

From Space to Earth: Meteor Crater

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Teacher Key: From Above or Below? Volcanic vs. Impact Craters

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IMAGES

- Image 1: **Volcanic** – Olympus Mons, Mars:
http://nssdc.gsfc.nasa.gov/image/planetary/mars/olympus_mons.jpg
- Image 2: **Impact** – Crater Verdi, Mercury:
<http://17.alamy.com/zooms/a424f975aae948e08ecf362d4feb5e75/crater-verdi-on-mercury-nasa-messenger-050911-d3d8pw.jpg>

GOOGLE MARS

Crater 1: Volcanic – caldera of Ascræus Mons:

<http://www.google.com/mars/#lat=11.075993&lon=-104.425048&zoom=7&map=visible>

Crater 2: Impact – Nordenskiöld crater, 89 km diameter:

<http://www.google.com/mars/#lat=-52.542955&lon=-159.060058&zoom=7&map=visible>

Explore Google Mars: <http://www.google.com/mars/>

1. Do you see more volcanic or impact craters? (impact craters)
2. How can you tell which is which? (review the characteristics of each type of crater)

GOOGLE MOON

Crater 1: Impact – Proclus (28 km in diameter, nice uprange zone of avoidance)

<http://www.google.com/moon/#lat=15.156973&lon=46.054687&zoom=6&apollo=false&map=visible>

Crater 2: Impact – Tycho (102 km diameter, still bright rays)

<http://www.google.com/moon/#lat=-43.961190&lon=-11.206054&zoom=6&apollo=False&map=visible>

Explore Google Moon: <http://www.google.com/moon/>

1. What kind of craters do you see? (impact)
2. In what ways do Mars and the Moon look similar? (so many crater holes!)

Further Thinking Questions

1. Was it difficult to identify the origin of the craters? Explain: Why or why not?
2. Why are there so many craters on Mars and the Moon? (no atmosphere, no/little water and erosion)
3. Do we have as many craters on Earth? Why or Why not?
 - Ask What obstacles may make it hard for sciences to correctly identify a crater's origin on Earth? Answer: Processes such as erosion, metamorphism, tectonics, and superposed craters affect their appearance and challenge scientists trying to identify them. (You may want to briefly define these terms if new to students.)
 - Ask “Why can we see the craters on the moon so easily? How are the Moon different from Earth?” Share how the Moon lacks water, an atmosphere, and tectonic activity.