



CALIFORNIA STATE SCIENCE FAIR 2012 PROJECT SUMMARY

Name(s) Ethan P. Kearns	Project Number J0811
Project Title Red Planet Crater Erosion: The Effects of Geologic Forces on Impact Crater Erosion over the Same Period of Time	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Mars has a greater diversity of impact craters than any other planet in our solar system. The purpose of my science project was to determine which type of geologic force has the most significant affect on eroding evidence of impact craters on Mars by simulating a flood, wind, glacial movement, and volcanic activity. I believe flooding will have a greater erosion effect on impact craters because water is a very powerful force as evidenced by such flooding activity throughout Earth's history.</p> <p>Methods/Materials I constructed a 1 ft. x 4 ft. wooden table with a 2 in. rim to hold sand and rocks simulating the surface of Mars with impact craters of varying size. Prior to filling with sand, I lined the table with plastic and drilled drainage holes at one end. For the flood test I placed a small fish tank pump in a bucket of water and started the water flow at the higher end of the table to simulate a flood. Before conducting the wind test I covered the entire wooden table with plastic to contain the sand, rocks and flying debris. I then switched on a hair dryer to the highest setting at one end inside the plastic cover simulating a wind storm. For the volcanic activity test I repeatedly poured a mixture of wet sand, dirt and small pebbles into a cone on one end of the table until the cone overflowed simulating lava flow. For the glacial activity test I placed a large chunk of ice on the volcanic cone. I timed each test at 5 minutes noting the effects of each simulation on the various craters.</p> <p>Results The results demonstrated that volcanic activity had the most significant effect on eroding the impact craters. Water flow (flood) had the next greatest erosion impact on the craters. The wind and glacial erosion tests showed minor to moderate erosion effects on simulated impact craters.</p> <p>Conclusions/Discussion My conclusion is that volcanic activity has the utmost ability to erode and even completely erase evidence of impact craters. Flooding is also a powerful erosion force but not as invasive as volcanic activity. Wind and glacial activity can be considered moderate erosion forces.</p>	
Summary Statement The purpose of my science project was to determine which type of geologic force has the most significant affect on eroding evidence of impact craters on Mars by simulating a flood, wind, glacial movement, and volcanic activity.	
Help Received Father helped build wooden table; supervised geologic force simulations.	