



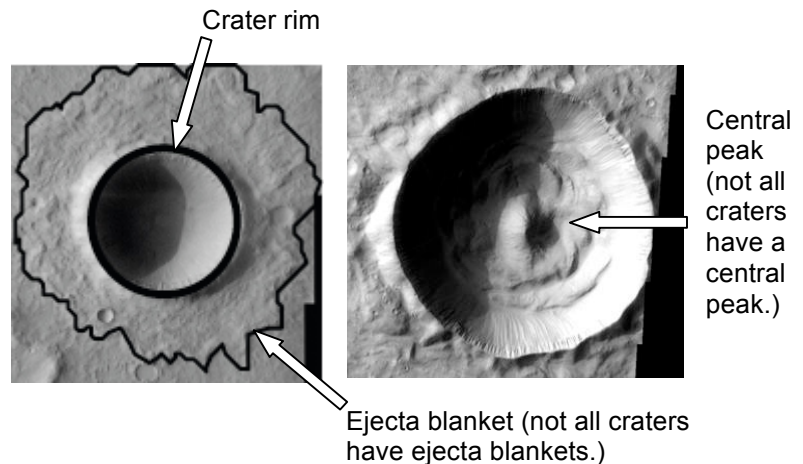
RELATIVE AGE DATING TECHNIQUE

Crater Classifications

We can classify impact craters into three general categories or classifications based on their appearance. These three categories give clues about the history (or relative age) of the crater. We cannot identify the exact age of a crater on Mars, but relative ages for different craters can help us develop a sequential history.

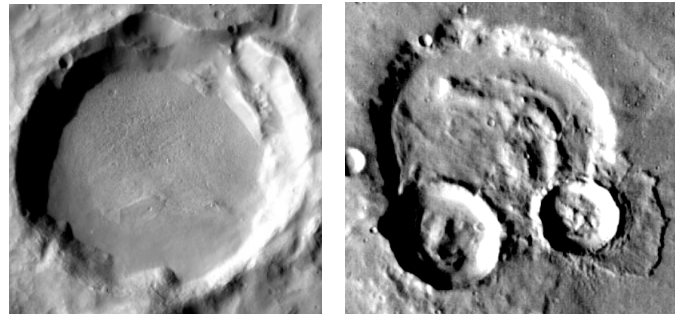
1. Preserved Craters:

- Near perfect craters
- Raised rims
- Look new
- Can sometimes see ejecta blanket or central peak
- Young crater



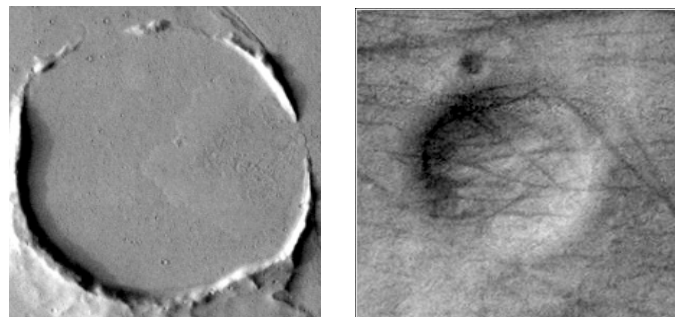
2. Modified Craters:

- Craters that have been changed or modified by:
 - Erosion (wind, water or lava)
 - Other impacts
- Sometimes crater ejecta is visible but looks eroded
- Crater may have smooth floor (partially filled in with material or sediment)
- Middle-aged craters



3. Destroyed Craters:

- Look very worn away
- Rims are broken
- Have been severely changed or modified
- Crater has been filled in almost completely by sediment
- Very old craters





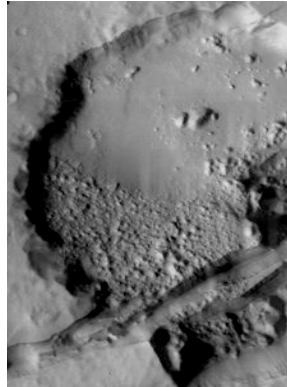
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Relative Age Dating Principles

Scientists use two basic rules or principles to help determine the relative age of craters or other features on a surface. They are as follows:

1. Cross-Cutting Relationships:

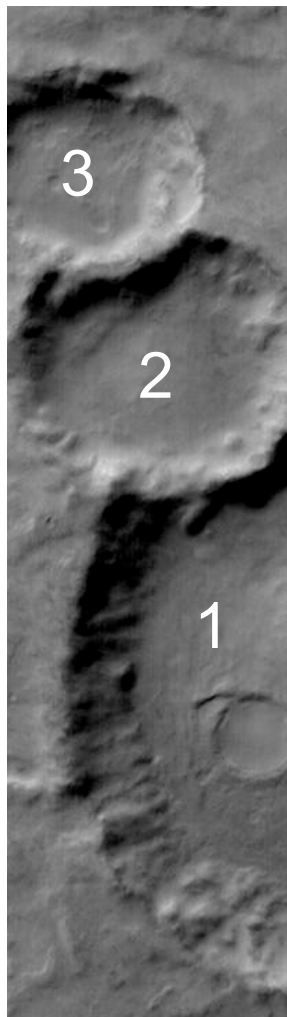
- A crater (or any other feature) can be cut by another feature.
- The feature cut is older than the feature that cut it.



Crater shown here is older than the fracture (crack) that cut through it.

2. Principle of Superposition

- When one feature is on top of another feature, the feature on top is younger.
- The feature on the bottom is the older feature.



Crater #1 is partly covered by crater #2, so crater #1 is older.

Crater #2 is partly covered by crater #3, which makes crater #2 older than #3.

By inference then, crater #1 is the oldest and crater #3 is the youngest.