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# THE WORLD IS AT YOUR FINGERTIPS

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The Axion 3D World Atlas is one of the most powerful research and exploration tools for anyone who wants to know more about the planet on which they live. Before you get started, take a few moments to familiarize yourself with some of the features provided in the Atlas. Consider this your road map.

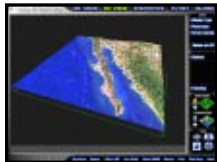
The Axion 3D World Atlas lets you explore the world in a variety of ways:

## 2D VIEW



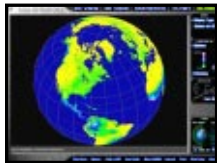
View two dimensional maps in elevation color scales, or in full color satellite imagery. Add roads, rails, boundaries, or names for more detail.

## 3D VIEW



Clip out any section of the world to view in 3D. Rotate, zoom, exaggerate features – also view cross-sections or touch down to view panoramas.

## GLOBE



View our planet from space in shaded elevations or in satellite imagery, study global climatic trends, or track satellites in orbit.

## FLYBY



Experience a real-time flyby of any terrain in the world draped with the same satellite imagery as seen in the 2D and 3D views.

## STATISTICS



An extensive database for over 260 countries and territories. Get information on population, government, economics and much more.

The following guidelines will help you install your Axion 3D World Atlas to run at its best.

**HARDWARE REQUIREMENTS:**

- IBM Compatible PC
- At least 26.6MB for a minimum install, 45.2MB for typical install

**NOTE:** The more data you allow to be installed on your hard drive, the faster the program will run.

- A CD-ROM drive (4x or faster recommended)
- A video card capable of greater than 256 colors and at least 640x480 pixel resolution. For improved performance, 15 or 16 bit color and 800x600 resolution is recommended
- Windows 95™
- A mouse, trackball, or other pointing device
- 8MB of RAM (Pentium with 16MB or more is recommended).

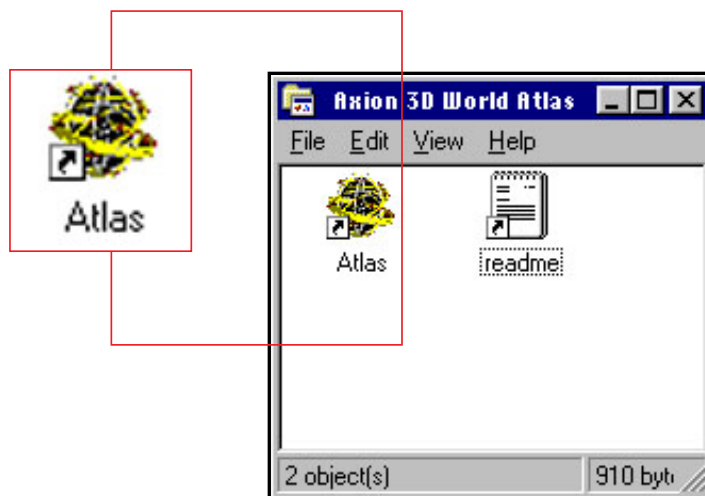
**BEFORE YOU START:**

- Ensure display is set higher than 256 colors. Preferably, also set the resolution to 800x600 pixels
- 'Small Fonts' must be selected under display properties
- After installation make sure that the drive containing the Windows 95 swap file (usually drive C:) still has 20MB - 30MB free.

**NOTE:** In order to determine what drive of the Windows 95™ swap is located on: choose Start Menu/settings/control panels/system/performance/ virtual memory and look at the value in the field labeled 'hard disk'

**INSTALLATION:**

- Insert the CD-ROM
- Run SETUP.EXE using Windows 95™ Explorer, the 'run' command at the Start menu, or by clicking on 'my computer', double clicking on the CD-ROM icon and double clicking on the file labeled SETUP.EXE
- Follow the instructions in the install program. If you also want to install support for 640x480 mode, choose it under the 'Custom' option in the setup program
- There are 3 options in the install program: **minimum**, **typical**, and **custom**. The install program will make a folder and add an item to the start menu under the heading 'Axion 3D World Atlas', unless you chose a different name
- When you install the program, you'll notice there are two icons in the group on your start menu. **ATLAS** is the main program. Double clicking on this icon will start the program. The other icon is a readme file containing important information about running the program.



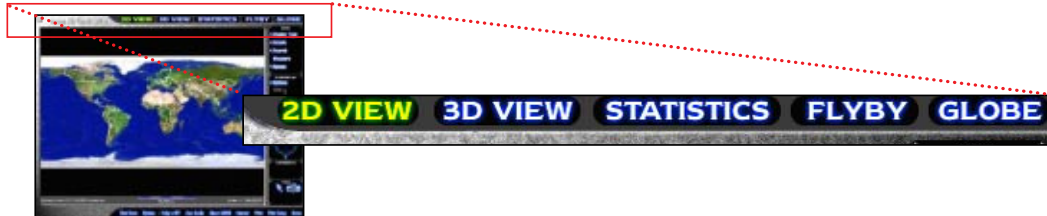
To start your journey, click on the ATLAS icon. The first thing you will see when you run the program is the opening title page. Click any key or the mouse to get past the screen into the program.

## THE HOME OFFICE



You are now looking at a view of a home office. Several of the objects on the desk link you to certain functions. When you pass the mouse over a linked object it will display a message describing its function.

- 1 **THE MODEM:** launches your Web browser (Netscape, Microsoft, etc.) with Axion's URL address. The website will have information on product updates, promotional information, etc.
- 2 **THE NOTEPAD:** on the desk launches your default e-mail program to send a note to Axion's e-mail address. If you don't have a separate e-mail program defined in the Windows 95™ registry, it launches the web browser with a `mailto://axion@axionspatial.com`.
- 3 **THE STARTUP BUTTON:** starts the Axion 3D World Atlas
- 4 **THE QUIT BUTTON:** exits you from the Atlas program to Windows 95™
- 5 **THE COFFEE CUP:** will bring up a geographical trivia game. If you want to keep playing after the first question, click on the 'Q' button to get the next question. Try to guess the correct answer from 4 choices. If you're stumped, you can get the correct answer by hitting the 'A' button.  
When done, hit the 'close' button to return to the room.
- 6 **THE CUP OF PENCILS:** prints a software registration form that you can fax or mail in.
- 7 **THE BUSINESS CARDS:** on the desktop are links to help pages giving contact information and other company information for Axion and Worldsat. Once you click on these, the screen will change showing the address, phone, and e-mail addresses for both companies. There are also hot links to directly connect you to the websites of Axion and Worldsat. Click 'close' when done.)
- 8 **THE PILE OF CD-ROMS:** on the desk link you to information about other Axion products. Once you choose this option, the three icons along the top display the information for each product. Click 'close' when done.

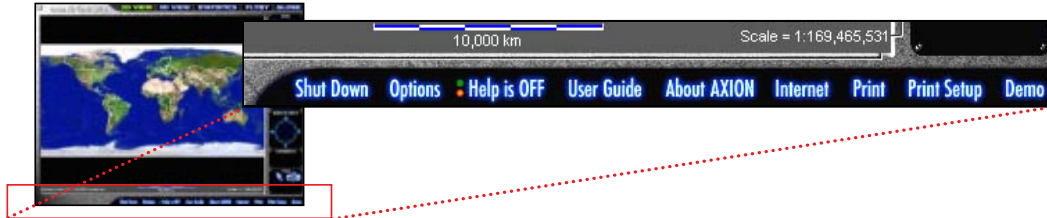


Once you enter the office and click 'start' on the computer screen, your screen will change, showing the primary interface – a 2-dimensional map of the world with buttons along the top and bottom edges, and along the right-hand side of the screen.

The buttons along the top edge direct you to the available viewing modes. You will notice that one of the buttons is always highlighted so that you can tell which display mode you are in.

- 2D VIEW:** Use this option to return to the 2-dimensional map from any other display mode.
- 3D VIEW:** Use this option to clip out a rectangular area from the flat 2D map, and view it in 3D perspective.
- STATISTICS:** Use this option to access the statistical database. The information is available in a number of formats: tables, 3-dimensional bar charts, or 2D color-coded maps.
- FLYBY:** Using this option, you can choose any starting point in the world from the 2D map and go on a real-time interactive flyby.
- GLOBE:** This option lets you view data wrapped around a rotating globe. You can display different data sets on the globe such as monthly temperature or precipitation changes, or orbital tracks of satellites around the Earth.

Regardless of which display mode you are in these buttons will remain the same, letting you switch easily between modes.



The buttons along the bottom edge will launch the program's command functions:

**SHUTDOWN:** This shuts down the Atlas and takes you back to the home office.

**OPTIONS:** This pops up a window that allows you to select the settings you want to optimize the program:

- **Calibrate Joystick** This lets you calibrate your joystick so you can use it when interactively flying over the terrain in the 'Flyby' display mode. Click on the button, then follow the instructions. If you do not have a joystick or wish to cancel the calibration, hit 'ESC'.
- **Gamma Correction:** If your monitor is too dark, you can adjust the gamma correction factor to make things readable. (providing that adjustment of the brightness and contrast controls on your monitor are not sufficient). Choose 'gamma', then use the + and - arrows to set the brightness. A value of 1.0 is the default and means that no adjustment will be done. If you change the gamma correction factor, the change will take effect the next time you run the program.
- **Monitor Size:** In order to correctly calculate the map scale shown at the bottom right of the map when in 2D display mode, the program needs to know the actual physical size of your monitor. The default value assumes a 15 inch monitor. Use this option to record your monitor size if it is different from the default.



- **Colors:** This allows you to set the preferred color depth (15, 16, 24, or 32 bit) that the program will run in.
- **Sound on/off:** If you have a sound card, this turns the sound effects for different events such as error messages on or off.
- **Update Software:** This launches your Web browser with Axion's Web Page address so you can download updates, as they become available. As soon as they become available, yearly updates for the statistical information will be available at our website, <http://www.axionspatial.com>

**HELP:** This allows you to toggle on or off a feature that displays helpful notes about what each button does. As you pass your mouse over any active button, a descriptive message appears at the bottom left corner of your screen.

**USER GUIDE:** This is a link to a context-sensitive on-line user manual. Once you choose this option, the menus along the top and right edge will be disabled, and a new text control panel will appear at the bottom left of the screen. This control panel allows you to search, scroll up and down, go to an index of topics (if one exists for that particular help file), or return to where you were in the program. You can also use the page up/page down or arrow keys to scroll through the text, and the 'ESC' button to close.

**ABOUT AXION:** This takes you to a help page listing contact information and company information about Axion.

**INTERNET:** This will launch your web browser with Axion's web address, so that you can get information on product updates or other relevant information. It performs the same function as the 'Update Software' choice under the 'Options' section.

## THE BOTTOM MENU BAR

**PRINT:** With this function, you can print whatever is displayed on your screen. Depending on what type of data you are printing, you may be presented with a pop-up window to choose different options such as whether you want to show both the base map (raster) imagery and map detail (vector) data overlaid on the same map, etc.

**PRINT SETUP:** This allows you to select which printer, paper size and paper you want to print with. The program supports both color and black & white printers, and can also print across networks.

**DEMO:** For any particular screen, this button will play back a short self-running demo showing you how to access various functions on that screen, such as zooming in or out of the map, changing the map display types, etc. Press 'control-escape' to cancel the demo.

## THE SIDE MENU BAR



Every time you change the view type using the top menu bar, the menu of options on the right hand side will change. These commands are specific to each of the view types. More information on these commands is supplied under the descriptions of the view types to follow. If you get stuck anywhere in the program, the 'ESC' key will always get you out, except during the self running demo, where you must press 'control-escape'.

## 2D VIEW

## DISPLAY MODE

The first thing you'll see when you get into the 2D mode is a map of the world, but this is no ordinary map. It's actually made up of many satellite images tiled together.



The map has a resolution of 1 km, this means that each pixel is spaced 1 km from the next. This level of resolution allows you to zoom in close enough to see lakes, mountains and the borders of towns and cities as they appear from space.

**NOTE:** Occasionally the satellite imagery will not match the detail overlays. This is due to differences in accuracy of the different data sets used in the product. The satellite data is the least accurate of all the layers. This is understandable when you realize that each pixel in the raster represents 1 square kilometer on the ground.

## DISPLAY TYPE



The map starts out as satellite imagery, but you have some options on how you see the world. You can view the map as:

- **SHADED RELIEF** Grey shaded relief of the structure of the land
- **SHADED ELEVATION** Colored according to the height above sea level
- **SATELLITE IMAGERY** Shaded satellite imagery draped over the landscape

To choose different data types, click on the 'display type' menu option on the right hand side, select one of the choices, and then press the 'close panel' arrow to accept or press 'ESC' to cancel.

**DETAILS**

This allows you to turn on or off different map details which are drawn on top of the main image. You can choose between different types of roads, railways, rivers, city boundaries and borders.

Map details which are turned on show in green on the display panel, and those which are turned off show in red.

As with the 'Display Type' (or any other window), hit 'ESC' to cancel or 'close panel' to accept.

**SEARCH**

Allows you to search for place names and show them on your map. The program contains a searchable database of over 1.6 million populated place names, 4700 ocean features, 12300 airport names, as well as mountains, mountain ranges, provinces/states and countries.

**NAME:**

Start by choosing the data type you wish to search by clicking on the appropriate item under 'data type'. Type in the name you want to search for in 'name' field. As you type, the closest matches will appear in the list under the 'name' field. The number in the brackets after each item is the number of occurrences found in the data base of that particular item.

**CHOOSE LOCATION:**

If you input a name (for example, 'Fairview'), which occurs many times in many countries, you can click on the 'choose location' button to select one or more specific names from the database. Each name will be listed along with what country it is located in. You can highlight multiple items in the list by holding down the Control key as you click items in the list. You can then choose to draw only those you have selected, or all of the names in the list. Your selections will appear as red on top of the 2D map. In order to turn them off later when you don't want to show them anymore, simply choose 'search' again and then choose 'cancel'.

**NOTE:**

There is an option at the bottom of the screen which, when turned on, will allow you to see all the names selected. It will automatically adjust the map window to display all the names.

**GO TO LIST OF COUNTRIES:**

Jumps to the list of countries in the Statistics View.

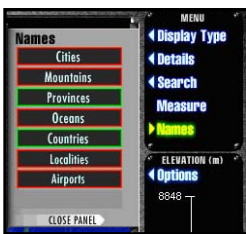
## MEASURE



Allows you to **measure the distance** between multiple points on the map.

The distance units used are the same as those shown on the scalebar at the bottom center of the map. Use the left mouse to click points on the map. When done, hit ESC or click the right mouse button.

## NAMES



Toggle off or on the display of different **types of names** on the map. A box with different categories of names (Cities, Mountains, etc.) is brought up, letting you decide which types of names you want to see on your map.

## OPTIONS



Allows you to pick what **color scale** will be used when showing the shaded elevation data. Also, you can choose whether to apply the color scale to the global elevation range, or use the entire color scale for only the area currently zoomed into (so that the color scale is stretched from the minimum to the maximum elevation value currently showing on screen).

## LEGEND



Displays the map legend for the different overlays and symbols on the map.



- 1 **MINIMIZE BUTTON:** Minimizes the program onto the Windows 95™ task bar.
- 2 **AREA UNITS:** You can change the area units of the surface area measurement of the current map by clicking on the text at bottom left which displays the surface area. The units will cycle between acres, hectares, square miles, and square kilometers.
- 3 **DISTANCE UNITS:** You can also change the distance units of the scale bar at bottom center of the map by clicking on the scale bar. The units will cycle between kilometers, miles, nautical miles, meters and others. Whatever units are shown here will be the units used in the point-to-point distance measurement function mentioned above.



- 4 **MAP SCALE:** To zoom to a specific map scale (centered at the current center location of the 2D map, as opposed to dragging out a zoom rectangle with the mouse), left click on the map scale text at bottom right. You can then type in the scale you want. The map scale value shown at lower right is the map scale measured horizontally across the center of the map, taking into account the physical size of the monitor (14",15",17", or 21") specified by the user in the Options window.

**PANNING:** If the cursor comes to within 15 pixels of any edge of the map at any time after you've begun zooming in, it changes into an arrow. If you click the left mouse button, the map will pan 80% of the width of the screen in the direction indicated. If you like, you can also use the arrow keys on the keyboard at any time to do the same thing.

- 5 **ELEVATION:** If you click on the word elevation at the top of the elevation scale bar at the center right side of the screen, you can change the elevation units shown throughout the program from meters to feet. This also works in the Globe and 3D View display modes.

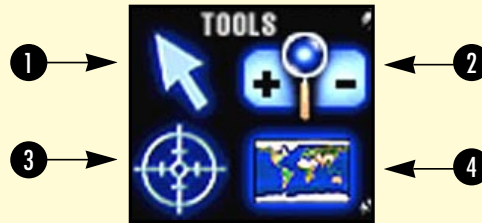
You will also notice that as the cursor moves over the map, the elevation of the land directly under the cursor is shown beside the elevation scale bar on the right hand side.

- 6 **MAGNETIC NORTH:** The long arrow points toward the 'True North' (North Pole). The small arrow points toward the Earth's North magnetic pole.

- 7 **LATITUDE/LONGITUDE:** The current latitude/longitude of the cursor location is also shown. If you click on the panel showing the current latitude/longitude location of the mouse, you get a window which allows you to specify an exact center point to zoom in to on the world map. This function is available at the top zoom level. This would be useful if you wanted to center the map exactly at a point such as 0 degrees East/West and 0 degrees North/South.

The program stops you from zooming in any farther than a scale of 1:220,000. Also, as you zoom in to a very high level, the program starts to gouraud-shade the image data in order to improve display quality. Regardless of whether the video card installed on your machine supports advanced graphics capabilities such as gouraud-shading, the software can still provide the smooth shading functionality so as to provide the best graphics quality.

The **TOOLS CONTROL PANEL** at bottom right contains tools for advanced zooming and other functions.



- 1 ARROW:** The arrow allows you to search for information about data showing on the map. If you click the arrow, it becomes highlighted. You can then click on cities, countries, or major rivers on the map to get information about them.

    - **CITIES:** If 'city boundaries' are turned on under 'details', and you are zoomed in far enough to see the city borders and click on a city, its name will be displayed. As you click on multiple names, they appear in white on top of the current map. You can toggle them on or off by clicking on them again.
    - **COUNTRIES:** If country names are turned on under 'names', then clicking on a country will take you to the information for that particular country.
    - **RIVERS:** If major rivers (dark blue) are turned on under 'details', then you can toggle names off or on the same as the city names by clicking on them.
    - **LOCALITIES/OCEANS:** If you are zoomed in far enough, and the localities and/or ocean place names are turned on, they will then be shown as small colored dots on the screen. These names can be toggled on or off by clicking on these dots.
    - **TO EXIT:** this function press 'ESC' or right mouse click.
    - When finished, you can print the result using the print function at the bottom of the screen and specifying 'copy raster image from screen'.
- NOTE:** When country names are turned on under details, if you click somewhere on the map and it doesn't find a name because you did not click close enough to a named feature (city, locality, ocean feature, or major river), but you did click some-where on land, the information for the selected country will be displayed.





**2 ZOOM TOOL:** The magnifying glass allows more advanced control of the zooming in and out on the 2D map. There are many ways to zoom:

- The standard method is to click and drag a zoom window, with the left mouse button centered at the initial mouse location on the map. The resulting map scale is shown as you drag the rectangle on the map. When you release the mouse, the map will be regenerated providing you did not choose too small an area. To return to the previous zoom level, simply right click the mouse.
- To make the zoom rectangle anchored from a corner rather expanding from the center point, hold down the shift key as you drag out the rectangle
- In order to toggle the zoom mode, you may use the 'control' key. You will notice that when the cursor is over top of the map, the cursor changes into a magnifying glass with a '+' sign, meaning a click of the left mouse button will zoom in on the map. The control key toggles the magnifying glass between '+' and '-'. When the magnifying glass has a '-' sign, clicking the mouse on the map will zoom OUT 30% rather than IN 30%.
- You can also click on the '+' and '-' button next to the icon of the magnifying glass to zoom in or out 30%.

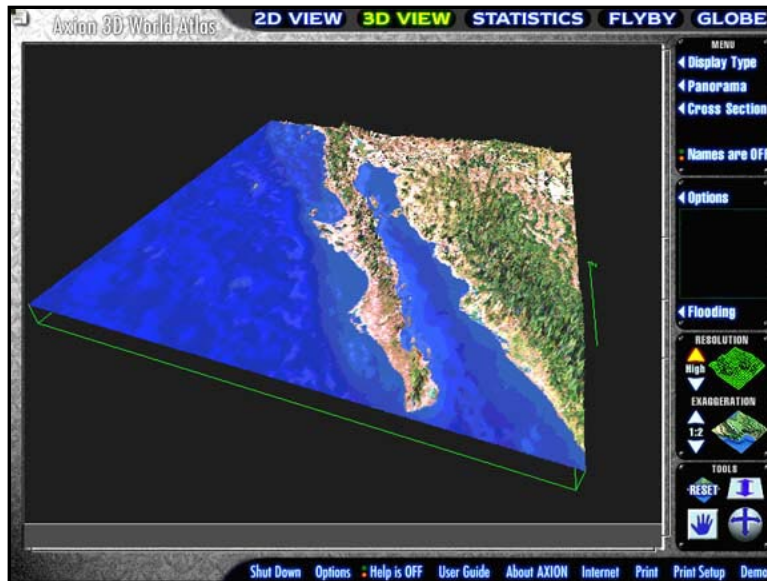
**3 CENTERING TOOL:** lets you change the center point of the current window. Click on the centering tool, then click on the map where you want to shift the center point to.

**4 ZOOM RESET:** The small picture of the world lets you jump all the way back up to full map view, regardless of how many levels you are zoomed in.

## 3D VIEW

## DISPLAY MODE

Get a hands-on understanding of the planet in the 3D section, clip out any area from the 2D maps and start exploring.



You can clip an area showing your 2D map and view it in 3D by clicking on the '3D View' command. This changes the cursor into a cross-hair, which you use to define the area you wish to see in 3D.

When you find the area you want to view, click the left mouse button to accept. You don't have to clip out an area every time. You can keep the area that you have previously clipped out (or the sample one provided on the CD) by answering 'no' to the prompt.

Once you have clipped out an area, the menus along the right-hand side of the screen will change:

### DISPLAY TYPE

Allows you to pick what type of imagery to drape over the terrain model. You have your choice of:

**SATELLITE:** The same satellite imagery as used in the 2D world map shown in 3D perspective.

**ASPECT:** This shows which direction a part of the terrain is facing, such as the north side of a hill, south side, etc.

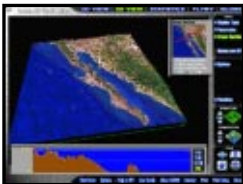
**SLOPE:** This shows how flat the terrain is, from perfectly flat (plateau) to completely vertical (cliff). The value is shown represented in degrees like the grade of a road, where 0 degrees is flat and 90 degrees is vertical.

**ELEVATION:** Shows the terrain model color coded based on height. The colors are from the currently chosen color scale showing at the right side of the screen, scaled from minimum height to maximum height.

**SHADED RELIEF:** Shows the gray shaded relief of the terrain. This emphasizes drainage features, ridges, valleys, and other geological formations well.

**DETAILS:** If you had any map details (vector data types) turned on when you clipped out this piece of terrain, then you can overlay a coarse version of the same vector data such as roads or international boundaries on top of the terrain. The underlying image data will be whatever was showing at the time you clipped out the terrain. This overlay type is available only when the terrain surface is in high resolution.

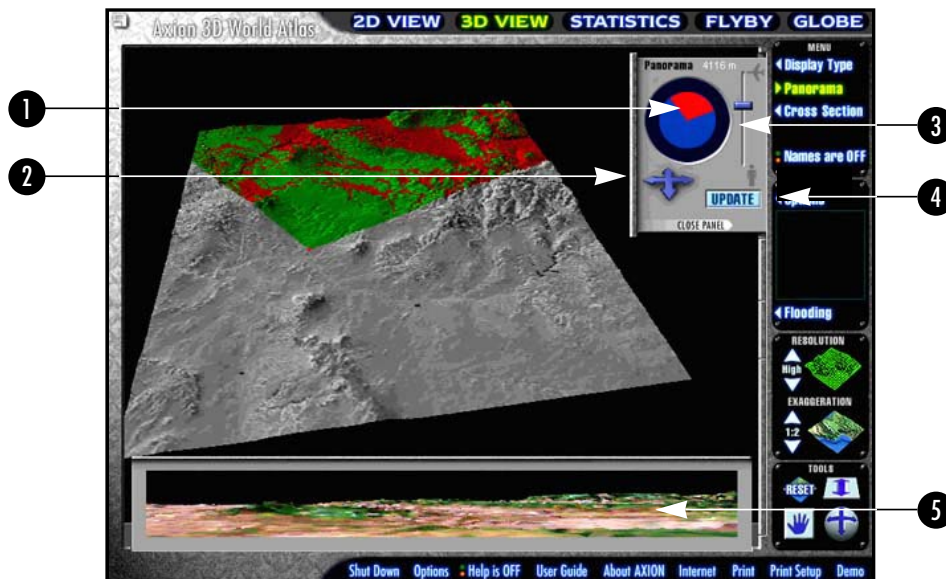
## CROSS SECTION



This lets you see a cross section or profile of the ground between any two points on the terrain model. When the little map pops up, click in two locations on it. You will see a red line drawn between the two chosen points. In the view screen at the bottom of the screen a cross section following that line is shown. You can adjust the vertical exaggeration in order to get a better idea of the vertical scale by using the four buttons at the right end of the bottom window. You can keep choosing other cross sections, or press 'ESC' to close the window when done.

## PANORAMA

This function allows you to see the view from any point on the chosen terrain. To start, click on the 'Panorama' button. You will now see a small window with some controls in it:



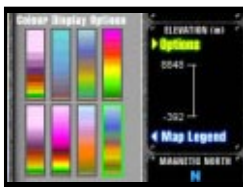
- 1 **VIEW DIRECTION INDICATOR:** allows you to set the direction you are facing, assuming a 120-degree field of view. Use the mouse to drag the wedge-shaped area to point in the desired direction.
- 2 **OBSERVER LOCATION:** The 4-pointed arrow lets you adjust the viewer location on the surface of the ground. Click and hold the mouse on the arrow control, and as you drag the mouse you should see a small red cross-hair traveling across the surface of the large terrain model still showing on the main screen. When you reach the location you want, simply let go.
- 3 **THE SCROLLBAR:** You can also adjust at what height your view will be seen from by using the scrollbar. It ranges from 2 meters (to represent a person standing on the ground) to 6000 meters (as if you were in an aircraft flying over the ground).

- 4 UPDATE BUTTON:** Once you adjust the position to your liking, click on the update button. The large terrain model on the main screen will now redraw, as the program is calculating what can and can't be seen from the observer location – any mountains or hills in the foreground will block your view of what is behind. The field of view cone is shown on the map in red, with the visible areas within it shown in green. The rest of the terrain is shown in shades of gray.
- 5 OBSERVER'S POINT OF VIEW:** When it finishes drawing the terrain model, a second view will also be drawn at the bottom of the screen. This is the view from the observer's point of view, rendered from the color satellite imagery data. You can then pick a different point as many times as you want, or click on the 'close panel' arrow or press 'ESC' to close the window.

## NAMES

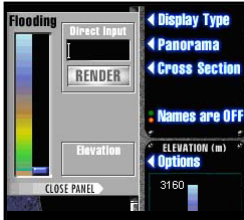
When you clipped out the section of terrain from the 2D View map, any city names within that area were also saved. You can display the locations of the cities on top of the terrain model by turning on this option. They will be shown as little flags at the location of the city. Additionally, if back in the 2D View mode you had searched the names database to display the location of a specific place on the map, that location will also show up, but drawn in red.

## OPTIONS



Allows you to pick a different color scale for displaying elevation data.

## FLOODING



If you click this button, the terrain model will be shown in shaded elevation, and you will see a pop-up window with a color scale and slider bar. You can then see what would happen if the water level was raised by a certain amount by dragging the slider on the color scale to adjust the water level. Or, you can specify an exact value to flood to (for example, 41 meters above sea level), and hit 'render' to see the result. When done, click the 'close panel' button or hit 'ESC'.

**Note:** All elevations are relative to sea level, not to the minimum height value in the clipped out terrain model.

## RESOLUTION



Increases or decreases the resolution of the terrain model in order to adjust the quality. The more points that are displayed, the longer it takes to draw. There are currently 3 different grid resolutions available (100x100, 150x150, and 350x350). The program defaults to medium resolution.

The higher your resolution, the better the quality of the images. Though it slows the program down a little, higher resolutions are useful when you want to view panoramas with good detail, or when you want to print at a better quality.

## EXAGGERATION



Increases or decreases the vertical exaggeration of the terrain.

At lower right, there is a panel labeled TOOLS with controls in it:

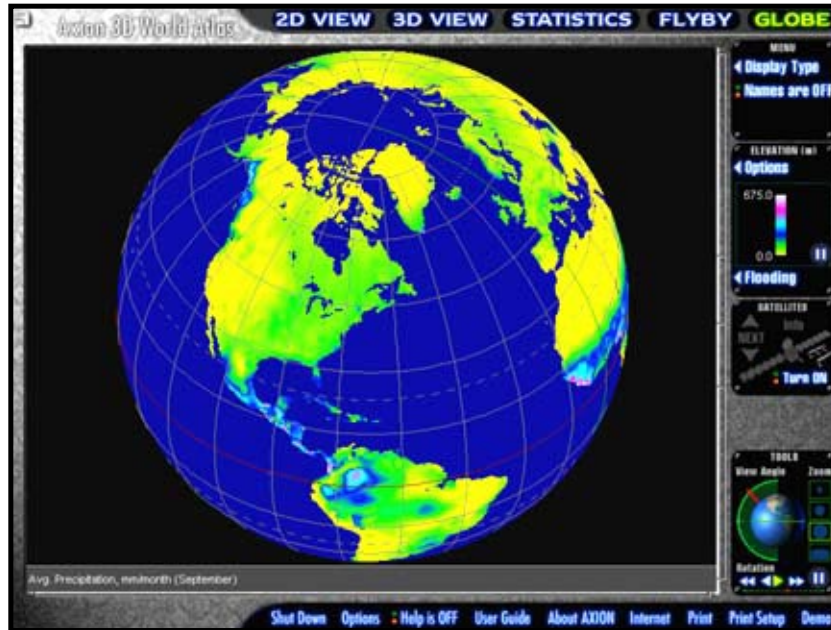


- ❶ **RESET BUTTON:** If you get the terrain model completely rotated, upside-down, or in some unknown orientation, you can use the reset button to return the perspective viewpoint to the default.
- ❷ **3D ZOOM TOOL:** The 2-pointed arrow at top right allows you to zoom closer or farther from the terrain model.
  - Click on the 'control' key, and hold the mouse button down, then drag the mouse up or down in order to adjust the view. Let go, the terrain model will then be redrawn at the new location.
- ❸ **PAN TOOL:** allows you pan the terrain model left, right, up, or down.
  - Click and drag with the mouse to adjust the position of the terrain model on screen.
- ❹ **3D ROTATION TOOL:** This tool allows you rotate the terrain, left or right, and tilt up or down.
  - As with the 3D zoom tool, click and hold the mouse on the sphere, then drag the mouse in the appropriate direction to adjust the location of the terrain model. Let go, and the terrain will be redrawn.

When done, click one of the other buttons at the top to go to another display mode, or press 'ESC' to return to 2D view.



This screen displays the data wrapped around a rotating globe. The menu items have the following actions:



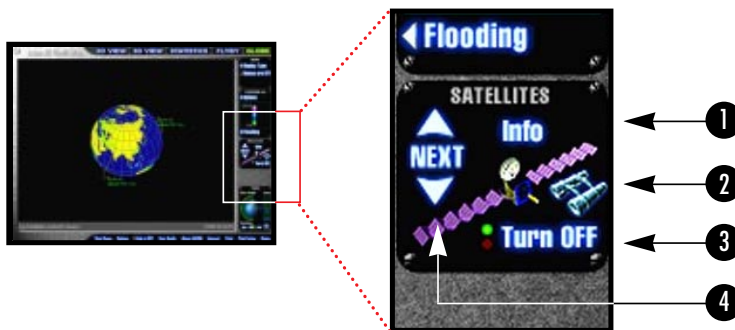
## DISPLAY TYPE

This option allows you to change the type of data being displayed on the globe. There are currently 8 different choices:

- SATELLITE IMAGERY:** Satellite imagery draped over the landscape
- SHADED ELEVATION:** Colored according to height above sea level
- SHADED RELIEF:** Grey shaded relief of the surface of the land
- LAND VEGETATION:** This shows the monthly changes in vegetation for an entire year
- OCEAN VEGETATION:** This shows the monthly changes in ocean vegetation (plankton) levels
- CLOUD COVER:** Shows the monthly average percentage of sunshine from 0 to 100 percent
- PRECIPITATION:** Shows the monthly average precipitation in millimeters per month
- TEMPERATURE:** Shows the monthly changes in temperature



## SATELLITES



- 1 INFO:** Shows in-depth information about each type of satellite. If there is text data available for the current satellite being drawn, the program automatically goes to the specific information for that family of satellites. If not, it gives you a list from which you can choose the family of satellites you are interested in. Embedded within some of the text files are hot links to automatically turn on the satellite orbital tracks for that particular family of satellites.
- 2 FIND SATELLITE:** If you want to know what satellites are overhead at a particular time and date from a location on the surface of the globe, you can find out with this function. Give the observer location in latitude longitude coordinates (from the 2D map) on the ground, and what day you are interested in, and the local time. The program will then search a database of over 8000 satellites to find out which of those would be visible within plus or minus 5 minutes from that specified time. You can then pick a particular satellite from the resulting list to see in what direction it passed overhead, and at what location in the sky it would be visible (elevation above the horizon, and azimuth, which is the angle clockwise from True North).
- 3 TURN ON/OFF:** This button toggles display of satellite orbital tracks on or off. The program displays groups of satellites of the same family (for example, all the Landsat satellites at one time, or all the GPS satellites). The orbital positions are real, and are calculated for the current day for a 24-hour period. A date and time indicator are shown at the lower right.

The position of each satellite is displayed along with its name and altitude above the surface of the earth. The program also displays a trail behind the satellite to give an idea of its movement and previous position.

The orbital data can be updated in order to ensure accuracy by using the 'update software' button on the options screen. The orbital data will be posted periodically along with other updates on Axion's website.

#### **4 NEXT/PREVIOUS:**

Switches to the next or previous family of satellites to display. There are about 14 groups provided with this version. We have also provided the orbital data for the Russian space station Mir as one of the satellite types for your interest.

#### **NAMES**

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This toggles the display of continent names on or off on the globe. The names show in every data type except the satellite imagery.

#### **OPTIONS**

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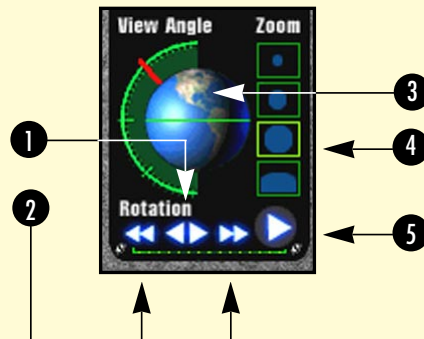
This button allows you to change the color scale for the shaded elevation display type. You can choose from eight different color scales. Once you choose the one you want, click on the close button to accept or press the ENTER key, or press 'ESC' to cancel.

#### **FLOODING**

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This allows you to see what would happen if the water level was changed on a global scale. Once you click on this button, the globe changes to show the shaded elevation data. You can click or drag the cursor on the color scale bar to change the water level. Once done, click the button again to turn flooding off, and you can then access any other function on the screen normally. You can specify an exact value to flood to (for example, 41 meters above sea level), and hit 'render' to see the result. When done, click the 'close panel' button or hit 'ESC'.

At lower right, there is a small panel labeled TOOLS with controls in it:



- ① **ROTATION DIRECTION ARROWS:** Toggle the rotation direction of the globe.
- ② **ROTATION SPEED ARROWS:** The double left/right arrows increase or decrease the rotation speed left or right. You can also use the left and right arrow keys on the keyboard.
- ③ **VIEW ANGLE:** Allows you to change the angle at which you view the globe.
- ④ **ZOOM LEVEL BUTTONS:** allow you change the size of the globe.
  - You can also use the + and - keys on the keyboard for the same purpose at any time. This is useful when you want to get in close to catch details or take a longer view to see the full satellite orbits.
- ⑤ **PAUSE/START BUTTON:** This button lets you stop or start the rotation of the globe without having to change the speed to zero.
  - If you are displaying one of the changing data sets, like vegetation or precipitation, a similar button appears beside the color scale to allow you to pause or start the changing seasonal data display regardless of whether the globe is rotating or not.
  - While paused, the months may be advanced incrementally by pressing the 'f' key.

**NOTE:** Also we have provided a utility which, when given your location on the ground and elevation above sea level, will make a table of elevation and azimuth values for each geosynchronous satellite visible from that location on the ground. It saves this information in a text file that can be printed. This information can then be used to align your satellite TV dish accurately, and is also useful for those interested in receiving weather satellite transmissions. You can access this function by hitting the F5 when in the GLOBE view.

This view allows you to go into a real-time flyby of the terrain data overlaid with the satellite imagery. Unlike most other programs, the path is not pre-calculated, so you can interactively fly over any area in the world you want.



When you first choose 'Flyby', you will be presented with a world map. Point your mouse to the location where you want to start flying and click the left mouse button. If you do not choose within 20 seconds, the default starting position will be the center of the current 2D zoom window.

The menu options have the following functions:

### DISPLAY OPTIONS

Lets you adjust how the terrain looks as you are flying over it:

**DISPLAY TYPES:** There are five different ways to draw the terrain. They range from the poorest quality (but fastest to draw) to best quality (slowest to draw). You can pick the best for your speed of machine and personal preference.

**LANDSCAPE FEATURES:** You can toggle off or on various optional features such as trees, texture mapping, sky background, fog, and moving clouds.

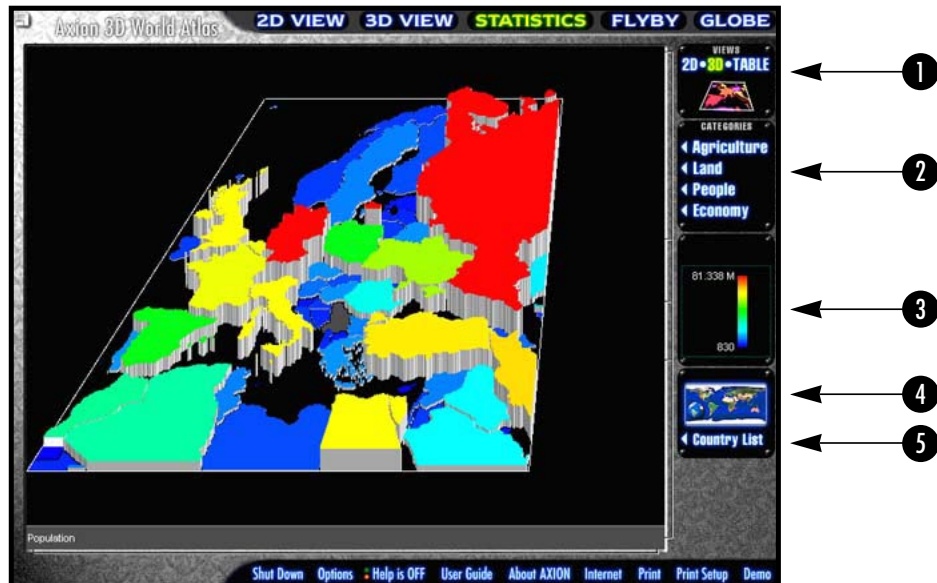
**CONTROLS:** If you have a joystick connected to your computer, you can decide whether you want to use it to control the direction and speed when flying over the terrain. You can also use the up and down cursor keys on the keyboard to increase or decrease speed, and the left and right cursor keys let you turn left or right. The page up/page down keys increase or decrease altitude above the ground. Please note that you have to calibrate your joystick so that it functions properly. You can do this under the Options screen accessible by clicking on the options button at the bottom of the screen. Pushing the joystick forward or back adjusts the speed, and pushing it left or right turns left or right.

**NAMES:** Toggles the display of city names on or off. As you fly over the terrain, city names will be displayed at the correct location with a little windsock to indicate the location on the ground.

You also can change the speed, altitude, and direction by using the controls on the lower right side of the screen:

- 1 **A SMALL REFERENCE MAP:** at center right that displays your position as a small red dot as you pass over the terrain. The map scrolls as you fly so that you can see interesting features that you may want to look at and change your course accordingly. The + and - buttons zoom in or out on the little reference map.
- 2 **ELEVATION:** above the curvature of the earth shows and adjusts the altitude of the spaceship. Click or drag the spaceship to adjust your height above ground.
- 3 **DIRECTION:** The red indicator on the edge of the spaceship controls the direction of flight. Click or drag around the edge of the spaceship to change the direction.
- 4 **THE BAR GRAPH:** shows the speed in forward or backward direction. Click or drag to adjust the speed in the direction you want. The line in the center of the speed indicator is STOP.
- 5 **LOCATION MAP:** Click to pick a new starting location.

This is where you can display statistical data for different countries of the world on a wide range of topics.



When you click on the Statistics button at the top of the screen, the first thing you will see is a map of the world. As the mouse passes over each continent or area, it will highlight. Once you decide which area to look at, click on it with the mouse.

- ❶ **DISPLAY TYPE:** Statistics can be displayed in different ways. There are over 30 different variables for 261 countries and regions which can be shown in tabular format. They can also be displayed as a color coded 2-dimensional map for any one particular variable, or as a 3-dimensional bar graph.

At top right, there are three buttons which allow you to switch between the different views for whichever area you chose on the world map. The program defaults to a display of the 2D color-coded map of population values.

- 2 STATISTICAL CATEGORIES:** The four buttons along the right-hand side allow you to choose what variable you want to display. The different variables are sorted into 4 general categories in order to help you find them more easily. Simply click on the menu item you want, pick the appropriate variable, and then hit the 'close' button on the pullout window to accept, or 'ESC' to cancel. The map or table will then be updated.

**NOTE:** When you are displaying the data in tabular form, only those countries which are within the area that you chose on the map of the world are shown. If the list is longer than one page, use the page up/page down or up-arrow/down-arrow keys to scroll through the list.

When you are choosing variables, please note there is a maximum of 4 columns of information showing at any one time. If you keep adding variables, only the most recently ones chosen will be shown.

If you want to import the statistical data from the table into a spreadsheet program such as Excel, the program automatically copies the tabular data into the Windows clipboard every time the table is shown. Simply open up your spreadsheet program and use the paste function to transfer the values into the spreadsheet.

- 3 COLOR SCALE:** Statistical information is shown in reference to the color scale based on its value.
- 4** You can get back to the map of the world where you can choose a different area by clicking on the world map button at the lower right of the screen. To go to any other view, simply hit one of the other buttons along the top, or press 'ESC' to go back to the 2D view.
- 5 COUNTRY LIST:** gives a list of all the countries in the world. From there, you can choose any country in the list and see detailed information about it such as its flag, economic data, political information, defense spending, etc. The text data for each country also contains a hot link so that you can zoom directly on the 2D view to see where the country is located.

**NOTE:** Yearly updates for statistical information can be accessed at our website as soon as the data is available. Please visit our website <http://www.axionspatial.com> for more information.

- If you do not know how to change your video card resolution, right click on the Windows desktop with the mouse, and select 'Properties' from the menu. Click on the 'Settings' tab. You should see a list of available color depths (8-bit, 16-bit, etc.). You should also see a list or scroll bar to change the resolution of the screen. If the screen resolution is 800x600 or higher, make sure you also change the font to 'small fonts'.
- The graphics will look better at 800x600 mode than at 640x480 mode. Also, installing support for 640x480 mode takes up more hard disk space, so if you don't need it you may choose not to install it during the setup process.
- With older monitors, changing the resolution to 800x600 may cause the image to break up into static. This is due to the fact that the refresh rate on most video cards defaults to 60Hz rather than 56Hz. Use the display properties to change the refresh rate for 800x600 mode down to 56 Hz, and the problem should be solved. If you cannot get back into Windows 95 because you cannot see the screen anymore, reboot, hit the F8 key when you see the 'Starting Windows 95...' prompt, and you will get a menu that gives you several boot options. Choose 'Safe Mode', and you will be able to change your screen resolution back to 640x480 under display properties. Then reboot back into normal Windows 95 and you should be able to see the screen again.
- If you cannot change your video display to higher than 256 colors, it is usually a good idea to download the proper video drivers for your video card off the World Wide Web. Each manufacturer constantly updates the drivers for their cards in order to fix bugs and improve performance. If you are unsure of how to install a new driver, please consult qualified personnel. You can usually find the latest drivers by using any of the Internet search engines available.



- If your CD-ROM drive seems slow, It could be due to several problems. You could be using a double-speed drive (we recommend a 4x or faster). SCSI drives are also sometimes slower to access files than IDE drives. Or, you could check that caching is enabled for your drive. Click on the Start menu at bottom left of the screen, then 'Settings', then 'Control Panel', then 'System', then 'Performance', then 'File System', then 'CD-ROM'. Choose the appropriate setting under 'Optimize pattern access' for your speed of drive (2x, 4x, ...). Also make sure cache size is set to 'large'. You should see a definite speed improvement.
- Another speed-up tip is that if you have anti-virus software installed such as McAfee, disable it (temporarily!) because it slows down access time to files on the CD-ROM drive. Don't forget to turn it back on later.
- You can find out how much virtual memory you have available on your system by going to Start Menu/Settings/Control Panel/System/Performance/Virtual Memory. Under the 'hard disk' field, it should tell you what drive the swap file is on, and how much space there is left. If there is less than 20 or 30 MB, free up some space on that drive by removing unnecessary files.
- If your printer runs out of memory while printing, click on the Properties tab for your printer, and adjust the image quality under 'Graphics', or adjust the settings for 'Printer Memory Tracking' under 'Device Options'.

**For technical support information, our e-mail address is:**  
axiontec@axionspatial.com

**For program updates and other information, our web site is:**  
<http://www.axionspatial.com>

**AXION SPATIAL IMAGING LTD.**  
**Suite 700, 9925 - 109 Street**  
**Edmonton, Alberta**  
**Canada T5K 2J8**

## AXION 3D WORLD ATLAS™

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e-mail: [axion@axionspatial.com](mailto:axion@axionspatial.com) web: <http://www.axionspatial.com>

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## DEVELOPMENT

---

**Executive Producer:** Ian Basford

**Senior Programmer:** Keith Young

**Interface Design:** Ian Davis

**Print Design:** Diane Jensen

**Additional Programming:** Oleg Veryovka, Ken Tettersington, Halim El Khalidy,

**Graphics Design Team:** Dwight Allott, Ian Davis, Steven Hoose, Diane Jensen

**Data Processing:** Keith Young, Oleg Veryovka, Ken Tettersington, Halim El Khalidy, Xiaoping Qu, Steven Hoose, Dwight Allott, Ian Davis, Ian Basford

**Marketing:** Grace Burke

**Product Testing:** Wiley Garvin

## DATA SOURCES

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**WorldSat International Inc. and Jim Knighton:** 1-km satellite imagery

**United States Geological Survey:** 1-km elevation data

**Rutgers University/U.S. Army Construction Engineering Research Laboratory:** Populated place names

**Central Intelligence Agency:** Statistical data (CIA Fact Book); World Data Bank II (rivers and lakes)

**NOAA National Geophysical Data Centre:** Olson World Ecosystem Classes Version 1.4D, World Magnetic Model'90; ETOPO-5 (data announcement 88-MGG-02, Digital Relief of the Surface of the Earth); Generalized Vegetation Index; Leemans and Cramer Precipitation, Temperature and Cloudiness indexes

**National Imagery and Mapping Agency:** Digital Chart of the World

**National Space Science Data Center (Greenbelt, MD):** Satellite descriptions

**NASA:** Satellite data

**Space Camp Canada (Laval, PQ):** Satellite descriptions

**Alberta Science and Technology Leadership Awards Foundation:** Astech logo

**Ted Gruber Software:** Fastgraph

## ACKNOWLEDGEMENTS

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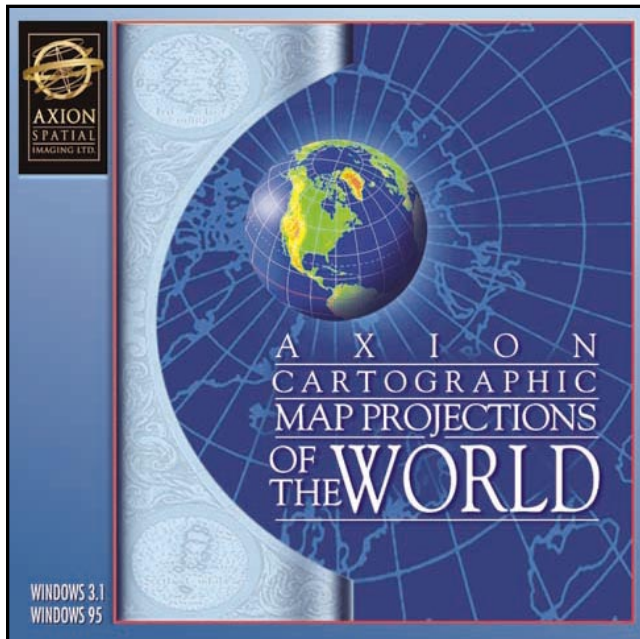
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MADE IN CANADA

# AXION CARTOGRAPHIC MAP PROJECTIONS OF THE WORLD

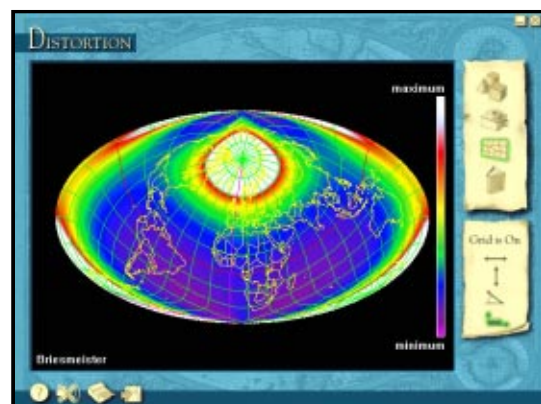
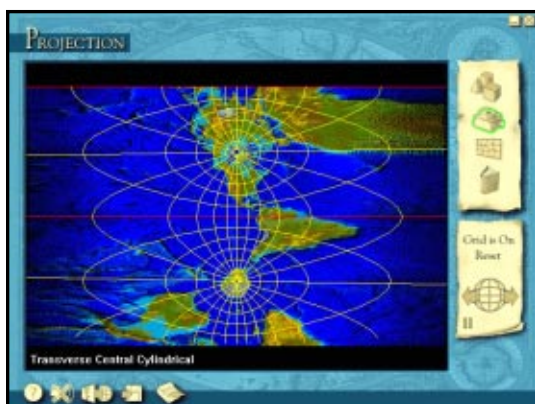


This CD-ROM has been designed with cartographers and map lovers in mind. It allows the user to view a global image in 76 different map projections. These projections have been chosen for their popularity and their interesting appearances and features. Each projection displays distortions according to four fields: longitude, latitude, area and angle.

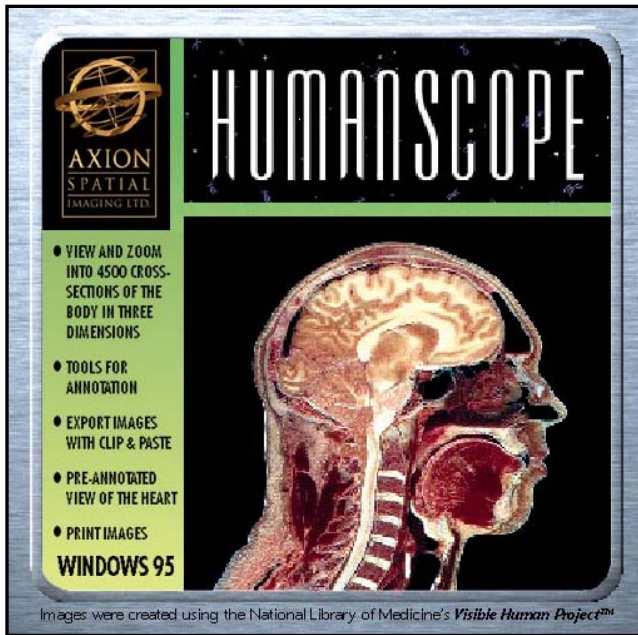
An accompanying database provides detailed information of each projection's classification, graticule, scale, distortion characteristics, formulas, and other features. Users also have the opportunity to import their own images and textures and have them mapped on the various projections.

This deluxe version includes a Map Projections screen saver program for Windows 95 and a spectacular full color poster (34"x22") of the 76 map projections.

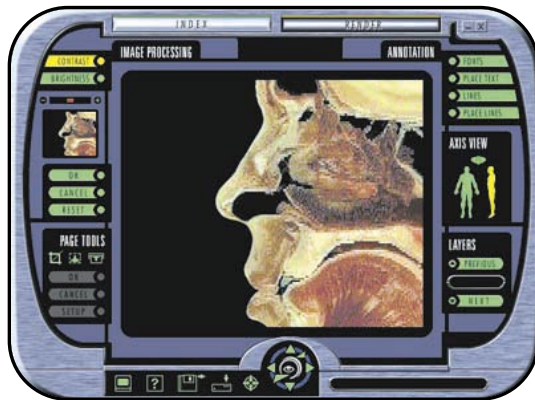
**WINDOWS 3.1**  
**WINDOWS 95**



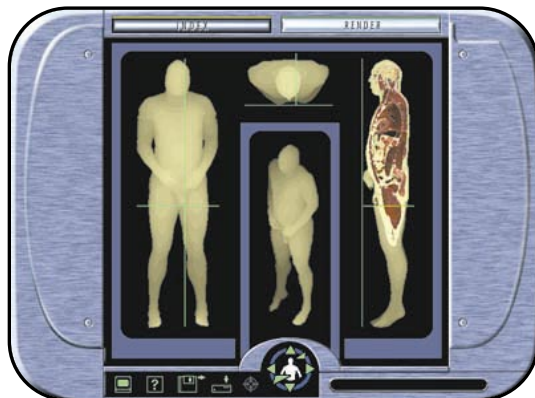
## HUMANSCOPE - MALE



HUMANSCOPE - MALE puts a powerful tool for exploring the human body into the hands of students, educators and enthusiasts. This unique CD-ROM is an amazing visualization of a male human body in three-dimensions. The 1871 digitized 24-bit (1 mm thick by 1/3 mm pixel resolution) color cross sections of the frozen cadaver are from the Visible Human Project™ conducted by the National Library of Medicine. Each slice was photographed using conventional photography as well as computed tomography and magnetic resonance.



Axion has compressed this data onto a CD-ROM, and developed a user friendly interface to provide an excellent teaching resource to accompany current anatomy reference textbooks, and human biology curriculum.

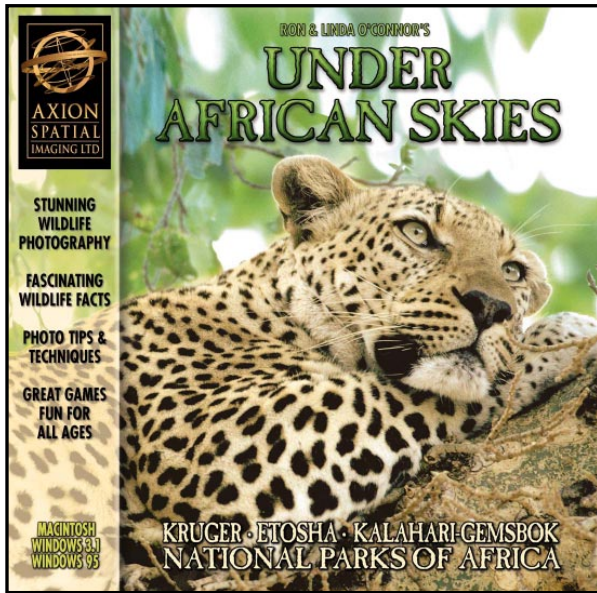


We also offer educators networking capabilities, additional annotation and quiz functions as well as full technical support as part of our educational licensing agreement.

### WINDOWS 95



# UNDER AFRICAN SKIES

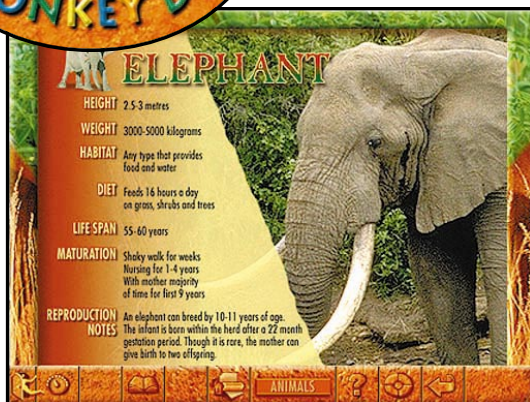
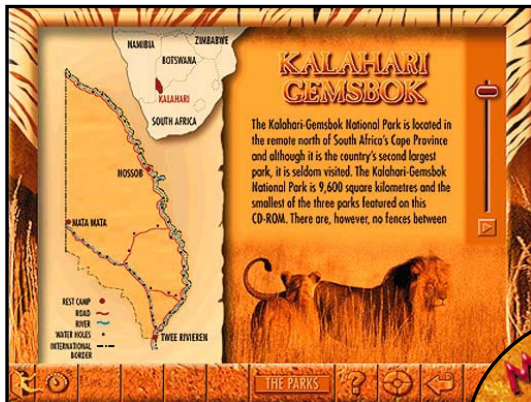


**UNDER AFRICAN SKIES** takes you on a pictorial tour of three of the magnificent national parks of southern Africa: the Kruger, Etosha and Kalahari-Gemsbok. Three years of exploration and photography by renowned photo-journalists Ron and Linda O'Connor, are brought to life in this one of a kind CD.

These parks have always been a mecca for wildlife lovers because of their diversity and concentrated animal populations. Now, for the first time, users can take an interactive safari through each of these parks – experiencing the sights and sounds of animals and birds in their natural habitats.

Included are two games that players of any age can enjoy. Photographers will find useful nature photography tips on film, lenses, cameras, exposures and image cropping – straight from the professionals.

**UNDER AFRICAN SKIES** is the ideal companion for students, nature enthusiasts, wildlife photographers, and for those eager to go on safari, without leaving their homes.



**MACINTOSH  
WINDOWS 3.1  
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