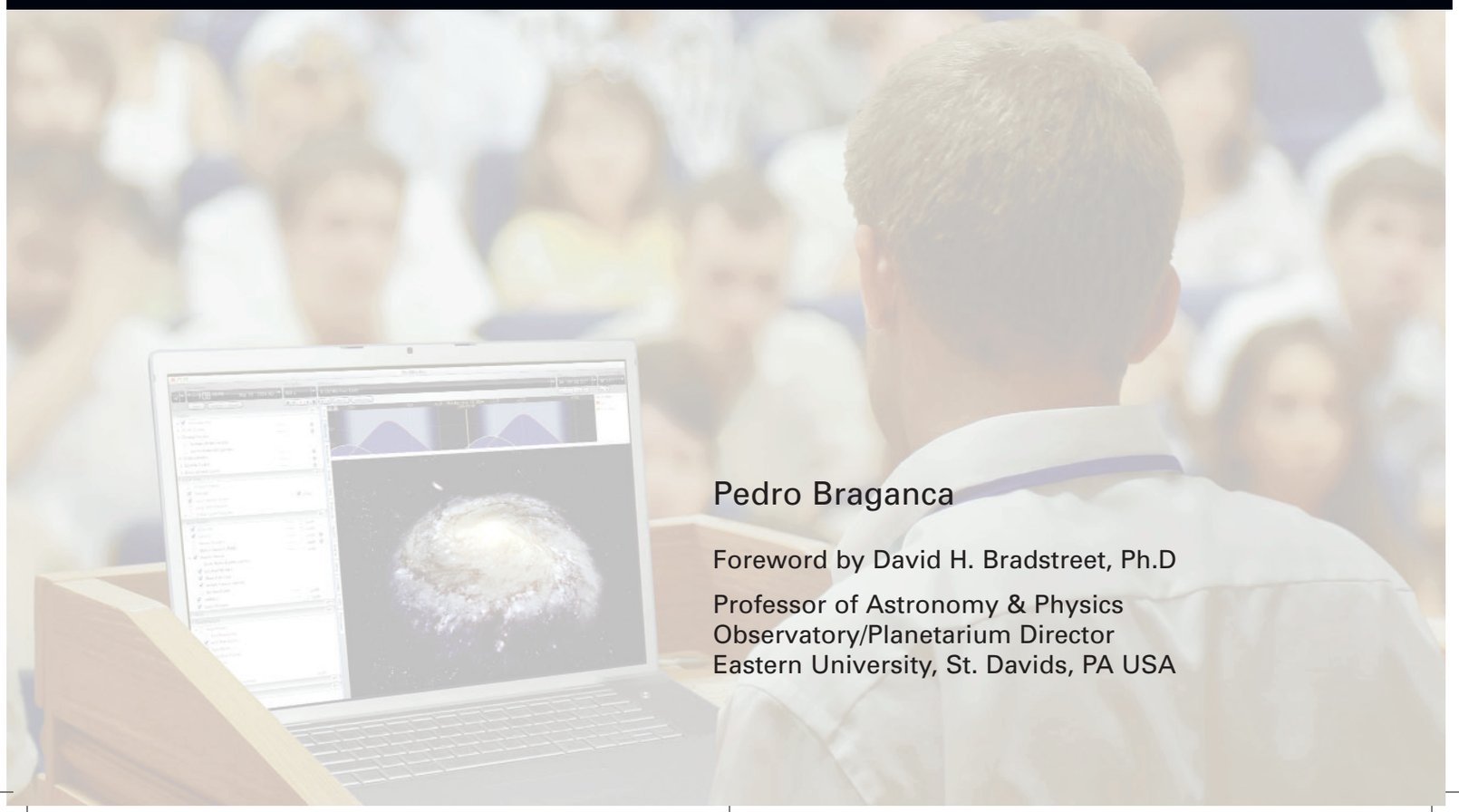
Starry Night® PODIUM

Bring the Visual Beauty of the Universe to Larger Screens and Audiences



Pedro Braganca

Foreword by David H. Bradstreet, Ph.D

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Licence Reference

For your reference, please record the user name and license key for Starry Night Podium here. Check that both the user name and license key match the user name and license key sent to you (the license key is uniquely tied to the user name, and will not work with another user name). The user name and license key are case sensitive.

Username: _____

License Key: gu6 – ☐☐☐☐ – ☐☐☐☐ – ☐☐☐☐ – ☐☐☐☐

INSTALLING AND RUNNING STARRY NIGHT

Installing Starry Night

The Starry Night Podium software comes on a single DVD-ROM. You will need a DVD-ROM drive to install the program. The DVD-ROM includes both the Windows and Macintosh versions.

Note: *To run Starry Night through a projector, you need to run two programs: Starry Night Podium and Starry Night Projector. Starry Night Podium is the operator interface. You can use Starry Night Podium on its own, without projecting it to an audience. To use a video projector or external monitor, both Starry Night Podium and Starry Night Projector need to be running.*

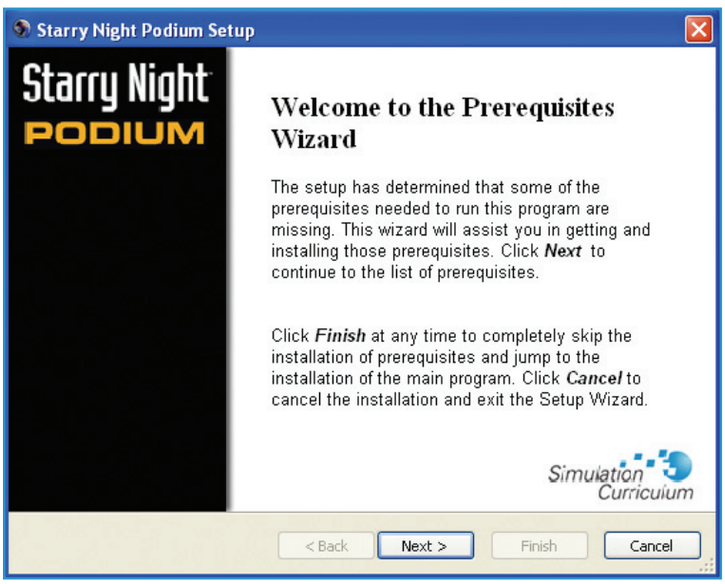
To install Starry Night Podium and Starry Night Projector, follow the installation instructions below.

Windows

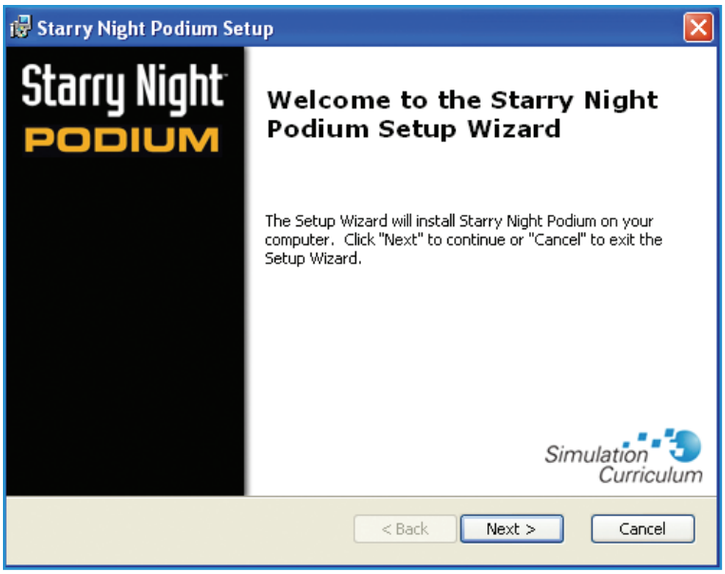
To install Starry Night for Windows, follow these steps.

1. Insert the Starry Night disc in the DVD-ROM drive.
2. A window will pop up onscreen with instructions for installing Starry Night. Follow the instructions that appear.

Note: *A pre-requisites installer will launch first and install all the required 3rd party software your computer will need to run Starry Night.*



The Starry Night installer will launch after the pre-requisites installation is completed.



Macintosh

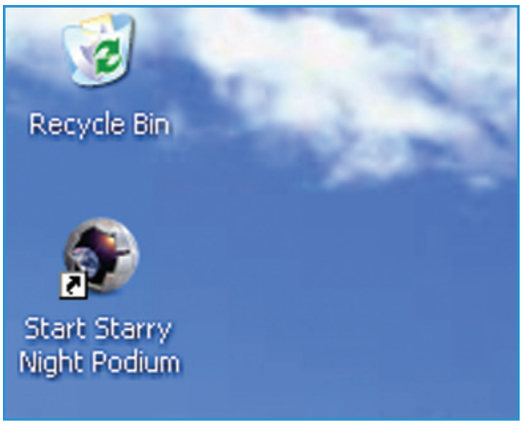
To install Starry Night for the Macintosh, follow these steps.

Insert the Starry Night disc into the DVD-ROM drive and "drag-and-drop" the Starry Night Podium folder into the Applications folder. The Starry Night Podium folder contains the Starry Night Podium and Starry Night Projector applications.

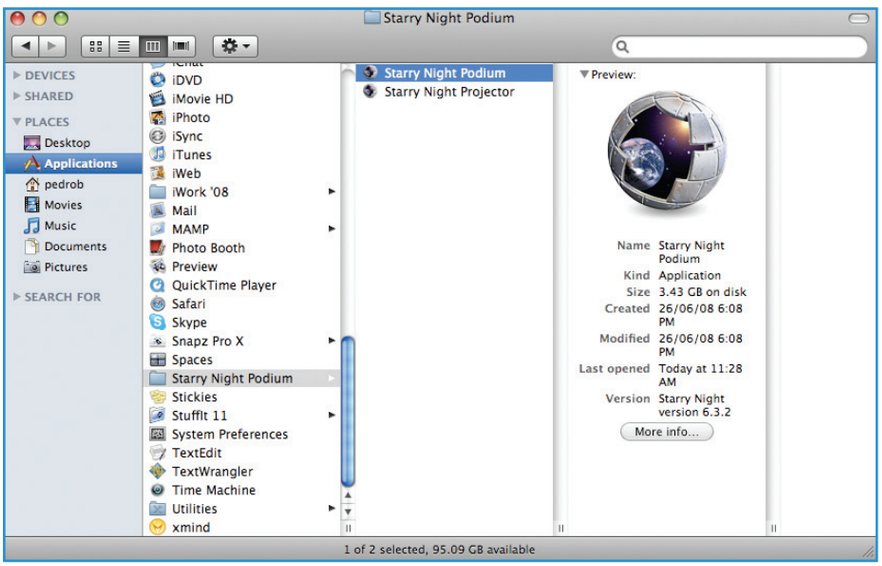
Running Starry Night

Once you have installed Starry Night Podium, you can run the program as follows:

Windows: Double-click the **Start Starry Night Podium** icon on your desktop, or select it from your start menu. This will launch Starry Night Podium and Starry Night Projector.



Macintosh: Double-click the **Starry Night Podium** and **Starry Night Projector** icons in the Applications/Starry Night Podium folder.



Important: *When using a projector, click on the Starry Night Projector icon found in the same location as Starry Night Podium. This will launch the projector component of Starry Night. The two applications will automatically connect so that any action you perform in Starry Night Podium will be mirrored in Starry Night Projector.*

Connecting to a Digital Projector

Follow these general guidelines when using a digital projector with Starry Night. Connecting a digital projector to a computer should be plug-and-play in most cases. Refer to your projector's manual for additional information on specific operating instructions.

Note: *A digital projector with a minimum native resolution of 1024 x 768 pixels is required.*

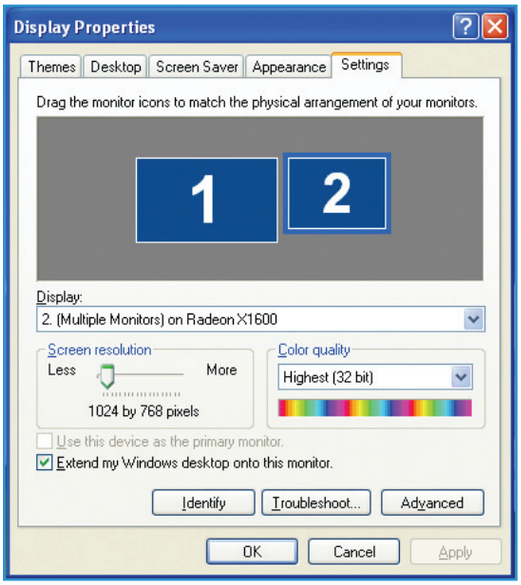
1. Connect the appropriate video cable by plugging one end of the cable on the projector's **Computer In** port and the other in to the computer's **Video** port. If supported by your computer and projector, a HDMI or DVI connection is recommended for the best quality connection.
2. To use an external speaker, connect the audio cables from the speakers into the computer's audio port. Audio is only required if you want to incorporate movies with audio tracks or use the ambient sounds and pronunciation guide in Starry Night.
3. Turn on the projector by pressing the Power/On button.
4. Turn on your computer. When your computer turns on, it should detect the digital projector and an image should be projected.

   Tip: *For Windows computers: if the image appears only on the computer screen or only on the projection screen, hold down the* ***Fn*** *key and press the* ***F8*** *key (some computers require a different* ***F*** *key) to toggle between modes until your image displays on both the computer monitor and projection screen.*
5. Your computer can mirror the monitor display onto the projection screen or extend the desktop onto the projection screen. To use Starry Night for projection, you will need to set your display settings to extend your desktop, not mirror.

Follow these general steps to extend the desktop onto the projection screen.

PC Computers

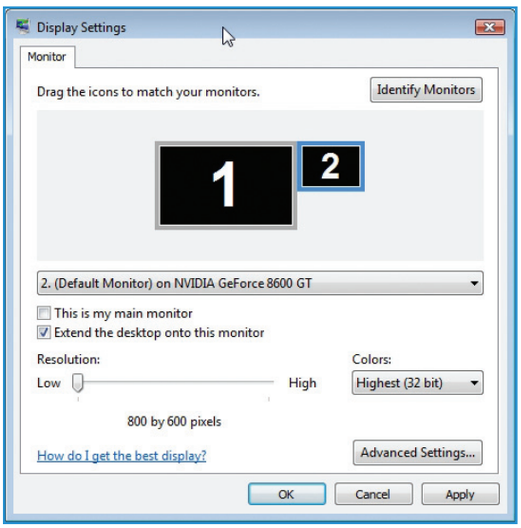
Windows XP: Start Menu > Control Panel > Display > Settings



a. Click on the monitor icon that reads "2" (this is the projection output).

b. Then check the box that reads "Extend my Windows desktop onto this monitor".

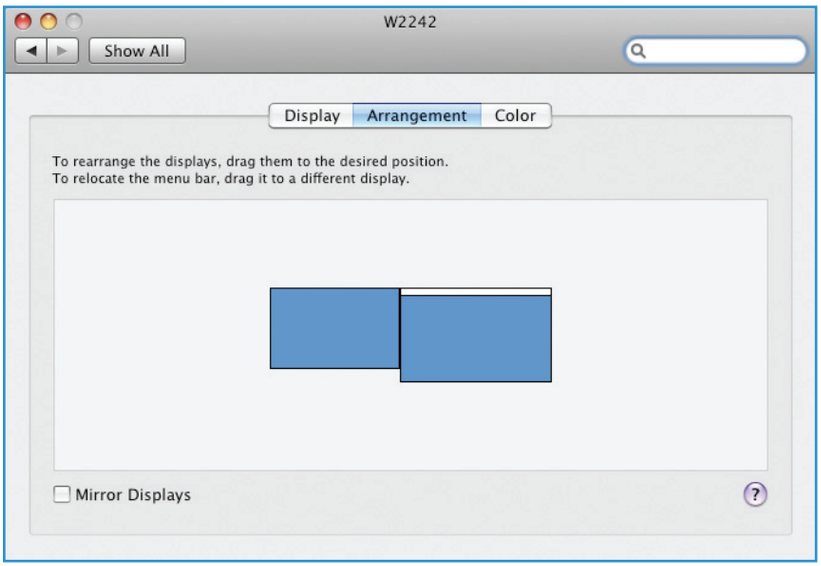
Windows Vista: Start Menu > Control Panel > Personalization > Display Settings



a. Click on the monitor icon that reads "2" (this is the projection output).

b. Then check the box that reads "Extend the desktop onto this monitor".

Mac Computers: Apple Menu > System Preferences > Displays



Click on the **Arrangement** tab. Make sure the "Mirror Displays" box is unchecked.

Tip: *If you have a Mac laptop, press the* ***F7*** *key to toggle between mirror and extended displays.*

6. You are now ready to launch Starry Night. Starry Night Podium and Starry Night Projector can be found under:

Windows:
Double-click the Start Starry Night Podium icon on your desktop, or select it from your start menu. This will launch Starry Night Podium and Starry Night Projector.

Macintosh:
Double-click the Starry Night Podium and Starry Night Projector icons in the Applications/Starry Night Podium folder.

Note: *When both Starry Night Podium and Starry Night Projector are running, they will automatically connect to each other so that any action performed in Starry Night Podium is reflected in Starry Night Projector (that is, the projection screen). If the connection is active, the* ***Sync*** *button will change its status to* ***Live****. The Sync button is located on the far left of the Toolbar.*

*(**Sync** button: **"Live"** indicates an active connection, **"Off"** indicates there is no connection.)*

Foreword

Welcome and congratulations for joining a vast community of Starry Night users. Over the years, I have found Starry Night to be the finest piece of educational astronomical software available. Its precision, ease of use, incredible graphics and flexibility make it one of the most useful teaching tools in my arsenal. I can quickly set up almost any kind of astronomical scenario, over an incredible range of dates, and present it to my students to wonderfully illustrate the workings of the skies. I have seen my students nod and make assenting "noises" time and time again when I demonstrate such things as lunar phases, eclipses and shadow cones, seasons, proper motion, precession, spin-orbit lock, planetary motion, analemmas on different planets and moons, coordinate systems or spatial distributions of various celestial objects like globular clusters. I love the ability to save all of my scenarios as Favorite files and then simply load them and you're ready to go! No need to reinvent the wheel each time.

Students also love to work with the program themselves. Its comfortable and easy to learn interface is a snap to computer literate young people. Starry Night Podium makes it even easier by integrating over 260 pre-made simulations, 100 movies and dozens of concept diagrams into the program and making them accessible via a point-and-click interface that takes minutes to learn.

In addition to tremendous software, the developers behind Starry Night are profoundly committed to excellence in education in general and astronomy education in particular. Many times in the past several years I have made suggestions for improvements and additions to Starry Night, and lo and behold almost all of those have made it into the current version. It's extremely satisfying to know that the folks that work on Starry Night share my own lifelong dedication to astronomy education at all levels. I love working with the program and the people behind it, and I have no doubts whatsoever that you will as well.

Starry Night has revolutionized my astronomy teaching and energized my students. It has given them a strong foundation in understanding how the universe works. I am certain that you will enjoy using and discovering new things with Starry Night and I know that your students will appreciate putting their hands on the universe.

David H. Bradstreet, Ph.D.
Eastern University, St. Davids, PA USA
March 10, 2009

TABLE OF CONTENTS

SECTION 1: WELCOME TO STARRY NIGHT PODIUM

"The most incomprehensible thing about the universe is that it is comprehensible."

– Albert Einstein (1879-1955) German-born theoretical physicist

Welcome

The invention of desktop astronomy software has been the most exciting new development in astronomy education in years, perhaps since that night four centuries ago when Galileo pointed the newly invented telescope at the heavens for the first time! Starry Night is the premier astronomy software package on the market, putting more power and knowledge in your hands than even the world's pre-eminent astronomers had just a few years ago.

You can see how the sky will look tonight, tomorrow, or far into the past or future. You can view the stars as they appear from your own backyard, from a country on the other side of the world, or from another planet. You can witness a total eclipse from the Moon, watch the Sun set from the surface of Mars, ride a comet or even venture out into the realm of galaxies. You are limited only by your curiosity.

To share the view with a larger audience, digital projectors are widely used in schools and other educational settings to project Starry Night on a larger screen. The resulting view is pleasing, but the projected image is not optimized. Some of the disadvantages include:

- The audience can view the contents of your desktop, including private documents and other programs.
- The Starry Night program interface and controls are visible. This takes up valuable projection real estate, clutters the view and provides a visual distraction to the experience.
- The audience can view the mouse cursor and how you interact with the program. This can be distracting, especially when you access various controls to manipulate the sky.

We knew we could provide a better solution that allowed you to display just the sky, without the clutter or distractions. Enter Starry Night Podium.

Optimized for projection, Starry Night Podium provides an intuitively designed interface on the operator's computer screen and projects an impressive, uncluttered view of the sky that brings the visual beauty and accuracy of Starry Night to larger screens and audiences.

Starry Night Podium also allows you to fade, zoom and position digital movies and still images anywhere on the screen during Starry Night presentations, without having to launch a separate program. You can even project live images from robotic telescopes such as SOHO (internet connection required).

Starry Night Podium makes it easy to build custom presentations. To help you get started, Starry Night Podium includes a library of pre-made interactive simulations, educational movie clips and concept diagrams to help you create memorable presentations. You can add your own simulations, movies and images to this library to create your own customized, professional looking, fully integrated astronomy lectures.

Starry Night Podium provides an immersive experience ideally suited for today's classrooms, lecture halls and science centers.

About This Guide

> "The art of teaching is knowing how to stimulate students to feel the joy of learning. And we have an absolutely delicious subject to teach!"
>
> – *Robert F. Garrison, PhD*
> *Professor Emeritus of Astronomy and Astrophysics*
> *University of Toronto, Canada.*

This guide is designed to help you harness the full power of Starry Night Podium. It will show you how an advanced software application optimized for projection can enhance your astronomy teaching or outreach and how you can create memorable presentations with the build in data library or from your own creative ideas, movies and images.

Starry Night Podium makes it easy and, dare we say, fun. There are hundreds of "point-and-click" pre-made simulations that you can use to start building a custom presentation. The pre-made simulations have been created by professional educators and astronomers using Starry Night and each demonstrate a particular astronomical concept. Many of the pre-made simulations contain a text description explaining and expanding upon the concept being illustrated. Use them as a starting point or to draw ideas from. You can also create and save your own simulation files.

Starry Night Podium also offers you a library of movies and concept diagrams. There are over a hundred movies of dramatic and realistic visualizations of astronomical phenomena. The movies touch on a variety of topics, from constellations to the big bang. A set of 25 concept diagrams round out the data library in Starry Night Podium. The diagrams showcase abstract concepts and phenomena.

Starry Night Podium makes it easy for you to organize the simulations, movies and images into a custom presentation. You can mix and match simulations, movies and

images, organize them in folders and arrange them in sequence. During your presentation, you can quickly move from file to file and deliver an immersive, multimedia experience that brings your presentation topic to life.

We invite you to explore Starry Night Podium yourself to see what it can do. Experiment with the software outside the framework of the pre-made simulations. The possibilities and learning potential are almost limitless.

A look at the table of contents will give you a good idea of how this guide is organized, with introductory information, guidance on creating presentations, and helpful appendices. There is a feedback form so you can tell us how we're doing. We appreciate your comments and will use them to improve future editions.

Learn more about the Starry Night family of astronomy and space exploration multimedia products and subscribe to our newsletter at www.starrynighteducation.com.

Teaching with Starry Night

Astronomy brings special challenges to an educator. Among them are:

- The three-dimensional nature of processes like seasons and moon phases,
- Frame-of-reference problems in understanding these processes,
- Many complex and abstract topics, and
- The existence of deep-rooted misconceptions.

In many instances, you are introducing an individual to one of the few science lectures they'll attend. Some astronomical concepts can be difficult if someone has no background or familiarity with the subject. Starry Night Podium can help your audience develop an understanding of the universe around them by engaging them in interactive simulations, movies and images.

In astronomy everything is relative. We see the universe from a tilted, moving platform. We do not feel ourselves moving. We are rooted on Earth's surface. To us on the ground, Earth's daily rotation on its axis and yearly revolution about the Sun make it look as though the sky is moving. Some of the motions we see are real while others are merely reflections of Earth's motions.

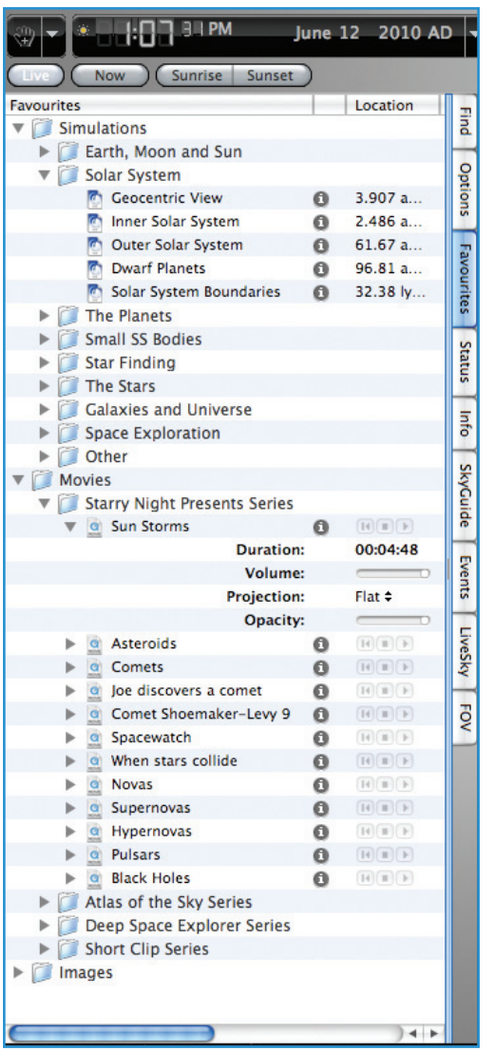
Visualization through computer simulations can help reconcile what are often conflicting ideas by enabling the viewer to gain otherwise impossible perspectives of celestial systems in motion.

This is the frame-of-reference problem. How something looks depends on the frame of reference within which it is viewed. In astronomy, the ability to change one's frame of

reference is crucial to understanding some common astronomical concepts. This Starry Night package, with its computer models, allows you to easily switch between different frames of reference to gain a fuller understanding of our place in the solar system, the galaxy, and the universe. It will help your audience sort out what is real motion and what is apparent motion.

The Favourites Side Pane

The included data library of pre-made simulations, movies and images resides in the Favourites side pane. The files in this pane are collectively known as Favourites. You can open any of the Favourites files by opening the Favourites side pane and clicking on a file of interest. If the Favourites file is a movie or image, a set of media player controls will appear.



Tip: *You can open the* ***Favourites*** *side pane by clicking on the Favourites side tab or by choosing Favourites > Show Favourites Panel from the main menu. To close the Favourites side pane, choose Favourites > Hide Favourites Panel from the main menu or click on the highlighted* ***Favourites*** *side tab.*

You can create new folders (and subfolders) in the Favourites side pane, add new files, place files in folders and organize them in any order. The Favourites side pane is a repository of all pre-made simulations, movies and images.

The Favourites side pane makes it easy to build a presentation by allowing you to drag files and organize them in folders. For example, if you were planning on doing a presentation on Moon Phases, you would first create a folder named "Moon Phases". Inside this folder, you would place your simulations, movies and images and arrange them in the order you wanted to show them. During your presentation, you simply open the "Moon Phases" folder in the Favourites side pane and scroll through the files.

We encourage you to browse the Favourites side pane and familiarize yourself with the incredibly diverse data library included in Starry Night Podium.

Section 2 of this guide explains in detail how to effectively use the Favourites side pane to create custom presentations from the available content or from your own files.

The Data Library

Starry Night Podium includes an extensive data library of pre-made simulations, movies and images that are ready to be used in your presentation. This valuable resource can be browsed in the Favourites side pane and includes:

- **Starry Night Files (.SNF):** a library of over 260 pre-made simulations organized by big topic areas. To access these files, open the Favourites side pane and expand the *Simulations* folder.
- **Movie Media:** 100 mini-documentaries and movie clips documenting our understanding of the universe. To access these files, open the Favourites side pane and expand the *Movies* folder.
- **Image Media:** 25 concept diagrams illustrating astronomical phenomena. To access these files, open the Favourites side pane and expand the *Images* folder.

Additional Resources

Rounding out this Starry Night package are these additional resources:

- **Starry Night User's Guide:** a comprehensive 210-page manual. Starry Night has been designed to be intuitive and easy to learn. Before reading this guide we encourage you to plunge in and give it a try. The manual is in PDF format and is accessible via the **Help** menu in Starry Night Podium.
- **Starry Night Companion Book:** a 192-page introduction to astronomy by well-known astronomy educator John Mosley. The book is in PDF format and is accessible via the **Help** menu in Starry Night Podium. You may find it helpful to browse through this first if you are new to astronomy or are teaching it for the first time.
- **Starry Night's Education Website:** here you will find more information on our educational products, software updates, and more astronomy resources. Log on to our website at: www.starrynighteducation.com

The Appendices

Wrapping up this guide are the appendices. Here you will find information on how to get started using Starry Night. Starry Night is a comprehensive astronomy program but its controls are intuitive. You will be an expert in no time.

There is also information on how to export data from Starry Night (star charts, movies and images), how to add your own custom data into the program such as photorealistic horizons and a section on tips and tricks for Starry Night Podium.

Everything you need to do a satisfying presentation that gives your audience a real insight into the universe using Starry Night Podium is right here, at your fingertips.

Starry Night Feedback Form

Starry Night Podium: We'd like to hear from you!

You get the last word! After you have used this product for a while, Starry Night would appreciate you taking a few minutes to fill out this evaluation form. Your feedback is important for the future improvement and development of our educational resources. Please return this form with your responses to:

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Att: Education, 5666 Lincoln Drive, Suite 260, Edina, MN 55436 USA

Fax: 1-952-935-4050 E-mail: education@simulationcurriculum.com
Web: www.starrynighteducation.com

Where do you use Starry Night Podium (i.e. classroom, college lecture hall, science center)?

_____

What is the average size of your audience?

_____

Please check the appropriate box	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Starry Night is easily integrated into my existing course or lecture content.	☐	☐	☐	☐	☐
The instructions in this guide have enough information and are easy to understand.	☐	☐	☐	☐	☐
The movies and graphics included are adequate to explain astronomical phenomena.	☐	☐	☐	☐	☐
The pre-made simulations effectively demonstrate concepts and are appropriate to my audience.	☐	☐	☐	☐	☐
The simulations, movies and images are well integrated and helpful in my presentations.	☐	☐	☐	☐	☐
I will be able to apply what I learned from this guide.	☐	☐	☐	☐	☐
This is a useful resource that meets my needs in this subject.	☐	☐	☐	☐	☐
I would recommend this product to a colleague.	☐ Yes		☐ No		

What features of this guide did you find most helpful?

How can we make this guide more effective for you?

Additional comments.

SECTION 2: STRUCTURING A PRESENTATION IN STARRY NIGHT

In this section you will learn about the different types of files you can project with Starry Night Podium and how you can use them to create a custom presentation. We'll look at several types of files:

Starry Night files: Dynamic files that you open with Starry Night to recreate a particular view or celestial event.

Movie files: Animation sequences showing an astronomical event such as an eclipse.

Image files: Static color images of a particular view.

Starry Night Favourite Files

What is a Starry Night File?

A Starry Night file allows you to recreate all the conditions and settings which you used in the program to see a particular celestial event.

When you open a Starry Night file again, it will restore you to the same time, viewing location and viewing direction as when you saved the file. It will also restore the time mode you were using when you saved the file. For example, if you had time playing continuously forward in discrete time steps of one day when you saved the file, time will again move forward one day at a time when you reopen it. Finally, all of your label, guide and sky settings will be restored.

Note: *Starry Night files are saved with the file extension ".snf" at the end of their name.*

Some events for which you may wish to make a Starry Night file include an eclipse, a planetary alignment, or a closeup of a galaxy or star cluster. Pre-made files are also very useful for teaching situations. The Favourites side pane contains hundreds of pre-made files that you can browse through.

What is a Starry Night file not? It is not a pre-made animation sequence which shows you blasting off from Earth, for example. All a Starry Night file does is establish the initial screen conditions from then on you have complete control over how the screen view will evolve. If you want to make replayable animation sequences, Starry Night Podium allows you to make movies. For more information, read the section on "Making Movies" in **Appendix B**.

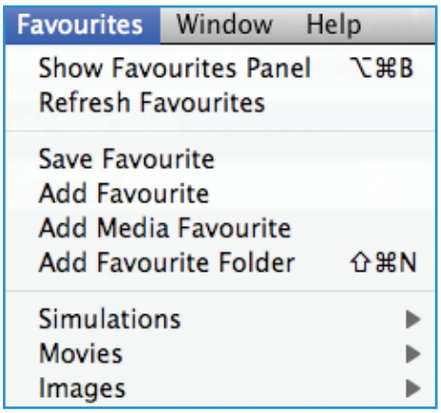
The Favourites Side Pane

The Favourites side pane provides a nice sample of what can be done with Starry Night files. The Favourites side pane is subdivided into layers based on big topic areas such as "The Stars" or "The Planets".

You can open the Favourites side pane by clicking on the Favourites tab that runs along the left side of the screen or by choosing Favourites > Show Favourites Panel from the main menu. Double-clicking on any entry opens a pre-made Starry Night file that shows off some aspect of astronomy.

Viewing a pre-made Starry Night File – An Example

This example teaches you how to open and view a pre-made Starry Night file in the Favourites side pane.

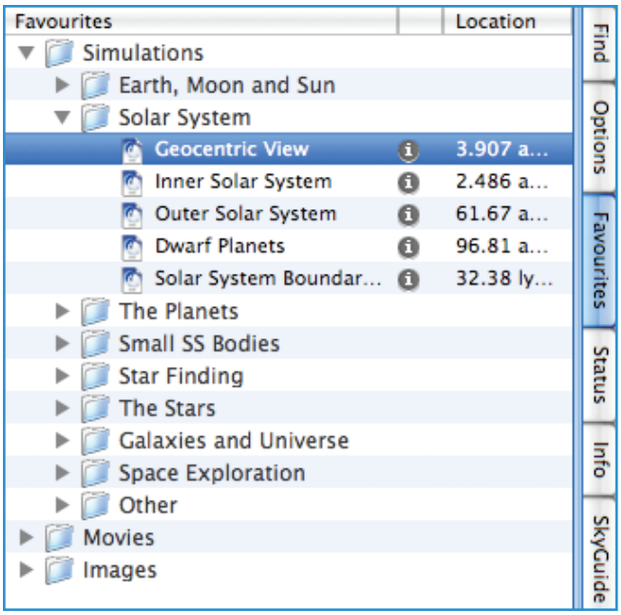


1. Select Favourites > Show Favourites Panel from the main menu bar that runs along the top of the screen.

Or, open the Favourites side pane by clicking on the **Favourites** tab that runs along the left side of the screen. The Favourites side pane will now be open.

Notice that the **Favourites** tab is now highlighted to let you know which side pane is open.

2. Open the "Simulations" folder and then the "Solar System" subfolder by double-clicking on the folders or by clicking on the arrow (Mac) ▶ or plus sign (Windows) ⊞ to the left of the folder name. This will reveal a number of pre-made Starry Night files.



3. Click on the "Geocentric View" file. This will load the "Geocentric View" file in the sky window.

4. Sometimes a small info icon will appear to the right of the file name in the Favourites pane. Click this icon to read a text note that describes this file. The note for the "Geocentric View" file should read "Use the 'Run time forward' button to view the motion of the Sun, Venus and Mars as seen from a stationary Earth."

5. As suggested in the note, press the Run Time Forward button located in the Starry Night Toolbar above the sky window.

The Starry Night file will now play and you can see the motion of the Sun and planets.

Tip: *Take some time to look at the entries in the Favourites side pane. Remember that the entries are not static images, they are regular Starry Night files which you can then modify using any of Starry Night's controls.*

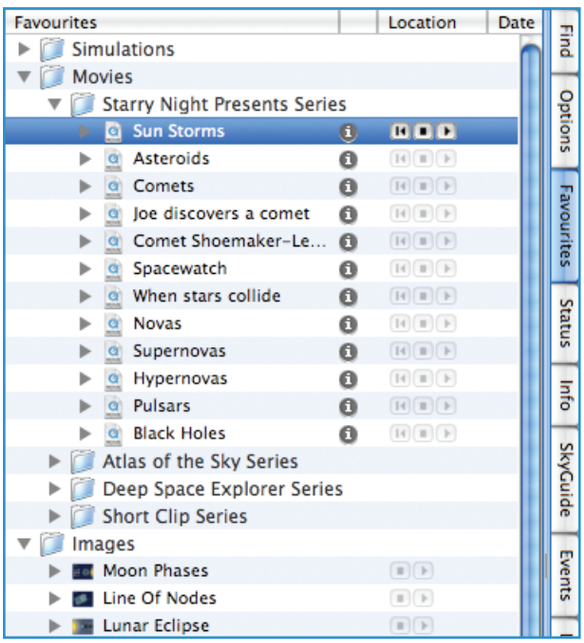
Projecting Movies and Images

A unique feature of Starry Night Podium is the ability to show movies and images on the projection screen. A library of a 100 movies and 25 concept diagrams is included and located in the Favourites side pane. Starry Night Podium also allows you to import your own movies and images. See "Adding Media Favourites (Movies and Images)" on page 19.

To browse the movies and images open the Favourites side pane. The images can be found in the "Images" folder and the movies can be found in the "Movies" folder.

Player Controls

To view a movie or image, click on a file you are interested in. This will highlight the file name and activate a set of media player controls.



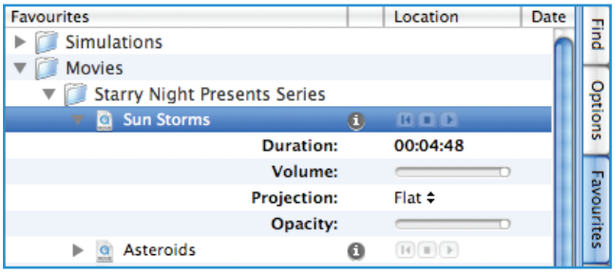
If you select a movie file, three buttons will appear that allow you to rewind, stop and play. If you select an image file, two buttons will appear that allow you to stop and play.

Press the play button to view movies and images. The stop button will stop the movie or image and remove it from the screen. The rewind button, available only for movie files, rewinds the movie to the beginning.

Tip: *A a small info icon ⓘ might appear to the right of a movie or image name in the Favourites side pane. Click this icon to read a text note that tells you more about the movie or image.*

Display Options

Starry Night Podium provides a number of options to control the appearance of movies and images. To view the available options, click on the arrow (Mac) ▶ or plus sign (Windows) ⊞ to the left of the media favourite name. This will reveal a number of display options:



Duration: displays a movie's runtime. Not applicable to images.

Volume: adjusts the sound volume of a movie. Not applicable to images.

Projection: allows the movie or image to be displayed at its native resolution (Flat) or to be displayed in Fullscreen mode.

Opacity: adjusts the opacity level (translucence) of a movie or image. The maximum opacity level of 100% represents a completely non-translucent (i.e. opaque) movie or image. While lower opacity levels make a movie or image translucent, blending it with the background sky.

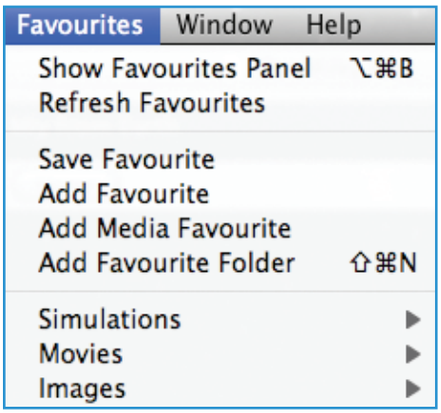
Note: *Modifying a display option while a movie is playing will automatically pause the movie. To resume the movie, press the play button.*

Viewing a Movie or Image – An Example

1. Select Favourites > Show Favourites Panel from the main menu.
2. Open the "Movies" folder by double-clicking on it or by clicking on the arrow (Mac) ▶ or plus sign (Windows) ⊞. This will reveal a set of folders.
3. Open the "Starry Night Presents Series" folder. A set of 12 movies will be displayed.
4. Select the "Sun Storms" movie by clicking on its name. This will activate the media player controls. Press the **Play** button to view the movie.

Adding Favourite Files

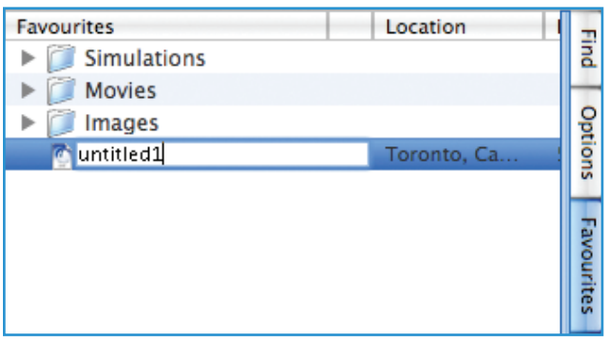
The options at the top of the Favourites menu allow you to add your own files. This can be particularly effective if you are giving a lecture or presentation and need to open a lot of files in a short period of time.



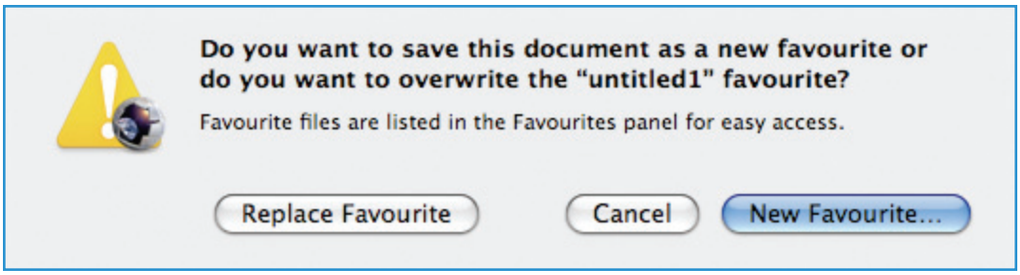
Creating and Saving

You can use Starry Night Podium to create a simulation of a particular celestial event and then save it as a file so that when you go back to it later and reopen the file, all of your settings will be restored.

To save a file, select **Add Favourite** from the **Favourites** menu. Your file will be addded to the Favourites pane. By default, your file will be named "untitled". Clicking on the file name allows you to rename the file.



Tip: *You can modify any of the files listed in the Favourites menu or side pane. To modify a file, first open the file from the Favourites menu, or the Favourites side pane. Next, modify the file in any fashion using the Starry Night controls. Finally, choose Favourites > Save Favourite from the main menu. A dialog box will appear, asking you if you wish to overwrite the existing file. Choose* ***Replace Favourite*** *to overwrite the existing file.*



Creating and Saving a Favourite File – An Example

This example teaches you how to use the Favourites menu to add a new Favourite. You will create a simple file that shows the constellations from your location tonight.

1. Restore Starry Night's default settings by pressing the **Home** button located in the Toolbar above the sky window.
2. Set the time to 10:00:00 PM in the Toolbar.
3. Press the k key on your keyboard to toggle on the constellation stick figures and names.
4. To save your work, select Favourites > Add Favourite. Name the file "Constellations Tonight".
5. Press the **Home** button in the Toolbar. Notice the default settings were restored.
6. In the Favourites side pane, locate the file named "Constellations Tonight" and click on it. The scene should change to 10:00:00 PM and the constellation stick figures and labels should appear.

Adding Document Notes

You can add personal text notes to any file in the Favourites side pane. Open the Favourite file you want to add a note to and select File > Edit Document Notes.

Use the text box to enter any additional information about the file. Then click the **OK** button. To attach and save your note to the file, you must resave the file from the Favourites > Save Favourite menu.

A small info icon will then appear to the left of the file name in the Favourites pane. Click this icon to read your notes. If you wish to edit the note you added, select File > Edit Document Notes and resave the file to make the changes permanent.

Organizing

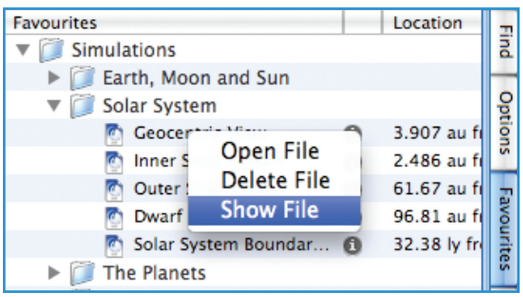
The pre-made simulation files in the Favourites side pane are organized in folders and subfolders. You can also add folders to help organize your favourite files. For example, if you are presenting a lecture on Moon phases, you might want to create a folder named "Moon Phases" and place all your related Moon Favourite files inside. Files and folders in the Favourites side pane are "drag and drop", so it is easy to move them around and arrange them in the order you prefer.

By organizing your files, you will be able to go through them quickly and in sequence during your presentation. It also makes it easier to share your work with others.

To add a new folder, select **Add Favourite Folder** from the **Favourites** menu. By default, the folder will be named "untitled folder". As with Favourite files, you can click on the folder name to rename it.

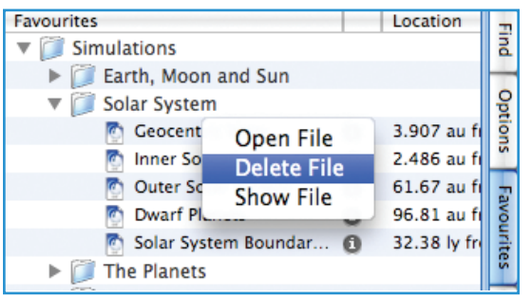
Exporting and Sharing

You can backup your Favourite files or share them with others. **Right-clicking** or **Crtl-click** (Mac) on a file or folder will display a contextual menu. Select **Show File** or **Show Folder** to open a dialog box with the folder where that file is stored.



Deleting

Right-click or **Crtl-click** (Mac) on a file or folder and select **Delete File** or **Delete Folder** to remove a file or folder.



Adding Media Favourites (Movies and Images)

In addition to Starry Night files, Starry Night Podium allows you to import and project movie and image files. For example, you can add video clips from NASA or custom graphics you created for a presentation. You can even convert your powerpoint presentation to image files and use Starry Night Podium to display them in any sequence. Starry Night files, movies and images can be combined to create memorable and engaging presentations.

Tip: *To save a view from Starry Night as an image, use Starry Night to setup the view and select File > Export as Image. You can also create movies by selecting File >Make Movie. For more information on exporting images and movies see* ***Appendix B****.*

Supported Formats and Types

Images:
You can choose from .jpg, .png, .bmp, .gif, .tiff and many other popular formats.

Movies:
You can choose from .mov, .avi, .mp4, .m4v, mpeg and other supported formats.

A complete list of supported video formats and file types is available from:

http://www.apple.com/quicktime/player/specs.html .

Importing

To add a media favourite select Favourites > Add Media Favourite. A window will open that will allow you to select the movie or image file you'd like to add to the Favourites side pane.

Organizing

As with Favourite files, media favourites in the Favourites side pane are "drag and drop". You can move them around and arrange them in the order you prefer. You can mix Starry Night Favourite files and Media Favourites in the same folder and arrange them in the sequence you'd like to show them during a presentation.

Deleting

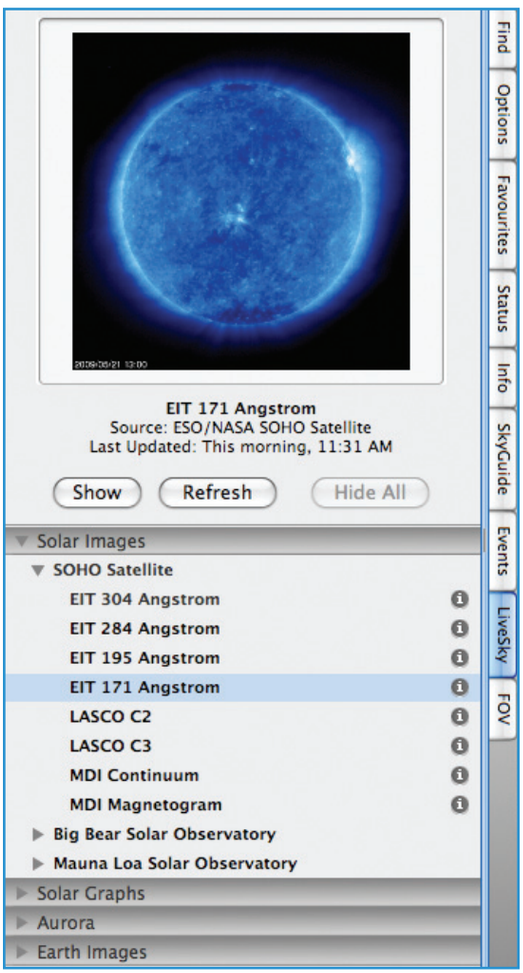
Right-click or **Crtl-click** (Mac) on a image or movie favourite and select Delete Media File to remove an image or movie.

Projecting LiveSky Content

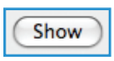
Although Starry Night has a wealth of built-in astronomical information, much more information exists on the Internet. LiveSky is a gateway to the rich resources of the Internet. You can use LiveSky to access live images of celestial phenomena and project them on a large screen.

LiveSky Side Pane

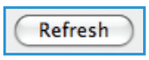
Open the Livesky side pane to access live images.



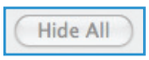
At the top of the open LiveSky pane will be an image. Beneath the image is information about the image, such as its source and date. Beneath the image information are three buttons.



Clicking this button opens the image and displays it.



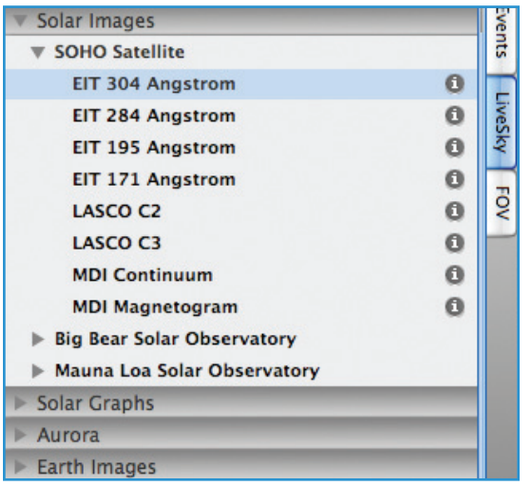
Clicking this button causes Starry Night to begin downloading an up-to-date image from the Internet.



Clicking this button will remove the image from the screen.

Accessing Images

You choose which image will be displayed in the LiveSky pane by expanding one of the layers listed beneath the image, and then clicking on an image name.



Clicking on an image name will display the most recently downloaded version of this image. It will not attempt to download an up-to-date version of the image – you need to press the **Refresh** button to do this.

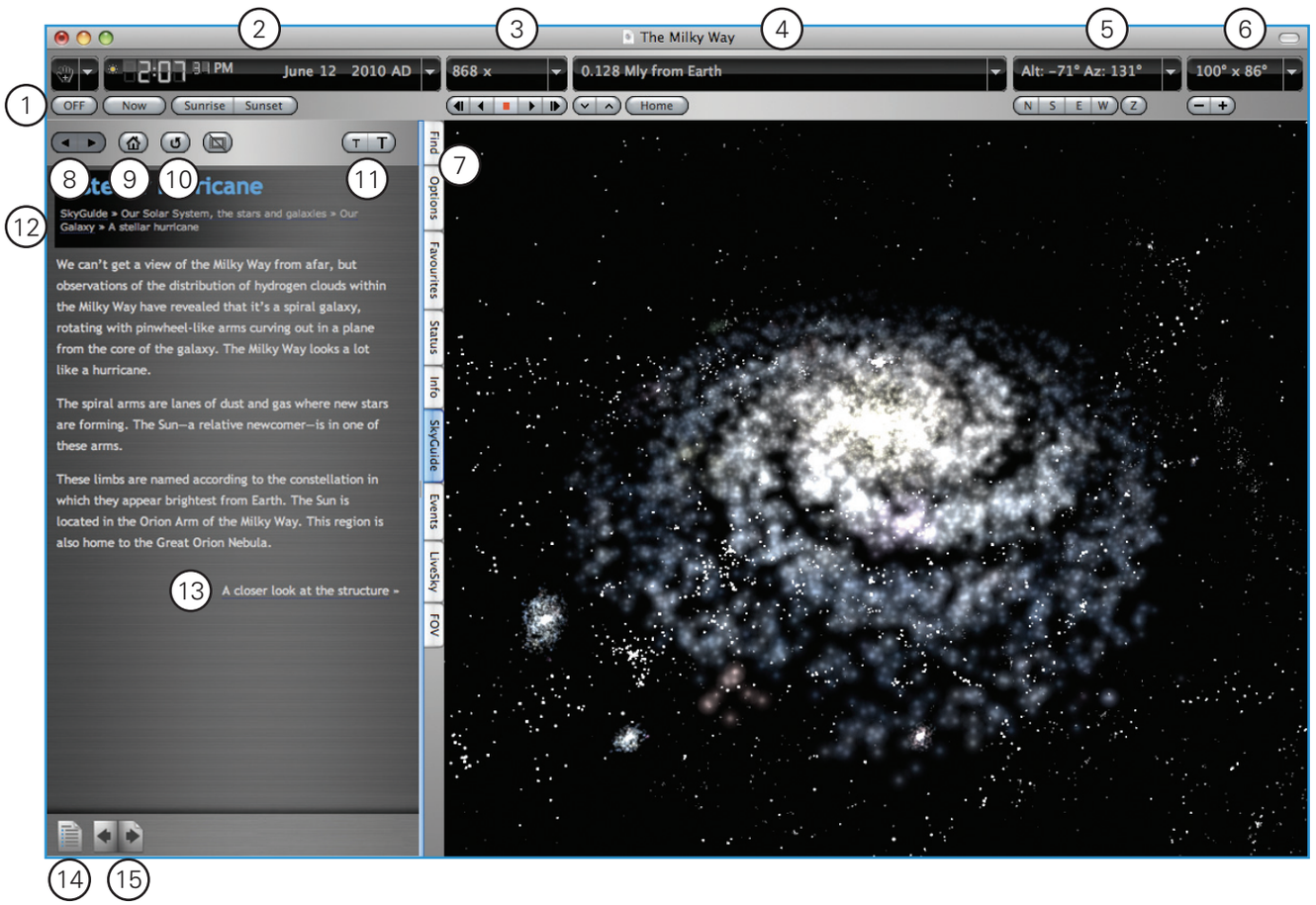
Clicking the information icon to the right of an image name will display a brief description of the image.

Types of Images

LiveSky can provide you with up-to-date images of many different celestial phenomena: images of the Sun as seen through different filters and at different wavelengths, plots of the sun's electromagnetic activity, images of auroral activity (northern and southern lights) in Earth's atmosphere, and satellite imagery of Earth. As more types of live planetary images become available online, links to these images will be added to LiveSky.

APPENDICES

Appendix A: Quick Start Guide



Running Starry Night Podium

Once you have installed Starry Night Podium, you can run the program as follows:

Windows: Double-click the Starry Night icon on your desktop, or select it from your start menu.

Macintosh: Double-click the Starry Night icon in the Applications/Starry Night Podium folder.

Important: *To use a projector, click on the Starry Night Projector icon found in the same location as Starry Night Podium. This will launch the projector component of Starry Night. The two applications will automatically connect so that any action you perform in Starry Night Podium will be mirrored in Starry Night Projector.*

The Interface

The main Starry Night Podium screen is divided in two with a tool bar across the top. The right panel is your current view of the sky. The side panes at the left include a series of tabs that give you access to specific functions, options, and detailed information.

The Tool Bar

The Tool Bar provides precise information about Starry Night's current view of the sky. It also gives you all the tools you need to move through time and space.

1. **Sync** (Live/Off) button toggles the connection between Podium and Projector. The **Off** and **Live** buttons display the current status of the connection. Pressing **Off** will switch the button to read **Live** to indicate that Podium and Projector are in sync. Press the **Live** button to disconnect Podium from Projector.

2. **Time and Date** shows the time and date for the current view. Starry Night can display the sky as it looks right now or take you back or forwardi ntime. To change the time or date, use any of the predefined buttons or click any of the fields in the display and enter a number. To change the month, enter a number between 1 and 12. Or use the up and down arrows to step through time.

3. **Time Flow Rate** controls the speed at which time is flowing.

Changing Your View

4. To change your **Viewing Location**, choose Options > Viewing Location. To return to your home location, click **Home**. To change your home location, choose File > Set Home Location in Windows, or Starry Night > Set Home Location on a Macintosh. Or use the up and down buttons to blast off from the surface of any planet you travel to.

5. **Gaze** indicates the direction you're looking. **Alt** (altitude) measures the height in degrees above the horizon. An altitude of zero degrees means you're looking straight ahead, 90° means you're looking straight up, and -90° is straight down. **Az** (azimuth) indicates the direction you're facing: zero degrees is north, 90° is east, 180° is south, and 270° is west.

   To change your view, click the direction buttons, or move your mouse onto the current display until it becomes the hand cursor, click and hold to grab the sky, and drag the display around.

6. **Zoom** indicates how much of the sky you're seeing, measured in degrees. If you could see everything in front of you, from your right to your left, it would cover 180°, but the average person can see only approximatley 100°. Binoculars typically cover

5° to 7°, and telescopes even less. Use the buttons below – or the scroll wheel on your mouse – to zoom in for a closer look at any object that catches your eye.

The Side Panes

7. These side panes give you access to Starry Night functions, display options, and detailed astronomical information.

   Find allows you to search through Starry Night's databases and select specific objects in the sky.

   Options allows you to modify the appearance of your sky display, including such things as guides and gridlines, local conditions, and the objects you want to see.

   Favorites include a menu of Starry Night files that demonstrate the application's features and key astronomical concepts. You can also store your own favorites here.

   Status provides a handy summary of your current sky view.

   Info provides comprehensive information on the currently selected object, including links to even more online information.

   SkyGuide is where you will find a collection of interactive guided tours through the cosmos. It also includes step-by-step instructions on how to use the most common Starry Night functions.

   Events is a search engine that finds and lists current and future visible astronomical events like moon phases, eclipses, meteor showers and more.

   LiveSky is Starry Night's gateway to the rich resources of the Internet. This panel gathers together the most current astronomical images and data available online.

   FOV allows you to display an outline onscreen that shows the shape and typical field of view (FOV) of any of your astronomical instruments.

SkyGuide

Click the SkyGuide tab to access Starry Night's collection of interactive guided tours of the cosmos. SkyGuide functions a lot like your Web browser: there are buttons to help you navigate through the pages and lots of links to explore.

8. The **Back** button takes you to the page you last visited. Click it again to move back through the pages you've seen. Click **Forward** to go forward again through the same pages.

9. Click **Home** to take you to the main SkyGuide page.

10. Click **Refresh** to restart the Starry Night display.

11. **Text Increase** and **Text Decrease** change the size of the text in the SkyGuide window. (Macintosh version only.)

12. Each page in SkyGuide includes a **Path** that shows where you are and the way back to the main page, and each section in SkyGuide begins with a **Menu of Topics** to be covered. Click these links to navigate through SkyGuide.

13. At the bottom of each page, you'll find a link to the **Next Page**. If you want to read SkyGuide from beginning to end, keep clicking here. Or use the menus to explore.

14. Click **Table of Contents** to display a list of all the topics and tours SkyGuide offers.

15. Click **Page Forward** to move to the next page in SkyGuide. Click **Page Back** to move to the previous page.

Appendix B: Exporting Data – Star Charts, Movies, Images

Exporting Data: Star Charts

Starry Night has a special set of print settings that make printing informative, legible charts easy. The charts can be taken outside to help locate and identify objects in the sky.

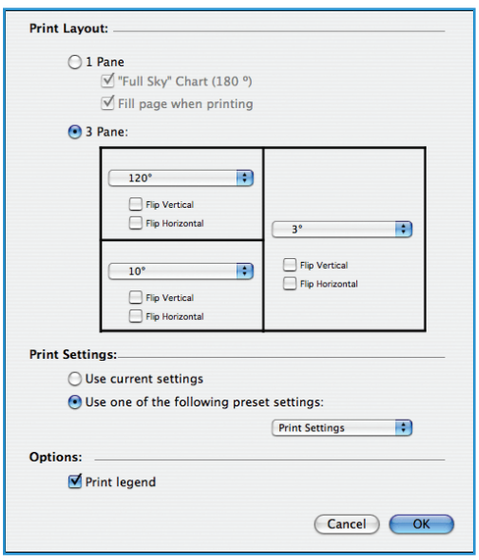
Starry Night can create finder charts in a variety of layouts. From naked eye charts that help you become familiar with the pattern of the constellations to finder charts that accurately simulate what you can see through a telescope, finder scope or binoculars.

First, center on the area of sky you are interested in and use the Field of View buttons in the **Zoom** control of the Toolbar to set the correct field of view for your printed chart. For example, if you want a chart that shows the northern part of the sky, press the **N** button in the Toolbar to face north and set your field of view to 100 degrees. Remember that the appearance of the sky is time-sensitive; make sure to set the time in Starry Night to the time you plan to use the star chart.

Once the time, viewing direction and field of view have been set, select File > Print from the menu. Alternatively, if you wish to print a chart centered on a specific object, right-click (Ctrl click on the Mac) on the object and select **Print Chart** from the contextual menu.

Print Settings

Selecting **Print** from the **File** menu will open a dialog box with options for controlling the appearance of the printed chart.



One-pane star charts: Produces a full-page printout of the area shown onscreen. When checked, the "Fill page when printing" box prints a star chart that covers a larger area than shown onscreen.

Full-sky star charts: Checking the "Full Sky Chart" box will print a circular star chart that covers the entire sky from horizon to horizon. These charts are centered on the zenith and show you what the sky looks like above the horizon in all directions. Full-sky charts are handy for identifying the constellations or locating the brighter stars and planets visible with the naked eye.

Tip: *To use a full sky star chart hold it in front of you and turn it around so the label for the cardinal direction you're facing (such as north (N) or southwest (SW)) is right side up. For example, if you are looking north, the bottom of your full sky printout should be labeled north.*

The circle around the full sky map is the horizon. The center of the map is the zenith, the point in the sky directly above the observer.

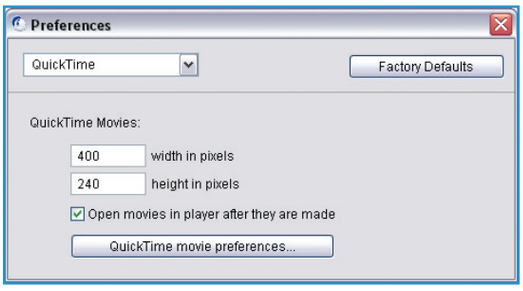
For more detailed information, please refer to the Starry Night **User's Guide** located under the **Help** menu.

Exporting Data: Movies

You can make spectacular movies using Starry Night. You can record a graphically intensive event (such as a planet flyby) and play it back as a smooth animated sequence. Movies are played back using the QuickTime viewer, so you can send them to students and colleagues. They need not have Starry Night to view the movies.

To make a movie, choose File > Make Movie. A dialog box will open that allows you to name your movie file and choose where to save it. The first time that you make a movie, the Compression Settings dialog box will also open. See "Movie Compression Settings" in the Starry Night User's Guide to learn more about the compression options available.

After you have named your file, a rectangle appears on the center of the screen, which we call the Movie Box.



You can change the size of the movie box (height or width) by choosing **Preferences** from the **File** menu (Windows) or the **Starry Night** menu (Macintosh). And selecting **QuickTime** from the dropbox on the upper left of the Preferences dialog box.

There are three Movie controls: the Pause button, the Stop button, and the Record button. The Movie window will automatically be in Record mode when it opens.

- The **Pause** button pauses the recording of the movie. This enables you to adjust your view "off screen" between frames.
- The **Stop** button completes the recording process, and closes the QuickTime window.
- The **Record** button resumes the recording of a movie after it has been paused.

The number of frames in your movie and the total running time are shown in the bottom right corner. A new frame is added to the movie every time the screen is redrawn. Most changes you make in Starry Night cause the screen to be redrawn. Switching daylight on or off, changing the labels, and zooming in or out are just a few changes which will cause a new frame to be recorded.

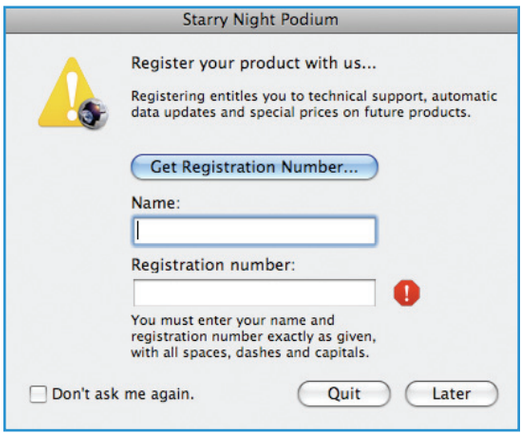
It is often best to stop time flow before you make a movie. Once your view is set up properly, you can turn the flow of time back on. When you are finished recording your movie, hit the Stop button along the bottom of the movie window.

Note: *The Movie Box doesn't record cursors, so you don't have to worry about getting a "hand" in the shot.*

For more detailed information, please refer to the Starry Night **User's Guide** located under the **Help** menu.

Appendix C: Tips & Tricks

Online Updates and Support



Registering Starry Night

When you run Starry Night the first time, you need to enter your name and registration number before you can use all the features of the program.

To get your unique registration number, click **Get Registration Number**. For this to work, you must have an active Internet connection. If you do not have an Internet connection, you can still click **OK** and the program will operate normally—but you will not be able to download the periodic data updates, such as new comets and tours.

After you have typed in your name and registration number, click **OK** to begin using Starry Night.

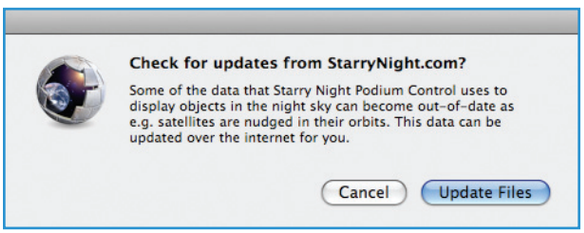
A registered user is entitled to free technical support and reduced prices on other astronomy software programs. You can update your registration information at any time by visiting the following site:

http://www.starrynight.com/register

You can retrieve your registration number at any time by choosing Help > Registration (on a Windows computer) or Starry Night > Registration (on a Macintosh).

Note: *You can record your username and registration number in the front of this guide.*

Updating your data files



After you enter your registration information, Starry Night asks if you want to update your data files.

If you click **Update Files**, Starry Night will attempt to download the latest data files from our servers. Downloading these files ensures that any new comets, asteroids, satellites, or SkyGuide information is added to the program.

You can update these files at any time by choosing LiveSky > Update Data Files from the application menu. You can customize how often to check for data update by choosing LiveSky > Preferences for Auto Updates from the application menu. New Starry Night data is available each day.

Note: *Updating the data files is not the same as updating the program itself. To ensure you are running the latest version of Starry Night, see the Program Updates section. If you do not register your copy of Starry Night, the application will not be able to retrieve automatic data updates.*

From here you can click **Cancel File Update** to continue using the program or **Open Registration Dialog** to obtain you registration number.

Technical Support and Discussion List

A list of frequently asked questions is available online by choosing Help > Online Help. You can also submit a question to our technical-support staff.

The Starry Night discussion list is a mailing list where you can ask questions and share tips with other owners of Starry Night. The list has more than 9,000 members, so it is an excellent resource. You can sign up on the following page:

http://tech.groups.yahoo.com/group/StarryNight/

Projection Tips

A few tips when using Starry Night for projection:

Screen savers – it is a good idea to turn off screen savers prior to running Starry Night. This will avoid the possibility of a screen saver starting during your presentation.

Energy saver – disable the energy saver in your computer settings to prevent the computer from dimming the display, entering into sleep mode or shutting down during a presentation.

Arrive early – and test all the connections and Starry Night prior to your presentation.

Room lighting – for the best image on the projection screen, darken the room as much as possible.

Projector adjustments – prior to your presentation, adjust the digital projector's contrast, brightness and gamma settings. You should have Starry Night running while adjusting these settings.

Starry Night Projector adjustments – there are a number of adjustments available in Starry Night itself to optimize the projected image:

1. **Star brightness, contrast & color:** There are options to change the size of the stars or even the color of the star display. To access these options select **Projector Preferences…** from the **File** menu in Starry Night Podium (Windows) or select **Projector Preferences…** from the **Starry Night Podium** menu in Starry Night Podium (Macintosh). To learn more about these options select **User's Guide** from the **Help** menu and read page 44.

2. **Line thickness** – you can adjust the line thickness of the various coordinate systems in Starry Night. For example, to change the grid line thickness of the ecliptic guides, open the **Options** side pane, expand the **Guides** layer and click on **Ecliptic Guides**. In the window that appears onscreen, adjust the line thickness using the **Thinner/Thicker** slider.

   The constellation stick figure lines can also be adjusted. Open the **Options** side pane, expand the **Constellations** layer and click on **Stick Figures**.

3. **Horizon dimming at night** – depending on your projector settings, the horizon may appear too dark at night. You can brighten the horizon by using the **Dim at night** slider found in the **Options** pane. To view the slider, expand the **Local View** layer and click on **Local Horizon**.

Tip: *After your presentation is done, allow the projector to cool down before unplugging the power cord. This will protect the lens from cracking.*

Starry Night Usability Tips

What if the monitor image and the projected image lose sync while using Starry Night?

First, check the status of the **Sync** button in the Toolbar. The button should read **Live** when the connection is active.

If the button reads **Live** but the image on your monitor and the image on the projected screen don't match, click the **Sync** button (changes the status from **Live** to **Off**) and then click the **Sync** button again (changes the status from **Off** to **Live**) to re-establish the connection. Your views should now be the same on the monitor and projection screen.

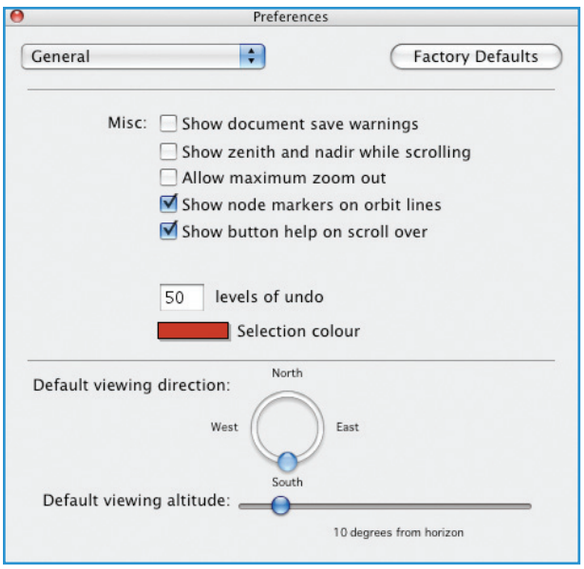
Starry Night Podium and Starry Night Projector Preferences

Starry Night Podium (what you see on your computer monitor) and Starry Night Projector (what is displayed in the projection screen) are two separate programs and each has its own set of preferences.

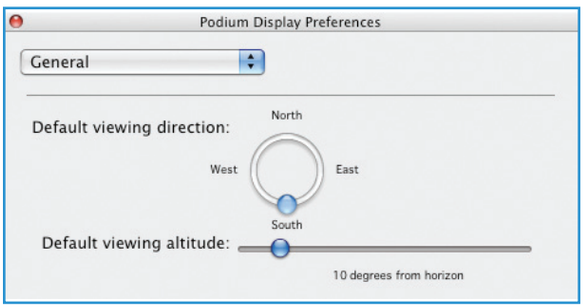
The preferences for Starry Night Podium only affect the scene shown in your computer monitor. The preferences for Starry Night Projector are specific to the scene that is displayed on the projection screen.

Accessing the preferences

Starry Night Podium: (Windows) Select **Preferences** from the **File** menu in Starry Night Podium. (Macintosh) Select **Preferences** from the **Starry Night Podium** menu in Starry Night Podium.



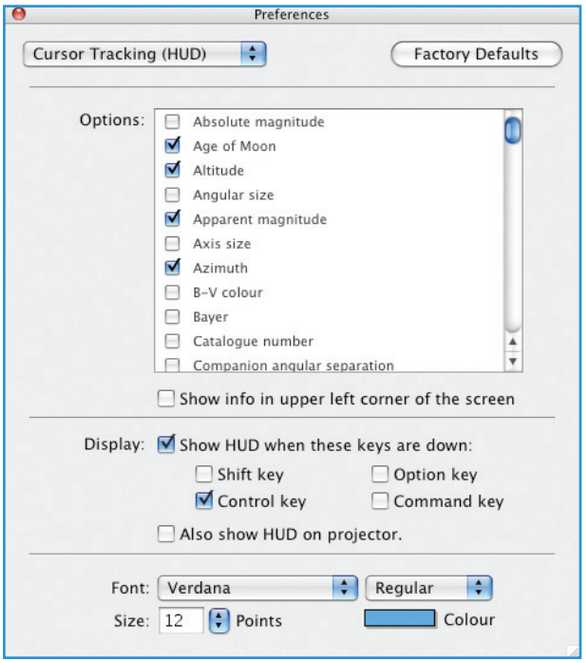
Starry Night Projector: (Windows) Select **Projector Preferences…** from the **File** menu in Starry Night Podium. (Macintosh) Select **Projector Preferences…** from the **Starry Night Podium** menu in Starry Night Podium.



Heads-Up Display (HUD) Options

The Heads-Up Display (HUD) Options are of particular interest. Pointing the cursor at an object onscreen causes Starry Night to display the object's name, constellation and distance. This feature is known as the Heads-Up Display (HUD).

You can change the look of the HUD and also change the information fields that it displays, by choosing **Preferences** from the **File** menu (Windows) or the **Starry Night Podium** menu (Macintosh) and selecting **Cursor Tracking (HUD)** from the dropbox in the top left corner of the Preferences dialog box.



A long list of information fields gives you control over which object information is displayed, including name, magnitude, distance, and so on. You can also choose the color in which you want to display these information fields.

Finally, you can choose the font, style, and size of the text in which the HUD information is displayed.

Tip: *Press the i key on your keyboard to toggle the HUD on and off.*

Displaying the HUD in the projection screen

If you want your audience to view where you are pointing your cursor, check the "Also show HUD on projector" box and the HUD will be displayed in the projection screen. This is a handy feature when you want to direct the attention of your audience to a particular object.

Tip: *Consult the* ***User's Guide*** *found under the* ***Help*** *menu for a complete description of all available preferences.*

The Sync (Live/Off) button

Every action you perform in Starry Night Podium is mirrored in Starry Night Projector (that is, the projection screen) after you let go of the mouse button. What is being shown on your monitor will always be in sync with the projected image. When you launch both Starry Night Podium and Starry Night Projector, the two programs automatically connect to each other and the **Sync** button in the Toolbar will toggle to **Live** to indicate the current status of the connection.

It might be useful at times, to disconnect Starry Night Podium from Starry Night Projector by clicking the **Sync** button on the Toolbar. When the **Sync** button's status is **Live** and you click on it, the connection between what you see in your monitor and what is being projected will no longer be in sync when you perform a new action in Starry Night Podium. To reflect the new connection status, the **Sync** button will toggle its status from **Live** to **Off**.

This allows you to setup a scene in Starry Night Podium without having the audience view all the actions you had to perform to setup the scene.

For example, if someone asked you to show them the Pathfinder landing site on Mars, you would click on the **Sync** button to change it status from **Live** to **Off** and proceed to setup your scene. When you had the scene you were asked to show, you would click the **Sync** button, thereby changing the connection status from **Off** to **Live**. This re-establishes the connection and what you see in your monitor will appear on the projection screen. The effect is similar from scrolling between pre-made simulation files and provides a smooth transition between concepts you want to illustrate or for those times when you need extra time to setup a scene.

Keyboard Shortcuts

I – *Toggles the HUD on/off*

K – *Toggles the constellation stick figures and labels*

L – *Turns on the labels for stars and brighter deepsky objects.*

Ctrl-D (Windows); **Cmd-D** (Macintosh) – *Toggles Daylight on/off*

Ctrl-E (Windows); **Cmd-E** (Macintosh) – *Toggles the Horizon on/off for Pro users.*

Shift Key – *turns on the location scroller when pressed down. Use the location scroller when exploring 3D space.*

Spacebar – *if you hit the **space bar** during a pan, the program immediately takes you directly to the object.*

There are many more shortcuts to explore in Starry Night. A complete list of keyboard shortcuts can be found at the back of your **User's Guide** – accessible via the **Help** menu in Starry Night.

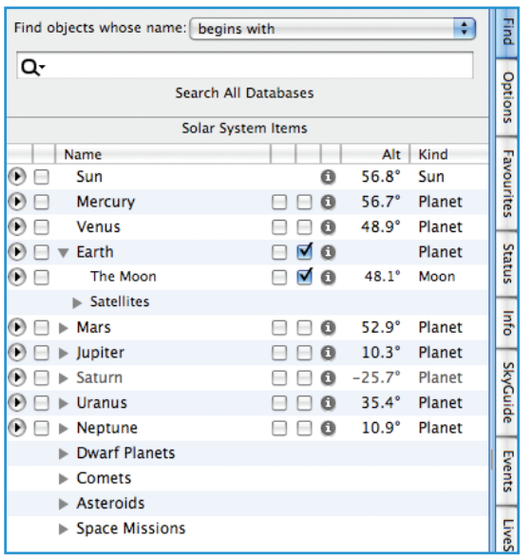
Hidden Gems: Features you might not know about

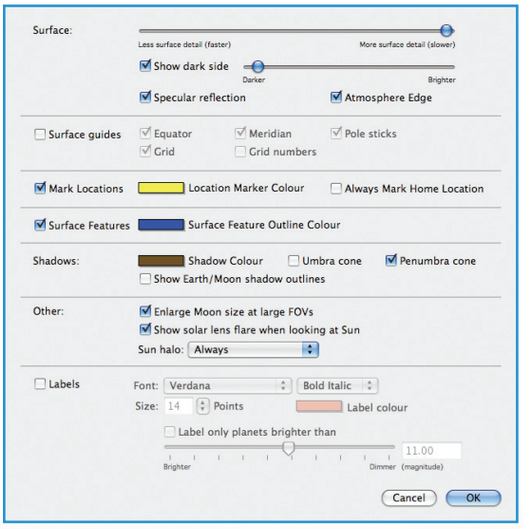
What follows is a list of Starry Night features that will help you create great looking Starry Night Favourite files. For additional features, refer to the **User's Guide** under the **Help** menu and subscribe to our monthly newsletter at www.starrynighteducation.com.

3D Shadows

Starry Night can display 3D shadow cones (umbra and penumbra) for all planets, dwarf planets and moons in our solar system.

To display the shadow cone for an object, open the **Find** pane and check the second box to the right of the object's name. In the example below, the Earth and Moon shadow cones have been toggled on.





You can change the color of the shadow cone and select to display the umbra, penumbra or both when the shadow box in the **Find** pane is checked. To customize how shadows will appear, open the **Options** pane, expand the **Solar System** layer and click on "Planets-Moons". This will bring up a new dialog window that allows you to change the display options for shadow cones.

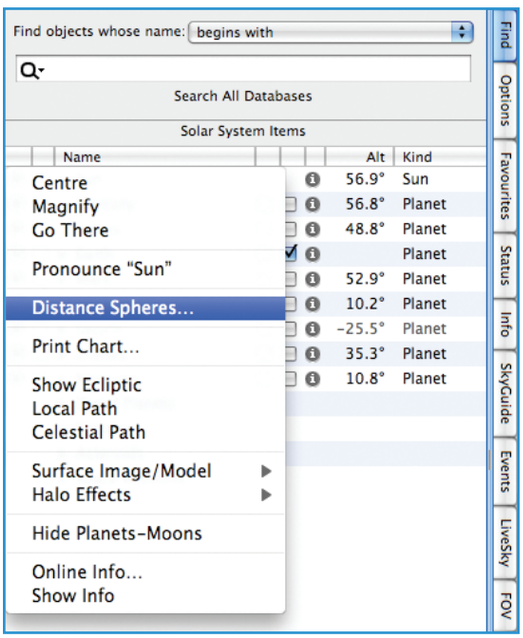
Tip: *An example of a 3D shadow cone to illustrate a lunar eclipse can be found in the Favourites side pane under Simulations > Earth, Moon and Sun > Eclipses > Lunar Eclipse > Lunar Eclipse zoomed in.*

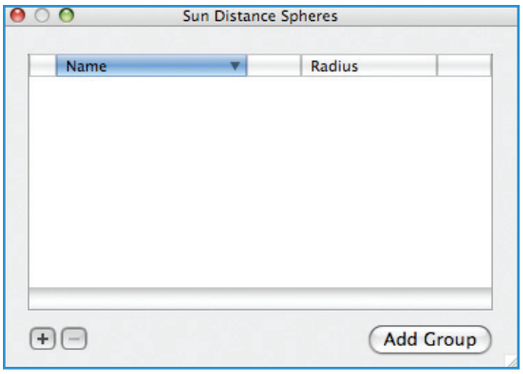
Distance Spheres

Distance Spheres allows you to display translucent spheres at custom distance milestones from a selected object.

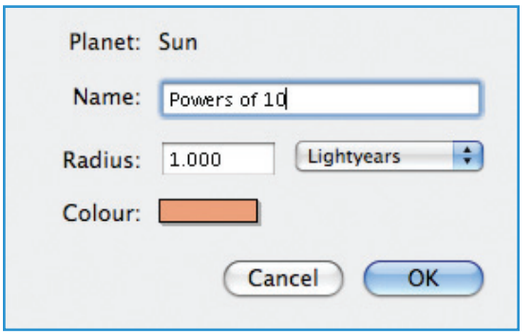
Tip: *An example of a distance sphere to show the boundaries of our solar system can be found in the Favourites side pane under Simulations > Other > Distance Spheres > Sun distance spheres. Use the* ***Increase Elevation*** *button in the Toolbar to view the distance spheres. Hold down the SHIFT key and click-drag your mouse cursor around a distance sphere to change your perspective.*

To add a new distance sphere, **right-click** or **ctrl-click** on a solar system object and select **Distance Spheres…** from the contextual menu that pops up. Alternatively, you can open the **Find** pane and click on an objects contextual menu button (first button located on the left of the object's name) to view the contextual menu.

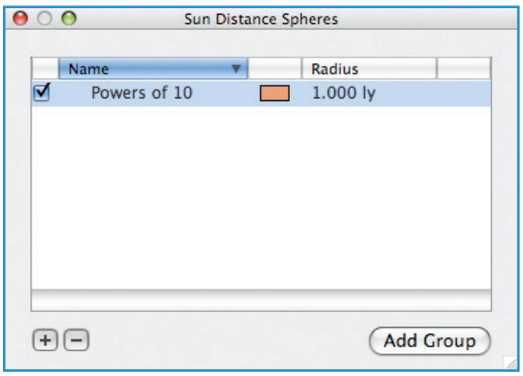




Click the (+) button in the dialog window that opens to add a new distance sphere.



Name your distance sphere and set the radius of the sphere. In the example below, the Sun will be at the center of the distance sphere. Press the **OK** button when finished.



To display the distance sphere, make sure the box to the left of the sphere's name is checked.

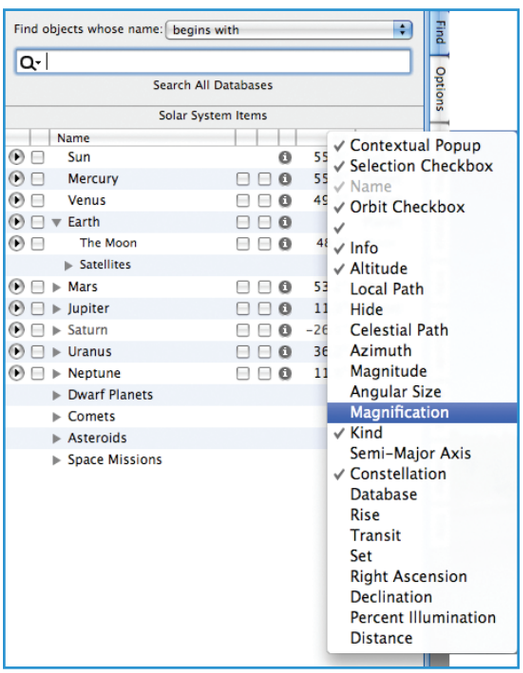
To view the distance sphere, use the **Increase Elevation** button to increase your distance from the Earth. In this example, we added a distance light sphere with a radius of 1 light year and would have to increase the elevation to at least 1 light year to view the sphere.

Magnify Planets

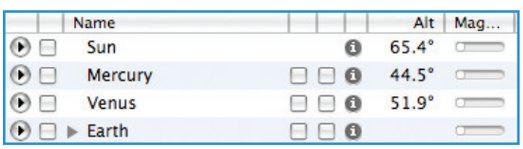
This is a fun and educational feature. Starry Night allows you to enlarge the sizes of solar system objects. When this feature is used, the object will no longer be drawn to scale but there are advantages. For example, when you hover above the solar system, the planets are mere dots. You can use the magnification feature to enlarge the sizes of the planets, making them easily visible.

Tip: *An example of a magnified Earth to better illustrate the seasons can be found in the Favourites side pane under Simulations > Earth, Moon and Sun > Seasons > Seasons.*

The magnification slider is hidden by default. To view the magnification slider open the **Find** pane and **right-click** (Windows) or **ctrl-click** (Macintosh) on a column heading, such as "Name". In the menu that opens, select "Magnification".



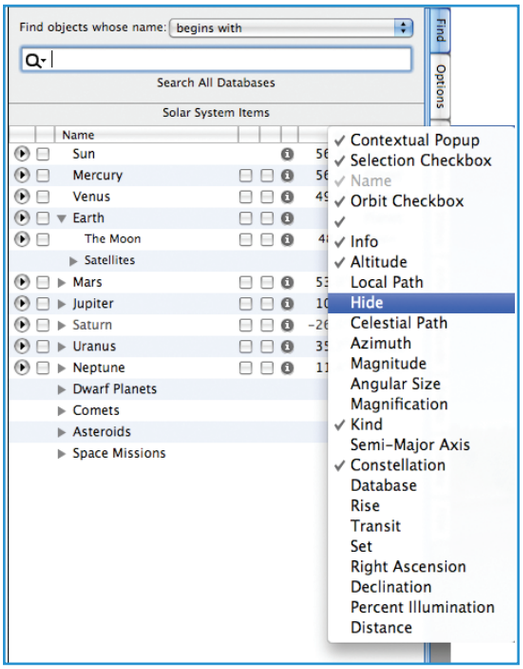
A new slider will appear under the heading "Mag." Move the slider to the right to magnify the size of the object.



Hide Planets

The hide feature will hide a solar system object from view. For example, if you were showing the orbit of the Earth, you could hide all of the other planets and avoid being distracted by the motion of the other planets.

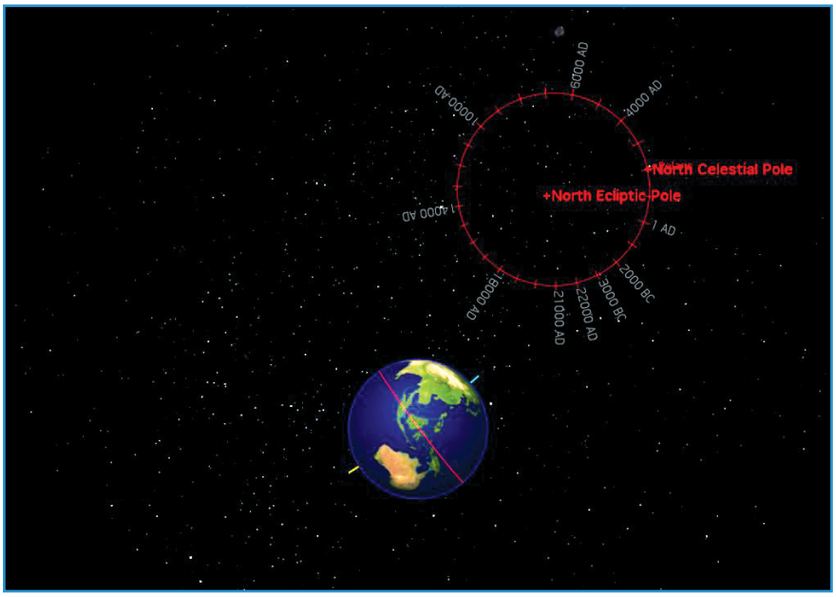
Like the magnification feature, the hide feature is hidden by default. To view the hide checkbox column open the **Find** pane and **right-click** (Windows) or **ctrl-click** (Macintosh) on a column heading, such as "Name". In the menu that opens, select "Hide".



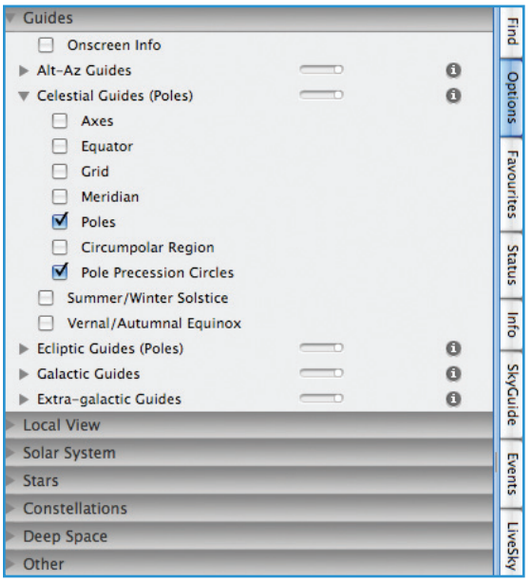
A new checkbox will appear to the right of the Alt. column. Click on the box to hide the object. In this example, Venus has been hidden from view.

Precession Dials

Precession Dial shows a ring in the northern and southern sky marked in 1000 year increments depicting the rotational axis "wobble" of the Earth over its 26,000 year cycle.



To display the precession dials, open the **Options** pane, expand the **Guides** layer and then the **Celestial Guides (Poles)** sub-layer. Under **Celestial Guides (Poles)** check the "Pole Precession Circles" box.



Tip: *A pre-made simulation file showing the precession dials can be found in the Favourites side pane under Simulations > Earth, Moon and Sun > Precession and Nutation > Precession*

More Tips & Tricks online

Please visit us online at www.starrynighteducation.com for more tips and tricks from us and other users of Starry Night.