MOON 101:
LUNAR GEOLOGY OF APOLLO 11 LANDING SITE

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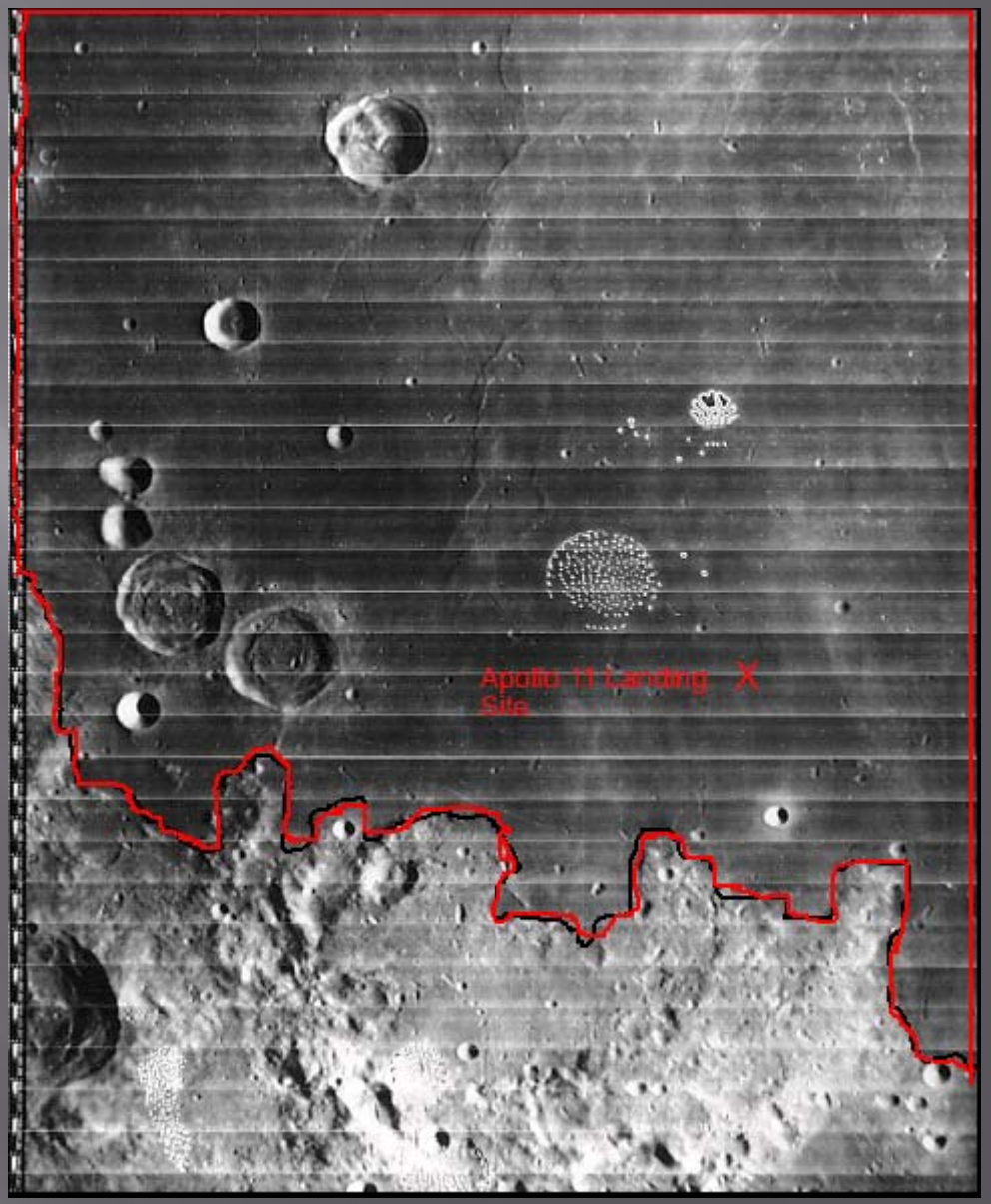
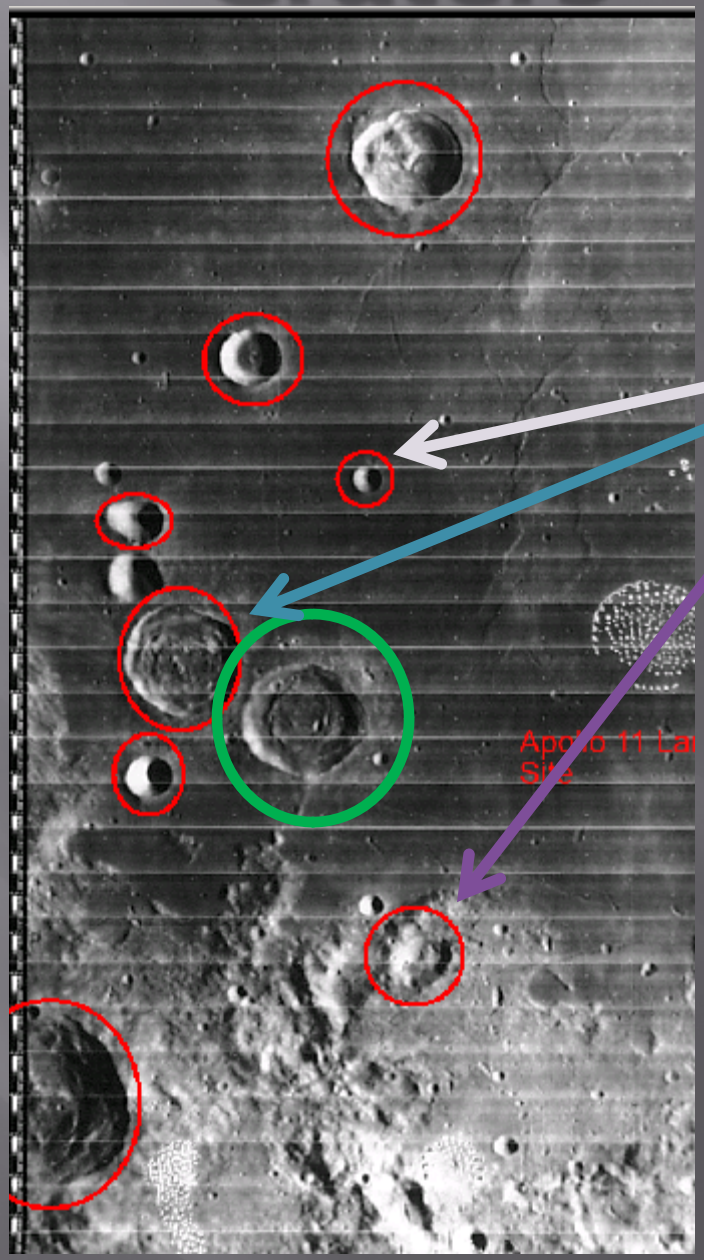
Lunar Maria

- Large, dark basaltic plains
- Formed by volcanic eruptions
- Maria = Latin for "seas"
- Low albedo
  - Def. the proportion of the incident light or radiation reflected by a surface (reflectivity)



Craters

- Are caused by an impactor
- Primary: caused by the initial impactor
- Secondary: created by the ejecta of the initial impactor
- Tertiary: caused by the ejecta of the secondary impactor
- Ejecta: material that is forced or thrown out by the impact
- Rim is more round and uniform for newer craters
- A crater on the rim of a crater came later than the one underneath (could be secondary)

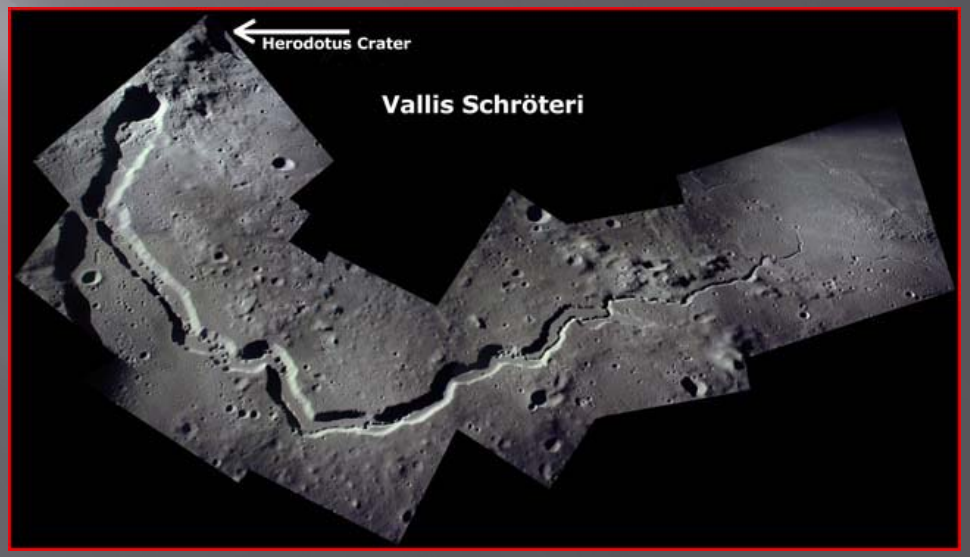


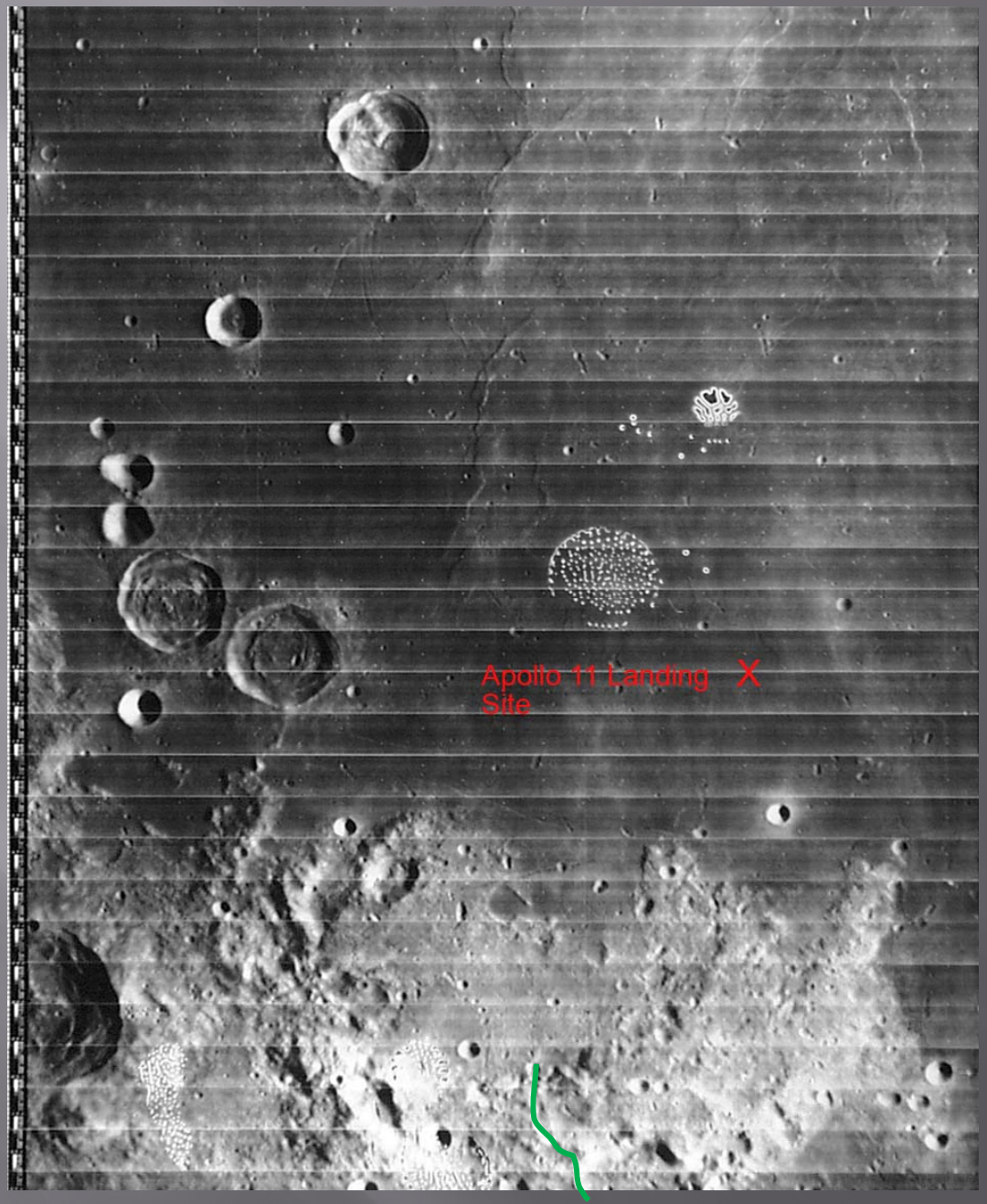
Oldest to newest (marked with arrows): Purple, Blue, White.

The green circle indicates a crater with noticeable ejecta.

Sinuous Rilles

- Described as a channel cut by flowing lava.
- Most well known is in Schroeter's Valley and it is:
  - 160 kilometers long
  - Up to 10 kilometers wide
  - Up to 1300 meters deep
- Very different to any lava flow observed on Earth

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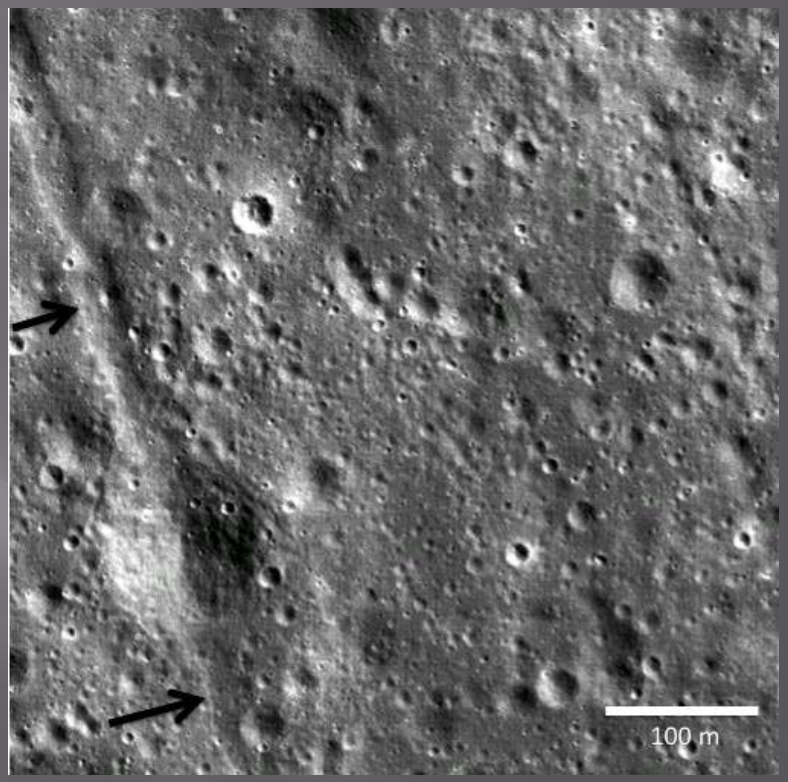
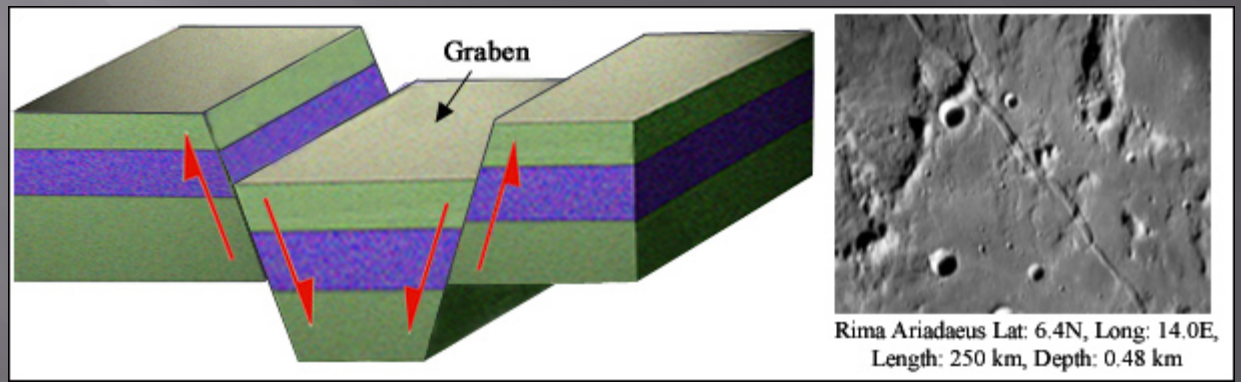
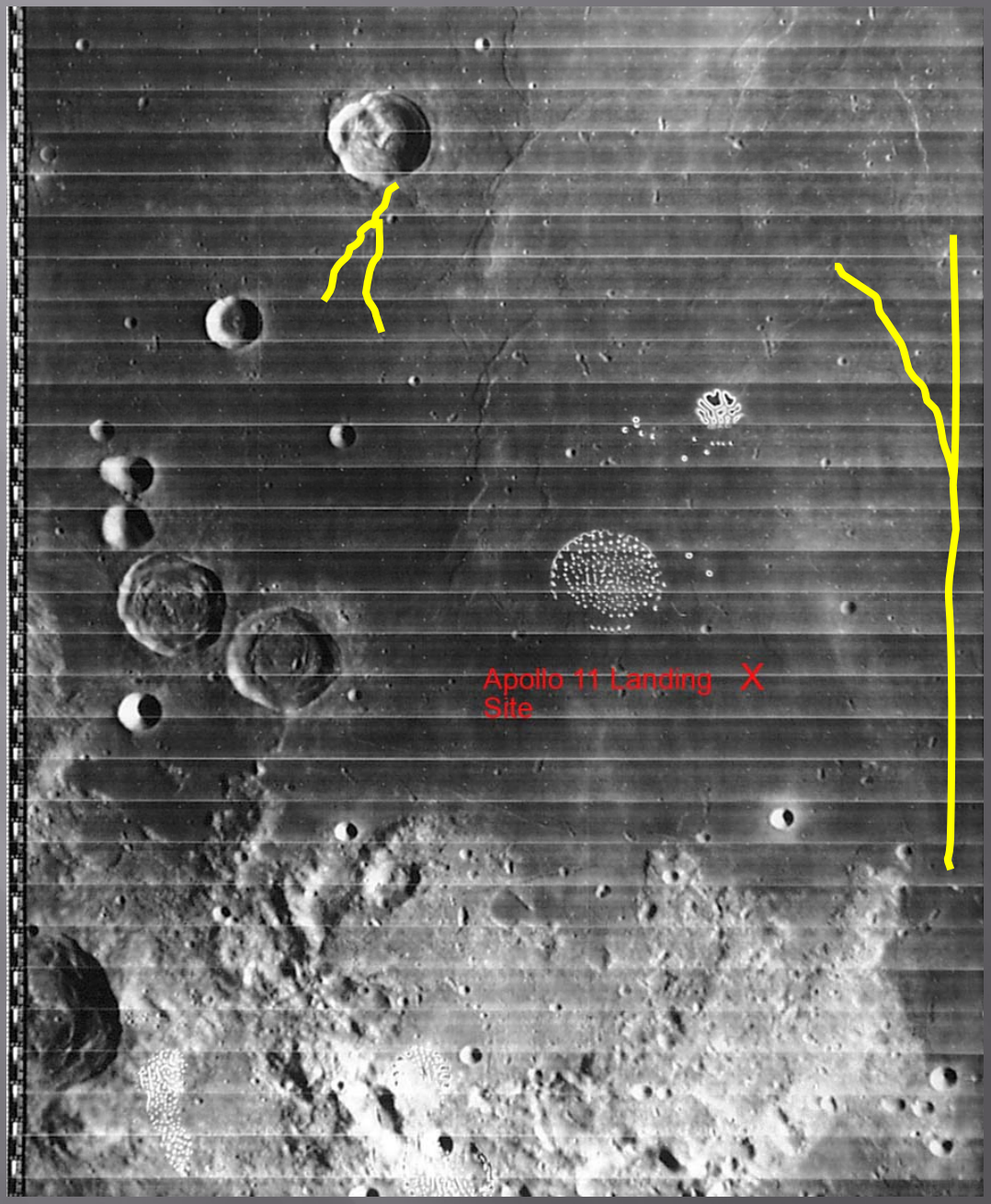
Grabens

- Formed approximately 3.8 billion years ago.
- Most are found bordering mare basins.
- They were created by lava filling the basins.
- Weight in the basins cause faulting and foundering of the Grabens





Rima Ariadaeus Lat: 6.4N, Long: 14.0E, Length: 250 km, Depth: 0.48 km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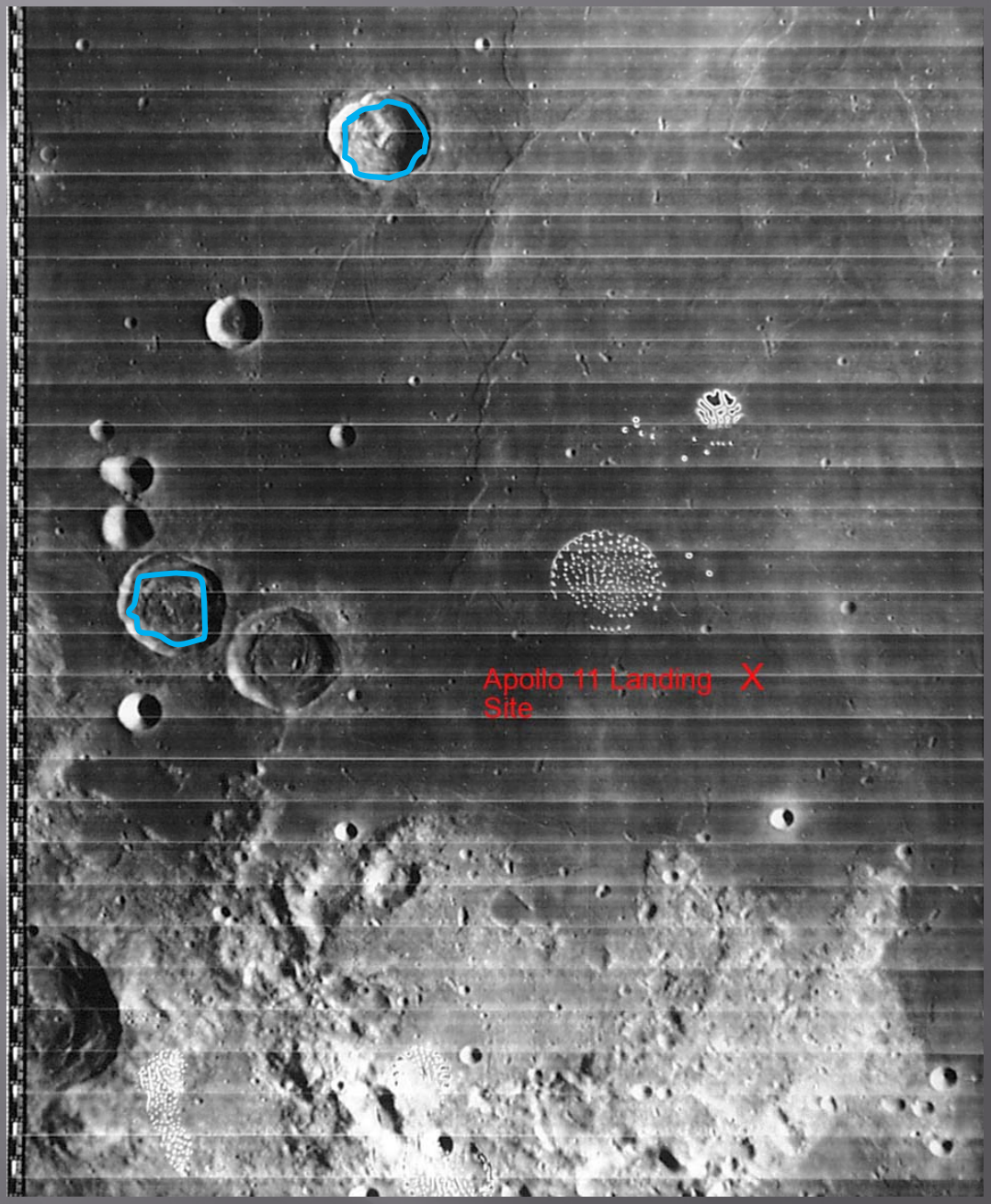
Lava Terraces

- Marks the highest level that lava reached.
- When lava cooled it settled to the middle leaving the “ring” at its peak.
- Bowditch is pictured adjacent.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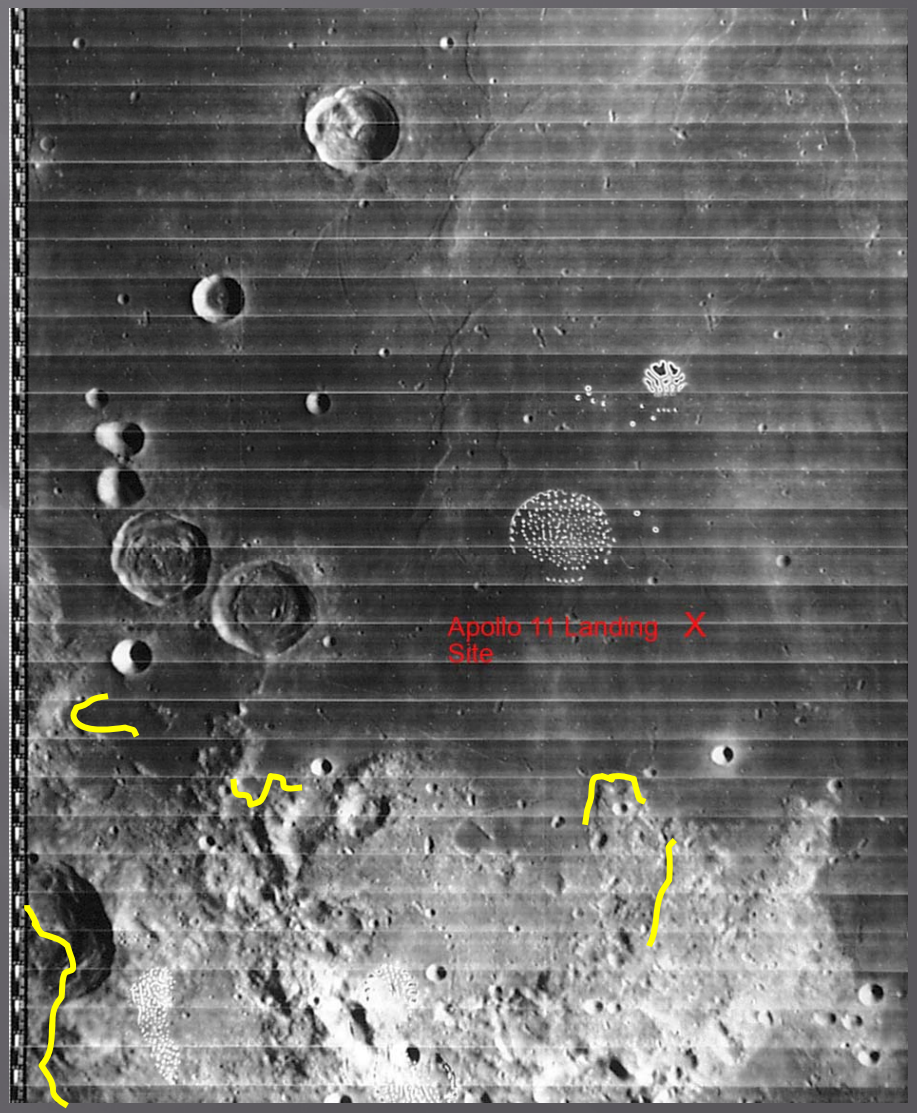
Scarps

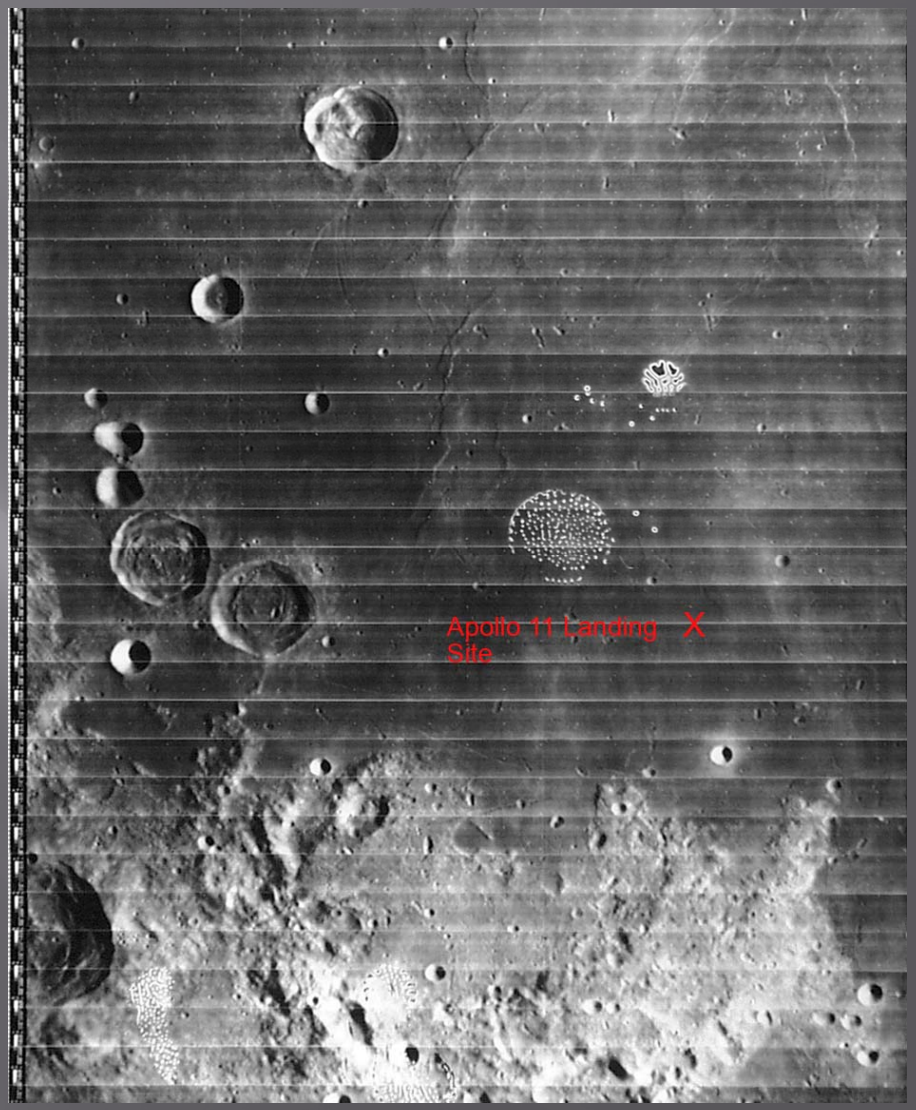
- A coincident land form where the fault plane has dislocated the ground surface

  Lobate Scarps
- Cliffs that form as the whole moon shrinks due to cooling
- Formed from less than a billion years ago to as recent as a few hundred million years



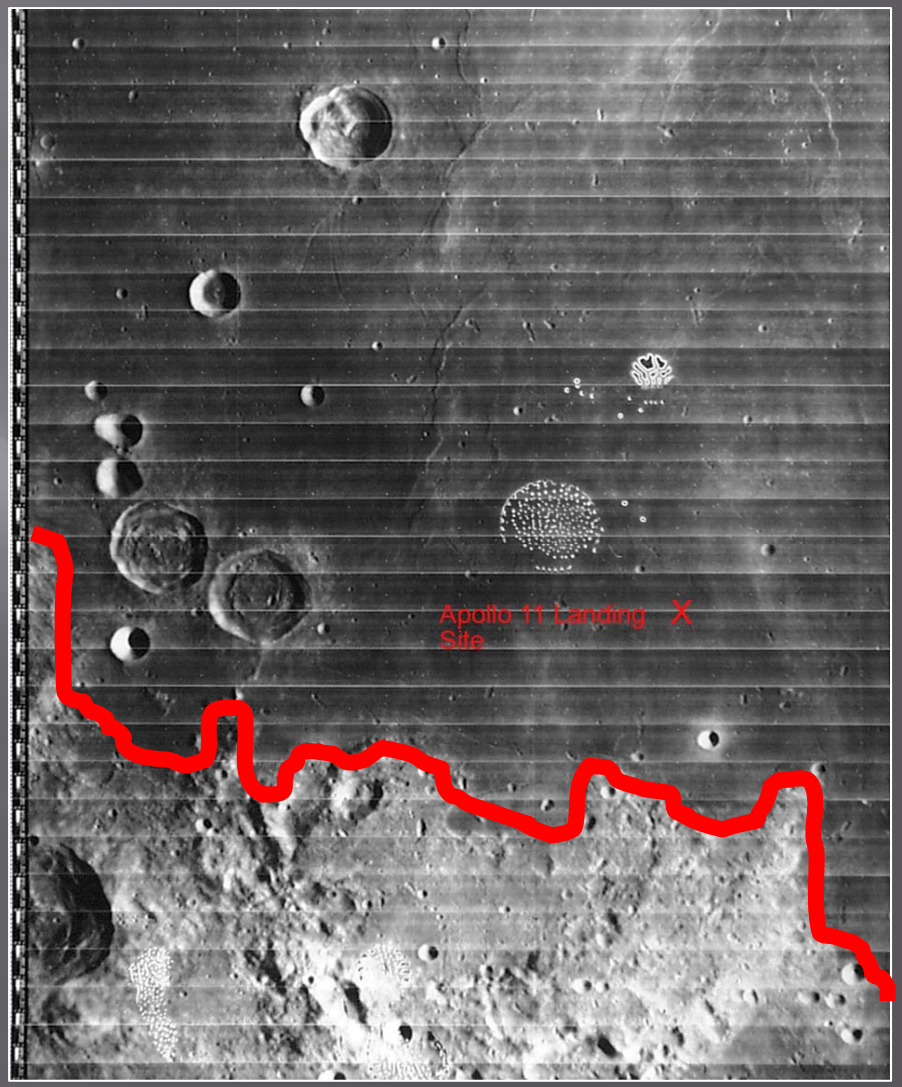
Lunar Domes

- Vast majority found in the maria
- Formed in the latter stages of moon volcanism



Lunar Highlands

- The lighter area below the red line
- Impacts form breccias
- Use Apollo and Luna missions learn about surviving pieces to learn about crust



Mascons

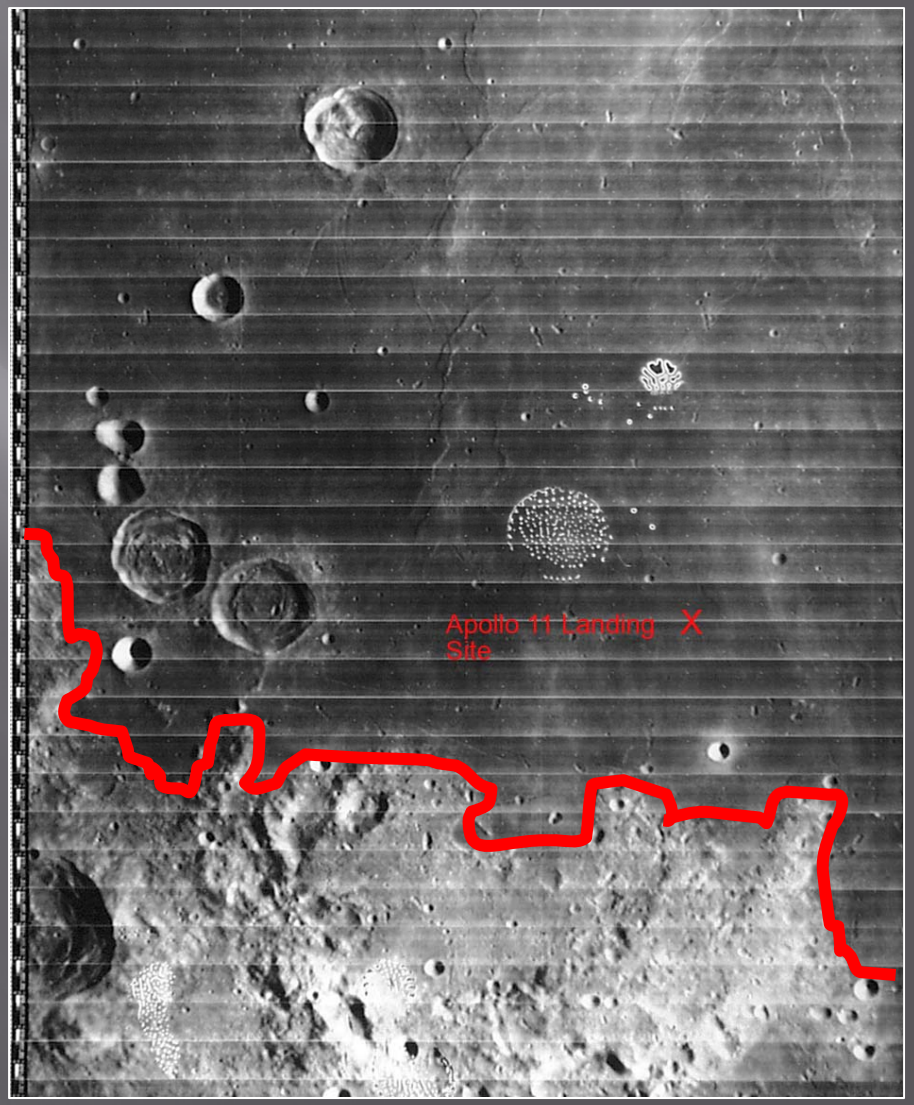
-High Density regions below lunar maria

-These were discovered by noticing anomalies during the orbit of the Lunar Orbiter spacecraft in 1966-67.

-The Apollo program calculated the gravitational pulls of the mascons to allow for accuracy when landing manned spacecraft.

-The word "mascon" is made up using Mass and Concentration.

- These areas were created during a major heating time in the moon's history, or through impacts.



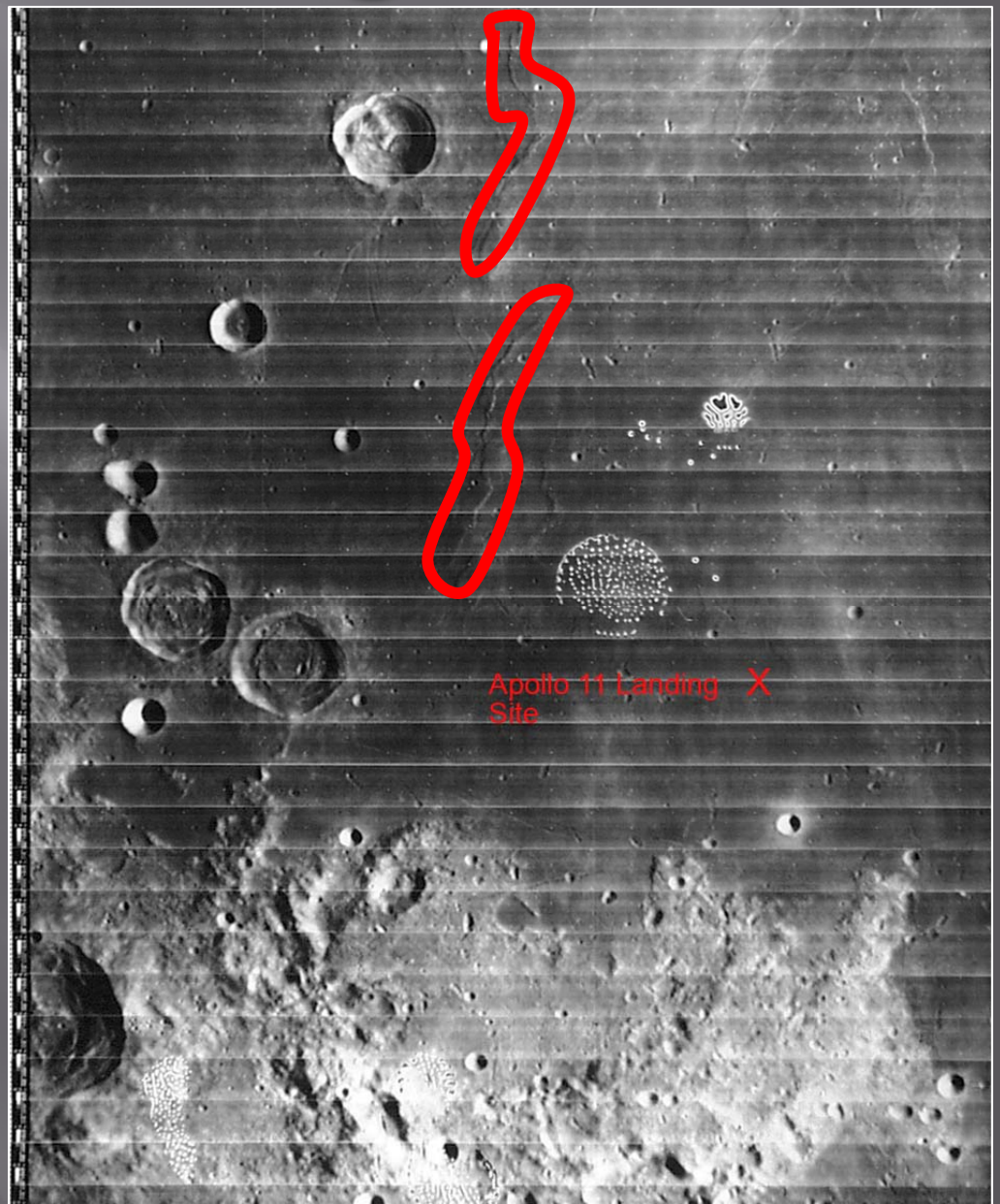
Wrinkle Ridges

-These are winding features that cover almost all of the moon's surface.

-Most of the ridges are less than 300 meters in height.

-Wrinkle ridges are one of least-understood features on the moon.

-There are a few different theories about the formation of the features but none of them works for all of the Ridges.



Works Cited

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