default terrain type used by the terrain and close up tools.   This can also be set directly by clicking on the chosen default terrain in the Parameter Display area of the window.

Load Bitmap

This displays a bitmap, typically a scanned image of the original paper map, as background.   A .BMP file is prompted for by a standard 'open file' dialog.

The bitmap may be moved using the Move Bitmap tool, and it's magnification altered by the Set Bitmap Magnification function.

All sample point heights and terrains are displayed (if enabled - see Map Function Status) superimposed on the background bitmap, which is typically used as a template for defining map information.

Set Bitmap Magnification

Prompts for the bitmap magnification to be used in pixels per kilometres or pixels per mile, and defaults to 50.   The value to be used may be calculated, but as it depends on the precise characteristics of the original scan is probably best arrived at by trial and error.

Set Spot Height

Prompts for the height of the sample point selected.   Enter either null or a height between 0 and 9999 metres/feet.

Note that the unregistered version of Landscape Explorer only allows maps to be defined using metric measurements, the registered version also allows imperial measurements (miles, feet etc.) to be used.

Trace Contour

Allows a series of sample points along a line to be set to the same height.   Typically this tool would be used to trace the contour lines on a bitmap loaded as background.

The tool uses a combination of the left and right mouse buttons or clicks and double clicks. To start a contour press the left mouse button.   You may now either move the mouse whilst holding down the button, or release the button and click again at another position. In both cases a red line highlights where the contour will be placed.   Continue defining the contour using any combination of these actions until complete, then either double click the left button or click the right button.   A dialog box prompt for the height of the contour, which must be between 0 and 9999 metres/feet.

You can also use the Auto-Contour trace tool if you have a suitably clear bitmap available.

Set Heights Level

Click and drag using the left mouse button to define a rectangular area.   On release a dialog box prompts for a height between 0 and 9999 metres/feet to which all sample points within the area will be set.

Set Heights to Null

Click and drag using the left mouse button to define a rectangular area.   On release a dialog box prompts for confirmation that sample points in the defined area are to be set to null.

Interpolate Heights

This tool will interpolate the heights of undefined (null) sample points.   After defining a representative sample of points - for example along contour lines, this facility enables heights to be derived for the remaining undefined points.

This version of Landscape Explorer offers two interpolation algorithms,   an implementation of the Natural Neighbor algorithm (nngridr), which should be used to interpolate the majority of missing heights, and a trend analysis/smoothing transform, which should be used for filling in the last few points once the majority of heights have been interpolated.

The Interpolation process

Your should broadly follow the steps outlined below:

1.   Define a representative set of points, for example using the contour line tools.   See the item on interpolation considerations below for more information.

2.   Select the interpolation tool from the button bar and click and drag to define an area to be interpolated.   After the mouse button is release a dialog box will displayed to prompt if interpolation is to be started.   Fill in the appropriate parameters for nearest neighbour interpolation (see below, but these will be the defaults when using the interpolation tool for the first time), and press OK to commence.   Whilst calculating a dialog box will be displayed showing progress and allowing cancellation of the calculation.

3.   Continue selecting areas for interpolation until the majority of points have been defined.   You should aim for 95-98% coverage.   You will probably find that the best strategy is to restrict the nearest neighbour algorithm to interpolation only first, then use extrapolation to fill in remaining areas.   However, you are likely to miss a few points, and the following step is used to ensure that all heights have been defined.

4.   Finally click the mouse anywhere on the canvas to start interpolation again.   However this time select the Trend Analysis/Smoothing radio button, then click on OK.   This will fill in and remaining undefined points and apply a smoothing transform to correct any anomalous heights.

The Interpolate Heights Dialog

The following parameters may be set:

Use Nearest Neighbour/Trend Analysis

This pair of radio buttons determine which interpolation algorithm will be used.   Controls not used by an algorithm will be disabled.

Use calculated gradients

Used by Nearest Neighbour interpolation.   Defaults to ON.   Uses gradients to estimate the trends in the data when checked.   For example, a rounded hilltop will be deduced if points are available around a hill, but not on top.   If turned off gradients will not be used and a flat top will be deduced.

Optimize for speed

Used by Nearest Neighbour interpolation.   Defaults to ON.   Calculates faster by making more generous usage of <u>memory</u>.   When turned off requires less <u>memory</u> but is significantly slower

Extrapolate

Used by Nearest Neighbour interpolation.   Defaults to OFF.   Enables extrapolation when checked.   This is by its nature a teuous proposition, and should be used with caution for final 'filling in' after the majority of the map heights have been defined directly or by interpolation.   Note that it is advisable to define as many grid points as possible on the edges of the map, and particularly at the corners as this reduces the amount of extrapolation required.

Tautness Parameters #1 and #2

Used by Nearest Neighbour interpolation.   These two parameters control the 'taughtness' of the generated surface around the points already defined.   Increasing the value of parameter 1 increases the influence of the gradient, increasing the value of parameter 2 increases the area over which the influence of the gradient is felt.

Minimum Height

Used by Nearest Neighbour interpolation.   The minimum height setting is available to help when defining sea coasts and other areas of water.   For example. to define an island draw the appropriate contour lines and spot heights for the island, and an area of sea at zero height for two or more sample points around the coast before applying interpolation.

Trend Analysis

Used by Trend Analysis interpolation.   Defaults to ON.   Applies a trend analysis to the whole grid to fill in any undefined points.

Smoothing Transform

Used by Trend Analysis interpolation.   Defaults to ON.   Applies a smoothing algorithm to the whole grid to correct any anomalous points.

Interpolation Considerations

The proportion of defined to undefined sample points required depends on the kind of landscape being defined.   For smooth, rounded hills or plains reasonable results may be obtained with 1 point in 30 or less.   For more complex structures 1 in 10 or less is recommended.   Interpolation is most accurate where the surface has few discontinuities - so for a valley with steep sides and a flat bottom placing two or three contour lines along the sides will be sufficient to derive the shape of the sides.   However, in the absence of other information the interpolation function will assume a continuation of the sides to form an overdeepend vee, so you will need to block in some of the valley floor.

nngridr and Calculation Efficiency

 Developed in this implementation by Dave Watson (contact PO Box 734 Claremont, WA 6010, Australia), this is probably one of the most effective algorithms of it's type available, and is a considerably advance over the bezier curve algorithm employed by previous versions of Landscape Explorer.

However, although yielding excellent results, the time required to calculate interpolated values varies approximatly with the square of the number of points.   We found that in practise on a 486DX2-50 an area of up to about 8,000 points could be calculated without an unreasonable delay.   Calculations on up to 20,000 points or more are certainly feasible if you are willing to allow for the time required (Landscape Explorer will issue a warning if the calculation time required is likely to be excessive).   However, it is faster to interpolate a large area by selecting smaller areas in a 'piece-meal' or 'patchwork' manner.   You should do this initially with the extrapolate option turned off, returning to extrapolate any

missing points before completion.   Even so, you are likely to miss a few points and the trend analysis interpolation should be used to define these last few points.

Set Terrain (by square)

Allows terrain squares to be 'painted' to a particular terrain type by moving the mouse with the left button held down.   Squares are set to the active terrain type, which can be set either using the Display Parameters dialog or clicking on the required terrain type in the Parameters Display area.

Set Terrain (by area)

Click and drag using the left mouse button to define a rectangular area.   On release a dialog box prompts for the terrain type to which all the terrain squares in the defined area will be set.

Flood with Water

Flood fills any flat area of the map with water.   After defining the shape of your landscape click on a suitable terrain square.   If the four bounding sample points define a flat square (with non null) a dialog will prompt for confirmation that all contiguous flat terrain squares at the same height are to be set to water.

Move Bitmap

This allows a bitmap to be moved under the grid.   Grab the bitmap using the left mouse button and release when positioned correctly.

Magnify

These tools allows the user to zoom in and out of the map canvas.   Clicking on the '+' button zooms in, and on the '-' zooms out.

The program handles the canvas when magnified slightly differently to in it's normal state. The following changes will be seen:

Display

Heights are displayed as numerical values.   Terrains are displayed as coloured squares.

Tools

A limited selection of tools are available when the canvas is magnified.   These are...
Zoom in
Zoom out
Map Status
Display Parameters
Set Spot Height
Set Defaults Spot Height
Set Terrain

Analyse DEM File

This tool is used to analyse a DEM data file prior to import to facilitate correct setting of map parameters.

Full details of DEM file formats can be obtained from the US Geological Survey (if you have access to mosaic and the internet their World Wide Web server is well worth a visit), however they basically consist of a set of parallel profiles arranged south to north, each profile being a one-dimensional array of elevations arranged west to east, thus describing a quadrilateral area.   DEM files can be obtained from USGS and various anonymous ftp sites - a good selection of 7.5-minute DEM's are available from spectrum.xerox.com.   Note that USGS DEMs are not the same as VistaPro/DEMs.

USGS produce the following types of DEM file:-.

7.5-minute DEM

7.5-minute quadrangle.   Horizontal coordinate system uses UTM on North American Datum of 1927 (NAD 27) or 1983 (NAD 83).   Elevations are referenced in metres or feet to the National Geodetic Vertical Datum of 1929 (NGVD 29) in the continental US, and to local mean sea level in Hawaii and Puerto Rico.   Spacing of elevations along and between each profile is 30 metres, and the profiles may not always have the same number of elevations because of thevariable angle between true north and the grid north of the UTM coordinate system.

30-minute DEM

1- by 1-degree block.   Horizontal coordinate system is Geographic (lat/long) on World Geodetic Survey (WGS) 72 or WGS 84.   Elevations are referenced in metres in the continental US and Alaska, and to local mean sea level in Hawaii and Puerto Rico. Spacing of elevations along and each profile is 3 arc seconds.   Spacing between profiles is 3 arc seconds south of 50 degrees north, and 6 or 9 arc seconds above this.   DEMs north of 50 degrees are not handled correctly by Landscape Explorer version 2.00.

7.5-minute and 15-minute Alaska DEM

These DEMs   are not handled correctly by Landscape Explorer version 2.00.

Import ASCII

This function allows the user to import a set of heights data from a textfile (for example data exported from a spreadsheet), and is only available in the registered version.   This version of Landscape Explorer can only import ASCII/ANSI space delimited text - i.e. a text file which you can view using Notepad or Write (with no conversion) and consists of numbers separated by spaces or newlines.   This type of file is, for instance, created by the Lotus 1-2-3 extract function.

Data is imported in a linear fashion starting at the top right corner of the map progressing left to right within top to bottom through all points.   The program will report an error if an incorrect number of heights is encountered.

Import DEM

This tool allows the user to import a set of heights data from a US Geological Survey digital elevation model (DEM) file. Further information about DEM file formats is available under the Analyse DEM file function.   Note that USGS DEMs are not in the same format as Vista/Pro DEMs.   See the section detailing file loading errors below.

A typical DEM file will contain many more grid points than Landscape Explorer can handle directly. The function therefore presents a dialog box that allows the user to specify a set of parameters that control how the data from the import file will be mapped on a Landscape Explorer map.   These are as follows:-

Sample Size

Specify X and Y offsets from the origin used by the imported data.   For DEM files this is the south west corner (bottom left on the map display canvas).   Hence if you specified an X,Y offset of 50,80 the point at 50,80 in the imported data is mapped onto the bottom left corner of the map display canvas (0,0).   Similarly the point 60,100 from the import data would be mapped onto 10,20.

Note that 7.5-minute DEMs may have differing numbers of elevations per profile, particularly for the first and last few profiles.   In this case it is advisable to apply offsets that will not import data from these profiles.

Sampling Frequency

Specifies the frequency at which points from the imported data will be mapped onto the map display canvas.   A value of 1 implies all points will be mapped, 2 imples every second point etc.

Terrain Configuration - Use Schema

The default colour schema to be used by the map.   This should be entered as a single word of up to 8 characters - for example 'standard' would be an acceptable schema name. You will probably wish to set up a number of standard schemes to cover sets of maps showing common types of data, for example you may have a set called 'glacial' to cover maps showing glacial soil types, 'aluvial' for aluvial soil types etc.   Your schema name should correspond to that of a .CFG file set up using the Colour Settings dialog.   For further details see the explanation about 'Saving and Using Colour Schemas' under the Colour Settings topic.

New_Map/Load into Current Map

With DEM files only import into the current map is available.

Origin X/Y Coordinates

Only activated when the import into the current map option is selected, these two values set the position of the map origin that the import will use.   This facility enables data from multiple import files to be tiled together, hence creating maps spanning the edges of import files.

Overwrite

Only activated when the import into the current map option is selected.   When checked all existing values in the map will be overwritten by imported values or set to the default height.

Default Height

Some import files may not contain data for all points on the map definition canvas.   You

can therefore provide a default height.

File Loading Errors

If an error is encountered while attempting to load the DEM file the process will abort and an error message is display.   DEMs may fail to load for a variety of reasons, some of the more common ones are listed below.

Invalid Offsets: You have chosen import offsets such that the DEM contains no data for the area to be imported.   Change the offsets and try again (an offset of X=0,Y=0 and a sampling factor of 1 will never produce an error from this cause).

Invalid DEM type: You are attempting to import a DEM file of a type not recognized by Landscape Explorer.   This is most likely to be a 1 degree USGS DEM - which can be recognized by their very large file size (typically about 10Mb), or VistaPro DEMs - which have a completely different format.

DEM file does not contain end-of-line markers: Some DEMs available on the internet were loaded without end-of-line markers being present.   Landscape Explorer cannot process these correctly and requires a DOS end-of-line marker (hex 0D 0A).

DEM file is corrupt.   Again, some DEMs available on the internet are simply corrupt - for example containing null lines.

Introduction to the Landscape Viewer

This View Module displays a view of a previously defined map.   The map may be viewed from any direction using a variety of different drawing schemes ranging from the abstract, such as simple grid, to realistic such as summer or winter colours.

Many other parameters may be altered by the user to tailor the image to specific requirements.   Examples include the light source position, magnification, perspective, background, and terrain colours.   You will probably wish to try varying some or all of these features to obtain the best results for your purposes.

Multiple copies of the Landscape Viewer module may be opened, subject to system resource constraints.

Getting Started

1.   From the View Map menu select the <u>View Projection</u> item or press F2.   A dialog box appears prompting for a *.lem file to open.   Select 'lomond.lem' as a suitable example.   A dialog box appears showing progress as the map is loaded.

2.   The <u>View Parameters</u> dialog box appears.   This is where the parameters which determine how the view will be drawn are set.   In particular note the controls setting viewer and light source position, and the drop down list with available colour schemas.   For now however just press OK.   A dialog box appears showing progress as the map is drawn.

3.   When complete a window is opened displaying the view.   If you want to change any of the parameters used select the <u>View Parameters</u>... item from the View Map menu, or press Ctrl-F1.

See also the <u>Application Menu</u> topic.

Cascade

Arranges the open windows in a cascade.

Save Picture

Saves changes to the picture you have been working on.   The picture is saved in the same format (bitmap (.bmp) or metafile (.wmf) file) as that in which it was previously saved.

When you choose Save, the <u>Landscape Viewer module</u> remains open so you can continue working with the projection.

Save Picture As

Saves a new or existing picture as a bitmap (.bmp) or metafile (.wmf) file.

When you choose Save As, the Landscape Viewer module remains open so you can continue working with the projection.

Print

Prints the current view of the map.   On Mono printers the basic grid often gives the best results, and you can adjust the size of the printed image using the Magnification control in the <u>View Parameters</u> Dialog.

Printer Setup

Selects a printer and sets printer options for Landscape Explorer before printing. The available options depend on the printer you select.

Copy (as Bitmap)

Click and drag using the left mouse button to define a rectangular area of the landscape viewer window that will be copied to the clipboard.

The picture will be copied as a bitmap, better printing quality can be obtained using the Copy (as Metafile) function.

View Parameters

Displays a dialog box that allows the user to set the parameters that will be used to draw the current projection of the map.   If any values are changed the projection is redrawn. The following parameters may be set.

Projection Viewpoint

This describes the viewer's position in terms of altitude and azimuth.   Altitude may range from 0 to 90 degrees where 0 is horizontal with and 90 vertically above the map.   Azimuth ranges from 0 to 355, corresponding to the compass bearing.

Light Source Position

This describes the position of the the light source in terms of altitude and azimuth in a similar manner to that described for the Projection Viewpoint above.

Colour Scheme

The following colour schemes available, divide into two groups by display mode.

256 Colour Schemes

These colour schemes use an optimized 256 colour palette to show the landscape in the most realistic mode possible - they are probably the best option for presentation-quality work and give excellent results with colour printers.   Unfortunaty a sample cannot be shown here due to limitations on palettes available with Windows help, although samples are included in the dsitributed files as summer2.bmp and winter2.bmp.   You must run windows in 256 colour to use these schemes.

256 Colour Summer: Draws the projection to give an impression of a temperate climate landscape in summer using an optimized 256 colour palette.   Includes light source and terrain information.   Registered version only.

256 Colour Winter: Draws the projection to give an impression of a temperate climate landscape in winter with snow covering the higher ground using an optimized 256 colour palette.   Includes light source and terrain information.   Registered version only.
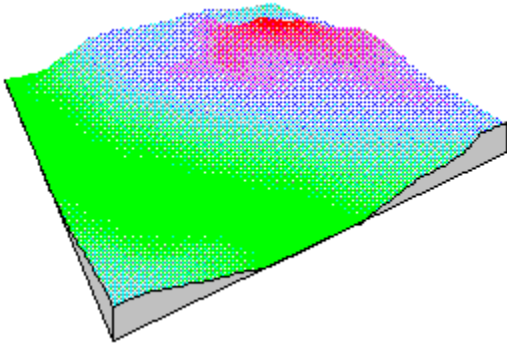
16 Colour Schemes

These schemes use the normal 16 colour windows palette, and are hence available under normal vga.   Despite palette limitations windows' automatic ability to dither colours can produce some very fine images.
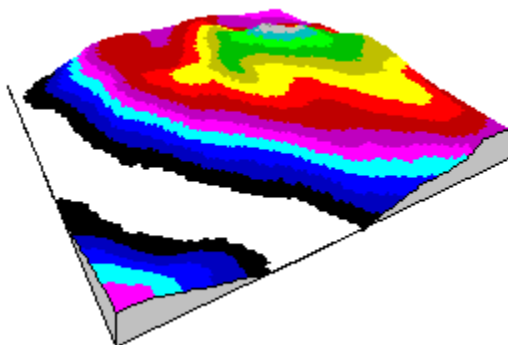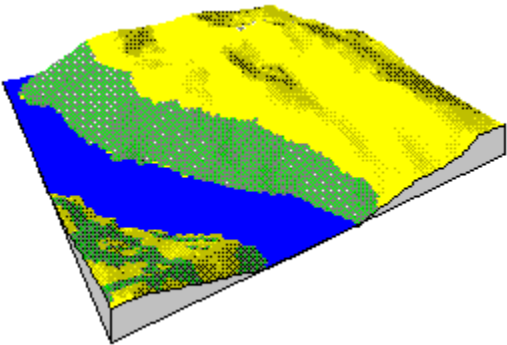

Contour l: Draws the projection coloured according to altitude.   The scheme used is the
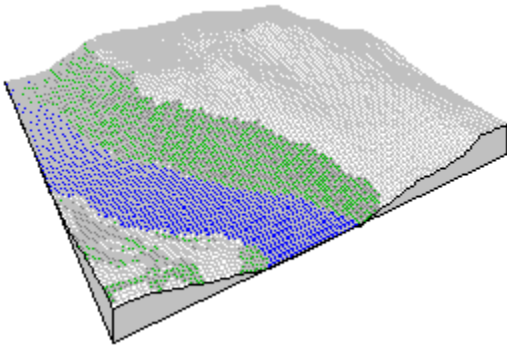
same as that in the Map Definition Module.   Registered Version Only.

Contour II: Draws the projection coloured according to altitude using a graduated colour scheme.   Registered Version Only.

Desert: Draws the projection to give an impression of a hot desert landscape.   Includes light source and terrain information.   Registered Version Only.

Framework: Draws the projection with grid squares coloured according to terrain, but with no shading.   Will be of partricular interest to professional users who wish to show the distribution of geological features, soil types etc.   Registered Version Only.   The sample has a grey grid superimposed.
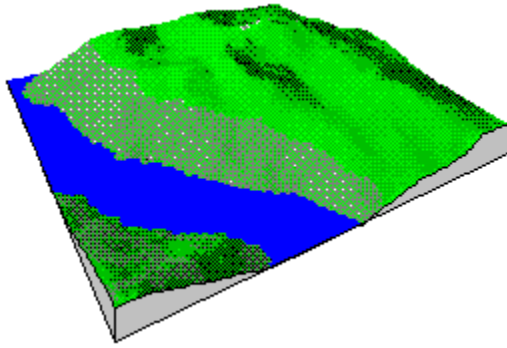
Summer: Draws the projection to give an impression of a temperate climate landscape in summer.   Includes light source and terrain information.

No Colour: Draws the grid squares as simple open quadrangles.   Light source and terrain are ignored.

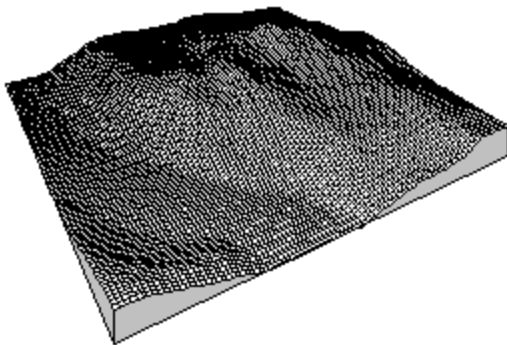Polar: Draws the projection to give an impression of a polar landscape.   Includes light source and terrain information.   Registered Version Only.
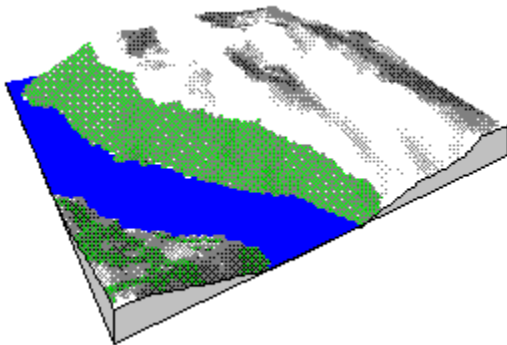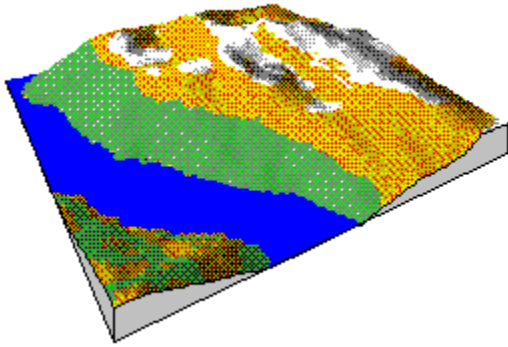
Winter: Draws the projection to give an impression of a temperate climate landscape in winter, with snow covering the higher ground.   Includes light source and terrain information.   Registered version only.

Background

Select between a choice of black or white backgrounds

Perspective

Allows the user to exaggerate or relax the perspective.   A value of 1.0 gives a 'Natural' looking perspective.

Vertical Scaling

The default setting (left of the slider) draws the projection completely to scale.   However with flat landscapes it may be useful to exaggerate changes in height.   Moving the slider to the right increases the vertical scaling by a factor of up to ten times.

Magnification

The default setting (centre of the slider) sizes the projection to fit comfortably within the window.   This can be changed to give a larger or smaller   drawing by suitable positioning of the slider bar.   A range of 20% to 100% of default size is available.

Terrain Settings

A grid may be superimposed on the landscape: select black, grey or white from the drop down box to include - this feature is particularly useful with the Framework scheme. Leave as the default (none) to omit the grid.

Note that this is not effective with the No Colour scheme, which always draws the grid in black.

The radio buttons allow the user to choose between using the current default terrain schema, or that previously associated with this map (if any).   See Colour Settings for details.

Customise Terrain Colours

The button accesses the Colour Settings dialog.

Tile

Tiles the open windows.

Arrange Icons

Arranges iconised windows.

Close All

Closes all open windows.

Auto-Trace Contour

Allows a series of sample points along a line to be set to the same height.   This tool is used to trace the contour lines on a bitmap loaded as background, and behaves in a similar manner to the Trace Contour tool.   Your background bitmap must be black or colour detail on a white background.

The auto-contour tool works by following a selected line.   It is colour-sensitive, and will consequently work best on images created using a colour scanner or modified using a paint package before use.   It may be used with a mono image, but it is advisable to 'clean up' the image first.

To start tracing a contour press the left mouse button over a contour line.   The program will now proceed to follow the line over the image, reversing the line colour as it does so. On completion a dialog box prompt for the height of the contour, which must be between 0 and 9999 metres/feet.

Import X,Y,Z,Attr

This facility is designed to import data exported from commercial GIS programs, such as MapInfo and Arc/Info.   It allows a complete map to be defined including size, terrain and heights information.

This format was developed in conjuction with John McCombs of Integrated Mapping, who can supply an add-in module for exporting the data in a suitable form from MapInfo. Follow the link for details.

The function presents a dialog box that allows the user to specify a set of parameters that control how the data from the import file will be mapped on a Landscape Explorer map. These are as follows:-

Sample Size

Specify X and Y offsets from the origin used by the imported data.   For x,y,z files this is the south west corner (bottom left on the map display canvas).   Hence if you specified an X,Y offset of 50,80 the point at 50,80 in the imported data is mapped onto the bottom left corner of the map display canvas (0,0).   Similarly the point 60,100 from the import data would be mapped onto 10,20.

Sampling Frequency

Specifies the frequency at which points from the imported data will be mapped onto the map display canvas.   A value of 1 implies all points will be mapped, 2 imples every second point etc.

User Terrain - Import Terrain Definitions

If checked any terrain definitions contained in the file header will be imported.   This is equivalent to loading a colour schema using the colour settings dialog, and the imported map will be drawn on the map display canvas using the new colour settings.

Terrain Configuration - Use Schema

The default colour schema to be used by the map.   This should be entered as a single word of up to 8 characters - for example 'standard' would be an acceptable schema name. You will probably wish to set up a number of standard schemes to cover sets of maps showing common types of data, for example you may have a set called 'glacial' to cover maps showing glacial soil types, 'aluvial' for aluvial soil types etc.   Your schema name should correspond to that of a .CFG file set up using the Colour Settings dialog.   For further details see the explanation about 'Saving and Using Colour Schemas' under the Colour Settings topic.

New_Map/Load into Current Map

Choose between automatically creating a new map with the correct dimensions for the imported data, or importing into the current map.

Origin X/Y Coordinates

Only activated when the import into the current map option is selected, these two values set the position of the map origin that the import will use.   This facility enables data from multiple import files to be tiled together, hence creating maps spanning the edges of import files.

Overwrite

Only activated when the import into the current map option is selected.   When checked all existing values in the map will be overwritten by imported values or set to the default

height.

Default Height

Some import files may not contain data for all points on the map definition canvas.   You can therefore provide a default height, which may either be an absolute value or relative to the lowest height used from the import file.

X,Y,Z Format

All records are comma delimited.   Coordinate system uses the SW corner as origin. Attribute referes to the terrain square to the NE of coordinate.   User defined   terrain colours and descriptions import is included as this information is easily available from MapInfo and maintains consistancy across applications.   However, it   is not are obligatory.
RECORD 1
   Header record.   Measurement System (m|i),min x, min y, max x, max y, x spacing, y spacing, attributes included (attr|noattr)

RECORD 2
   Description.   Free format.

RECORD 3
   Number of user-colours defined (nominally n, max 16, may be 0).

RECORDS 4 to 4+N
   Terrain number,colour definition (RGB format - Red + 256 * Green + 65536 * Blue),terrain description (max 24 characters).

RECORDS 4+N+1 TO END OF FILE
   Data.   X coord, Y coord, Height, Terrain type.

Example

m,2262300,5617000,2267900,5628000,100,100,attr
Derived from TR_STYPE
3
1,0,BdU
2,255,BnH
3,65535,BnR
2266400,5617000,1531.74,9
2266300,5617100,1520.17,9
2266400,5617100,1519.89,9

Import Ordnance Survey NTF

This facility can be used to import data from files produced by   the UK Ordnance Survey.
Support is currently limited to the Land-Form PANORAMA Digital Terrain Model Data (DTM)
files produced from the Landranger series of maps.   This data can be obtained from the
Ordnance Survey (Tel. 0703 792773).   The price as of October 1994 is £45 + VAT.   A free
sample can be obtained covering the Port Talbot area of Wales, and if you are an
educational user Gower, Peak District, Lake District, Bristol and Glasgow are also available
under the CHEST aggreement.
The files cover a 20km x 20km area with height values at each intersection of a 50 metre
horizontal grid.
A DTM file contains more data points than a Landscape Explore map can handle, The
function therefore presents a dialog box that allows the user to specify a set of parameters
that control how the data from the import file will be mapped on a Landscape Explorer
map.   These are as follows:-

Sample Size
Specify X and Y offsets from the origin used by the imported data.   For DTM files this is
the south west corner (bottom left on the map display canvas).   Hence if you specified an
X,Y offset of 50,80 the point at 50,80 in the imported data is mapped onto the bottom left
corner of the map display canvas (0,0).   Similarly the point 60,100 from the import data
would be mapped onto 10,20.

Sampling Frequency
Specifies the frequency at which points from the imported data will be mapped onto the
map display canvas.   A value of 1 implies all points will be mapped, 2 imples every second
point etc.   The default value of 4 will produce a low-resolution map of the whole file if the
default option to create a <u>new map</u> is also chosen (see below).

Terrain Configuration - Use Schema
The default colour schema to be used by the map.   This should be entered as a single
word of up to 8 characters - for example 'standard' would be an acceptable schema name.
You will probably wish to set up a number of standard schemes to cover sets of maps
showing common types of data, for example you may have a set called 'glacial' to cover
maps showing glacial soil types, 'aluvial' for aluvial soil types etc.   Your schema name
should correspond to that of a .CFG file set up using the <u>Colour Settings</u> dialog.   For
further details see the explanation about 'Saving and Using Colour Schemas' under the
<u>Colour Settings</u> topic.

New_Map/Load into Current Map
Choose between automatically creating a <u>new map</u> with the correct dimensions for the
imported data, or importing into the current map.

Origin X/Y Coordinates
Only activated when the import into the current map option is selected, these two values
set the position of the map origin that the import will use.   This facility enables data from
multiple import files to be tiled together, hence creating maps spanning the edges of
import files.

Overwrite
Only activated when the import into the current map option is selected.   When checked all
existing values in the map will be overwritten by imported values or set to the default

height.

Default Height

Some import files may not contain data for all points on the map definition canvas.   You can therefore provide a default height.

MapInfo

An add-in module to export data from MapInfo in a suitable form for import into Landscape Explorer can be obtained from John McCombs of Integrated Mapping.
You may wish to contact WoolleySoft in the first instance, but he may be approached directly at.

Integrated Mapping,
PO Box 2708,
Christchurch,
New Zealand.
Fax +64 3 365 5755.

The company's E-mail address is info@inmap.co.nz, but you may prefer to contact him directly at john@inmap.co.nz.

Directories and Paths

This displays a dialog prompting for the path to the directory containing the <u>colour settings</u> (.CFC) files.   If this is left blank it will use the directory from which the program was run.

Colour Settings

Landscape Explorer offers considerable control over how terrains are be displayed.   The program uses two types of terrains, standard and user-defined.   Both types are controlled by the Colour Settings dialog.   If this dialog is accessed from the View Parameters dialog colour changes will only apply to the view being drawn.   Alternatly, if you access the dialog from the menu changes will be applied to the global program settings - thus effecting the map definition module and the defaults for any new views drawn.

Standard Terrains

There are currently 8 standard terrains, corresponding to pre-defined terrain types such as water and forest.   You may alter the colours used for all but the base colour type, but the names are fixed.

User Terrains

Up to 16 user terrains may be defined, and unlike the standard terrains you may specify both the colour and names of these terrains.   User terrains can be imported in .XYZ files - see import xyz for details.

Storing and Using Colour Schemas

You can store and use colour settings schemas at several different levels.   Landscape Explorer loads a default set of colours at start-up, and you can save any set of colours as these defaults using the Save button in the Defaults group box.   The Reset button in the same box restores the standard program defaults.

You can also save colour settings schemas in a .CFG file.   Use the Save As button in the File group box to do this.   You can load a previously saved schema using the Load button in the same group box.

As described above, changes made in the Colour Settings dialog are applied globally if the dialog is accessed from the menu, but only locally to the current view if accessed from the View Parameters dialog.

You can also associate a colour settings schema with a map file - this can either be done on creation using the New Map or one of the import dialogs, or for an existing map using the map status dialog.   The schema name corresponds to that of a .CFG file, and the program looks for this file in either the current directory or that specified by the Directories dialog.

Base Colour

This is the default terrain type, and how it will be handled depends on the colour scheme being used to draw the projection.   For example, the Summer colour scheme will treat this as grassland, and the Framework scheme will draw white squares.

Copy (as Metafile)

Copies the current view to the clipboard as a re-sizable metafile.   You can paste this into any product that accepts a metafile format.

You will produce higher quality output using metafiles than using the copy (as bitmap) function.

Product Support

As part of the registration price of this product, WoolleySoft will provide support for a period of 6 months from the date of registration with us.

Support is provided by

Mail, at the address given for WoolleySoft elsewhere in this document.

Telephone on 0786 825406 (7 - 10pm Mondays to Fridays and Weekends are pretty much guaranteed.   You can try outside these times and leave a message on our answerphone if no reply).

e-mail on the internet at kjw1@stirling.ac.uk or on CompuServe at 100332,2104.   Please use the kjw1.. address if you are not a CompuServe user.

As well as support I'm always interested to chat about how you are using the program, suggestions for improvements, or shareware in general - so drop me a line!

Ombudsman Statement

Kevin Woolley is a member of the Association of Shareware Professionals (ASP). ASP wants to make sure that the shareware principle works for you. If you are unable to resolve a shareware-related problem with an ASP member by contacting the member directly, ASP may be able to help. The ASP Ombudsman can help you resolve a dispute or problem with an ASP member, but does not provide technical support for members' products.   Please write to the ASP Ombudsman at 545 Grover Road, Muskegon, MI 49442-9427 USA, FAX 616-788-2765 or send a CompuServe message via CompuServe
Mail to ASP Ombudsman 70007,3536."

What's New in version 2.2

WoolleySoft has joined the Association of Shareware Professionals (the ASP).   For the user (YOU!) this means that the unregistered program now complies with the ASP's legendary Policy on No Crippling.   To be honest we did have qualms about this - so please prove us wrong and <u>register</u>!

The Projection Parameters dialog box has been overhauled again. Wel've added a viewpoint diagram to help you visualise viewing and lighting angles better, and you can now vary the perspective on the final drawing.

Several bug fixes including:-   problems with saving maps before all points defined; abend when interpolating maps with more than 16000 but less than 16300 data points; better handling of   shading on flat sufaces; minor problems with NTF import; displaced controls in 1024x768 (Large Font) mode; problem with cancel in AutoTrace tool; and problem when saving views as .BMP files.

What's new in Version 3.0

This version represents a major rewrite of some of the original features of the package, in particular a new 'state-of-the-art' interpolation algorithm and significant enhancements to the user interface.   We have also added <u>animation</u>, improved the <u>memory</u> management, and added 256-colour drawing schemes.   Some details are given below.

For more demanding users we are now also producing an enhanced version of the program - Landscape Explorer Professional.   Features included in this version include a full printed manual, overlays, and larger resolution maps.   See the Landscape Explorer Professional topic for details.

256-Colour Schemes

Two additional colour schemes have been added: 256-colour summer and 256-colour winter.   The views produced using these schemes are very fine - and will be essential to anyone requiring presentation quality work.

<u>Animation</u>

A facility to generate multi-image DIB files has been added.   When displayed by suitable software (available in the public domain, but also supplied with the registered version) these display the landscape rotating.   Excellent for highlighting the three-dimensional form of the landscape.

Auto-Trace

Rewritten to be colour-sensitive, the autotrace tool will now only follow a line of the initially selected colour.   Ideal for tracing colour bitmaps, it is also a considerable help if you only have a mono scanner available as a little time with the paintbrush program can yield considerable dividends.

<u>Magnify</u>

Completely rewritten, the separate <u>magnify</u> tool used by previous versions has been replaced by in-place zoom in/out facilities.

Exports

Data can be exported in ASCII or x,y,z,attribute format.

Export Functions

Landscape Explorer can export the data constituting the map .LEM file in a number of different formats.

All export functions are accessed from the map definition module.   Select the Export... item from the Define Map menu.   A dialog box is displayed.   Select the export file type required from drop down list box, and enter the file name in the usual way.

ASCII

Exports all heights in space delimited ASCII format.   This is the same format as described in the Import ASCII function.

X,Y,Z,Attribute

Exports all the data in the map in x,y,z,attribute format (see Import x,y,z,attr for details). This is the only format which exports details of terrains in addition to heights.

Landscape Explorer Pro

To meet the demand for a version of Landscape Explorer tuned to the needs of professional users, we are now producing Landscape Explorer Pro as a sister product to Landscape Explorer

Delivered with a full printed manual, Landscape Explorer Professional offers the following enhancements:

Higher Resolution

Landscape Explorer is limited to a maximum of 16,300 grid points, which equates to a grid of approximatly 125 x 125 points.   Our professional product extends this to 68,000, or 258 x 258.   Apart from general benefits, this also allows the program to handle VistaPro maps.

Faster

The program is optimised to use a maths-coprocessor.   Drawing speeds are increased by at least 30%, and many times faster for some processes.

Overlays

Landscape Explorer Pro can handle two different kinds of overlay data.   Firstly images such as satellite photographs or maps can be superimposed directly onto the surface. Secondly objects such as lines and circles can be defined which can be superimposed on both image overlays and the other drawing colour schemes.

Export VistaPro DEMs

Map height data can be exported as uncompressed VistaPro DEM files.   This offers a simple way of defining realistic new DEMs for VistaPro.

Import VistaPro Data

Data files exported from VistaPro can be imported into Landscape Explorer Pro.   In conjunction with the export function above this provides a method for VistaPro users to supplement the relatively poor editing facilities available in VistaPro.

Export DXF files

Map grid data can be exported in AutoCAD's DXF file format.   This facility was developed in conjuction with AutoCAD release 12, where it gives very impressive results in conjunction with AutoCAD's rendering facilities.

Please note that whilst the DXF format used should be compatible with other CAD packages, no guarantee can be made.

Micro-Maps

Small scale maps are supported in Landscape Explorer Pro.   These are defined with map side lengths in whole metres, and grid point spacing and height values in metres and tenths of metres.   Particularly suitable for archaeological and other small scale applications.

Annotations

Single line annotations may be added to maps displayed by the Viewer Module.

Printed Manual

A full printed manual is supplied.

How To Order

Landscape Explorer Pro costs £100 or US$180 including shipping.   Upgrades for existing users cost £75 or $140, and can be obtained from WoolleySoft at

Humblesknowe Cottage
Ramoyle, Dunblane
Perthshire.   Scotland FK15 0BA.
Tel. 0786 825406.
E-Mail kjw1@stirling.ac.uk (internet), 100332.2104@compuserve.com (CompuServe)

Orders for Landscape Explorer Pro can also be taken in the USA by Pic-A-Program and by our Australian agents.   You can also register on CompuServe using the GO SWREG facility, and you may find the following information useful.

Author: Kevin Woolley
CompuServe ID: 100332,2104
Program Title: LANDSCAPE EXPLORER PRO V3
Registration ID: 3882

Animation

This function is access from the View Map menu, and activated once a landscape view has been displayed with the <u>Landscape Viewer Module</u>.   It is used to create a multiple image DIB file which can be later viewed with a suitable program to show a movie of the landscape rotating

To create an animation first display a landscape view, selecting display values for colour scheme, light position, viewer altitude etc. as required (see <u>View Parameters</u> for details). Selecting the Animation item from the View Map menu displays a dialog allowing the following items to be set:

DIB File

The multi-image DIB file to be created.   Enter directly or click the elipsis box to browse.

Frame Rotation

The number of degrees to rotate the model between each frame.   10 degrees or less gives reasonably smooth animation, 20-30 degrees is acceptable first time testing.

Once generated, the DIB file can be viewed using a suitable program.   These are available within the public domain, but a suitable viewer is supplied with the registered version and Landscape Explorer Professional.

American Registrations

Landscape Explorer can be registered with either of our two registration agents in America: PsL and Pik A Program.   Both agents offer payment by credit card and can handle both Landscape Explorer and Landscape Explorer_Pro.   Click on the agents name for ordering details.

Pik A Program keep stocks of the programs themselves, and will fill your order directly.   Pik A Program cannot take orders outside the USA and Canada.

Alternatively PsL will take your order then notify WoolleySoft.   We will then mail out the program directly from ourselves.

Australian Registrations

Registered versions of Landscape Explorer and <u>Landscape Explorer Pro</u> are available in Australia from

<p style="color:purple; text-align:center">BUDGETWARE
PO BOX 496
NEWTOWN NSW 2042
AUSTRALIA</p>

<p style="color:purple; text-align:center">Phone (02)519-4233   Fax (02)516-4236
Payment by cheque, money order, Bankcard, Mastercard and Visacard.</p>

Prices are:

Landscape Explorer:	AU$99
Landscape Explorer_Pro:	AU$260
Shareware -> Pro upgrade:	AU$180

Prices include shipping and handling.

Registering via PsL

CREDIT CARD ORDERS ONLY

Prices are:
Landscape Explorer: $60
Landscape Explorer_Pro: $180
Shareware -> Pro upgrade: $140
Shipping: $5

You can order with MC, Visa, Amex, or Discover from Public (software) Library by calling 800-2424-PsL or 713-524-6394 or by FAX to 713-524-6398 or by CIS Email to 71355,470. You can also mail credit card orders to PsL at P.O.Box 35705, Houston, TX 77235-5705.

THE ABOVE NUMBERS ARE FOR ORDERS ONLY.

Any questions about the status of the shipment of the order, refunds, registration options, product details, technical support, volume discounts, dealer pricing, site licenses, etc, must be directed to WoolleySoft at the address given for direct registration above.

To insure that you get the latest version, PsL will notify us the day of your order and we will ship the product directly to you.

The PsL reference number for both Landscape Explorer and Landscape Explorer_Pro is 11239.

Landscape Explorer Registration with Pik A Program

You can get a printed copy this registration form by select PrintTopic from the File Menu.

You may mail, fax, or phone in your order.   You will get faster service by sending this order form directly to Pik A Program, Inc., the American distributor for Landscape Explorer.   USA and Canada orders only. Please note that Canadian orders must be paid in US$.

Please send payment to Pik A Program, Inc. at:

<div align="center">

Pik A Program (tm)
TOLL FREE (ORDERS ONLY)
1-800-TOREGISTER   1-800-867-3447
13 Saint Marks Place
NY, NY 10003
USA
Telephone (212) 598-4939
Fax (212) 228-5879

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_____
(Name)

_____
(Company)

_____
(Street1)

_____
(Street2)

_____
(Town)   (State)   (Zip)

_____
(Telephone)   (Fax)   (Country if outside USA)

You will get a short printed manual, free product support via phone, mail, or email on CompuServe or the internet, and a disk containing the latest version of Landscape Explorer.   The registration fee is $60 plus $4.00 for shipping.

We also have available Landscape Explorer Pro which sells for $180.00. and offers additional features aimed at the professional user and includes a full printed manual,

Upgrades from the registered shareware version of Landscape Explorer are $140.00.   All disks will be sent on 3.5" high density (1.44 MByte) unless 5.25" disks are specifically requested.

QUANTITY   ITEM   PRICE   EACH (US $)   TOTAL
_____

Landscape Explorer   US$ 60.00
Landscape Explorer_Pro   US$ 180.00
Shareware -> Pro upgrade US$140.00
Shipping   US$ 4.00

TOTAL

_____

I am paying by:
( ) CHECK   ( ) VISACARD   ( ) MASTERCARD
( ) AMERICAN_EXPRESS   ( ) DISCOVER
( ) CASH   (by registered mail only, please)

Number _____-_____-_____-_____   Exp. date ___-___

_____   _____-_____-_____
(Signature)   (Date)

THANK YOU FOR REGISTERING YOUR SHAREWARE!

Important: If you are ordering by mail or fax, please completely fill out
this form and send it in.   Please call or fax for information regarding site
licensing and or purchase orders from government agencies or
Fortune 500 companies.

Technical support is not available from Pik A Program.
For any technical help, please contact WoolleySoft.

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You can find the latest English version of WoolleySoft's
Landscape Explorer on the Software Creations BBS, the
Home BBS of Pik A Program (theUSA distributor for
Landscape Explorer).

(508) 365-2359 - 2400 Baud V42 MNP5
(508) 368-7036 - 14.4K V32(BIS) DS
(508) 368-4137 - 16.8k HST USR
****

Registering via CompuServe

Use the Shareware Registration service (GO SWREG).   You can <u>register</u> both Landscape Explorer and <u>Landscape Explorer Pro</u> and you may find the following information useful to locate the programs.

Landscape Explorer

Author: Kevin Woolley
CompuServe ID: 100332,2104
Program Title: LANDSCAPE EXPLORER V3
Registration ID: 2099

Registration is $60 + $5 if outside Europe.

Landscape Explorer_Pro

Author: Kevin Woolley
CompuServe ID: 100332,2104
Program Title: LANDSCAPE EXPLORER_PRO
Registration ID: 3882

Registration is $180 + $5 if outside Europe

Austrian/German Registrations

Registered versions of Landscape Explorer and <u>Landscape Explorer Pro</u> are available in Austria and Germany from:

Nane Juergensen
Alpenstrasse 52
D-82194 Groebenzell
GERMANY
Voice: (08142) 521 77
Fax (08142) 546 41
Mailbox: (08142) 530 39
CompuServe: 100021,414.

Prices are charged at the equivalent in German DM when ordering of UK prices, i.e.:

Landscape Explorer: £40
Landscape Explorer_Pro: £100
Shareware -> Pro upgrade: £75

Modulo di registrazione per l'Italia.

Potete registrarvi a Landscape Explorer direttamente in Italia corrispondendo le tariffe riportate sotto tramite vaglia o busta chiusa raccomandata a:

Simone Bazzi
Via Nomentana 293
00161 Roma

Si consiglia anche di allegare il seguente modulo (o di spedirlo via FAX al numero 06-68.80.20.51) per sveltire le operazioni di registrazione. Ad accredito avvenuto vi verra` immediatamente spedita la copia del programma da voi richiesto. Inoltre, per ogni questione o supporto tecnico sui programmi, potete far riferimento al numero di FAX sopra menzionato.

Per registrarvi a questo programma, ed agli altri da noi supportati, e per avere un supporto continuo (gratuito) potete collegarvi via modem alla BBS di Roma Agora` Telematica, che risponde ai seguenti numeri di telefono:

06-69200112 (10 linee) 300 > 14.400 MNP5 N81 V42 V42bis
06-69920412 (10 linee) 300 > 14.400 MNP5 N81 V42 V42bis
06-6990532 (10 linee) 300 > 14.400 MNP5 N81 V42 V42bis

Io sottoscritto_____, residente in_____

Via/Piazza_____ n._____ CAP_____

Telefono_____ FAX_____

E-mail_____

desidero ricevere le versioni registrate dei seguenti pacchetti Software (contrassegnare con una croce):

   [_] Landscape Explorer........................ Lit. 120.000 (IVA inclusa)

   [_] Landscape Explorer Pro................ Lit. 295.000 (IVA inclusa)

   [_] Landscape Explorer Upgrade
        (da versione normale a Pro)........... Lit. 225.000 (IVA inclusa)

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   TOTALE............................. _____

                              Firma_____

Belgium/Dutch Registration

Registered versions of Landscape Explorer and <u>Landscape Explorer Pro</u> are available in Belgium and the Netherlands from:

<div align="center">

CopyCats
Postbus 1088
1700 BB Heerhugowaard
The Netherlands
Tel/Fax +31.2207.45993   (+31.72.5745993 after 10/10/95)
Postbank (NL) 43.28.577 Postcheque (B) 000-1656064-80

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Prices are:

Landscape Explorer:	Dfl 120.00	/ 2200 Bf
Landscape Explorer_Pro:	Dfl 290.00	/ 5500 Bf
Shareware -> Pro upgrade:	Dfl 215.00	/ 4100 Bf