

Introduction to the Moon and the Lunar Surface

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What is a cow's favorite
place in the Solar System?

The Mooonoooooon



The Moon is much smaller than the Earth.
If you think of the Moon as a tennis ball,
then the Earth would be a little bigger
than a basketball.

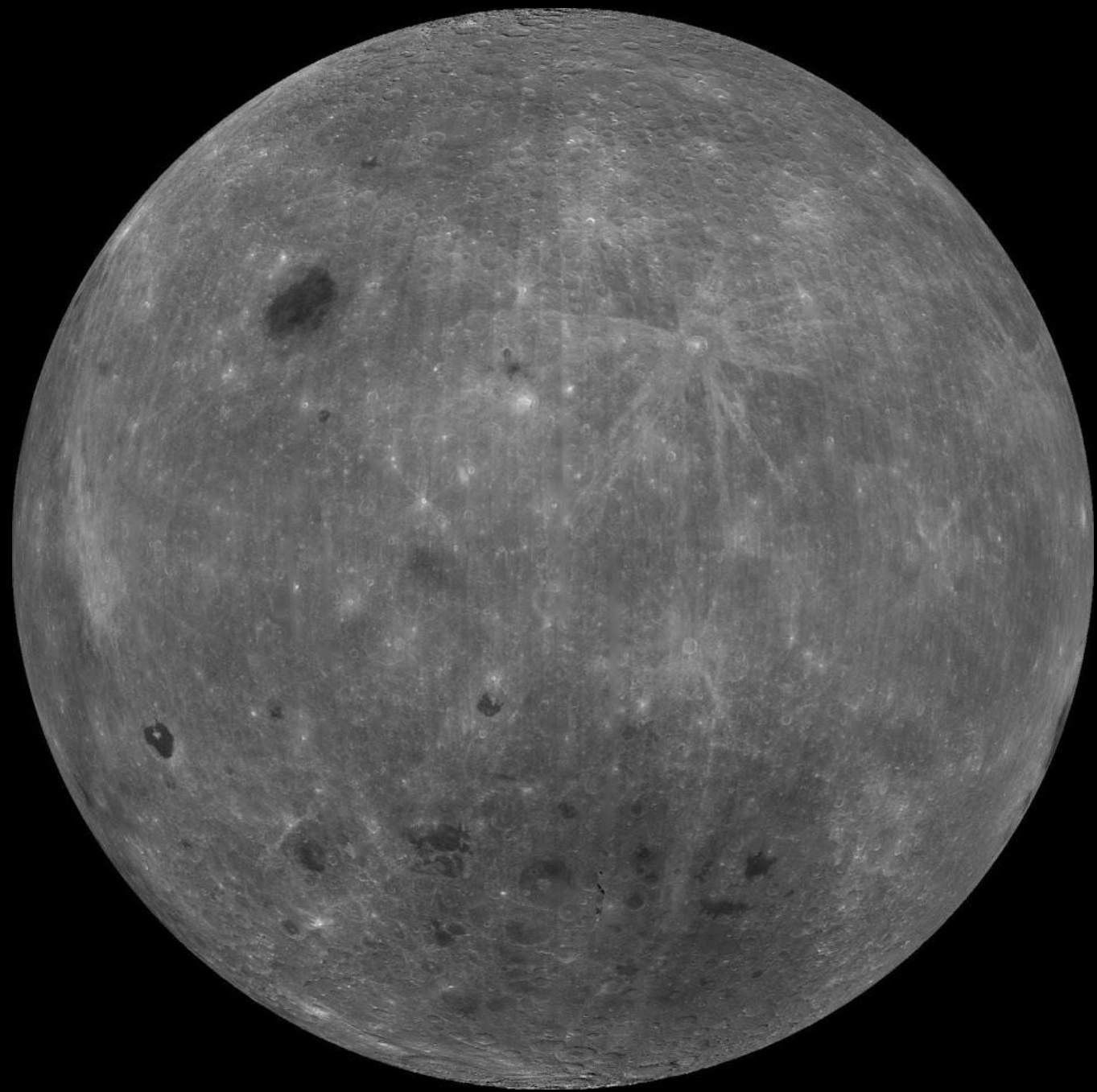


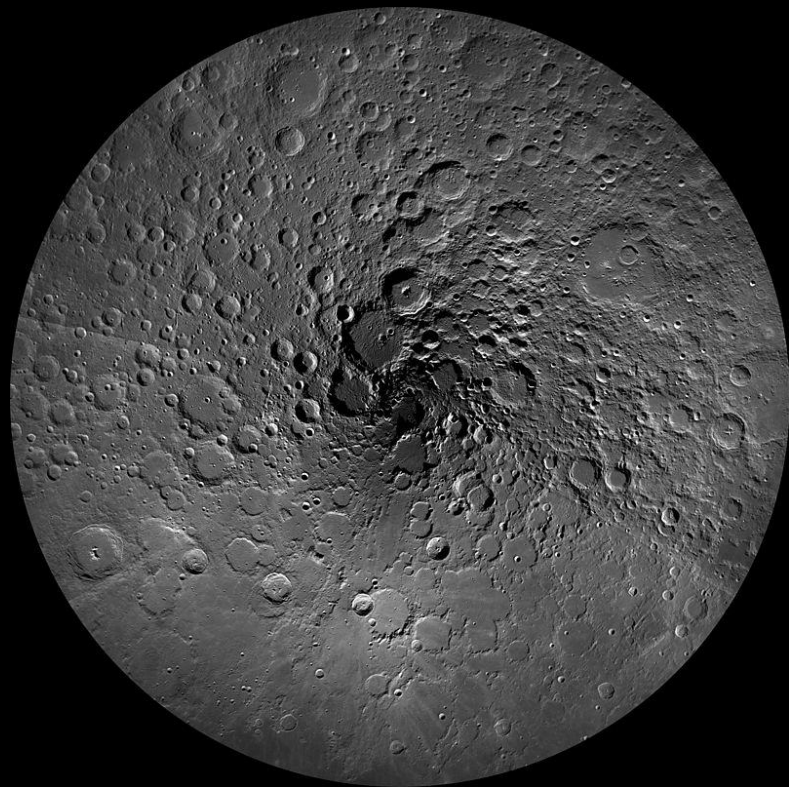
~400,000 km

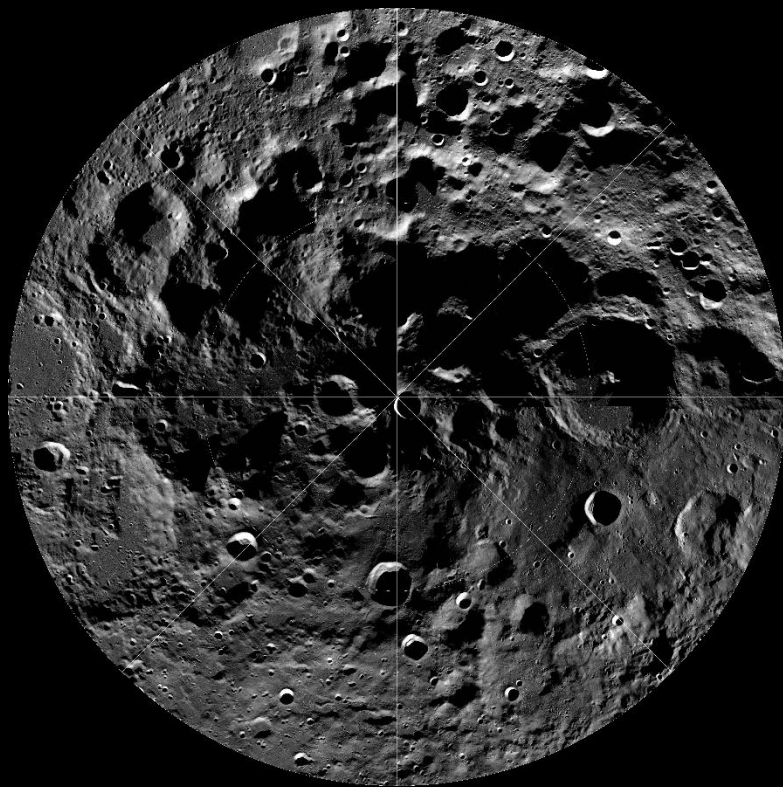
About 30 Earths could fit between the Earth and the Moon.



People used to think the dark areas on the Moon were seas. They are actually dark rocks like from some volcanoes.









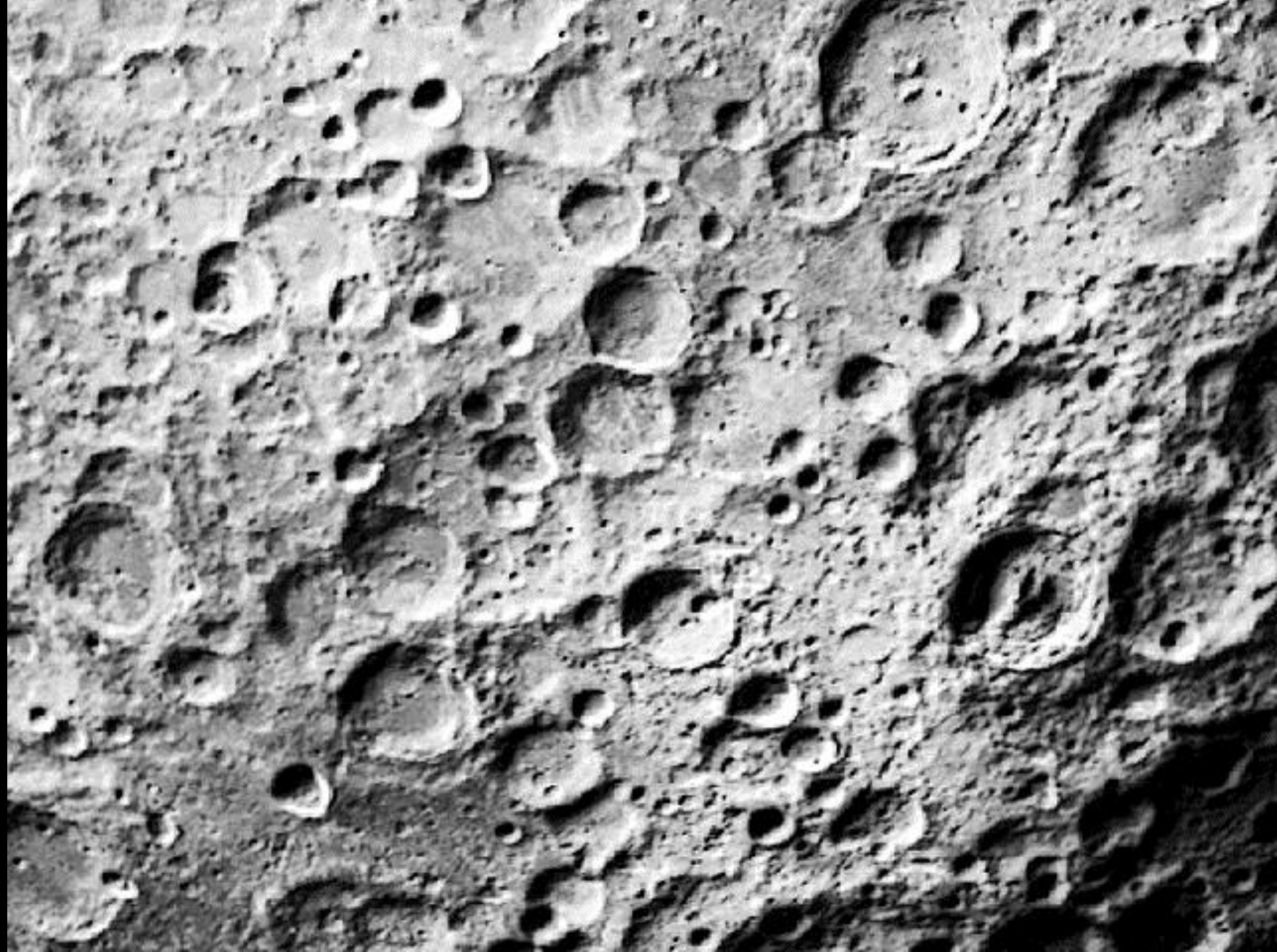






← Sunlight





Random Space Fact Video 15
Moon Rocks (with Bill Nye)

<https://youtu.be/2bexWrqTKi8>

Other Characteristics of the Moon

- 5th largest moon in the Solar System
- About $\frac{1}{4}$ the diameter of Earth
 - (tennis ball vs. basketball)
- Essentially no atmosphere
- Length of Day = 29.5 Earth Days
- About $\frac{1}{6}$ Earth gravity



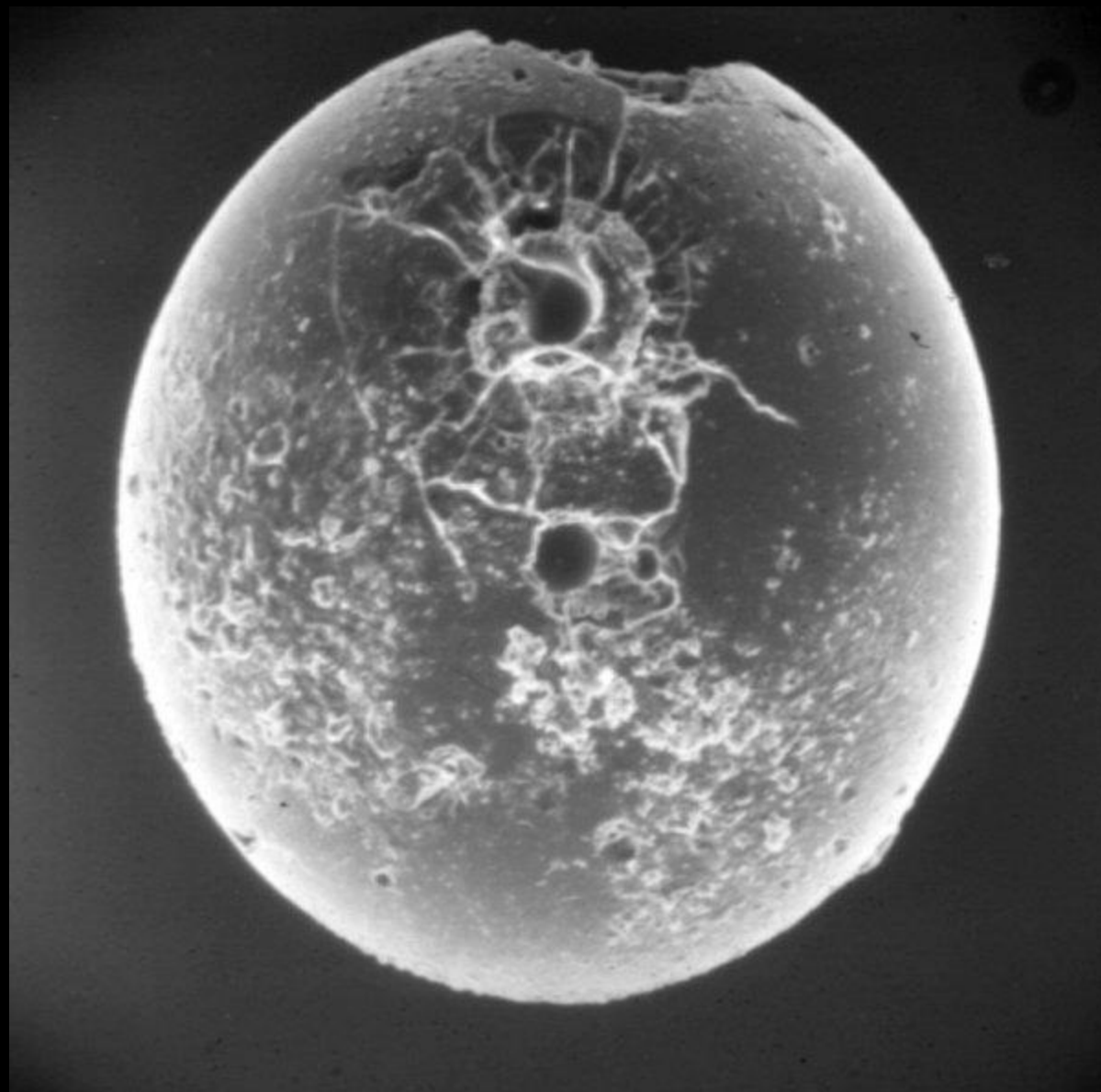


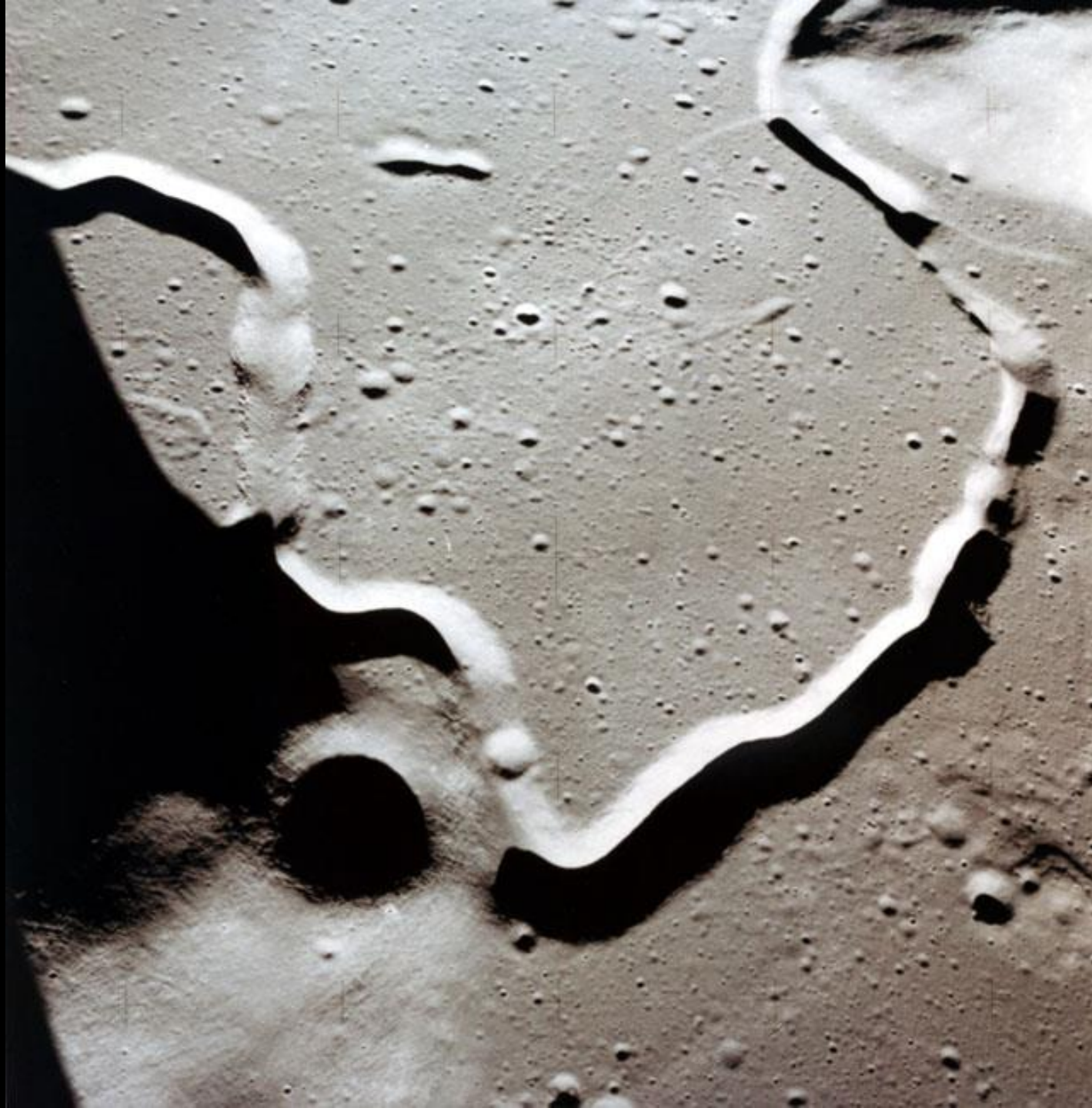
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Almost 100 missions have been flown or attempted to the Moon including robotic flybys, orbiters, and landers.

The Moon is the only other place humans have walked besides Earth. 12 astronauts walked on the Moon between 1969 and 1972.

AS11-40-5867







AS16-114-18453,54,55

Michael J. Tuttle





Random Space Fact Video 10
Duct Tape in Space (Featuring Bill Nye)
<https://youtu.be/L63-DWB816A>



Apollo 17 LM *Challenger* Descent Stage

City challenges

- Challenge of getting there from Earth: people and supplies
- No atmosphere
- 29 Earth days in 1 Moon day
 - So, have to deal with 14+ Earth days of darkness
 - Unless at few permanently lit locations at poles
- If on the Far Side, need communication relays
- Huge temperature extremes at the surface (hundreds of degrees)



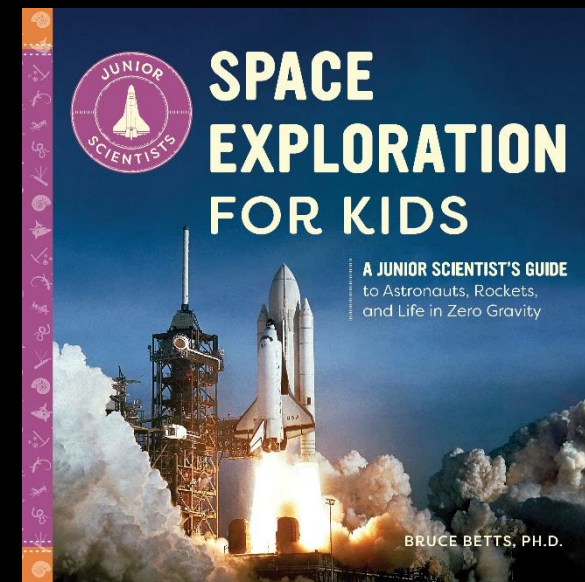
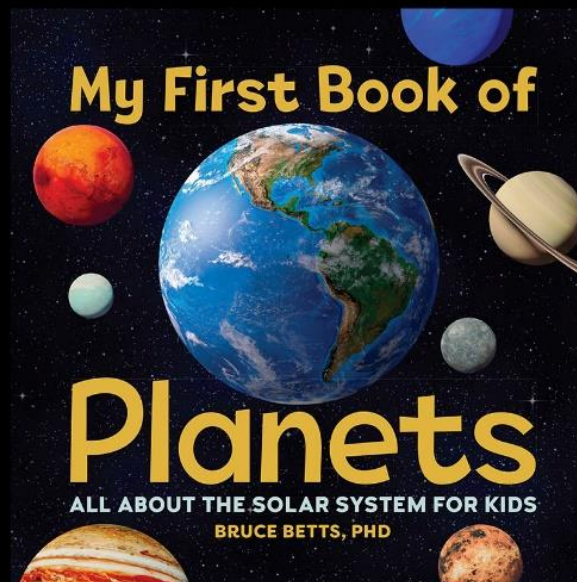
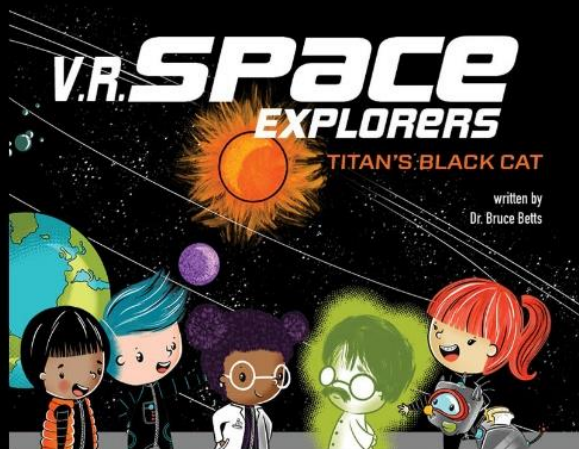
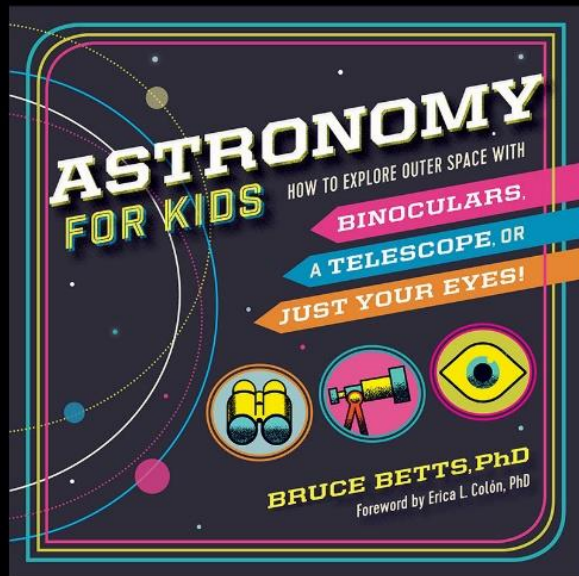
City challenges part 2

- Dust and lots of it
- Radiation
- Rough terrain (though location can mostly solve that)
- $\frac{1}{6}$ Earth Gravity (not necessarily bad)
- Lack of resources
- Micrometeorite impact

Stuff to See in the Night Sky

Planet Goodness

- Evening East and South
 - Super bright red Mars
 - NEXT TO THE MOON TOMORROW NIGHT OCT. 2
 - Closest to Earth and brightest October 6
- Evening West:
 - Very bright Jupiter
 - Yellowish Saturn to left of Jupiter
- Pre-dawn East
 - Super bright Venus



Dr. Betts resources:

- Bruce Betts
 - randomspacefact.com
 - Twitter: [@RandomSpaceFact](https://twitter.com/RandomSpaceFact)
 - Facebook: [DrBruceBetts](https://www.facebook.com/DrBruceBetts)
 - Instagram: [randomspacefact](https://www.instagram.com/randomspacefact)
- The Planetary Society
 - planetary.org – Planetary Society home page
 - planetary.org/radio – Planetary Radio including What's Up at end
 - [Random Space Fact videos](#) – Fun for Kids!
- Introduction to Planetary Science and Astronomy online videos class (free): planetary.org/bettsclass
- [Asteroid Defense 101](#) (1 hour free class):

