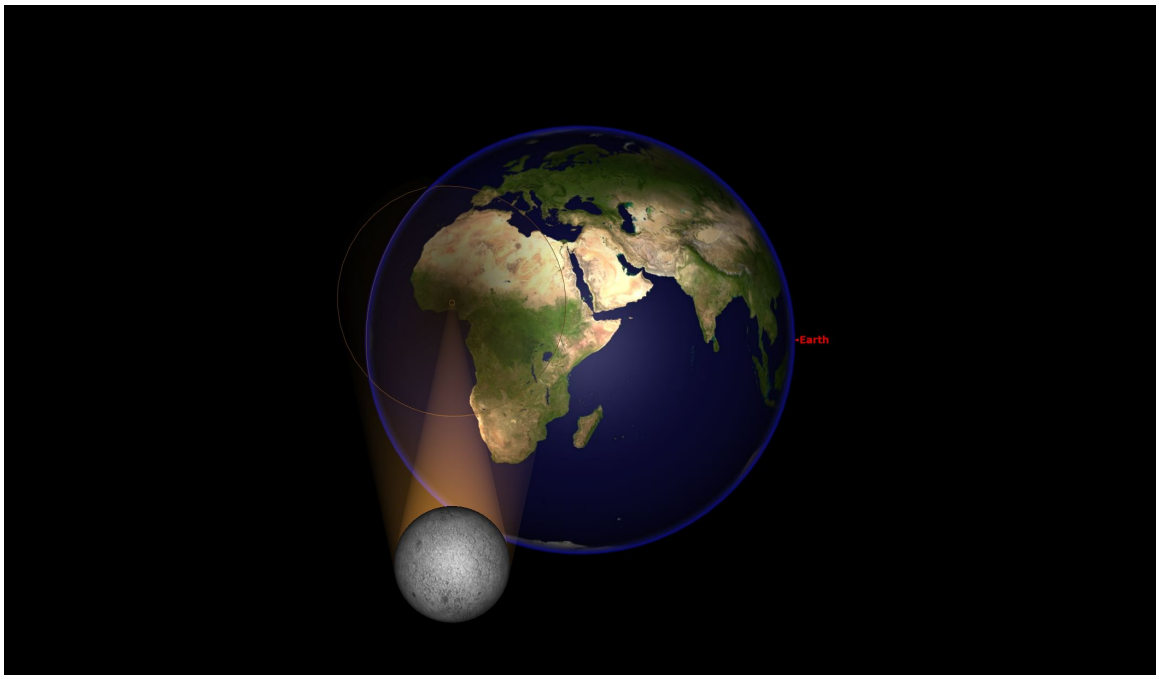
Starry Night 6.4 Feature Walkthrough

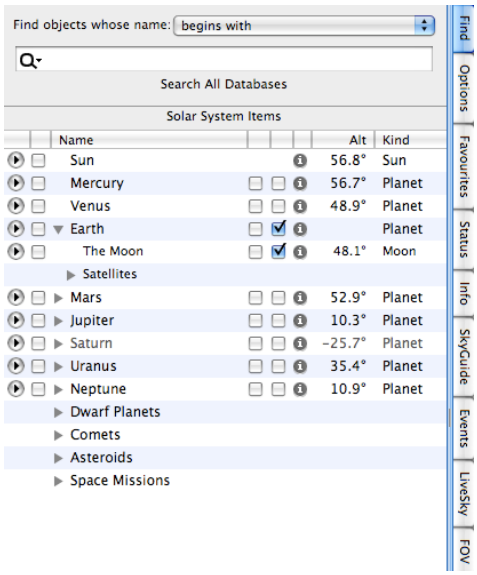
For more info visit: *http://store.starrynight.com/upgrade-features*

Feature 1: 3D Shadows



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

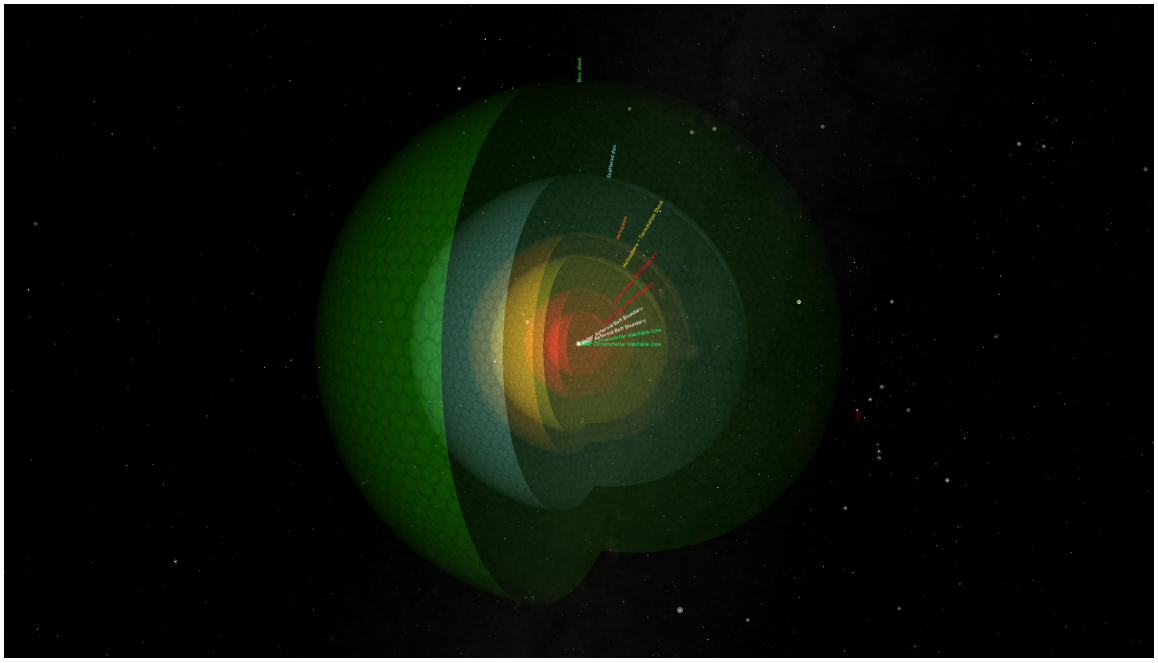
To display the shadow cone for an object, open the Find pane and check the second box to the right of the object's name. In the example below, the Earth and Moon shadow cones have been toggled on.



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

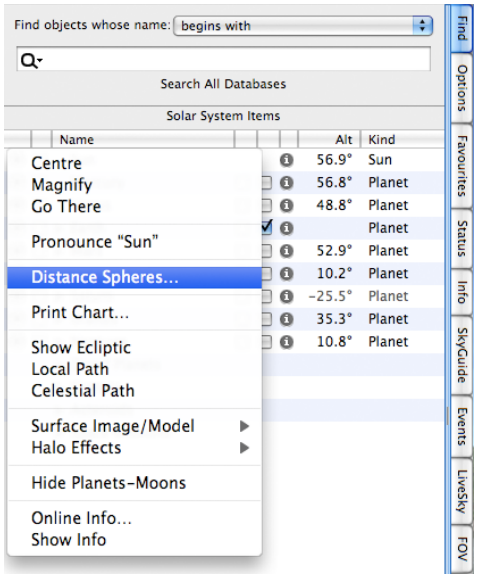
shadows will appear, open the Options pane, expand the Solar System layer and click on “Planets-Moons”. This will bring up a new dialog window that allows you to change the display options for shadow cones.

Feature 2: Distance Spheres

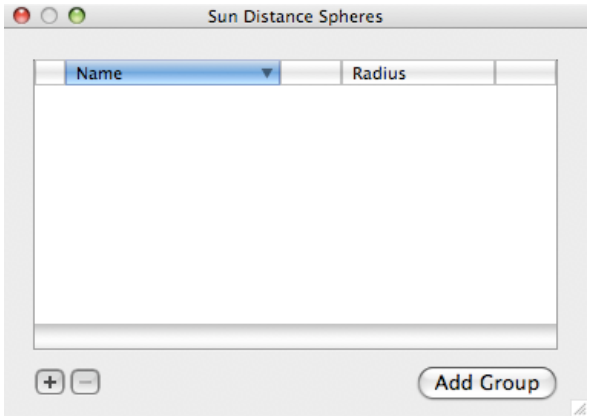


Distance Spheres allows you to display translucent spheres at custom distance milestones from a selected object.

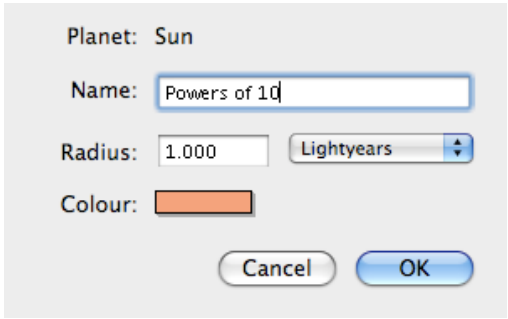
To add a new distance sphere, right-click or ctrl-click on a solar system object and select Distance Spheres... from the contextual menu that pops up. Alternatively, you can open the Find pane and click on an objects contextual menu button (first button located on the left of the object's name) to view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



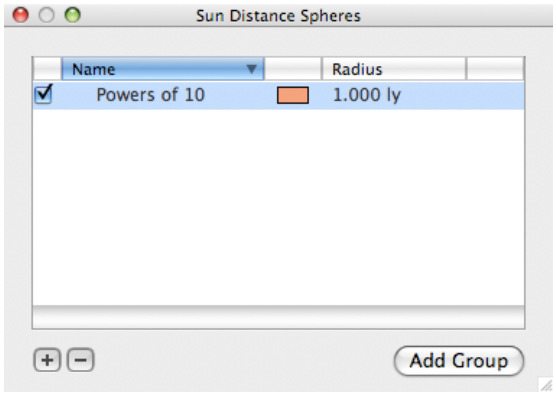
Click the (+) button in the dialog window that opens to add a new distance sphere.



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.

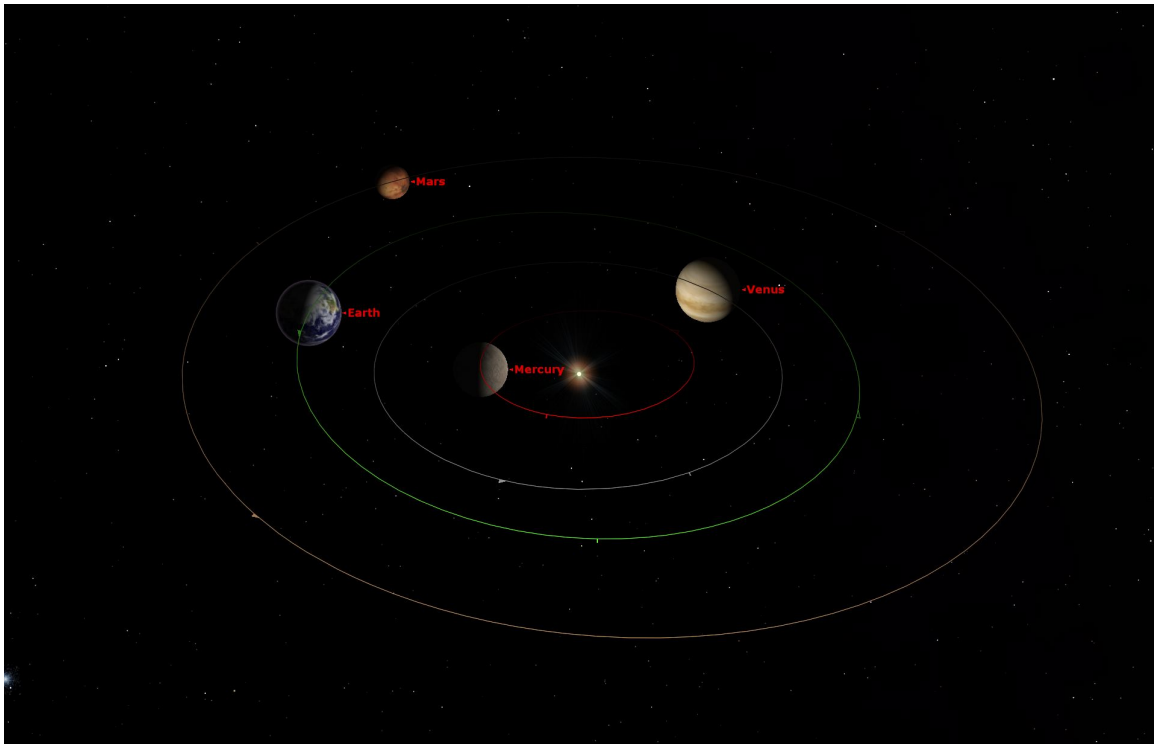


To display the distance sphere, make sure the box to the left of the sphere's name is checked.



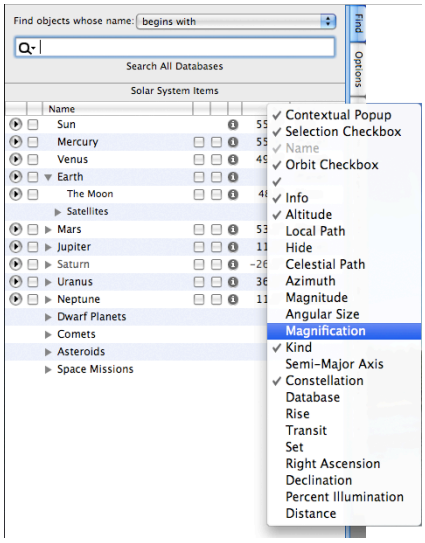
To view the distance sphere, use the Increase Elevation button to increase your distance from the Earth. In this example, we added a distance light sphere with a radius of 1 light year and would have to increase the elevation to at least 1 light year to view the sphere.

Feature 3: Magnify Planets

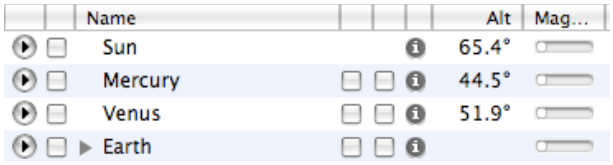


This is a fun and educational feature. Starry Night allows you to enlarge the sizes of solar system objects. When this feature is used, the object will no longer be drawn to scale but there are advantages. For example, when you hover above the solar system, the planets are mere dots. You can use the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

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”.



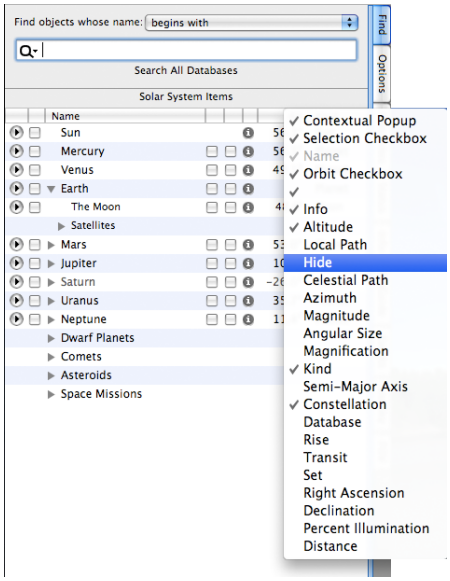
A new slider will appear under the heading “Mag.” Move the slider to the right to magnify the size of the object.



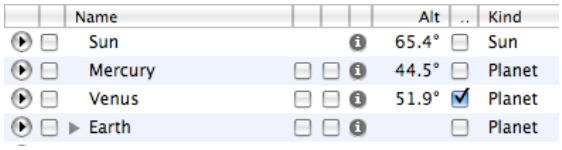
Feature 4: Hide Planets

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”.

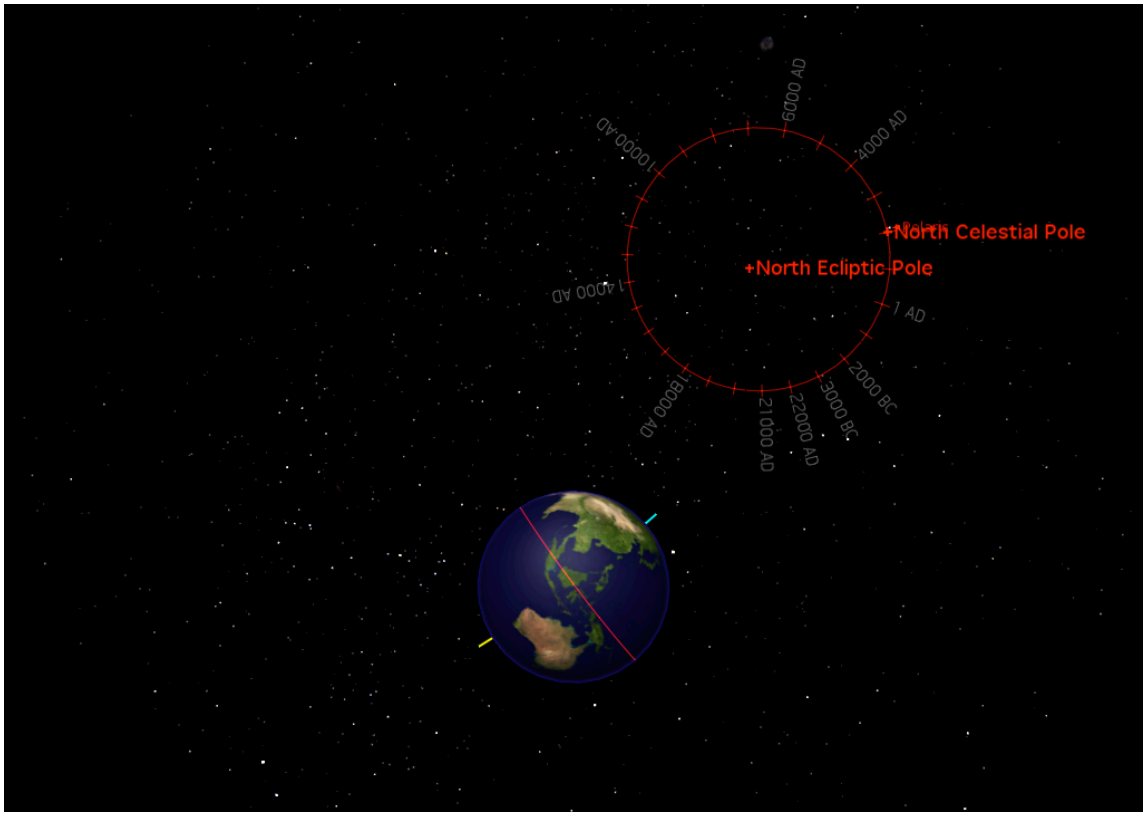


A new checkbox will appear to the left of the Alt. column. Click on the box to hide the object. In this example, Venus has been hidden from view.

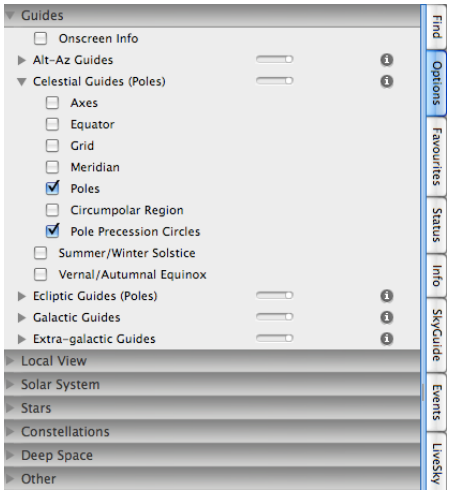


Feature 5: Precession Dials and Circumpolar Regions

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.



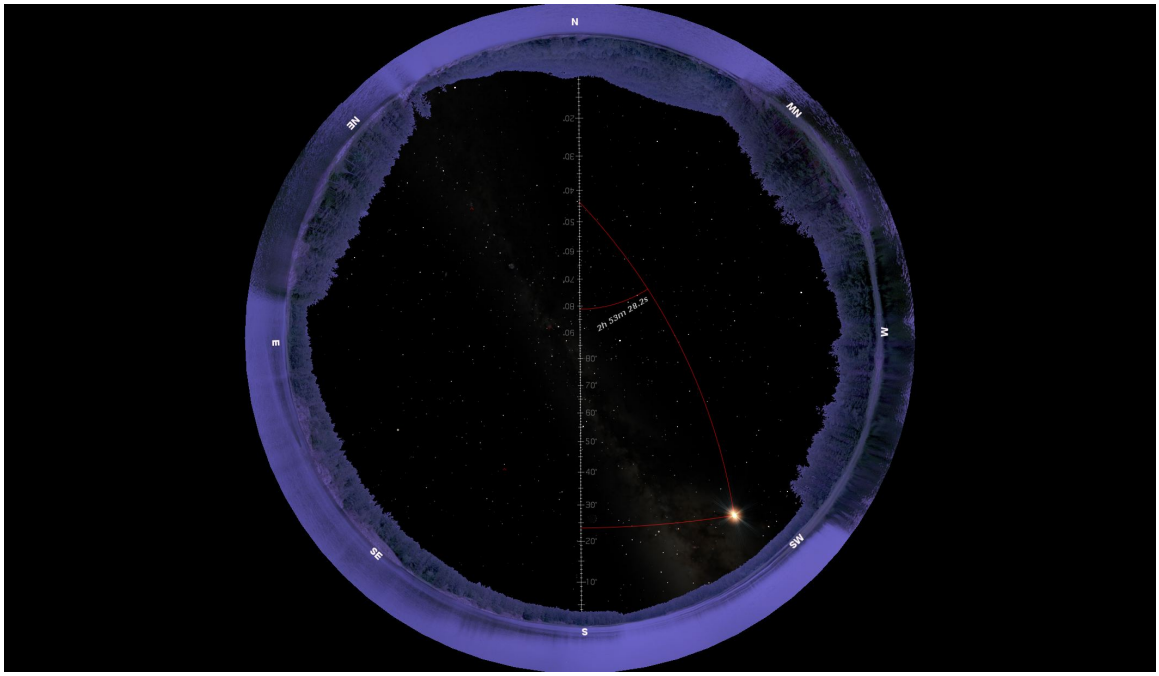
To display the precession dials, open the Options pane, expand the Guides layer and then the Celestial Guides (Poles) sub-layer. Under Celestial Guides (Poles) check the “Pole Precession Circles” box.



Circumpolar Region shows the stars (and other ‘fixed’ deep sky objects) that never disappear below the horizon for a given latitude on Earth. Polaris for example is a circumpolar star for northern hemisphere observers.

To display the circumpolar region, open the Options pane, expand the Guides layer and then the Celestial Guides (Poles) sub-layer. Under Celestial Guides (Poles) check the “Circumpolar Region” box.

Feature 6: Hour Angle Lines

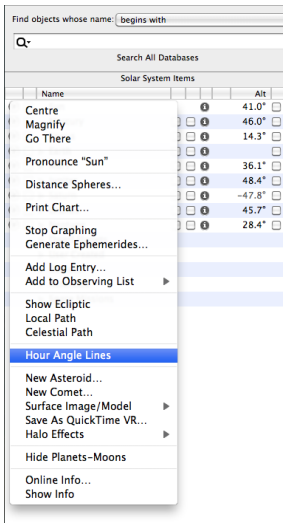


Our time systems are based on what is defined as the Local Hour Angle (LHA) of a celestial object. The LHA is the angular distance that a celestial object is from the observer's local meridian measured westward along the declination circle to the position of the object. Usually the object in question is the Sun, but the LHA of an object will tell the observer exactly where the object is relative to his/her local meridian, and therefore where to locate it in the sky.

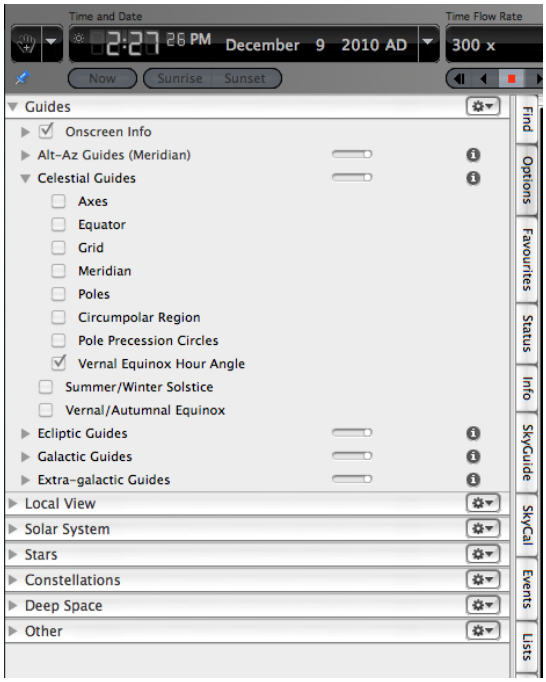
Local Apparent Solar Time (LAST) is defined as the LHA of the Sun + 12 hours. The 12 hours is tacked on because people didn't want the day to start when the Sun is on the local meridian (so astronomers get the inconvenience instead!). So for example if the Sun is on the observer's local meridian, the LHA = 0 h and the LAST = 0h + 12h = 12 noon. When the Sun is beneath you feet (LHA = 12 h) the LAST = 12h + 12h = 24h = 0h = 12 midnight. Note that AM (ante meridian) and PM (post meridian) have no meaning for 12 noon and 12 midnight, i.e., the Sun can't be before or after the meridian if it's on the meridian.

Sidereal Time is defined as the LHA of the Vernal Equinox. This tells us exactly how the celestial sphere is oriented at any time and is required in order to determine an object's position. If you look at the LHA of the Vernal Equinox depicted close to the North Celestial Pole you will note that it is identical (by definition really) to the Right Ascension that is on the observer's local meridian at that instant. This is because the Right Ascension scale was defined as starting at 0h at the location of the Vernal Equinox.

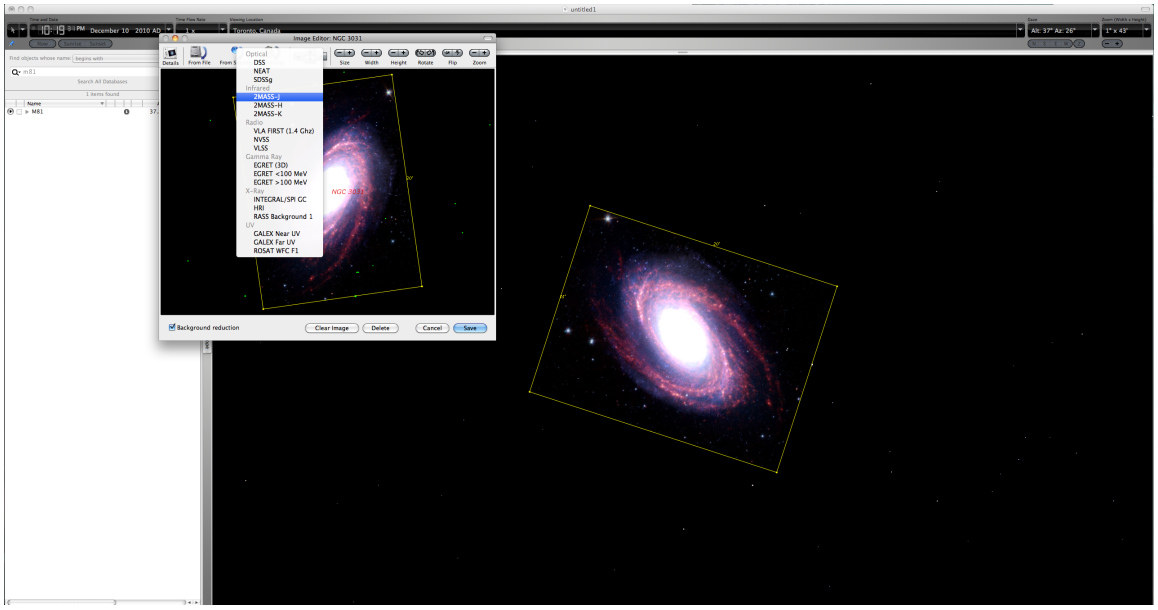
To display the Local Hour Angle right-click or ctrl-click (Mac) on a solar system object and select Hour Angle Lines from the contextual menu that pops up. Alternatively, you can open the Find pane and click on an objects contextual menu button (first button located on the left of the object's name) to view the contextual menu.



To display the Vernal Equinox Hour Angle, open the Options pane, expand the Guides layer and then the Celestial Guides (Poles) sub-layer. Under Celestial Guides (Poles) check the “Vernal Equinox Hour Angle” box.



Feature 7: SkyView Link to Digitized Sky Survey Images



Adding Images from digitized sky surveys: You can use Starry Night's SkyView link to download and paste in images of galaxies, nebula, or any other object from a number of digitized sky surveys in a variety of wavelengths,

To add an image using the SkyView link:

1. Right-click (**Ctrl**-click on the Mac) on the object of which you would like to download an image.

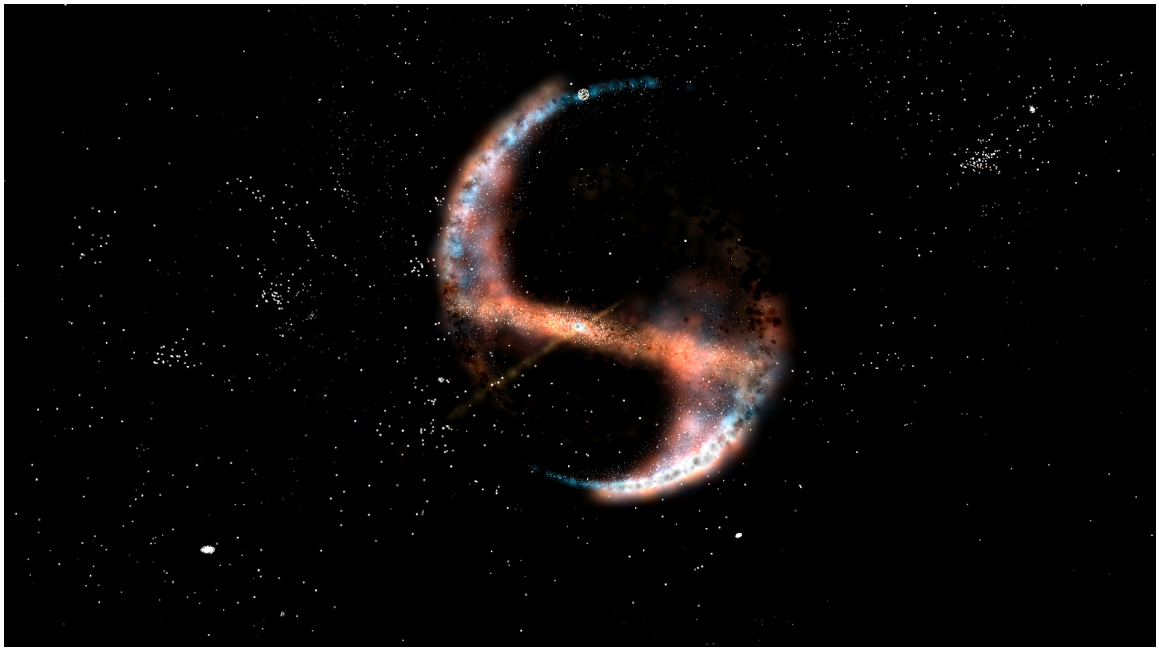
2. Choose **Add Image** from the object's contextual menu to open the Image Editor. If the object already has an image, select **Edit Image** from the object's contextual menu. Starry Night will have automatically guessed at the area of the sky for which you wish to download an image, based on the size of the original object you selected. This area will be marked with a yellow square. In most cases you will not need to change this, but you can enlarge, shrink or shift the image bounds if you wish, using the Image Editor controls.

3. Click the **From SkyView** button. Starry Night will begin downloading the image if one is available. This may take a few minutes, depending on the server load. Once the image is downloaded, it will appear in the Image Editor dialog box.

4. The image should automatically be aligned with the background stars. If for some reason, it is not perfectly aligned, you can align the image using the Image Editor controls.

5. When you are satisfied that your image is correctly aligned, press the **Details** button in the upper left corner of the window, to add an image name, add other information, and use the Background Reduction box (if necessary). Then press **Save** twice to exit the Image Editor.

Feature 8: Advanced Particle Galaxy Rendering

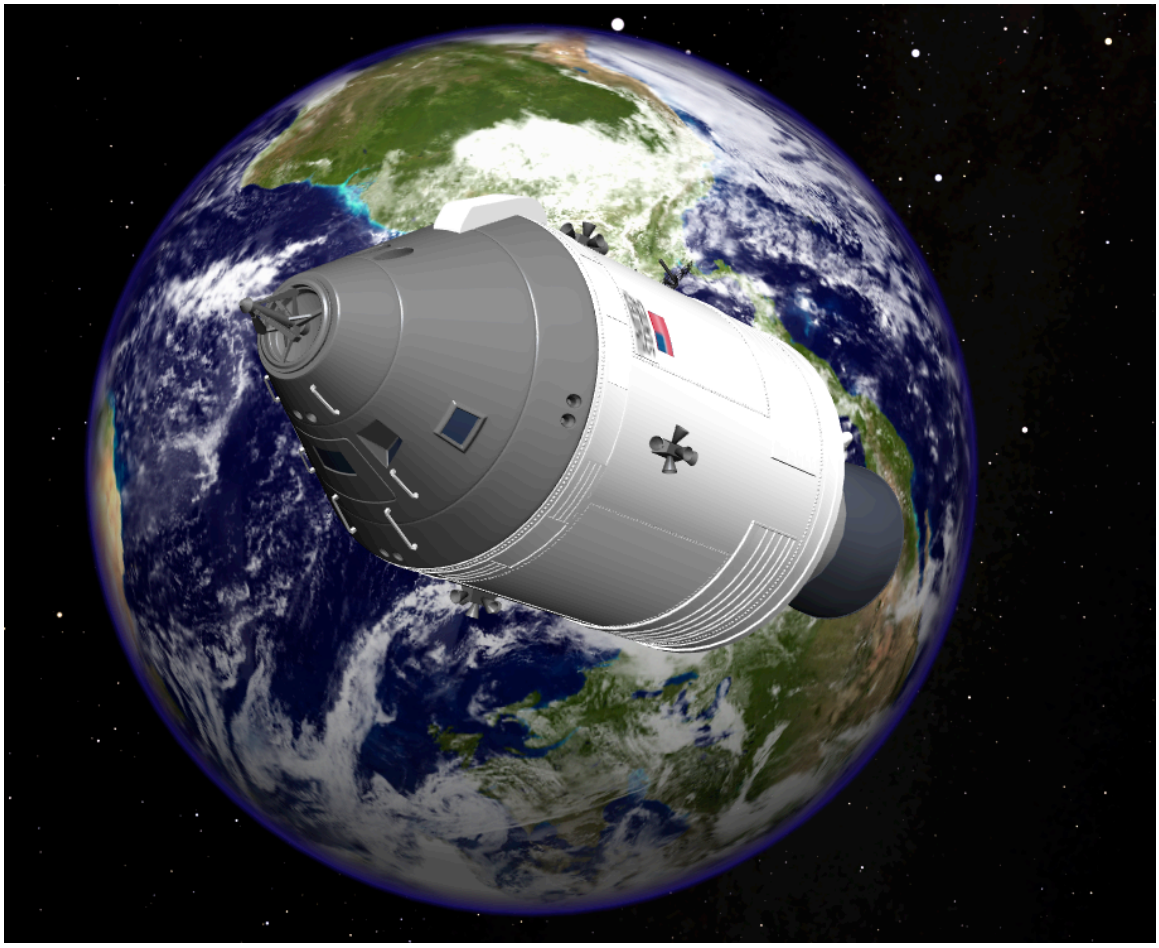


One of the core databases in Starry Night contains 28 000 nearby galaxies plotted in 3-D. This database was compiled by astronomer Brent Tully and colleagues, hence it is referred to as the ***Tully Collection***. This galaxy database is very special because it shows the 3-D position in space of each galaxy, not just the galaxy's position as seen from Earth.

Galaxy rendering in the Tully database is now implemented as particle systems. This means galaxies look more realistic than even before in Starry Night.

To view the Tully galaxies, simply press and hold the **Increase Elevation** button in the Toolbar until you leave the Milky Way galaxy.

Feature 9: Apollo Space Missions



Utilize the new space probe visualization capabilities in Starry Night to explore the Apollo Lunar Program. Visualize the spacecraft, trajectories and landing sites as you follow the crews of Apollo.

- Travel along on the Apollo Space Missions using the unique and powerful features of Starry Night
- Includes nine missions flown by the Apollo astronauts during the 1960's and 1970's
- View the Earth and Moon as it appeared to the crew. Land on the Moon, then blast back into lunar orbit!
- Interactive SkyGuide Tour with multimedia exploration of the Apollo Lunar Program
- Moon inbound/outbound trajectories and Lunar Descent/Ascent trajectories for Apollo 8, 10, 11, 12, 13, 14, 15, 16, and 17
- Accurate 3-D models of the Apollo Spacecraft - including the Saturn V rocket, the Command Service Module and the Lunar Lander Module
- Lunar Landing sites for all Apollo Missions
- Photographs of the Moon and Earth taken by the Apollo crew
- Comments from the astronauts as they peered through the window

The simulated trajectories have been made as accurate as possible, using actual data published by NASA. You'll be impressed and amazed with the realism.

To start exploring, open the **SkyGuide** pane and navigate to **Guided Tours-The Apollo Lunar Program**.