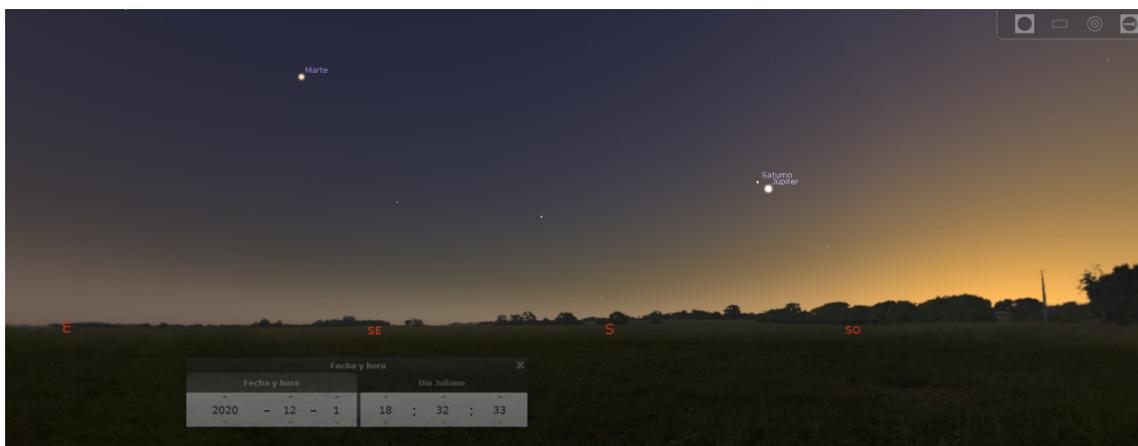


Location of Jupiter and Saturn with the naked eye.

From the end of November to the end of December 2020, it is very easy to locate these two giant planets of the Solar System. Looking at sunset towards the southwest, where the sun has hidden on the horizon, we will see a little further to the left two points of light in the sky, which stand out against the stellar background, being brighter than all the stars visible at sunset. They are on the horizon at the apparent distance covered by the palm of the hand extended with the arm outstretched. Make sure to locate a site with the southwest horizon clear of obstacles.

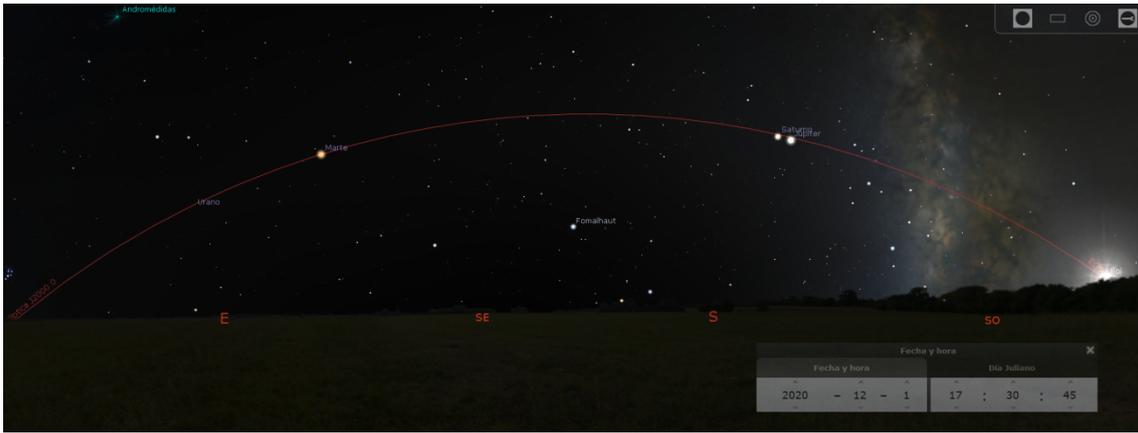


We will have located the two largest planets in the Solar System, Jupiter and Saturn. But which of the two points is Jupiter? This is also an easy task. Jupiter is the brighter of the two. Until December 21, Jupiter will apparently be below Saturn and from December 22 it will gain height and will stay above it. The apparent brightness of Jupiter is -2 magnitudes, while that of Saturn is 0.6, this means that Saturn looks almost 7 times fainter than its companion. In addition, the color will also help us distinguish them, Jupiter is pale yellow, while Saturn is orange.

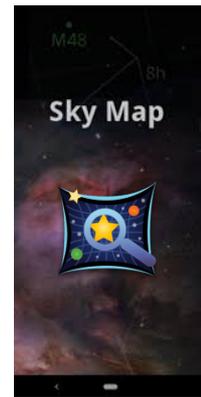
We can also locate the planet Mars that is higher on the horizon in a southeast direction. We will see it reddish in color with an intermediate brightness between Jupiter and Saturn, as shown in the image.

As these planets are so bright, we can observe them from the middle of the city, the light pollution will erase the rest of the stars from the sky and only these two will remain. If we have the opportunity to be in a place further away from the city it will be better to observe them in all their splendor, standing out with their brightness above the rest of the surrounding stars.

The closer we live to the Earth's equator, the higher they will be on the horizon and therefore we will see them more clearly, since their light will not have had to pass through the lower layers of the atmosphere and we will not see them flickering. In Spain, the best place to observe it will be in the Canary Islands and in the south of the Iberian Peninsula, however the phenomenon is visible throughout the peninsula, with the only exception that the further north we move the closer they will be to the horizon and therefore, their observation will be more difficult, either due to obstacles or due to the density of the lower layers of the atmosphere that will not allow us to see clearly.



All the planets in the Solar System are apparently located in the sky around a curved line called the ecliptic, which is the line along which the Sun circulates, from when it rises in the east until it sets in the west. The Moon also passes through it. It represents the projection of the plane of the Solar System in the sky. For this reason, one way to locate the planets is to imagine that line in the sky and look a little lower, a little higher than it, for very bright points of light, which will be planets. If there are still doubts, we can use specific mobile apps for sky maps that will indicate what we are observing, such as "Sky Map".



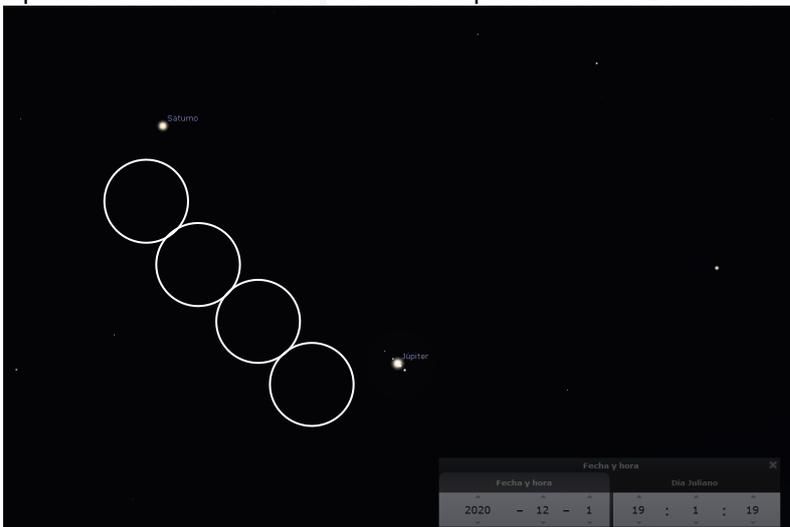
On December 1, 2020, Jupiter and Saturn will apparently be about 2 degrees apart, equivalent to 4 full moons, between them two would fit our thumb with an outstretched arm.

Jupiter is closer to the Sun than Saturn, so it completes an orbit in less time than Saturn. Specifically, Jupiter is 5 astronomical units, while Saturn is approximately twice the distance, remember that an astronomical unit is the distance from the Earth to the Sun, about 150 million km. Thus, while Jupiter takes about 12 years to complete one orbit, Saturn takes about 29 years. This circumstance means that when observing them from Earth we see them near the ecliptic and it will always be Jupiter that passes Saturn, sometimes it will pass over it, other times below it and very rarely it will almost cover it.

This year 2020 is special that Jupiter will pass almost in front of Saturn and that will happen on December 21. This is due to the fact that coincidentally the inclination of the orbits of both planets, observed from Earth, almost overlap. The last time there was such a close approach, Felipe IV reigned in Spain and Velázquez was appointed the king's chamber painter, that happened in 1623 and another such close encounter will not happen again for 60 years.



Apparent position of Jupiter and Saturn on December 1, they will be about 2 degrees apart, equivalent to 4 full moons. The circle represents the size of the full Moon.



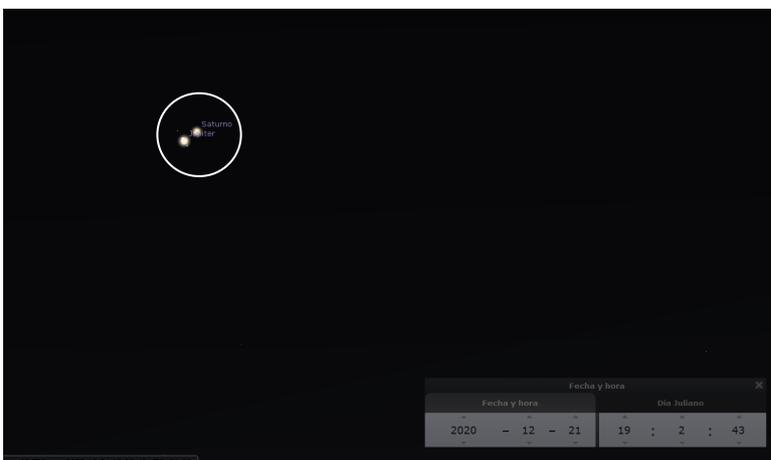
Apparent position of Jupiter and Saturn on December 8, they will be slightly less than 1.5 degrees apart, equivalent to 3 full moons. Between the two, our little finger would fit with an outstretched arm.

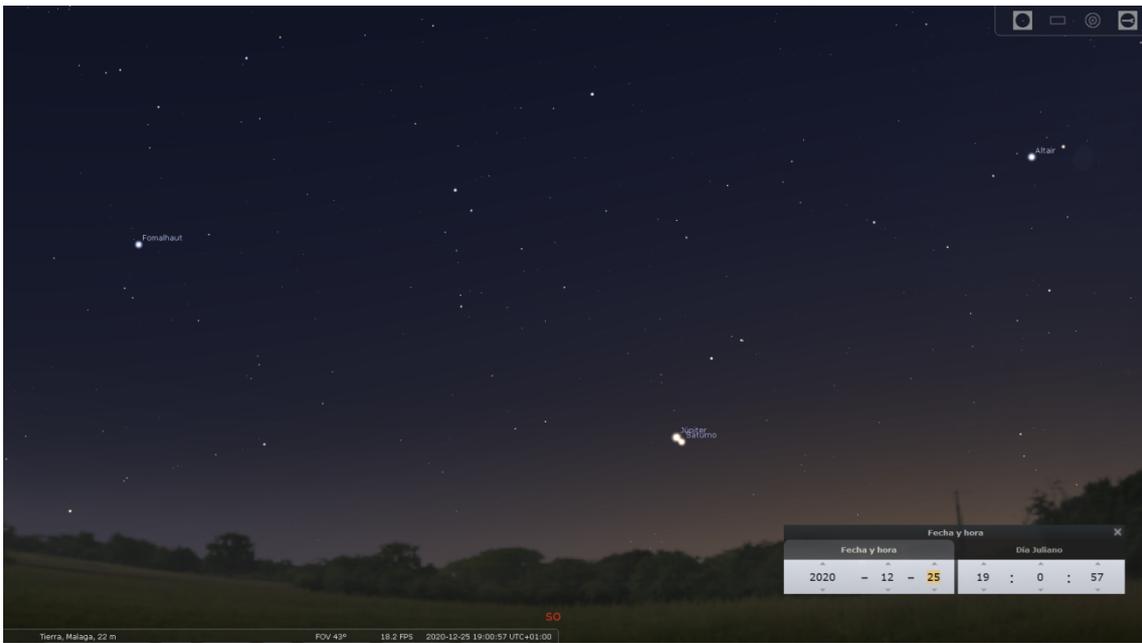


Apparent position of Jupiter and Saturn on December 15, they will be a little more than half a degree apart, equivalent to 1 full moon.

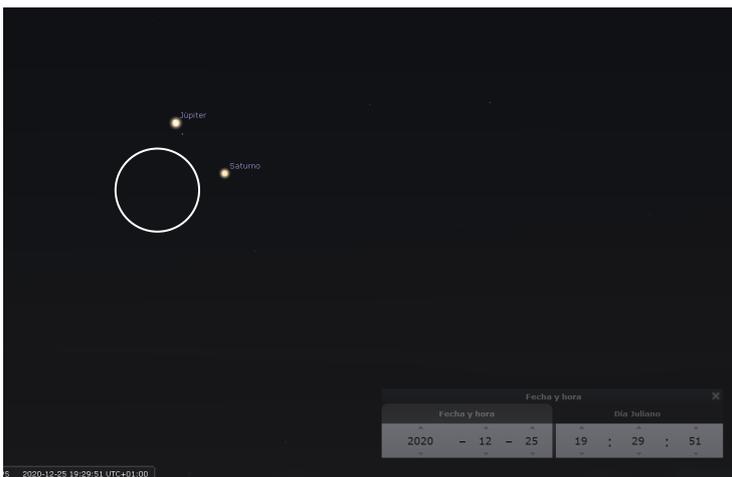


Apparent position of Jupiter and Saturn on December 21, they will be 0.1 degree apart, equivalent to one fifth of the lunar disk. With the tip of a pen held with an outstretched arm we would cover both planets!





Apparent position of Jupiter and Saturn on December 25, they will be slightly less than half a degree apart, equivalent to 1 full moon. Jupiter will have surpassed Saturn in height, having begun its separation as of December 22.





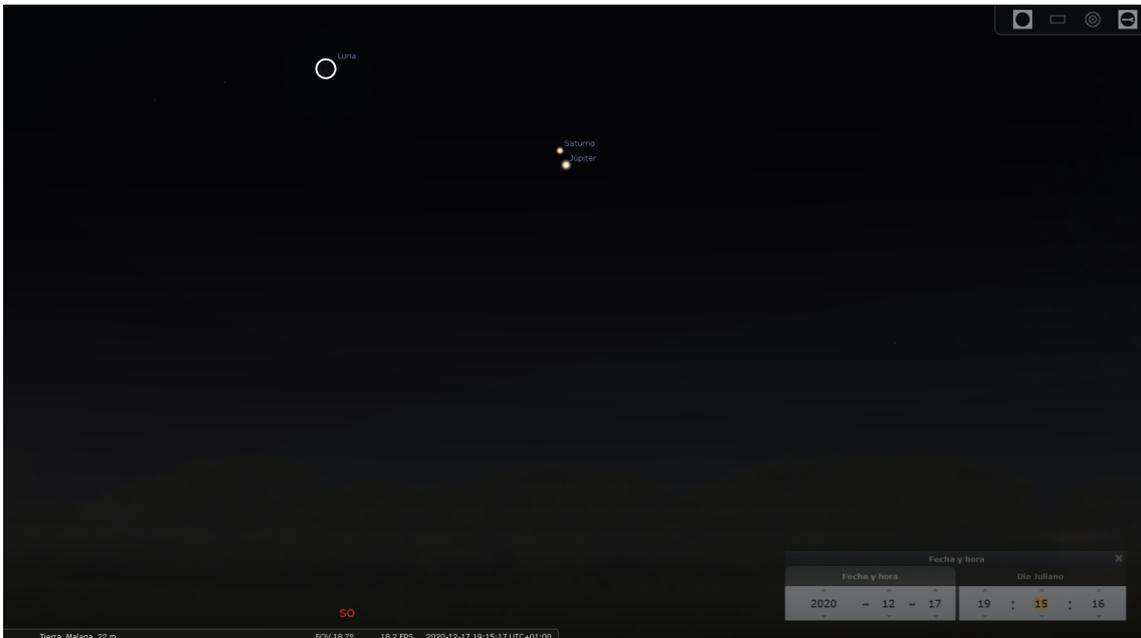
Apparent position of Jupiter and Saturn on December 31, they will be 2 degrees apart again.



The Moon in its first days of waxing phase will be especially close to both planets on December 16 and 17, a suitable date to make a good photographic composition.



On December 16, the Moon will be on its second day of waxing with an illumination of only 5%



On December 17 the Moon will be on its third day of waxing with an illumination of 11%

To observe more details on the large planets it is necessary to use astronomical instrumentation. With binoculars we will see the satellites of Jupiter and with a telescope we can see the rings of Saturn and details in the atmosphere of both planets.