

In this newsletter:

- Shows
- Moon Phases
- Sunrise/set and moonrise/set for Johannesburg
- Astronomical Events
- Eclipse
- Naked Eye Planets
- Southern Delta Aquariids Meteor Shower
- Word Search – Moons of Jupiter

### Shows

Currently, ALL SHOWS are SUSPENDED until further notice due to the Covid-19 pandemic and national state of disaster.

### Moon Phases

Full Moon: 5 Jul  
Last Quarter: 13 Jul  
New Moon: 20 Jul  
First Quarter: 27 Jul

### Sunrise/set and Moonrise/set for Johannesburg – July 2020

Date	Day	Sunrise		Sunset		Moonrise		Moonset	
		h	m	h	m	h	m	h	m
1	Wed	06:56	17:28	14:21	02:52				
2	Thu	06:56	17:28	15:06	03:56				
3	Fri	06:56	17:28	15:56	05:01				
4	Sat	06:56	17:29	16:51	06:04				
5	Sun	06:56	17:29	17:49	07:04				
6	Mon	06:56	17:30	18:49	07:58				
7	Tue	06:56	17:30	19:47	08:46				
8	Wed	06:56	17:30	20:44	09:29				
9	Thu	06:56	17:31	21:39	10:06				
10	Fri	06:55	17:31	22:31	10:40				
11	Sat	06:55	17:32	23:22	11:12				
12	Sun	06:55	17:32	--:--	11:43				
13	Mon	06:55	17:33	00:13	12:14				
14	Tue	06:55	17:33	01:04	12:45				
15	Wed	06:54	17:34	01:56	13:20				
16	Thu	06:54	17:34	02:50	13:58				

Date	Day	Sunrise	Sunset	Moonrise	Moonset
		h m	h m	h m	h m
17	Fri	06:54	17:35	03:46	14:40
18	Sat	06:53	17:35	04:43	15:29
19	Sun	06:53	17:35	05:41	16:23
20	Mon	06:53	17:36	06:37	17:22
21	Tue	06:52	17:36	07:30	18:25
22	Wed	06:52	17:37	08:19	19:30
23	Thu	06:52	17:37	09:04	20:34
24	Fri	06:51	17:38	09:45	21:37
25	Sat	06:51	17:38	10:23	22:40
26	Sun	06:50	17:39	11:01	23:42
27	Mon	06:50	17:39	11:39	--:--
28	Tue	06:49	17:40	12:20	00:45
29	Wed	06:49	17:40	13:03	01:48
30	Thu	06:48	17:41	13:50	02:51
31	Fri	06:47	17:41	14:42	03:54

Data calculated using MICA, US Naval Observatory

### Astronomical Events – July 2020

Date	Day	Time	Event
1	Wed	04:45	Mercury Inferior Conj. Venus: 34.3° W
4	Sat	05:18	Moon Descending Node
		16:59	Aphelion: 1.0167 AU (Earth farthest from Sun 152,096,155 km)
5	Sun	03:37	Moon South Dec.: 24.1° S
		06:30	Penumbral Lunar Eclipse
		06:44	Full Moon
		23:37	Moon close to Jupiter: 1.9° N
6	Mon	10:45	Moon close to Saturn: 2.6° N
11	Sat	14:17	Venus close to Aldebaran: 1° N
		21:36	Moon close to Mars: 2.2° N
12	Sun	21:27	Moon Apogee: 404,200 km
13	Mon	01:29	Last Quarter
14	Tue	09:03	Jupiter Opposition
17	Fri	09:26	Moon close to Venus: 3.4° S
18	Sat	14:33	Moon Ascending Node
19	Sun	13:51	Moon North Dec.: 24.1° N
20	Mon	19:33	New Moon
		23:33	Saturn Opposition
22	Wed	16:59	Mercury Elongation: 20.1° W
25	Sat	06:54	Moon Perigee: 368,400 km
27	Mon	14:32	First Quarter
		23:08	Delta Aquarid Shower: ZHR = 20
31	Fri	11:32	Moon Descending Node

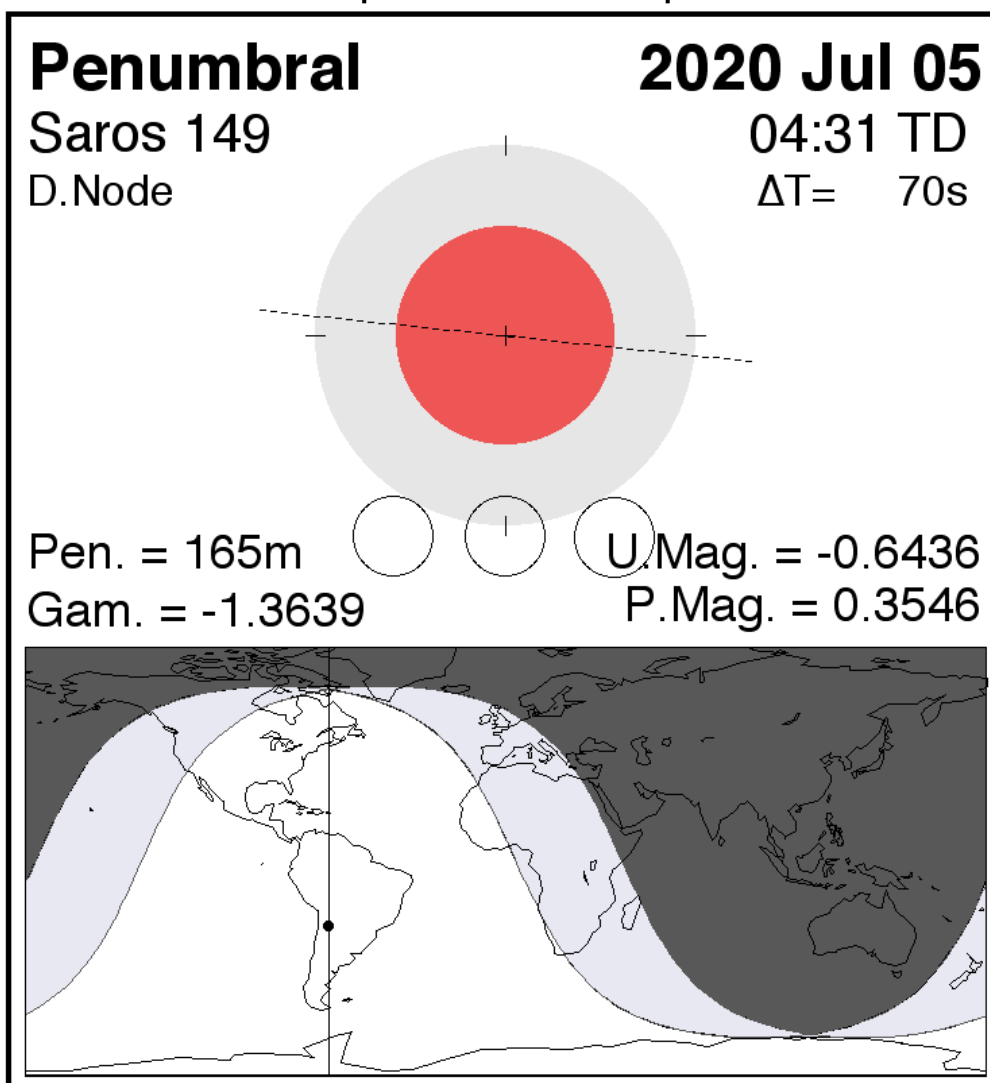
Sky Events Calendar by Fred Espenak and Sumit Dutta (NASA's GSFC)

## Eclipse

5 July

Type of Eclipse: Penumbral Lunar Eclipse  
Time (SAST): 5:07 a.m. - 7:52 a.m.  
Visible from: Americas, southwestern Europe and Africa

[www.EclipseWise.com/eclipse.html](http://www.EclipseWise.com/eclipse.html)



***Thousand Year Canon of Lunar Eclipses***

©2014 by Fred Espenak

## Naked Eye Planets

Mercury: Mercury reaches inferior conjunction (between the sun and earth) on 1<sup>st</sup> July before moving to the eastern morning sky.

Venus: Venus is above the eastern morning horizon in the constellation of Taurus the bull. It will be within 1° of the star Aldebaran on 11 July (see image below).

Mars: In the beginning of July Mars rises at 11:33 p.m. and by months end at 10:45 p.m. If you have a suitable sized telescope you will notice the southern pole cap shrink in the following weeks.

Jupiter: Reach opposition on 14 July, it will be visible all night. Even a small telescope will show its main two cloud bands.

Saturn: Saturn rises about 30 minutes after Jupiter. It will reach opposition on 20 July when it will become an all-night object.

Moon 4 – 6 July at 10 p.m.

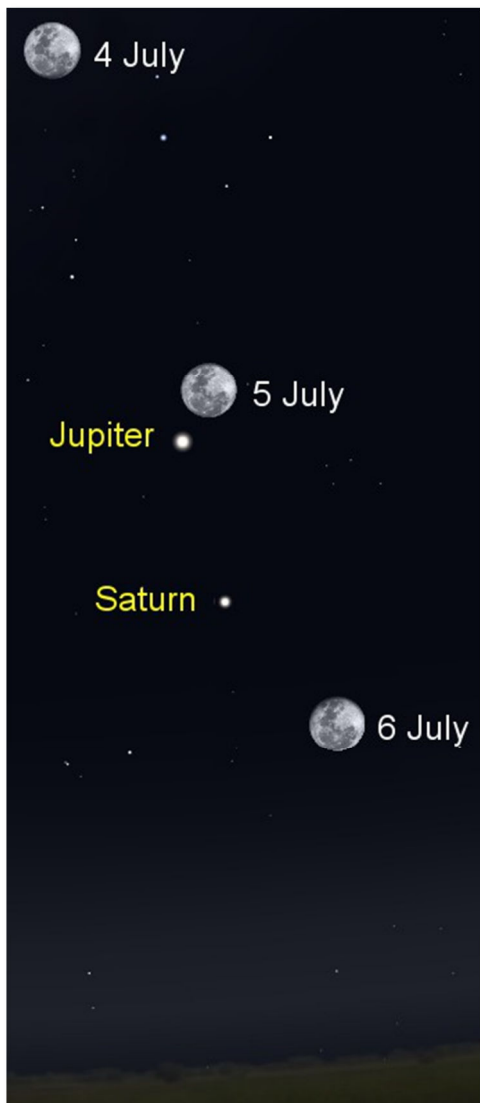


Image: Stellarium

Venus 11 July at 5 a.m.



Image: Stellarium

## Southern Delta Aquariids

Active from: 21 July – 29 August

Maximum: 29 July

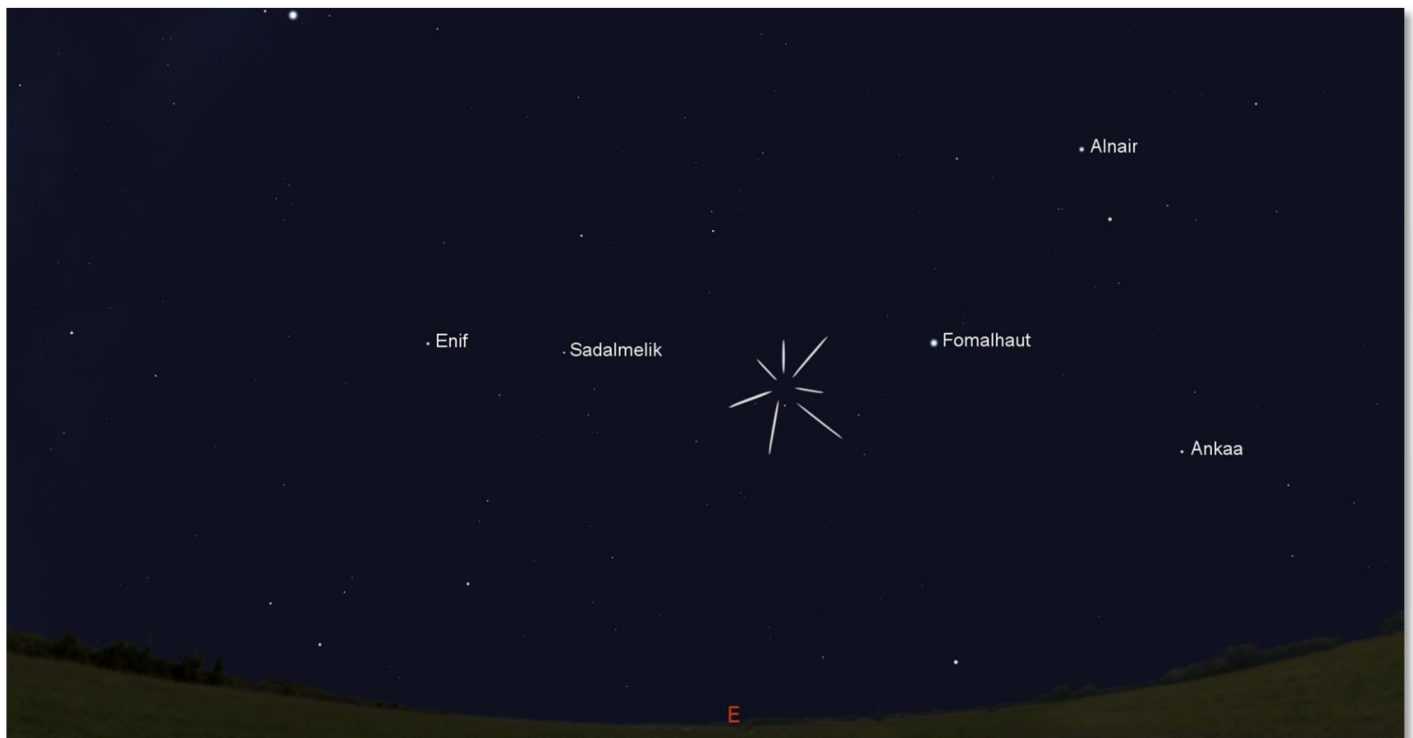
Constellation: Aquarius - the water carrier



*Aquarius as depicted by Johann Bayer in his Uranometria (1603). Source image provided by www.RareMaps.com — Barry Lawrence Ruderman Antique Maps Inc.*

The Delta Aquariids is best viewed from areas away from the city lights. The best time is between 10 p.m. and 5 a.m. The shower originated from the breakup of what are now the Marsden and Kracht Sungrazing comets. We might see between 20 – 25 meteors per hour.

### **Radiant of Delta Aquariids as on 29 July 2020 at 10 p.m.**



*Image: Stellarium*

## Word Search

Search up, down, forward, backward, and on the diagonal to find the hidden words.

### Moons of Jupiter



ADRASTEIA  
AITNE  
AOEDE  
CALLISTO  
CARPO

CYLLENE  
ELARA  
ERINOME  
EUPORIE  
EUROPA

EURYDOME  
GANYMEDE  
HARPALYKE  
HEGEMONE  
IO

KALE  
KALLICHORE  
KALYKE  
LEDA  
METIS

MNEME  
ORTHOSIE  
PASITHEE  
THEBE  
THEMISTO

Enjoy

Clear skies  
Constant