

The Wilson School St. Louis, MO

Fifth Grade Class

2013



INTRODUCTION

- Science Question: Is there another characteristics to the McLaughlin Crater?
- Hypothesis: If we can find another crater with similar characteristics to McLaughlin Crater, then there is evidence that water once existed in that area of Mars.



IMPORTANCE

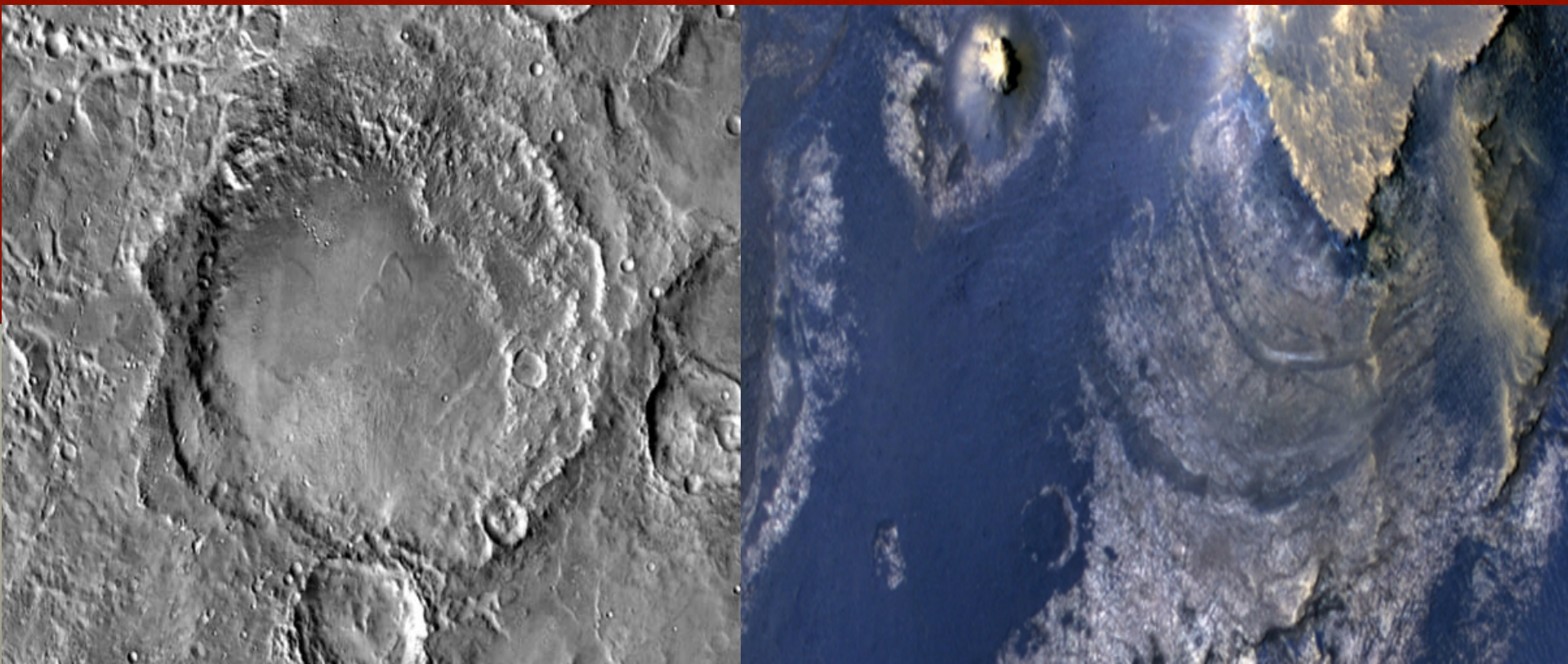
- If we find another crater like McLaughlin Crater on Mars, then there will be more probable evidence of water on Mars.
- This also means there might have been several ground water fed lakes on Mars. These lakes are most likely in deep impact craters.
- If microbial life existed on Mars, it would be found in places like McLaughlin Crater which would have once been a ground water fed lake.
- All of this will help unlock the mystery if life existed or exists on Mars.

Background Information



Dean B. McLaughlin

Background Information



Important Vocabulary

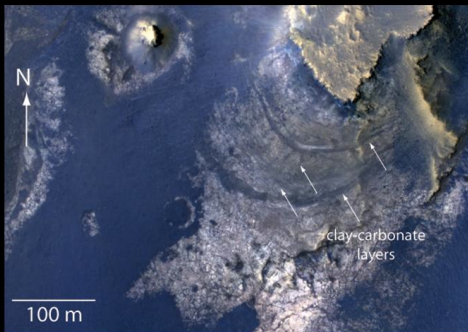
Crater-



Clay-



Carbonate-



Important Vocabulary

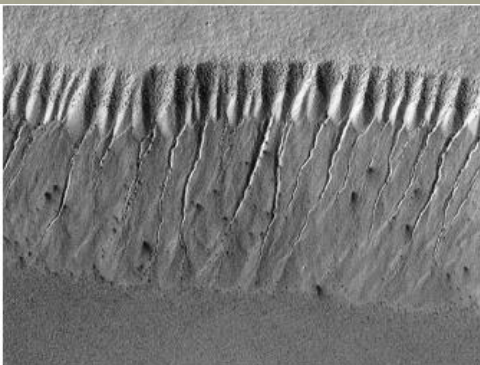
Sedimentary Rock-



Conglomerate Rock-



Gully-



WHERE CAN PLACES LIKE MCLAUGHLIN CRATER FORM ON EARTH?

- Most lakes on Earth receive ground water as its water source similar to McLaughlin crater does despite the fact McLaughlin Crater has an on flow but not off flow of water.



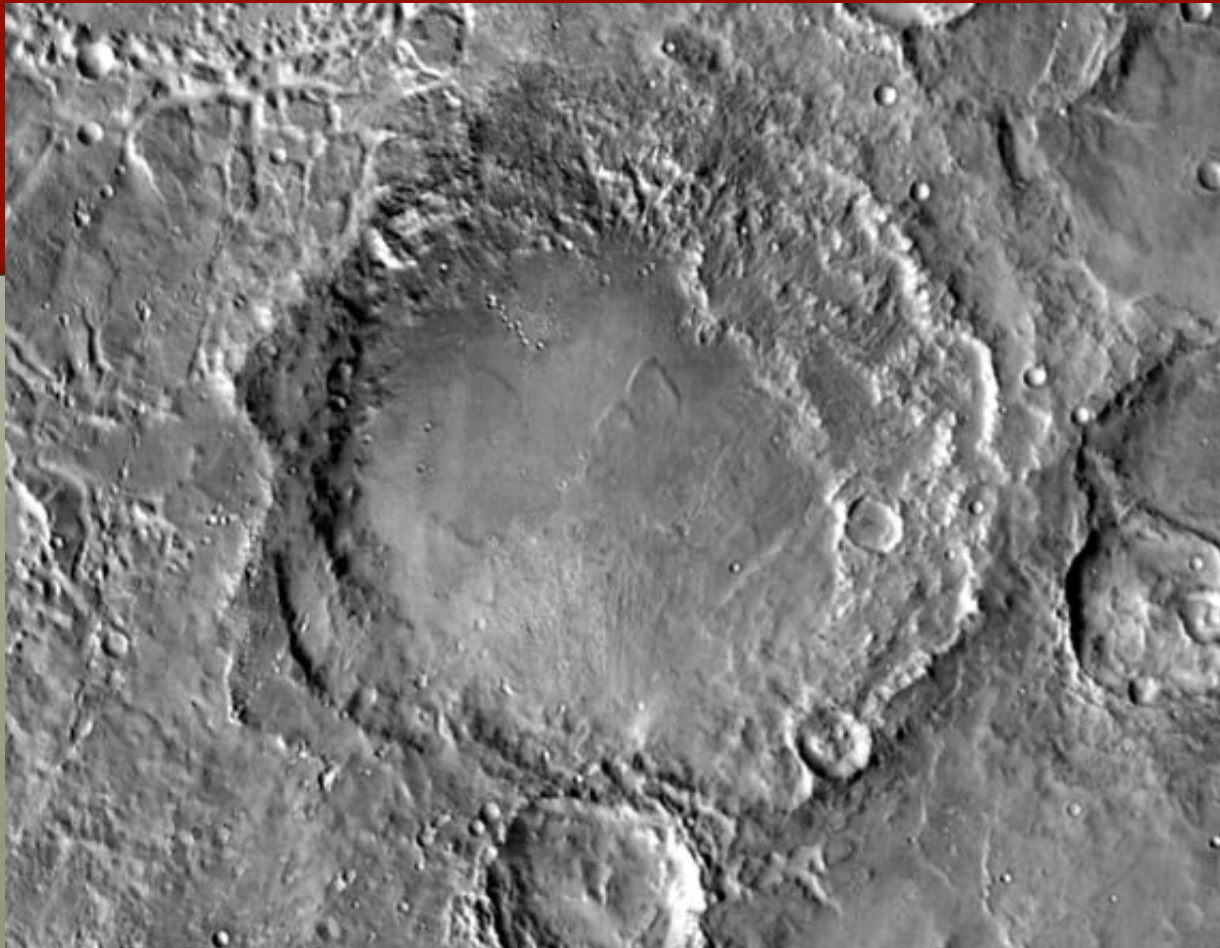
WHERE CAN PLACES LIKE MCLAUGHLIN CRATER FORM ON EARTH?

- Clay and carbonate create sedimentary rocks, and is linked to microbial life on Earth, and are also found on Mars in the McLaughlin Crater.



tary)

Images Of Importance



Key Points

- Clay carbonate forms sedimentary rocks.
- Sedimentary rocks provide evidence of water.
- Clay carbonate only forms in a watery substance
- The sedimentary rocks are on the crater floor, saying McLaughlin was probably a ground-fed lake.
- These minerals have been connected to microbial life on Earth.
- Clay is always formed by a watery substance.
- CONCLUSION: sedimentary rocks = clay carbonate = great evidence of water!

Pictures And Notes

Pictures we chose:

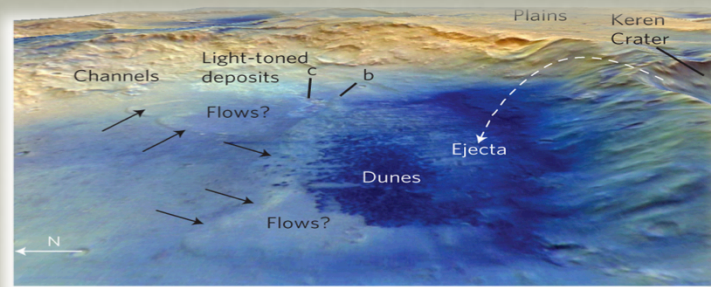
Seems to have flows near

Left edge of crater.

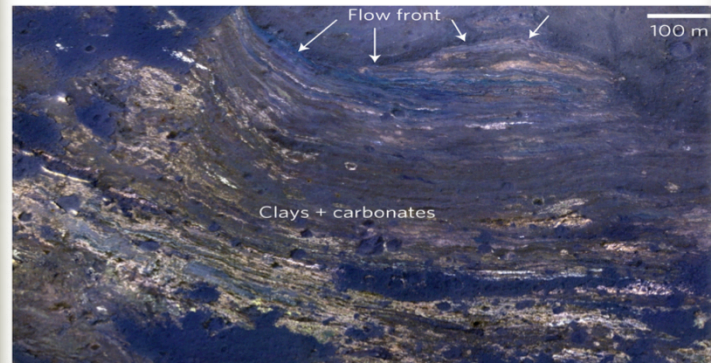
Clay carbonate follows
flows

Channels are in clay carbonate

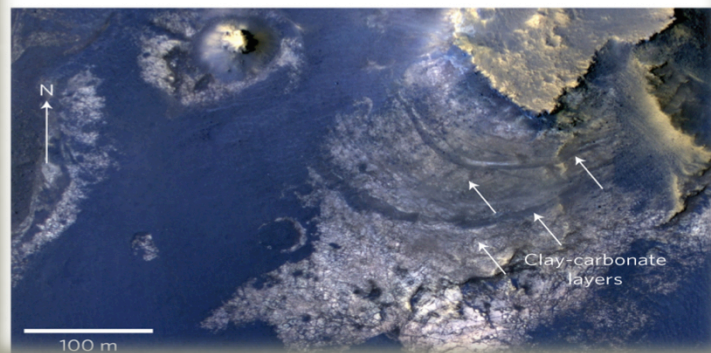
Layers, or it seems so.



Thermal camera



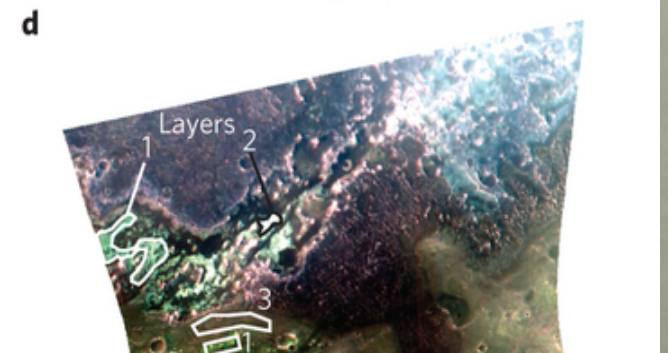
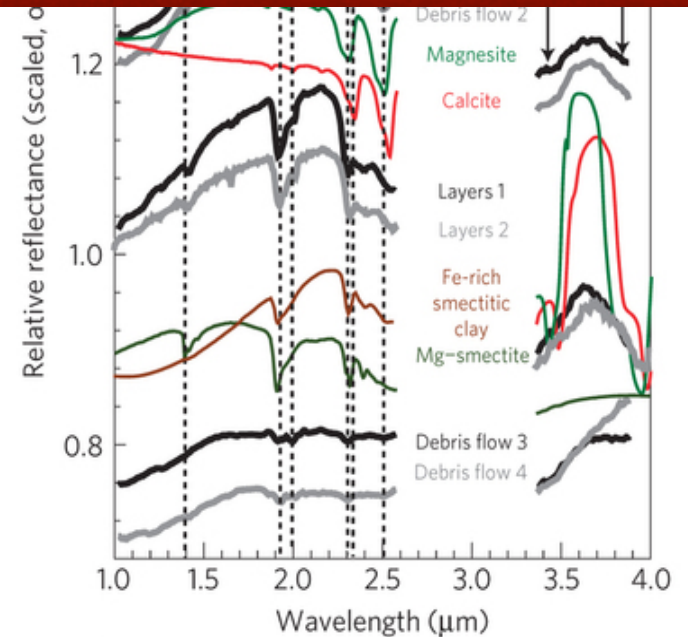
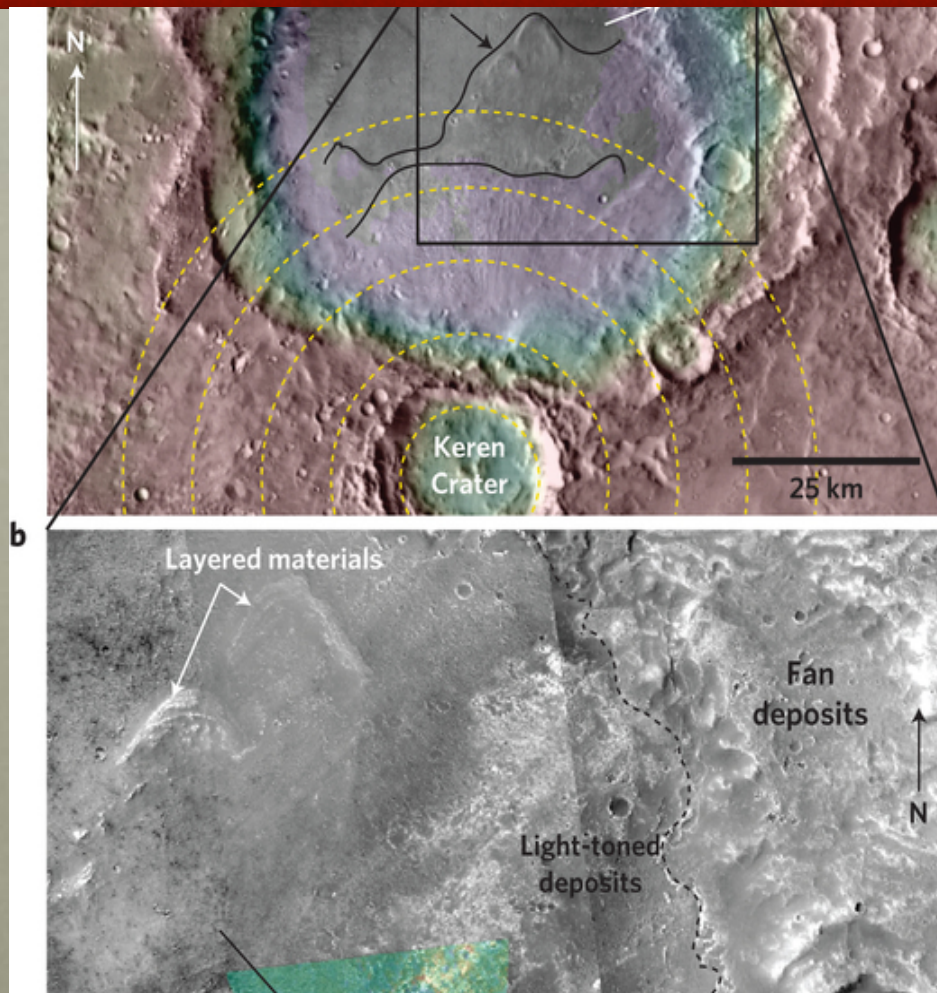
Clay carbonate image




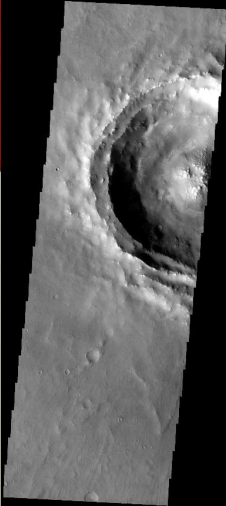
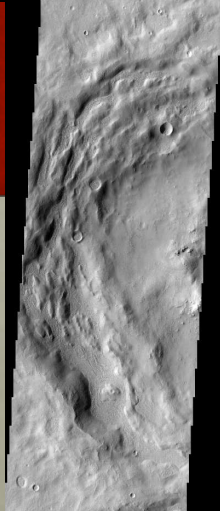
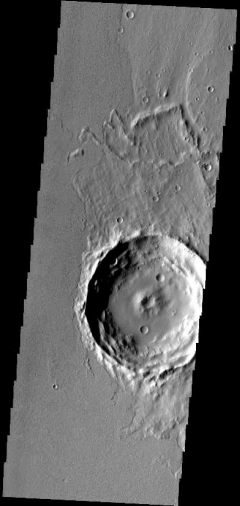
Clay carbonate

Layers image

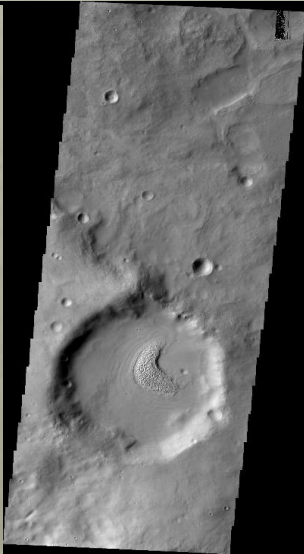


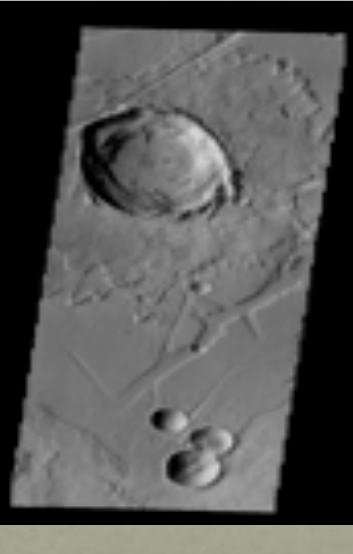
More Pictures



IMAGES OF INTEREST

Image ID	V31968004	V24503003	V20343006	V19074010
THEMIS				
Image				

Images of Interest

Image ID	V28479007	V20122008	V46152053	V44281005
THEMIS Image				

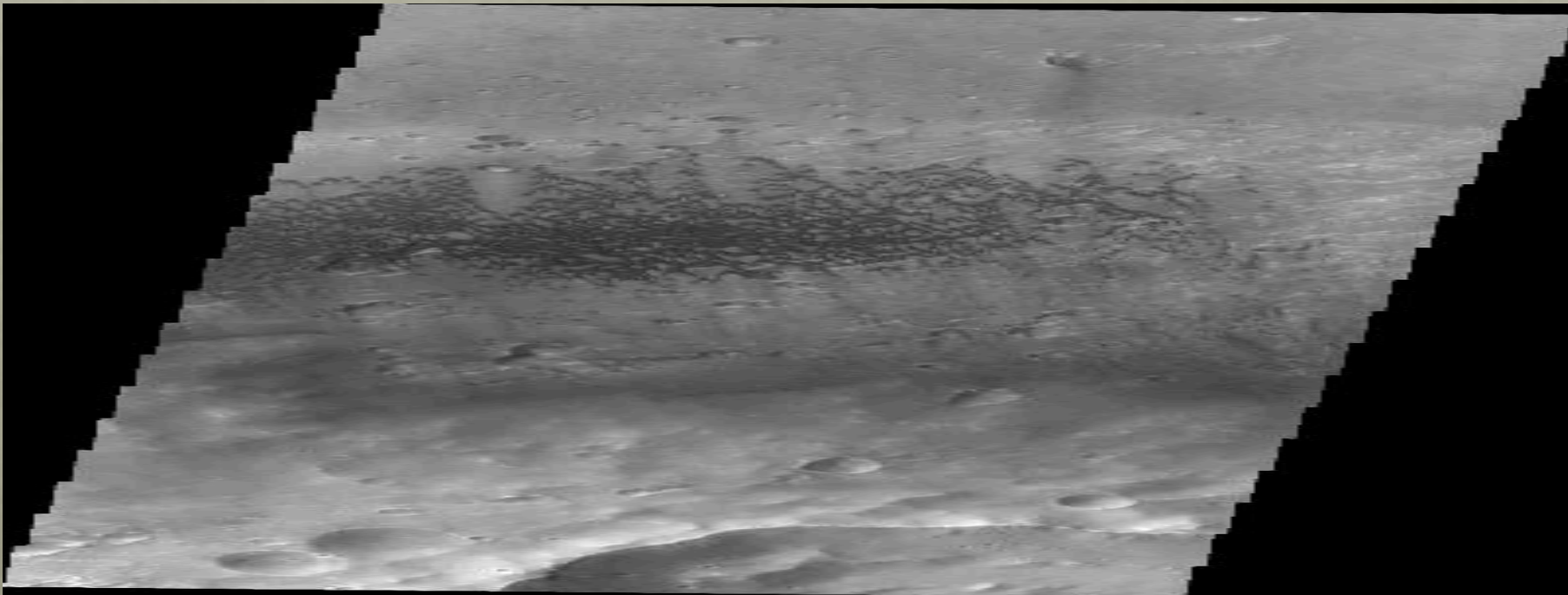
EXPERIMENT DESIGN

- We will use the THEMIS camera on the Mars Odyssey satellite to collect our data.
- Our research centers on craters, and craters sharing characteristics with the McLaughlin Crater.
- We will be focusing on these images from the <http://themis.asu.edu> website. They were chosen because they looked interesting.
- We will need 8 THEMIS images for our research

Image ID	Latitude	Longitude
V31968004	-19.1979	191.719
V24503003	-17.9939	294.54
V20343006	30.5949	36.939
V19074010	16.5115	280.771
V28479007	26.5166	49.6477
V20122008	36.2778	292.83
V46152053	10.6203	323.397
V44281005	24.139	279.958

Experiment Design

- We will be looking at craters that have no obvious cracks or openings in the crater rim, and no gullies in the rim of the crater.
- Also, we will be looking for clay, and carbonate minerals because the McLaughlin Crater has these features.



Sand dunes on McLaughlin crater floor.

Analysis Plan

How the data table works

Based on the information in the experiment design we will look at crater images and will compare the craters to McLaughlin crater.

ID #	Latitude	Longitude	Depth (m)	Evidence of Gullies	Rim Condition	Evidence of Layered Rock on Floor	Evidence of Sedimentary Rock on Floor	Mineral Composition (Clay-Carbonate Evidence)

We will take the information from the chart and transfer it into a bar graph.

Conclusion

Science Question: Is there another crater on Mars that has similar characteristics to the McLaughlin Crater?

Hypothesis: If we can find another crater with similar characteristics to the McLaughlin Crater, then there is evidence that water once existed in that area of Mars.

Why this is important: Doing this research will help prove the theory that water once existed on Mars. This will also help prove that water existed ALL OVER Mars and not just in a few special areas.