



# The Moon

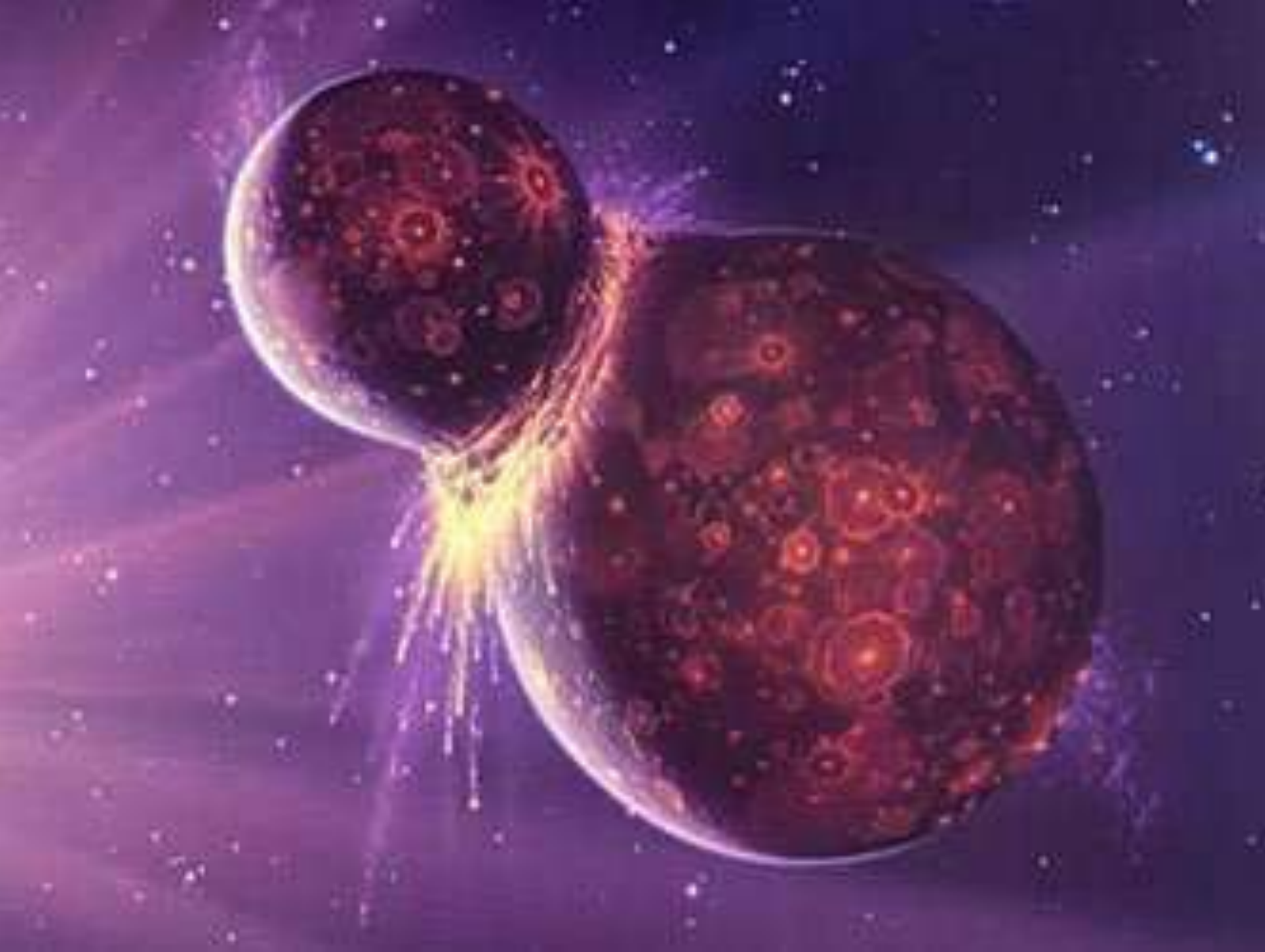


# July 20, 1969

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





PHASES

NEW



WAXING  
CRESCENT



FIRST  
QUARTER





WAXING  
GIBBOUS





WANING  
GIBBOUS



THIRD  
QUARTER

A high-contrast, black and white image of a waning crescent moon. The moon is positioned on the left side of the frame, with its illuminated edge curving towards the right. The surface of the moon shows detailed craters and textures. The background is a solid black, making the white text and the moon stand out.

WANING  
CRESCENT

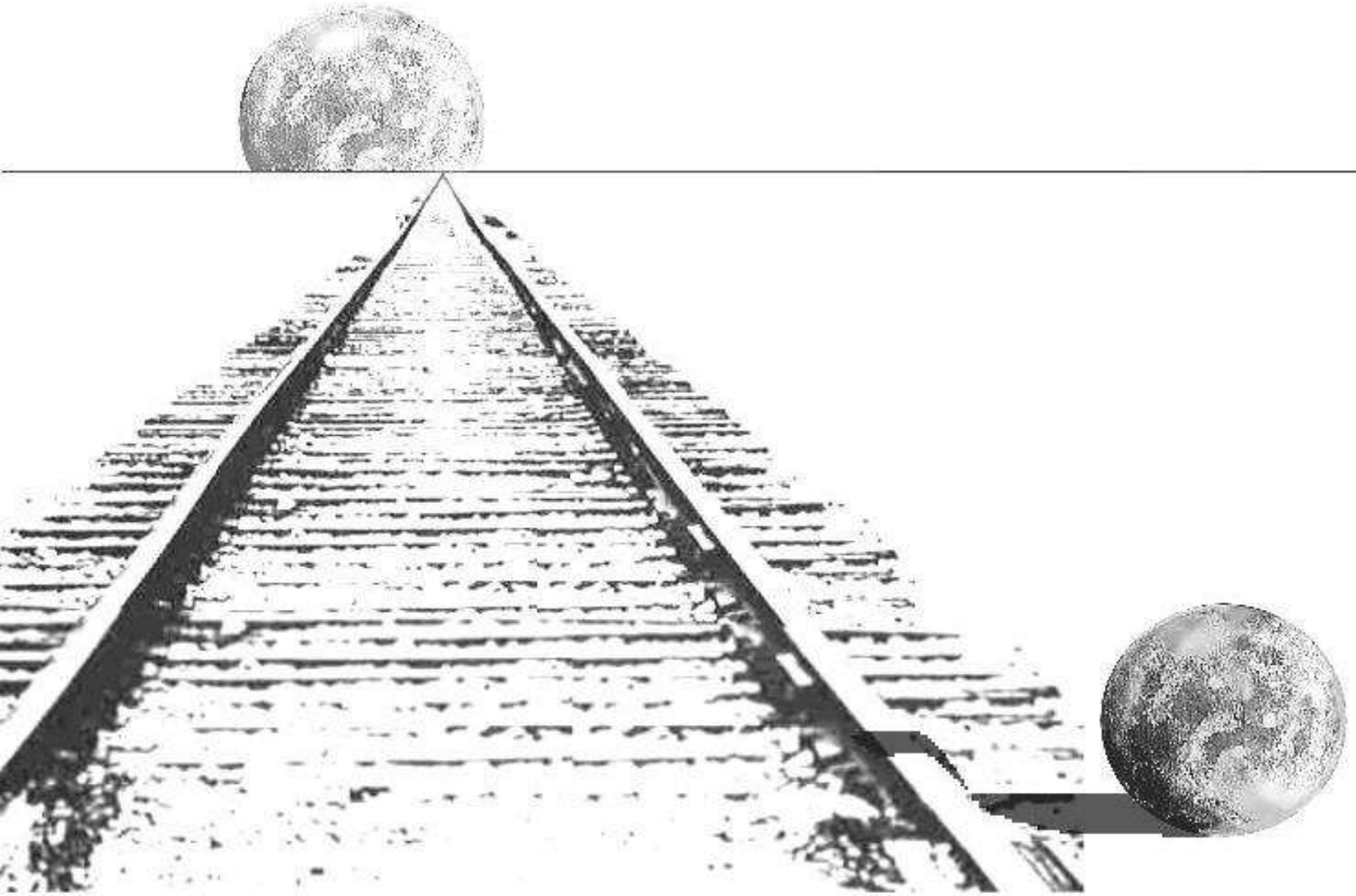
# Earthshine



# 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



# SOLAR ECLIPSE



©2001 F. Espenak

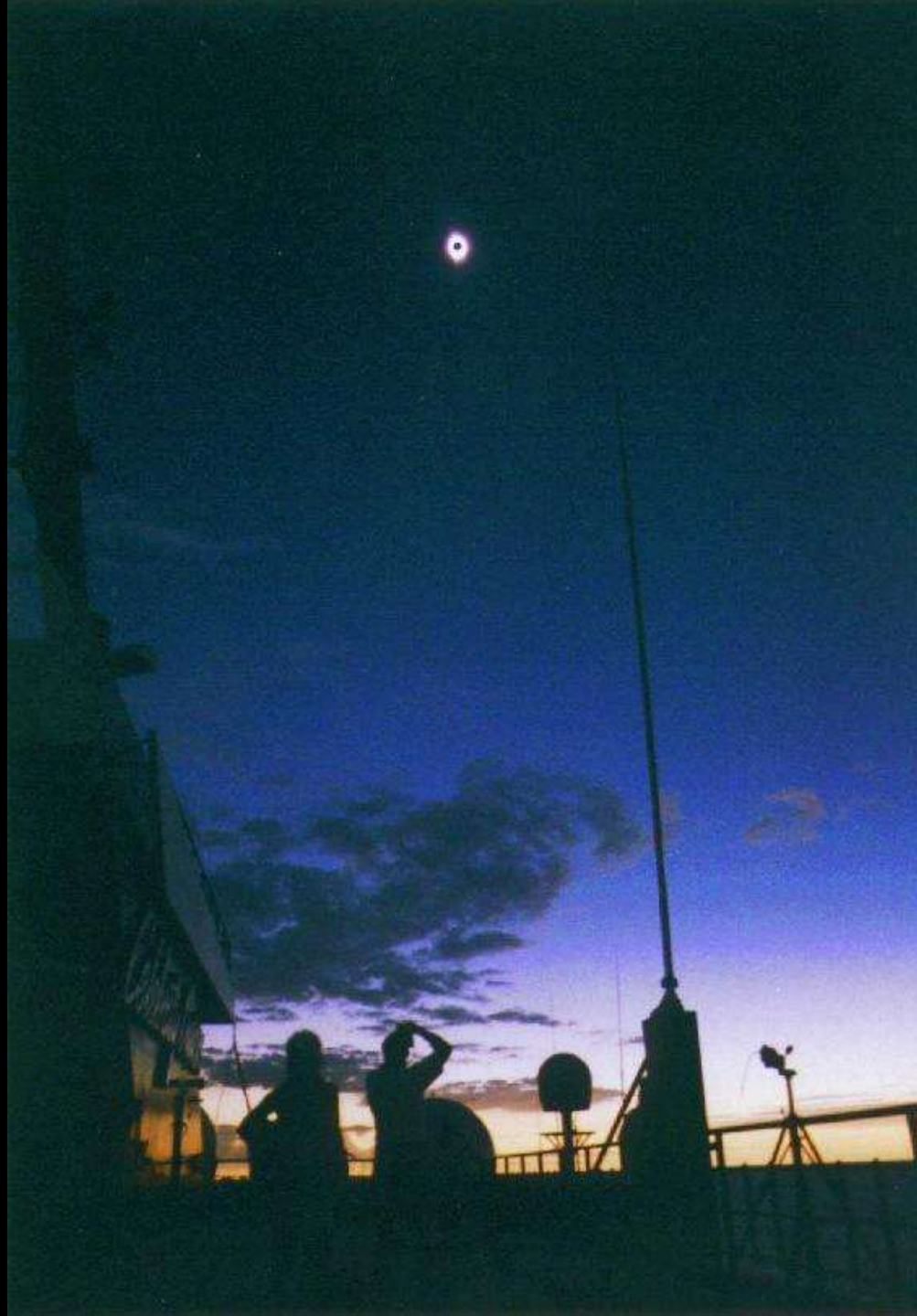
[www.MrEclipse.com](http://www.MrEclipse.com)



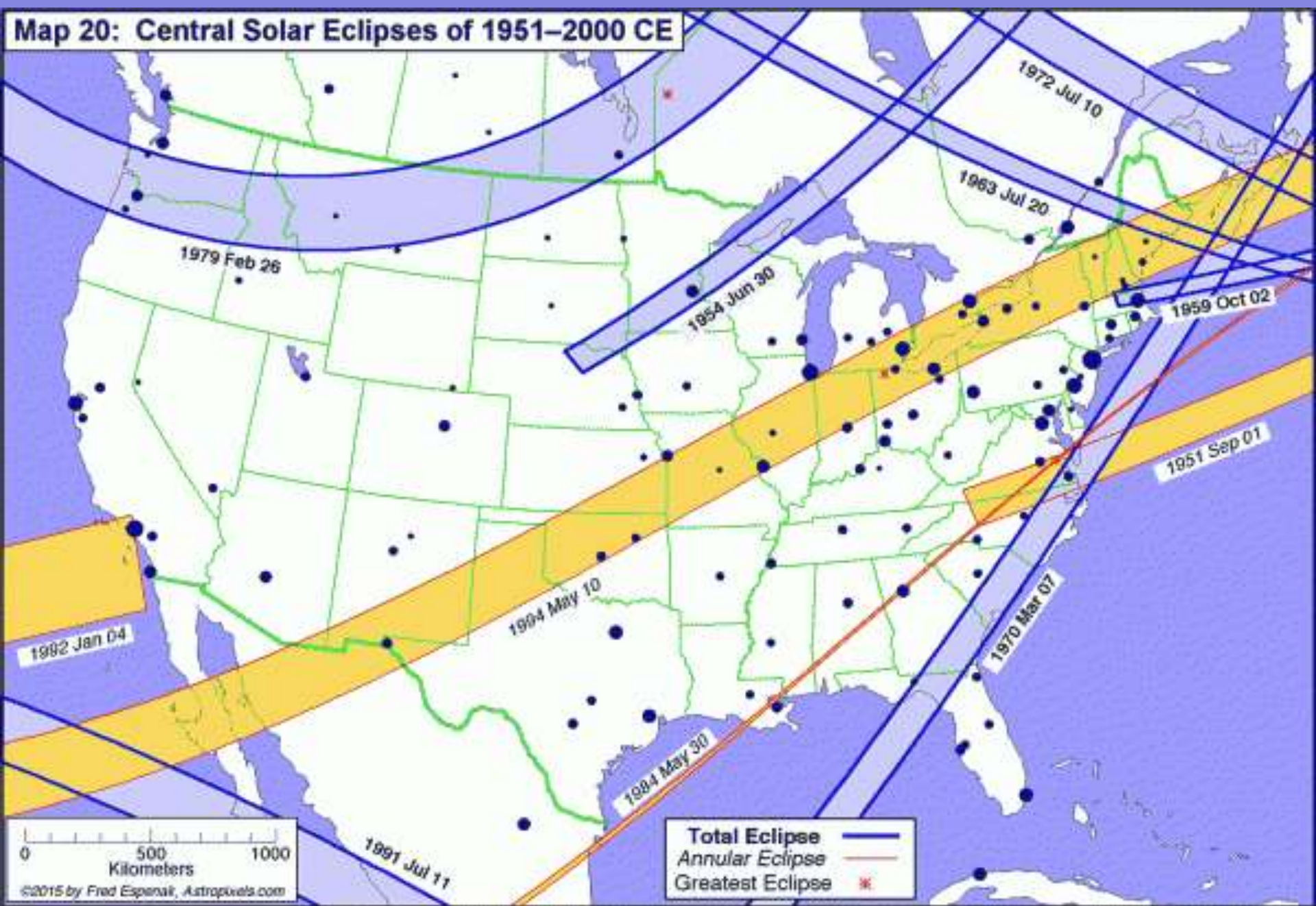
Moon's shadow on Earth taken by  
French cosmonaut Jean-Pierre  
Haigneré aboard the Mir







Map 20: Central Solar Eclipses of 1951–2000 CE





Total solar eclipses over  
North America in the  
21st century





# 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.

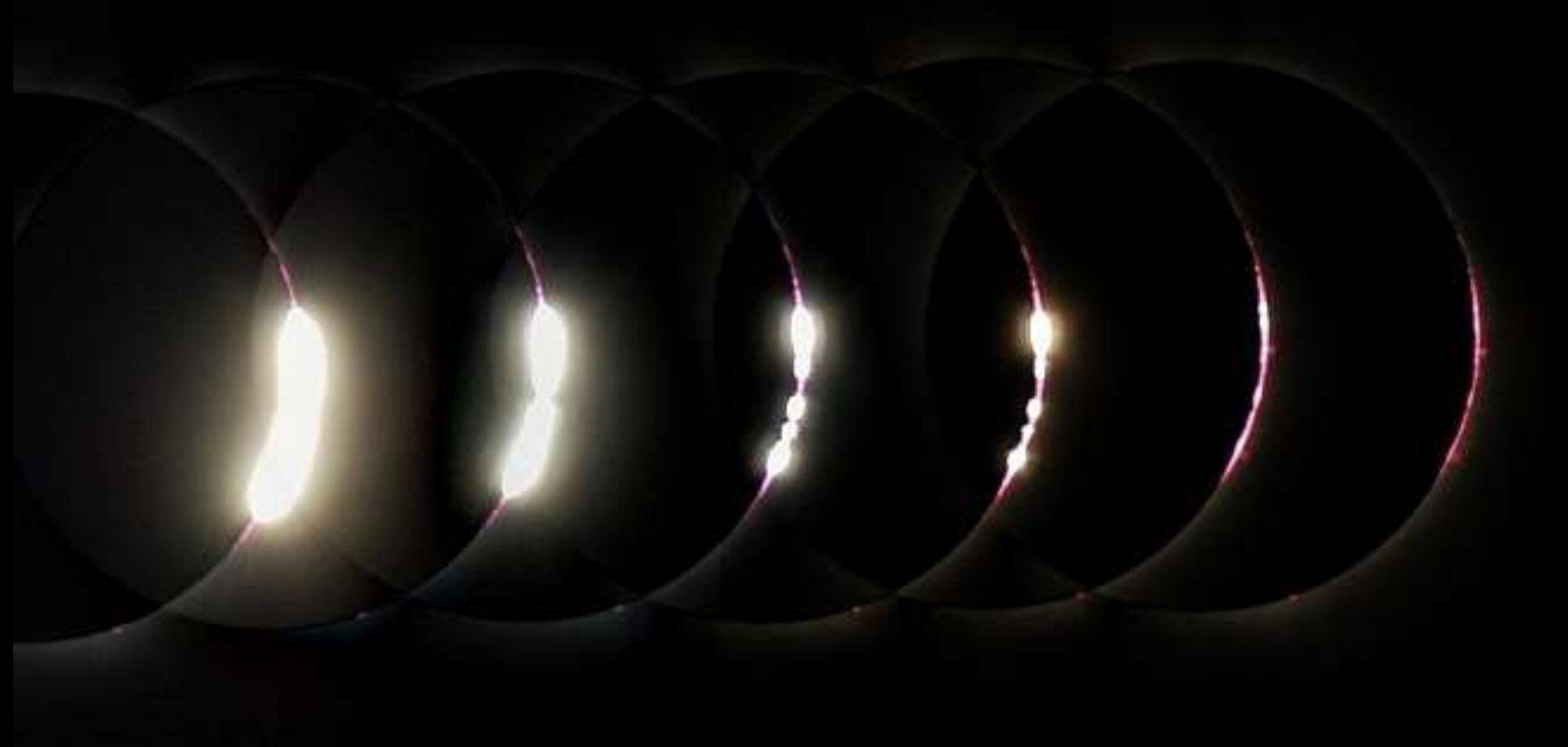


# What to Watch For in a Total Solar Eclipse

# Moons Shadow



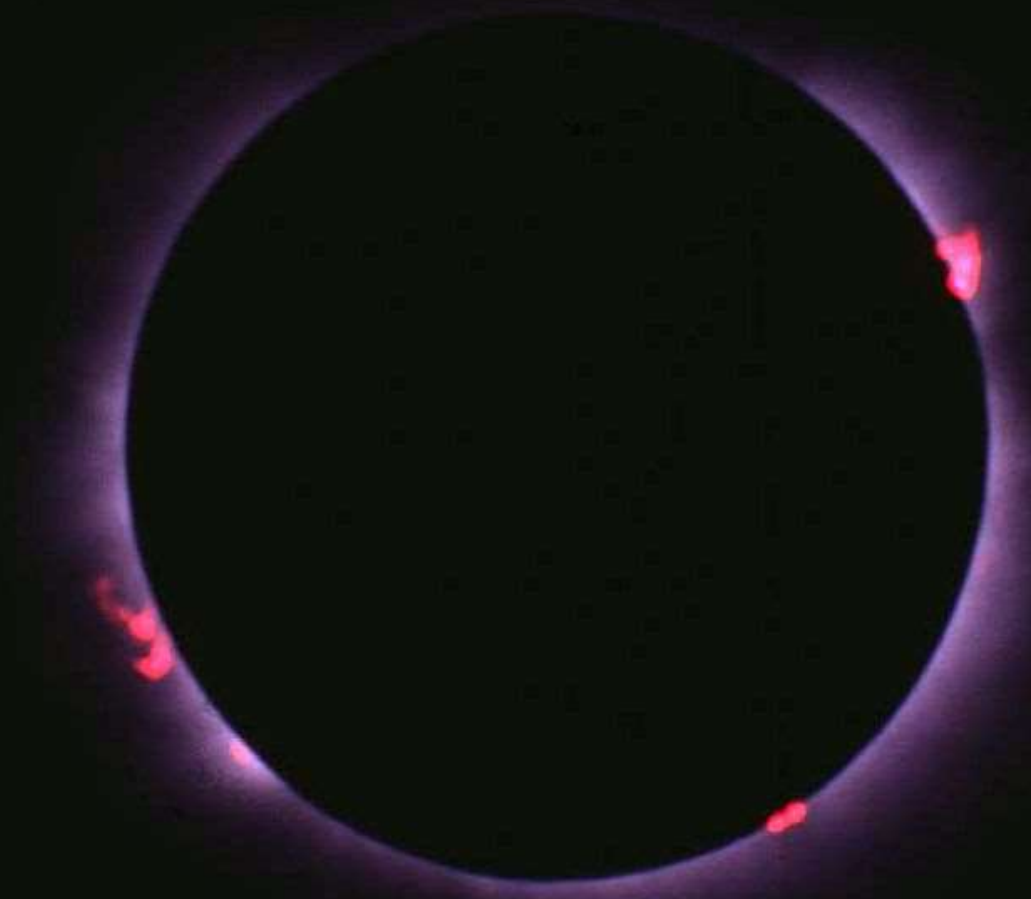
# Baily's Beads



# Diamond Ring

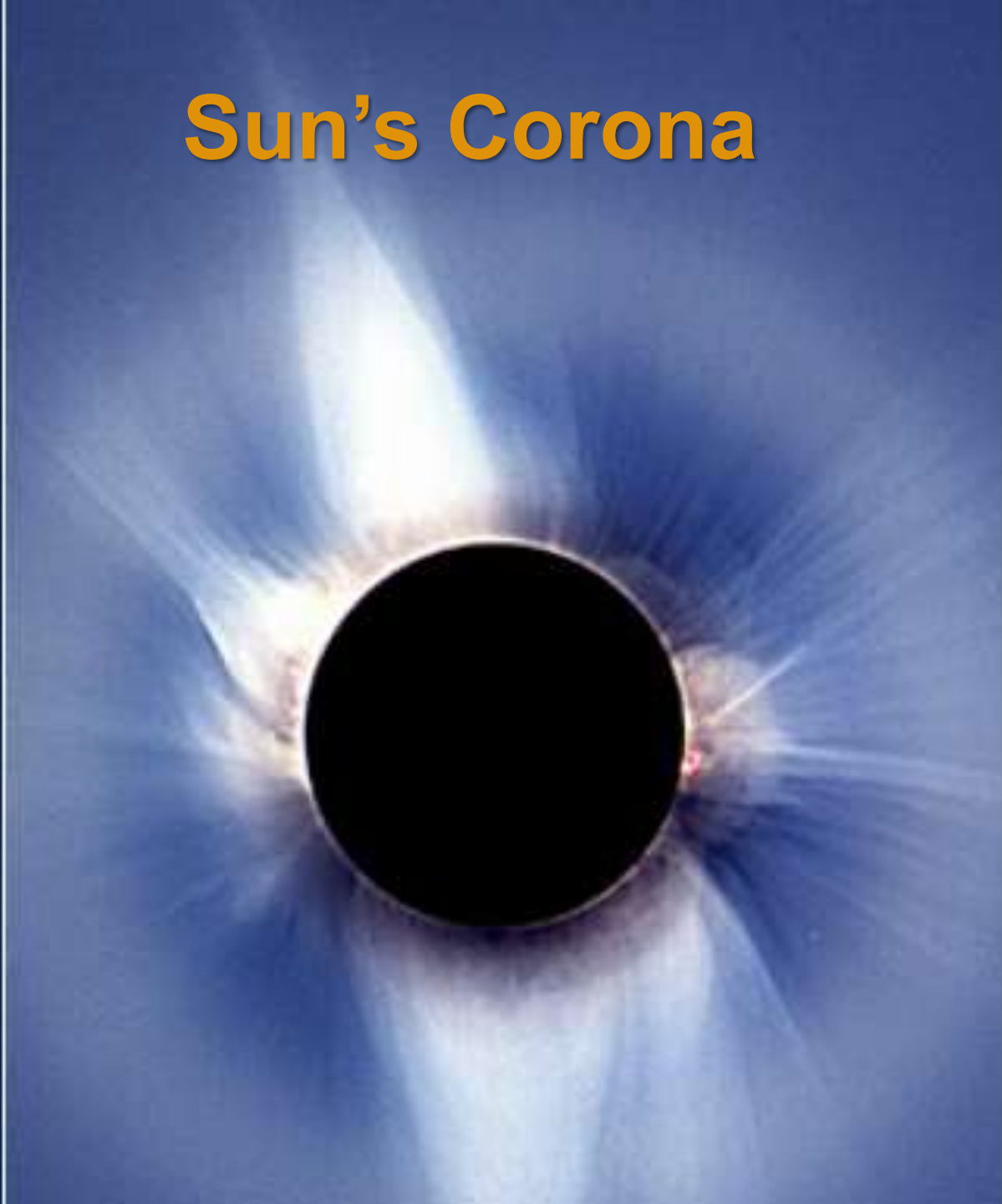


# Solar Prominences





# 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



# LUNAR ECLIPSE











# Next Total Lunar Eclipses

January 21, 2018 Early Morning

January 21 2019 Early Evening.



Why are  
Eclipses Rare?



THE END

QUESTIONS?