

# #1#2#3#4#5 *Help for WinStars 2.0*

5

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Introduction to WinStars

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## About translation

## 7<sup>#</sup> *Introduction to WinStars*



5

10 Who has not been dazzled and intrigued when lifting his gaze to the celestial vault on a clear, dark night? The spectacle of those fleeting and distant lights racks both our eyes and our brains. Is this star farther away than that one, or is it simply less luminous? Is that little blot, barely visible over there, a nebula, a star cluster or a galaxy?

15 Have you ever asked yourself where the Voyager space probes are? What does Saturn look like in Titan's sky or, better yet, what does the rise of Jupiter look like from the surface of Europa? WinStars can help you find the answers to these questions.

20 WinStars uses the latest 3D technology to show the objects of our solar system in a realistic manner. Thus, it is possible to move from one planet to another, to follow a space probe on its long voyage or to observe a celestial event from a place to which you could never go. The use of the *Jet Propulsion Laboratory's DE 404* planetary theories allows us to have a precise representation of the events displayed.

25 *Here are the chief characteristics of the software:*

- a database of 2,500,000 stars;
- a catalogue of 10,000 nebulae, galaxies and star clusters;
- a direction of observation which is easily controlled by a mouse and in real time;
- a precise representation of the observable sky from a point on the earth's surface on a given date;
- a 3D interface to give more realism to celestial objects;

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6<sup>S</sup> Introduction to WinStars

7<sup>#</sup> menu\_presentation

- a calculation of notable astronomical phenomena visible from an observation point on the earth;
- detailed information about each object;
- a calculation of the positions of the principal satellites of Mars, Jupiter, Saturn, Uranus and Neptune, of comets and of asteroids;
- an outline of the celestial equator, the ecliptic, and a grid of azimuthal and equatorial coordinates;
- a 3D outline of the planetary orbits
- Internet resources are also available: a display of information on comets and asteroids, querying of DSS (Digitized Sky Survey) servers to obtain a photograph of that portion of the sky being displayed by the program, a notice of the visibility of artificial satellites, etc.
- automatic updates;
- a program developed entirely in C++

### *Minimum system requirements*

- a 1GHz CPU
- Windows 98/ME/2000/XP
- DirectX version 9.0c
- 128 MB of RAM
- 100 MB of hard drive space
- a 3D video card with at least 65535 colours (16 bits)

## #8<sup>9</sup> \$<sup>10</sup> *File menu*

<u>O</u> pen	Open a configuration file.
<u>S</u> ave	Save a configuration file.
<u>P</u> rint	Print a map.
<u>E</u> xit	Exit WinStars.

## #<sup>11</sup> *Observation menu*

<a href="#"><u>Time and location</u></a>	Enter the date and the location of the observation.
<a href="#"><u>About solar system</u></a>	Here you can find all information about the planets, the Moon and the Sun.
<a href="#"><u>Searching for object</u></a>	Use this function to find a star, a planet or a deep sky object.
<a href="#"><u>Looking in a direction</u></a>	Enter equatorial coordinates. Now, you can look in that direction.
<a href="#"><u>Eyepiece</u></a>	Add an eyepiece field of view circle on the map.
<a href="#"><u>Quickfinder</u></a>	Add quickfinder circles on the map.
<a href="#"><u>Telrad</u></a>	Add Telrad circles on the map.
<a href="#"><u>Animation</u></a>	Moving the time forward or backward

## #<sup>12</sup> *Calculation menu*

- [Horizontal coordinates of an object](#) Computes azimuth and altitude of an object according to date, time and location.
- [Sidereal time](#) Shows Julian day number, sidereal time and Universal Time.
- [Ephemeris](#) Shows all prominent astronomic events observable from your location .

## #<sup>13</sup> *Internet menu*

<a href="#"><u>Calling a DSS server</u></a>	To obtain pictures from DSS (Digitized Sky Survey) servers.
<a href="#"><u>Visibility of artificial satellites</u></a>	Computes times of artificial satellites visibility.
<a href="#"><u>Iridium flares</u></a>	Date and time of Iridium satellites flares.
<a href="#"><u>Weather reports</u></a>	About meteorology...
<a href="#"><u>Update comets' elements</u></a>	For more accurate predictions concerning comets.
<a href="#"><u>Update asteroids' elements</u></a>	For more accurate predictions concerning asteroids.
<a href="#"><u>Update WinStars</u></a>	Eventual new versions of WinStars.
<a href="#"><u>Visit WinStars homepage</u></a>	For information about WinStars.

## #<sup>14</sup> *Telescope menu*

### Configuration

Use this box for configure your telescope.

### Open connection

Initialize your telescope and use it with WinStars.

### Close connection

Close the connection between the scope and WinStars.

## #<sup>15</sup> *Options menu*

[WinStars configuration...](#)

Choose elements to display, the appearance of the charts, and activated catalogues

[Fonts and colors](#)

Change fonts and colors used by WinStars.

[Zoom setup](#)

Zoom configuration.

[Information about catalogues](#)

Information about catalogues used by WinStars.

## #<sup>16</sup> *View menu*

<u>Tools bar</u>	Show/hide tools bar.
<u>Status bar</u>	Show/hide status bar.
<u>Full screen mode</u>	Hides tools bars, status bar, and title of the WinStars' window.
<u>Night vision</u>	When using WinStars in a dark environment.

#<sup>17</sup>Help ? menu

Help topics      Help index of WinStars program.

About  
WinStars      Shows version number of the program.

## #<sup>18</sup>K<sup>19</sup> \$<sup>20</sup> **New command (File menu)**

Use this command to create a new document in WinStars. Select the type of new file you want to create in the File New dialog box.

5 You can open an existing document with the Open command.

### **Shortcuts**

Toolbar: {bmc filenew.bmp}

Keys: CTRL+N

10

---

18# HID\_FILE\_NEW

19<sup>K</sup> files: managing

20<sup>S</sup> File New command

## #<sup>21</sup> File New dialog box

## #<sup>22</sup>K<sup>23</sup> \$<sup>24</sup> **Open command (File menu)**

5 Use this command to open an existing document in a new window. You can open multiple documents at once. Use the Window menu to switch among the multiple open documents. See Window 1, 2, ... command.

You can create new documents with the New command.

### **Shortcuts**

10     Toolbar: {bmc fileopen.bmp}  
       Keys:    CTRL+O

---

22# HID\_FILE\_OPEN

23<sup>K</sup> files: managing

24<sup>S</sup> File Open command

## #<sup>25</sup>File Open dialog box

The following options allow you to specify which file to open:

### File Name

- 5      Type or select the filename you want to open. This box lists files with the extension you select in the List Files of Type box.

### List Files of Type

Select the type of file you want to open:  
<< List your application's file types here. >>

### 10      Drives

Select the drive in which WinStars stores the file that you want to open.

### Directories

Select the directory in which WinStars stores the file that you want to open.

### Network...

- 15      Choose this button to connect to a network location, assigning it a new drive letter.

## #<sup>26</sup>K<sup>27</sup> \$<sup>28</sup> **Close command (File menu)**

5 Use this command to close all windows containing the active document. WinStars suggests that you save changes to your document before you close it. If you close a document without saving, you lose all changes made since the last time you saved it. Before closing an untitled document, WinStars displays the Save As dialog box and suggests that you name and save the document.

10 You can also close a document by using the Close icon on the document's window, as shown below:  
{bml scmenu.bmp}

---

26# HID\_FILE\_CLOSE  
27<sup>K</sup> files: managing  
28<sup>S</sup> File Close command

## #<sup>29</sup>K<sup>30</sup> \$<sup>31</sup> **Save command (File menu)**

5 Use this command to save the active document to its current name and directory. When you save a document for the first time, WinStars displays the Save As dialog box so you can name your document. If you want to change the name and directory of an existing document before you save it, choose the Save As command.

### **Shortcuts**

10     Toolbar: {bmc filesave.bmp}  
      Keys:    CTRL+S

---

29# HID\_FILE\_SAVE

30<sup>K</sup> files: managing

31<sup>S</sup> File Save command

#<sup>32</sup>K<sup>33</sup> \$<sup>34</sup> **Save As command (File menu)**

Use this command to save and name the active document. WinStars displays the Save As dialog box so you can name your document.

5

To save a document with its existing name and directory, use the Save command.

---

32# HID\_FILE\_SAVE\_AS

33<sup>K</sup> files: managing

34<sup>S</sup> File Save As command

### #<sup>35</sup>Send command (File menu)

5 Use this command to send the active document through electronic mail. This command presents a mail window with the active document attached to it. You may then fill out the To: field, Subject: field, etc., and add text to the body of the message if you wish. When you are finished you may click the "Send" button to send the message.

## #<sup>36</sup>File Save As dialog box

The following options allow you to specify the name and location of the file you're about to save:

5 **File Name**

Type a new filename to save a document with a different name. WinStars adds the extension you specify in the Save File As Type box.

**Drives**

Select the drive in which you want to store the document.

10 **Directories**

Select the directory in which you want to store the document.

**Network...**

Choose this button to connect to a network location, assigning it a new drive letter.

#<sup>37</sup> K<sup>38</sup> \$<sup>39</sup> **1, 2, 3, 4 command (File menu)**

Use the numbers and filenames listed at the bottom of the File menu to open the last four documents you closed. Choose the number that corresponds with the document you want to open.

5

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37# HID\_FILE\_MRU\_FILE1  
38<sup>K</sup> files: managing  
39<sup>S</sup> File 1, 2, 3, 4 command

## #<sup>40</sup>K<sup>41</sup> \$<sup>42</sup> **Exit command (File menu)**

5 Use this command to end your WinStars session. You can also use the Close command on the application Control menu. WinStars prompts you to save documents with unsaved changes.

### **Shortcuts**

10     Mouse: Double-click the application's Control menu button.  
          {bmc appexit.bmp}  
          Keys: ALT+F4

---

40# HID\_APP\_EXIT  
41<sup>K</sup> exit  
42<sup>S</sup> File Exit command

## #<sup>43</sup>Undo/Can't Undo command (Edit menu)

<< Your application's user interface for Undo may differ from the one described below. Modify this help text accordingly. >>

5

Use this command to reverse the last editing action, if possible. The name of the command changes, depending on what the last action was. The Undo command changes to Can't Undo on the menu if you cannot reverse your last action.

10

### Shortcuts

Toolbar: {bmc editundo.bmp}

Keys: CTRL+Z or  
ALT-BACKSPACE

15

**#<sup>44</sup> Redo command (Edit menu)**

## #<sup>45</sup> Cut command (Edit menu)

Use this command to remove the currently selected data from the document and put it on the clipboard. This command is unavailable if there is no data currently selected.

5

Cutting data to the clipboard replaces the contents previously stored there.

### Shortcuts

Toolbar: {bmc editcut.bmp}

10 Keys: CTRL+X

## #<sup>46</sup> Copy command (Edit menu)

Use this command to copy selected data onto the clipboard. This command is unavailable if there is no data currently selected.

5

Copying data to the clipboard replaces the contents previously stored there.

### Shortcuts

Toolbar: {bmc editcopy.bmp}

10

Keys: CTRL+C

## #<sup>47</sup>Paste command (Edit menu)

Use this command to insert a copy of the clipboard contents at the insertion point. This command is unavailable if the clipboard is empty.

5

### Shortcuts

Toolbar: {bmc editpast.bmp}

Keys: CTRL+V

10

<sup>48</sup>#<sup>49</sup>#<sup>50</sup>#<sup>51</sup>K <sup>52</sup>\$ **Toolbar command (View menu)**

5 Use this command to display and hide the Toolbar, which includes buttons for some of the most common commands in WinStars, such as File Open. A check mark appears next to the menu item when the Toolbar is displayed.

See Toolbar for help on using the toolbar.

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48# HID\_AFFICHAGE\_BARREDOUTILSGAUCHE

49# HID\_AFFICHAGE\_BARREDOUTILSDROITE

50# HID\_VIEW\_TOOLBAR

51K toolbar

5 52\$ View Toolbar command

#<sup>53</sup>K<sup>54</sup> \$<sup>55</sup> **Toolbar**  
{bml hiptbar.bmp}

5 The toolbar is displayed across the top of the application window, below the menu bar.  
The toolbar provides quick mouse access to many tools used in WinStars,

To hide or display the Toolbar, choose Toolbar from the View menu (ALT, V, T).

10 << Add or remove toolbar buttons from the list below according to which ones your  
application offers. >>

**Click To**

---

{bmc filenew.bmp} Open a new document.

15 {bmc fileopen.bmp} Open an existing document. WinStars displays the Open dialog  
box, in which you can locate and open the desired file.

{bmc filesave.bmp} Save the active document or template with its current name. If you  
20 have not named the document, WinStars displays the Save As dialog box.

{bmc fileprnt.bmp} Print the active document.

{bmc editcut.bmp} Remove selected data from the document and stores it on the  
25 clipboard.

{bmc editcopy.bmp} Copy the selection to the clipboard.

{bmc editpast.bmp} Insert the contents of the clipboard at the insertion point.

30 {bmc editundo.bmp} Reverse the last editing. Note: You cannot undo some actions.

{bmc recfirst.bmp} Go to the first record in the current selection.

{bmc recprev.bmp} Go to the previous record in the current selection.

35 {bmc recnext.bmp} Go to the next record in the current selection.

{bmc reclast.bmp} Go to the last record in the current selection.

40

---

53# AFX\_HIDW\_TOOLBAR  
54<sup>K</sup> toolbar  
55<sup>S</sup> toolbar

**#<sup>56</sup>K<sup>57</sup> \$<sup>58</sup> Status Bar command (View menu)**

5 Use this command to display and hide the Status Bar, which describes the action to be executed by the selected menu item or depressed toolbar button, and keyboard latch state. A check mark appears next to the menu item when the Status Bar is displayed.

See Status Bar for help on using the status bar.

---

56# HID\_VIEW\_STATUS\_BAR

57<sup>K</sup> status bar

58<sup>S</sup> View Status Bar Command

#<sup>59</sup>K<sup>60</sup> \$<sup>61</sup> **Status Bar**  
{bml hipsbar.bmp}

5 The status bar is displayed at the bottom of the WinStars window. To display or hide the status bar, use the Status Bar command in the View menu.

10 The left area of the status bar describes actions of menu items as you use the arrow keys to navigate through menus. This area similarly shows messages that describe the actions of toolbar buttons as you depress them, before releasing them. If after viewing the description of the toolbar button command you wish not to execute the command, then release the mouse button while the pointer is off the toolbar button.

The right areas of the status bar indicate which of the following keys are latched down:

15

<b>Indicator</b>	<b>Description</b>
CAP	The Caps Lock key is latched down.
NUM	The Num Lock key is latched down.
SCRL	The Scroll Lock key is latched down.

---

59# AFX\_HIDW\_STATUS\_BAR  
60<sup>K</sup> status bar  
61<sup>S</sup> status bar

## #<sup>62</sup> New command (Window menu)

5 Use this command to open a new window with the same contents as the active window. You can open multiple document windows to display different parts or views of a document at the same time. If you change the contents in one window, all other windows containing the same document reflect those changes. When you open a new window, it becomes the active window and is displayed on top of all other open windows.

10

**#<sup>63</sup> Cascade command (Window menu)**

Use this command to arrange multiple opened windows in an overlapped fashion.

5

---

63# HID\_WINDOW\_CASCADE

**#<sup>64</sup>Tile command (Window menu)**

Use this command to arrange multiple opened windows in a non-overlapped fashion.

5

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<sup>64</sup># HID\_WINDOW\_TILE

**#<sup>65</sup>Tile Horizontal command (Window menu)**

Use this command to vertically arrange multiple opened windows in a non-overlapped fashion.

5

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65# HID\_WINDOW\_TILE\_HORZ

## #<sup>66</sup>Tile Vertical command (Window menu)

Use this command to arrange multiple opened windows side by side.

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<sup>66</sup># HID\_WINDOW\_TILE\_VERT

## #<sup>67</sup>Window Arrange Icons Command

5 Use this command to arrange the icons for minimized windows at the bottom of the main window. If there is an open document window at the bottom of the main window, then some or all of the icons may not be visible because they will be underneath this document window.

---

<sup>67</sup># HID\_WINDOW\_ARRANGE

## #<sup>68</sup> Split Command (Window menu)

5 Use this command to split the active window into panes. You may then use the mouse or the keyboard arrows to move the splitter bars. When you are finished, press the mouse button or enter to leave the splitter bars in their new location. Pressing escape keeps the splitter bars in their original location.

---

68# HID\_WINDOW\_SPLIT

**#<sup>69</sup>1, 2, ... command (Window menu)**

5 WinStars displays a list of currently open document windows at the bottom of the Window menu. A check mark appears in front of the document name of the active window. Choose a document from this list to make its window active.

---

<sup>69</sup># HID\_WINDOW\_ALL

## #<sup>70</sup>Index command (Help menu)

5 Use this command to display the opening screen of Help. From the opening screen, you can jump to step-by-step instructions for using WinStars and various types of reference information.

Once you open Help, you can click the Contents button whenever you want to return to the opening screen.

10

## **#<sup>71</sup>Using Help command (Help menu)**

Use this command for instructions about using Help.

**#<sup>72</sup>About command (Help menu)**

Use this command to display the copyright notice and version number of your copy of WinStars.

5

#<sup>73</sup>\$<sup>74</sup> **Context Help command**  
{bml curhelp.bmp}

5 Use the Context Help command to obtain help on some portion of WinStars. When you choose the Toolbar's Context Help button, the mouse pointer will change to an arrow and question mark. Then click somewhere in the WinStars window, such as another Toolbar button. The Help topic will be shown for the item you clicked.

**Shortcut**

10 Keys: SHIFT+F1

---

73# HID\_CONTEXT\_HELP

74\$ Help Using Help Command

## #<sup>75</sup>Title Bar

The title bar is located along the top of a window. It contains the name of the application and document.

5

To move the window, drag the title bar. Note: You can also move dialog boxes by dragging their title bars.

A title bar may contain the following elements:

- 10 {bmc bullet.bmp} Application Control-menu button
- {bmc bullet.bmp} Document Control-menu button
- {bmc bullet.bmp} Maximize button
- {bmc bullet.bmp} Minimize button
- {bmc bullet.bmp} Name of the application
- 15 {bmc bullet.bmp} Name of the document
- {bmc bullet.bmp} Restore button

## #<sup>76</sup> Scroll bars

5 Displayed at the right and bottom edges of the document window. The scroll boxes inside the scroll bars indicate your vertical and horizontal location in the document. You can use the mouse to scroll to other parts of the document.

<< Describe the actions of the various parts of the scrollbar, according to how they behave in your application. >>

## #<sup>77</sup>Size command (System menu)

Use this command to display a four-headed arrow so you can size the active window with the arrow keys.

5 {bml curarw4.bmp}

After the pointer changes to the four-headed arrow:

1. Press one of the DIRECTION keys (left, right, up, or down arrow key) to move the pointer to the border you want to move.
- 10 2. Press a DIRECTION key to move the border.
3. Press ENTER when the window is the size you want.

Note: This command is unavailable if you maximize the window.

## 15 **Shortcut**

Mouse: Drag the size bars at the corners or edges of the window.

## #<sup>78</sup> Move command (Control menu)

Use this command to display a four-headed arrow so you can move the active window or dialog box with the arrow keys.

5 {bmc curarw4.bmp}

Note: This command is unavailable if you maximize the window.

### Shortcut

10 Keys: CTRL+F7

## #<sup>79</sup>\$<sup>80</sup> Minimize command (application Control menu)

Use this command to reduce the WinStars window to an icon.

- 5 **Shortcut**
- Mouse: Click the minimize icon {bmc scmin.bmp} on the title bar.
  - Keys: ALT+F9

---

79# HID\_SC\_MINIMIZE

80\$ System Minimize Command

## #<sup>81</sup> Maximize command (System menu)

Use this command to enlarge the active window to fill the available space.

5

### Shortcut

Mouse: Click the maximize icon {bmc scmax.bmp} on the title bar; or double-click the title bar.

Keys: CTRL+F10 enlarges a document window.

10

---

<sup>81</sup># HID\_SC\_MAXIMIZE

## #<sup>82</sup>Next Window command (document Control menu)

Use this command to switch to the next open document window. WinStars determines which window is next according to the order in which you opened the windows.

5

### Shortcut

Keys: CTRL+F6

### #<sup>83</sup>Previous Window command (document Control menu)

Use this command to switch to the previous open document window. WinStars determines which window is previous according to the order in which you opened the windows.

5

#### **Shortcut**

Keys: SHIFT+CTRL+F6

10

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<sup>83</sup># HID\_SC\_PREVWINDOW

## #<sup>84</sup> Close command (Control menus)

Use this command to close the active window or dialog box.

- 5 Double-clicking a Control-menu box is the same as choosing the Close command.  
{bml appexit.bmp}

10 Note: If you have multiple windows open for a single document, the Close command on the document Control menu closes only one window at a time. You can close all windows at once with the Close command on the File menu.

### Shortcuts

Keys: CTRL+F4 closes a document window  
ALT+F4 closes the window or dialog box

15

## #<sup>85</sup> Restore command (Control menu)

Use this command to return the active window to its size and position before you chose the Maximize or Minimize command.

5

## #<sup>86</sup> Switch to command (application Control menu)

Use this command to display a list of all open applications. Use this "Task List" to switch to or close an application on the list.

5

### Shortcut

Keys: CTRL+ESC

### Dialog Box Options

10 When you choose the Switch To command, you will be presented with a dialog box with the following options:

#### Task List

Select the application you want to switch to or close.

#### Switch To

15 Makes the selected application active.

#### End Task

Closes the selected application.

#### Cancel

Closes the Task List box.

20

#### Cascade

Arranges open applications so they overlap and you can see each title bar. This option does not affect applications reduced to icons.

#### Tile

25 Arranges open applications into windows that do not overlap. This option does not affect applications reduced to icons.

#### Arrange Icons

Arranges the icons of all minimized applications across the bottom of the screen.

#<sup>87</sup>\$<sup>88</sup> **Ruler command (View menu)**

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87# HID\_VIEW\_RULER  
88<sup>S</sup> View Ruler Command

#<sup>89</sup>\$<sup>90</sup> Choose Font dialog box

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89# AFX\_HIDD\_FONT  
90\$ Choose Font Dialog

#<sup>91</sup>\$<sup>92</sup> Choose Color dialog box

---

91# AFX\_HIDD\_COLOR  
92\$ Choose Color Dialog

#<sup>93</sup>\$<sup>94</sup> **Find command (Edit menu)**

---

93# HID\_EDIT\_FIND  
94\$ Edit Find Command

#<sup>95</sup>\$<sup>96</sup> Find dialog box

---

95# AFX\_HIDD\_FIND  
96\$ Find Dialog

**#<sup>97</sup> \$<sup>98</sup> Replace command (Edit menu)**

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97# HID\_EDIT\_REPLACE  
98\$ Edit Replace Command

#<sup>99</sup>\$<sup>100</sup> **Replace dialog box**

---

99# AFX\_HIDD\_REPLACE  
100\$ Replace Dialog

#<sup>101</sup>\$<sup>102</sup>**Repeat command (Edit menu)**

Use this command to repeat the last editing command carried out. The Repeat menu item changes to Can't Repeat if you cannot repeat your last action.

5

**Shortcut**

Key: F4

---

101# HID\_EDIT\_REPEAT  
102\$ Edit Repeat Command

#<sup>103</sup>\$<sup>104</sup> **Clear command (Edit menu)**

---

103# HID\_EDIT\_CLEAR  
104\$ Edit Clear Command

#<sup>105</sup>\$<sup>106</sup> **Clear All command (Edit menu)**

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105# HID\_EDIT\_CLEAR\_ALL  
106\$ Edit Clear All

#<sup>107</sup> \$<sup>108</sup> **Next Pane**

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107# HID\_NEXT\_PANE  
108\$ Next Pane Command

#<sup>109</sup>\$<sup>110</sup> **Prev Pane**

---

109# HID\_PREV\_PANE  
110\$ Prev Pane Command

## #<sup>111</sup> Modifying the Document

**#<sup>112</sup> No Help Available**

No help is available for this area of the window.

**#<sup>113</sup> No Help Available**

No help is available for this message box.

## §114#115 *Main commands and Keyboard commands*

5 To launch the program, double click on the icon that is present on your desktop after the installation. After about ten seconds the program window will appear..

10 WinStars offers two modes. The *planetarium mode* which reproduces the sky as we can see it from earth and the *solar system mode* that allows you to travel from one object to another as if you were floating freely through space.

Why the two modes? Wouldn't it have been wiser to create only one mode, which would have allowed the user to instantly take off from the surface of our globe to become a satellite around Saturn in a couple of seconds?

15



*Planetarium mode*



*Solar system mode*

20 As a matter of fact, this choice allows for maximal precision in the planetarium mode by taking into account all the physical effects that can affect the position of the stars as seen by a terrestrial observer. Disturbances by the earth's orbit, atmospheric refraction, precession and nutation effects are all taken into account in the planetarium mode while some of these effects are dismissed in the other mode. The goal is not to waste the  
25 precious resources of your machine on calculating long superfluous equations.

Whatever the mode, certain information is always present at the same location on your screen.

30 For example, at the top left you will find the time and date of the current observation. Below that the computer will indicate if the system is locked onto an object. At the bottom right, the observer's position is always indicated in astronomical units (AU) in an orthonormal and heliocentric framework.

### 35 *Use of the mouse and keyboard in solar system mode*

- *Mouse :*

---

114<sup>§</sup> Main commands and Keyboard commands

115<sup>#</sup> menu\_sou

You can access most of Winstar's functions with the mouse without having to use the drop-down menus or the toolbar :

5 Moving the mouse, while keeping the left button depressed, causes the observer to swivel around his own axis. This way you can look to the left or the right of an object, look up, down...

10 In much the same way, when the program is locked onto an object, the observer will turn around this object by keeping the right button depressed. In this way it is possible to observe it from all angles.  
Use the mouse wheel to retreat from or to advance closer to an object...

15 By pressing both the left and right buttons while moving the mouse, you will make the image turn around an axis which passes through the centre of the screen.

20 Finally, when pointing to an object and double-clicking the right mouse button, a contextual menu will offer you access to relevant information, locking/unlocking the object or make it possible to approach the object (if you are at a large distance away from it)...

- *Keyboard :*

25 To unlock an object, click the ESC key. The "locked on" message will disappear when you do so.

The keys '0' and '.' on the numeric keypad allow you to speed up or slow down (by a factor of 2) an animation.

30 *Use of the mouse and keyboard in planetarium mode*

- *Mouse :*

35 By moving the mouse and keeping the left button depressed, the user tilts the celestial sphere. This effect is somewhat like moving our head up or down, looking left or right, a bit like if we were in a night time observation in the field.

40 When the pointer is aimed at an object, a double-click on the right button calls up a contextual menu offering you access to information, the option of following the object or to take a DSS photograph of the zone in which it is located.

A double click on the left button will place the object in the middle of the screen.

45 Finally, the centre wheel acts as a controller for zooming in or out.

- *Keyboard :*

To unlock an object, press the ESC key. The “locked on” message will then disappear.

5

The keys ‘0’ and ‘.’ on the numeric keypad allow you to speed up or slow down (by a factor of 2) an animation.

Double-click the left button to place the object in the middle of the screen.

10

The ‘z’ key resets the zoom to a value of 1 x

The + and – keys change the zoom value.

15

The four arrow keys adjust the direction of the observation.

The F1 key accesses the program help.

## #116§117 *Hardware configuration*

WinStars uses DirectX 9.0c libraries to generate the 3D images 3D in real time.

5 Because of the complexity of the calculations, the large amount of objects to draw multiple times a second, the big size of the textures and the large grids of some objects, Winstars needs a powerful computer to function adequately.

10 An old configuration built up around a Pentium running at 200 Mhz and equipped with a 2D graphics card will not be able to function with this software. The program will even refuse to start and will give you an error message.

15 Even a computer equipped with a 3D of more than four years old will probably deliver jerky animations and only mediocre usage comfort.

A shortage of RAM memory can also be a problem. The use of large textures needs at least 128 Mb to avoid being faced with a huge slowdown of the machine.

20 Thus, the minimal system requirements for running WinStars 2 as intended, look something like this:

- A computer built up around a Pentium (or AMD) 1000 Mhz running Windows 98/Me/2000/XP
- 128 Mb of Ram (especially if you use Windows XP)
- 25 ➤ a 3D graphics card that is less than 3 years old equipped with a minimum of 16 Mb Video RAM.

---

116# conf\_mat

117\$ Hardware configuration

## §<sup>118</sup>#<sup>119</sup> *Installation*

- 5 Before installing WinStars, make sure that your machine makes use of DirectX version 9.0c . If the installed version is any older, the program will notify you and will refuse to start...
- Check the Microsoft website to get hold of the latest installation file (<http://www.microsoft.com> ).
- 10 Verify also that you have the latest drivers for your 3D graphics card (you can consult your computer's documentation to discover the brand and model of your graphics card and the internet address of its manufacturer). At the manufacturer's website you will in all likelihood find a "support" or "drivers" section where you can download updated drivers for free. Any outdated driver can be the cause of extra problems.
- 15 Remind yourself to visit the download section of the [www.winstars.net](http://www.winstars.net) site on a regular basis to make sure you have the latest WinStars version. In theory, the latest version is the most stable one...

---

118<sup>S</sup> Installation

119<sup>#</sup> installation

## §120#121#122 *Observation dialogue box*

5 The planetarium mode reproduces in a realistic way the sky as you can observe it from any given place on earth. By taking into account the geographical coordinates of the observer, the time and date as well as some additional physical parameters (like temperature), WinStars will calculate the position of the stars over your head with higher than arc second precision.

10

But for the display to be true to reality, it is necessary to take care in providing the program with the observation's parameters. That is the goal of this dialog box.

15

the observation. Take the time in box n°2 (this time corresponds to the *legal time*, meaning the time indicated by your watch).

20

The **Now** button makes use of your computer's internal clock to fill out the date and time sections (box n° 1 & 2) for you.

Observation about dates :

25

If Year = 2006 AC -> Enter +2006 in the Year field

If Year = 1 AC -> Enter 1 in the Year field

If Year = 1 BC -> Enter 0 in the Year field

If Year = 1000 BC -> Enter -999 in the Year field

If Year = 2999 BC -> Enter -2998 in the Year field

---

120<sup>S</sup> Observation dialogue box

121<sup>#</sup> HIDD\_OBSERVATEUR

122<sup>#</sup> HID\_OBSERVATION\_INFORMATIONSSURLOBSERVATION

5 Next choose the *time zone* of the observation in box n°**3**.. This is the number of hours you need to add to universal time (UT) to obtain the local time. In most cases this number equals the whole part of the following division: longitude of observation locale / 15°. It is a positive number for longitudes east of Greenwich and a negative number for longitudes west of it.

10 Example : For an observation point at a longitude of 110° west, we have:  
110°/15°= 7 (I take the whole part of the division).  
So we have to take down **-7** in box n°**2** (the number is negative since we are at a longitude west)

15 Regretfully, the time zone isn't always as easy to determine. The legislation of certain countries imposes exceptions.

**Attention : if the time zone indicated by the user is wrong, all of Winstars' calculations will be affected by this error.. If you have difficulty in determining this value, click on the « time zone configuration » button.**

20 Next choose the name of the largest city situated near your observation point.. If the city is not on the list or if it is too far away, take your latitude and longitude (if you are lucky enough to have a GPS system, this is the time to use it...).

25 Fortunately, internet can help you to determine your geographic position by offering you lists with place names and locations. The "coordinates ?" command will allow you to query one of these databases.

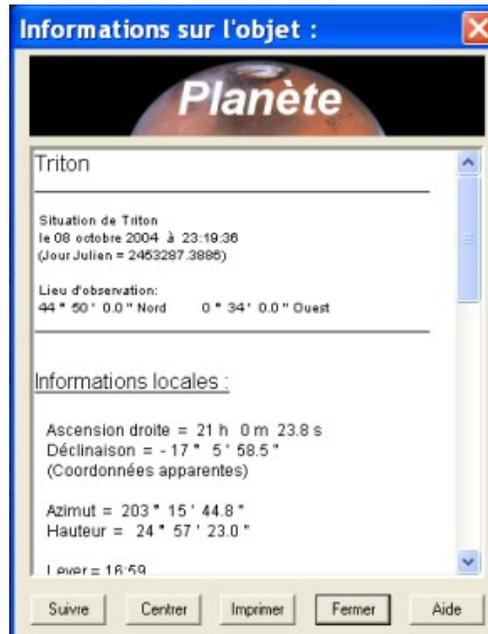
30 If the precision of the calculations is not of primordial importance, you can easily find your geographical coordinates on a planisphere by using the « map » function.

When you have entered your geographic coordinates, proceed to the location section. The "add/change" inserts a new item in WinStars' locations list. To erase an item, simply click on the "delete" button.

35 For optimal precision in the calculations, the values of pressure and temperature as well as altitude are necessary to evaluate the effects of atmospheric refraction on the visible height of the stars.

## #<sup>123</sup>§<sup>124</sup> *Information box*

5 This box contains information on the selected object:



10 If it concerns an object in our solar system, the computer indicates it's longitude and latitude in geocentric terms, the distances sun/object/earth and sun/observer, it's apparent diameter, it's magnitude and it's equatorial and horizontal coordinates..

15 If the object is a star, Winstars gives it's identification number in the Bright Star and Henry Draper (HD) catalogues, it's magnitude, it's right ascension, it's declination, colour index and spectral type... If you are in the planetarium mode, the azimuth, the height, the rise and set of the star are calculated in function of the observation's parameters. If it is a bright star, the computer also shows it's Bayer letter and Flamsteed number.

20 For deep sky objects, Winstars additionally gives the apparent diameter, the surface magnitude as well as a description in English.

This box also contains multiple buttons :

25 • In the planetarium mode :

---

123# HIDD\_RECHERCHERESULTS

124§ Information box

- The **Follow** button asks the program to keep the object in the centre of the screen during an animation (to better visualise an unfolding eclipse for example, or to see the rotation of satellites around a planet). This button also allows you to point a telescope at the object.

5

- In the solar system mode :

- The **Lock** button allows you to follow an object in 3D during an animation. When this function is activated, it is possible to turn around the object by depressing the right mouse button while moving the mouse.

10

Elementary functions like **Print** or **Centre** are available as well.

15

***This is the meaning of the abbreviations used in the descriptions (Burnham's method) :***

20

!	remarkable object	!!	very remarkable object
am	among	n	north
att	attached	N	nucleus
bet	between	neb	nebula, nebulosity
B	bright	P w	paired with
b	brighter	p	pretty (Before F,B,L or S)
C	compressed	p	preceding
c	considerably	P	poor
Cl	cluster	R	round
d	double	Ri	rich
def	defined	r	not well resolved, mottled
deg	degrees	rr	partially resolved
diam	diameter	rrr	well resolved
dif	diffuse	S	small
E	elongated	s	suddenly
e	extremely	s	south
er	easily resolved	sc	scattered
F	faint	susp	suspected
f	following	st	star or stellar
g	gradually	v	very
iF	irregular figure	var	variable
inv	involved	nf	north following
irr	irregular	np	north preceding
L	large	sf	south following
l	little	sp	south preceding
mag	magnitude	11m	11th magnitude
M	middle	8...	8th magnitude and fainter

45

m much

9...13 9th to 13th magnitude

Some examples :

5

*NGC object number*

*Description Decoded Description*

10

214 pF, pS, IE, gvlbM

pretty faint, pretty small, little elongated  
gradually very little brighter in the  
middle

708 vF, vS, R

very faint, very small, round

15

891 B, vL, vmE

bright, very large, very much elongated

7009 !, vB, S

remarkable object, very bright, small

20

2099 ! B, vRi, mC

remarkable object, bright, very rich,  
much compressed

25

6643 pB,pL,E50,2 st p

pretty bright, pretty large,  
elongated in position angle 50 degrees,  
two stars preceding

For the object's class, we have other abbreviations :

30

• **For Open clusters :**

Concentration :

**Type I.** Strong concentration close to the centre.

**Type II.** Weak concentration close to the centre.

35

**Type III.** Very weak concentration close to the centre.

**Type IV.** Cluster barely discernible from the surrounding star field.

Luminosity range :

**1.** Narrow      **2.** Average      **3.** Strong

40

Richness in stars :

**p** Poor (<50 stars)

**m** Moderately rich (50-100 stars)

**r** Rich (>100 stars)

45

An "**n**" that follows the description indicates nebulosity in the open cluster.

*Example* : For the Pleiades open cluster (*Messier 45*), we have a class **I 3 r nnb**, in other words a cluster with a strong concentration close to the centre, with a strong luminosity range, a large number of stars and nebulosity.

5

- **Shapley-Sawyer classification for the concentration of Globular clusters :**

This classification goes from 1 up to 12. The smaller the class number, the higher the concentration of stars in the globular cluster.

10

- **Vorontsov-Velyaminov types for Planetary Nebula :**

15

1. Stellar type.
2. Regular Disk (a, bright centre; b, uniform luminosity; c, traces of structures in the ring).
3. Irregular Disk (a, very irregular luminosity distribution; b, traces of structures in the ring).
4. Ring.
5. Irregular form similar to diffuse nebula.
6. Abnormal form, no structure.

20

Very complex forms can accumulate multiple types.

25

- **Hubble types for Galaxies :**

**Type E :**

30

Elliptical galaxy, E0 is a round elliptical galaxy, E7 a very flattened elliptical galaxy.

'd' indicates that its a dwarf elliptical galaxy, 'c' indicates that we are in the presence of a enormous galaxy, 'D' signals a diffuse halo.

35

**Type S :**

Spiral galaxy, 'a' signals no visible arms, 'b' moderatly visible arms and 'c' stands for very clearly visible arms.

40

**Type SB :**

Designates a centrally barred spiral galaxy.

**Type Irr :**

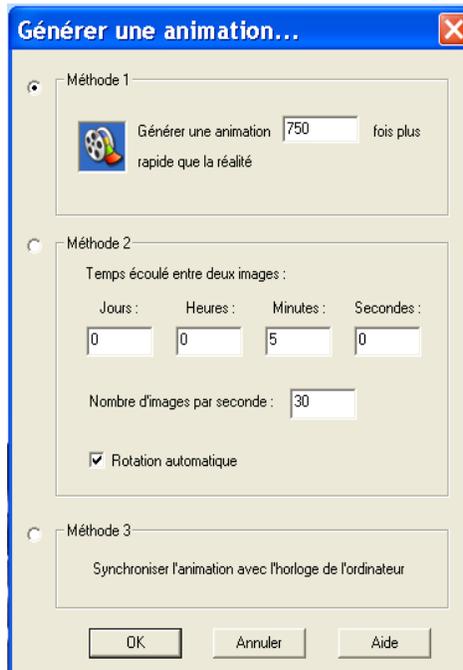
Designates an irregular galaxy.

45

Also take a look at the classification of galaxies

## §<sup>125</sup>#<sup>126</sup>#<sup>127</sup> Animation Box

5 Use this box to define the parameters of a news animation.



10 WinStars will enable you to reproduce the movements of the objects celestial in real time or on the contrary to accelerate or slow down time so to return the observation of a phenomenon easier.

15 • **Method 1:**

Indicate to the program the factor acceleration of time while supplementing the first line

"To generate an animation..."

- 20
- if this value is higher than 1, the movements will be faster than in reality
  - if it is equal to 1, the movements will be reproduced at a speed conforms to reality.
- 25
- if the value is lower than 1 (it is necessary that it remains strictly positive!)

---

125<sup>§</sup> Animation box

126<sup>#</sup> HID\_OPTIONS\_ECARTPOURLANIMATION

127<sup>#</sup> HIDD\_ANIMATION

them speeds of the objects will be lower than real speeds...

Value 0.5 will thus indicate to reproduce the movement of the bodies celestial with displacements twice slower than in reality!

5

- **Method 2**

10 Number of frames by second determines the quality of the animation. For a cinema quality, please enter 25 frames by second (with a powerful computer, of course!).

Time between two frames defines the period added to each frame for the animation generation.

15 For example, if we enter 5 minutes in “time between two frames” and 1 in “Number of frames by second”, we have (if the animation starts the 2001/21/10 at 10h00).

- First picture, the sky (2001/21/10 at 10h00)
- Second picture (1 second after the first) : the sky (2001/21/10 at 10h05)
- Third picture (1 second after the second) : the sky (2001/21/10 at 10h10)
- Etc...

20 By checking “Automatic”, the pictures are generated automatically. Else, you must click on the “Sky rotation” button to view the next picture.

25

- **Method 3**

30 By checking the option *Synchronize animation with the clock of the computer*, the movements are reproduced not only with real speed but while using as bases time the clock interns your computer. By selecting this option, you will thus see with the screen it that it occurs in reality at the precise moment where you use your computer.

35

After have creating an animation, please click on the “Sky rotation” (the green arrow directed towards the line and located in high on the right of the screen) button to play animation.

40 Lastly, for stop animation, press on the key 'Esc' or click on the button *stop* (the green square).

45 **Example: let us suppose that we want to re-examine in accelerated the arrival of the Cassini-Hugens probe in the Saturn suburbs..**

A research on Internet will enable us to find the date and the hour of the arrival of the

Cassini probe close to Saturn. It acts of June 30, 2004.

Let us go in the Observation box and enter this date. Let us fix the hour to 15 h.

In the menu *Observation*, let us select the option *Animation* then *parameters* to define a new animation.

5

We will choose to create an animation 3000 X faster than reality. There would be necessary if not to remain hours in front of its computer before to see the probe passing to the tops rings...

10

One closes then the box while supporting on *To validate* then one click on the button representing an arrow directed towards the line (like the button *play* of a video tape recorder) in the bar of tools located on the right of the screen...

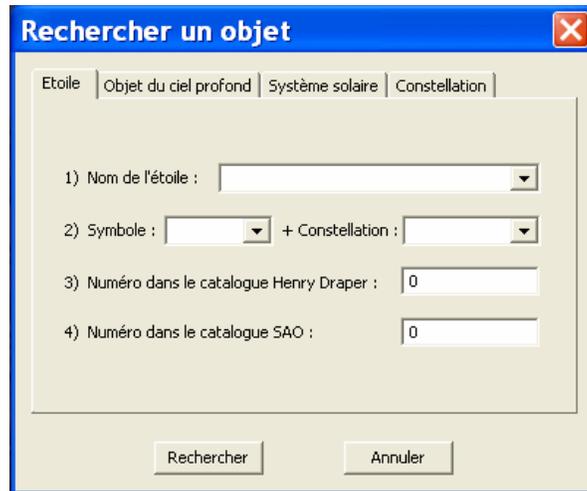
Saturn approaches gradually you then. It is rather fixed probe on the screen which approaches planet.

15

During, animation, it is possible to turn around the probe in moving the mouse and by keeping the finger inserted on the left button...

One can accelerate animation while clicking on key 0 of the paving stone numerical or to slow down it while typing on '.

## §128# #129# #130 *Find an object*



5

This dialog box will enable you to find quickly an object among the three million celestial bodies which are present in bases of WinStars.

10

After having selected this function, one will notice that box of research comprises four sections.

### *The stars section*

15

The first section is dedicated to research of a star.

Four possibilities are offered to you:

20

1) - If the star leaves a name, type it in on the first line (thank you with the men of antiquity, with the Greeks and Arabic to have to give to them of too pretty names).

Examples: Betelgeuse, Arcturus, etc...

25

2) - Second possibility: specify letter of Bayer and the constellation of the object..

Examples: (alpha, Andromede) for Alpheratz - (Beta, Orion) for Rigel etc...

30

3) - to give the number of star in the catalogue Henry Drayer,

4) - or to indicate its identification number in catalogue SAO..

---

128<sup>§</sup> Find an object

129<sup>#</sup> HID\_OPTIONS\_RECHERCHEDUNOBJET

130<sup>#</sup> HIDD\_DIALOGRecherche

### *The Object of the deep sky section*

5 To find an object of the deep sky, you must to type the type of catalogue and the identifying number.

For example: M 42 for great nebula of Orion (M indicating the Messier catalogue), NGC 4388 for a galaxy of the cluster of the Virgin (one uses it here *New General Catalogues of Nebulae*).

10 To find the site of the unit of calculation which the Seti@Home program is currently examining since your computer (if you take part in this project), type *Seti* in the heading "deep Sky". Attention, the option "to post the calculating unit in progress" être must notched in the mitre "seti@home" of the box general configuration (to also read the heading [seti@home](#)).

15

### *The solar system section*

To find a planet, sun, the moon, an asteroid or comets.

20

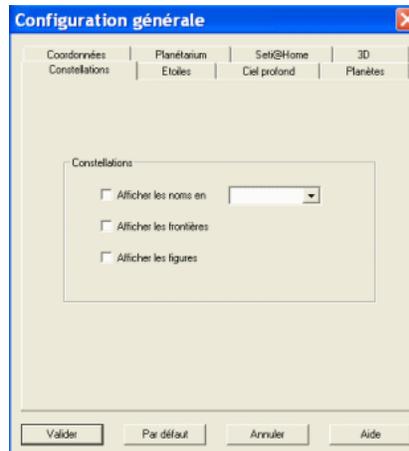
### *The Constellations section*

Lastly, the last option makes it possible to locate a constellation.

25 **Note:** If the object exists and is above the horizon at the time of the observation, then it will be automatically centered on the screen.

## §131#132#133 WinStars configuration

- 5 Here options of the box general Configuration. It is from here that you can choose the elements to be posted. This will enable you to personalize the appearance of WinStars.



10

### Constellations:

- *Names of the constellations* : displays the shortened names, or the names complete in English or Latin.
- *Borders between constellations* : draws the borders of constellations by using gray lines (by default).
- *Figures of the constellations* : connect certain stars of a constellation by blue lines (by default).

15

20

### Stars:

If you wish to change the aspect of stars, choose the texture which will make it possible to represent them. You must for that to choose an image with the tga format which you can possibly create with one graphic software of final improvement.

25

The heading *magnitude zero* it defines diameter on the screen, in pixels, of a star magnitude zero. stars different magnitude will be represented with sizes proportional.

30

---

131\$ WinStars configuration

132# HID\_AFFICHAGE\_OPTIONSDAFFICHAGE

133# HIDD\_DIALOGOptionAffi1

The box *magnitude limits posted stars* impose in WinStars not to represent stars higher magnitude with the value indicated. This makes it possible to control the number of stars represented on the screen:

This number  $N$  is fixed at 6.0 per defect (limit of perception of the human eye, without instrument)

If  $n=6$  approximately 10 000 stars are posted,  
If  $n=5$  approximately 6 000 objects are posted,  
If  $n=1$  approximately 100 objects are posted...

Choose then the catalogues credits:

*Sky2000* : notch this option to use additional stars of the catalogue Sky2000 (warning : this catalogue must be present in the same directory than WinStars. See [Installation of the Sky2000 module](#))

*Tycho 2*: notch this option to post additional stars of the catalogue Tycho2 (warning : this catalogue must be present in the same directory than WinStars. See [Installation of the Tycho module](#))

### Deep Sky:

- The first option show/hide objects of sky deep (galaxies, nebulas, etc...),
- You can show/hide the names of these objects,
- The third option can improve the Messier objects representation by using pictures.
- The box *Limiting magnitude* allows to control the number of used objects (see above)

### Milky Way:

- Show/hide the Milky Way
- Option *Luminosity* : modify the glare of the Milky Way.

### Planets:

- Show the names: for better locating planets.
- Compute comets' position : attention, this option slows down the computer when it is activated.
- Compute asteroids' position : attention, this option slows down the computer

when it is activated.

## 5 *Coordinated:*

- *Show coordinates* : draw two rules, horizontal and vertical, graduated in degrees allowing to better control its direction of observation (see too Use of the co-ordinates).
- Show *the equator celestial*
- Show *the ecliptic*.
- *Show grid right RA/dec* : to locate the co-ordinates quickly equatorial of an object.
- *Show grid azimuth/altitude*: allows to evaluate the horizontal co-ordinates of one star.

## 25 *Seti@Home:*

- Current path of the seti@home client. Use the Browse button and select the seti@home.exe file.
- Show the current work unit (if this option is uncheck, it's impossible to find the work unit with the "find a object" box).

## 30 *Planetarium:*

- *Show status line* : Post a line in top of the screen indicating the date and the hour of the observation and the value of the zoom.
- Natural sky colors : this option tries to reproduce the variation of the color of the sky in function hour.
- *Landscape* function : improve the representation of the horizon. To use this function, you must have chosen beforehand landscape to be posted:
  - Click on the button "Browse "
  - Choose a file of extension ".tga "present in the repertory" landscapes "
- *Height of a landscape* : This function makes it possible to raise or lower the image of the landscape compared to the horizon of WinStars.

### 3D:

5           Antialiasing is a technique which consists with to limit the effect "stair" specific to the images data processing. The contour of the images (especially when contrast is high) is some improved.

#### Options:

10           In the solar system mode, WinStars uses technique of "Bump Mapping" to simulate the relief of some planets (to reduce this effect, move the cursor on the left).

15           The option reflection simulates the reflexion of sunlight on the terrestrial oceans. Lens Flare, effect present in many plays and which simulate the dazzling when one looks in the direction of the sun (appearance of parasitic luminous spots) through an objective.

Wireframe: the 3d video cards draw triangles to represent spheres ! By notching this option, you will understand how...

20

§134# #135# #136 **Ephemeris box :**

This dialog allows you to know all remarkable astronomic phenomenon visible from your location.

5



Select a month or a period and click on **Compute** button.

10

By checking *Planets Rise-Set*, you will obtain rise and set of all planets in the solar system for each day.

**Attention** : WinStars use only Universal Time in this box.

15

See also Ephemeris display box.

---

134\$ Ephemeris box  
135# HID\_OBSERVATION\_EPHEMERIDES  
136# HIDD\_EPHEM

## §<sup>137</sup>#<sup>138</sup>#<sup>139</sup> *Ephemeris display box*

- 5 This box regroups all events (oppositions, conjunctions, occultation, etc...) find by WinStars on the period indicated by the user



See also [Ephemeris box](#).

10

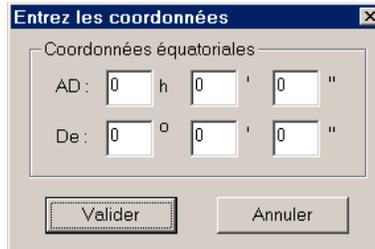
---

137<sup>§</sup> Ephemeris display box

138<sup>#</sup> HID\_CALCULS\_REVOIRLEDERNIERCALCULDPHMRIDES

139<sup>#</sup> HIDD\_EPHEMRESULT

#<sup>140</sup><sub>S</sub><sup>141</sup> *Position/direction box*



5

With this box, you can:

- Look in a direction by entering equatorial coordinates,
- Compute altitude and azimuth of a star by using observation parameters.

10

## #<sup>142</sup> *Left button*

Scroll the map viewpoint to the left.

5

## #<sup>143</sup> *Right button*

5

Scroll the map viewpoint to the right.

## #<sup>144</sup> *Up button*

Scroll the map viewpoint upwards.

5

## #<sup>145</sup> *Down button*

Scroll the map viewpoint downwards.

5

## #<sup>146</sup> *Zoom + button*

Increase zoom value.

5

## #<sup>147</sup> *Zoom - button*

Decrease zoom value.

5

## #<sup>148</sup> *Zoom 1 button*

Fix zoom value to 1 x.

5

## #<sup>149</sup> *North button*

Display a view of northern sky.

5

## #150 *East button*

Display a view of eastern sky.

5

## #151 *South button*

Display a view of southern sky.

5

## #152 *West button*

Display a view of western sky.

5

## #153 *Zenith button*

- 5 Display a view of sky centered at the Zenith.

## #<sup>154</sup> *Altitude and azimuth box*

- 5 Enter right ascension and declination of a star. The computer will compute altitude and azimuth by using time, date and location of the observation.

#<sup>155</sup>#<sup>156</sup> *Looking in a direction...*

- 5 Enter right ascension and declination of the center of a part of sky. The computer will display a view of the sky in this accurate direction.

## #<sup>157</sup> *Sky rotation button*

5

By clicking on this button, you can start/stop an animation.

For define an animation, please use the [Animation configuration](#) box.

## #158 *Invert sky rotation button*

- 5 By clicking on this button, you can display an inverted animation.  
For define an animation, please use the [Animation configuration](#) box.

## #159 *Stop animation button*

- 5 You can stop an animation by clicking on this button.

## #160 *Sidereal time*

- 5 The sidereal time, the Julian day and the Universal Time will be displayed. This information will be compute by using the observation parameters.

## #161 *Information about catalogues*

This option shows the catalogues used by WinStars at the present time.

5

## #162 *Constellations figures*

- 5 This option draws lines between stars.

## #163 *Constellations names*

- 5 This option allows to show/hide constellationsnames.

## #164 *Stars names*

- 5 This option allows to show/hide brightest stars names.

## #165 *Deep sky objects*

- 5 This option allows to show/hide deep sky objects (nebulae, globular clusters, open clusters...)

## <sup>#166</sup> *Deep sky objects names*

- 5 This option allows to show/hide deep sky object names.

## #167 *Planets names*

- 5 This option allows to show/hide planet names.

## #168 *Asteroids names*

- 5 This option allows to show/hide asteroid names.

## #169 *Rule*

5 This option allows to show/hide coordinates.

See also : [Use coordinates](#)

## #170 *Landscape*

- 5 This option allows to show/hide landscape.

## #171 *Milky Way*

- 5 This option allows to show/hide Milky Way. (attention, this option uses the Milky Way module.)

## #172 *Equator and ecliptic*

- 5 This option allows to show/hide the equator and the ecliptic.

## #173 Comets

- 5 This option allows to show/hide comets.

## #174 *Map*

- 5 Click on the map for define your localization.

\$175#176#177 *Update WinStars*

5 Use this function for update your current version of WinStars. You can download the update file called “updatewinstars.exe”.

Run this program file and click on “UnZip” button. Change directory installation only if necessary (c:\winstars by default.)

10

Restart WinStars.

#<sup>178</sup> *Visit WinStars' homepage*

5 If you want visit the WinStars homepage.

## #<sup>179</sup> *Comets' elements*

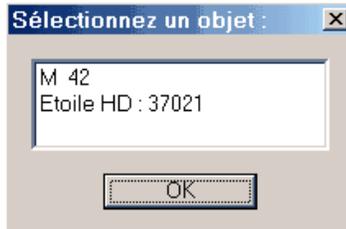
- 5 This option uses Internet for updated information about comets.

## #<sup>180</sup> *Asteroids' elements*

- 5 This option uses Internet for updated information about asteroids.

## #181 *Selection box*

5 If your selection is ambiguous (for example, if you click on a star in a nebula. What is your choose ? the star or the nebula ?), the computer asks you to specify your choose :

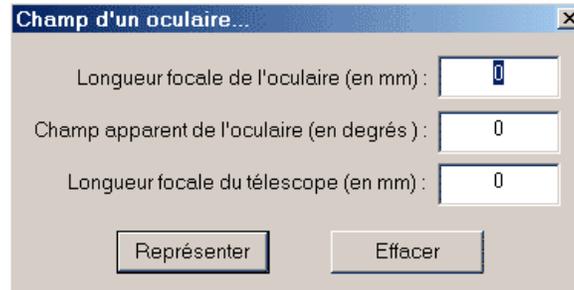


10 Click on the desired object.

§182#183#184#185 *Eyepiece field*

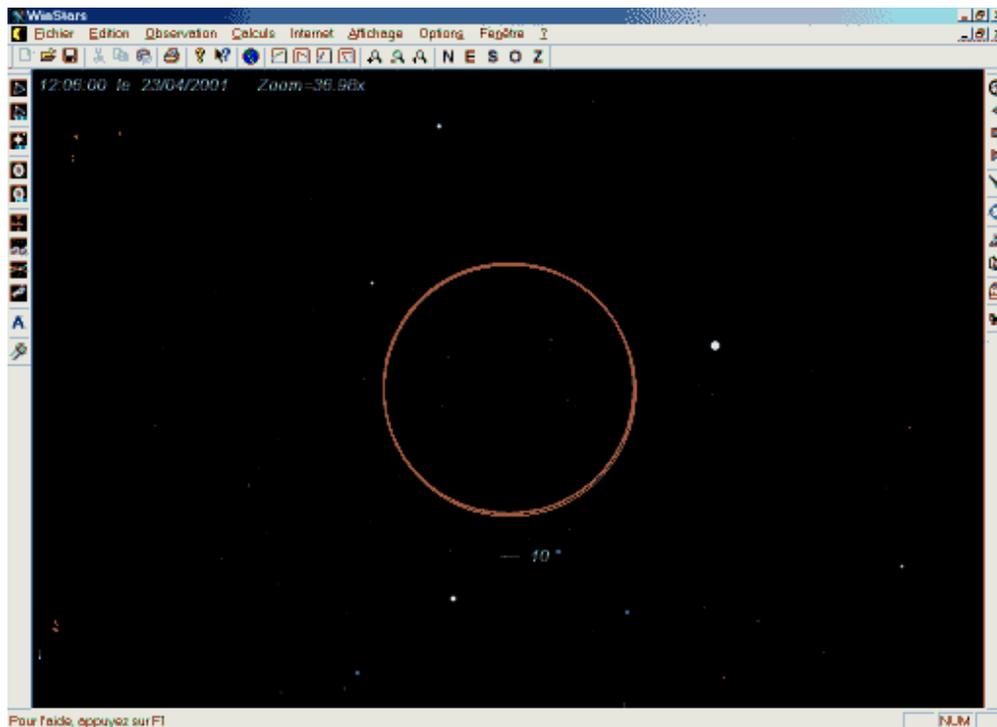
5 This function draws the field of an eyepiece on the map.

Enter the focal length (mm) and apparent field (degrees) of an eyepiece, and the focal length of your telescope (mm).



10

The program displays the magnification and the field of view of this optical montage and draws a circle on the map. This circle has the diameter of the field of view.



15

- 
- 182<sup>§</sup> Eyepiece field
  - 183# HIDD\_DIALOGSelectOculaire
  - 184# HIDD\_OCULAIRE
  - 185# HIDD\_OBSERVATION\_CHAMPDUNOCCULAIRE

## #<sup>186</sup>#<sup>187</sup> *Flashes des satellites Iridium*

5

Cette fonction affiche les heures de visibilité des flashes très spectaculaires des satellites américains Iridium sur les 7 prochains jours.

## #188#189#190 *Viseurs Quickfinder*

5

Cette fonction dessine sur les cartes de WinStars les cercles de visibilité des viseurs Quickfinder

(2 cercles concentriques délimitant un champ de 2° pour le plus grand et 0,5° pour le plus petit).

10

---

188# HID\_OBSERVATION\_CHAMPDUNQUICKFINDER\_EFFACER  
189# HID\_OBSERVATION\_CHAMPDUNQUICKFINDER\_AFFICHER  
190# quickfinder

## #191#192#193 *Viseurs Telrad*

5

Cette fonction dessine sur les cartes de WinStars les cercles de visibilité des viseurs Telrad.

(3 cercles concentriques délimitant un champ de 4° pour le plus grand, de 2° pour le moyen et de 0,5° pour le plus petit)

10

---

191# HID\_OBSERVATION\_CHAMPDUNTELRAD\_AFFICHER  
192# HID\_OBSERVATION\_CHAMPDUNTELRAD\_EFFACER  
193# telrad

§194# # # #195# # # #196# # # #197# # # #198 **Calling a DSS server**

- 5 You can obtain a picture of the part of sky displayed by WinStars with this function. WinStars calls a DSS server (*Digitized Sky Survey*) for this operation.



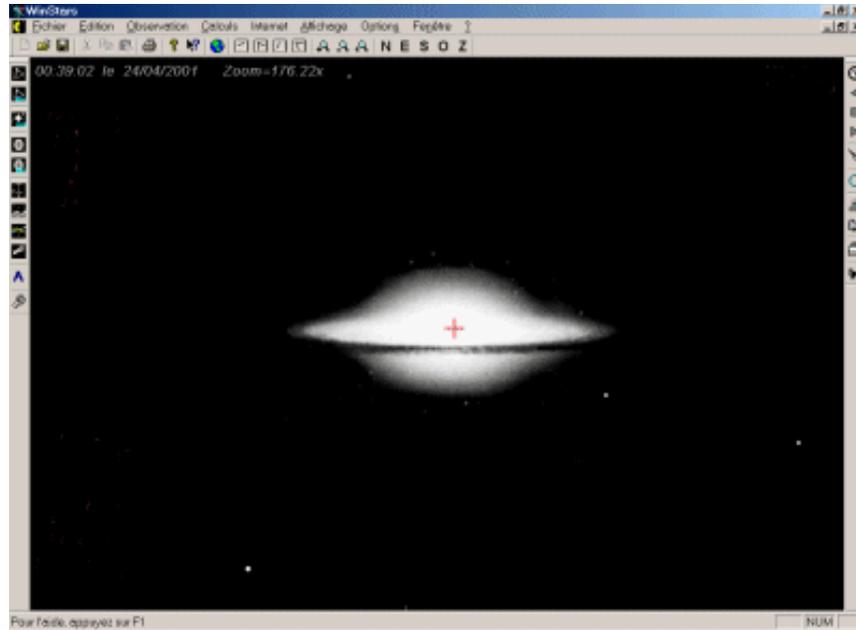
- 10 Select DSS address, choose DSS1 mode for a picture in medium quality and DSS2 mode for better quality.

- 15 **Attention** : *DSS2 pictures are three times bigger than DSS1 pictures. 98 % of the sky is available in DSS2-red, 45 % in DSS2-blue and only 27 % in DSS2-infrared. To be able to use this function, you must have a picture editor like “Windows Imaging” installed on your computer.*

- 20 An example :

---

194<sup>§</sup> Calling a DSS server  
195<sup>#</sup> menu\_dss  
196<sup>#</sup> HIDD\_DSS  
197<sup>#</sup> HIDD\_PROGINTERNET  
5 198<sup>#</sup> HID\_INTERNET\_OBTENIRUNEPHOTO



M104 galaxy on the screen when you call the function.

5



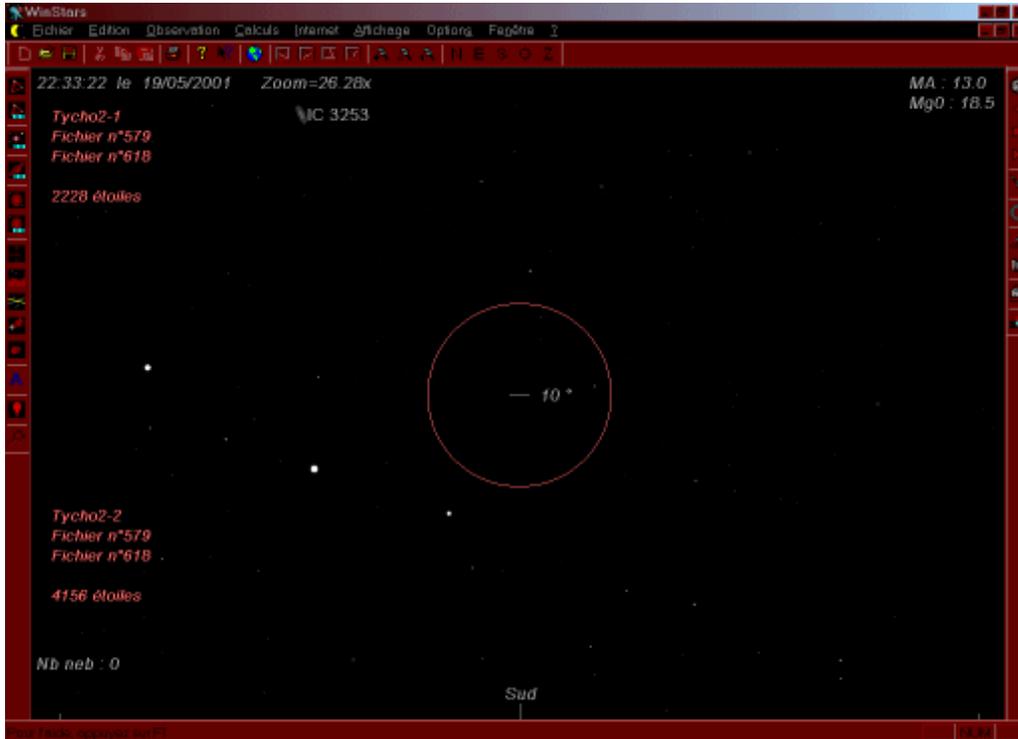
This is the picture you will get.

10

§199# # #200# # #201# # #202# *Night vision*

Use this option to decrease screen luminosity for using WinStars by night.

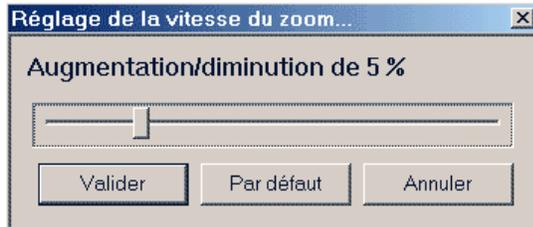
5



- 
- 199<sup>§</sup> Night vision
  - 200# HIDD\_OBSERVATION\_ECLAIRAGE
  - 201# HID\_OBSERVATION\_ECLAIRAGE
  - 202# nocturne

## #203#204#205 Zoom setup

- 5 Configure the increase/decrease factor of the zoom function.



---

203# HIDD\_REGLAGEZOOM  
204# HID\_OPTIONS\_RGLAGEDELAVITESSEDUZOOM  
205# vitessezoom

#<sup>206</sup>#<sup>207</sup>#<sup>208</sup> *Weather reports*

This site proposes many links about weather.

5

---

206# HIDD\_SATELLITE  
207# HID\_INTERNET\_VISIBILITDUNSATELLITE  
208# artificiels

#209#210#211 *Artificial satellites visibility*

5 Show times of visibility of artificial satellites brighter than magnitude of 4,5.

First, select your country :

You will obtain daily predictions for these satellites :

10

Satellite		Starts			Max. <u>Altitude</u>			Ends		
Name	<u>Mag</u>	Time	<u>Alt.</u>	<u>Az.</u>	Time	<u>Alt.</u>	<u>Az.</u>	Time	<u>Alt.</u>	<u>Az.</u>
<a href="#">Cosmos 2151</a>	4.2	22:12:17	10°	N	<a href="#">22:16:51</a>	89°	SSE	22:21:19	10°	S
<a href="#">ISS</a>	-0.4	22:27:39	10°	SW	<a href="#">22:30:39</a>	46°	SE	22:33:39	10°	ENE
<a href="#">SOYUZ TM-32</a>	3.1	22:27:40	10°	SW	<a href="#">22:30:40</a>	46°	SE	22:33:40	10°	ENE
<a href="#">Okean-O</a>	3.5	22:31:37	10°	SSE	<a href="#">22:36:08</a>	82°	ENE	22:40:42	10°	NNW

Click on the time of maximum altitude of a satellite to obtain trajectories on charts.

---

209# HIDD\_SATELLITE  
210# HID\_INTERNET\_VISIBILITDUNSATELLITE  
211# artificiels

## #<sup>212</sup> *Invert chart*

5 Flip the chart vertically

“Invert vertic” appears in the status line.

## #<sup>213</sup> *Invert chart*

5 Flip the chart horizontally

“Invert horiz” appears in the status line.

## #<sup>214</sup> *Natural sky colors*

5

This option tries to render the natural sky colors according to the time and the date.

## §<sup>215</sup>#<sup>216</sup>#<sup>217</sup> *Solar system mode*

- 5 WinStars proposes two modes. Mode *planetarium* who reproduces the sky such as one can see since a terrestrial place and mode *solar system* who you will allow to travel of an object to another with complete freedom like if you float in space.



- 10 This mode uses the functionalities 3d of your machine for to represent with precision the shape and the texture of the objects of the system solar.

The positions of planets are calculated according to parameters of the box "observation".

- 15 See also the mode "planetarium mode"

---

215<sup>§</sup> Solar system mode

216<sup>#</sup> menu\_systemesolaire

217<sup>#</sup> HID\_OBSERVATION\_MODE\_SYSTMESOLAIRE

## §218<sup>S</sup>#219 *Planetarium mode*

5 This mode gives access to a representation of vault of heaven in 3 dimensions such as one can see it since one terrestrial place:



10

The positions of the stars are calculated according to parameters of the box "Information on observation".

See also the mode "solar system".

---

218<sup>S</sup> Planetarium mode

219<sup>#</sup> HID\_OBSERVATION\_MODE\_PLANTARIUM

## #220<sup>S</sup>221 *Configuration of your telescope.*

You must download and install the ASCOM drivers for using WinStars with your scope (<http://ascom-standards.org/>).

5



Use this box to select your scope model, if your model is not listed consult your documentation for a compatible model.

10

Select the serial port (COM1 to COM 4) where the telescope is connected.  
Set other options (speed, data, parity and stop) according to the manufacturer information.

## #<sup>222</sup>§<sup>223</sup> *Open connection with your scope*

When your scope is configured, use this function for starting the connection between the telescope and your computer.

5 If the function succeeds, the indication “telescope mode” must appear on the bottom of the screen.

If you want to follow an object with your scope, double-click on it (with the right button of the mouse) and select the Information option. After that, click on the follow button.

---

222# connexion

223§ Open connection with your scope

## #<sup>224</sup>§<sup>225</sup> *Definitions* :

5

### A

#### **Altitude**

10 The direct angular distance between the celestial object and the horizon, measured vertically.

#### **Asteroid**

15 A small rocky object in the solar system.

#### **Azimuth**

20 The bearing of an object measured as an angle round the horizon eastwards starting from the north as the zero point.

### B

25

#### **#<sup>226</sup> Bayer letters**

30 The letters of the Greek alphabet used in conjunction with constellation names (as in Alpha Leonis) to identify the brighter stars.

#### **#<sup>227</sup> Bright Star Catalogue**

35 A star catalogue published by Yale University Observatory. The fourth edition appeared in 1982, compiled by Dorrit Hoffleit with Carlos Jaschek. It contains entries for all stars included in the 1908 *Harvard Revised Photometry* catalogue, a total of 9096.

---

224# def

225§ Definitions

226# bayer

227# bright

# C

## #<sup>228</sup>**Celestial equator**

5 The great circle on the celestial sphere marking the boundary between the northern and southern hemispheres, and acting as the zero-mark for declination. It is the projection into space of the Earth's equatorial plane.

## 10 #<sup>229</sup>**Color index**

The difference between the magnitude of a star measured in one wavelength band and its magnitude in another.

15 When first conceived, the term normally referred to the difference between photographic and visual magnitudes, which were different because the types of photographic plate then used were predominantly sensitive to the blue end of the spectrum, whereas the eye's sensibility peaks around green-yellow part. Since the introduction of more precisely defined photometric systems using filters, such as the UBV photometry system, color indices have been formed from different pairs of magnitude.

20

## #<sup>230</sup>**Conjunction**

An alignment of two bodies in the solar system with the Earth, so that they appear to be at the same place (or nearly so) in the sky as seen from the Earth.

25

## #<sup>231</sup>**Constellation**

One of the 88 designated areas in the sky or the pattern of stars within it.

30

## **Comet**

An icy body orbiting in the solar system, which partially vaporizes when it nears the Sun, developing a diffuse envelope of dust and gas and, normally, one or more tails.

35

# D

## #<sup>232</sup>**Declination**

---

228<sup>#</sup> equateur

229<sup>#</sup> indicecouleur

230<sup>#</sup> conj

231<sup>#</sup> constellation

5 232<sup>#</sup> dec

On of the coordinates used to define position on the celestial sphere in the equatorial coordinate system. Declination is the equivalent of latitude on the Earth. It is the angular distance, measured in degrees, north or south of the celestial equator. Northerly declinations are positive and southerly ones negative.

5

## E

10

### #<sup>233</sup> **Ecliptic**

The mean plane of the Earth's orbit around the Sun. The name arises because eclipses of the Sun or Moon can occur only when the Moon passes through this plane.

15

### #<sup>234</sup> **Eyepiece**

A combination of small lenses mounted in a tube, used to magnify and focus the image formed by a telescope or other optical instrument.

20

## F

25

### #<sup>235</sup> **Flamsteed numbers**

Identification numbers assigned to stars listed in *Historia coelestis Britannica* by John Flamsteed (1646-1719). In the official version of the catalogue, published posthumously in 1725, the numbers are not included explicitly. However, they do appear in a preliminary version published by Edmond Halley and Isaac Newton in 1712 without Flamsteed's approval.

30

## G

35

### #<sup>236</sup> **Galaxy**

A family of stars, together by their mutual gravitational attraction, and with a distinct identity separating it from other galaxies.

---

233# ecliptique

234# champ

235# flamsteed

236# galaxie

Galaxies cover a huge range of size and mass as well as exhibiting a variety of structures and properties.

5 **#<sup>237</sup> Globular clusters**

A roughly spherical, densely packed cluster of hundreds of thousands or even millions of stars. The brightest globular cluster in the sky is Omega Centauri, which has a diameter of 620 light years.

10

## H

15 **#<sup>238</sup> Henry Draper Catalogue**

A catalogue of stellar spectra, compiled at Harvard College Observatory. The work was made possible through funds donated by the pioneering astrophysicist Henry Draper (1837-1882), and the catalogue was named as a memorial to him.

20

## M

25 **#<sup>239</sup> Magnitude**

A measurement of the brightness of a star or other celestial object. On the magnitude scale, the lowest numbers refer to objects of greatest brightness.

30

## N

35 **Nebula**

A cloud of interstellar gas and dust. The term was formerly also used for objects now know to be galaxies (e.g. the “great nebula” in Andromeda, now usually called the Andromeda Galaxy).

40

---

237# amasglobulaires

238# henridraper

239# magnitude

## O

### #<sup>240</sup>Occultation

5 The passage of one astronomical object directly in front of another so as to obscure it from view as seen by a particular observer

### #<sup>241</sup>Open cluster

10 A type of star cluster containing several hundred to several thousand stars distributed in a region a few light years across.

### #<sup>242</sup>Opposition

15 The position of one of the superior planets when it is opposite the Sun in the sky, that is, when its elongation is 180°.

## R

### #<sup>243</sup>Right ascension (RA)

25 One of the coordinates used to define position on the celestial sphere in the equatorial coordinate system. It is equivalent of longitude on the Earth but is measured in hours, minutes and seconds of time eastwards from the zero point, which is taken as the intersection of the celestial equator and the ecliptic, known as the first point of Aries.

## S

### #<sup>244</sup>SAO catalogue

35 Abbreviation of Smithsonian Astrophysical Observatory Star Catalogue. This general catalogue contains 259000 stars down to an approximate magnitude limit of 9. It was published in 1966, the epoch of the positions given is 1950.0.

---

240<sup>#</sup> occ

241<sup>#</sup> amasouverts

242<sup>#</sup> opp

243<sup>#</sup> ad

5 244<sup>#</sup> SAO

### #<sup>245</sup> Sidereal time

5 Time measured by the rotation of the Earth with respect to the stars (rather than the rate relative to the Sun, which is this basis for civil time). Local sidereal time at a particular place is given by the right ascension of the meridian.

### #<sup>246</sup> Spectral type

10 A classification assigned to a star according to the appearance of its spectrum. The spectral type is based primary on a temperature sequence; a luminosity class may also be specified. Additional information about star's spectrum, such as the appearance of emission lines or unusually strong metal lines, may also be indicated.

15 The classes originally designated A-Q, were subsequently rationalized and re-ordered as a temperature sequence, resulting in the final basic types still used : O, B, A, F, G, K, M.

Spectral type

Temperature

O5	35 000 K
B0	21 000 K
B5	13 500 K
A0	9 700 K
A5	8 100 K
F0	7 200 K
F5	6 500 K
G0	6 000 K
G5	5 400 K
K0	4 700 K
K5	4 000 K
M0	3 500 K
M5	2 600 K

20

U

---

245# tempssideral

246# spectral

**#<sup>247</sup>Universal time**

5 A measure of time that relates closely to the Sun's daily apparent motion and serves as the basis for civil timekeeping. It is formally defined by a mathematical formula that links it to sidereal time, and is thus determined from observations of the stars.

10 Z

**#<sup>248</sup>Zenith**

15 The overhead point.

---

247# universel  
248# zenith

§249# #250# #251

## Contact

You can send me your ideas if you find that a useful functionality is missing or if you find an error. But, you can also mail me to tell what you think about this program.

5 Best regards,

Franck RICHARD.

- WinStars homepage : <http://www.winstars.net/english>
- E-mail address : [support@winstars.net](mailto:support@winstars.net)

10

See also [about translation](#).

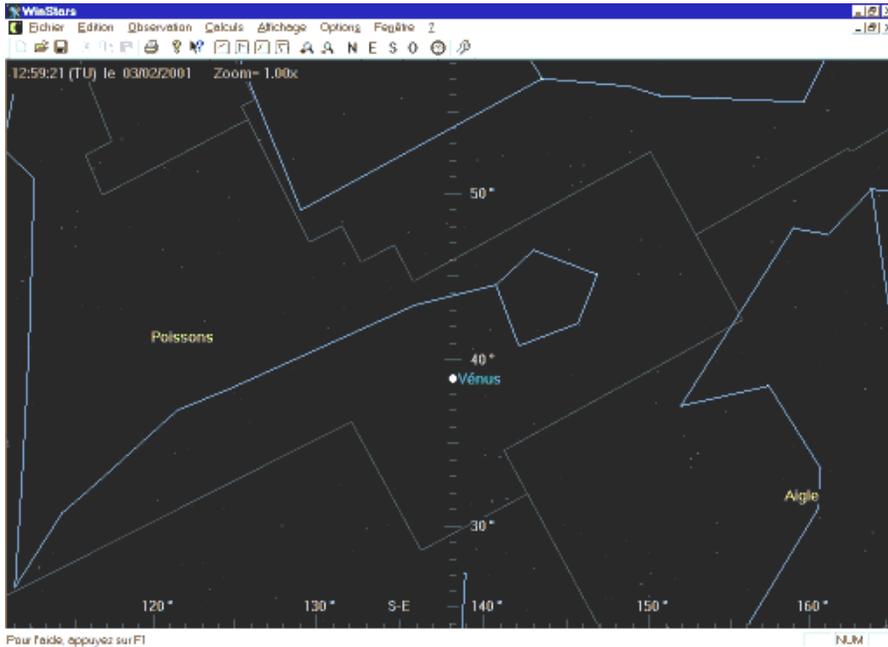
## <sup>#252</sup> *About translation*

5 Sorry, I am not a native english speaker - pardon me for some mistakes in my english.  
If there are painful mistakes in the help-file or in the software itself, please let me know  
it. Thanks !

## 253<sup>S</sup> 254<sup>#</sup> Use coordinates

The coordinates allow you to have a better orientation in stars fields. Two rules graduated in degrees indicate azimuth and altitude of objects.

5 For example :



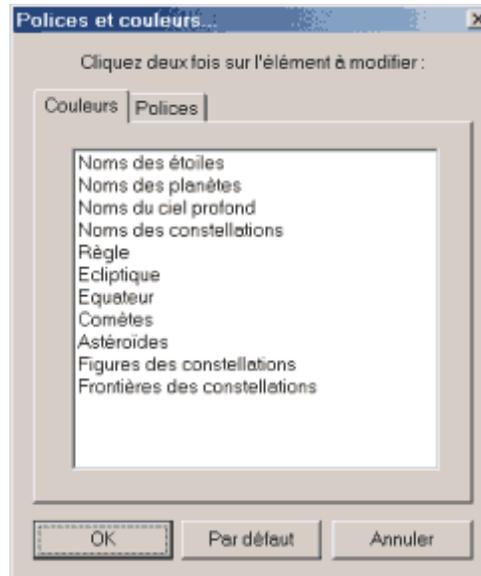
If you want to know the value of the altitude of Venus, rotate the celestial sphere until the planet is on the vertical axis. So, you can read the altitude :  $\sim 38.5^\circ$

For the azimuth, you can read on vertical axis :  $\sim 139^\circ$

10

§255# #256# #257# *Colors and fonts*

You can use this dialog to define texts color and font used on maps.



5 Use left section to define colors, right section to define fonts...

---

255<sup>§</sup> Colors and fonts  
256<sup>#</sup> HIDD\_COULEURS  
257<sup>#</sup> HID\_OPTIONS\_POLICESETCOULEURS

## #<sup>258</sup> *Full screen*

Hides tools bars, status bar, and title of the WinStars' window.

## §259<sup>S</sup>#260# *Remarks about display*

WinStars uses the libraries DirectX 9.0c to generate images 3d in real time.

5 Because of complexity of calculations, great number of objects to draw several times a second, of the big size of textures, high grid of certain objects, WinStars needs a computer powerful to function suitably.

10 An old configuration built around Pentium given rhythm with 200 MHz and equipped with a 2d graphic card will not be able to function with it software. The program will refuse to start and one will announce you error message.

A computer equipped with a 3d graphic card of more than four years will undoubtedly produce jerked animations and a comfort of use poor.

15 To solve certain problems of posting, check that you lay out last pilot of your graphics board 3d (for that, consult documentation of your computer to find the mark and the model of your graphics board and address Internet of its manufacturer). You will certainly find at this address a heading "support" or "pilots" where you will be able to download the updated pilot free. A too old pilot can be the source of problems of posting. You can improve in a significant way the speed of posting while selecting the 3d in the box General configuration while going in "advanced parameters" then while selecting

20 "hardware" in the heading "vertex processing".

Think of reconsidering the site regularly [www.winstars.net](http://www.winstars.net) , heading remote loading to ensure you to have the last version of WinStars. the most recent version is in theory most reliable...

25

## \$<sup>261</sup>#<sup>262</sup> *Installation of additional files*

#<sup>263</sup>

### *Installation of Tycho2 catalogue :*

5

This catalogue contains more than 1.500.000 stars.  
You must unzip it in the install directory of WinStars. Tycho2-1 and Tyco2-2 directories must be in the same directory as WinStars.exe)

10

Restart WinStars.

In the WinStars configuration box, check the option *Use Tycho2 catalogue*.  
For a magnification of 10 x and more, you will see more stars

15

---

261\$ Installation of additional files

262# menu\_sup

263# tycho

## §264\$ #265 *Using WinStars with Seti@Home/BOINC*

5 **SETI@home** is a scientific experiment that uses Internet-connected computers in the Search for Extraterrestrial Intelligence (SETI). You can participate by running a free program that downloads and analyzes radio telescope data. You can learn more about **Seti@home** by clicking on this link : <http://setiathome.ssl.berkeley.edu>

10 WinStars is able to show the exact location of the current work unit on the charts.

In a first time, you must indicate to WinStars the location of the **Seti@home** client on your hard drive.

15 In the « WinStars configuration » box :

- Use the “Browse” button for indicate the current path of the program **boinc.exe** (the program is habitually in the *c:\program files\boinc* directory)
- Check the “Show the current work Unit” option.

20 ***So, you can search the position of the current work unit :***

In the « Find a object» box, enter the word « seti » in the « Deep sky » section.

25 WinStars will center the work unit object on the screen.

## #266 Acknowledgments

5

**Handmade Software for Gif2Jpg utility**

**C. Spieler for the unzip32.exe program**

The "Blue Marble" textures are the property of the *NASA* and the *Earth Observatory team*.



the **BLUE MARBLE**  
true-color global imagery at 1km resolution

Image by Reto Stöckli (land surface, shallow water, clouds). Enhancements by Robert Simmon (ocean color, compositing, 3D globes, animation).

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Filip Degroote,  
Mhiri Samih,  
Juan Sebastian Tobon Conde,  
Dominik Marszk,  
Lauren Baker

(If for one reason or another you no longer want your name to appear on this list, contact me quickly at this address: [franck.richard@free.fr](mailto:franck.richard@free.fr))

10