Early Mapping of Mars vs Modern Mapping of Mars

Emmanuel Estrella

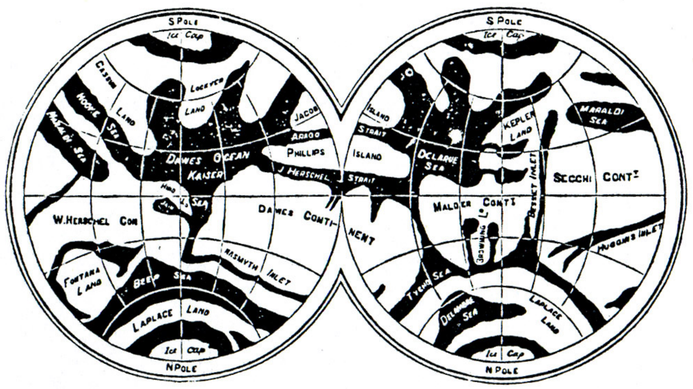
Department of Geography and Geographic Information Science, Class of 2021 | University of Illinois at Urbana-Champaign | estrellaemmanuel74@gmail.com

Land and Sea

Background information on the map:
- Richard Proctor and W.R Dawes based on Dawes' drawings from 1867

Notable Observations:
- Light and dark areas as land and seas.
- Ice caps at both poles.
- Proctor was the first label these features. He named them after famous astronomers who contributed to the observations of Mars

Impacts of the map:
- Sparked the conversation about the habitability of Mars

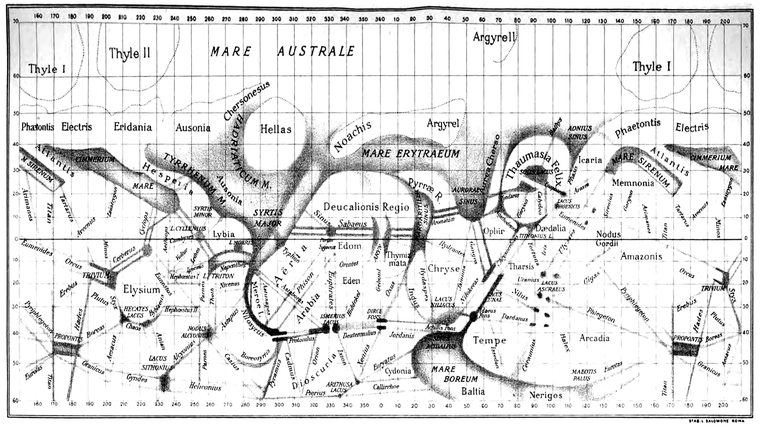


"Canals"?

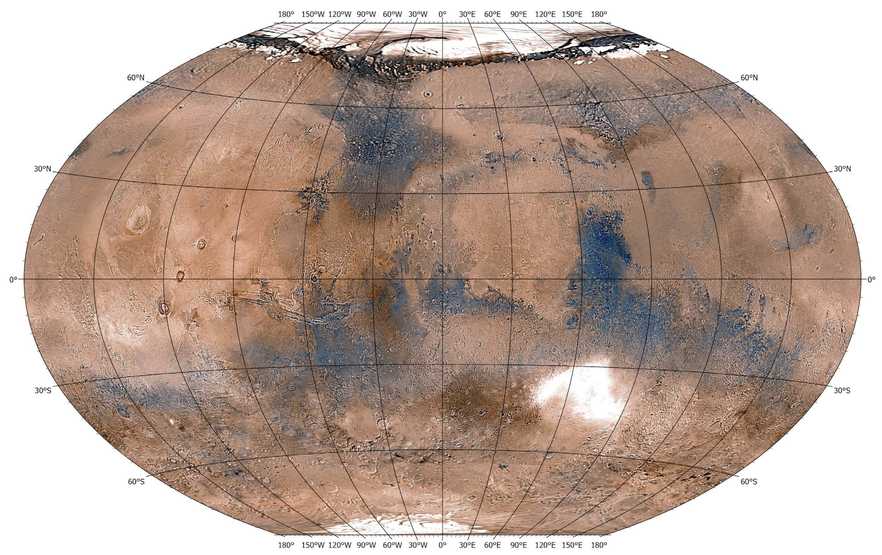
Background on the map:
- Giovanni Schiaparelli 1883, Historical Archives of Astronomical Observatory of Brera

Notable Observations:
- "Canals" were observed by Schiaparelli
- These canals were scattered all over the surface of Mars

Impacts of the map:
- Many believed that these canals were made by intelligent life
- Schiaparelli had theorized that these canals were naturally made like some canals on Earth.
- A map like Schiaparelli's was later used to plan the first Mars flyby mission



Cartography is a profession that has been around for a very long time. Mapping the surface of the Earth is very important in understanding all aspects about it. However, cartographers had an advantage in the surface of the Earth. They were able to visit the places they mapped to judge the accuracy of their maps. Cartographers have also made maps on the surface of the planet Mars since the 19th century but were limited by the technology that was available to them. In this poster, I will be presenting the earliest representations of the surface of Mars and comparing them to modern representations along with the technologies used in the process of making both representations.



Global Mosaic Map of Mars (Astropedia)

Sources

Mason, Betsy. "What Mars Maps Got Right (and Wrong) Through Time." National Geographic. 19 October 2019. Accessed 30 October 2020.

"Mars Maps Made by Schiaparelli (1877-1890)." Digital Museum of Planetary Mapping. Accessed 8 November 2020.

"Proctor's Mars Maps (1865-1892)". Digital Museum of Planetary Mapping. Accessed 8 November 2020.

"PDS Imaging Node". Nasa JPL. 12 June 2020/. Accessed 30 October 2020.

"Astropedia". Astropedia. Accessed 25 October 2020.

"Mars Quadrangle Grid". ESRI Astro. 4 April 2019. Accessed 25 October 2020.

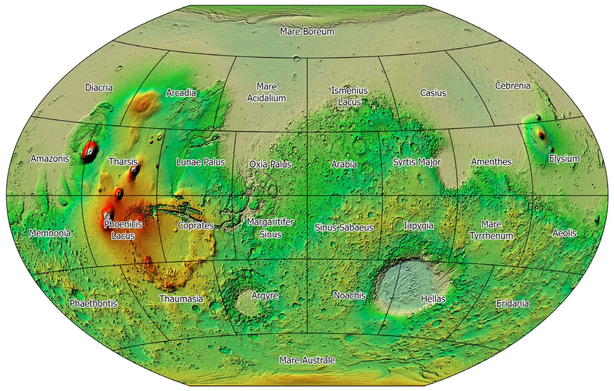
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Satellites

Background of the Map Data:
- DEM of data captured from the Viking mission in 1976

Changes from Early Observations:
- Discussions about seas on Mars were resolved with the Mariner Missions
- The canals that Schiaparelli and other saw were likely canyons and ridges formed from ancient water ways.

New Knowledge gained from new technology:
- MOLA has been used to "create the most accurate topographic maps".
- MOLA can collect data on elevation, clouds, gravity waves, and many other types of data.



Rovers

Background on Scene Data:
- DEM data was used to make the terrain and vector data for the rover path.
- Contour lines are by 100 m

Planning a Rover Mission:
- This satellite provided information in planning new rover missions
- Selection process of landing site considered a wide variety of variables

Visualization of Rover Path:
- Close up visualizations of terrain
- Data gathered from satellites help create robust rovers that consider Mars' terrain