

# Moon 101

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# Objectives

## ★ Formation of the Moon

- Capture
- Double impact
- Fission
- Giant Impact
  - Include hypothesis, proof, skepticism

## ★ Geology of the Moon

- Lunar highlands

- Lunar Maria

# Moon Images

Image 1

Image 2

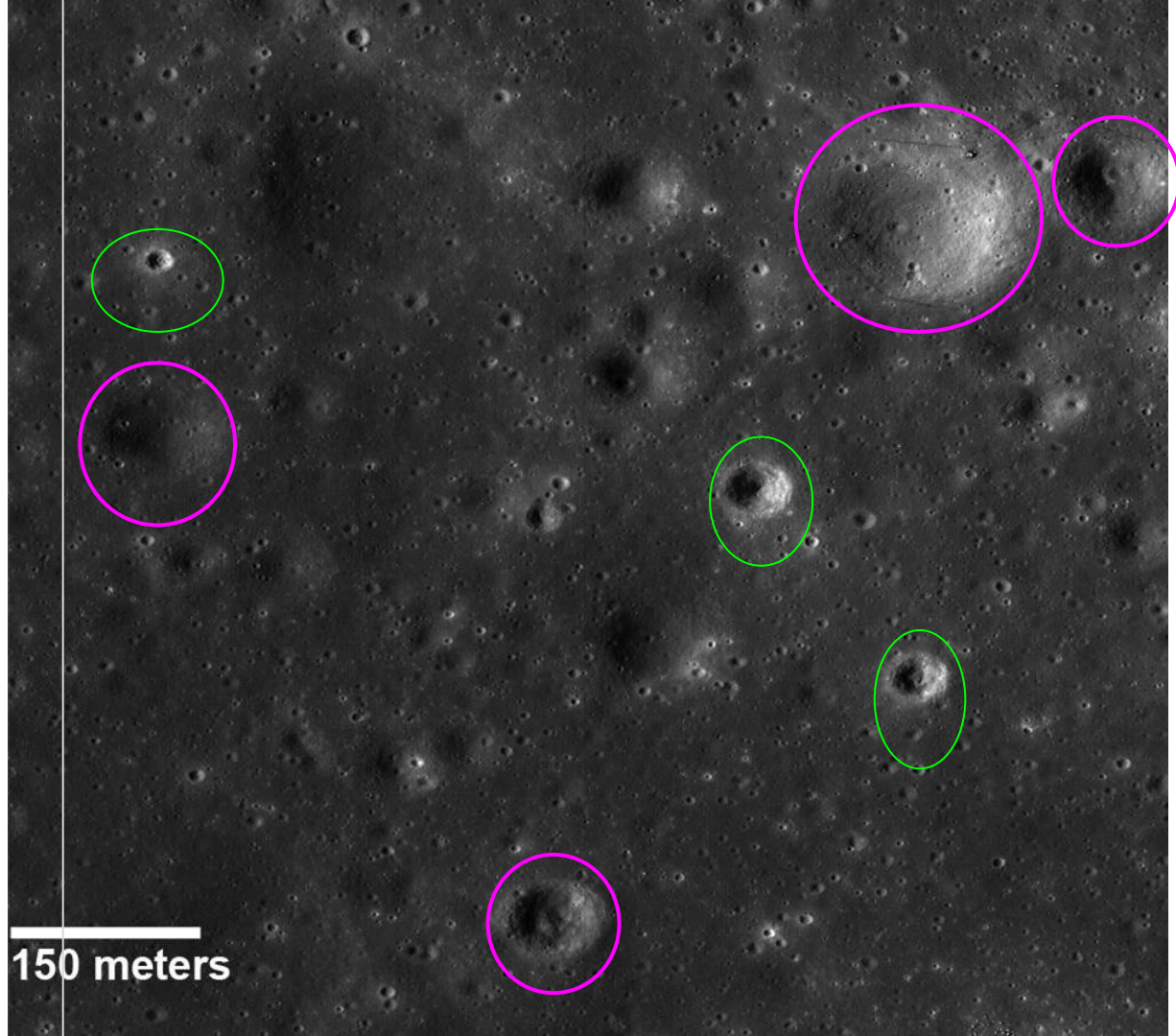
Image 3

Look at Relative Age of each feature on the image.

# Moon Image 1

Green circles- cones

Pink circles- domes



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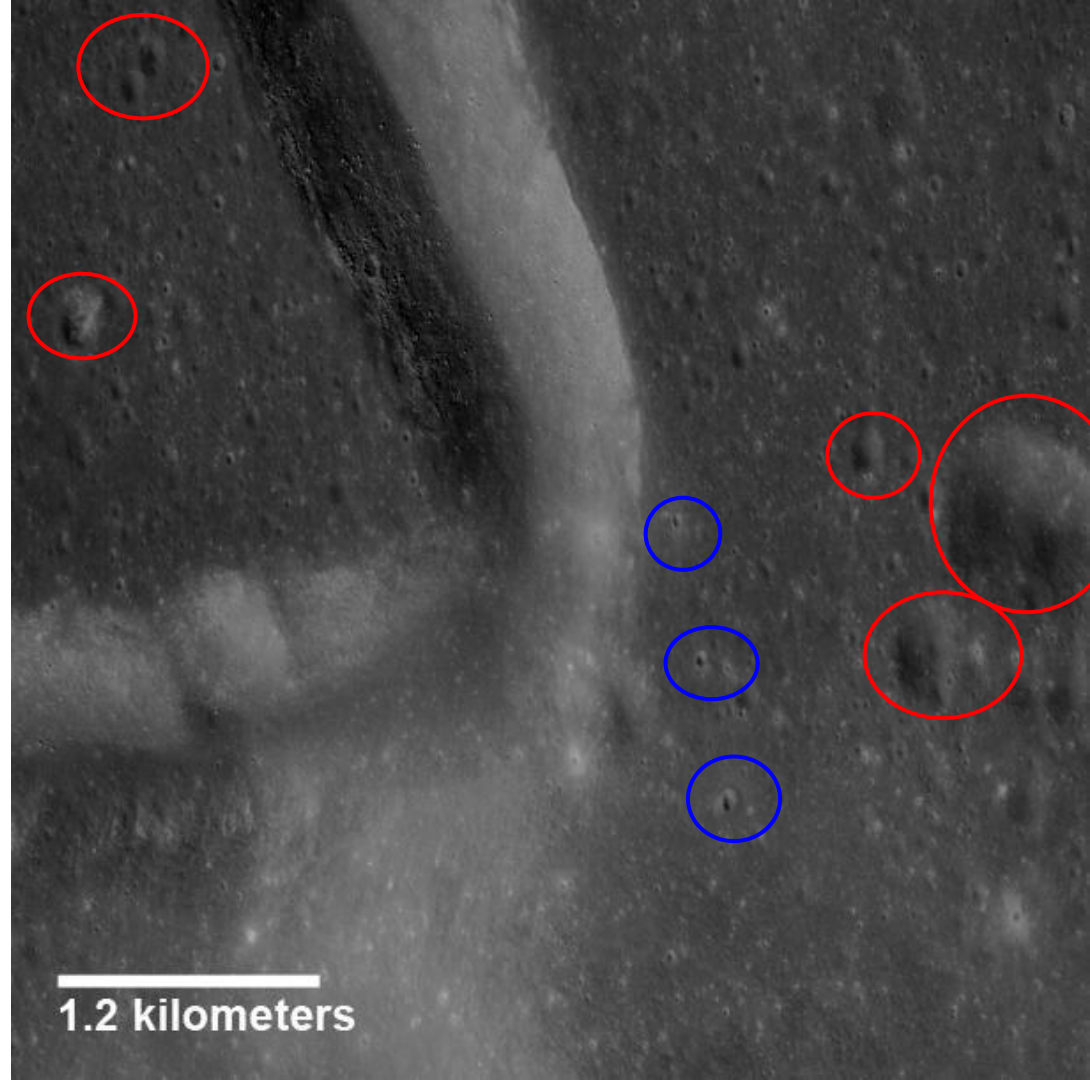
## Image 2

### Sinuuous Rilles

- Started as little craters but ended up fading into the mare surface
- Long narrow depressions in the moon's surface resembling channels

Red circles- domes

Blue circles- cones



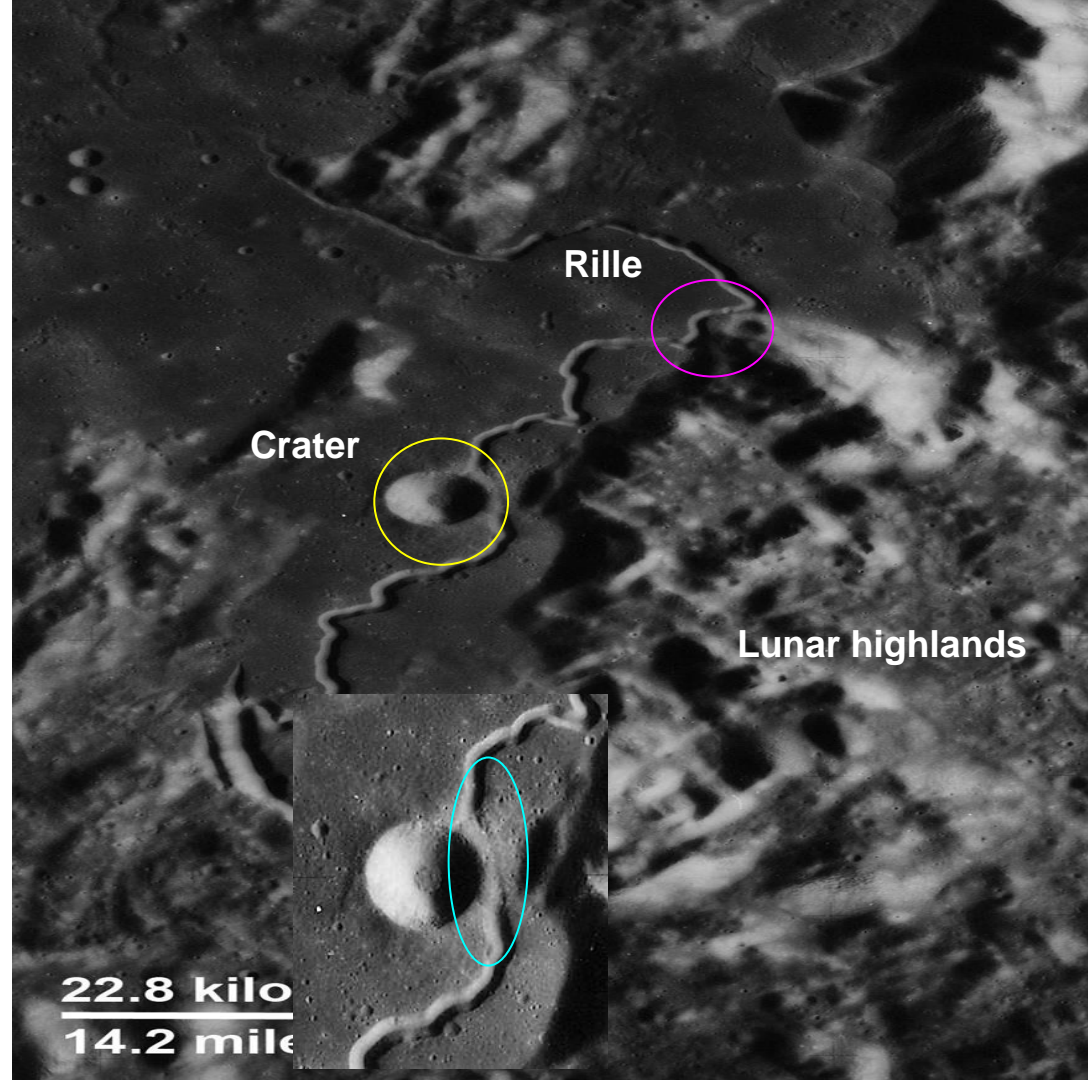
## Image 3

Yellow circle is an impact crater caused by asteroids.

The rille located next to the crater is older than the crater because the ejecta from the crater overlaps (covers) the rille (see inset photo). It is younger than the highlands because it follows the contour of the highland (pink circle).

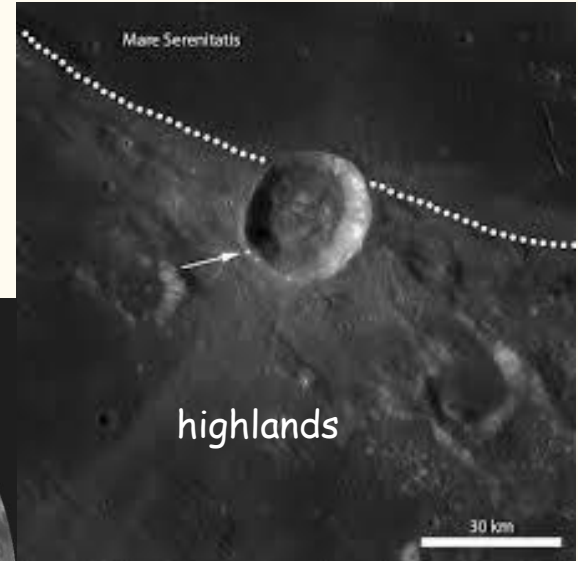
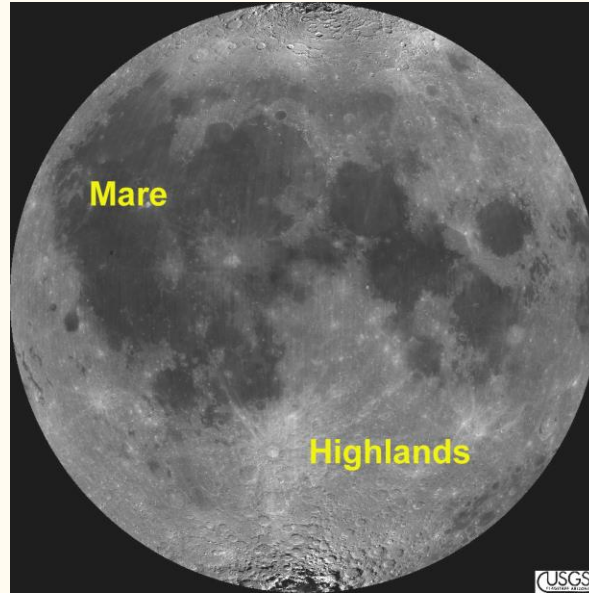
Apollo 15 confirmed the theory that sinuous rilles were analogous to lava channels and collapsed lava tubes.

The highlands are older than both the



# Lunar Highlands

- ★ The moon was a huge molten ball of hot lava, it caused volcanic eruptions, it then cooled and formed the lunar highlands.
- ★ The left over debris hit the moon.
- ★ It is the most crater filled section on the moon.
- ★ The highlands are riddled with craters and the rocks found there are thought to be between 3.84 and 4.48 billion years old.

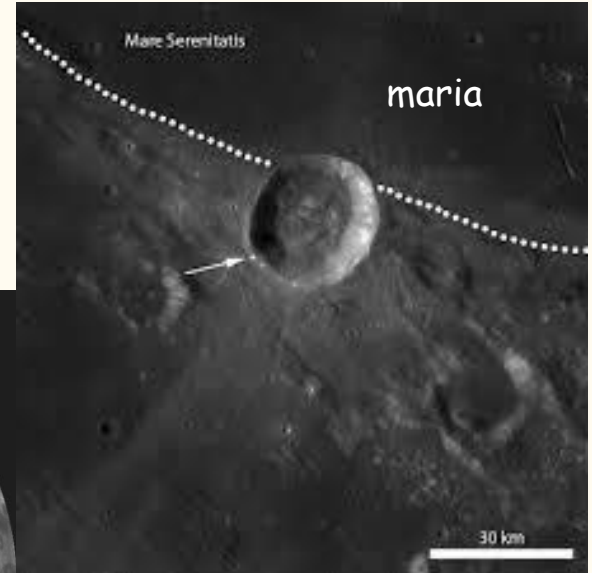
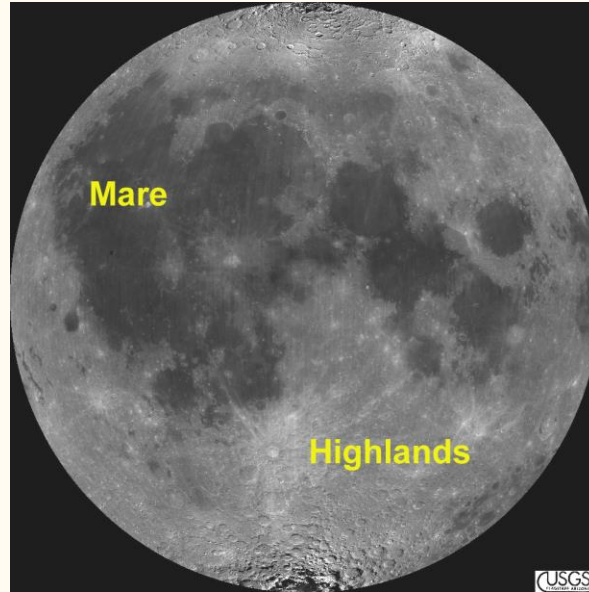




# Lunar Maria

- ★ Most earthlike feature on the Moon and probably the most understood.
- ★ Covers about 16% of the lunar surface.
- ★ Formed when lava erupted at the surface from impact from large meteors
- ★ Basaltic in composition and are the dark areas of the moon surface.
- ★ Some Maria on the moon are 621 miles across.

Boundary between lunar maria and lunar highlands →



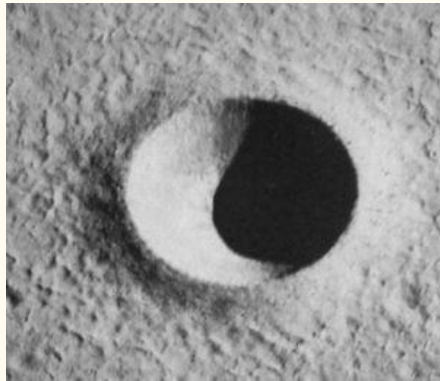
Lunar Pioneer, Oct. 2010



# Impact Cratering

Circular features formed by impactors collided with the moon's surface. The size and speed of the impactor affects the appearance of the crater. Cratering played an important role in the formation of the moon (and planets) and in the shaping of the surfaces of both the moon and planets. Craters come in three classes- simple, complex, and multi-ring.

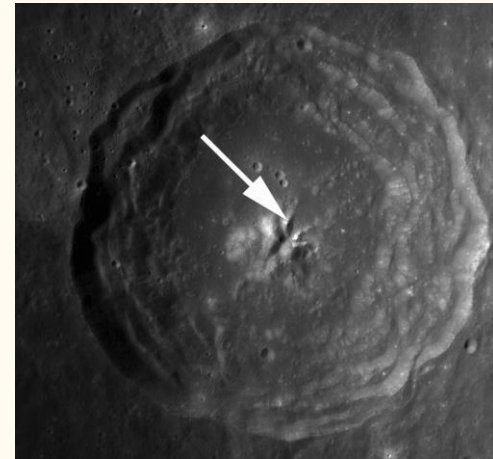
-Simple crater is a bowl shaped crater that is small and simple looking. It is not a very large impact on the moon's surface.



-Multi-ring crater has 2 or more rings around the original rim.



-Complex crater is a large type of impact, that looks very rough and large. There is a peak in the middle of the crater, because of the rebound effect the crater had on the moon's surface.

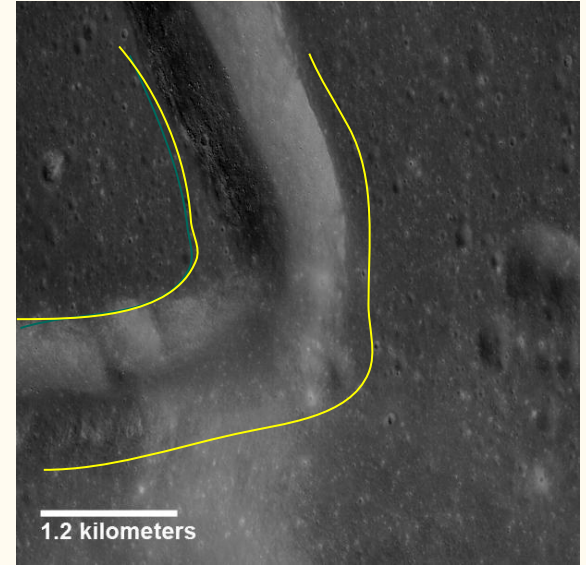




# Rilles

Three different types of Rilles

- Straight-Floor fracture are rilles, Straight by contrast with the other curved or complex shaped features
- Arcuate - Flat floored, steep-walled trough, few kilometer wide and Linear subparallel facing scarps 50 to 250m high
- Sinuuous- Meandering channels which commonly begin as craters, size range from a few 10 of meters 3km in width, lengths ranges up to 300 km



# Cones & Domes

Two types of cones

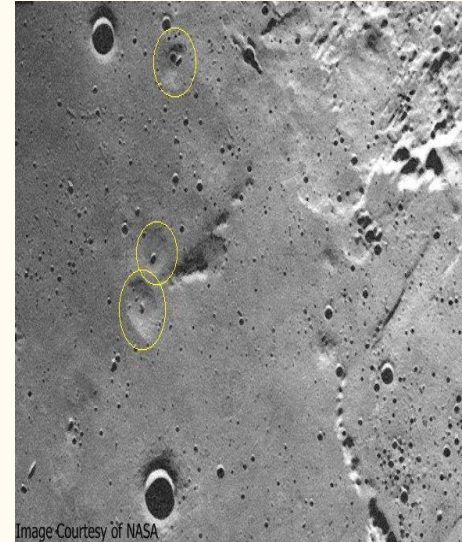
Small cones, and large cones.

Cinder cones are formed from lava bombs and erupted explosively from a central vent

Domes are low profiles topped by small smooth rimmed craters

Also, they are broad shallow landforms

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# Conclusion