

Stellarium Tutorial

Written for version 0.10.6.1 (Released 12/06/2010), using a Windows platform.

ABOUT STELLARIUM

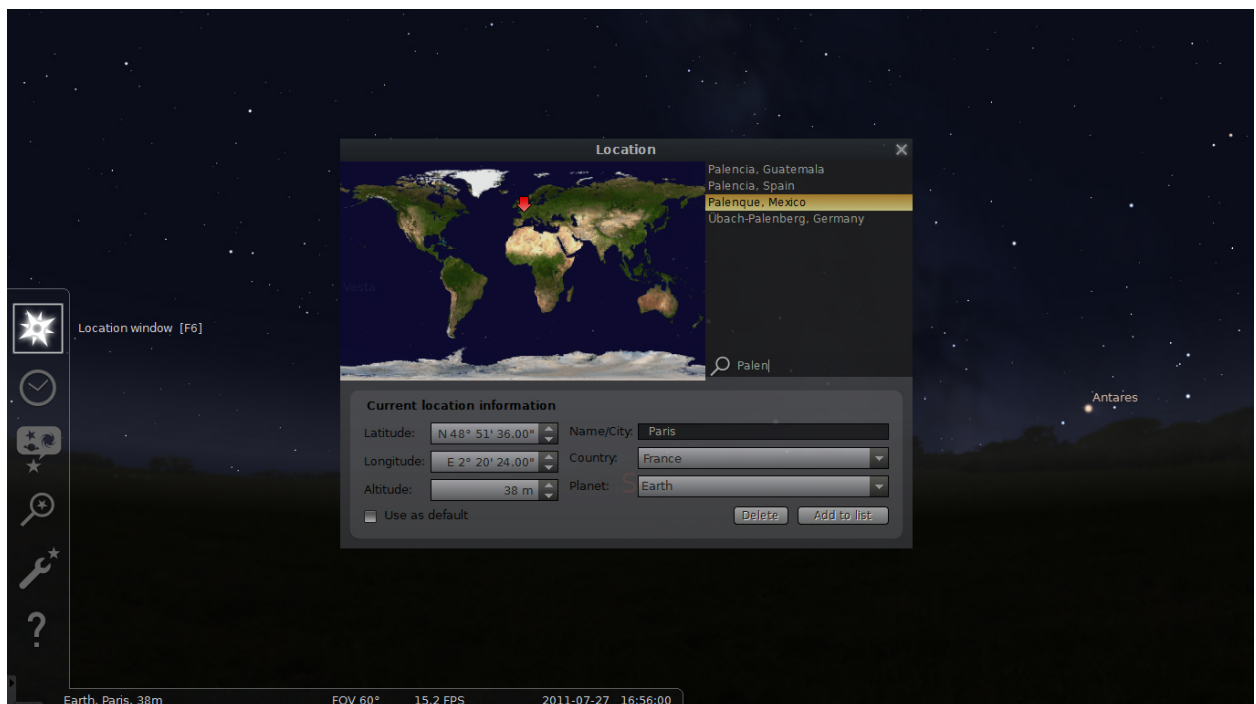
Stellarium is a free, open-source planetarium program for your computer. It shows a realistic sky in 3D, just like what you see with the naked eye, binoculars or a telescope. To download Stellarium, visit <http://stellarium.org/> and choose the correct platform for your computer (i.e. Mac OS X, Windows, etc.).

SETTING THE VIEWING LOCATION

You can set the viewing location of Stellarium to anywhere in the world. The default viewing location for Stellarium is Paris, but you can change the location to anywhere in the world. To change the location, click on the "Location" icon on the left menu bar. (If you do not see the menu bar, place your cursor on the left side of the screen. The menu bar should appear. You can also press F6.) You can search for a location in the list or enter exact coordinates.

Try This:

- Set a location in the database: In the search bar (beside the magnifying glass), type "Palenque". Palenque, Mexico will appear in the list of locations. When you click on this, Stellarium will automatically change the location to Palenque.
- Add a new location to the database: In the Latitude box, type in N 20° 21' 40.60". In the Longitude box, type in W 89° 46' 14.40". For altitude, enter 52 meters. Type "Uxmal" into the Name/City box. In the Country box, change the country to Mexico. Click on "Add to list".
- To make Uxmal your default location, check the "Use as Default" box.

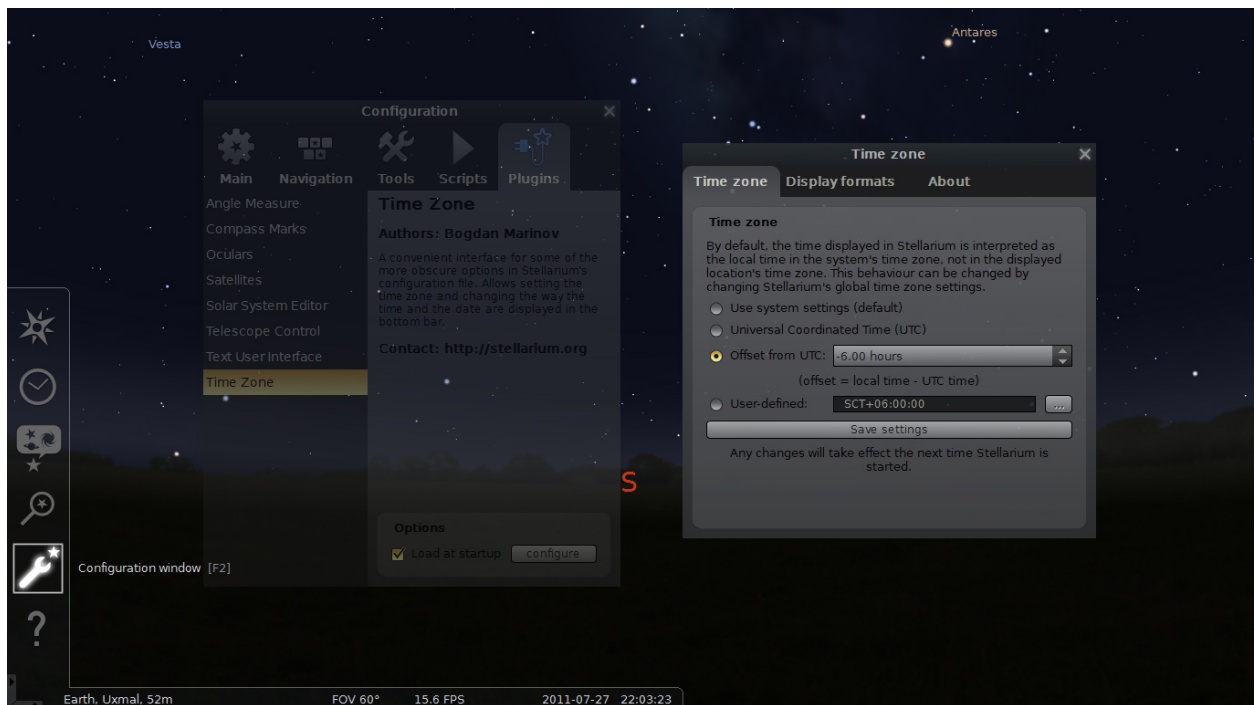


SETTING THE TIME ZONE

By default, the time displayed in Stellarium is interpreted as the local time in your computer's time zone, *not* in the displayed location's time zone. This can be changed by changing Stellarium's global time zone settings. Any changes will take effect the next time Stellarium is started.

Try This:

- To set Uxmal's time zone, open the Configuration window from the left menu bar (or F2), then click on "Plugins". In the "Time Zone" section, click "Configure". Change the "offset from UTC" to -6.00 hours. Click on "Save Settings". You will need to close and restart Stellarium to activate these settings. To close Stellarium, press Control-Q on your keyboard or click on the "Quit" button on the bottom menu.



CHANGING THE LANDSCAPE

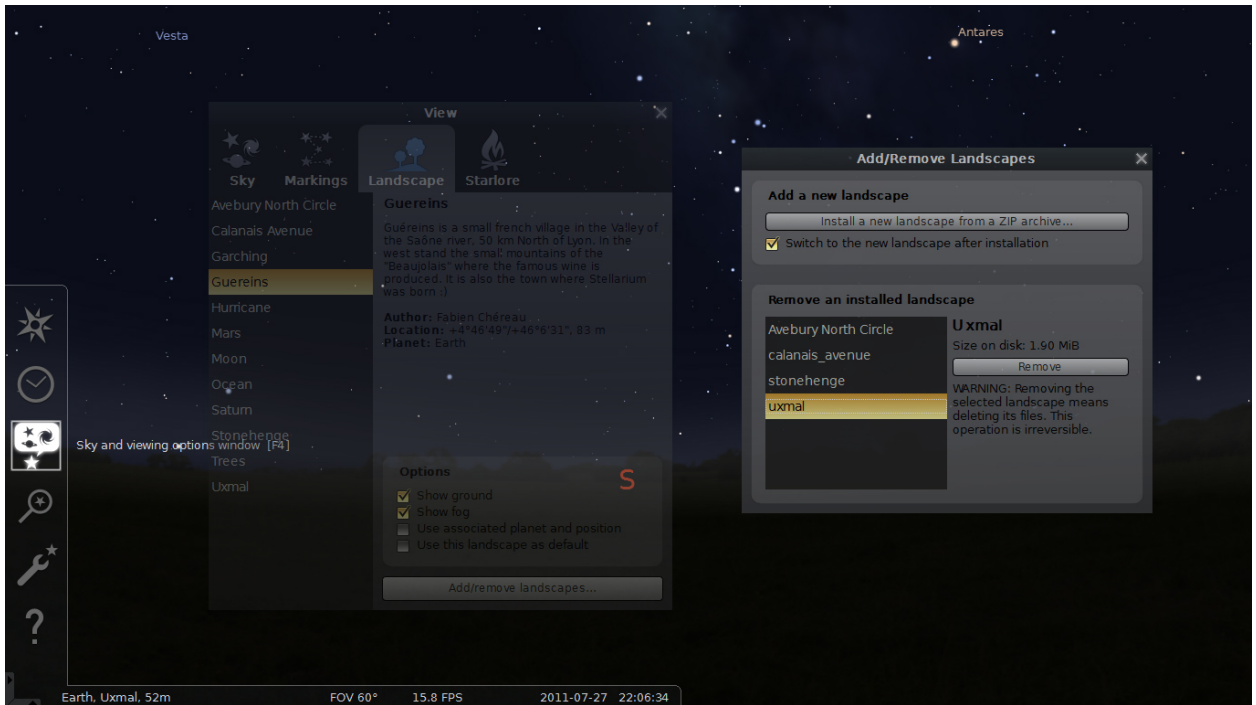
The default landscape is the French village Guereins. You can change the landscape to other pre-set landscapes as well as download and install user-created landscapes from the Internet. To change the landscape to another pre-set landscape, click on "Sky and Viewing Options" window (F4), then "Landscape". If you want a flat horizon, you can choose "Ocean."

Try This:

- To download a landscape of the ancient Maya city of Uxmal, visit http://www.stellarium.org/wiki/index.php/Landscapes#North_America. Scroll down to the Uxmal, Yucatan landscape by Xavier Bonnefoy-Cudraz, and click on "Download". Save the file to your desktop or other location that you can easily find.
- Open the "Sky and Viewing Options" window from the left menu (or F4). Click on "Landscape" then "Add/remove landscapes". Click on "Install a new landscape from a ZIP archive". Navigate

to the folder where you saved the Uxmal landscape and double click on it. The landscape should be installed immediately and will be listed in the landscape options.

- After you have changed the landscape to Uxmal, click and hold your mouse on the screen to move in a 360° circle around the horizon to look at the different buildings. The Uxmal landscape situates the viewer inside the quadrangle of the Nunnery. The layout of the structures forming this quadrangle symbolizes Mayan cosmology concepts. The North building has 13 exterior doorways, representing the 13 levels of the celestial realm. The West building has 7 doorways, representing the Earthly realm. The South building has 9 doorways, representing the 9 levels of the underworld realm.



Helpful Hint:

Changing the landscape does **not** change the viewing location. The landscape is simply a panoramic photograph that overlays the sky. For example, if you set the *landscape* to Uxmal but do not change the *viewing location* from the default of Paris, you will be viewing the Paris sky with the overlay panorama of Uxmal. Your current viewing location is always listed in the lower left corner of the Stellarium screen.

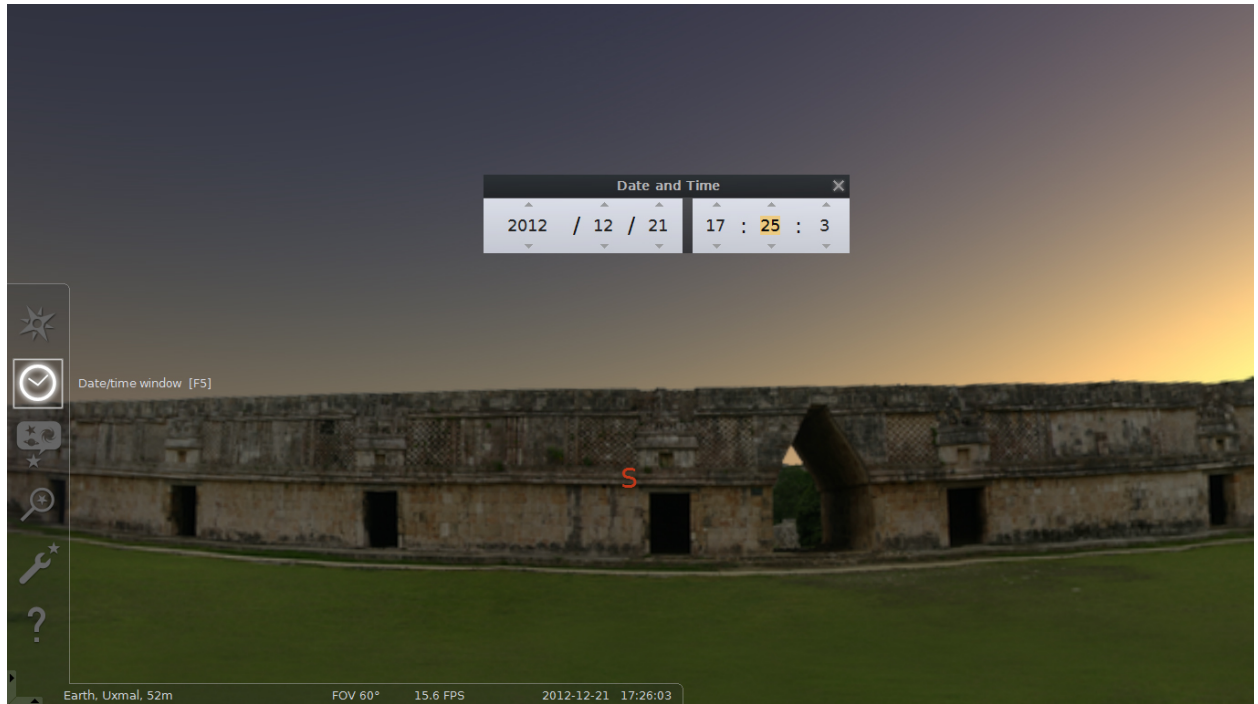
SETTING THE DATE/TIME

The default date and time for Stellarium is the current date and time according to your computer's clock. You can change the date and time to any time in the past or future by using the Date/Time window on the left menu bar or by pressing F5. Note that the left side of the Date/Time window box shows the year/month/day, while the right side shows the hour/minutes /seconds (in a 24-hour format).

Try This:

- View sunset at Uxmal on December 21, 2012 (winter solstice). Make sure your viewing location is Uxmal. Click on the date/time window on the left menu bar, or press F5. Use the arrows to change the year to 2012, the month to 12, and the day to 21. Change the time to 17:25:00 (5:25

PM). If you want to freeze time (i.e. stop it from advancing in real-time), press the number “7” on your keyboard or click on the “Play/Pause” button on the bottom menu.



Helpful Hint:

You can use the US Naval Observatory website to find the sunrise, sunset, moonrise or moonset times for any location in the world on any date. Visit <http://aa.usno.navy.mil/data/> and click on “complete Sun and Moon Data for One Day”. You can choose from a list of US locations or input the latitude/longitude coordinates for any location in the world.

OBSERVING THE SUN ALONG THE HORIZON

The horizon can be divided into cardinal points (North, South, East and West) and intercardinal points (Northeast, Southeast, Northwest, Southwest). We often hear that the Sun rises in the East and sets in the West, but how accurate is this statement?

Try This:

- Make sure the location is set to Uxmal, Mexico. Make sure the date and time is set to December 21, 2012, 5:25 PM (winter solstice). Click and hold your mouse on the screen to view around the horizon. In what cardinal or intercardinal direction is the Sun setting?
- Change the date to June 21, 2012, 6:42 PM (summer solstice). In what cardinal or intercardinal direction is the Sun setting?
- Make a prediction about when the Sun will set due West, then change the date and time to test your prediction.

More Information:

If you are using the Uxmal landscape, you may notice that you do not have a clear view of the setting Sun. This is because the apparent horizon of the Uxmal landscape includes trees and buildings. Sunrise and sunset times are usually calculated assuming a flat horizon located at sea level. If your apparent

horizon includes buildings, mountains, trees or other obstructions, you will see the Sun earlier than someone who is viewing from a flat horizon.

OBSERVING THE ZENITH PASSAGE OF THE SUN

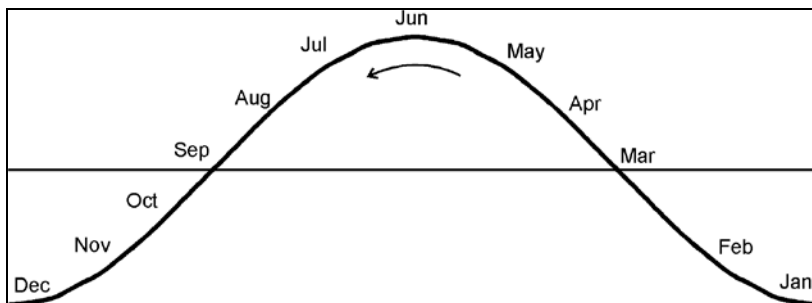
Many people think that the Sun passes directly overhead everyday at noon. However, this only happens in tropical locations once or twice a year. Tropical locations are those places that fall between 23.5° North latitude and 23.5° South latitude. Observers at higher-latitude locations will never see the Sun at the zenith (i.e. directly overhead). Ancient Maya cities, such as Uxmal, fall within the tropics and therefore are great places to observe the passage of the Sun through the zenith.

Try This:

- Set your viewing location to Uxmal, Mexico. Set the date to May 21, 2012 (2012/5/21). Set the time to 11:56 a.m. (11:56:00). Press the “7” key to stop time from advancing.
- Open “Sky and Viewing options” window (F4 or click icon in left menu). Under the “Markings” tab, check the azimuthal grid, meridian line and the ecliptic line. The meridian is an imaginary line that runs from the Northern horizon point through the zenith (top of the sky) to the Southern horizon point. The ecliptic is an imaginary line that traces out the movement of the Sun across the sky. The azimuth grid is an imaginary grid that divides the horizon into 360° (azimuth) and the dome of the sky into 90° (altitude).
- Click, hold and drag your mouse around the horizon so that you can get a sense of what the sky looks like at Uxmal at this time. Notice where the Sun is located.
- To get a better view of the Sun’s disk, remove the atmosphere by clicking on the “Atmosphere” icon on the bottom menu (or by pressing the “A” key). Removing the Earth’s atmosphere will make the sky appear black, even though it is daytime.
- Click, hold and drag your mouse on the screen so that you can see the zenith (top of the sky). Notice how the Sun is crossing the meridian right at 90° altitude.
- Open the “Date and Time” window to advance the date one day at a time. How does the position of the Sun relative to the meridian change as the days go by?

More Information:

For most tropical locations, the Sun passes through the zenith twice a year: once as it travels northward towards the Tropic of Cancer and again as it travels southward toward the Tropic of Capricorn. Locations that are situated right on the Tropic of Cancer (23.5° N latitude) or the Tropic of Capricorn (23.5° S latitude) experience zenith transit only once a year.



SHORTCUTS

A full list of shortcuts is available by clicking on the “?” in the left menu bar or by pressing F1. Some of the more useful shortcuts are listed below:

Menu Options:	
F1	Help window
F2	Configuration window
F3, or “Ctrl+F”	Search window
F4	Sky and viewing options window
F5	Date/time window
F6	Location window
Time Options:	
7	Set time rate to zero (stop time)
8	Set time to now
J	Decrease time speed
L	Increase time speed
Display Options:	
A	Atmosphere (deselect to remove)
C	Constellation lines
R	Constellation art
V	Constellation labels
G	Ground
Q	Cardinal points
Navigation:	
Left click	Select object
Right click	Clear selection
Arrow keys & left	Pan view around the sky
Ctrl+Q	Quit