



2017

# NASA Mars Weather Station

M. Cole Hendricks  
*Virginia Commonwealth University*

J. E. West Redington  
*Virginia Commonwealth University*

S. Sahir Shehzad  
*Virginia Commonwealth University*

Byron M. Watts  
*Virginia Commonwealth University*

Follow this and additional works at: <https://scholarscompass.vcu.edu/capstone>

 Part of the [Mechanical Engineering Commons](#), and the [Nuclear Engineering Commons](#)

© The Author(s)

---

Downloaded from

<https://scholarscompass.vcu.edu/capstone/165>

This Poster is brought to you for free and open access by the College of Engineering at VCU Scholars Compass. It has been accepted for inclusion in Capstone Design Expo Posters by an authorized administrator of VCU Scholars Compass. For more information, please contact [libcompass@vcu.edu](mailto:libcompass@vcu.edu).





# NASA Mars Weather Station

MNE 525 | Team members: M. Cole Hendricks, J. E. West Redington, S. Sahir Shehzad, Byron M. Watts | Faculty adviser: Frank Gulla, PE  
Sponsor: NASA | Sponsor adviser: Joseph Gasbarre

### Problem:

- NASA is in need of a way to observe and record weather conditions on Mars in hopes to be able to send manned mission to the Martian planet in the future.

### Project Description:

- Ground Based Weather Stations
- Economical Design
- Large number of stations
- Gain more accurate meteorological data

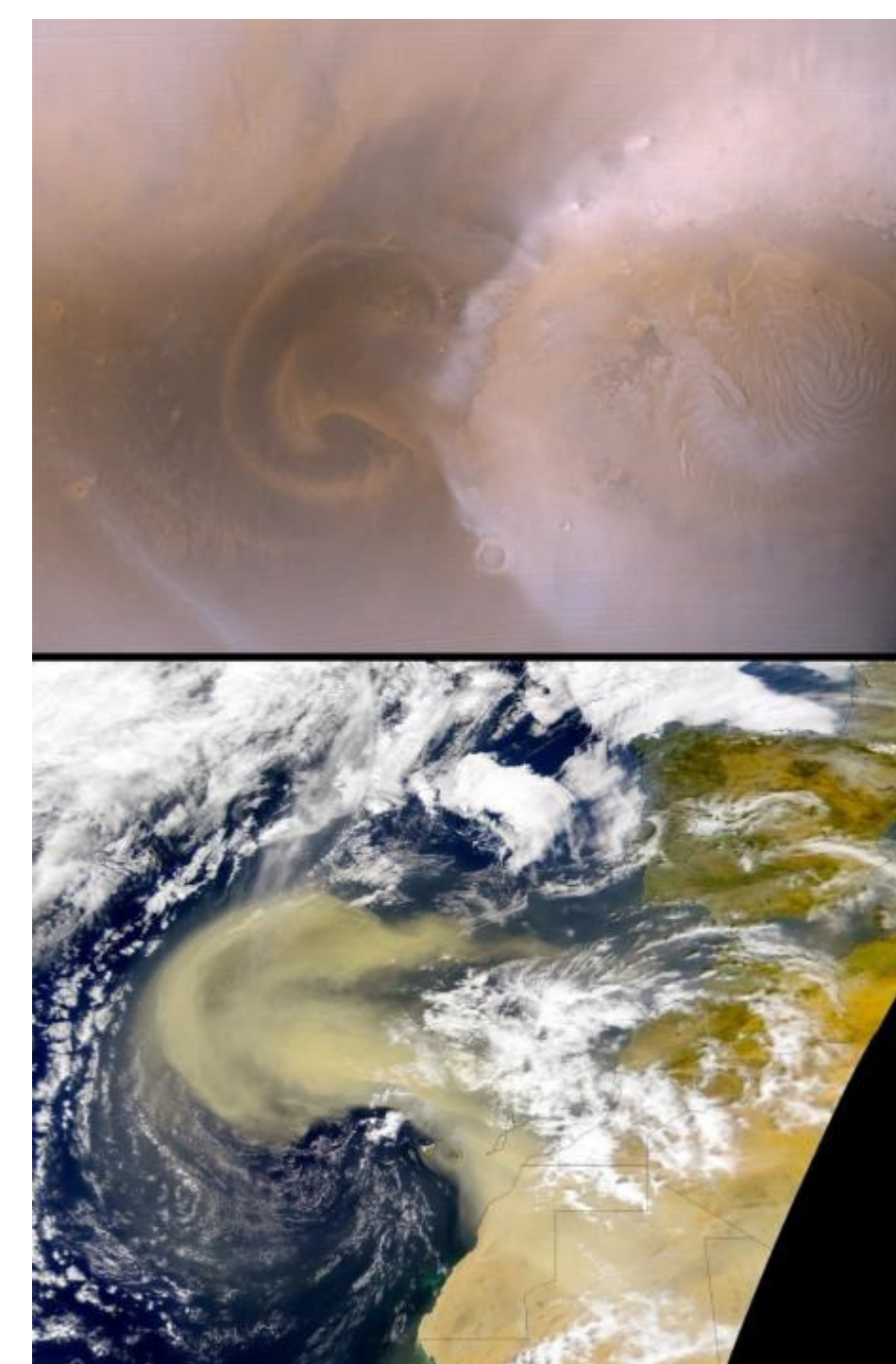


Figure 2: Recent Mars and Earth Dust Storms Compared  
NASA/JPL/MSSS

### Purpose:

- Collect range of meteorological data
- Global Data collection
- Assist future Martian Mission with up to date meteorological models
- Development of forecasting capabilities for Martian environment

### Design Constraints:

- Size of the weather stations
- Number of stations needed to gain accurate data throughout the planet
- Rate of Data Acquisition
- Proper power source
- Transmission of Data

### What Needs to be Measured:

- Martian weather observed similar to that on earth, with a few differences.
- Important values to be measured:
  - Temperature
  - Pressure
  - Humidity
  - UV Radiation
  - Wind Speed

### Martian Weather Model:

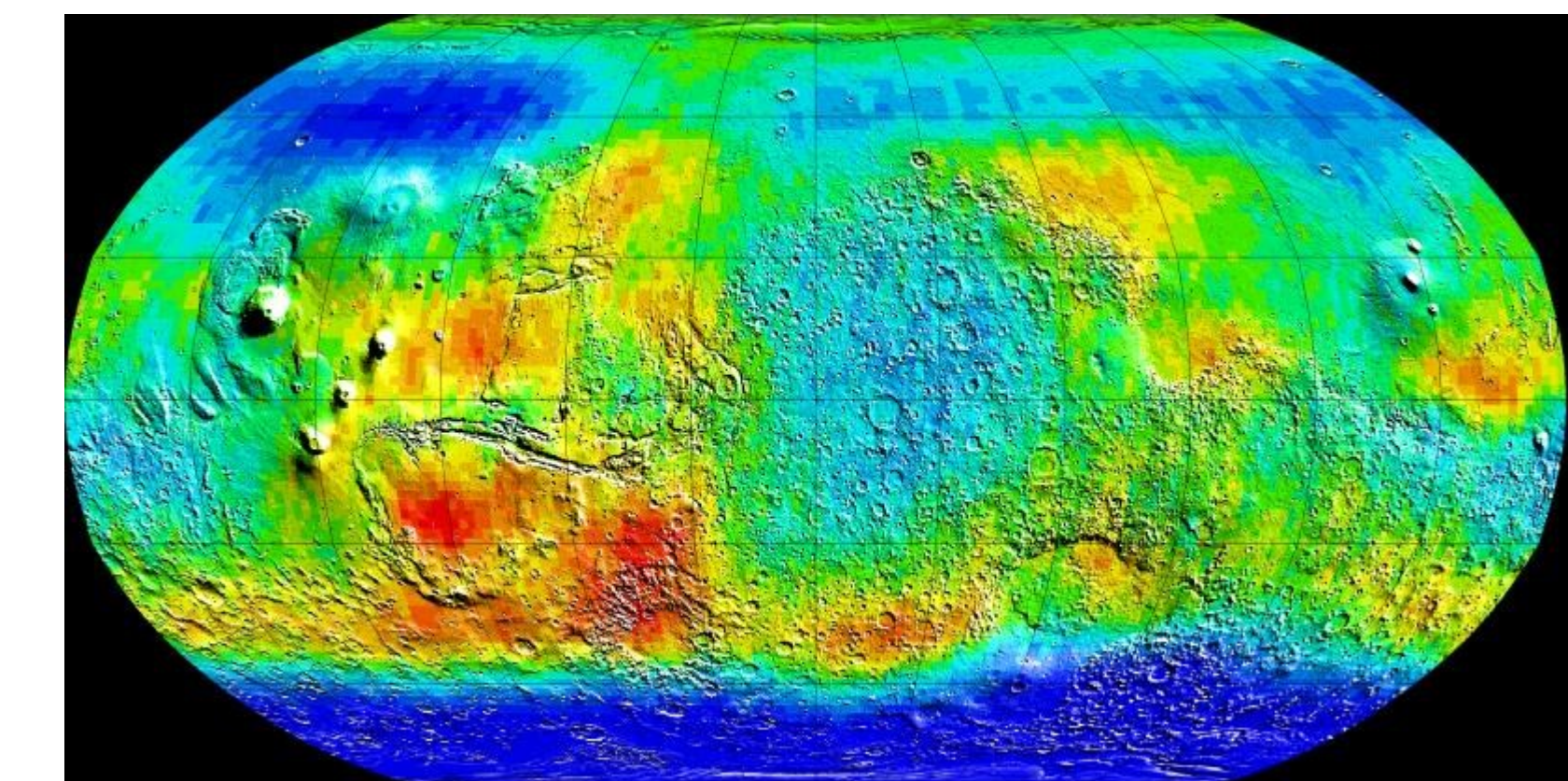


Figure 1: Global Map of Epithermal Neutrons  
NASA/JPL/University of Arizona/Los Alamos National Laboratories

### Design Considerations:

- Sustainability of the stations
- Manufacturability and Cost
- Environmental Effects
- Safety of nuclear power fuel

