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The File menu contains commands which   may be used to save the data in the current worksheet   as an ASCII file, to print the currently displayed data, or to exit(terminate execution of MoonPo) .

For more information, select the File menu command name.
Save
Save as
Print
Exit

File Save or Save as commands:

These commands may be used to save numerical data in the current worksheet in the form of a plain text (ASCII) file.

Choosing then opens a dialog which request the file name,etc.

NOTE:   Saving   data in a file   erases the data from memory so that it cannot be saved again later on.

File Exit command

This command will terminate execution of MoonPo. If you have not saved results from recent runs you will be asked whether or not you wish to save them before termination actually occurs. Its action is the same as the Close command.

Control Data command

Clicking on the Control Data command creates a "pop-up" menu which contains two additional items: (1) Observer Position and (2) Time of Day.

Use the Observer Position Data command to specify your geographical position (latitude and longitude in degrees and minutes) and Time Zone.

Use the Time of Day command to enter the day, month, year, start hour, stop hour and increment to be used for the numerical calculations.

Graph

Select this command on the main MoonPo menu bar to display graphs of azimuth and elevation vs local time.

Successful execution of this command requires that the GSW.EXE and GSWDLL.DLL files be available in a directory specified in your DOS path.

Reset

This command clears most data from the work sheet, and erases the buffer used to hold data which might have been saved in a file or used for graphs. Most user entered options are retained however.

Run

This command executes calculations associated with the current date, observer position and time range. Numerical results will be displayed in the work sheet window only after the calculations for all times of day have been completed.

You must execute this command before you can execute the Graph command.

Printing numerical results

Numerical results curently displayed in the worksheet window may be transferred to the default Windows printer by choosing File and then Print from the popup menu. Printer setup is not included in MoonPo, but may be done via the Windows Print Manager.

Printing a graph

To print the azimuth/elevation graphs, choose the Print command from the menu bar of the "MoonPo Graphs" display window. Printing is done using your default Window printer. The printer must, of course, be able to handle graphical data. If it can't, you may find yourself with lots of waste paper.

The default size of the printed graphs is a full printer page, but you can reduce (but not expand) the size of the printed graph by reseting the scale factors. Use the Scale Factor command on the graphing window menu bar to do that. Scale factors should lie between 0.0 and 1.0 for both axes.

You may also adjust the page position of a printed graph by choosing the Position command. Data values for the dialog executed under this command are expected to be in millimeters. Negative values may be rejected, but are probably a bad choice even if the program does not reject them.

This command is available only from the MoonPo Graphs display window; it is not available from the main MoonPo window.

Finding your time zone

The time zone value needed by MoonPo is an integer which tells the program the relationship between your local time zone and the time at longitude 0 (Greenwich meridian). It is negative if your position is West of Greenwich, and positive if you are East of there. The absolute value of your time zone is the number of hours that your time is different from that at Greenwich. Values for a number of cities will be found in the MOONPO.DOC file.

US time zones and corresponding numerical values are as follows:

```
Eastern Standard Time:     -5
Central Standard Time:     -6
Mountain Standard Time: -7
Pacific Standard Time:     -8
```

Valid time zone values lie in the range -11 to +12. Entries outside that range will not be accepted.

If your entry differs from that calculated from your longitude entry by more than one hour, MoonPo will issue a warning and ask for confirmation of the questionable value.

The term "Start Hour" in the Time of Day dialog refers to the first hour for which numerical calculations are to be made. Use only integers. Warnings will be issued if you enter values outside the range 0 to 24. In this connection, 0 means midnight on the morning of the date you entered (very early today) and 24 is again local midnight (but very late tonight).

The term "Stop Hour" refers to the final hour at which you desire numerical calculations. Use only integers. Warnings will be issued if you enter values outside the range 0 to 24. In this connection, 0 means midnight on the morning of the date you entered (very early today) and 24 is again local midnight (but very late tonight).

The term "increment" means the interval between the times at which numerical calculations will be made and displayed. This value should be in MINUTES rather than in hours as is the case for the start and stop hours. Values should be positive and have a maximum of two digits. Be sure not to enter a zero, or the program may not finish in your lifetime.

View

The View command on the main menu bar will create a new window containing views of the general appearance of the moon as seen at three hour intervals by an observer looking directly at it. The top center drawing is for Oh Om (0000) for the current date, and the bottom center one is for 12h 0m (1200). The sketches are each labeled with the HHmm 4-digit time format, and the date and observer position are shown in the center. The background color of a sketch is light blue or cyan if the sun is above the local horizon at a given time, and black otherwise.

Drawings are omitted for those times at which the moon is below the local theoretical horizon. Only the background color will be seen in such cases.

Cases in which the bright or dark portion of a sketch involve a narrow crescent are sometimes not shaded properly because of the finite size of the pixels and the narrowness of the crescent.

Commands on the View subwindow are File, Redraw and Help.

The File command pops up a submenu containing two choices: FileSaveAs and Exit.
FileSaveAs allows you to save the currently displayed sketches in a file.
You can create a:

A) Device Independent Bit Map by Specifying ".BMP" as the filename extension. This type of file may be resized and printed using the Windows Paintbrush application.

B) Windows metafile by specifying ".WMF" as the file name extension.

C) Placeable metafile by specifying ".WFM" as the filename extension.

Exit destroys the view window and returns to the main MoonPo window.

The Redraw command is used to redraw the sketches if they are improperly redisplayed after the view window has been overwritten by another window.

The Help calls up the MoonPo help system.

Observer Position

This term refers to the geographical location at which calculation are to be made. Users will normally want to enter the latitude and longitude at which they reside.

Latitudes and Longitudes must be entered in degrees and minutes. If you do not know your latitude and longitude you might want to look in the MOONPO.DOC file - wherein are listed the coordinates od a few major cities. Or perhaps a local road map will show them along its edges. This information is sometimes listed in the section of local newspaper listings of sunrise and moonrise times. Don't neglect to enter a "N" or "S" with your latitude and an "E" or "W" with your latitude.

YOU MUST ALSO ENTER A VALUE FOR YOUR TIME ZONE.

When you exit from the Time of Day dialog you may be asked if you want to save changes in you MYLOCALE.INI file. If you elect to do so (via the Yes button), then you should not need to execute the Observer Position dialog again unless you wish to change your coordinates or time zone. Choosing the Yes button will create a MYLOCALE.INI file in your base Windows directory if one is not already present or will replace data in an existing file.

Time of Day

This dialog is used to set the year, month and day for which you want to make calculations. Other data entered via this dialog are the <u>start hour</u>, computational <u>increment</u>, and the <u>final hour</u> for the numerical calculations

Only the year, month and day are needed in order to calculate rising and setting times for the sun and moon. However, default values are provided for all needed items.

Moonrise (and sunrise)

The Moonrise command on the MoonPo menu bar is used to calculate the times and directions at which the moon and sun rise and set at the specified observer position. The values are approximate, of course, and assume that there are no visible obstructions between you and a level theoretical horizon. Furthermore, the values are not corrected for refractive effects in the atmosphere. The latter advance rising and delay setting by about one observable diameter of the sun or the moon.

There are occasional days when the moon rises but does not set or when it sets but does not rise on the same day. When such a condition is encountered, the word "none" may appear instead of a 4-digit time value.

Control Data

This command is used to enter data for the geographical position, date and times at which calculations are to be performed. When it is selected, a popup menu containing two subcommands will appear.

Select the Observer Position command to specify the latitude, longitude and time zone to be used.

Use the Time of Day subcommand to specify the date and range of times for numerical calculations.

Saving your Geographical Position

MOONPO can employ a "personalization" file to record your geographical position and time zone so that you will not need to enter them each time you restart MOONPO. The file used for this purpose is called MYLOCALE.INI and should reside in you base Windows directory. See the file MOONPO.DOC for additional information about editing MYLOCALE.INI.

You can change MYLOCALE.INI (or create one if it doesn't already exist) via the Observer Position command (found on the popup menu created when you select the Control Data command from the main MoonPo menu bar). Whenever you alter the entries for latitude, longitude or time zone and exit the dialog using the OK button, you will be asked if you want to save the changes. Choose Yes to revise (or create) the data in MYLOCALE.INI.

Graph Print Scaling

The height and/or width of a printed graph may be reduced from the normal full-page values by means of the Scaling Factor command on the MoonPo Graphs menu bar. Activating this command brings up a dialog into which you may enter values for the X (time of day) and Y (azimuth/elevation) axes. Only values between 0 and 1.0 are allowed. (But using 0 is probably a bad idea).

See also Graph Print Offsets.

Graph Print Offsets

The normal origin for printed graphs is at the lower left hand corner of the printed page (as seen looking at an upright print). The offsets along the X (time of day) and Y (azimuth/elevation) axes may be adjusted using the dialog associated with the Position command seen on the MoonPo Graphs window menu bar.

Offset values should be entered in millimeters. Using scale factors of 0.5 for both axes, and X-offset of 50 mm and a Y-offset of 75 mm places a printed graph near the center of the printer output page.

See also: Graph Print Scaling.

The azimuth of the sun or moon is its angular position measured in the local horizontal plane. Standard compass values are used, with North being at azimuth 0 or 360 degrees, East at 90 degrees, South at 180 degrees and West at 270 degrees.

The elevation of the sun or the moon is its angular position above the local horizon when looking along its specified azimuth angle. 0 degrees refers to the horizon itself, and 90 degrees to the zenith , or directly overhead.

The Lunar Phase Angle is nominally the angle between lines drawn from the center of the moon to the cetnters of the earth and the sun. The angle is -180 degrees for a new ,moon, zero at full moon and reaches +180 degrees just before the next new moon. This is the definition of the angle displayed with the numerical data. The actual value for an observer on the surface of the earth would be somewhat different, although not much different, because of the offset between such an observer and the center of the earth.

Graph print scale factors are the amounts by which the horizontal and vertical sizes of a graph should be multiplied if the currently displayed graph is printed. Separate scale factors are used (and required) for the horizontal and vertical dimensions.

Scale factors should be greater than zero and no larger than 1.0. Values of 1.0 for both scale factors yield a printed graph which essentially fills a full page of printer paper.

Graph print offset values are used to move the lower left hand corner of a printed graph to some place on the paper other than the lower left hand corner of the paper itself. Values should be entered in millimeters.

An 8.5" x 11" page is roughly 216 mm x 279 mm in size.

The abbreviation GMT stands for "Greenwich Mean Time", or the time on a 24-hour clock at longitude 0.0. GMT is almost, but not quite, the same as the standard international scientific UTC (Universal Coordinated Time). The differences are too small to be significant at the precision levels used in MoonPo.

UTC values are broadcast each minute by   radio stations WWV and WWVH on shortwave radio frequencies of 5.0, 10.0 and 15.0 MHz.

The term Global Time as used in MoonPo is the same as Greenwich Mean Time or GMT.

Getting Started

To see how MoonPo works simply click on the Run or View commands on the MoonPo menu bar. After executing a "run" you can also examine how the graphs of azimuth and elevation appear by selecting the View command. The calculations made in this fashion will use either default data or data stored in the MYLOCALE.INI file (if you have copied it to your base Windows directory).

To customize MoonPo's operating parameters do the following:

     1) Click the Control Data command on the main MoonPo menu bar. You will then see a popup menu.

     2) Choose the Observer Position selection, and replace the default latitude, longitude and time zone values with the ones appropriate to your location (or the location for which you wish to make calculations). Exit using the OK button and then choose the Yes button to save the new data in you MYLOCALE.INI file. Even if you do not save the data, it will be held in memory until you change it or exit from MoonPo.

     3) Click the Control Data command on the main MoonPo menu bar again and this time select the Time of Day command. Replace all of the default data items with ones of your choice. Be sure to enter the full 4 digit representation of the year, and enter the month and day as one or two digits. If you wish to change the values of the start or stop hours or the increment between computation times you may do that also. Again exit via the OK button to enter your changes in memory.

     4) You may now execute a "run" (do the numerical calculations) by clicking on the Run command on the main menu bar. Once you have executed a run, you can display graphical data using the Graph command or see rough drawings of the moon's appearance by selecting the View command.