

A photograph showing the Earth rising over the horizon of the Moon. The Earth is a bright blue and white sphere in the center, set against the dark, starry background of space. The Moon's surface is a reddish-brown, cratered landscape in the foreground. The text "The Moon" is overlaid in white on the lower half of the image.

# The Moon



# July 20, 1969

- On 10:56pm - July 20, 1969 Neil Armstrong stepped onto the Moon.
- On December 19, 1972 Eugene Cernan stepped off the Moon.
- Since then no human has gone to the Moon or even left low earth orbit.
- In the history of mankind, only 12 men ever walked on another world.

A woman with red hair and glasses is shown in profile, holding a blue mug with steam rising from it. She is looking towards a young child with brown hair who is also looking up at the sky. They are standing in a green field under a dark, starry night sky. A large speech bubble is positioned to the right of the woman, containing text.

SINCE THE FIRST SKY-WONDERER  
GAZED OUT OF HER CAVE AND INTO  
THE LIGHT-SPECKLED BLACKNESS,  
WE HAVE ALWAYS ACHED TO FLY  
BEYOND THE CONFINES OF THIS  
LITTLE ROCK CALLED EARTH,  
SO LONG AS IT CAN BE  
DONE PRETTY CHEAP.



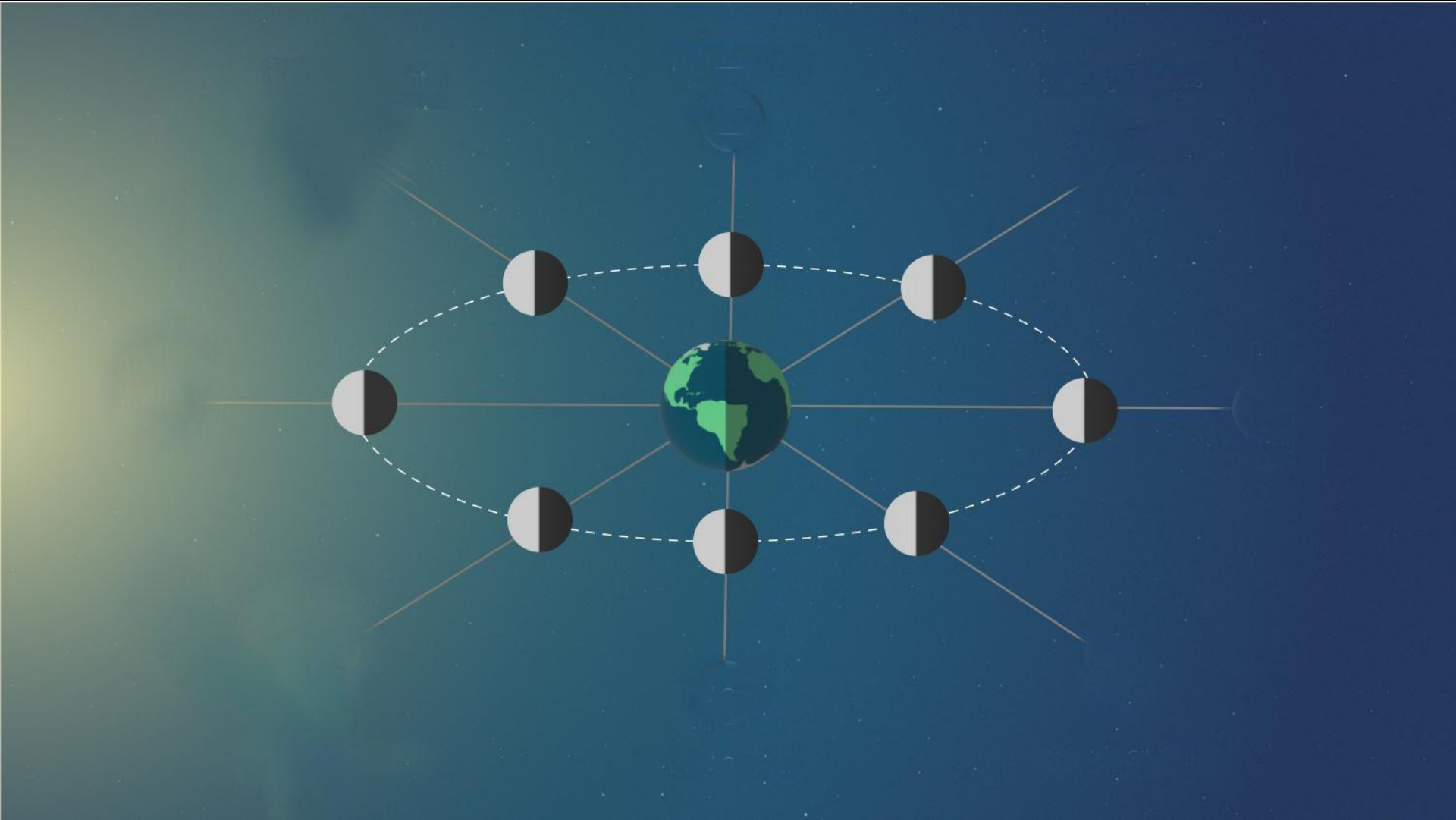


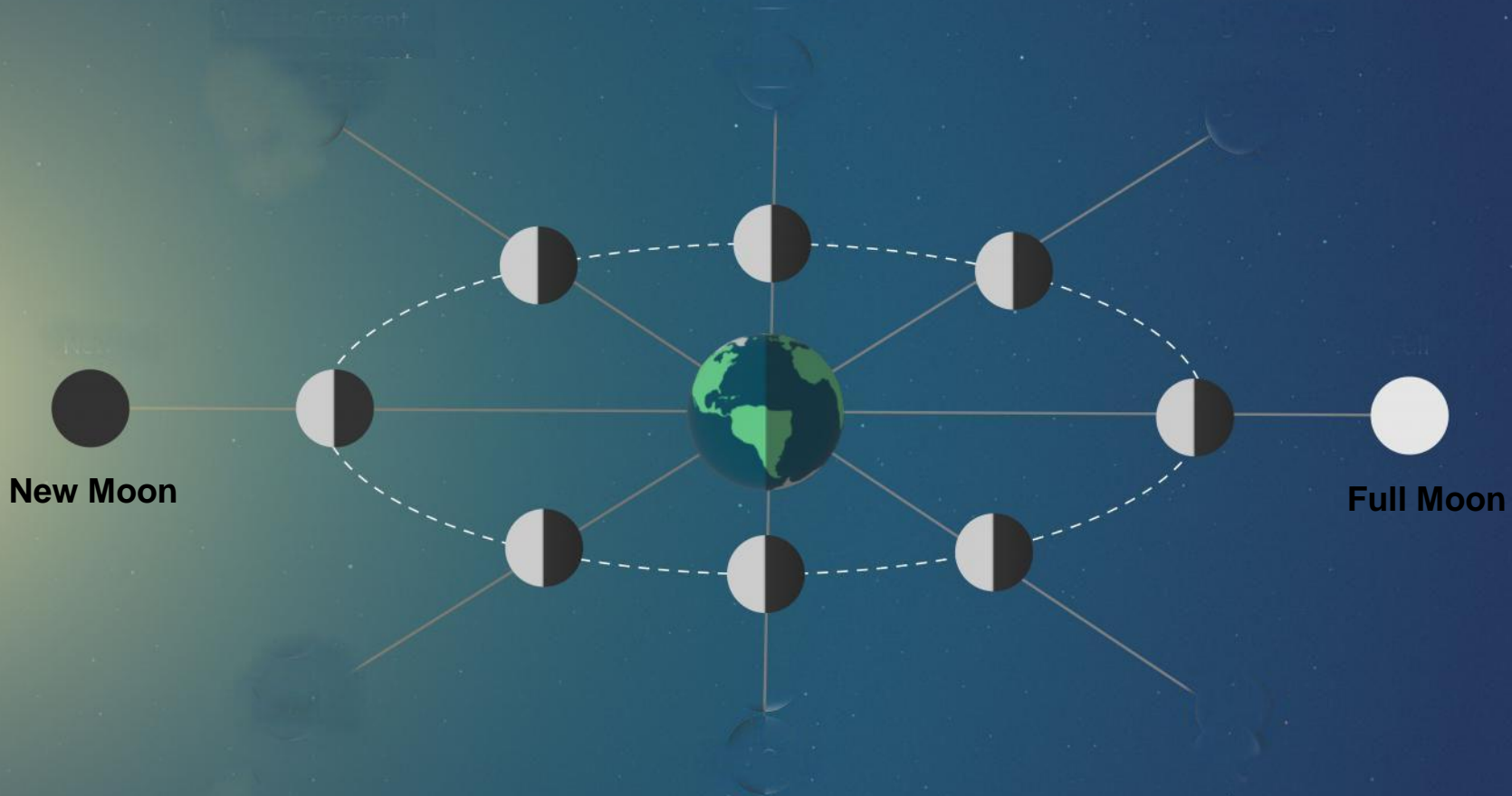




PHASES

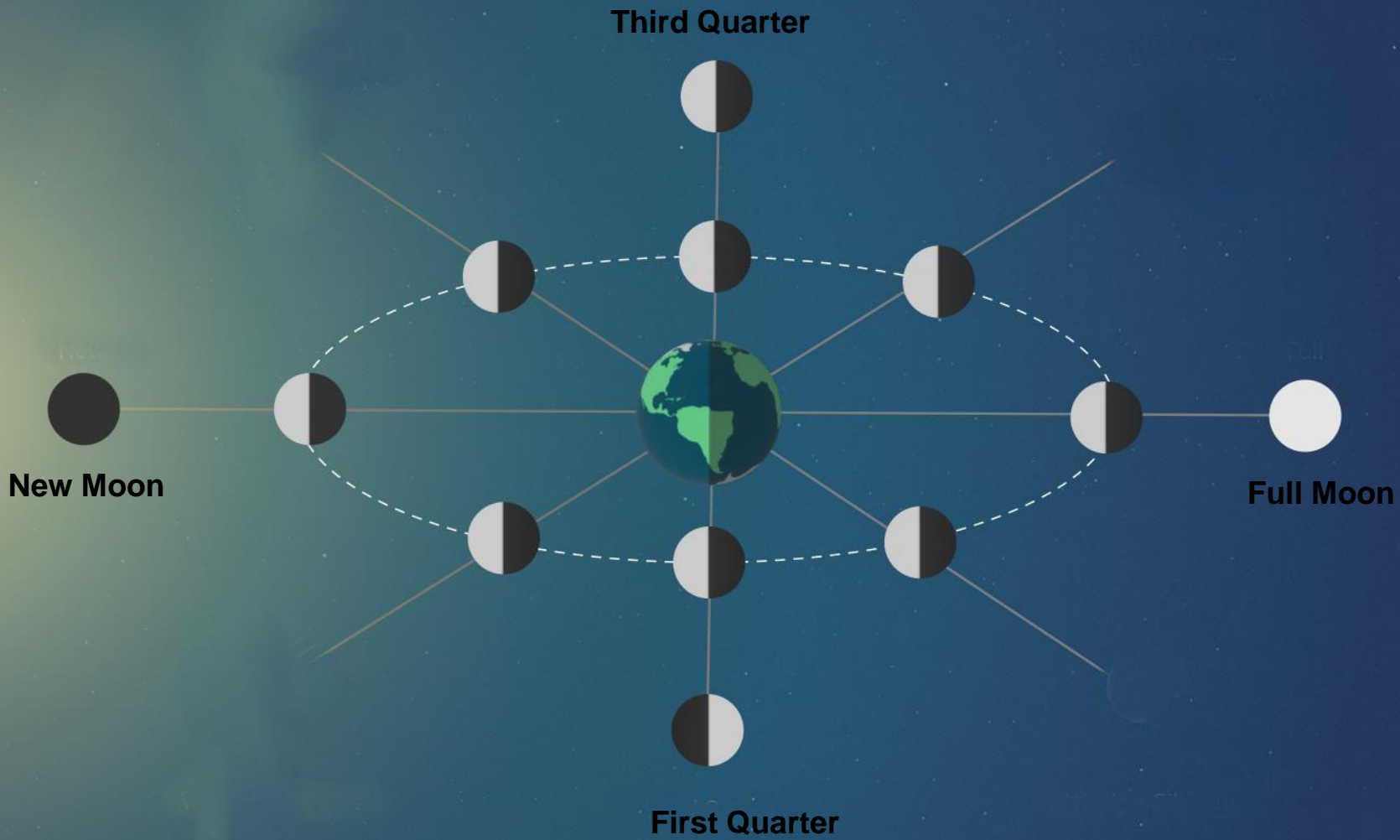






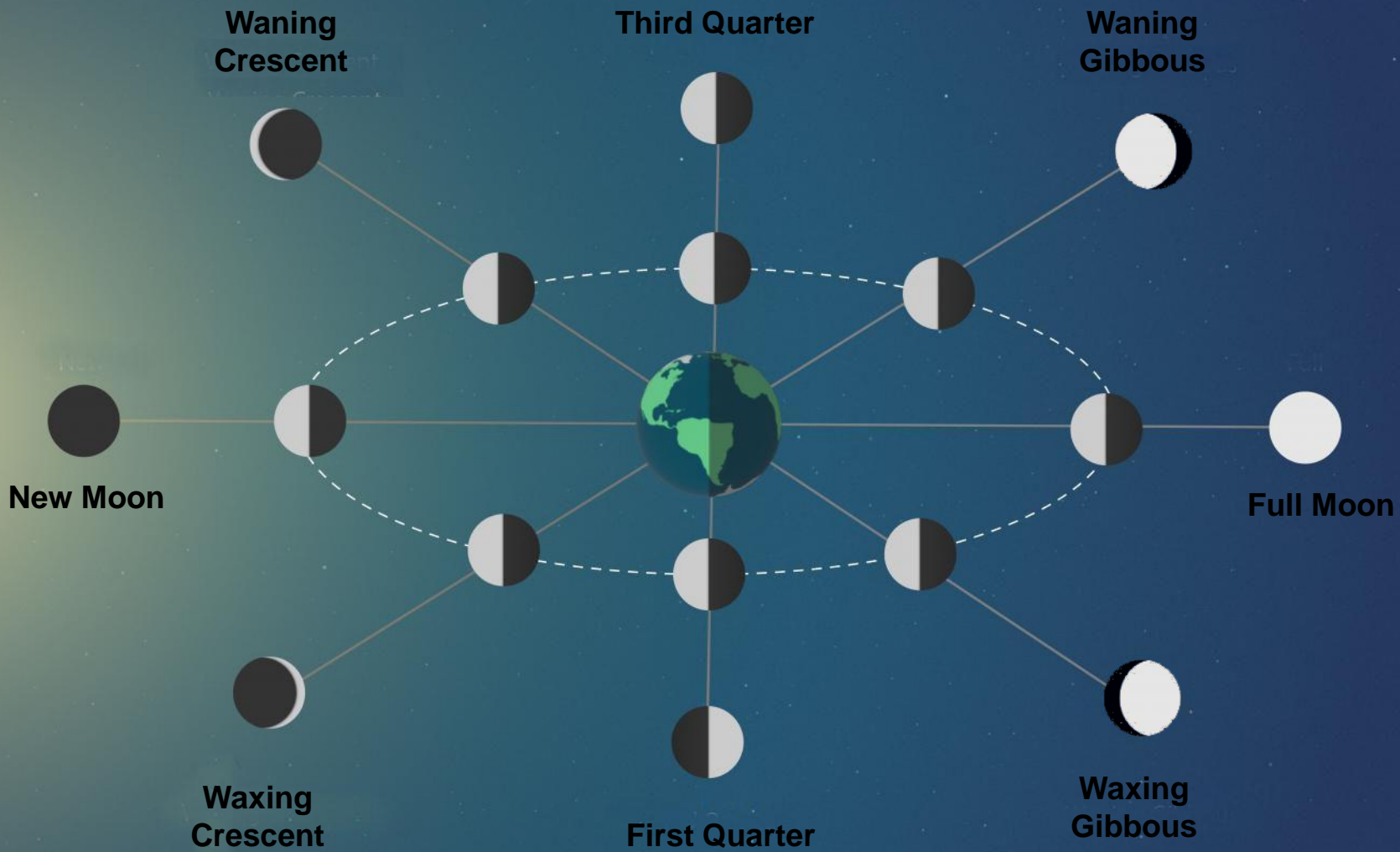
**New Moon**

**Full Moon**



# OLD ENGLISH

- CRESCENT - LESS THAN HALF OF A CIRCLE
- GIBBOUS - LOPSIDED
- WAXING - GROWING
- WANING - SHRINKING



NEW

A black and white photograph of a waxing crescent moon, showing its characteristic curved shape and surface craters. The moon is positioned on the right side of the frame, with its illuminated edge facing left. The background is a solid black field.

WAXING  
CRESCENT



FIRST  
QUARTER





WAXING  
GIBBOUS



FULL



WANING  
GIBBOUS



THIRD  
QUARTER

A waning crescent moon is visible in the background, appearing as a thin, curved sliver of light against a dark sky. The moon's surface shows some detail, including craters and shadows.

WANING  
CRESCENT



# Earthshine



# Earthshine





# MOON ILLUSION









# Moon Phase Timing

- The Moon orbits the Earth every 27.3 days.
- The full phase Cycle takes 29.5 days.

# Full Moon Names

- January - Wolf Moon
- February – Snow Moon
- March - Worm Moon
- April - Pink Moon
- May - Flower Moon
- June - Strawberry Moon
- July - Buck Moon
- August - Sturgeon Moon
- September - Corn Moon
- October - Harvest Moon
- November - Beaver Moon
- December - Cold Moon

If there is a second Full Moon in a month it is called a Blue Moon



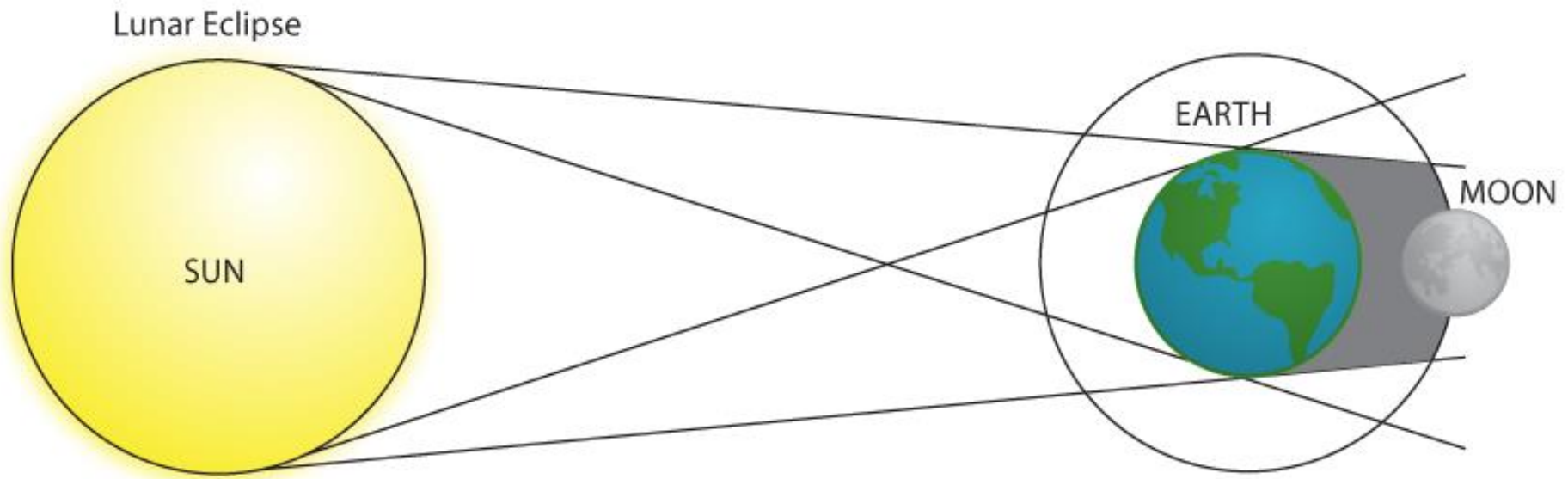
# LUNAR ECLIPSE

A cartoon character with a large, wide-open mouth showing many teeth, wearing a green shirt with yellow stripes and a red tie. He has a black collar around his neck. His eyes are wide and blue, and he has a surprised or excited expression. He is shouting or calling out.

A Super Wolf  
Blood Moon  
Eclipse!!



# Lunar Eclipse









# Total Lunar Eclipses

January 20, 2019 Evening (8:41  
TO 9:43PM)

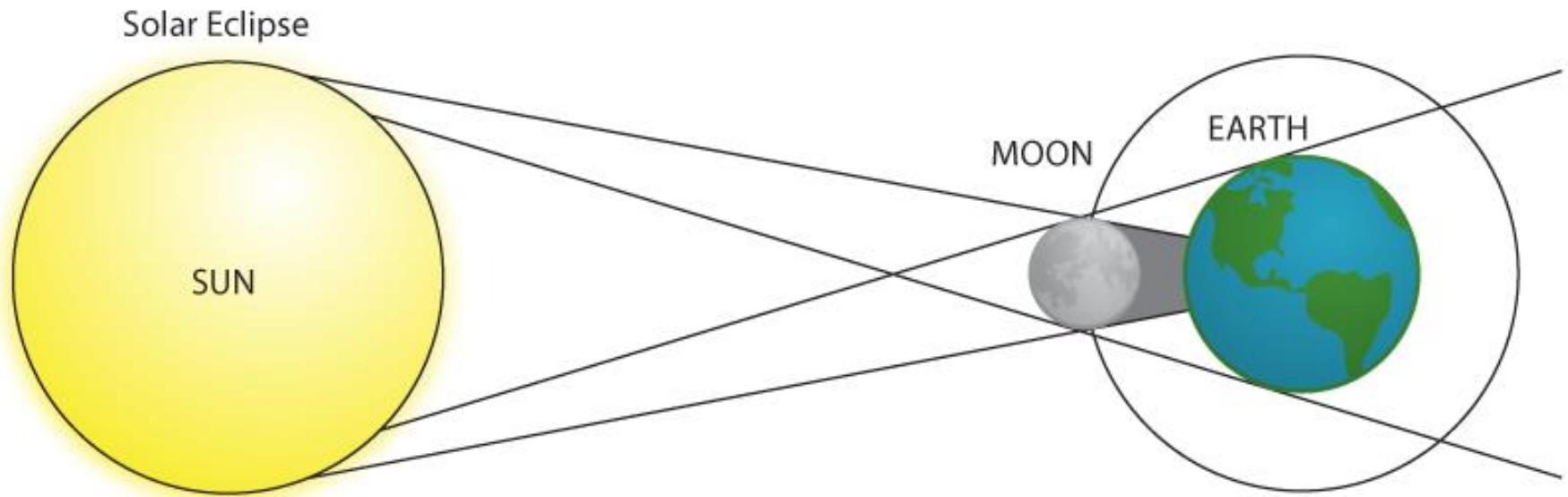
May 21, 2021 Early Morning  
(1:47am to 6:01am)





# SOLAR ECLIPSE

# Solar Eclipse





©2001 F. Espenak

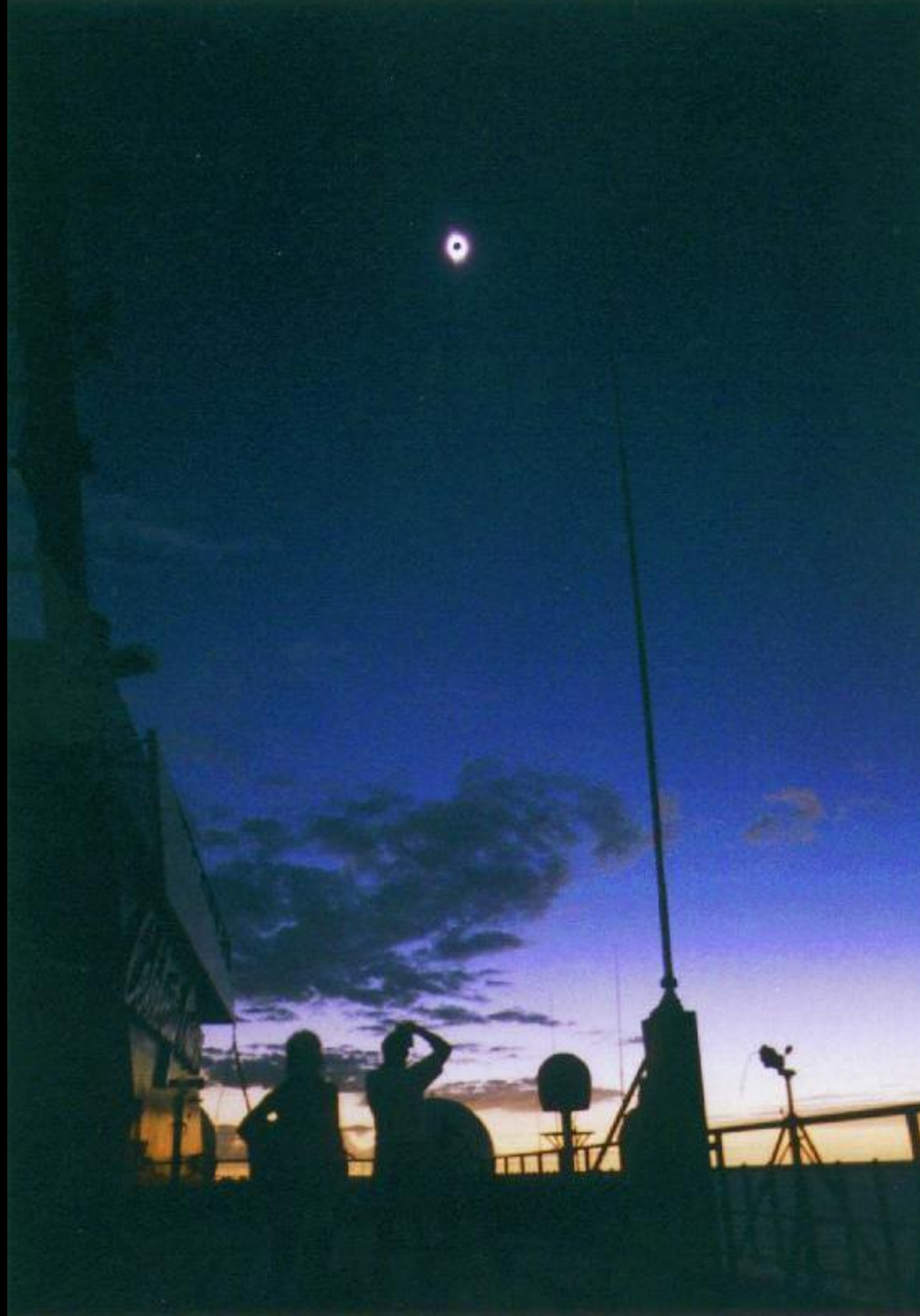
[www.MrEclipse.com](http://www.MrEclipse.com)





Moon's shadow on Earth taken by  
French cosmonaut Jean-Pierre  
Haigneré aboard the Mir







Total solar eclipses over  
North America in the  
21st century



Why are  
Eclipses Rare?



THE END



# Total Solar Eclipse

A total solar eclipse will occur on the U.S. mainland on August 21, 2017. Its path will stretch across all of the country. The area of partial eclipse spreads much wider than the path of totality shown below.

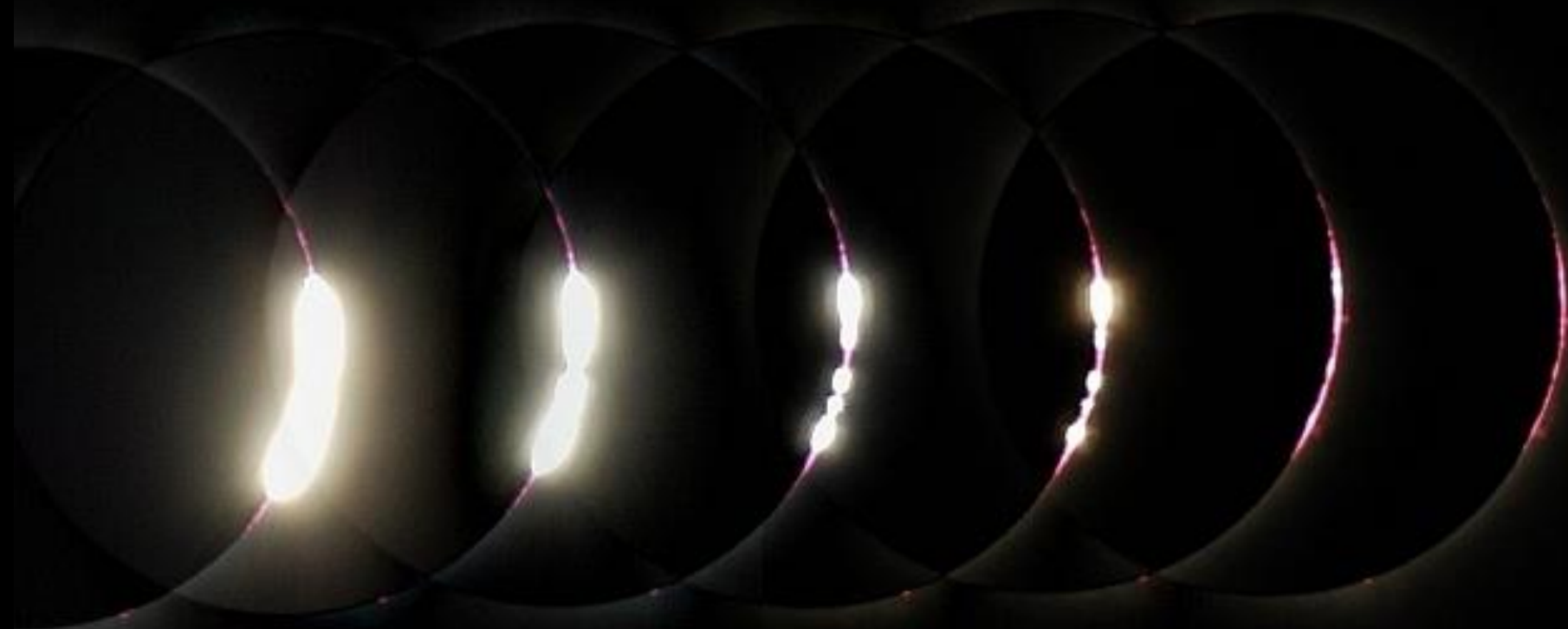


# What to Watch For in a Total Solar Eclipse

# Moons Shadow



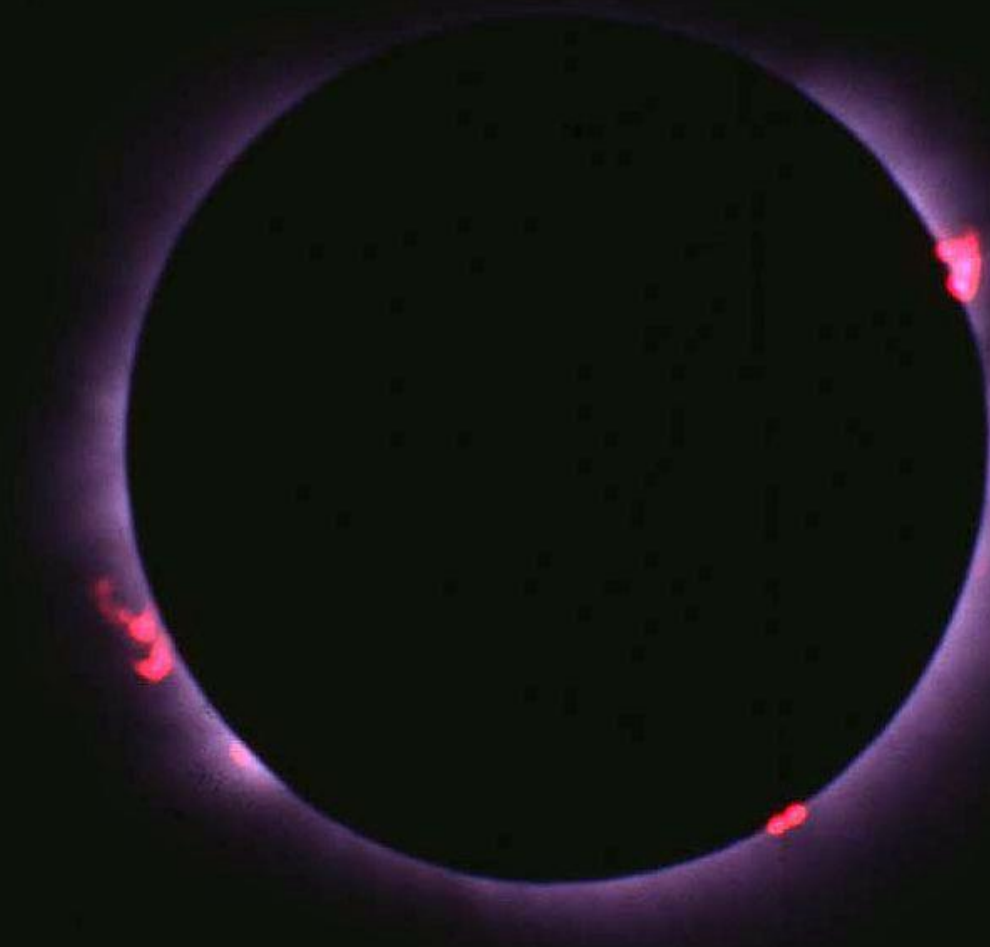
# Baily's Beads



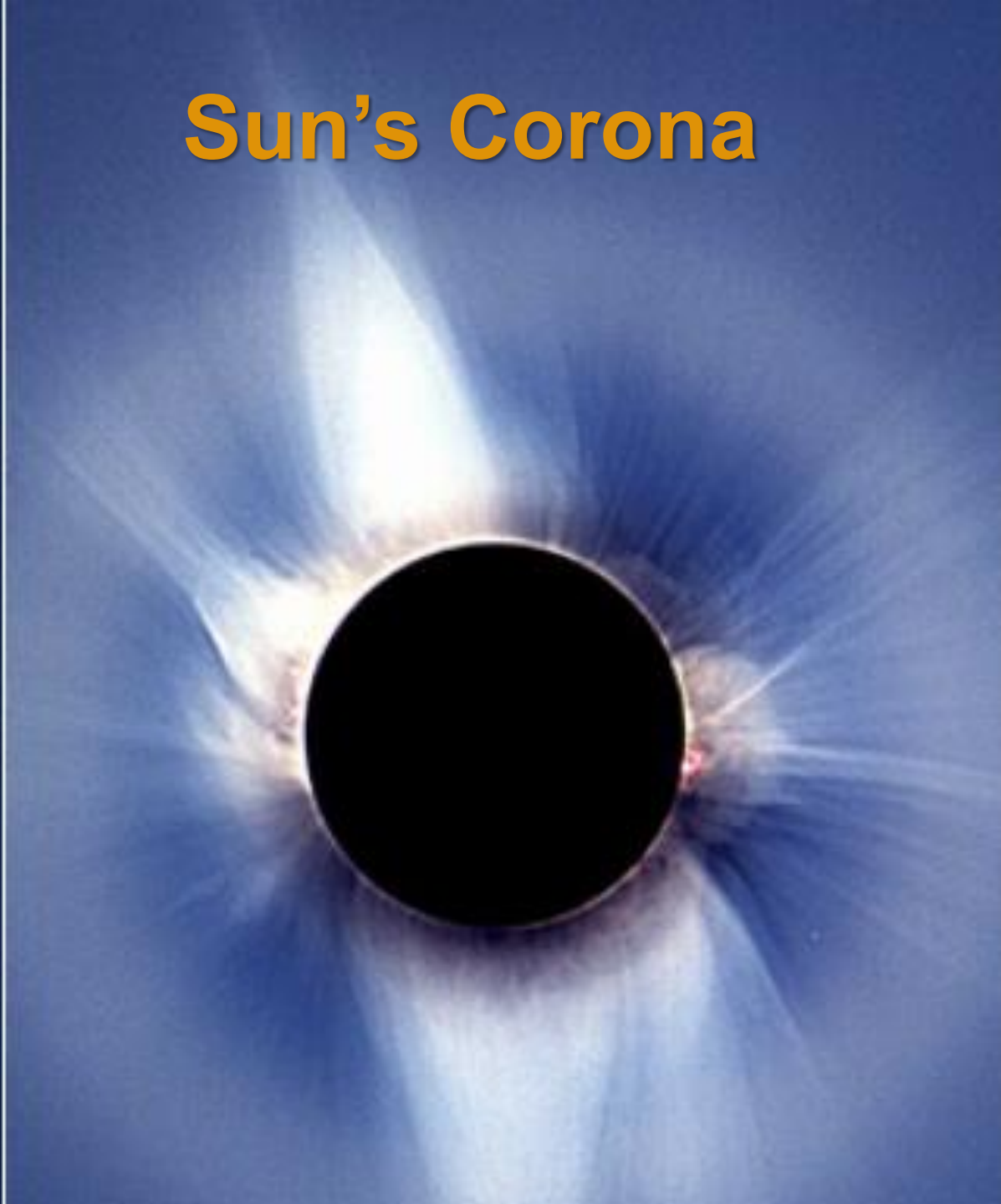
# Diamond Ring



# Solar Prominences



# Sun's Corona



# Shadow Bands





# Terms

- 1st contact: - Partial eclipse begins
- @
- 2nd contact: - Totality and maximum eclipse.
- 3rd contact: - Total eclipse ends and the Sun reappears.
- 4th contact: - Partial eclipse ends



Total Solar Eclipse  
29 March 2006

Jalu, Libya

David & Jean Kodama © 2006  
<http://www.eanet.com/kodama/astro/>

# Times

## In San Mateo (75% Covered)

- **1st contact:** - Partial eclipse begins
  - 9:01 am
- **Maximum** - Maximum eclipse.
  - 10:15 am
- **4th contact:** - Partial eclipse ends
  - 11:37 am

# Resources

- An interactive map showing times and dates for the 2017 eclipse:
  - [http://xjubier.free.fr/en/site\\_pages/solar\\_eclipses/TSE\\_2017\\_GoogleMapFull.html](http://xjubier.free.fr/en/site_pages/solar_eclipses/TSE_2017_GoogleMapFull.html)
- A good write-up on the upcoming eclipse for teachers and students.
  - <http://static.nsta.org/extras/solarscience/SolarScienceInsert.pdf>
- A general site with links and videos:
  - <https://www.greatamericaneclipse.com/>
- Search Google or BING for Eclipse 2017



Total Solar Eclipse  
29 March 2006

Jalu, Libya

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