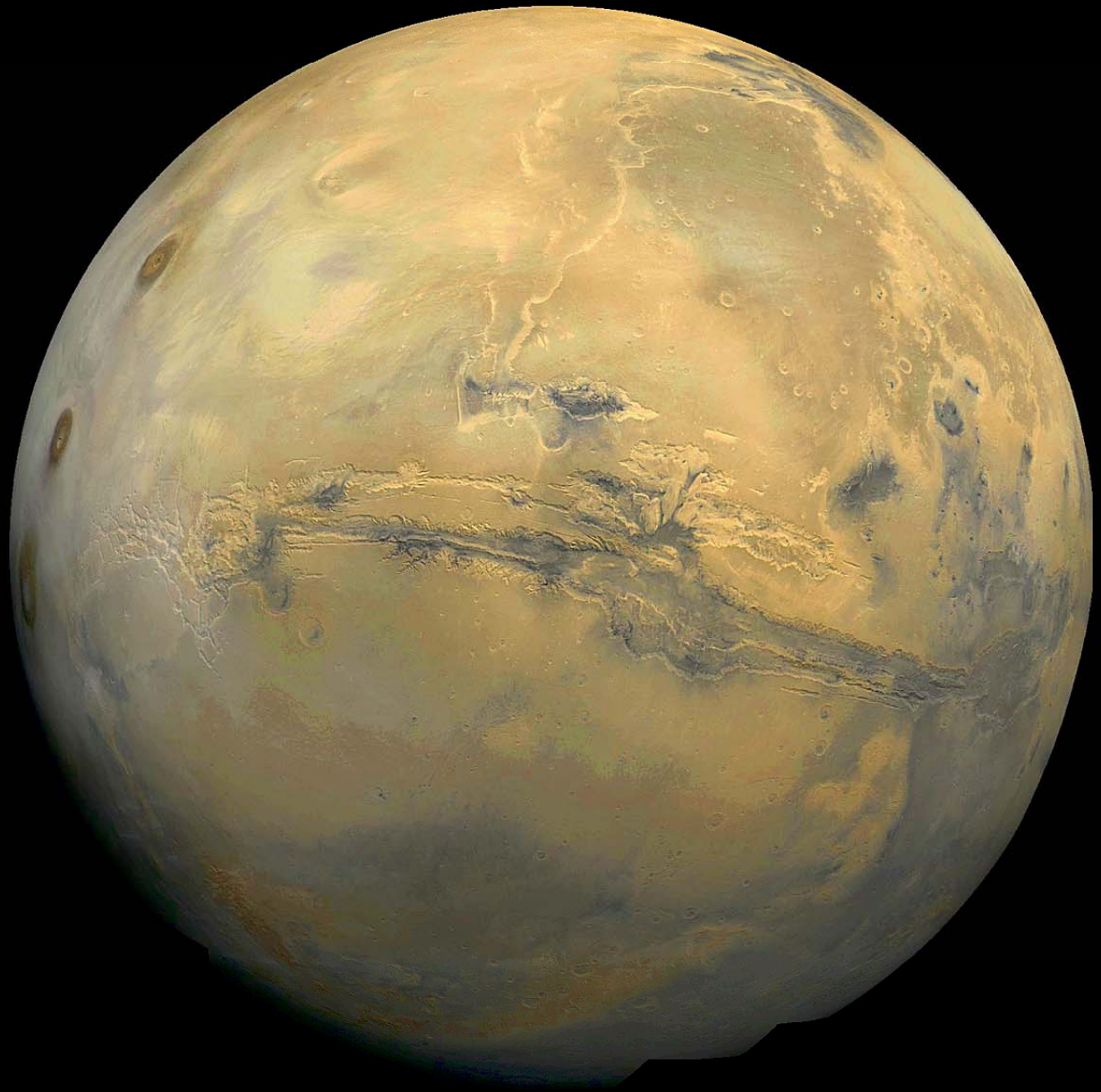
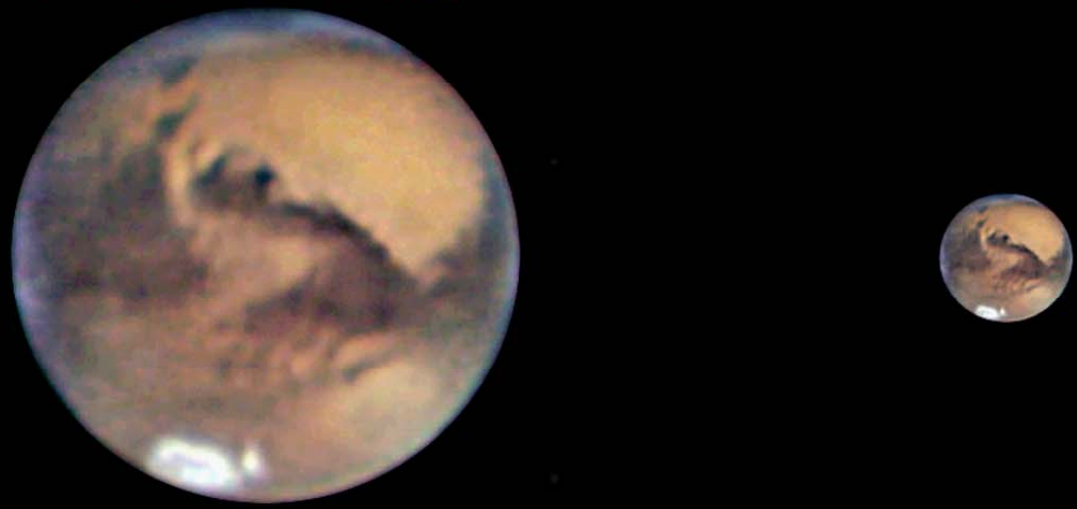
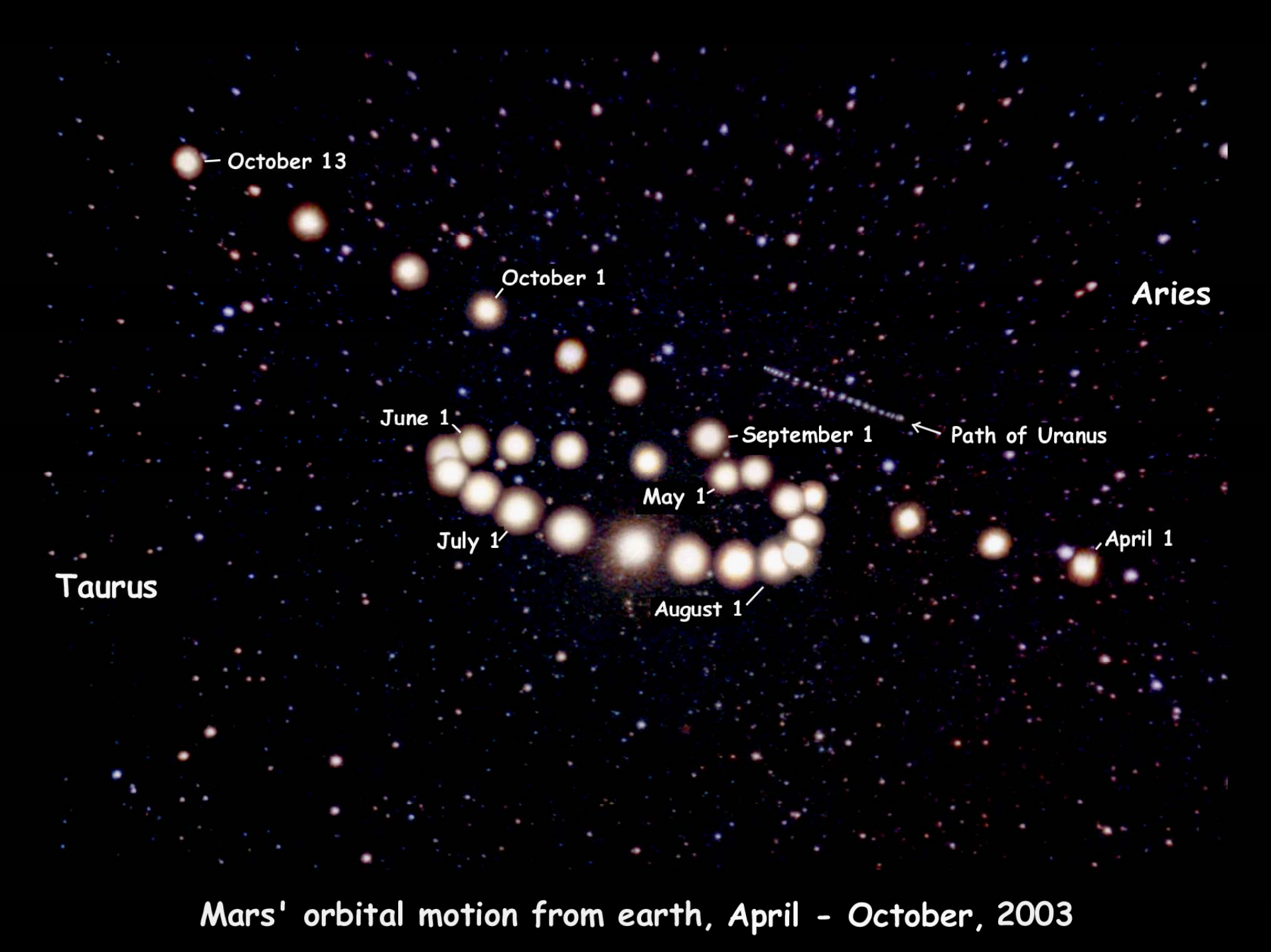




Mars big and small, bright and much less bright



Mars' orbital motion from earth, April - October, 2003

A Few Mars Related Numbers

minus 185° to plus 81°F

25°

0.38

140 million miles

1.52

24 hours, 37 minutes, 22 seconds

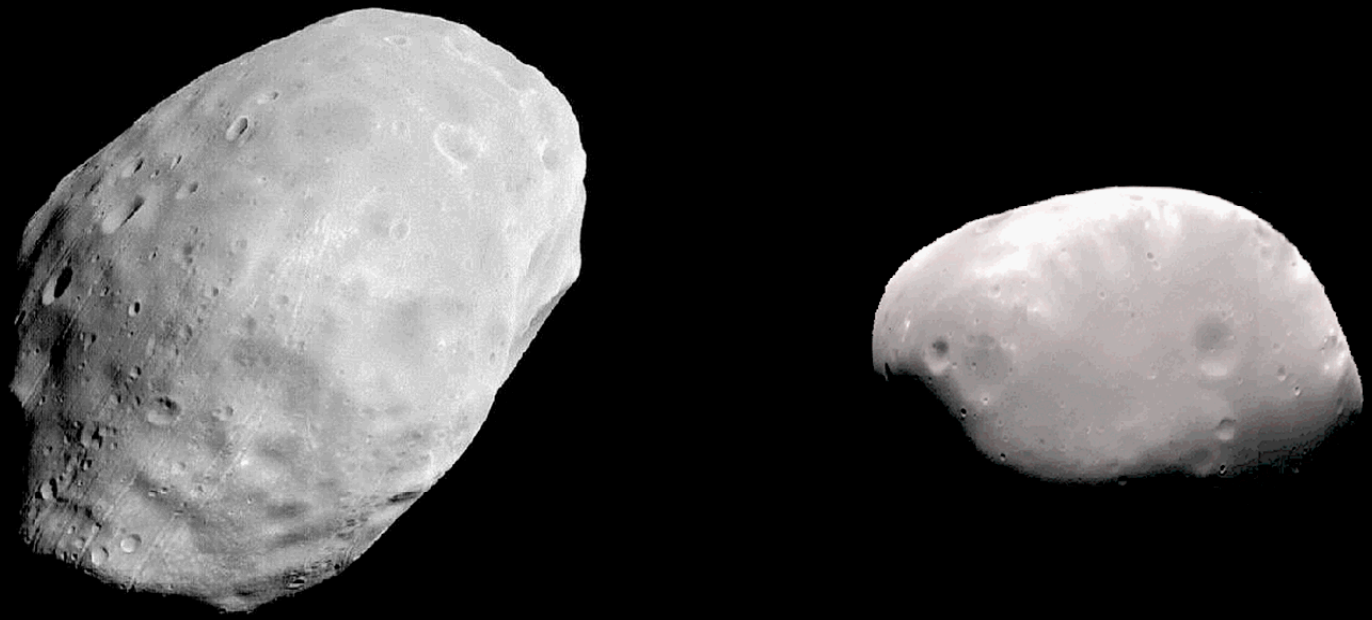
4,220

687 earth days

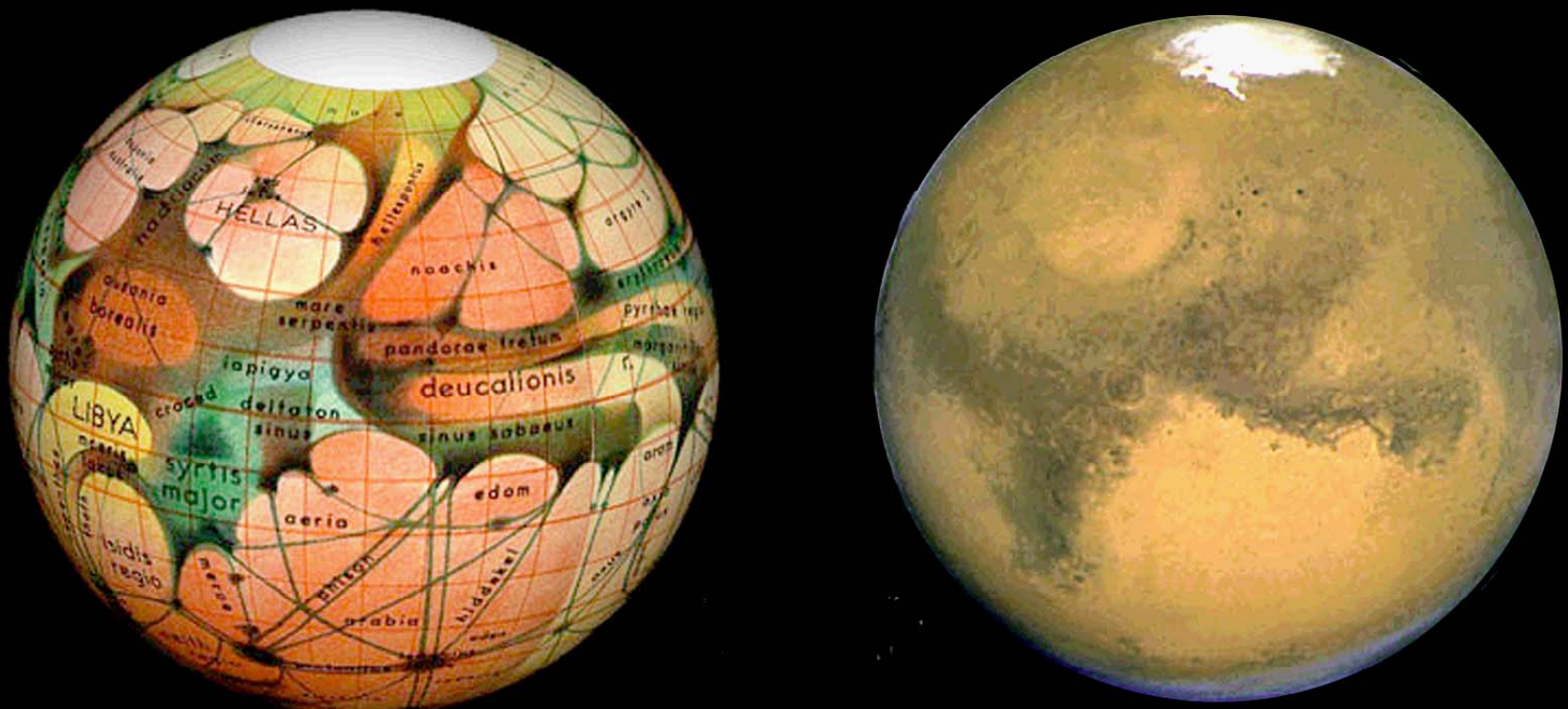
95.32%

2

Phobos and Deimos



Phobos and Deimos

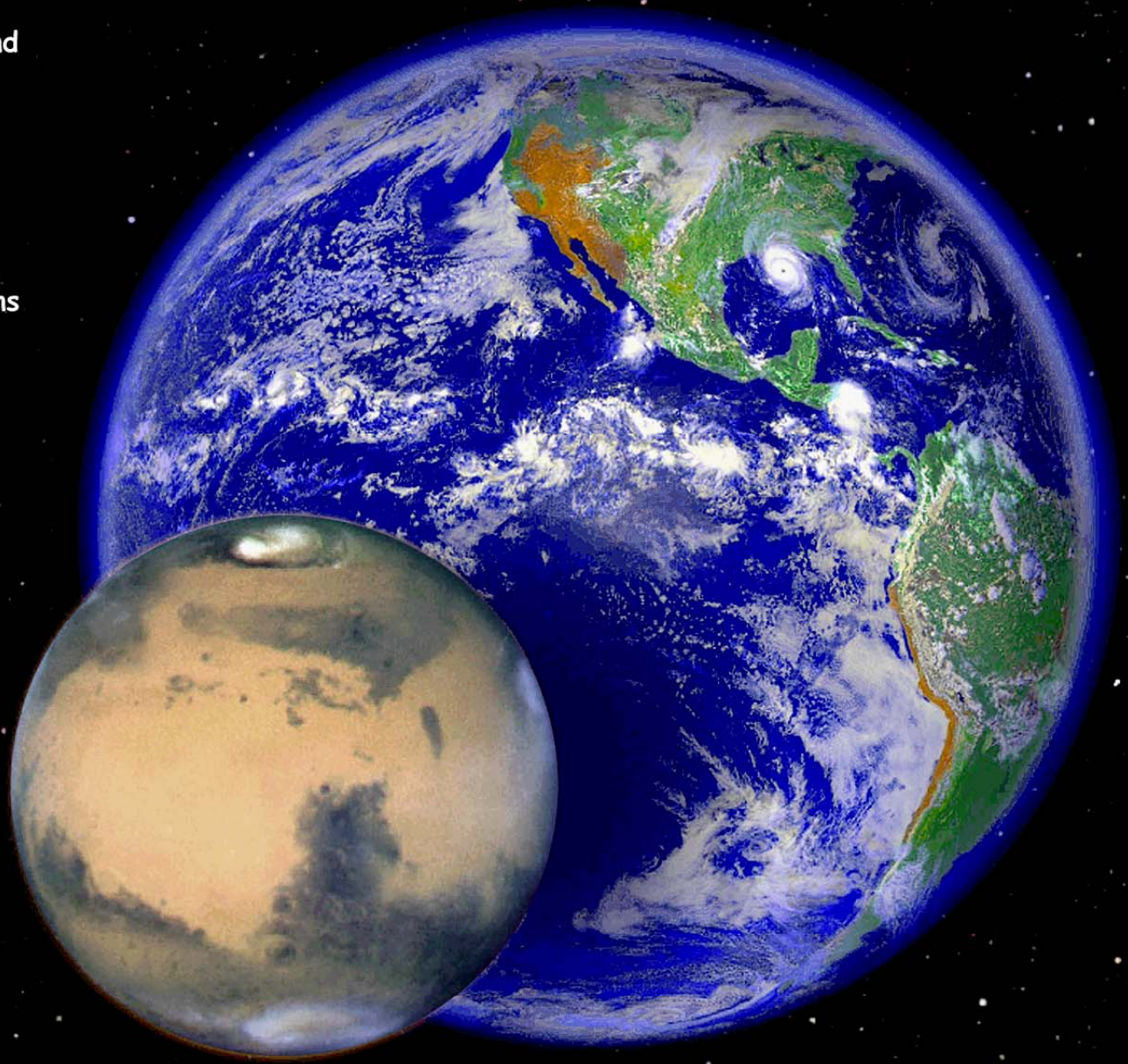


Mars according to Percival Lowell and the Hubble Space Telescope

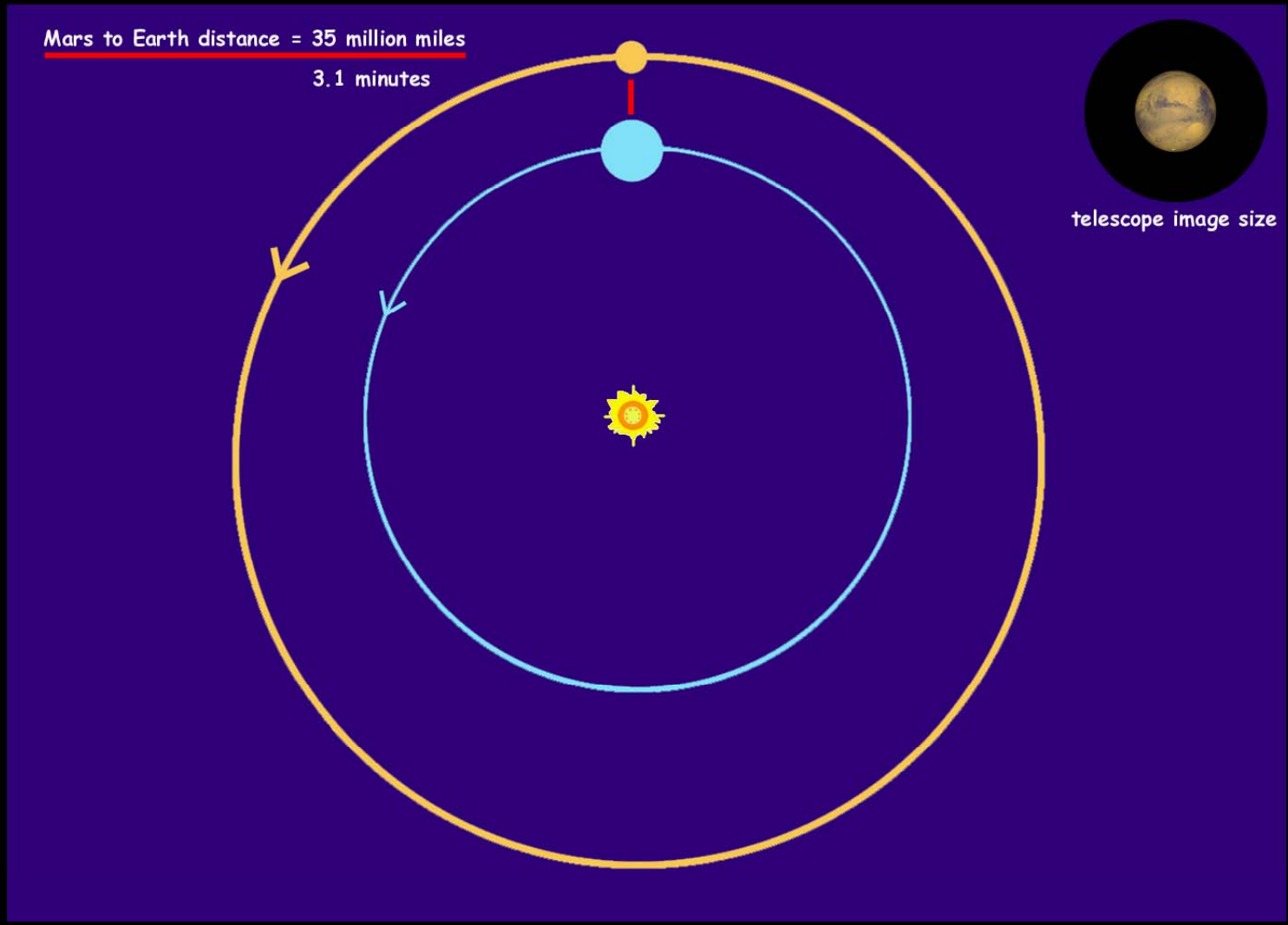
Areas of dry land

77% N/21% O_2
vs 95% CO_2

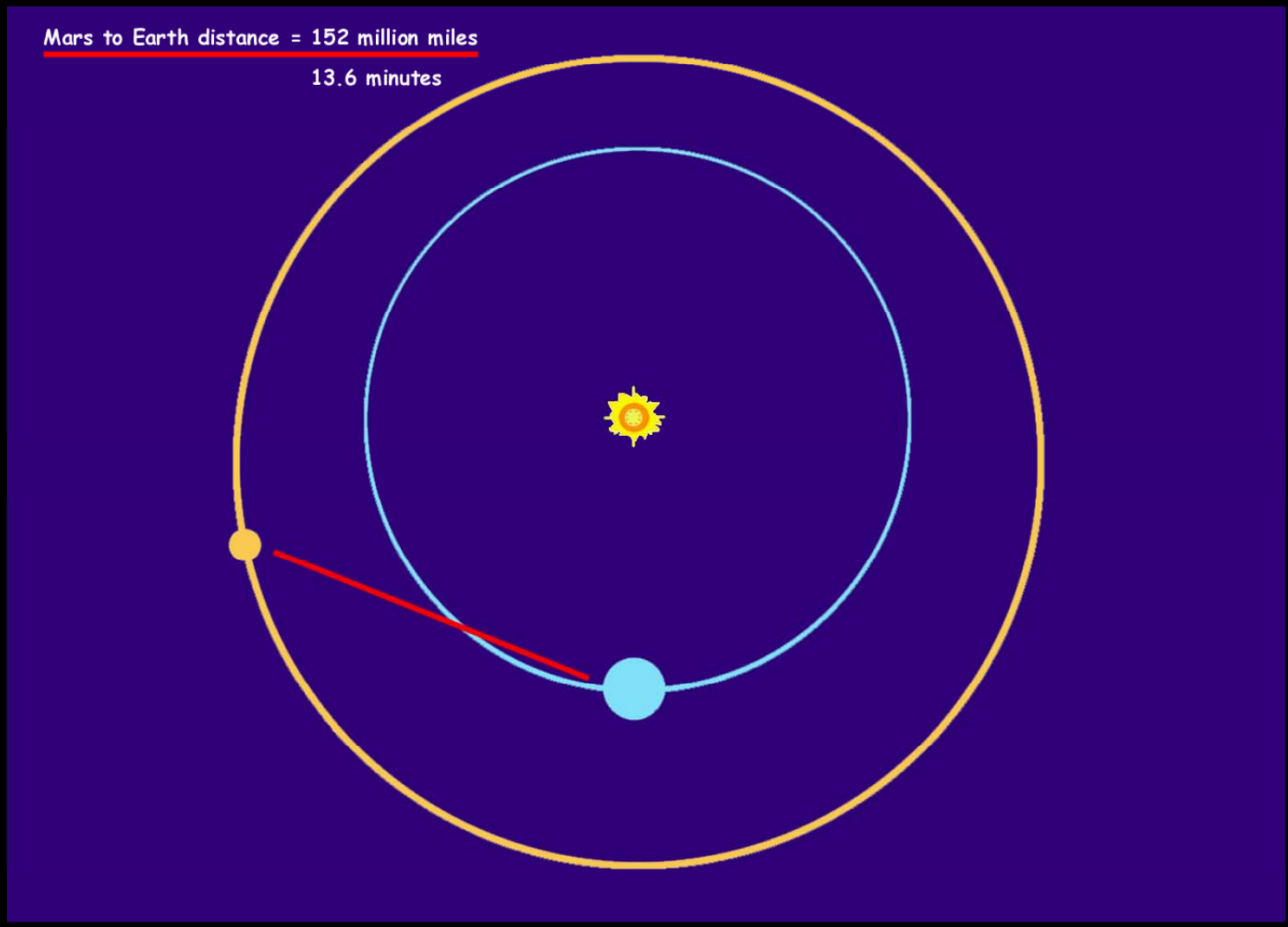
Length of seasons



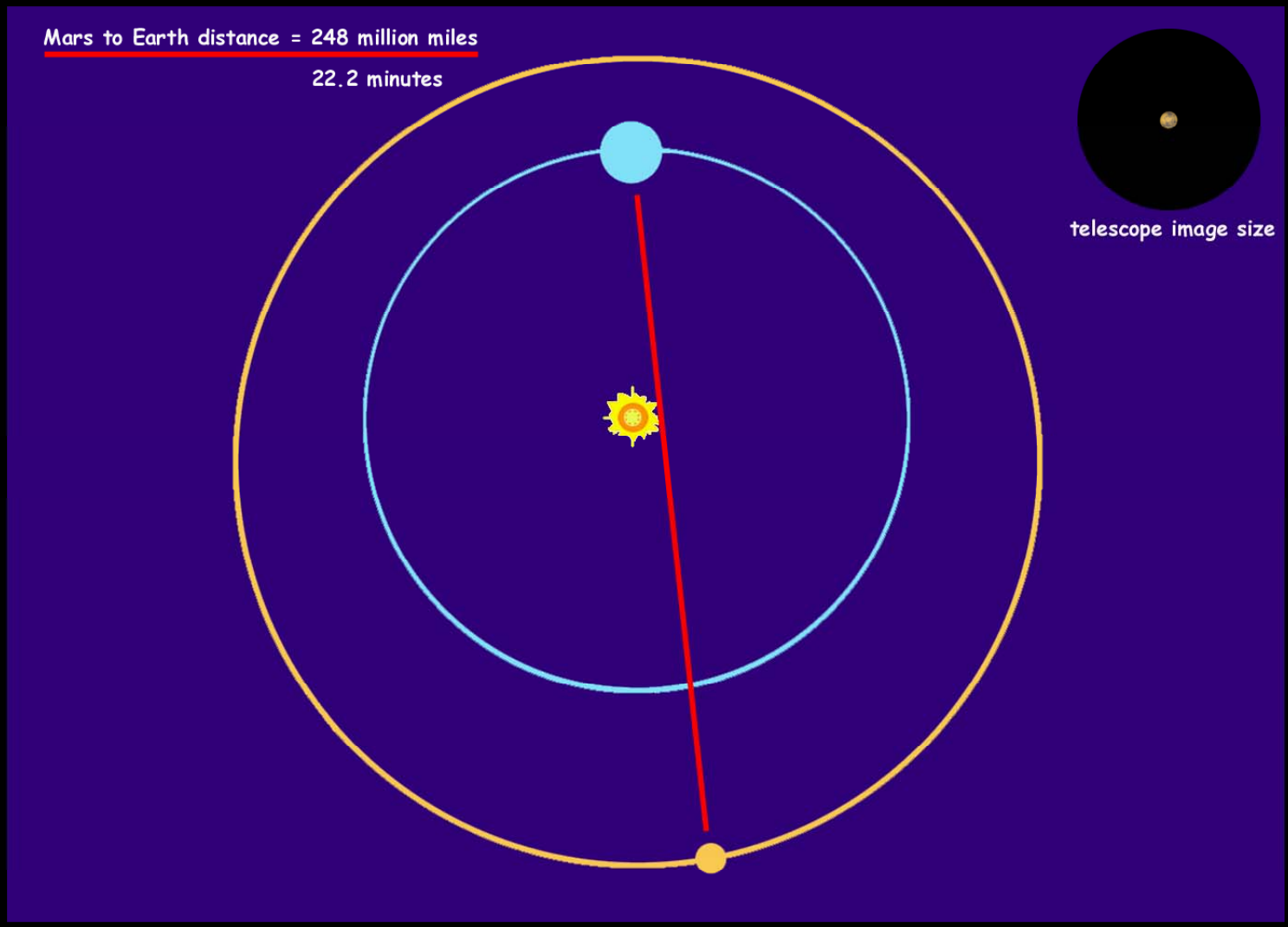
Mars and its sister planet



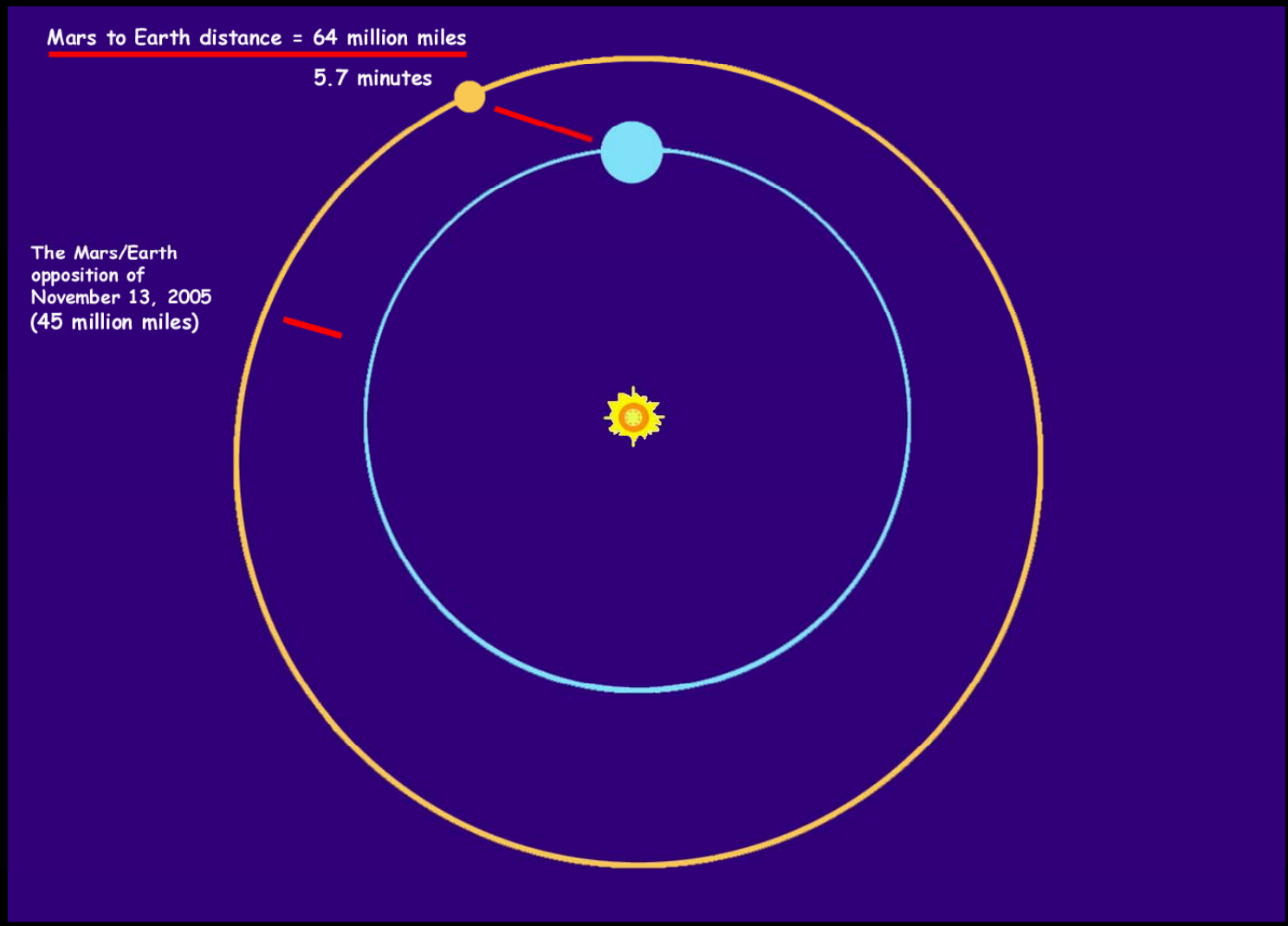
Mars and Earth on August 28, 2003



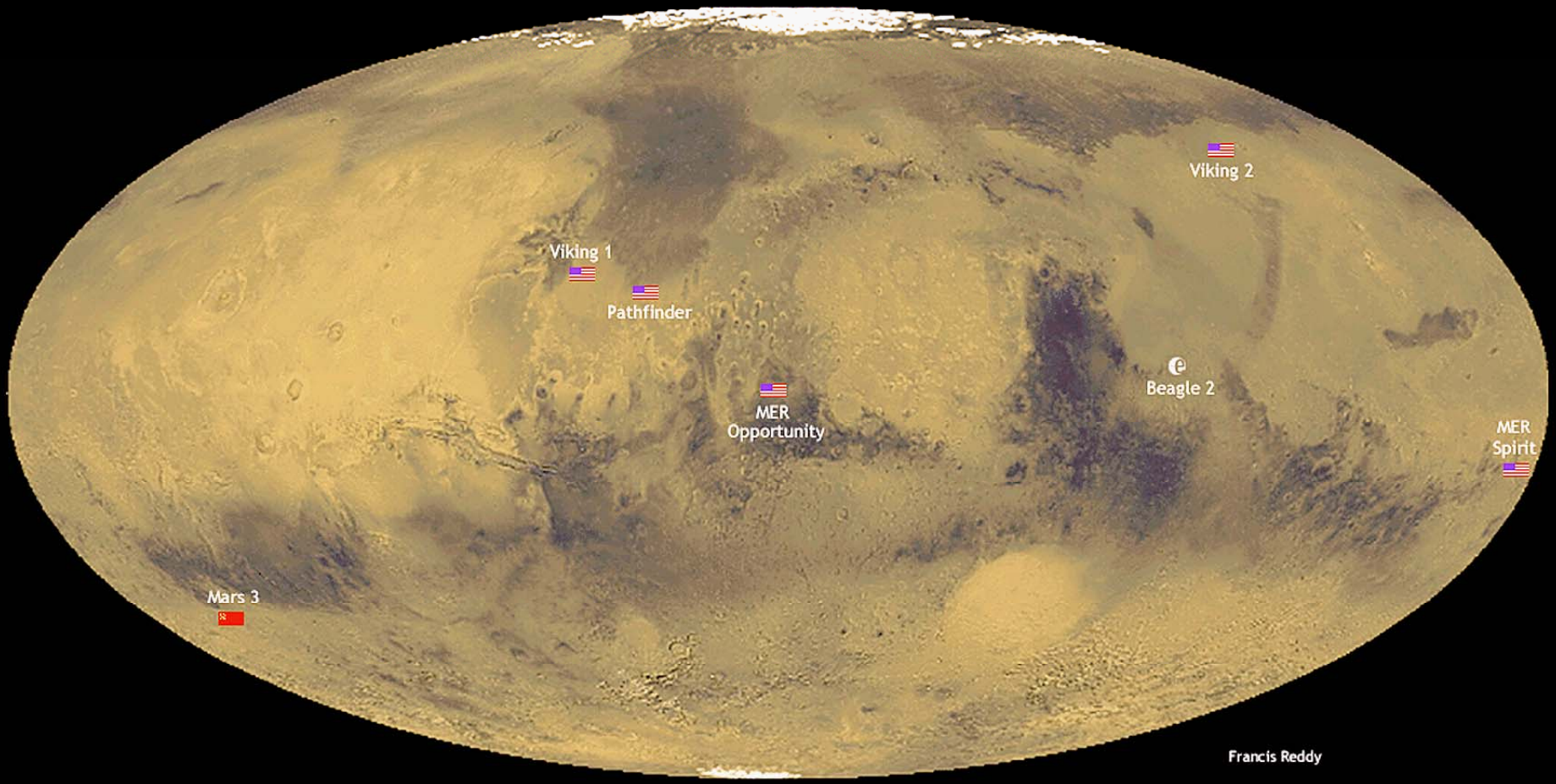
Mars and Earth on February 28, 2004



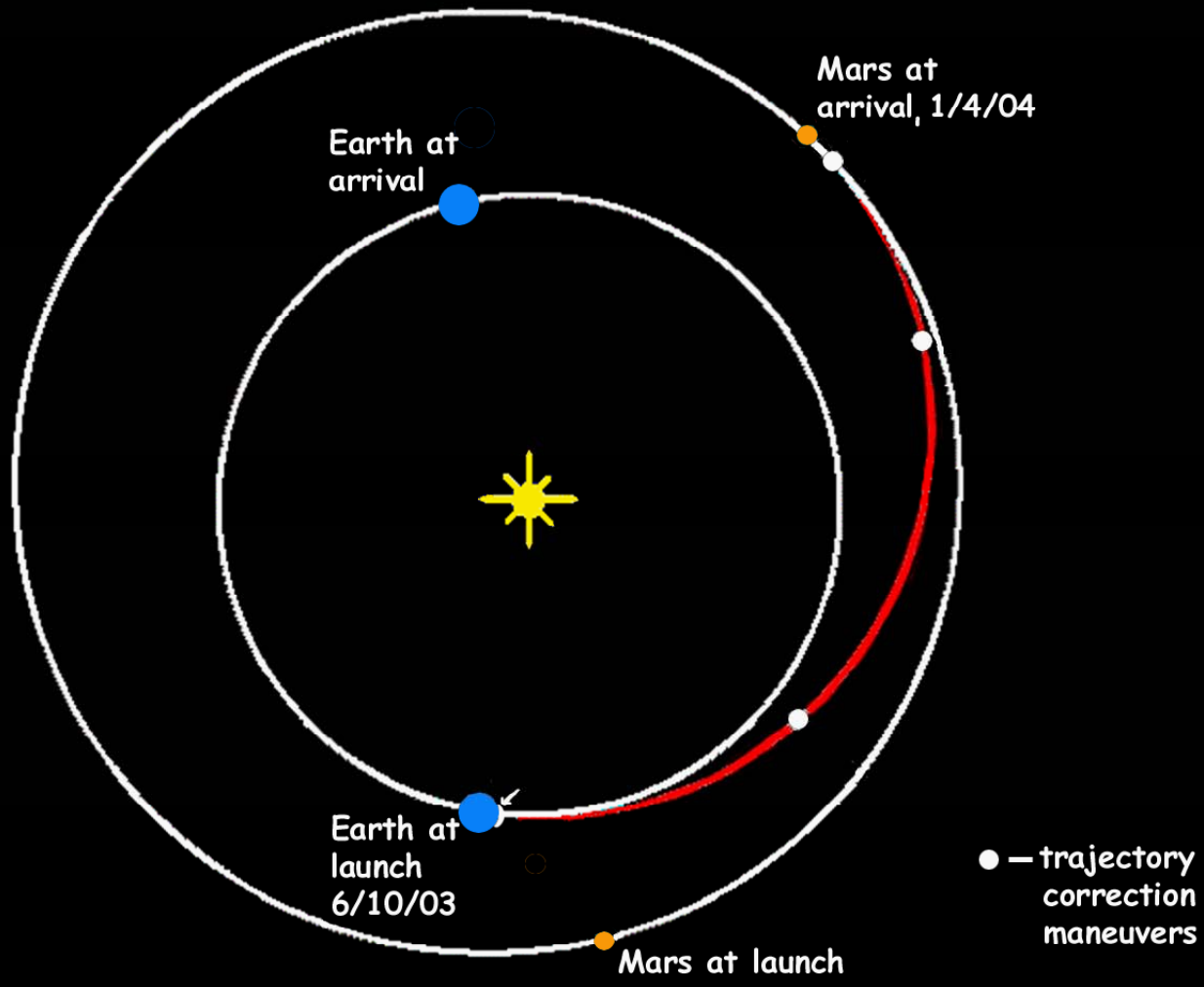
Mars and Earth on August 28, 2004



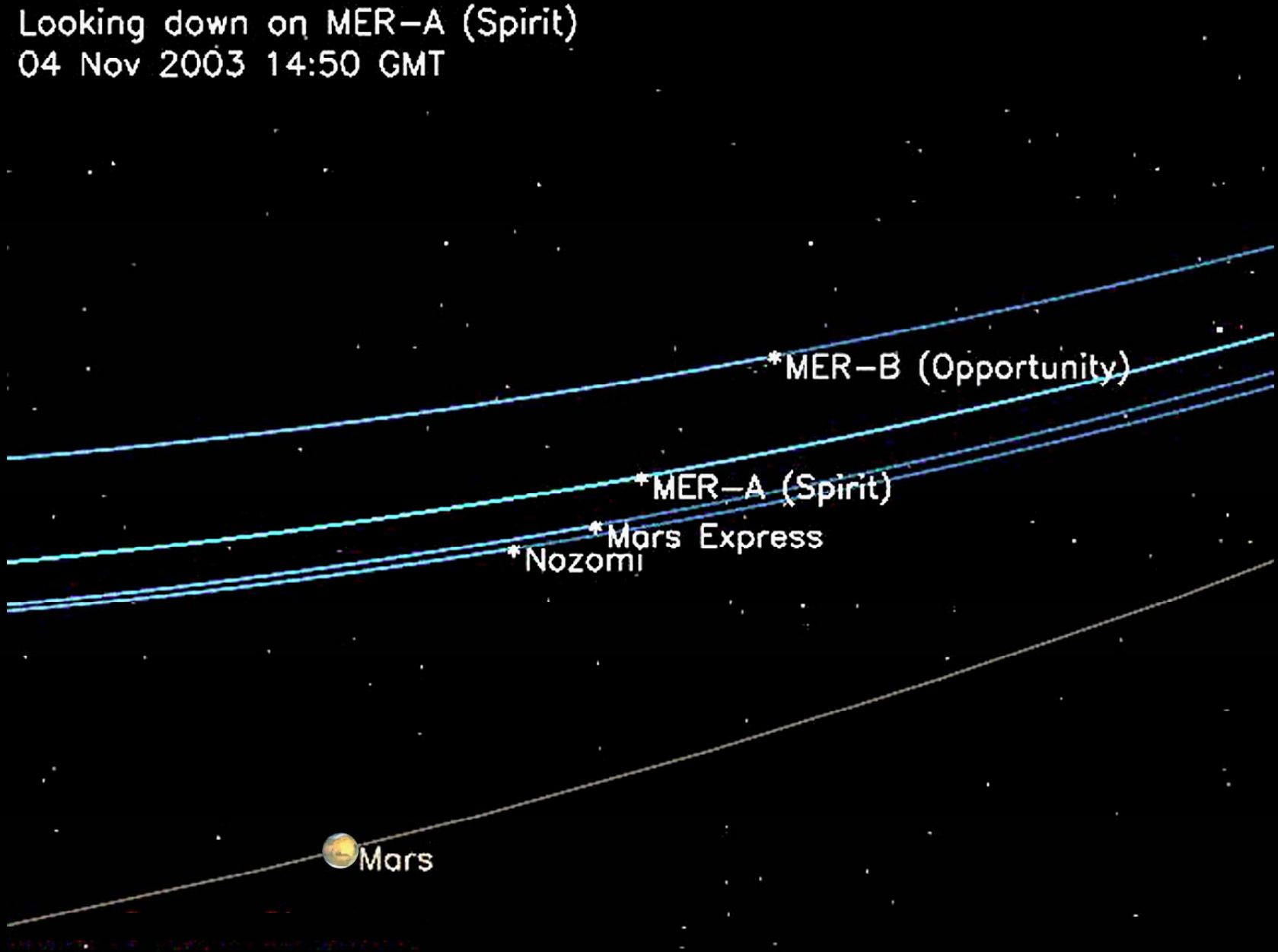
Mars and Earth on August 28, 2005



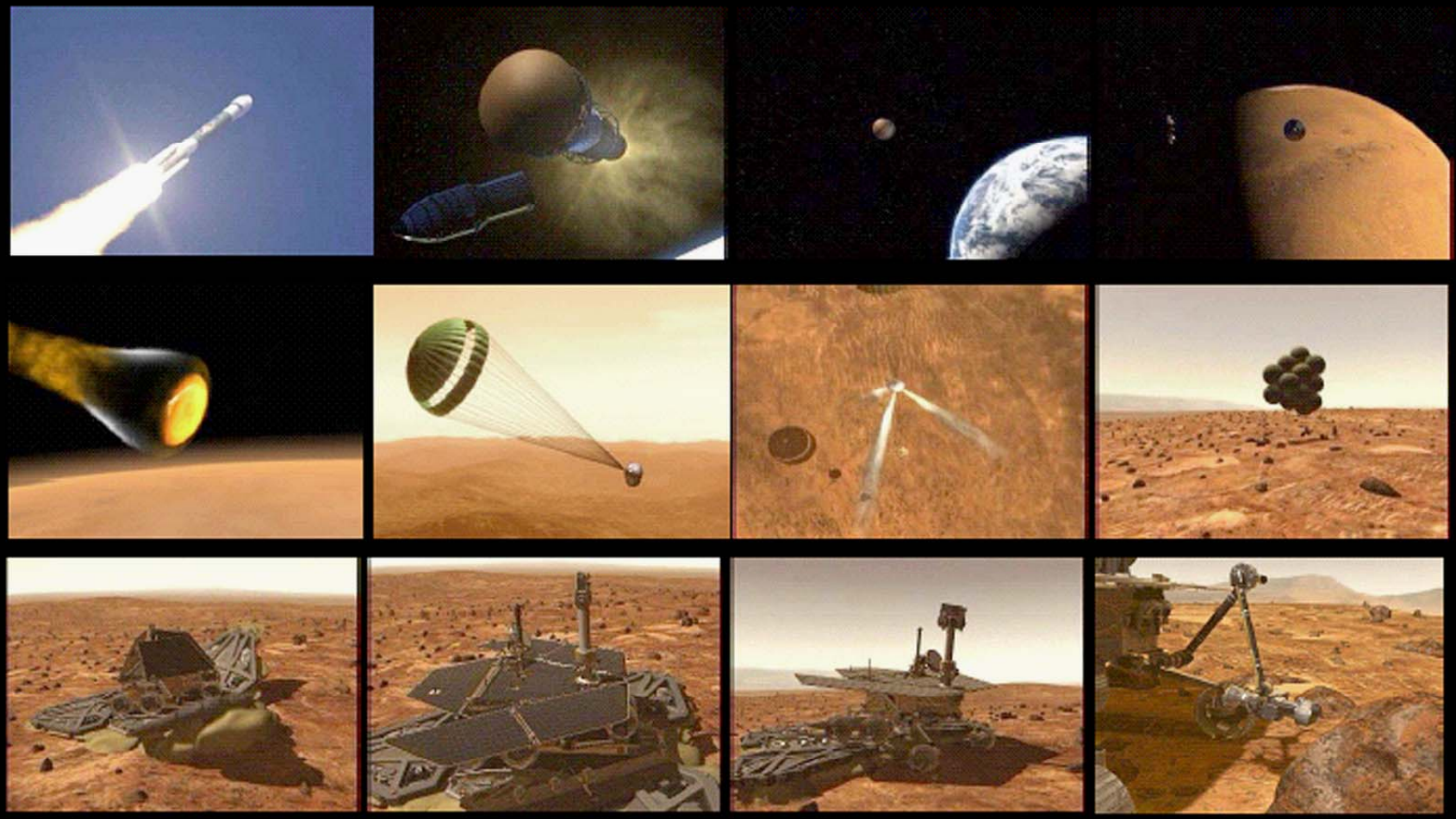
Mars landing sites -- Molleweide projection



Flight path for MER1, Spirit



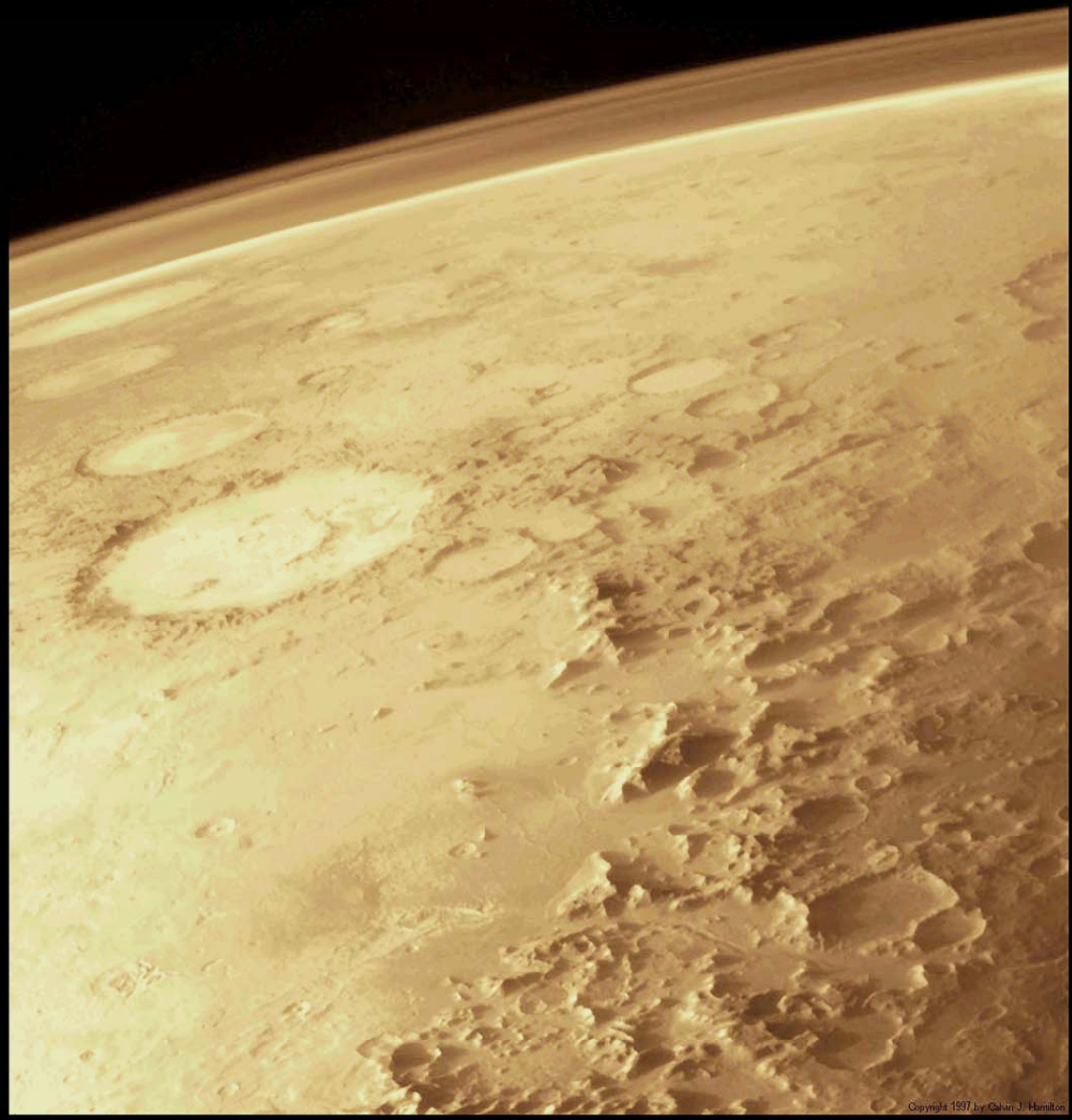
Four Mars Missions on November 4, 2003



Images From Mission Animation by Dan Maas

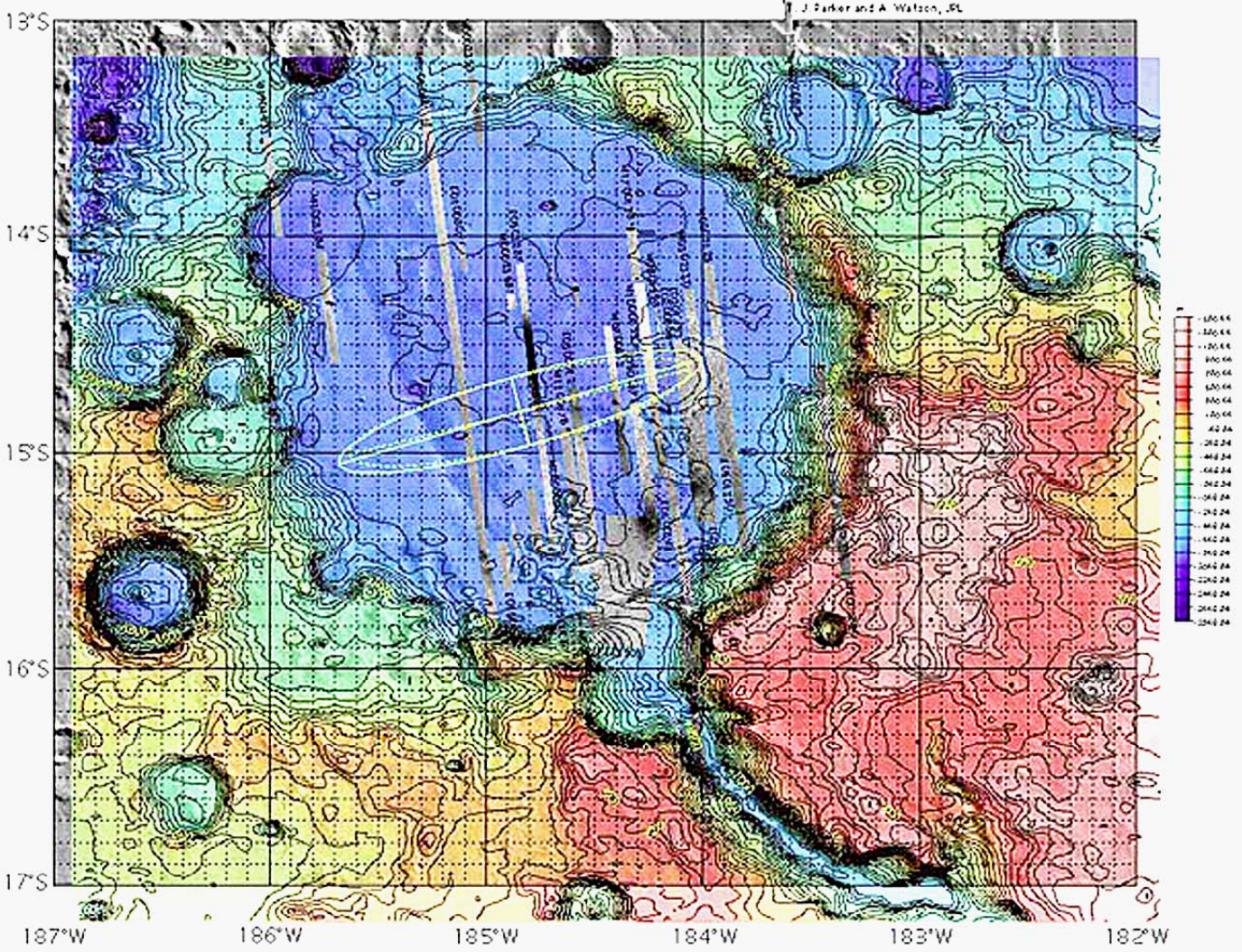
Phases of the MER Missions:

-- launch and cruise
-- entry/descent/landing
-- egress and surface operation



A view of Mars' atmosphere

Gusev Crater Site (TCM-5 DeltaDOR, -2Day:
MER-A; Open of window=dashed, Close=solid)

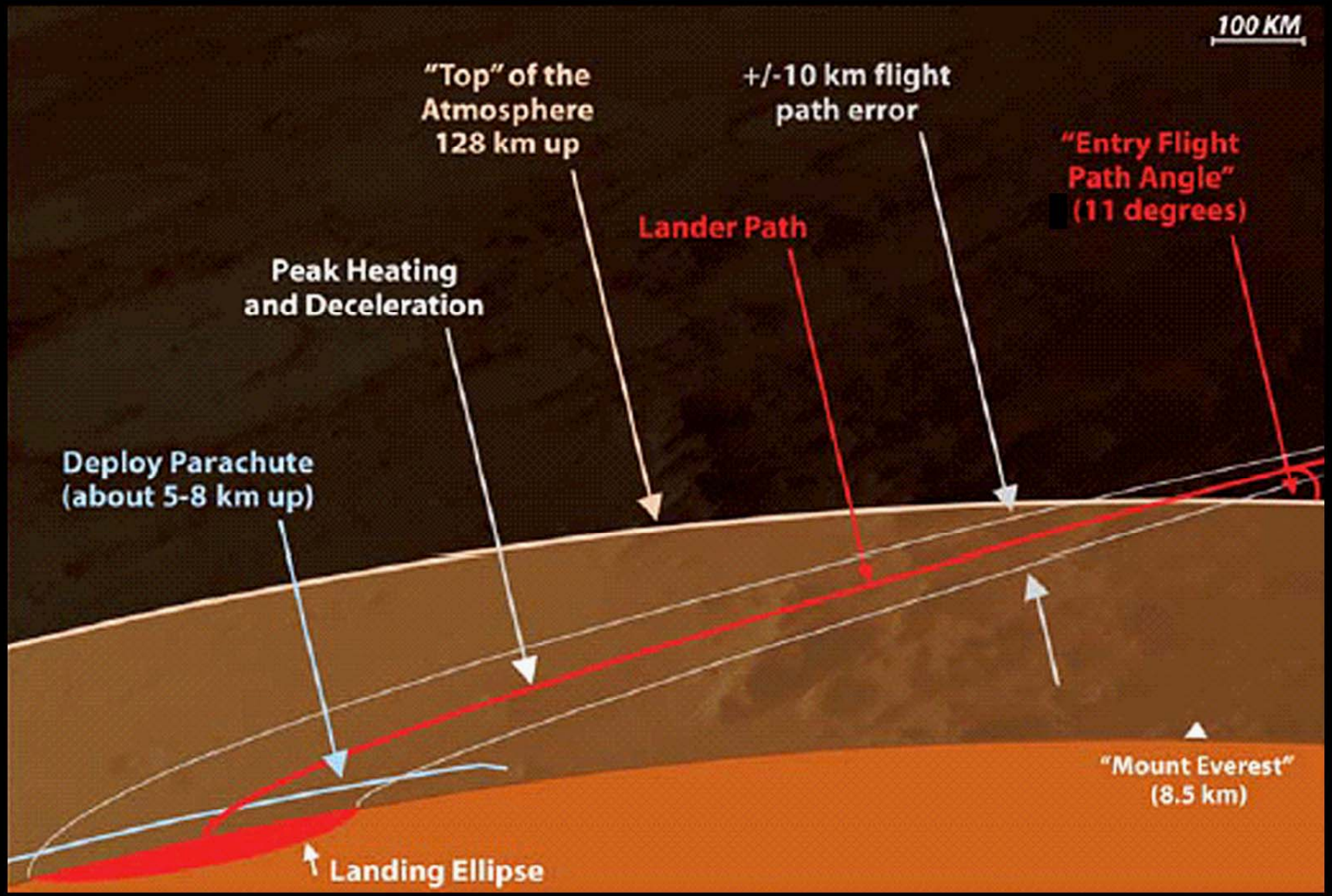


USGS

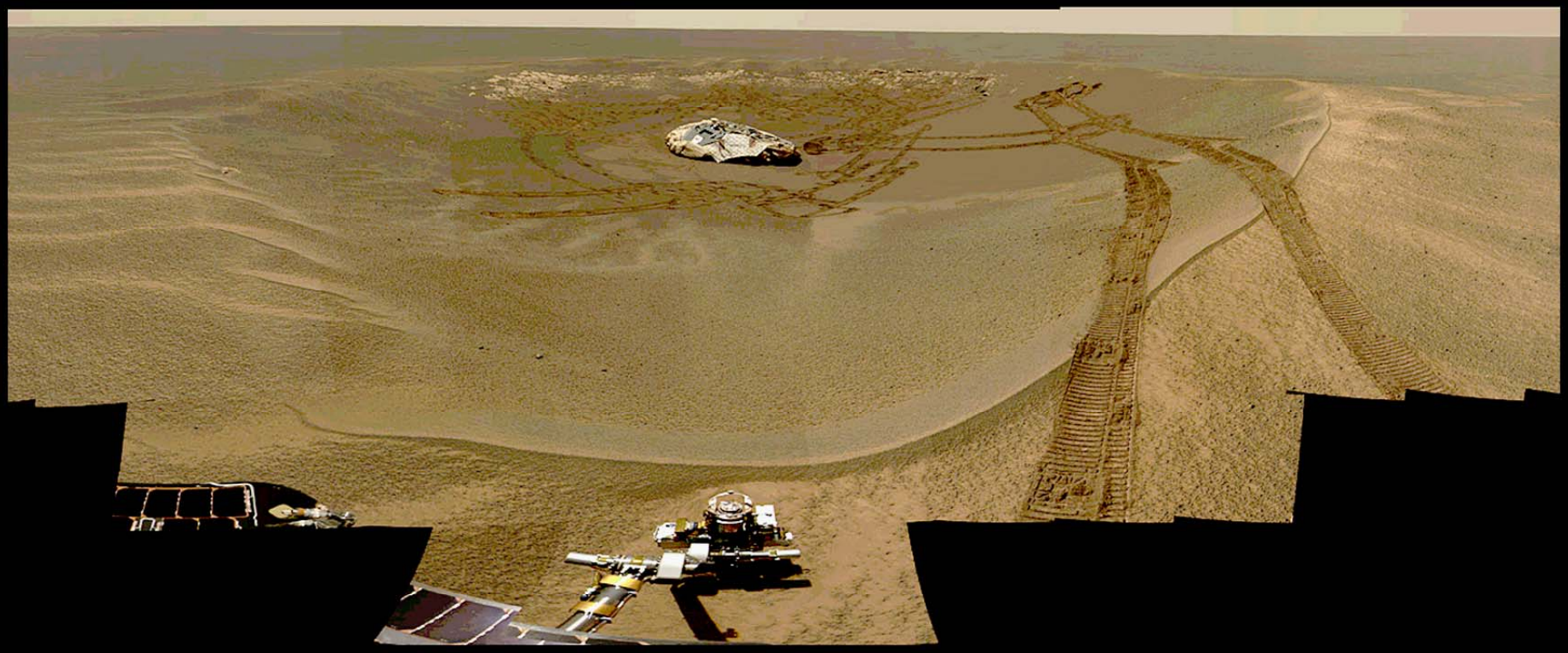
Mars Exploration Rover Project

Potential Landing Site Map, Gusev Crater

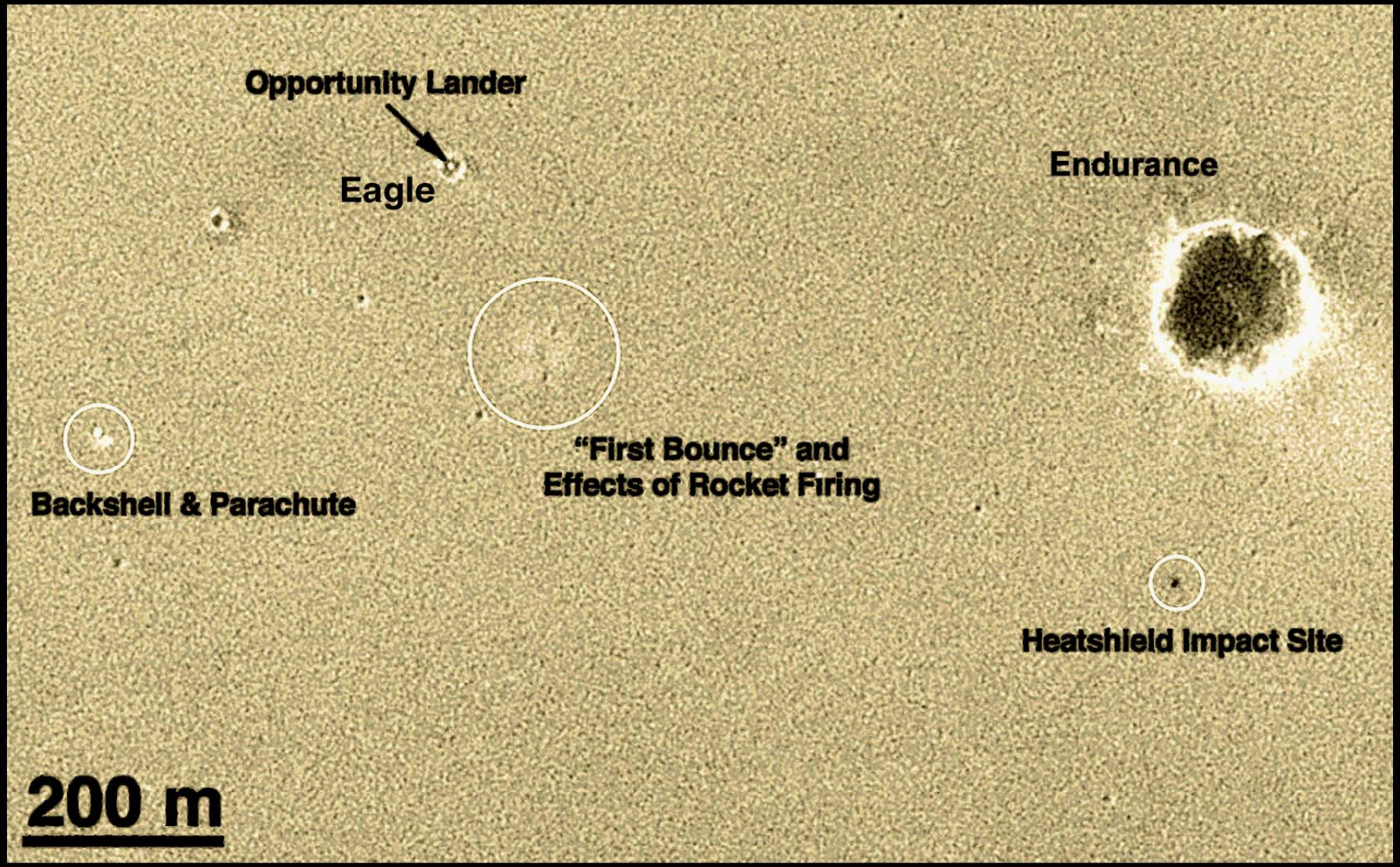
http://astrogeology.usgs.gov



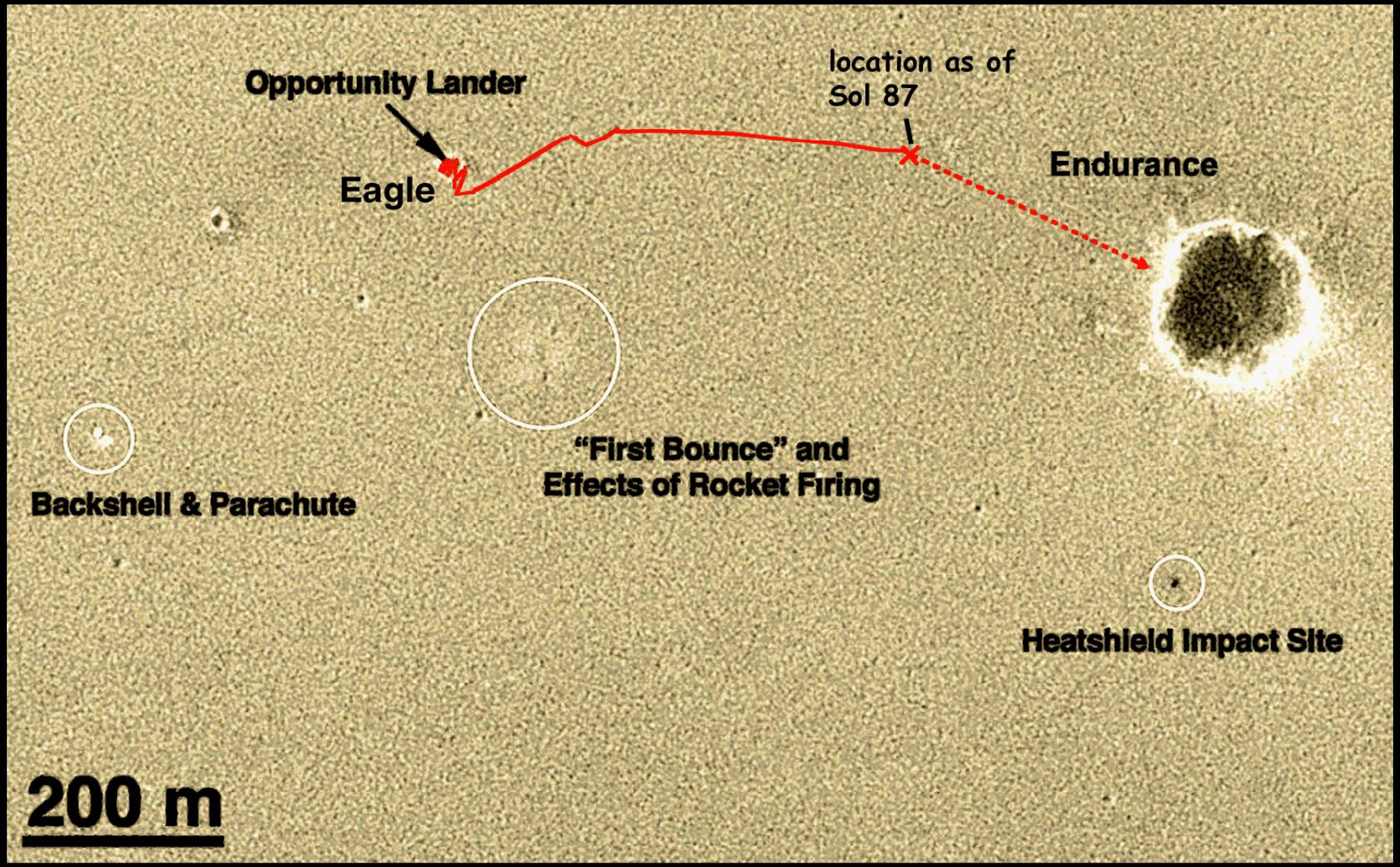
11° -- The critical atmospheric entry angle (for Mars)



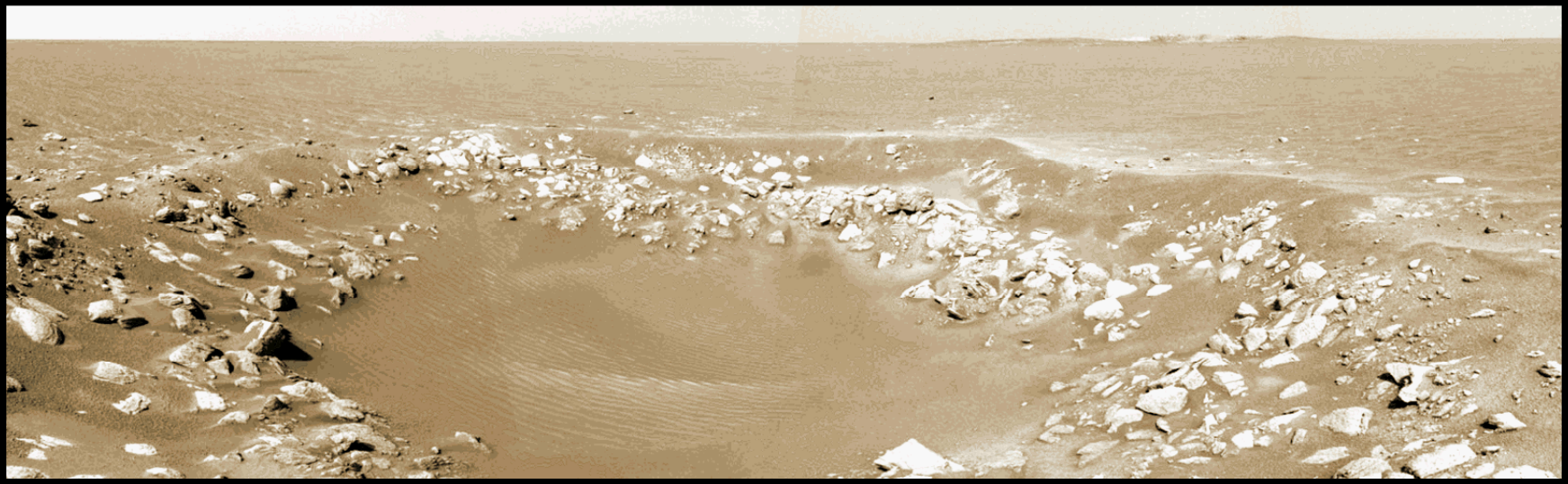
An Opportunity (MER2) panorama of its landing site, Eagle Crater



Overview of Opportunity's landing site (courtesy of Odyssey)



Overview of Opportunity's landing site (courtesy of Odyssey)



Opportunity's view of a small crater (Fram?) enroute to Endurance

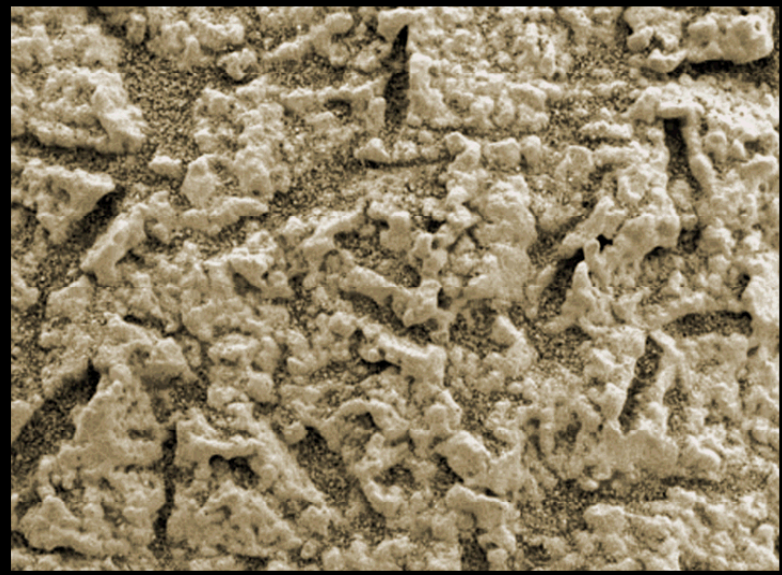
Was there (is there) water on Mars?

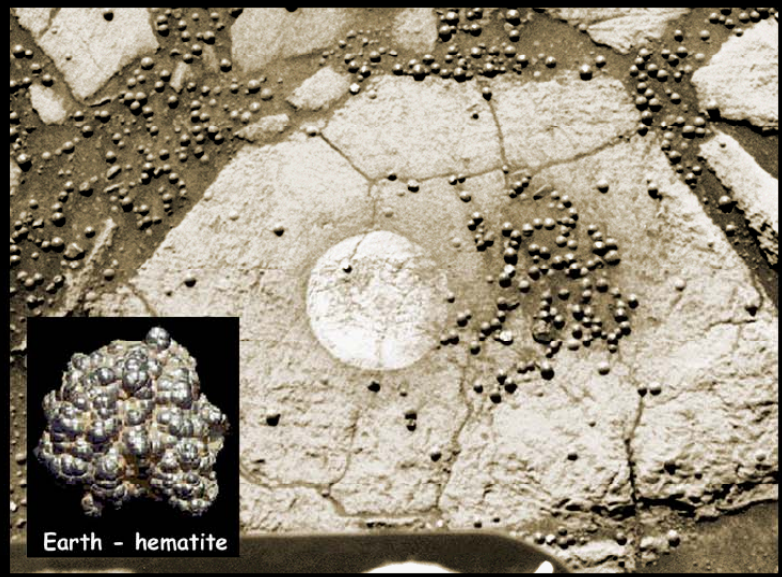
The evidence:

- -hematite concretions (blueberries)
- -vugs
- -flow patterns
- -jarosite and evidence of other salts (Mg, Cl, Br)

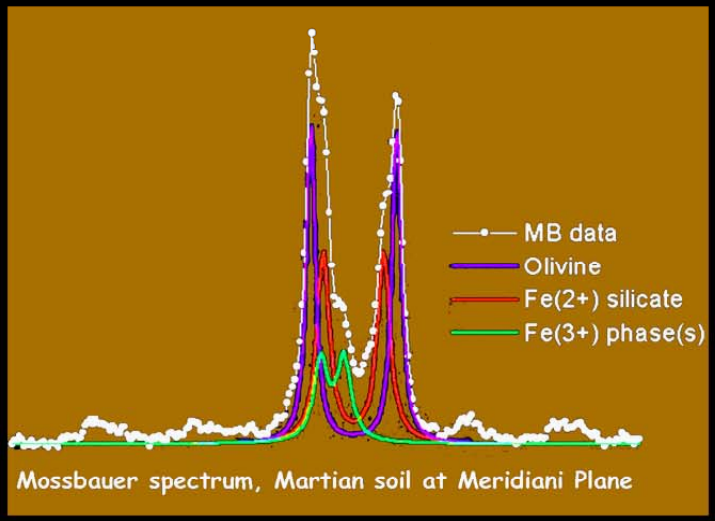
The tools:

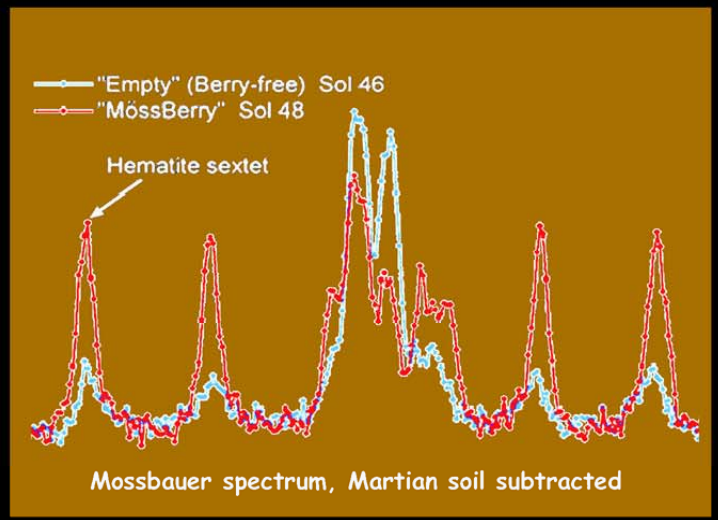
- -cameras (crossbedding, hematite spheres, vugs)
- -alpha particle x-ray spectrometer
- -Mossbauer spectrometer
- -thermal emission spectrometer

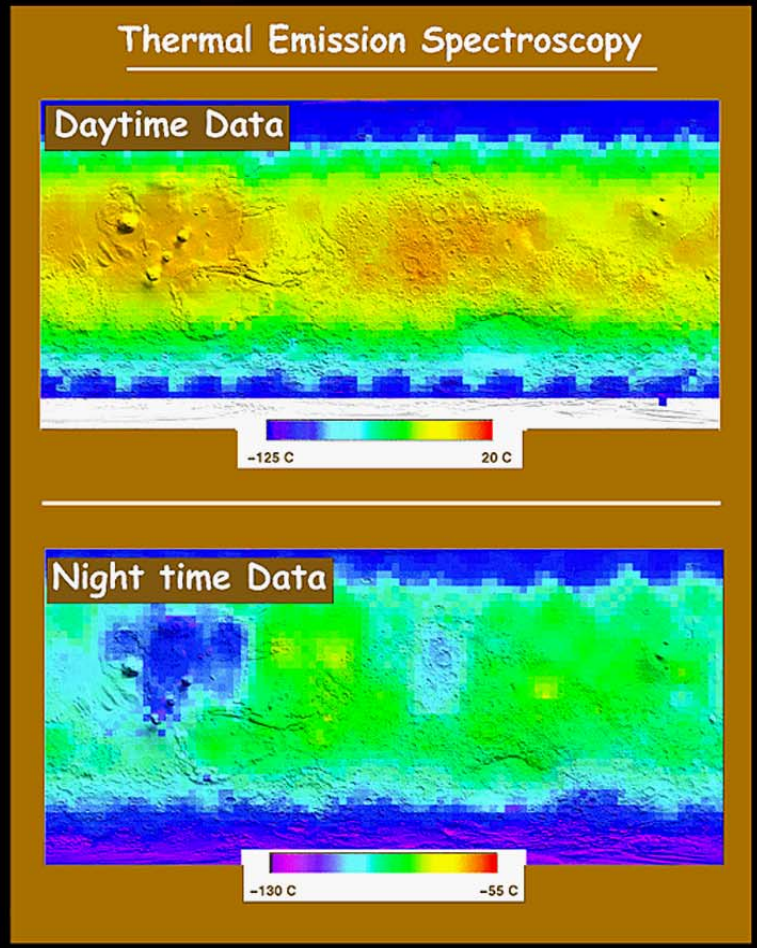




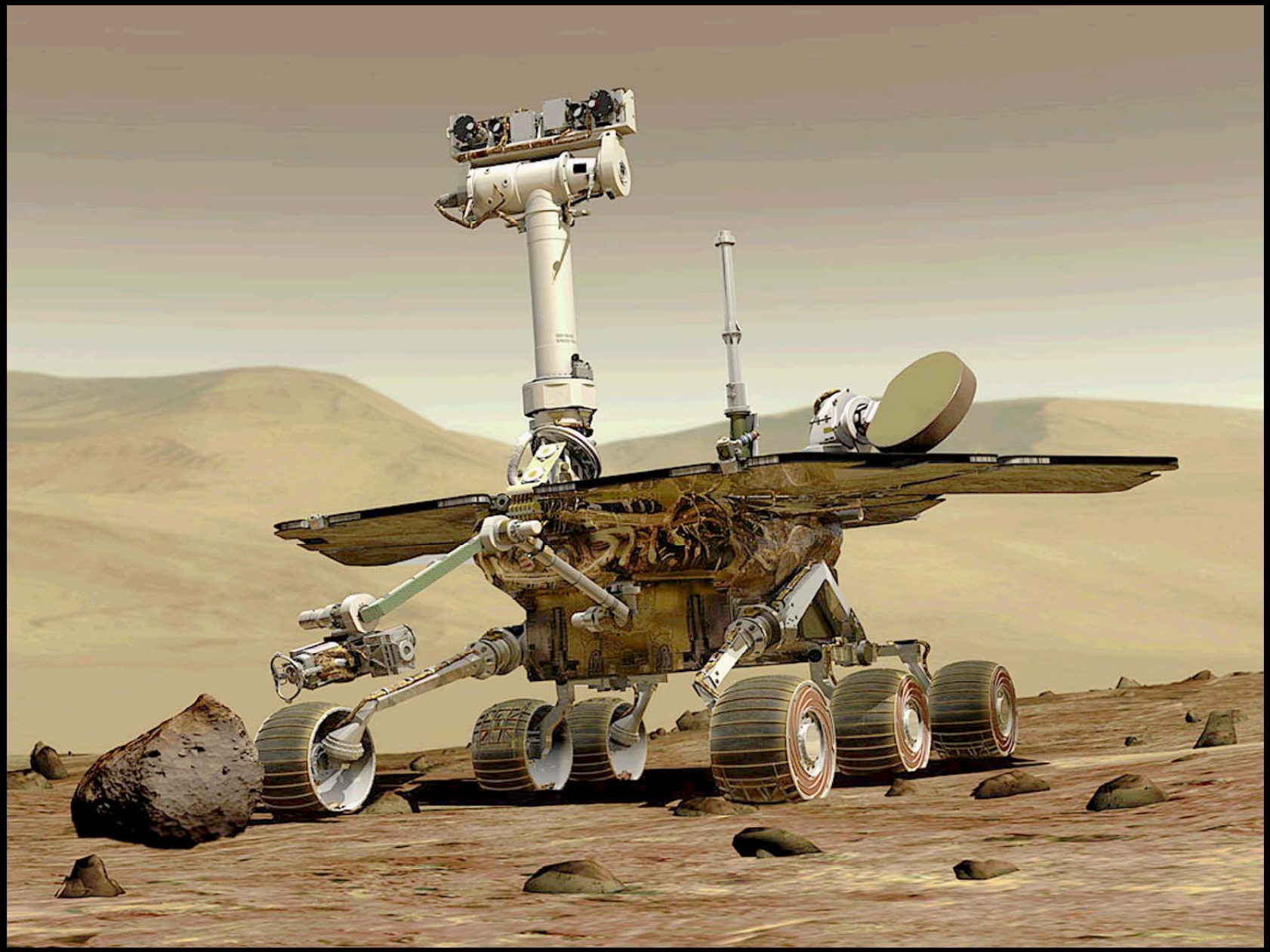
The evidence for water -- visual



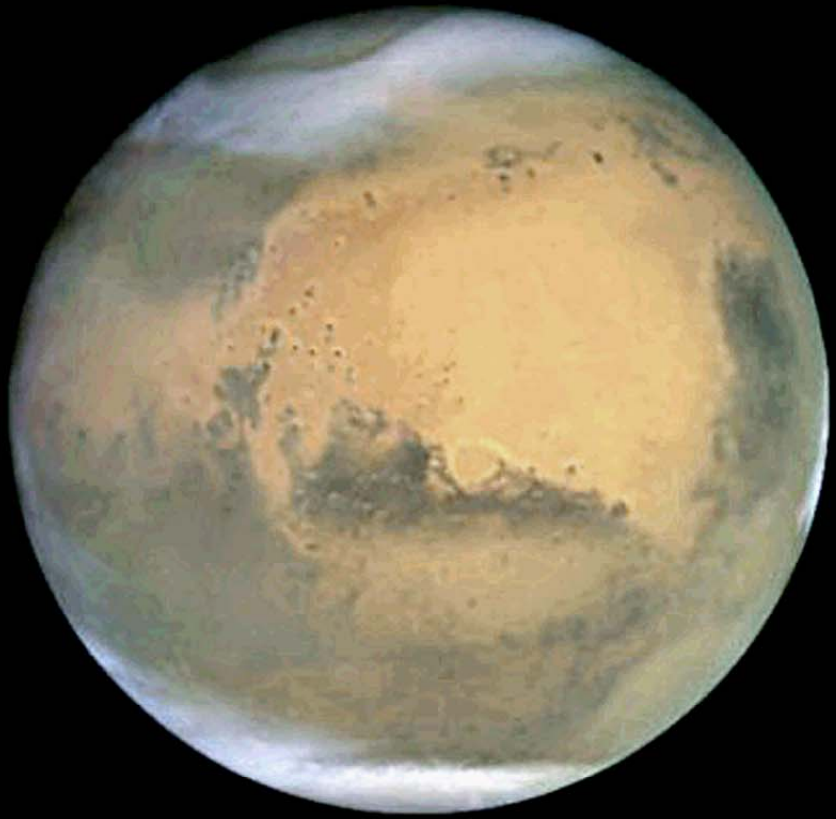




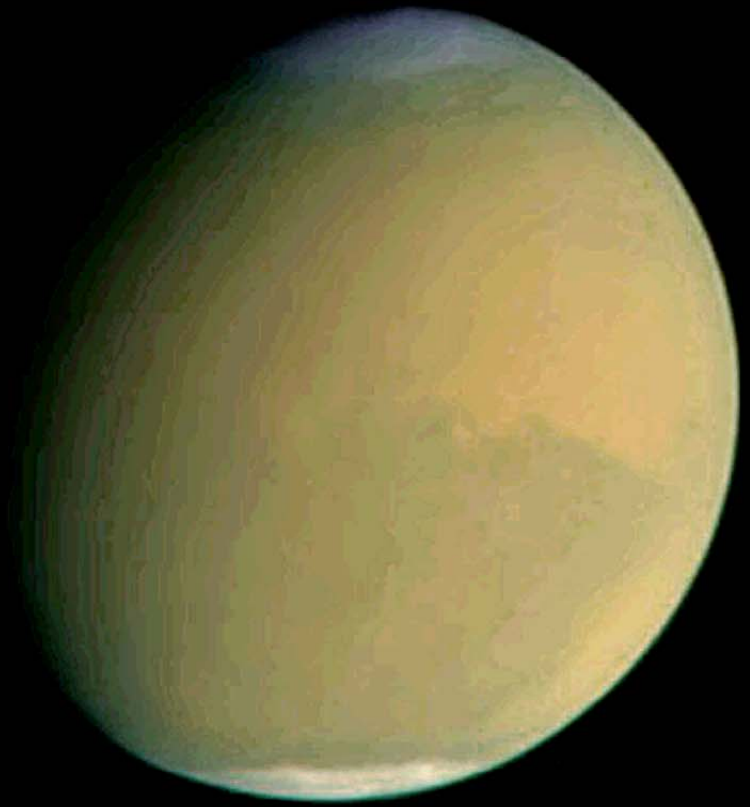
The evidence for water -- spectroscopic



The Mars Rover(s), January-May, 2004

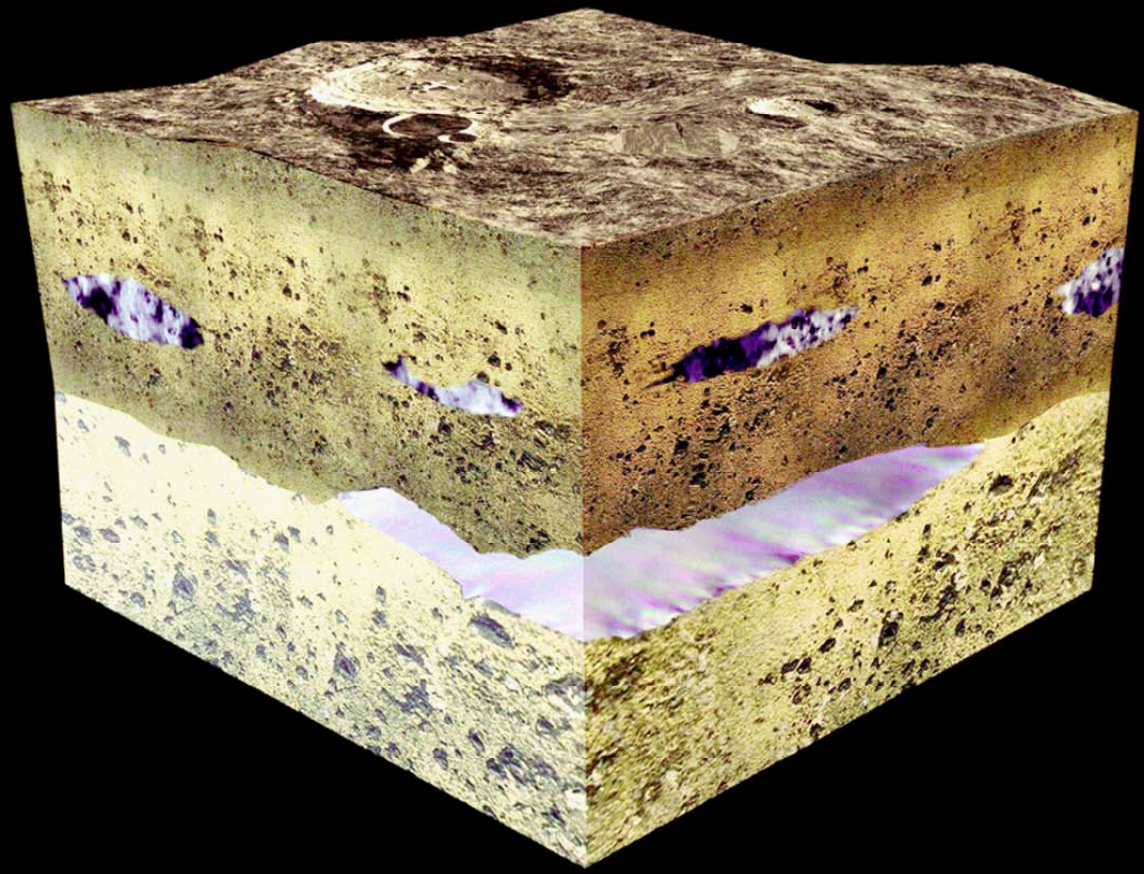


June 26, 2001



September 4, 2001

Mars before and during a dust storm



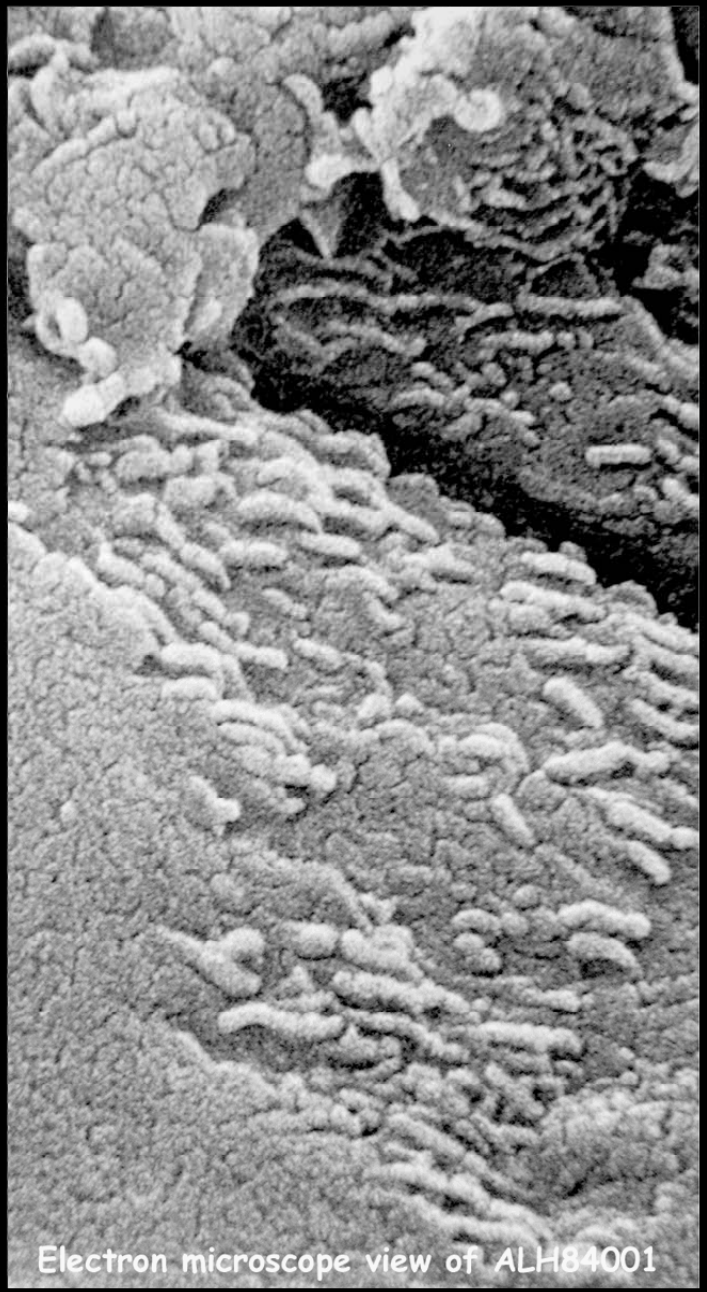
The search for Martian water

The Sahara Desert with radar strip

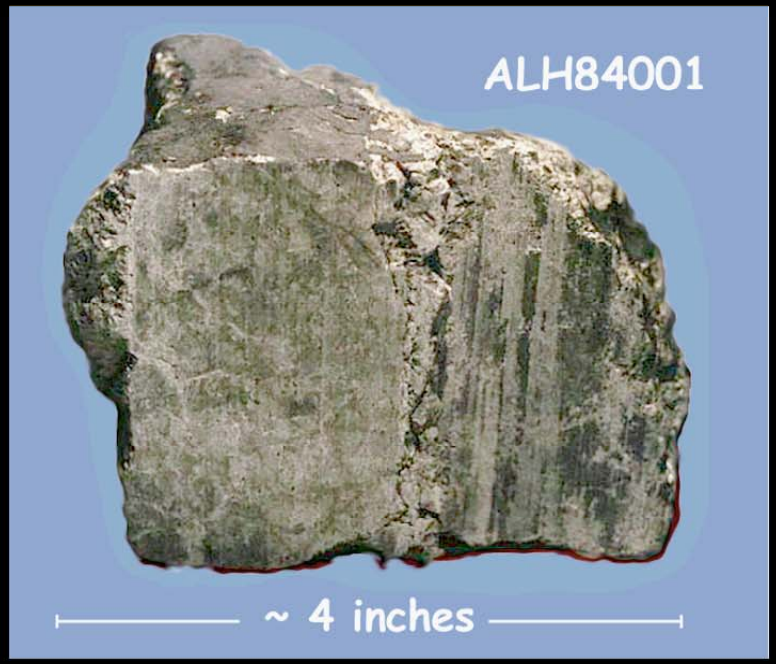
Mars Exploration: past, present, future

- Mars Observer (1992)
- Mars Pathfinder (December 1996 - March 1998)
- Mars Global Surveyor (November 1996 - present)
- Mars Climate Orbiter and Mars Polar Lander (1998-99)
- Mars Odyssey (April 2001 - present)
- Mars Exploration Rovers (present)

- Mars Reconnaissance Orbiter (2005)
- Phoenix Mars Scout (2007)
- Mars Science Laboratory (2009)
- Mars Telecommunications Orbiter (2009)
- And Beyond



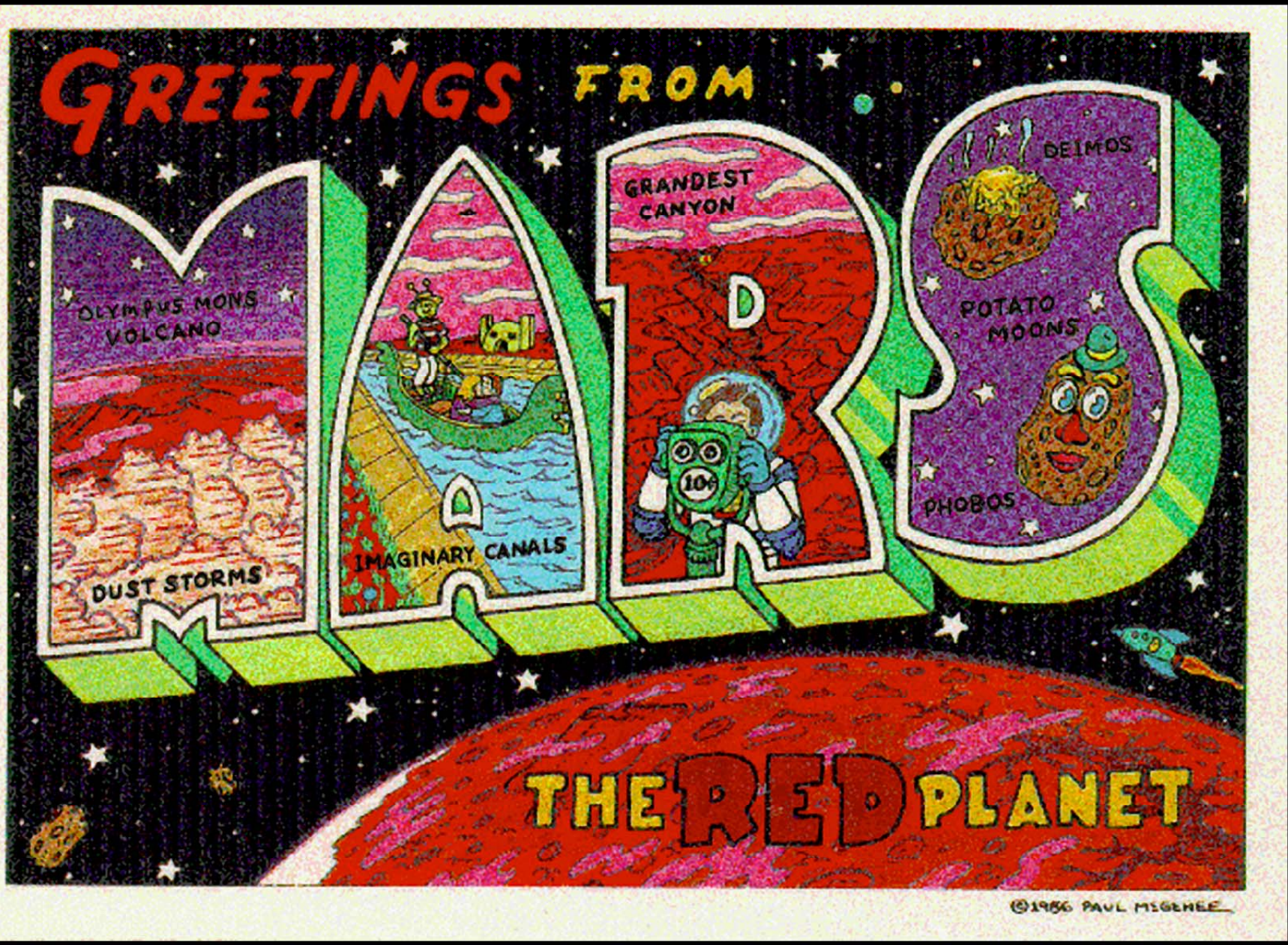
Electron microscope view of ALH84001



← Are these fossilized microbes?

ALH84001 is a meteorite which was found in Antarctica in 1984. It is known to be of Martian origin on the basis of its dissolved gases (types and ratios of abundnce match match the gases found in the Martian atmoshere).

The true nature of these worm-like forms is not known. They may or may not have had biological beginnings.


GREETINGS FROM
MARS
OLYMPUS MONS VOLCANO
DUST STORMS
IMAGINARY CANALS
GRANDEST CANYON
DEIMOS
POTATO MOONS
PHOBOS
THE RED PLANET
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