Moon 101 Presentation

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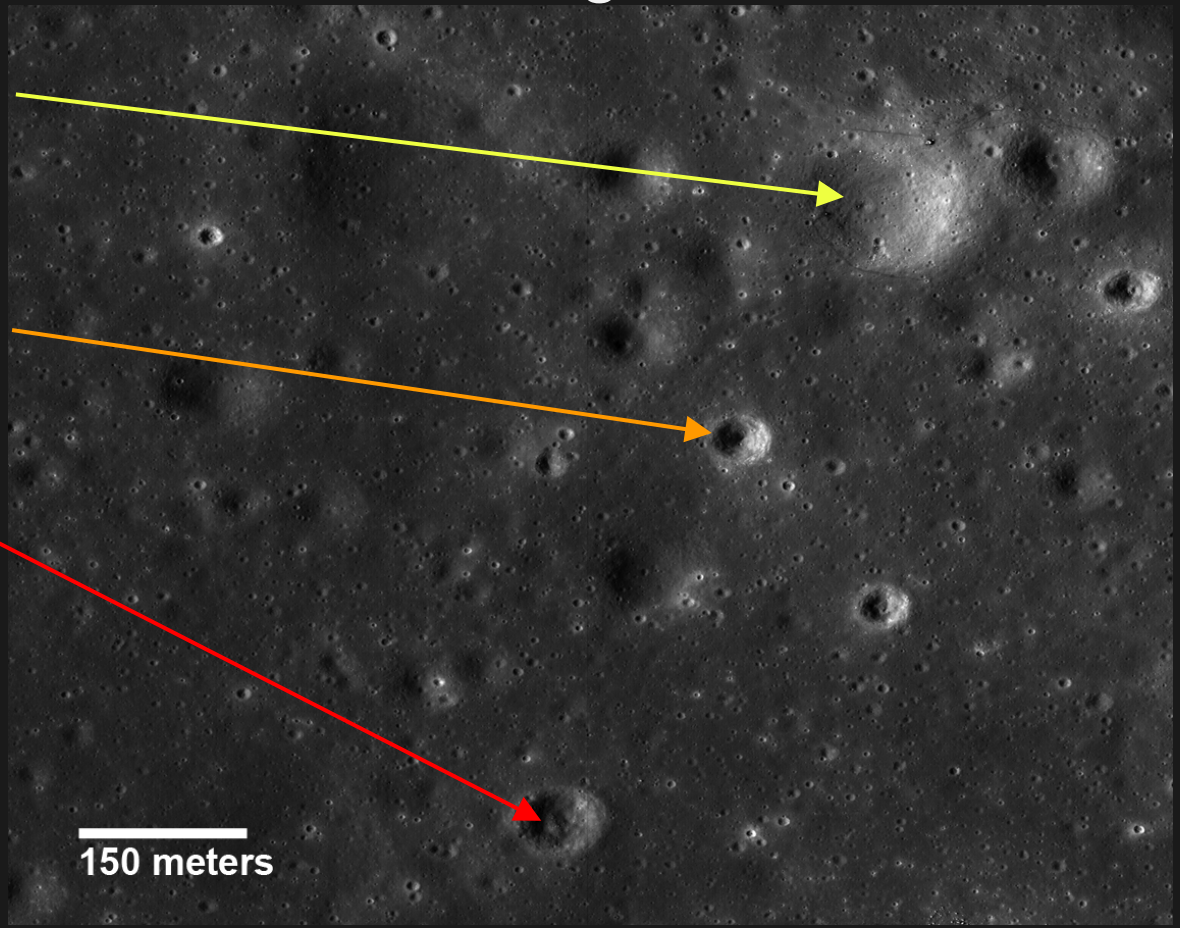
Image 1

Feature 1: Dome

Feature 2: Cone

Feature 3: Main dome crater



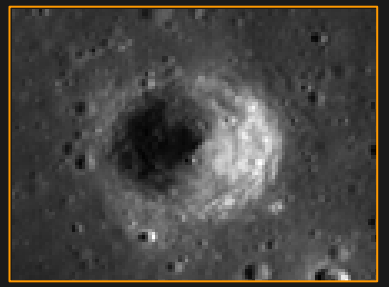
Color key:
Dome/Cone:
Dome Crater
Cone
Dome
Craters:
Endogenic Crater
Impact Crater
Rilles:
Sinuous Rille
Arcuate Rille
surface

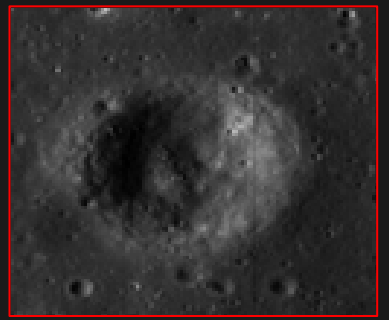
What geologic features are present?

Feature 1: Dome

Feature 2: Cone

Feature 3: Main dome crater





How did they form?

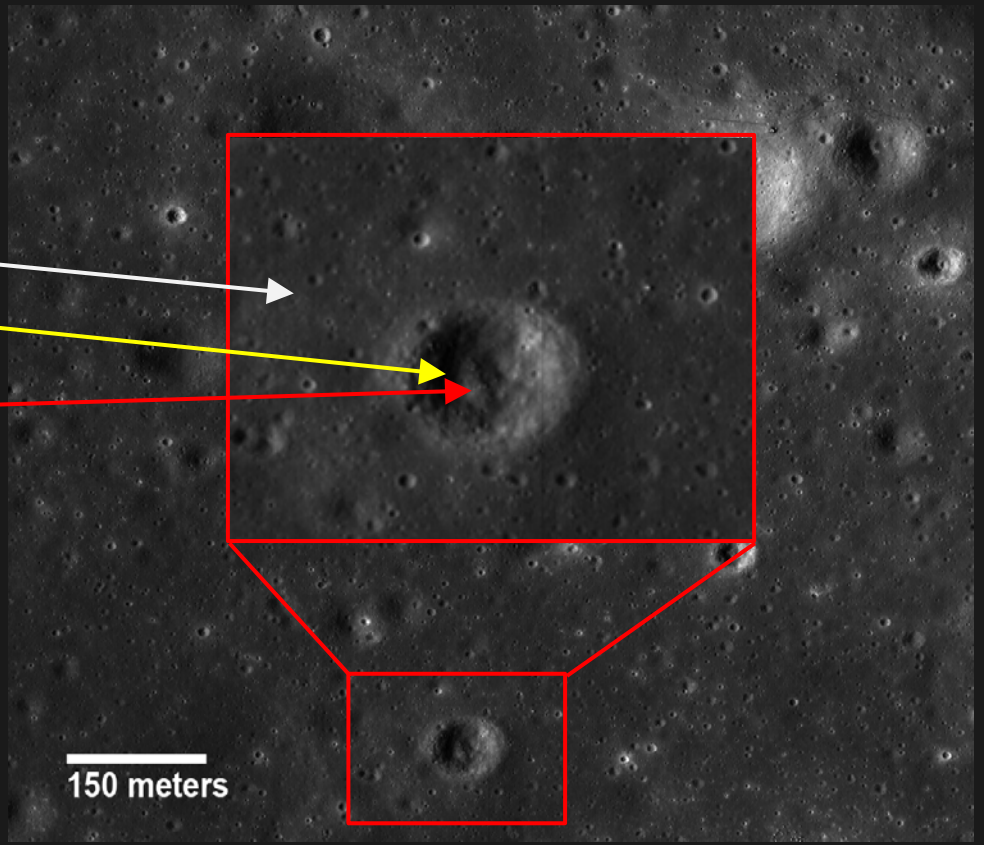
Domes and cones are formed by geologic activity below the surface. Magma pushes up from lava tubes due to pressure.

The main dome crater was either formed when a dome was impacted by a meteorite, creating an impact crater in it, or some kind of collapsing of the top of the dome or any other kind of endogeny.

How old are they relative to each other and how do you know that?

In order (oldest-youngest):

- Surface
- Dome
- Small craters and Placeholder
- Any ejecta on top of the placeholder



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Dome Crater
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Arcuate Rille
surface

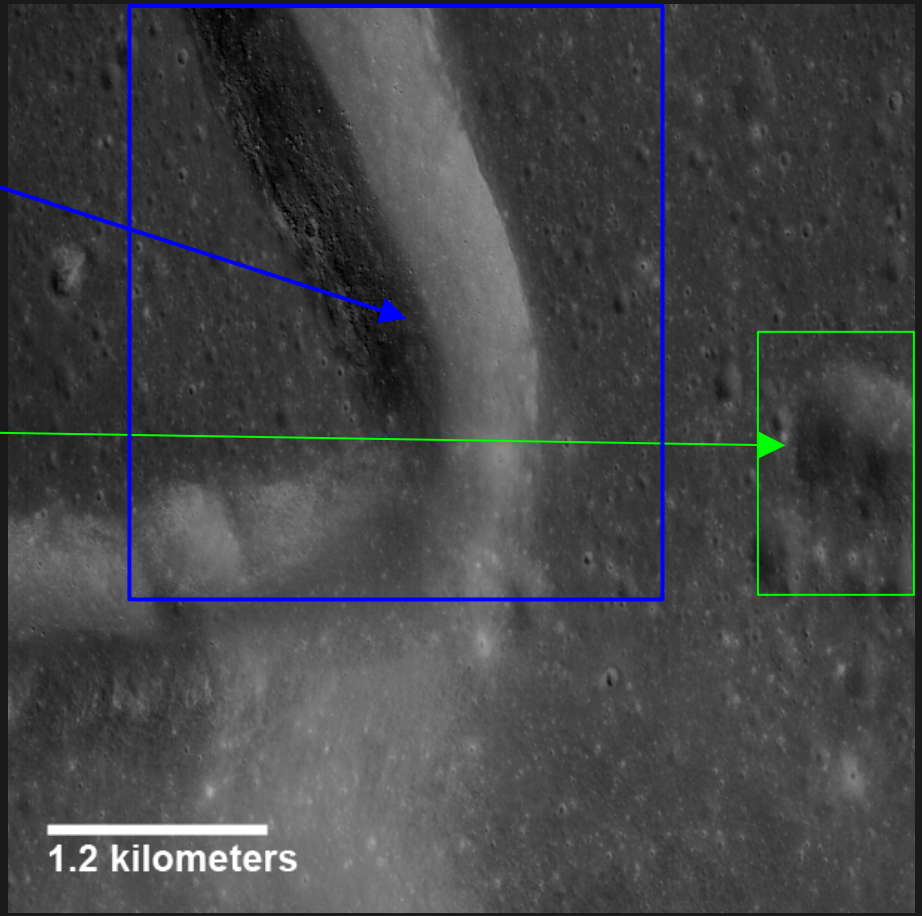
How old are they relative to each other and how do you know that? (cont.)

We know that some things are older than others because of superposition. Superposition lets you determine the relative ages of objects based on their positions relative to each other. For example, if you have a piece of paper and you draw something on it, you know that the drawing is younger than the paper. You know this because the paper had to be there first to be drawn on. Superposition generally shows that if object A is on top of object B, it is usually younger than or was placed after object B. Superposition isn't always an accurate way to determine relative age. Things like overturning and other movements can alter position and the ages don't change so superposition would be inaccurate. It is best used for things like rock formations or cratering because they don't move and aren't shaken. We used this to determine relative ages of objects on the image of the moon's surface. All of the objects in the image are younger than the initial surface because these objects formed on the surface. the second oldest object is the labeled dome. We know this because the dome was formed by an alteration of the surface so the surface is required to have been there before the dome. There are small craters all across the image and there are some on the dome and these range in age. There is no indication of superposition on the dome so there is no way of knowing if the craters or the dome crater came first so it is put in the same time spot. The main crater on the dome is also on the dome so it is younger.

Image 2

Feature 1:
Sinuous Rille

Feature 2:
Endogenic Crater

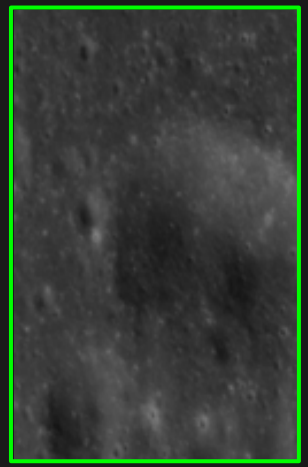


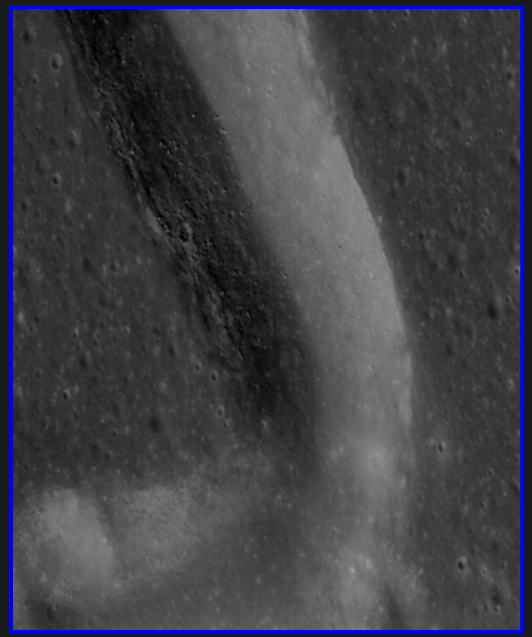
Color key:
Dome/Cone:
Dome Crater
Cone
Dome
Craters:
Endogenic Crater
Impact Crater
Rilles:
Sinuous Rille
Arcuate Rille
surface

What geologic features are present?

Feature 1: Sinuous Rille

Feature 2: Endogenic Crater





How did they form?

Feature 1 is a sinuous rille. These form when lava tubes collapse.

Feature 2 is an Endogenic crater. It did not form from impact, but it could have formed from something like a sinkhole with weathering under the surface or a gas bubble that was trapped by solidification of the rock around it.

How old are they relative to each other and how do you know that?

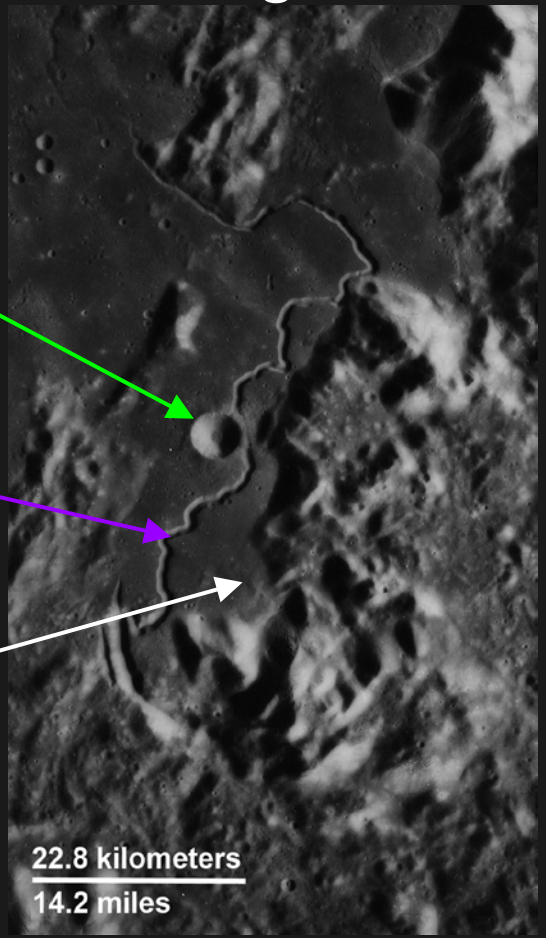
The surface of the moon in the image is the oldest object. We know this because of superposition. the surface is where all subsequent features formed, therefor they are younger than the surface. The Sinuous Rille formed from a collapsed lava tube under the surface. The lava tube formed after the surface because it altered it so it is younger.

Image 3

Feature 1: Endogenic Crater (Younger than arcuate rille)

Feature 2: Arcuate Rille

Feature 3: Maria-Highland Border



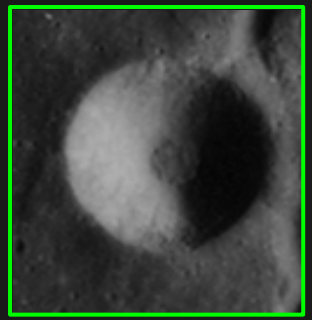
Color key:
Dome/Cone:
[Placeholder]
Cone
Dome
Craters:
Endogenic Crater
Impact Crater
Rilles:
Sinuous Rille
Arcuate Rille
Surface

What geologic features are present?

Feature 1: Endogenic Crater

Feature 2: Arcuate Rille

Feature 3: Maria-Highland Border



How did they form?

Feature 1 is an endogenic crater, we can tell that by certain characteristics present in the geologic feature. The feature is very circular and has a smooth basin which is indigenous with endogenic craters.

Feature 2 is an arcuate rille. These form along the edges of lunar maria where the density of the basalt causes it to sink and contract. These Rilles follow the edge of the maria where the basalt has cracked under its own weight. The lunar surface is not strong enough to support the basalt.

Feature 3 is a Maria-Highland border. This is just where the Mare ends and the Highland begins. The Maria formed from volcanic activity under large basins filling the basins with dense basalt. This Basalt in the Maria is denser the Highland, which formed during the moon’s formation when it was mostly magma and the magma that became the highlands floated to the surface due to its low density.

How old are they relative to each other and how do you know that?

The endogenic crater (Feature 1) has is superposed on top of the arcuate rille (Feature 2), indicating that it is younger than the rille. It also morphs it requiring the Rille to be there first to be morphed. The Maria-Highland border (Feature 3) is the oldest feature. We know this because it formed when the Maria formed and the Maria formed from lava rising up from cracks in basins.