

Star-Hop Maker V1.0 User's Guide

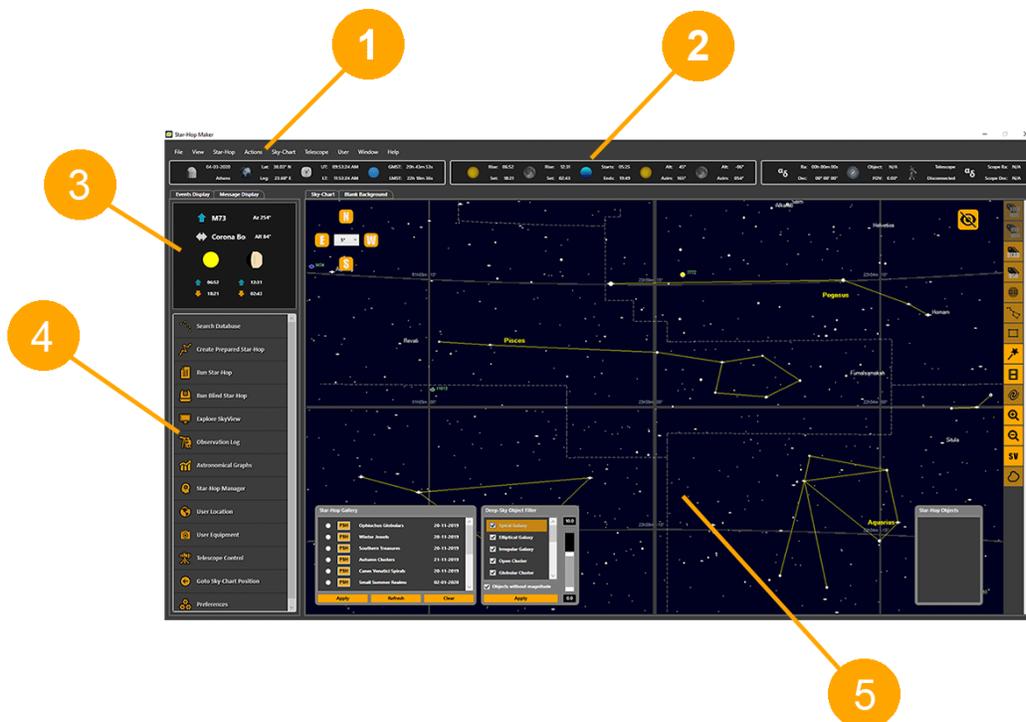
This start-up guide will help you to get familiar with most important functions of the program.

Please, read this guide before using the program as it will make it easier for you to prepare and run your first star-hop.

Program Installation

To install the program double click on the **setup.exe** file. Follow the instructions displayed by the setup wizard and after installation is complete, double click on the program shortcut to open it.

Star-Hop Maker Main Screen



The **Star-Hop Maker** main screen consists of five parts.

1. Menu Bar.
2. Information Area (Date, Time, etc).
3. Events Area (Updated display of constellation or Messier object name that either rises, transits or sets).
4. Button list for opening various program windows.
5. Sky-Chart area, which can be used in creating and running a star-hop or just explore what the sky has to offer.

1. Session Life – Cycle

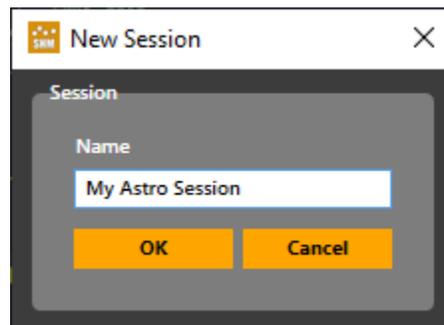


Figure 1.1

Sessions in Star-Hop Maker are used to associate star-hops and saved observations with date/time data and are helpful for archiving purposes.

To run a Star-Hop a session must be active. A session can be started by selecting Session/New... from the menu bar and entering a name for it in the window displayed. (**Figure 1.1**). Alternatively, users are prompted to enter a session name - if no active session exists - when they run a prepared/blind star-hop or when an All-Sky Explore window is opened.

Information about the active session is obtained by selecting Session/Complete... from the menu bar. Using this window's "Complete" button the user can complete the session by displaying and saving its end time (**Figure 1.2**).

There is also a session archive which can be opened by selecting Session/Archive... from the menu bar (**Figure 1.3**). Data for the selected session is shown on the right side of the window and a green circle indicates an active session.

NOTE

A session can include more than one star-hop or star-hops of different types (Prepared Star-Hops / Blind Star-Hops) or a run of "The All-Sky Explore" window.

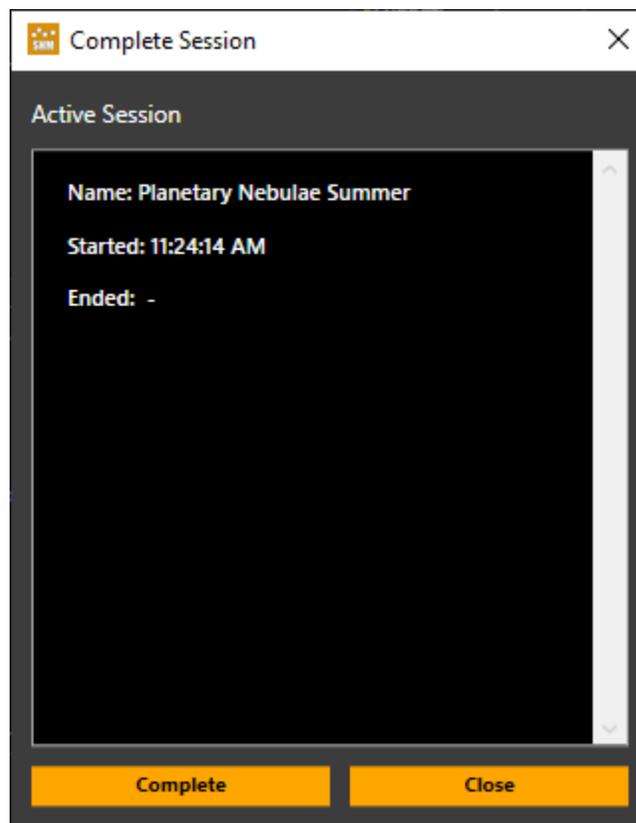


Figure 1.2

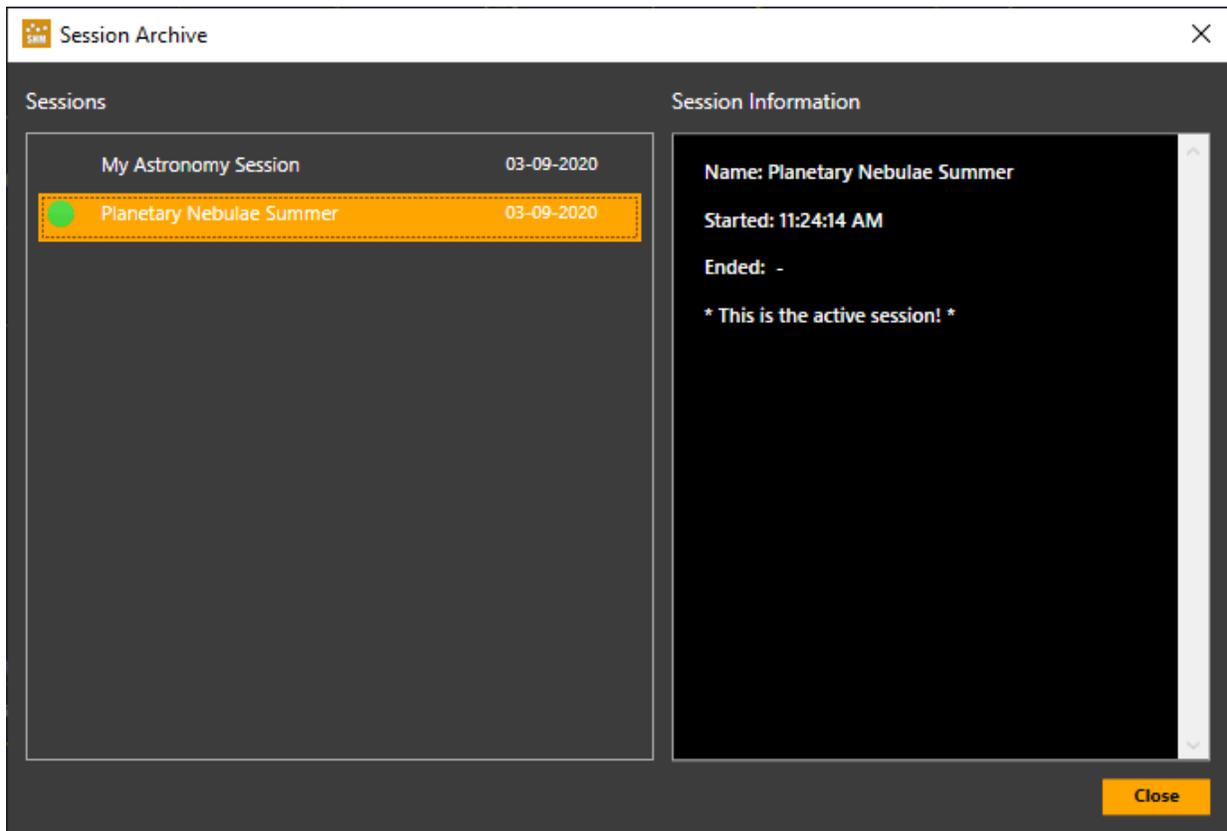


Figure 1.3

2. Creating and running a Star-Hop

There are two types of Star-Hop supported in the program.

1. Prepared Star-Hop (PSH)

2. Blind Star-Hop (BSH)

A **PSH**, as its name suggests, contains objects that are selected by the user, using the program's functions, before running it with the star-hop runner. Conversely, a **BSH** can be run instantly, using the Star-Hop runner, without using a prepared list. In this case the user selects the first object and proceed by adding neighbouring objects using tools provided by the runner. Thus, the desired area of the sky is covered until the end of the session.

We will now summarize the lifecycle of a **PSH** that is, how it is planned, created, run, associated with user observations and analyzed, using the following steps:

1. Query the database for objects with certain properties.
2. Create and save a star-hop and apply restrictions to its objects.
3. Run the star-hop.
4. Save user observations associated to star-hop objects.
5. Analyze the star-hop.

2.1 Plan which objects to use in a PSH



Figure 2.1

In order to create lists with candidate objects for a **PSH**, open **Search Database** window either by selecting **Actions/Search Database** from the menu bar or by clicking **Search Database** from the button list in **Star-Hop Maker** main screen.

TIP

The **Search Database** window is one way to find objects for populating a star-hop. We will see later that we can also drag and drop stars and deep-sky objects directly from the sky-chart to the star hop we are working on.

There are five parts in the **Search Database** window (**Figure 2.1**)

1. **Search Criteria** tab for setting parameters for searching the database.
2. Tabs with lists of Single/Double/Variable Stars and Deep-Sky Objects.
3. **Properties Summary** tab for a summary of the search criteria currently in use.
4. Slides for each type of object retrieved from database.
5. A grid with important information displayed for each slide.

NOTE

There are two slide rows shown for each result list. The top row shows a visual representation of each object using color and size as indicators of the nature and properties of the object. The second row contains the object photo downloaded from NASA SkyView server.

Let us see now how to create a list of galaxies in *Canes Venatici* by using only simple search criteria.

1. Click on the **NGC & IC** buttons in the **Deep-Sky Object Catalogs** section of the **Search Criteria** tab.
2. Click on the first and second icon in the **Deep-Sky Object Types** section to select spiral and elliptical galaxies.
3. Click on the first icon of **Sky-Coverage** section to select a constellation. The **Search Criteria** window opens (**Figure 2.2**) in the constellations tab. Add *Canes Venatici* by selecting it in the list and click the **Add** button. Also, remove *Andromeda* by selecting it and clicking on remove*. (*** One constellation is always selected**).
4. Select **Deep-Sky Objects** tab in **Search Criteria** window and then **Galaxy Magnitudes** tab. Move the right handle of the top slider until the range shown reads **0–10** mags. (**Figure 2.4**)

The **Search Criteria** window enables the user to specify exact search criteria by using sliders and other controls. Most of the functions are self-explanatory. Please, spend some time to get used to it and when finished click **Apply** and then **Close** to return to **Search Database** window.

We will now retrieve spiral and elliptical galaxies brighter than magnitude 10 in the constellation of *Canes Venatici*.

Click on **Find Stars and DSOs** button at the bottom of **Search Criteria** tab, in **Search Database** window, to query the database.

The results of the query will be displayed in **Deep-Sky Objects** tab of **Search Database** window. Furthermore, two rows of slides will be created below the results data grid.

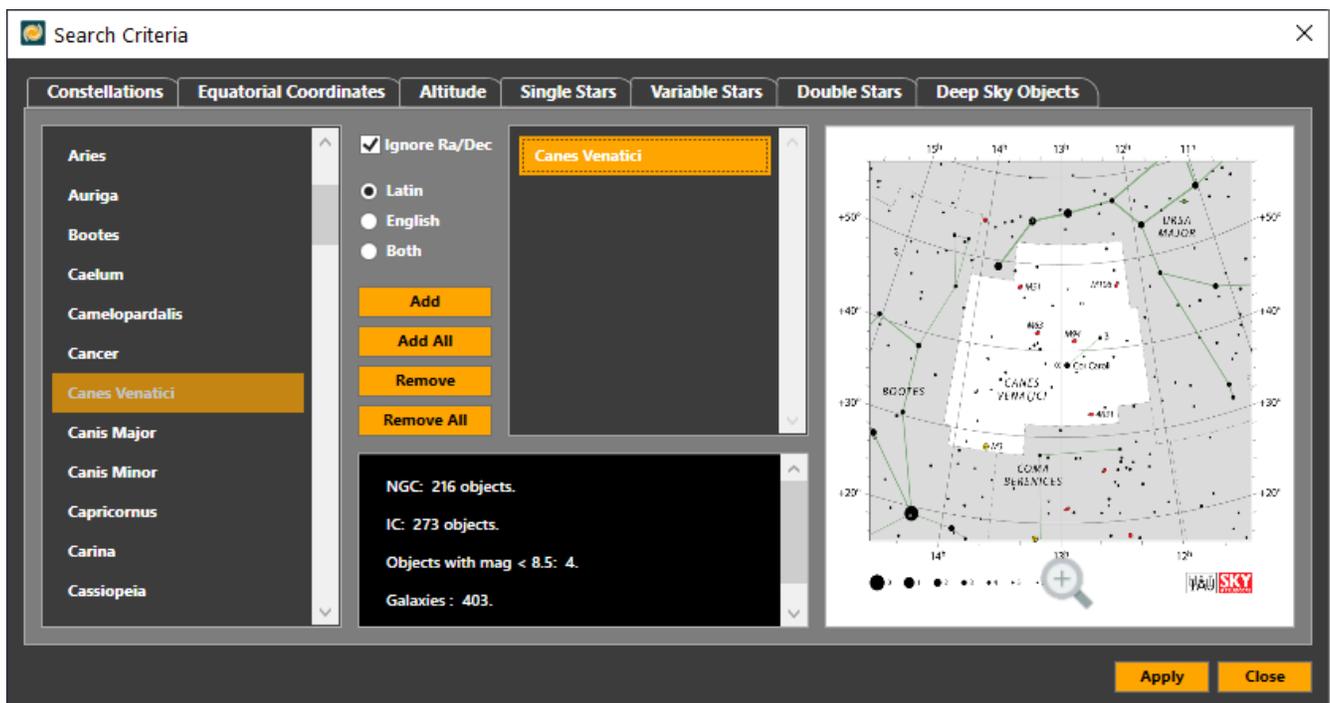


Figure 2.2

TIP

Several windows in this application use a modular design that allows the user to hide specific segments of the window to prevent screen cluttering and show the Sky-Chart background. Segment visibility can be toggled on/off by clicking the button on top of any orange column that is always at left of the segment it controls.

While preparing our first star-hop it is time to introduce the **Message Display** feature (**Figure 2.3**).

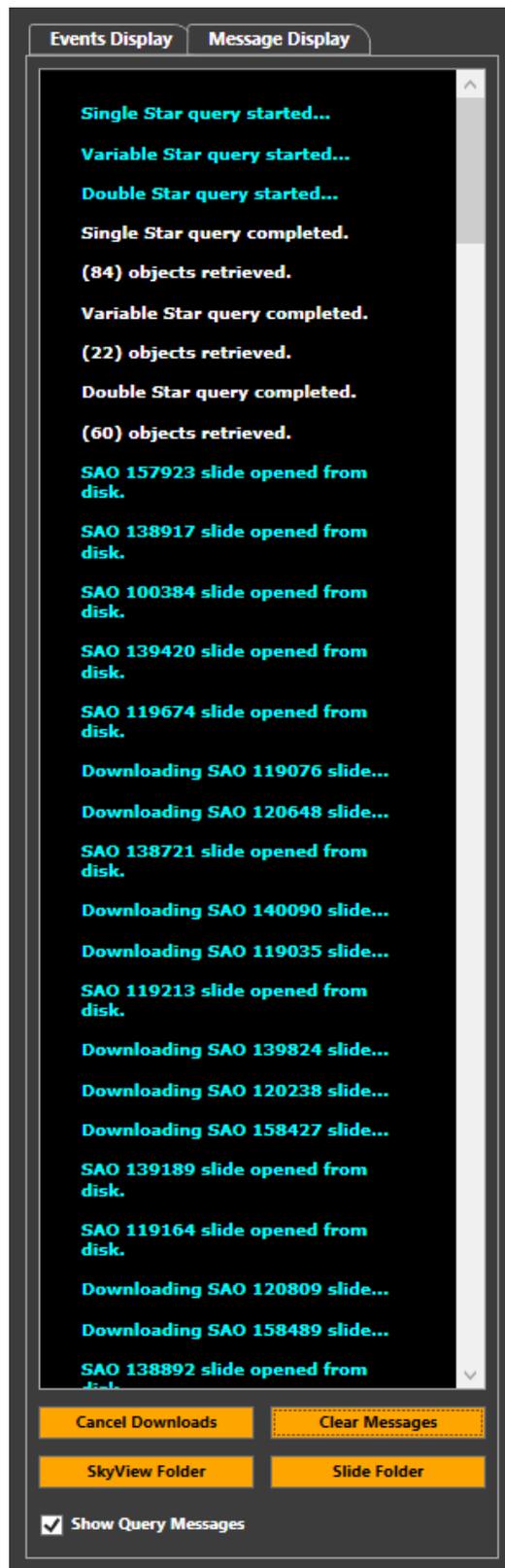


Figure 2.3

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Each time a database query is taking place or photos are downloaded from the internet, information messages are displayed in the **Message Display** area which can be found in the **Star-Hop Maker** main screen by selecting the **Message Display** tab at top left of the window.

The text of the actual messages is using a variety of colors depending on message nature. Furthermore, the download of an image sequence for populating a slide row can be canceled by clicking the **Cancel Downloads** button at the bottom of the tab.

NOTE

If for any reason a slide image can not be downloaded the program will attempt to download it the next time the slide image is needed either on the same window or any other window with a slide image display.

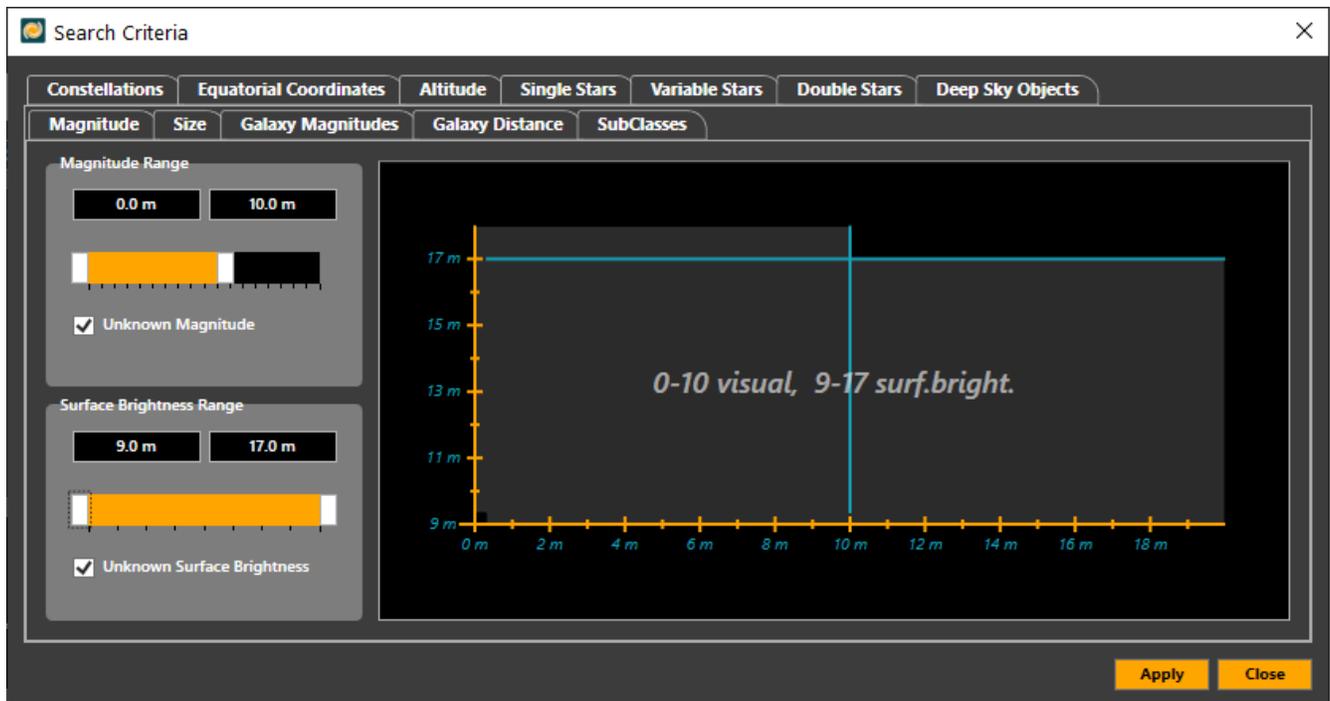


Figure 2.4

2.2 Creating the actual PSH

Continuing from our previous example, with **Search Database** window open and the **Deep-Sky Objects** results tab visible, open the **Prepare Star-Hop Creator** window (*Figure 2.5*) either by selecting from the menu bar **Star-Hop/Create Prepare Star-Hop** or by clicking on **Create Prepare Star-Hop** button from the button list in **Star-Hop Maker** main screen.

The **Prepare Star-Hop Creator** window consists of three parts:

1. The **Star-Hop List** at left which provides the user with a list of all available star-hops filtered by type (**PSH/BSH**) and season.
2. The **Star-Hop Objects List** tab as well as two tabs with slides at right, where candidate objects for a star-hop are shown using different representations.
3. A number of controls at bottom right that help modify and transform the initial list into a star-hop list.

Now, with **shift+click** select all rows in **Deep-Sky Objects** tab of **Search Database** window that we have kept as a result of our previous steps. Drag and drop all objects into the blank area in either of the tabs of the **Prepare Star-Hop Creator** window. Then, select any object you like in the list and click on **Set As First Step** button to set the first object of the star-hop. Notice that the first text column in the object list now displays the distance of each object from the first object just set. The list displays the items in increasing distance order from the first object. The **Next** column displays the distance and direction of each object from its previous. Objects more distant than 30° are shown in different color and are excluded from the star-hop.

The user is allowed to make the following modifications to the list:

1. Set the maximum distance an object can be from first object.
2. Set the magnitude limit for objects in the star-hop.
3. Set the allowed direction of objects with regard to first object.
4. Change the order of objects in the star-hop.
5. Delete object(s) from the list.

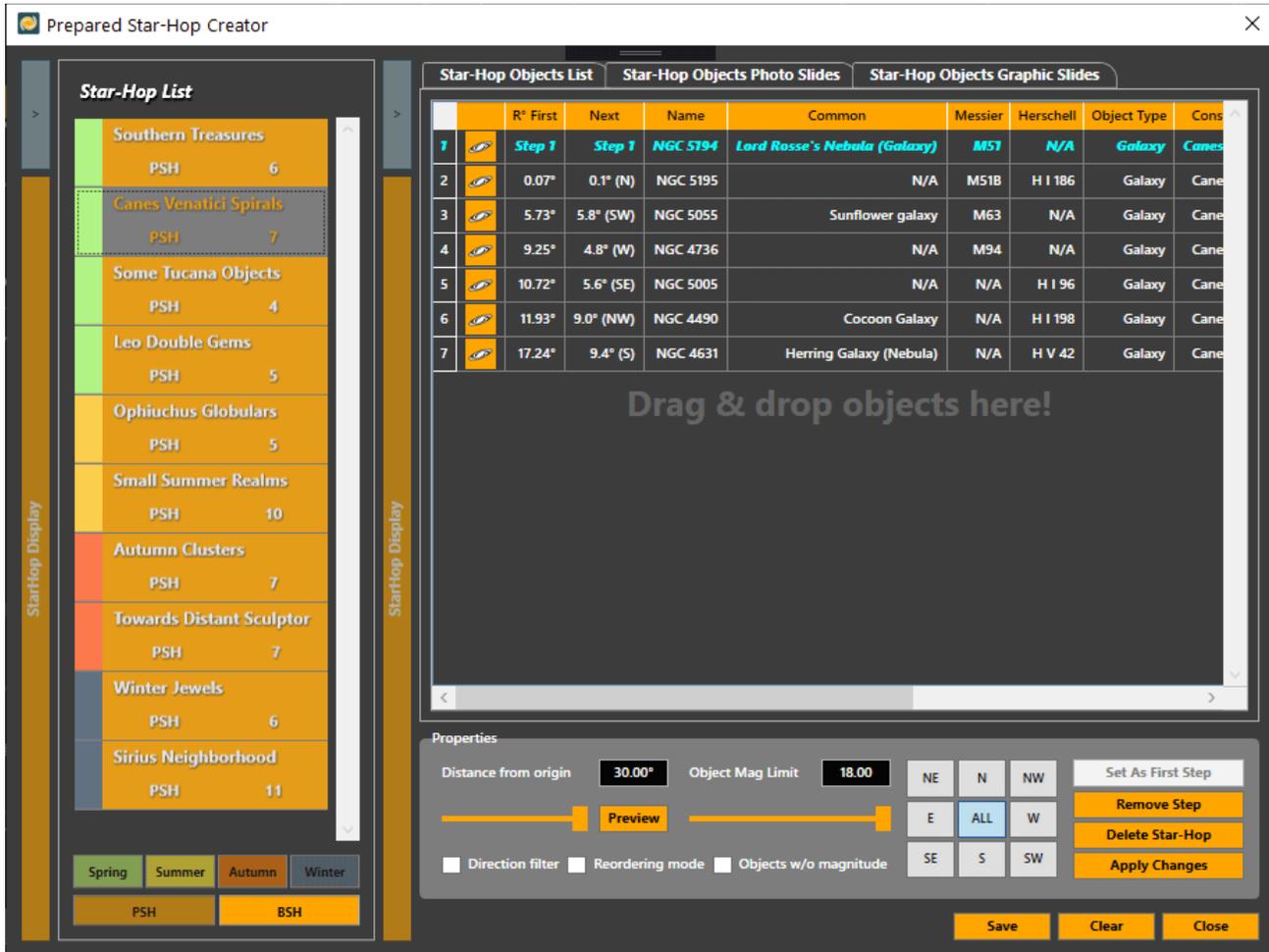


Figure 2.5

TIP

The Prepare Star-Hop Creator window can also be used to modify an existing star-hop from the list shown at its left side.

There is another way to add objects in a star-hop, this time using the sky-chart. While holding the **ALT** key on the keyboard left-click and drag over an area in the sky-chart. (**Figure 2.6**) A green rectangle appears that surrounds this area. Release the mouse and **ALT** key and after a while a popup appears with any bright stars and deep-sky objects, enclosed by the green rectangle, shown in a list. Click on the check box next to any star/object you would like to include in your star-hop and then press **CTRL** key and drag from inside the green rectangle area into the **Prepare Star-Hop Creator** window. The new objects will be added to the star-hop list.



Figure 2.6

An important feature of the program is the depiction of a star-hop on the sky-chart. (**Figure 2.7**) This is used in all cases where a star-hop is active. When working on a **PSH** using the **Prepared Star-Hop Creator** the star-hop graph displayed on the sky-chart is continuously updated. Furthermore, the user can examine all star-hops available by using the **Star-Hop Gallery** shown above the sky-chart.

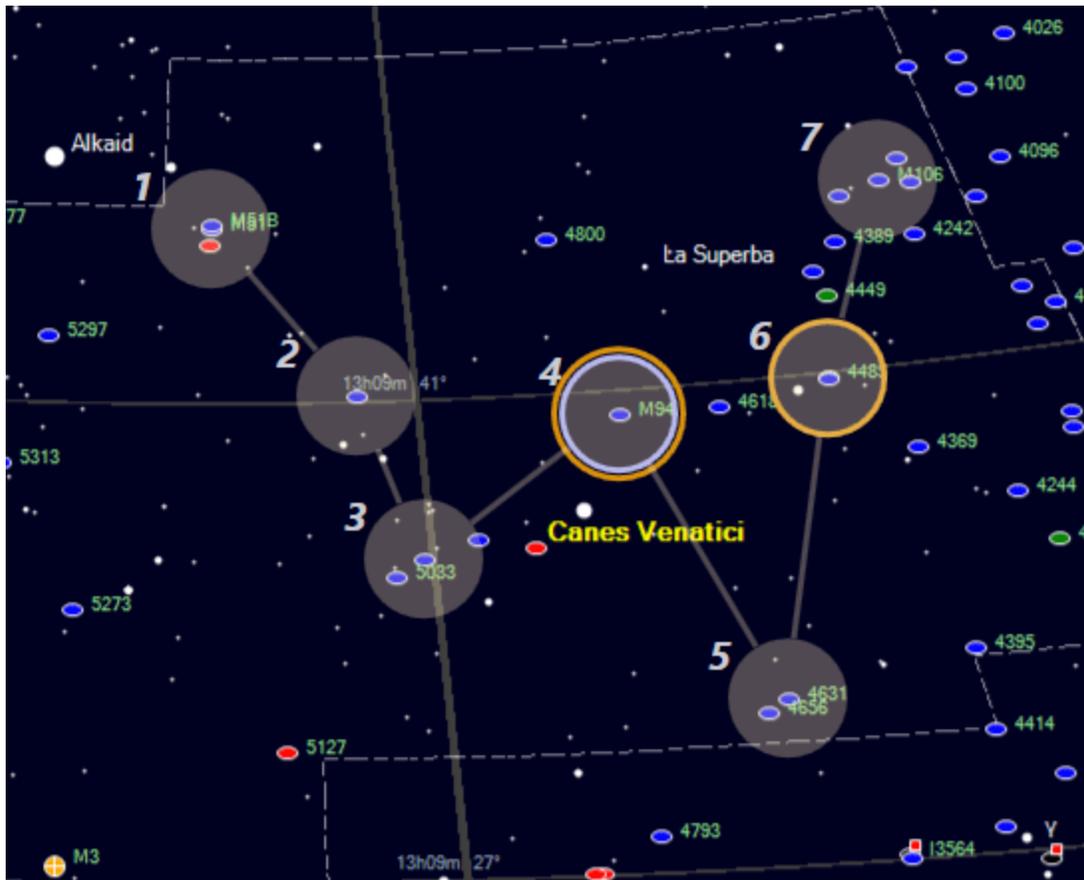


Figure 2.7

TIP

Checking the Reordering Mode checkbox in Prepare Star-Hop Creator window allows the user to change the order of the steps in the star-hop shown on the sky-chart. This can be accomplished by holding Ctrl + Shift and dragging from one step circle to another. The changes will be reflected in the window list.

NOTE

When an object in a star-hop graph is included in more than one star-hops then an orange stroke is used for "step" depiction. Furthermore, when user notes exist in the database for the object, then a white stroke is used. In the later case the user can right click on the "step" and choose the "Show User Notes" menu item to display notes saved for that object in the database.

After making all necessary adjustments to the list, click the **Save** button in **Prepare Star-Hop Creator** window and supply a name and a season for your new star-hop in the popup window that will appear. Click **OK** and close all open windows except the main application window that contains the sky-chart.

2.3 Running a PSH

It is now time to run our first star-hop. Open the **Open Prepared Star-Hop** window (**Figure 2.8**) either by selecting **Star-Hop/Run Prepared Star-Hop** from the menu bar or by clicking **Run Prepared Star-Hop** from the button list in **Star-Hop Maker** main screen. Select the season of the star-hop you have just saved. Then select any of the constellations included in your star-hop, in this case *Canes Venatici*, and click **Find Star-Hops**. The name of the star-hop is now included in the combo-box at the top right of the window. Select it and enter a name for your star-hop session, which is about to begin, at bottom right. Click apply and wait for the **Star-Hop Runner** window to appear.

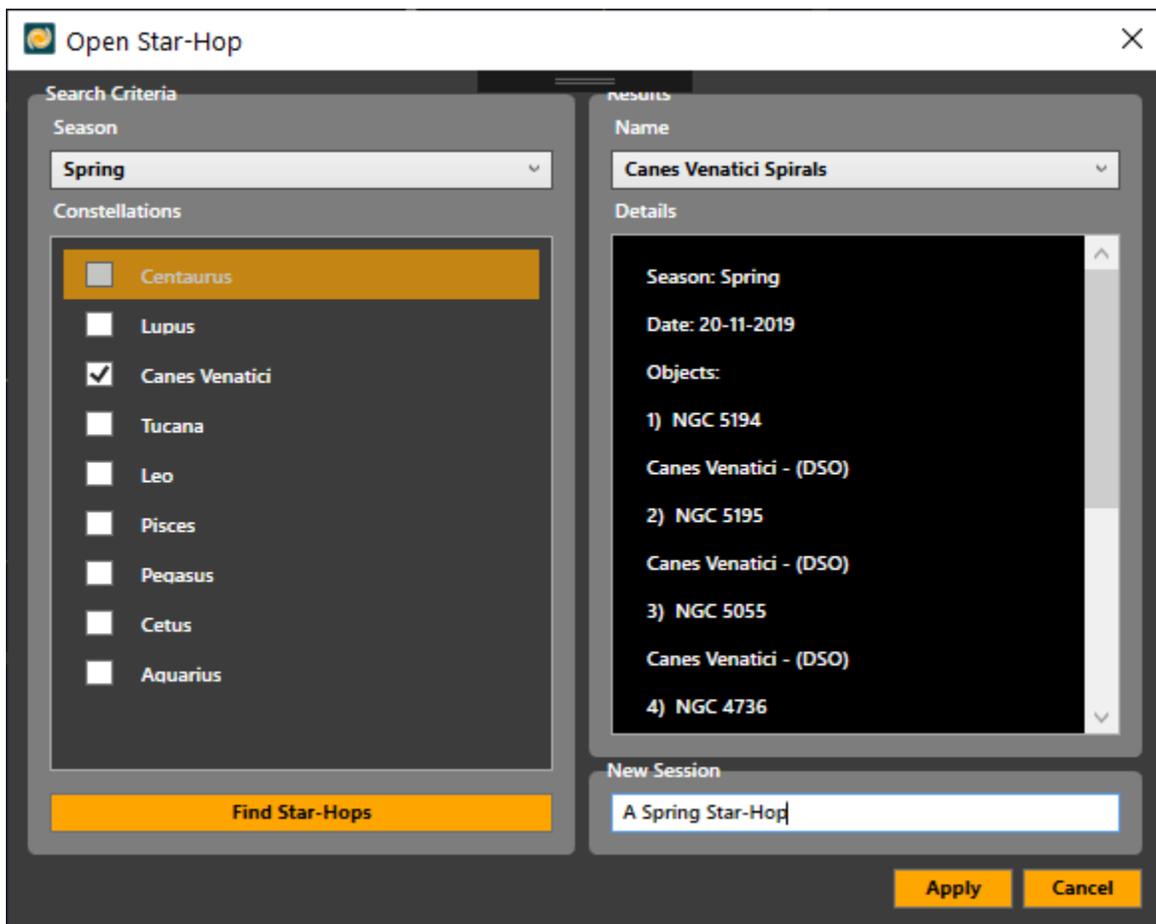


Figure 2.8

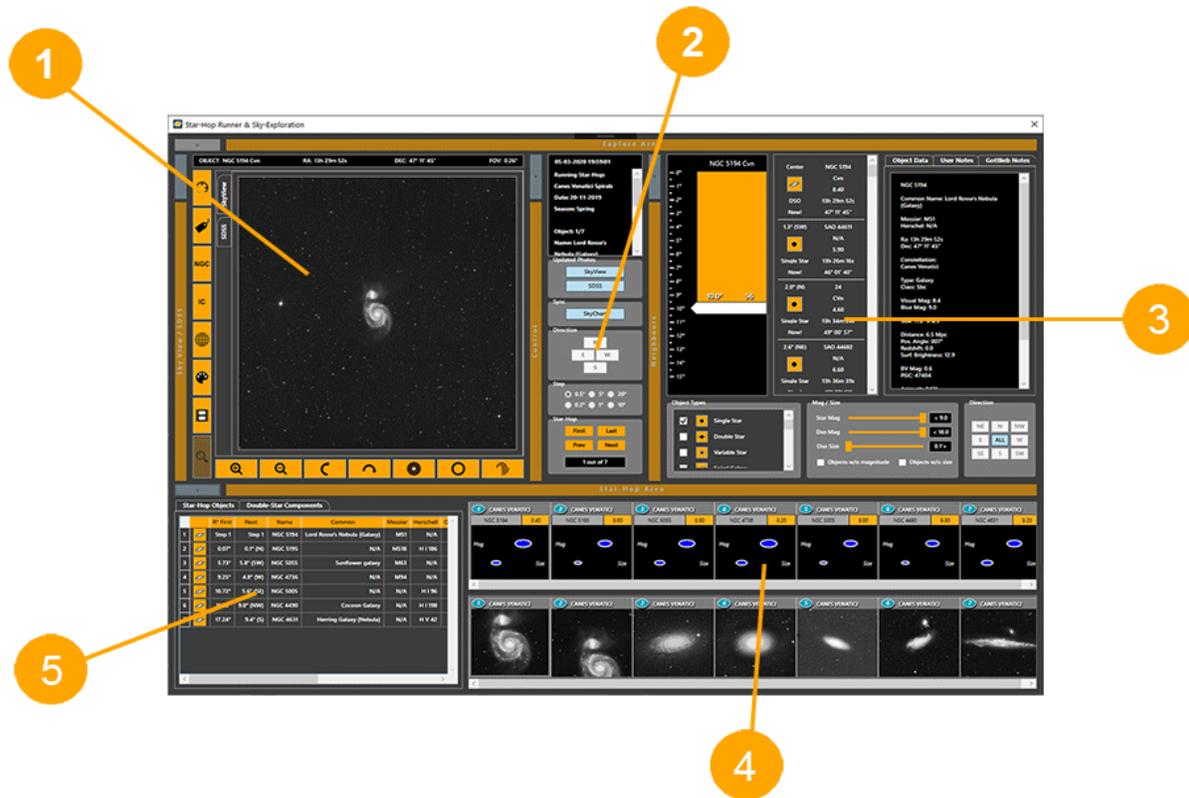


Figure 2.9

The **Star-Hop Runner** (**Figure 2.9**) consists of five parts.

1. The **SkyView/SDSS display**, where a big image for the current position is downloaded and displayed.
2. The **control area**, where navigation and other functions are implemented.
3. The **neighbours area**, where objects near the center object are retrieved from the database and shown in a listbox.
4. The **slides area**, where two rows of slides are shown for the objects contained in the current star-hop.
5. The **data-grid area**, where a list of the star-hop objects is shown.

Our star-hop is now loaded in the “runner” window. We can now use the direction buttons at **control area** or click on any slide or data-grid row to move to the corresponding object and display its image in the **SkyView/SDSS display**. Also, data about the current object is shown in the box at top right. The user can insert new objects in the running star-hop. By sliding the white

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handle at the **neighbours area**, towards the bottom, (**Figure 2.10**) objects close to the currently centered object are retrieved, up to a distance indicated by the handle arrow. As the handle is moved, new objects are retrieved and shown in the listbox.

Any object from the listbox can be inserted in the star-hop if dragged over a slide position.

NOTE

All objects in a star hop can be at maximum 30 degrees from first object to restrict the star-hop in a small segment of the sky and avoid star-hop overlapping.

The same can be achieved if an object is dragged from the sky-chart over a slide in a similar way to what was described previously for **Prepared Star Hop Creator** window.

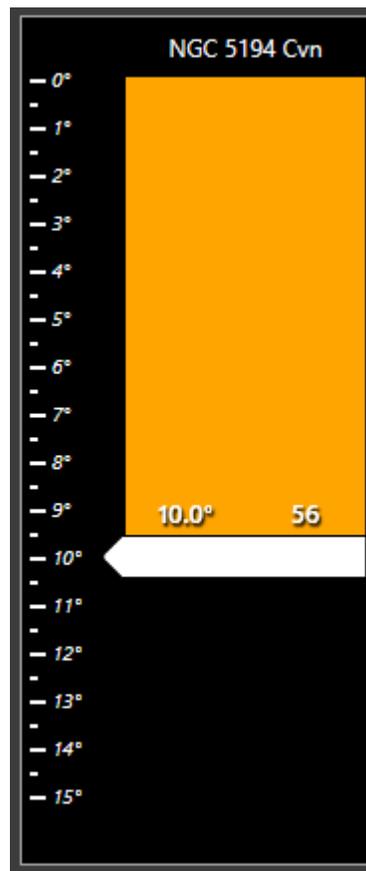


Figure 2.10

2.4 Saving a user observation

In order to save an observation made while running a star-hop, open **Observation Log** window (*Figure 2.12*) either by selecting **Actions/Observation Log** from the menu bar or by clicking **Observation Log** from the button list in **Star-Hop Maker** main screen.

Now, **CTRL +** click on a slide or data-grid row and drag it over the **Observation Log** window. The name of the object for which an observation entry is required will be added in the black area of the window. Then, click on any of the orange buttons to open the **Log Entry Data** window (*Figure 2.11*) where a number of discrete data can be added to the observation entry. Select what you want to include to your observation entry and click the **Apply** Button for each data or click **Apply All** to add all default values. Each time the user clicks on an **Apply** button the **Observation Log** window's black area is populated with new data. When finished click **Save** on the **Observation Log** to save the observation and close the **Observation Log** window.

The screenshot shows the 'Log Entry Data' window with the following structure:

- Object**: (Empty field)
- Time - Date - Observatory**: (Empty field)
- Equipment**: (Empty field)
- Environment**: (Empty field)
- Characteristics**: (Empty field)
- Description**: (Empty field)
- Size**:
 - Very Large (Selected)
 - Large
 - Average
 - Use as default value
 - Apply
- Brightness**:
 - Very Bright (Selected)
 - Bright
 - Average
 - Use as default value
 - Apply
- Shape**:
 - Circular (Selected)
 - Moderately Elliptical
 - Extremely Elliptical
 - Use as default value
 - Apply
- Impression**:
 - 1/6 (Selected)
 - 2/6
 - 3/6
 - Use as default value
 - Apply
- Bottom Buttons**:
 - Apply All
 - Close

Figure 2.11

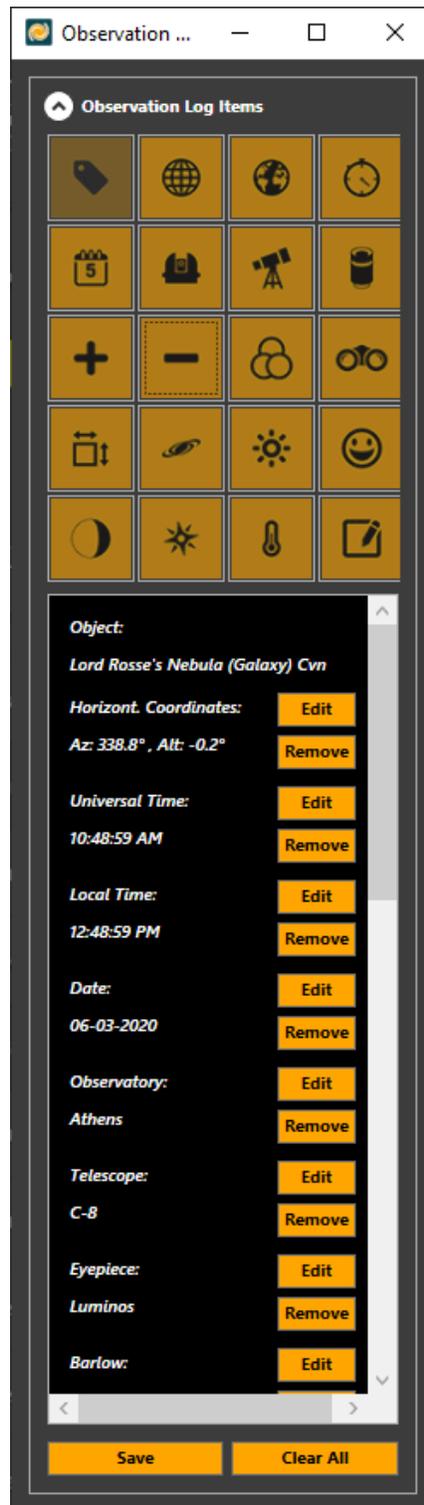


Figure 2.12

2.5 Running a BSH (Blind Star-Hop)

To run a Blind Star-Hop open **New Blind Star-Hop** window (**Figure 2.13**) either by selecting **Star-Hop/Run Blind Star-Hop** from the menu bar or by clicking **Run Blind Star-Hop** from the button list in **Star-Hop Maker** main screen.

The screenshot shows the 'New Blind Star-Hop' window with the following details:

- Star-Hop Name:** A Summer Blind Star-Hop
- Season:** Summer
- Bright Stars List:**

Star Name	Magnitude
Sirius - Alpha CMa	-1.46
Canopus - Alpha Car	-0.72
Rigel Kentaurus - Alpha Cen	-0.27
Arcturus - Alpha Boo	-0.04
Vega - Alpha Lyr	+0.03
Capella - Alpha Aur	+0.08
Rigel - Beta Ori	+0.12
Procyon - Alpha CMi	+0.38
Arcturus - Alpha Boo	+0.46
- First Step:** Vega - Alpha Lyr, Mag: +0.03, Ra: 18h 36m 56s, Dec: +38° 47' 01"
- Session Name:** A Summer Session

Figure 2.13

Enter a name for the blind star-hop, select a season, choose a bright star or set coordinates for use as first position and click **Set As First Step** button. Then, enter a name for your session and click **Apply** button.

The **Star-Hop Runner** window opens with at most a single bright star included in the object list, if a bright star was chosen as first step. The user inserts objects either from the **neighbours area** or from the sky-chart as shown in the **PSH** case.

TIP

A Blind Star-Hop can also be started by right clicking on any position in the sky-chart and selecting "Start BSH From Here" menu item. (Figure 2.14)



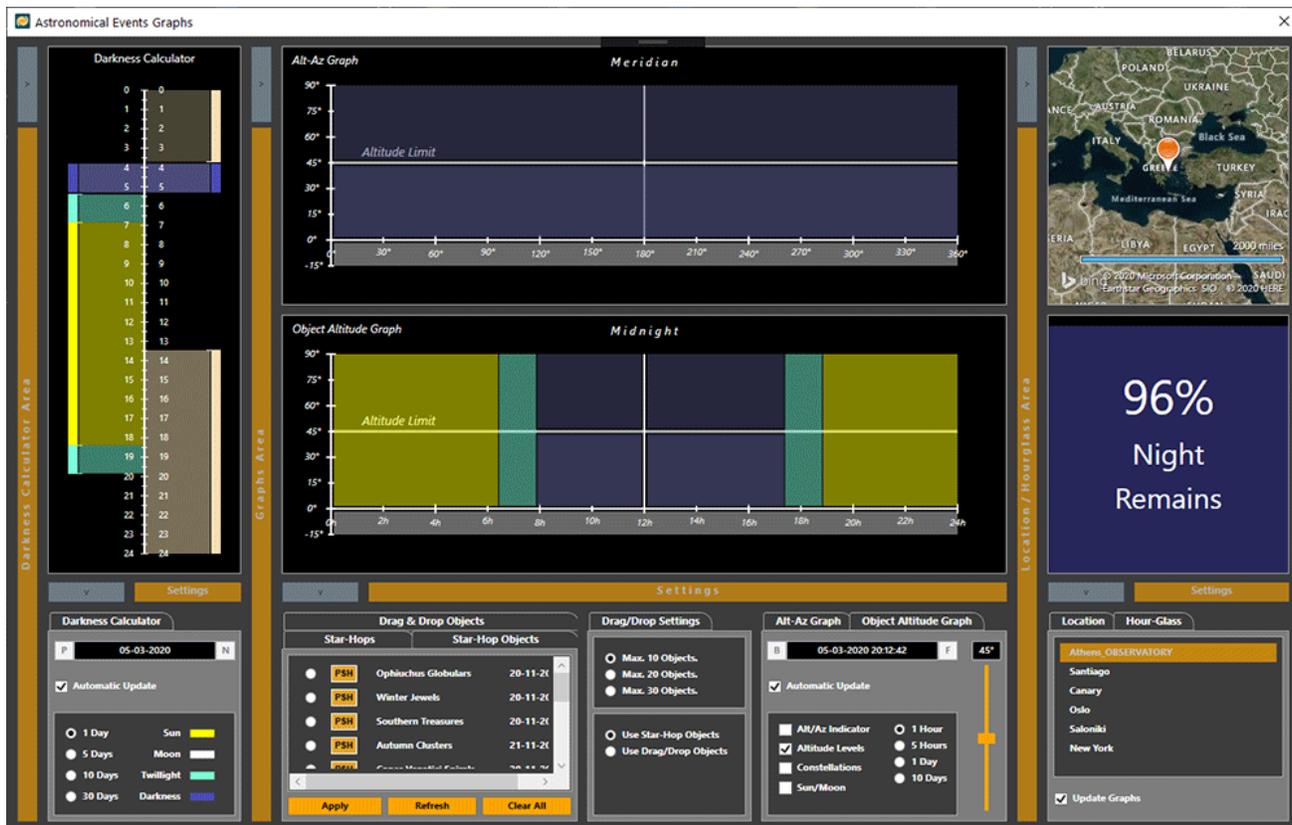
Figure 2.14

TIP

Before downloading a photo in SkyView display, click on the NGC/IC buttons at left of the display. When the download completes, click on the button with a 'label' icon which is above the NGC button. If the image contains NGC/IC objects then labels with information are shown next to each NGC/IC object in the photo.

3. Other Windows

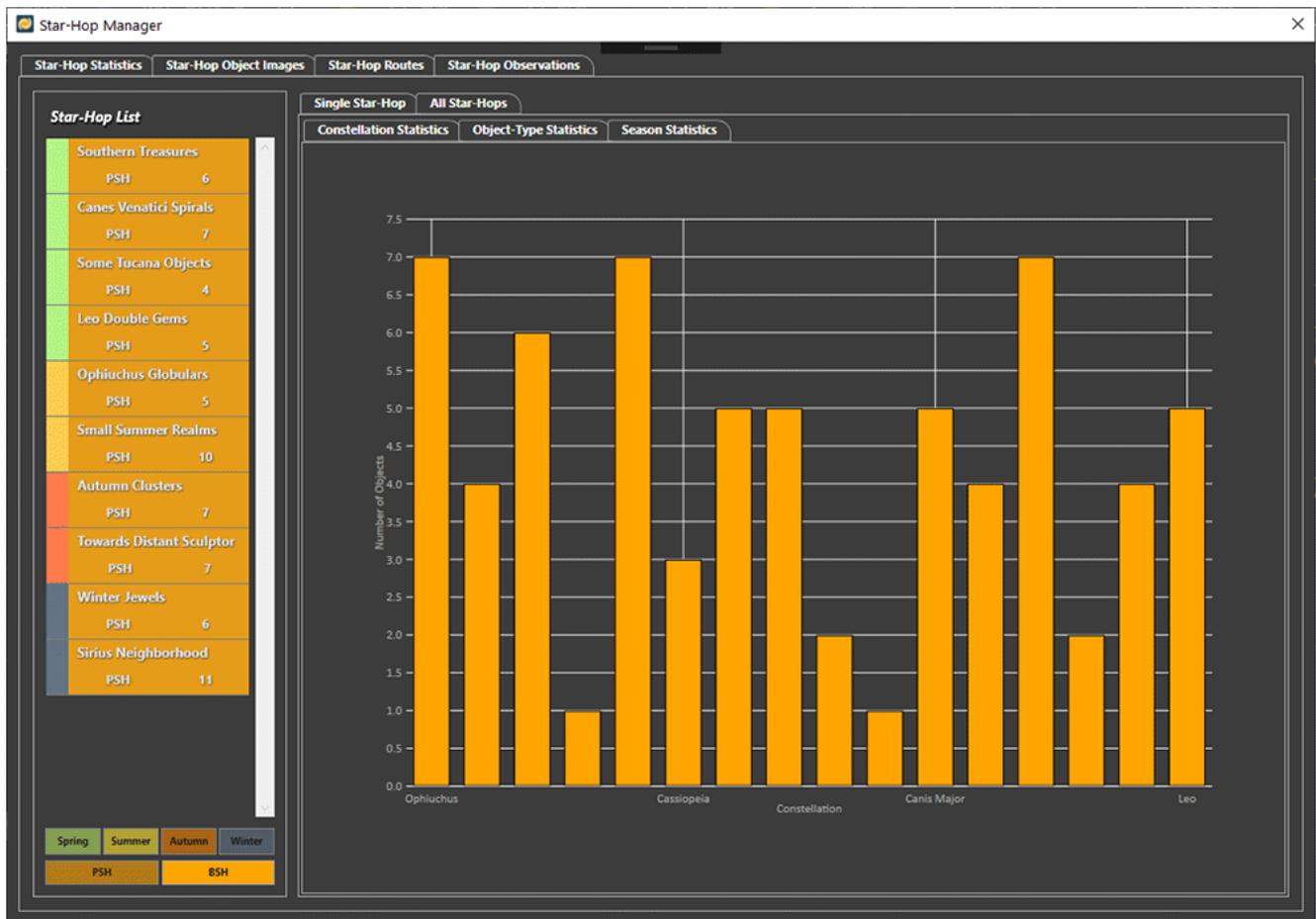
3.1 Astronomical Events Graphs



This window offers various ways to visualize astronomical events. The user selects a location and manipulates the controls of the window to:

1. Get a visual representation of the length of night and sun/moon visibility for any date by using the **Darkness Calculator**.
2. Find out, for instance, how much time remains for the night to begin or end by checking the **"hourglass"** box.
3. Select a star-hop and a date-time and view a graph with the altitude/azimuth for all containing objects, or select an object in a star-hop and view how its altitude changes during a day.
4. Drag and drop a number of objects from the sky-chart to the Alt-Az graph and perform similar calculations as with 3. above.

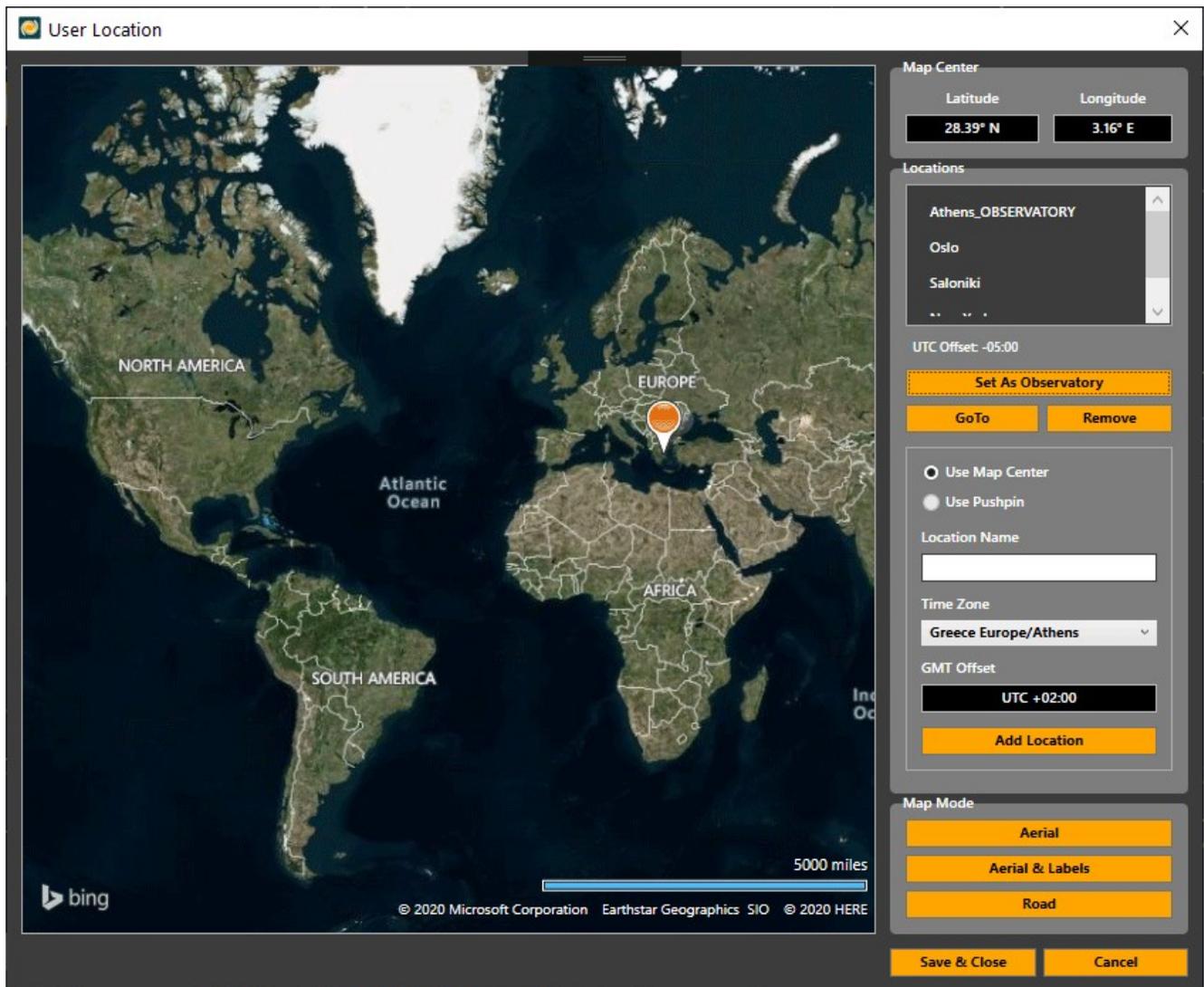
3.2 Star-Hop Manager



The **Star-Hop Manager** window provides a way to analyze and visualize all star-hops and display user observations stored in the database. There are four tabs in this window.

1. **Star-Hop Statistics** (Statistics separately for each star-hop as well as together for all star-hops).
2. **Star-Hop Object Images** (Images of objects displayed for each star-hop and images displayed for each class of object and included in all star-hops).
3. **Star-Hop Routes** (Provides a visual representation of the sequence of steps in each star-hop).
4. **Star-Hop Observations** (Gives a number of ways to search for user observations or view user observations for each star-hop and session recorded).

3.3 User Location



User location can be set by placing a pushpin on the map and selecting the **Use Pushpin** radio button as well as providing a name and selecting a time zone for the new location.

The same can be done, if the user wishes to use the center of map as location, by selecting the **Use Map Center** radio button instead.

The current observing location used by the program for various calculations can be set by selecting a location from the listbox and clicking the **Set As Observatory** button.