Mars Student Imaging Project

CFHS
Period 6

Introduction

- **Topic:** Fractures
- **School:** Catalina Foothills High School, Period Six
- **Speakers:** Maddie Owens and Jamie Barton

Questions

- **Big Picture Question:** Are there regions on Mars where fractures occur more frequently?
- **Research Question:** On Mars, at what frequencies do wrinkle ridges occur within an obround area around a fracture with a radius measuring ½ the length of the fracture?

Why is our topic interesting?

- Because Mars does not have evidence of plate tectonics, the existence of fractures is interesting
- By examining the spatial relationship between wrinkle ridges and fractures we can possibly view a correlation which could lead us to the conclusion that they are related and maybe formed at the same time and maybe by the same processes, such as plate tectonics.

Background Information

- **Fracture:** any separation in a geographic formation, such as a joint or a fault that divides rock into two or more pieces

Background Information

- **Wrinkle Ridges: low, sinuous ridges formed on the Mars surface that can extend for up to several hundred kilometers**

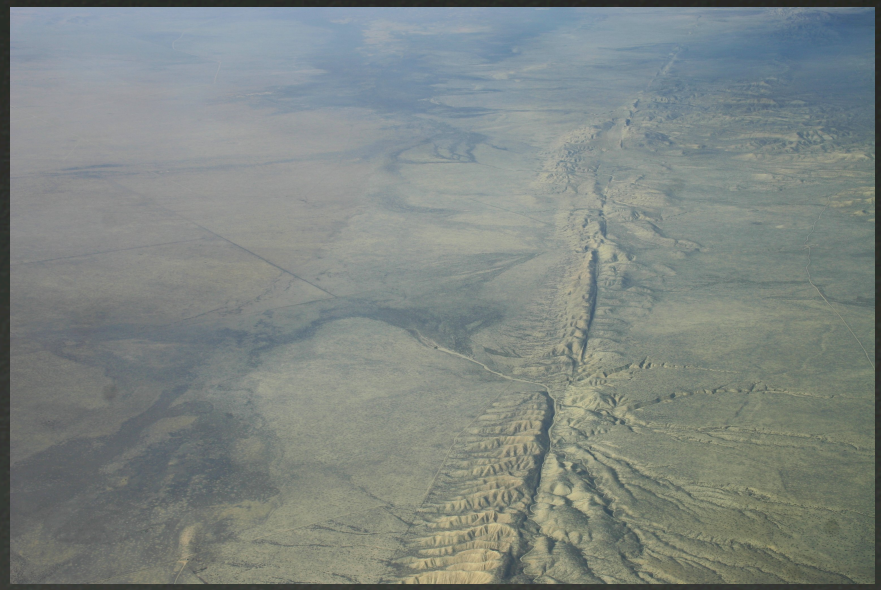
Hypothesis

- If there are wrinkle ridges found frequently within an obround area of a fracture, it can be concluded that the formation of wrinkle ridges can be directly connected to how proximal they are to a fracture.
- If one wrinkle ridge can be found inside multiple obround areas around multiple fractures, then there will be evidence to support that fractures are a byproducr of the formation of wrinkle ridges

Mars and Earth

Mars Fractures

Earth Fractures
(San Andreas Fault)



Mars and Moon

Mars Wrinkle Ridges

Moon Wrinkle Ridges

Methods Summary

- Using JMars, we divided the planet into smaller sections to gather data on the frequency of wrinkle ridges around fractures
- We will measure the length of the fractures and then calculate an obround area in which we will look for wrinkle ridges
- After we have these measurements we can determine if there is a correlation between fractures and wrinkle ridges using various graphs and data tables

Data Display

- **Types of graphs:**
  - Pie chart
    - Fractures with number of wrinkle ridges in obround
  - Bar graphs
    - Lengths of fractures at various longitudes and latitudes
    - Number of ridges per obround by longitude or latitude
  - Scatterplots
    - Length of fracture (y) by number of ridges present (x)