



Observation Planning

Planning an Observing Session with Stellarium

Author: Daniel Duggan

Observation Planning

Planning an Observing Session with Stellarium

Introduction

Stellarium is a free, open source planetarium application which shows a realistic sky in 3D. Its photo-realistic look simulates what you may see with the naked eye, binoculars or a telescope.

Stellarium is available for Windows, Mac OS X and Linux systems, and can be downloaded from www.stellarium.org. Installation instructions for each platform are available on the Stellarium website.

Basic Controls

When you open Stellarium, it adopts the date and time from your computer clock, therefore it may be day or night depending on the time of day.

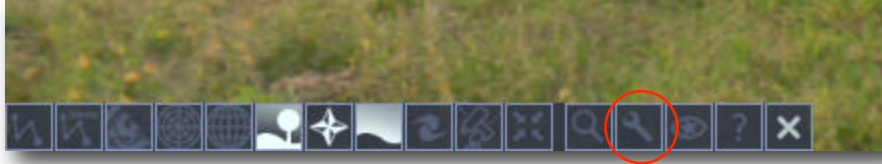


This is the main Stellarium window. The control panel, where the software settings are, is located in the bottom left; the time controls in the bottom right, the date and time in the upper left, and the software version and location on the Earth in the upper middle.

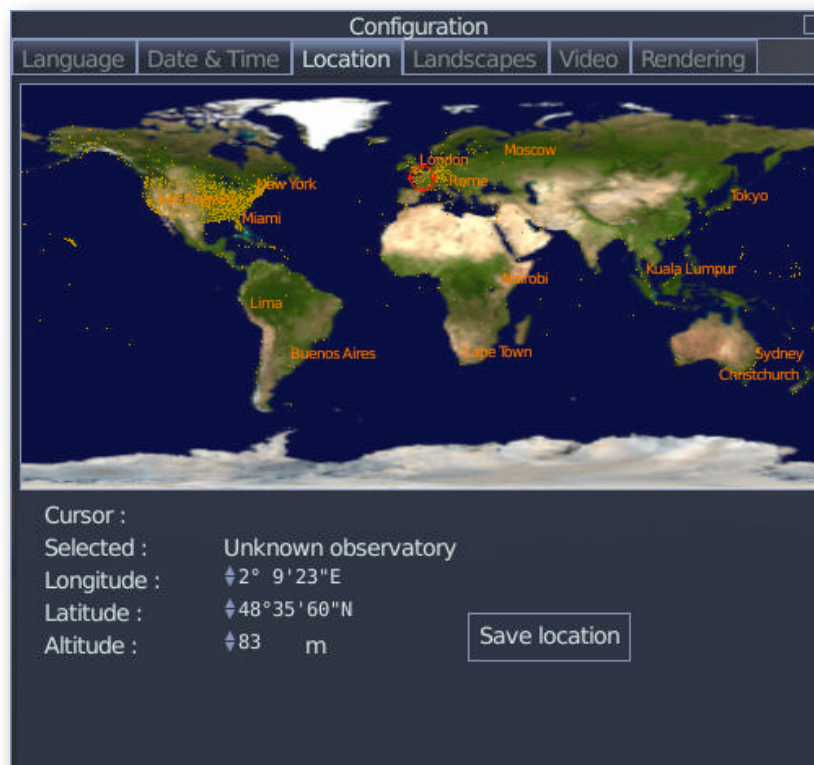
Setting Your Location

The default location in Stellarium is Paris, France - not particularly useful if you're observing with one of the Faulkes Telescopes.

Open the **Configuration Window** by clicking on the spanner icon in the control panel.



Then click on the **Location** tab.



You can set your location to anywhere on the Earth by simply clicking on the map.

Faulkes Telescope North is located on Haleakala, part of the Hawain islands.

Move your mouse over the Hawain islands and you will see place names appear as you roll over them.

Clicking in the exact position is not essential, as long as you are within a few hundred miles of the real site.



Kona is close to FTN, so hover your mouse over the islands until Kona appears, then click your mouse. A red target will appear around the area you clicked.

You will then see the sky change behind the configuration window as your location is moved.

If you are observing with Faulkes Telescope South, then hover your mouse over Sydney, and click to select it.



When you have your location selected, click **Save Location**, then enter a name for your location - i.e. Faulkes Telescope North or FTN etc...

Setting the Date & Time

You will also need to set the date and time of Stellarium to that of your observing session. Click on the **Date & Time** tab in the Configuration window.

The current time is displayed in Year, Month, Day and Hour, Minutes and Seconds. You can adjust any one of these using the small up and down arrows next to them.



Looking Around

There are two methods of looking around the sky in Stellarium. The first is by using your mouse to click and drag the sky around. Click and hold down your mouse button on the sky, and keeping the mouse button pressed, drag the sky around by moving your mouse.

You can also use your keyboard arrows. Pressing and holding the arrow keys will move the sky in the respective direction. A combination of arrows can also be used, e.g. up and right for a diagonal movement.

Selecting Objects

A useful feature of Stellarium is its ability to label objects in the sky. Turn on the "Nebulas" labels by clicking the **Nebulas** button in the control panel. This will label some bright objects in the sky, mostly bright Messier objects.



To select one of these objects simply hover your mouse over the label, and click once.

Your selection is confirmed when the object's information is displayed in the upper left of the window.

Details such as the object's name, Messier and/or NGC number, Right Ascension, Declination and its object type (cluster, galaxy, nebula etc...)



You can then centre the object by pressing the **Space Bar**.

Zooming In & Out

Now that you have an object selected and centered, you can now zoom in on it to see what it looks like.

There are two ways to do this. Press the Page Up and Page Down arrows on your keyboard to zoom in and out respectively. They are often located on the right hand side of keyboards and are represented by up and down arrows.

If you have a mouse with a roller ball, you can roll the ball up and down to zoom in and out.



Objects Suitable for the Faulkes Telescopes

Objects that are to be imaged with the Faulkes Telescopes should ideally reach a certain criteria. This section will cover two main points - altitude and object size.

Altitude

Due to turbulence caused by the Earth's atmosphere, Faulkes Telescope North and South do not allow objects less than 25 degrees above the horizon to be observed; they also warns you for objects between 25 and 30 degrees. So objects are best viewed when they are 30 degrees or above, the higher the better.

Stellarium has a feature to display an **Azimuthal Grid** on the sky. This can be turned on by clicking the Azimuthal Grid button on the control panel.



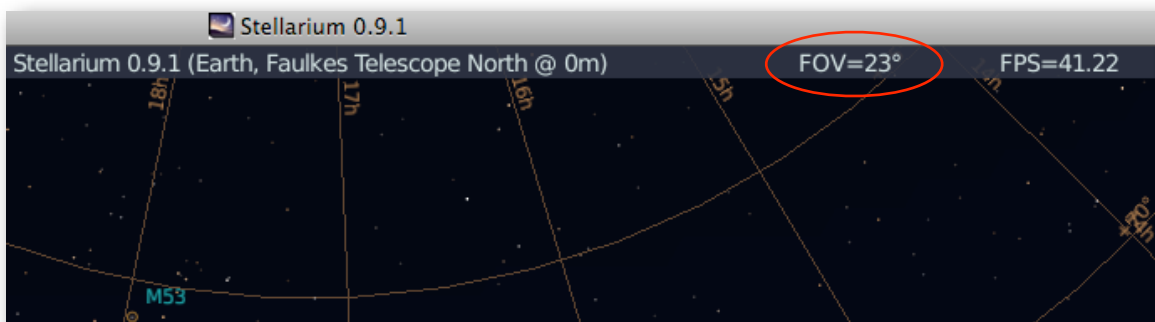
Now you can see that M6 cannot be observed because it is below the 30 degree line.

Here is an object that is over 70 degrees, a much better altitude.



The Faulkes Telescopes have quite a small Field of View (the area of sky the telescope can see), and as such, you have to make sure that the object you have chosen is going to fit nicely into the field.

You may have notice the FOV listed in the upper right of the Stellarium window. This value changes as you zoom in and out from an object, it tells you how much of the sky you are seeing in your window.



This is displayed in degrees however, and the FT field of views are so small they are quoted in arcminutes. **1 arcminute equals 0.017 degrees.**

The FoV of FTN and FTS is 4.6 arcminutes, which equals approximately **0.0782 degrees.**

So, zoom into your object until the FOV value in Stellarium is about **0.078**, and what you see in your Stellarium window is what the telescopes will see.