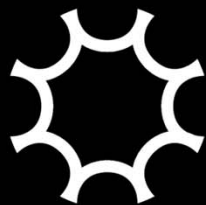
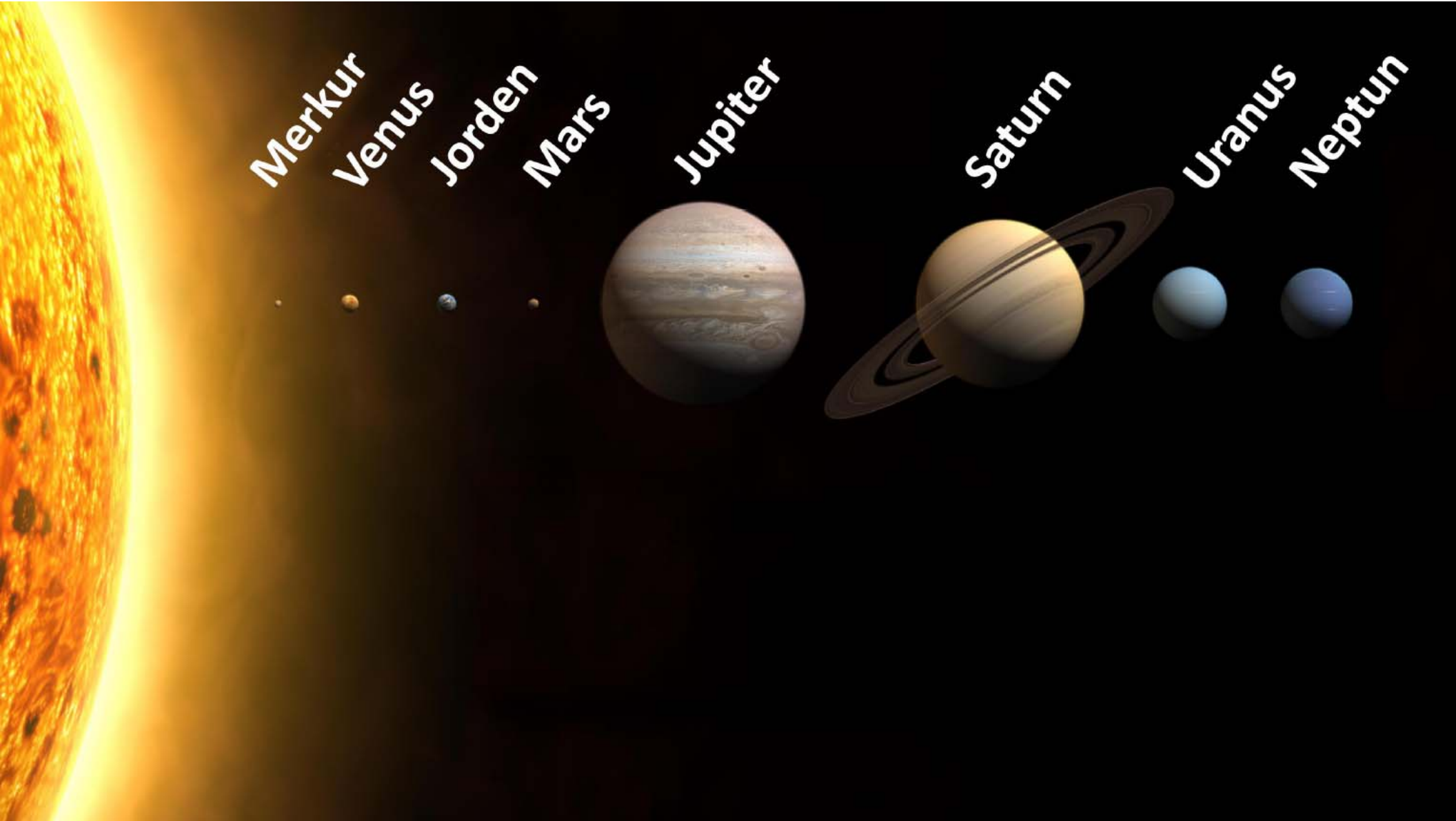


Vand og støv på Mars

Hans Kjeldsen
Aarhus Universitet



STELLAR ASTROPHYSICS CENTRE



Merkur

Venus

Jorden

Mars

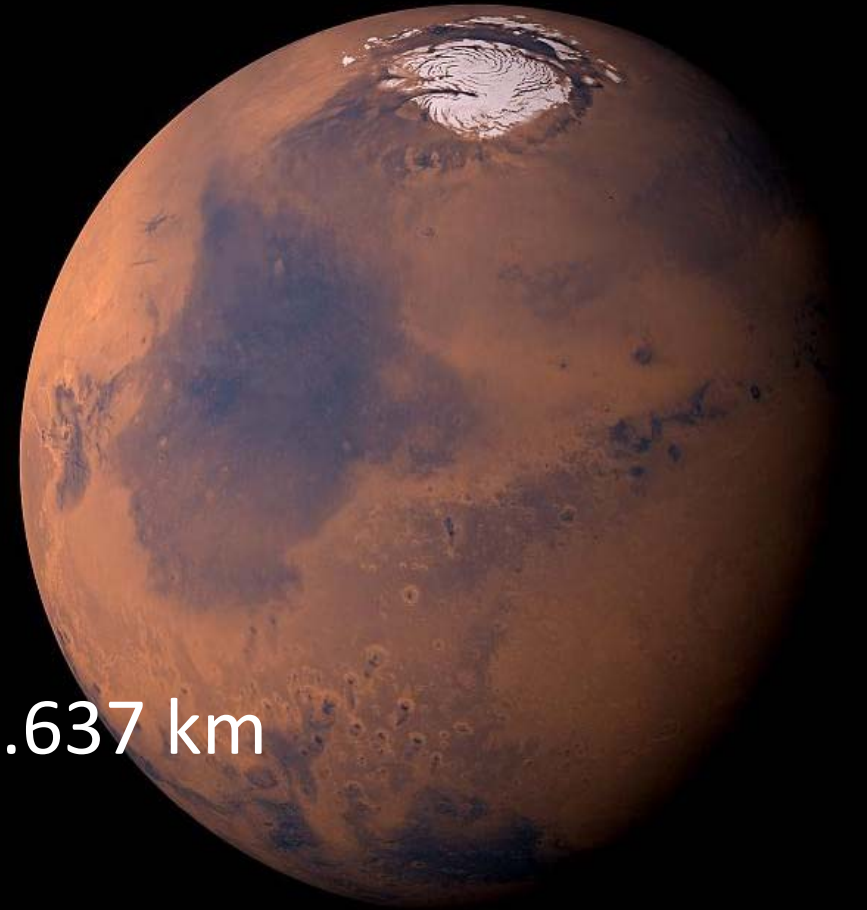
Jupiter

Saturn

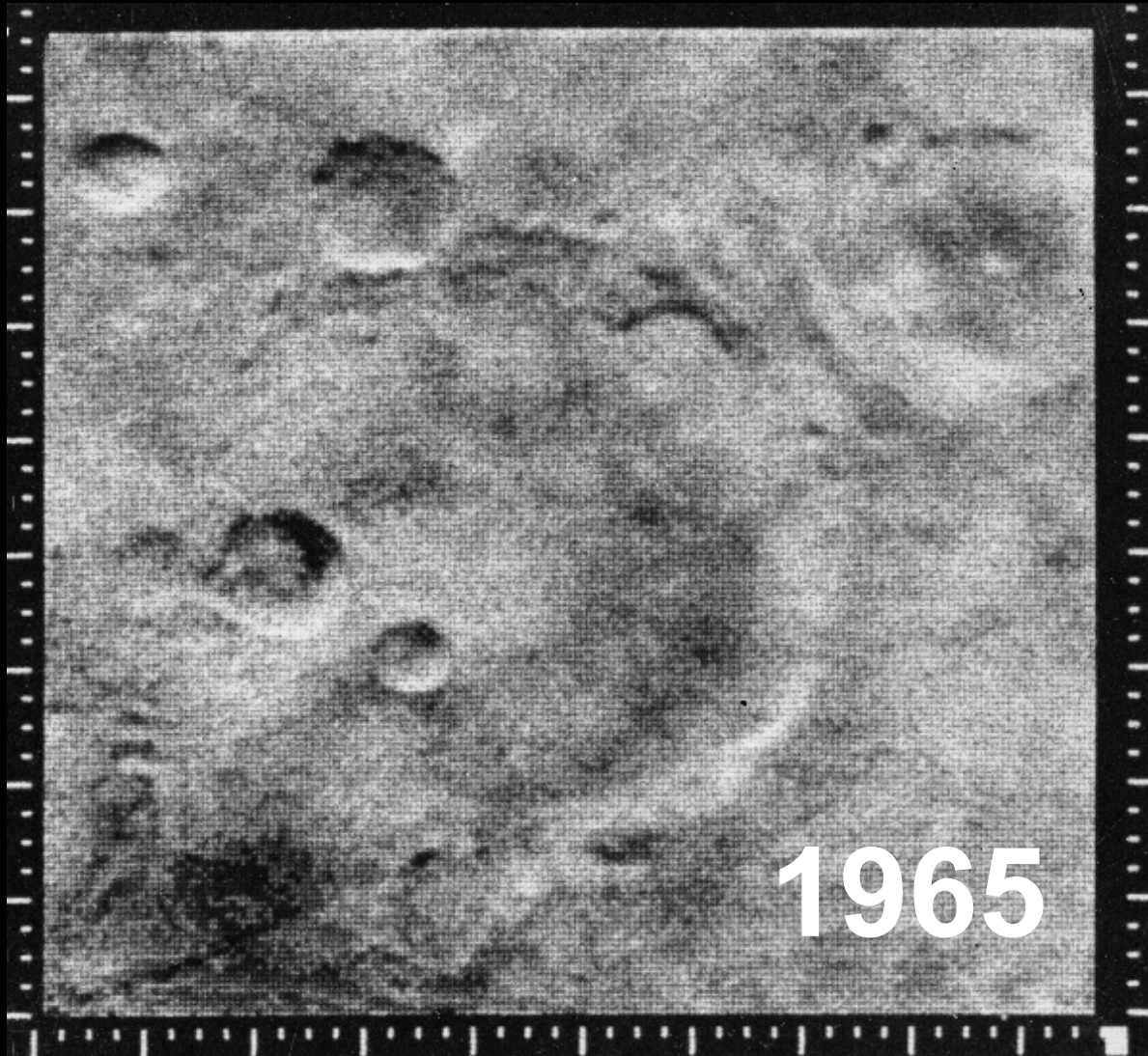
Uranus

Neptun

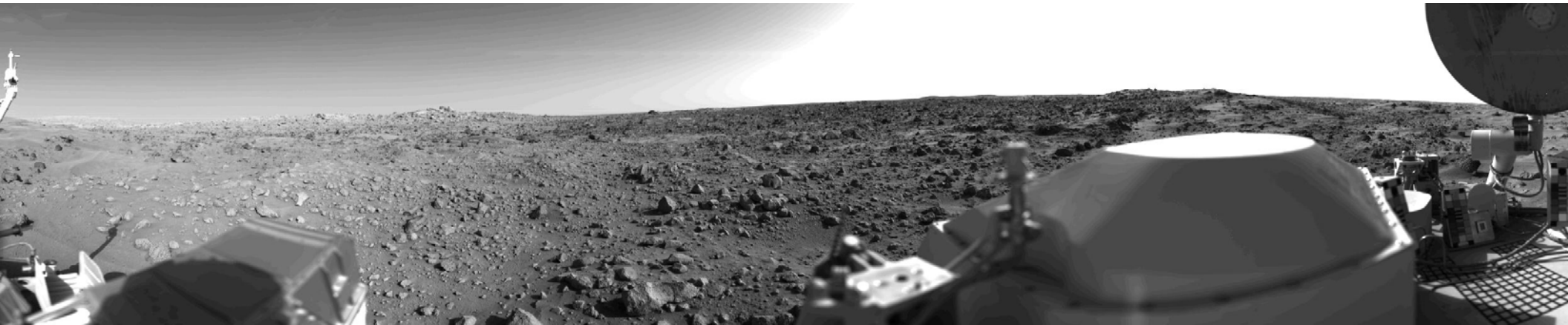
Mars



Afstand fra Solen: 227.936.637 km
Omløbstid om Solen: 1,88 år
Diameter: 6.779 km
Tyngdeacceleration på overfladen: 38% af Jordens

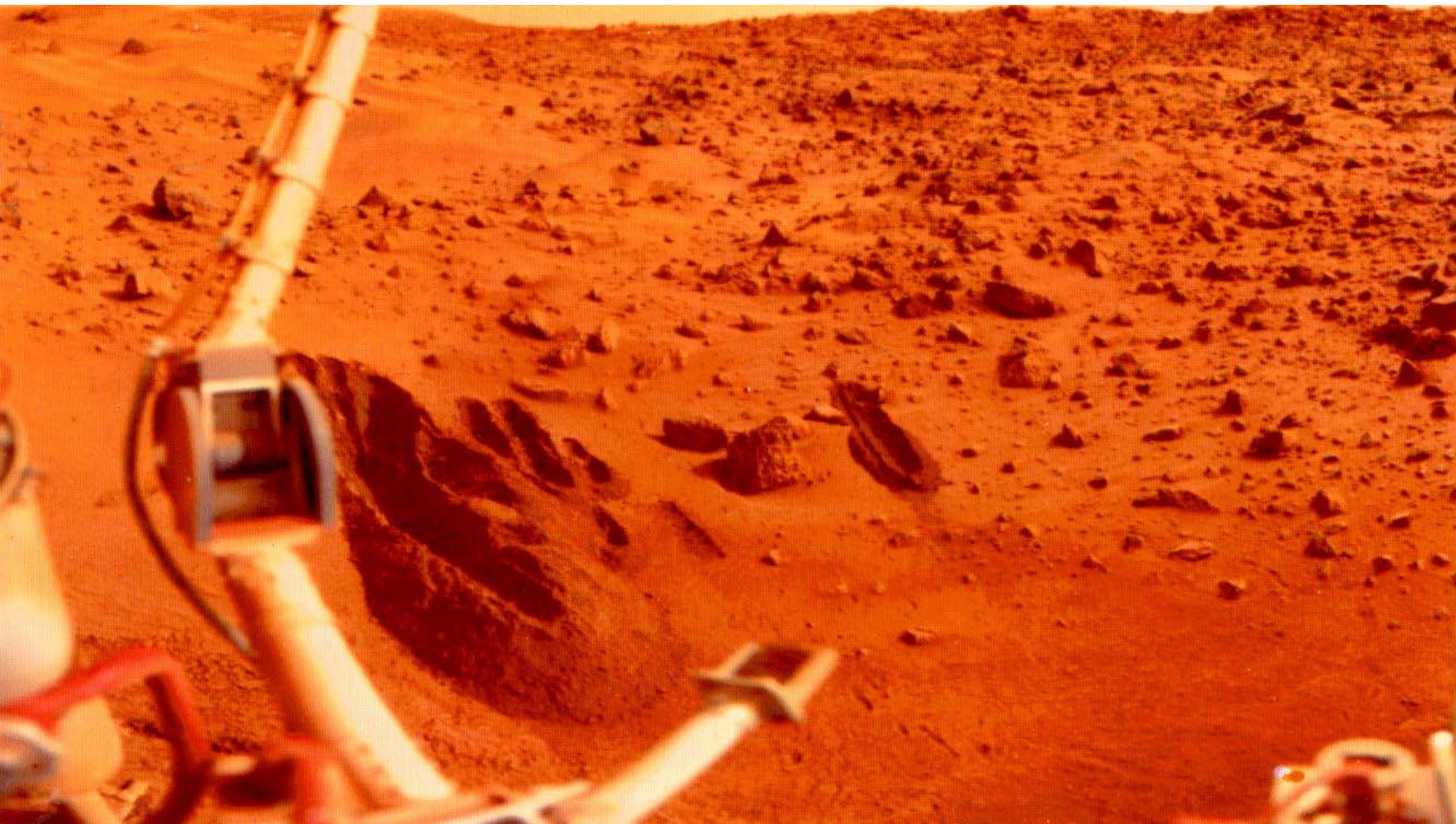


Mariner 4 (USA)

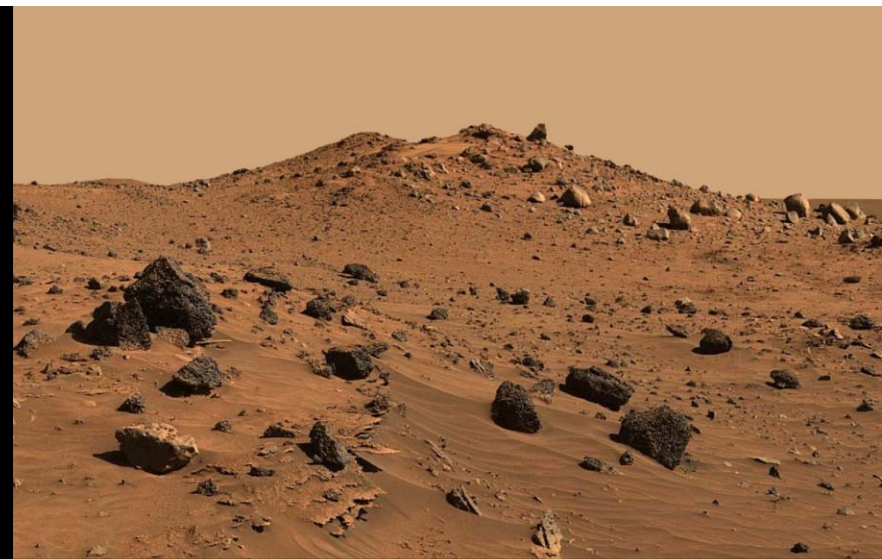


Viking 1 - 1976

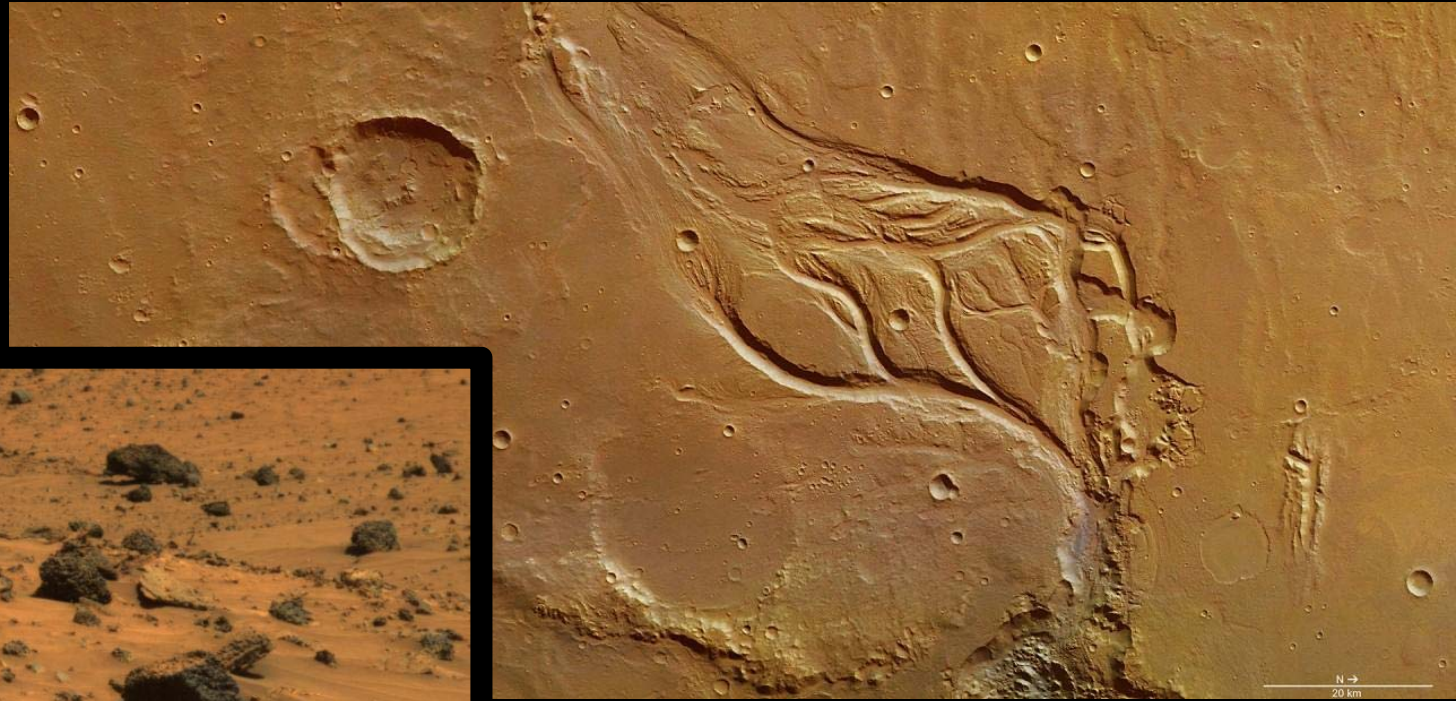


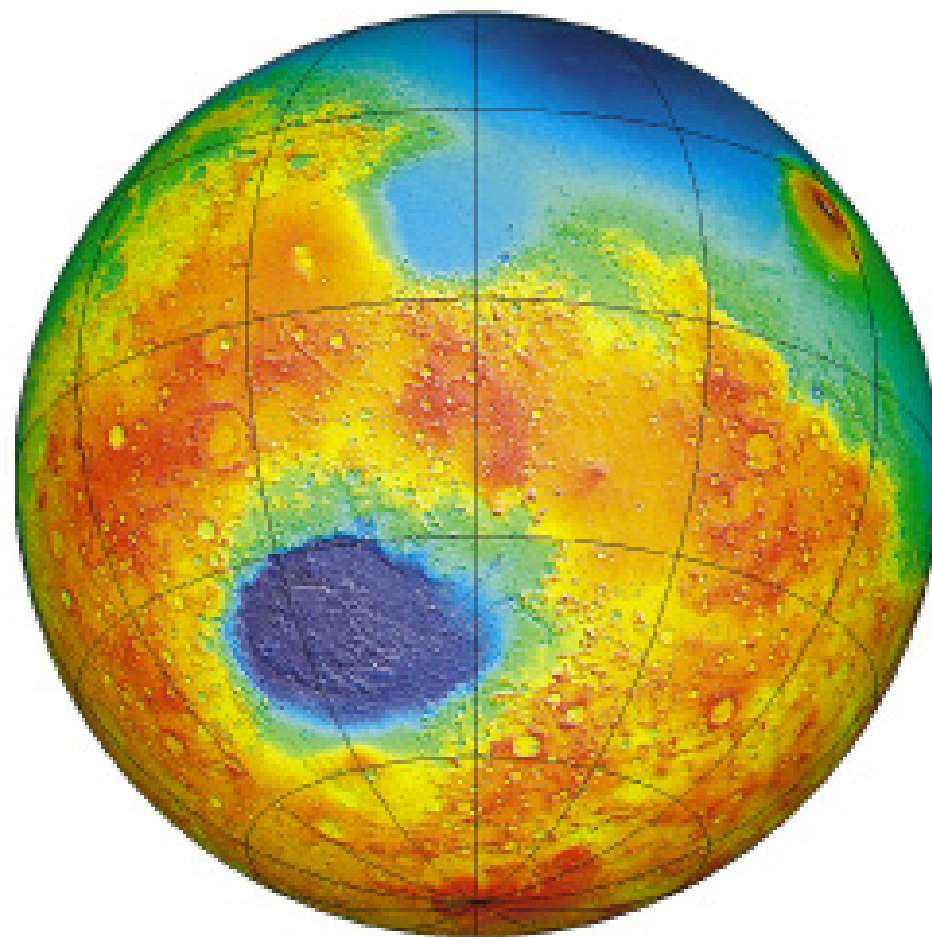
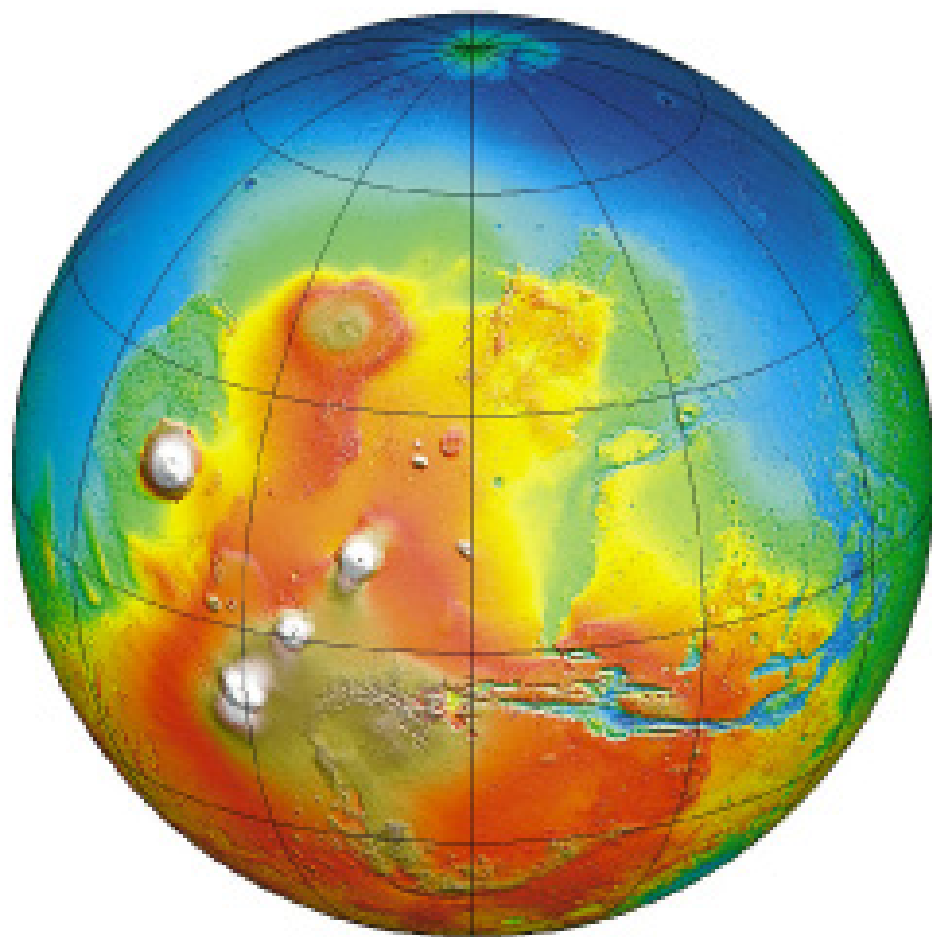


Vi har flere gange sendt robotter
til overfladen af Mars



Vand på Mars
Støv på Mars

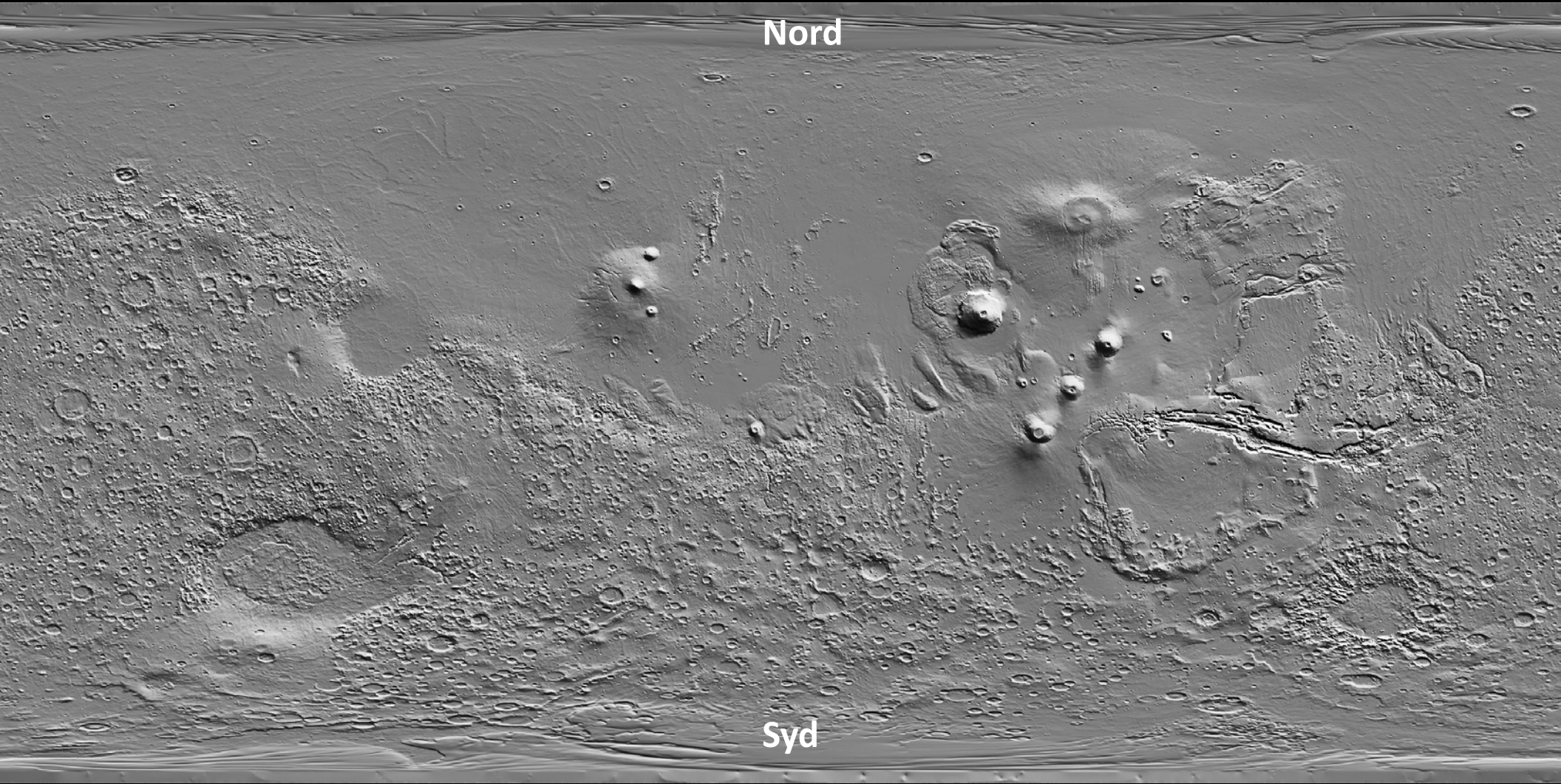




Mars

Nord

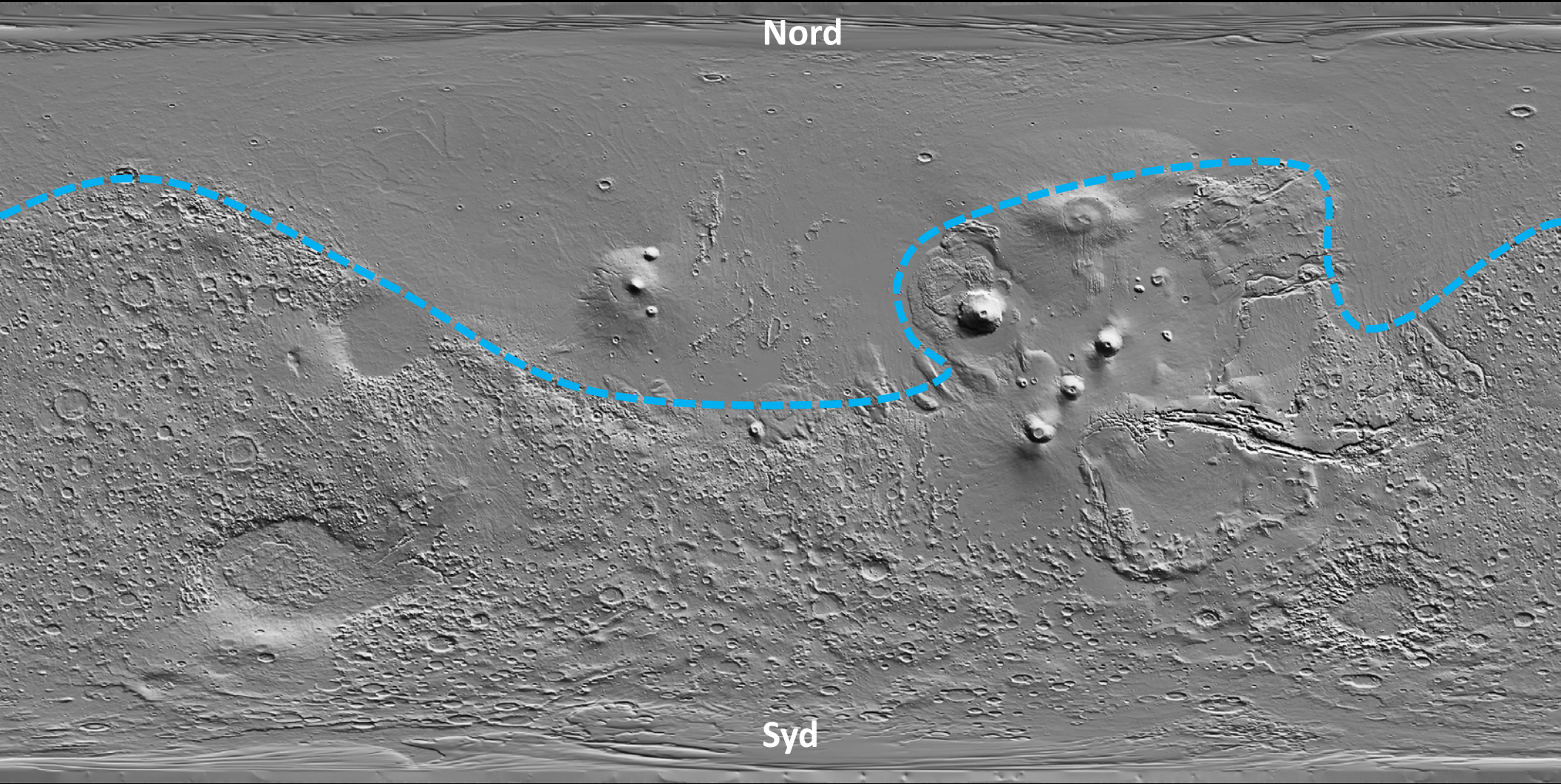
Syd



Mars

Nord

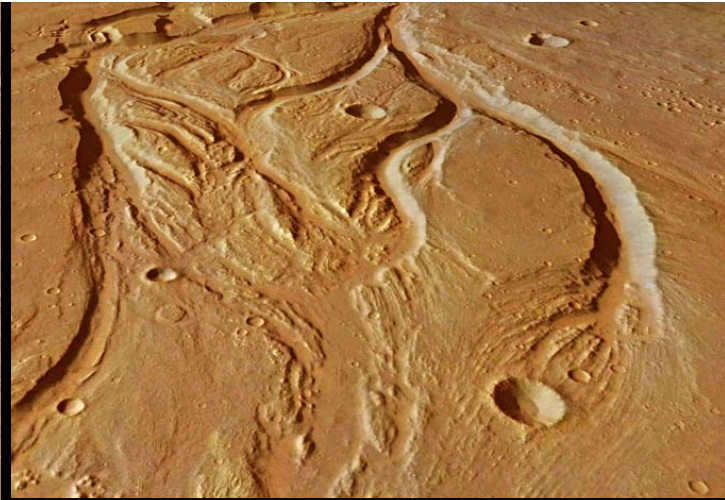
Syd

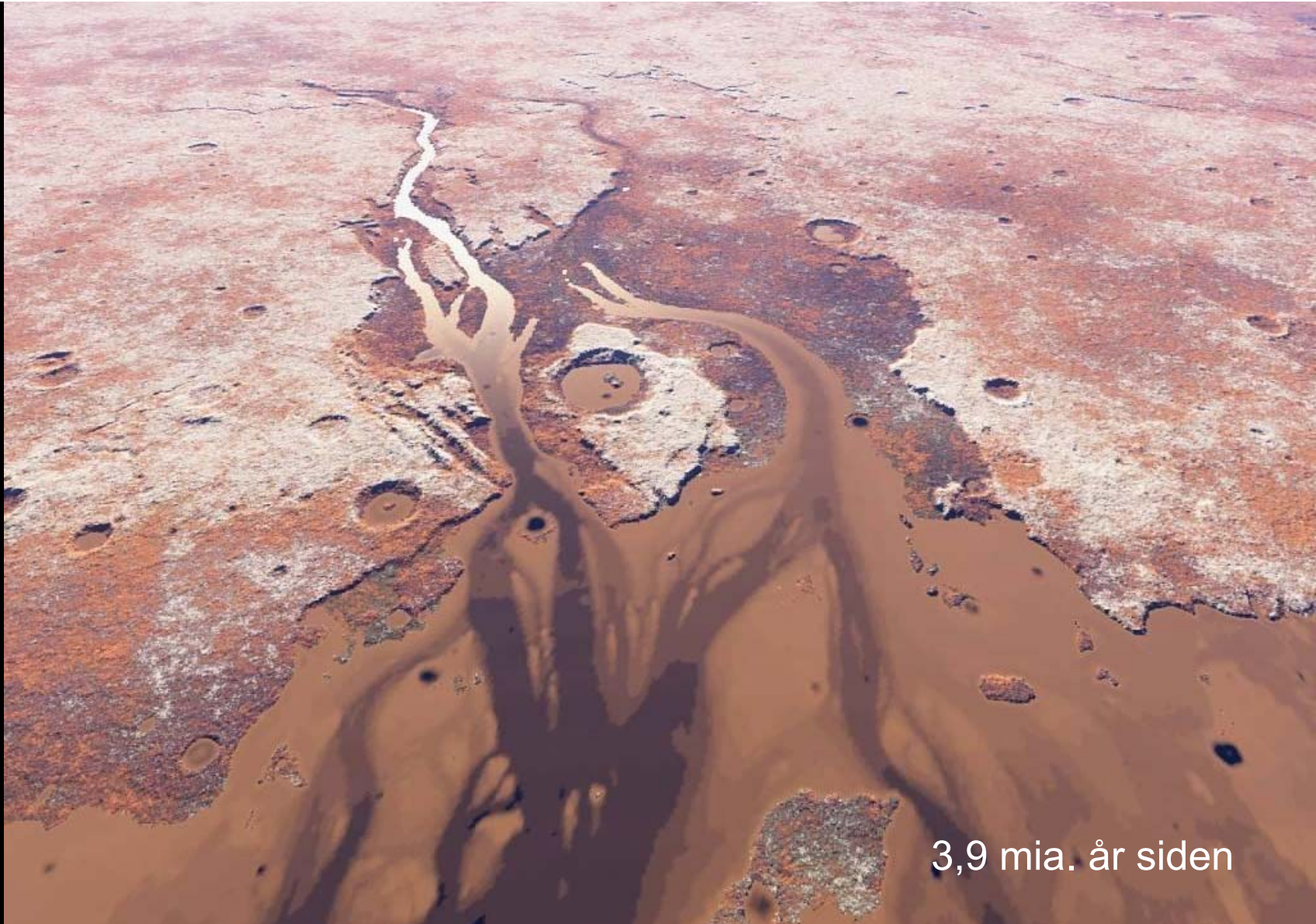


Mars



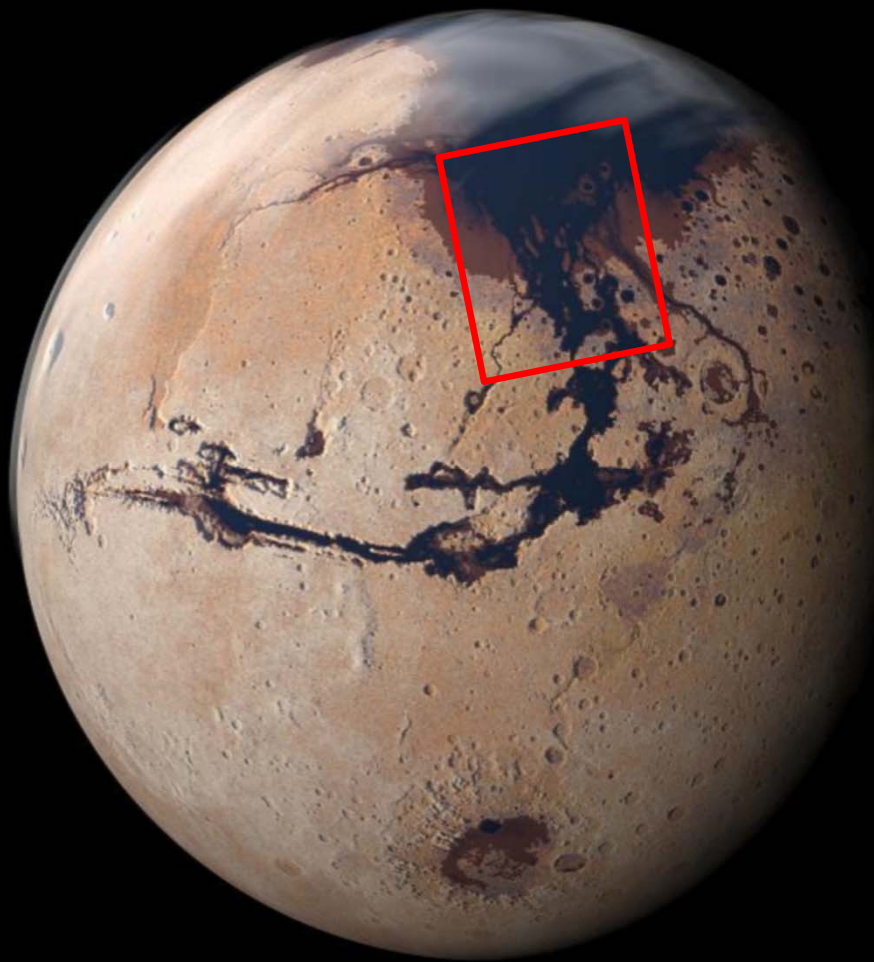
Mars



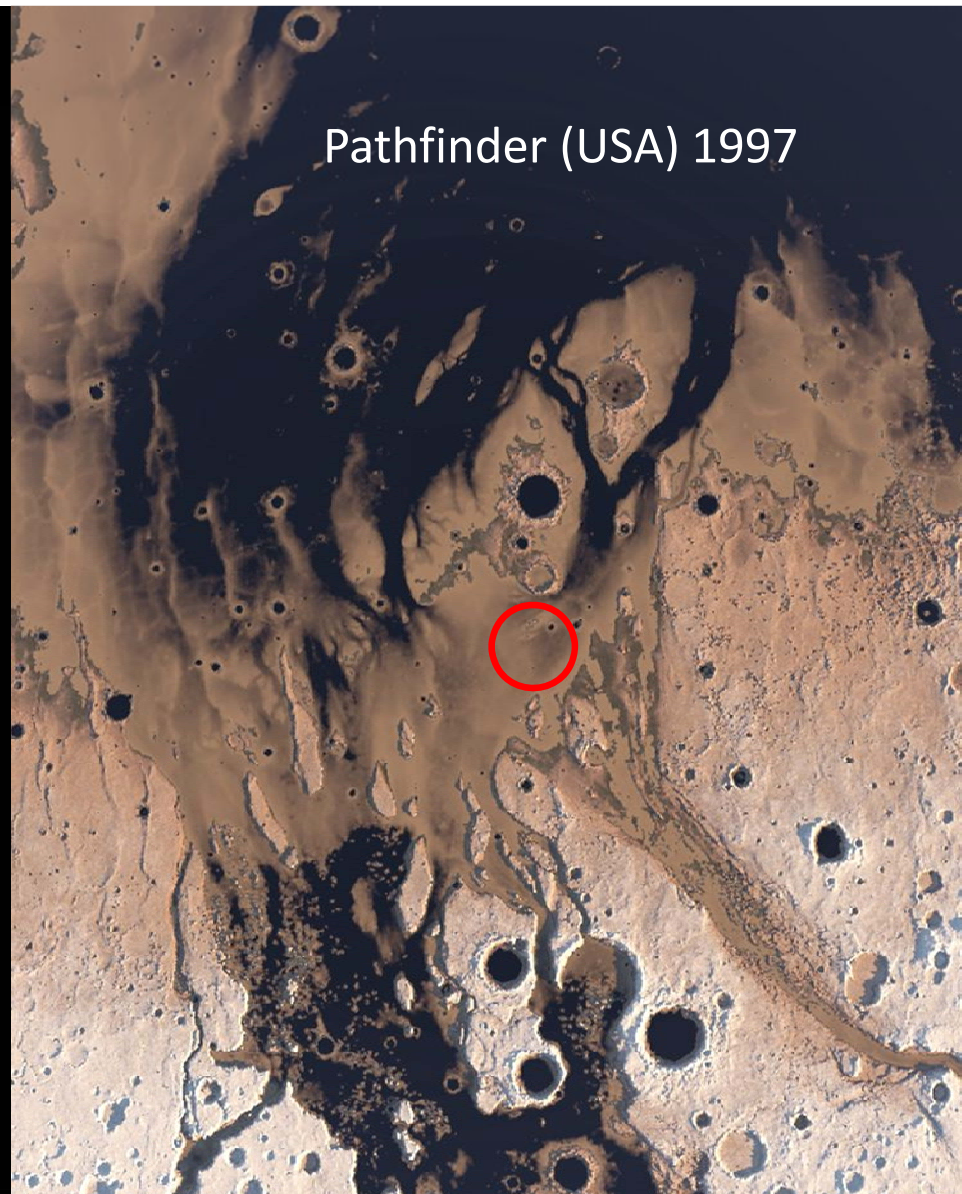


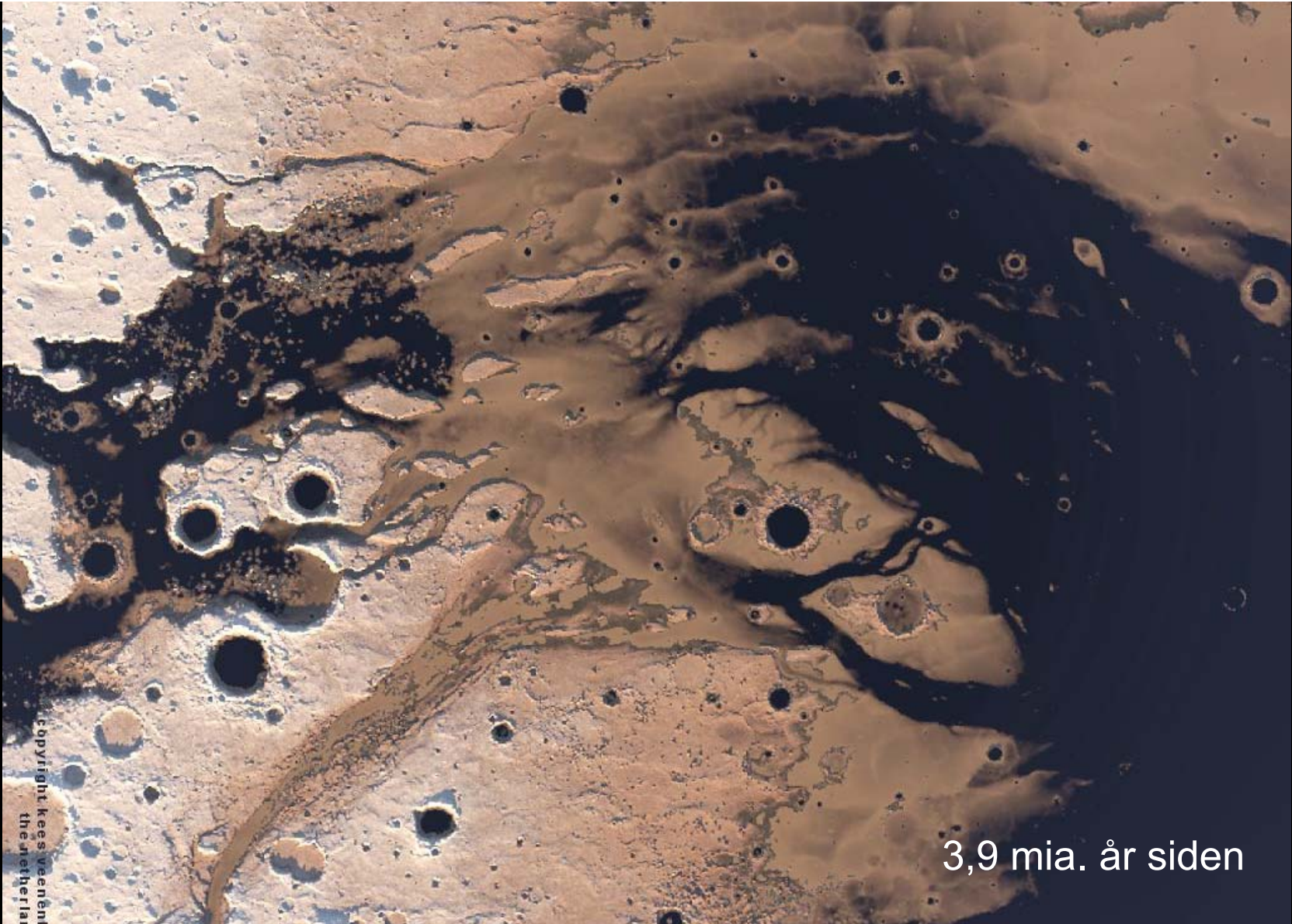
3,9 mia. år siden

Sådan forestiller vi os at Mars så ud for 3,9 milliarder år siden



Pathfinder (USA) 1997





3,9 mia. år siden

Copyright: Kees van den
the ether jar



Copyright: Kees van den
the ether jar

3,9 mia. år siden

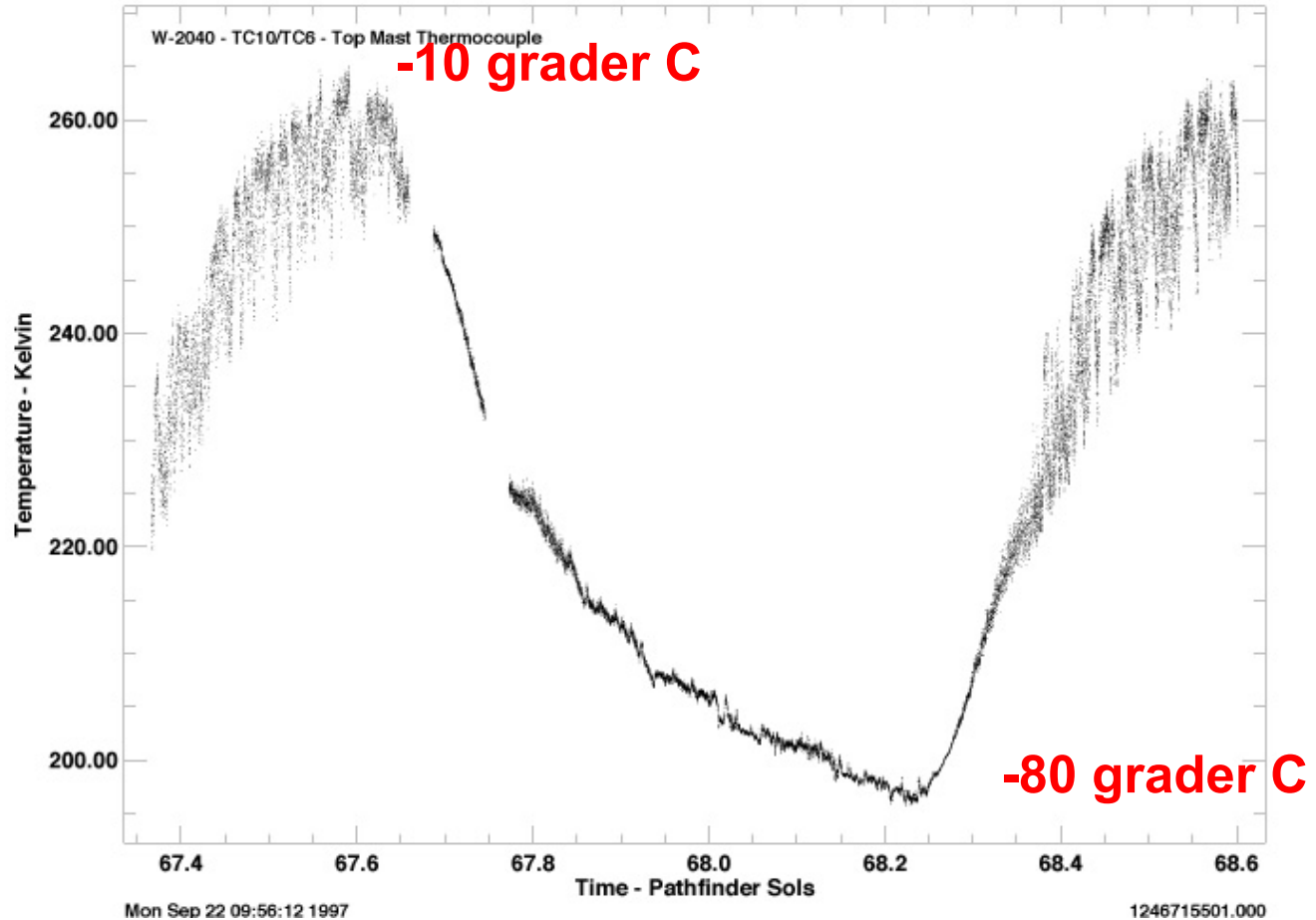
1997



1997



Sols 68&69



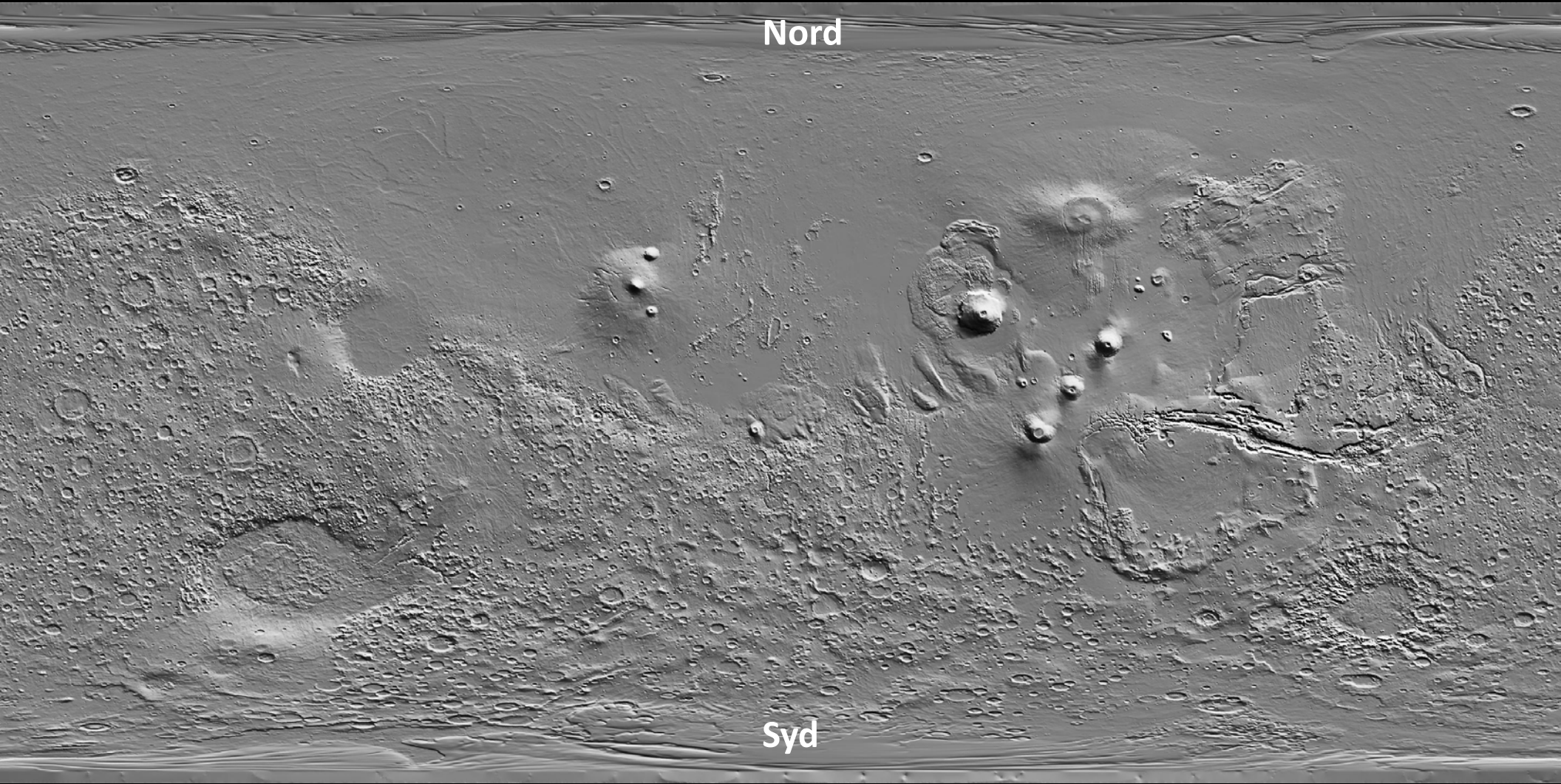
-10 grader C

-80 grader C

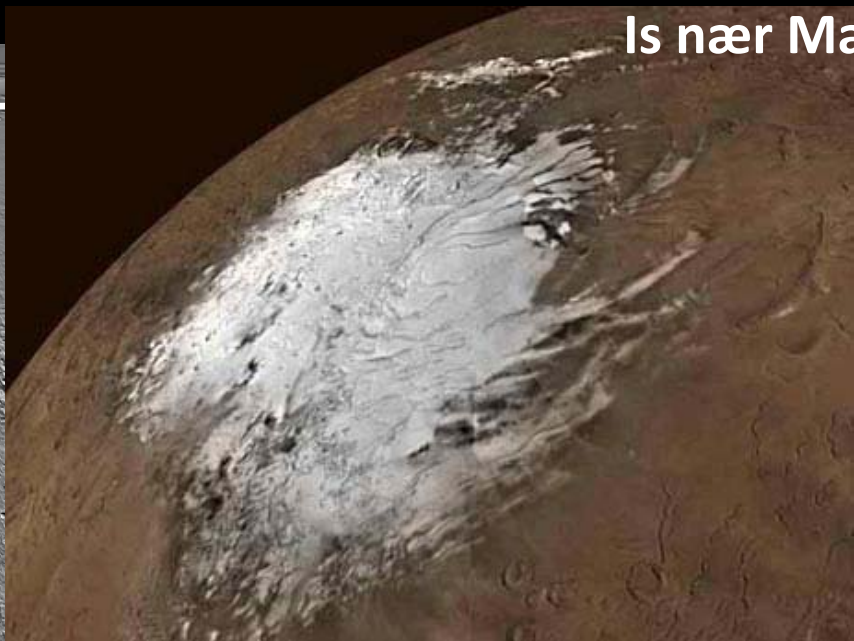
Mars

Nord

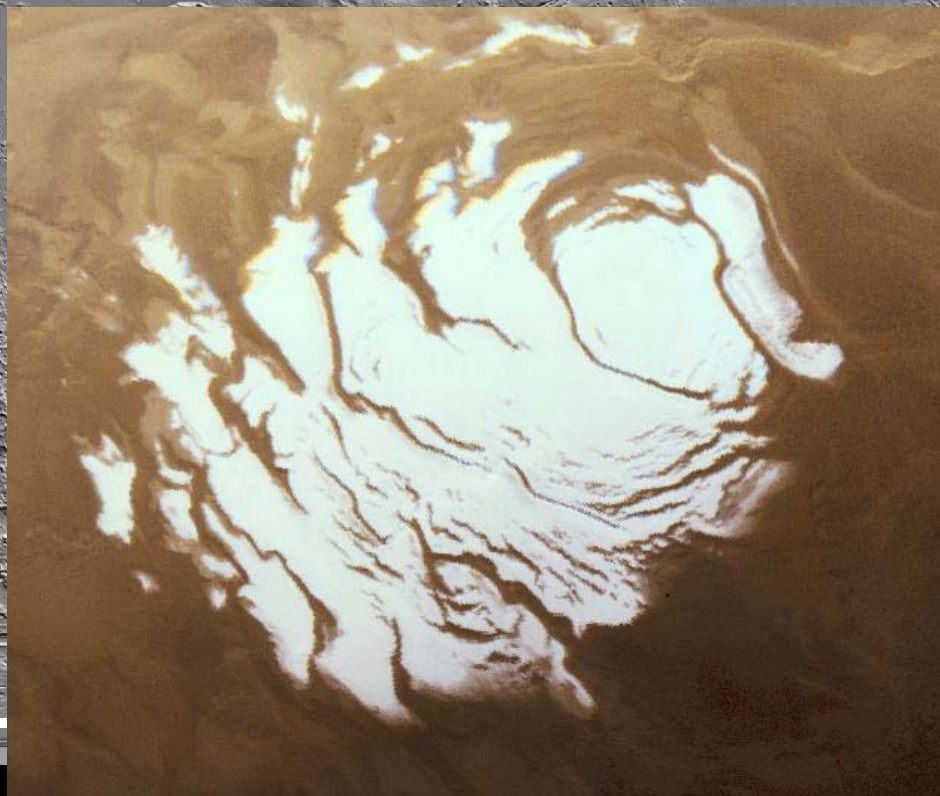
Syd



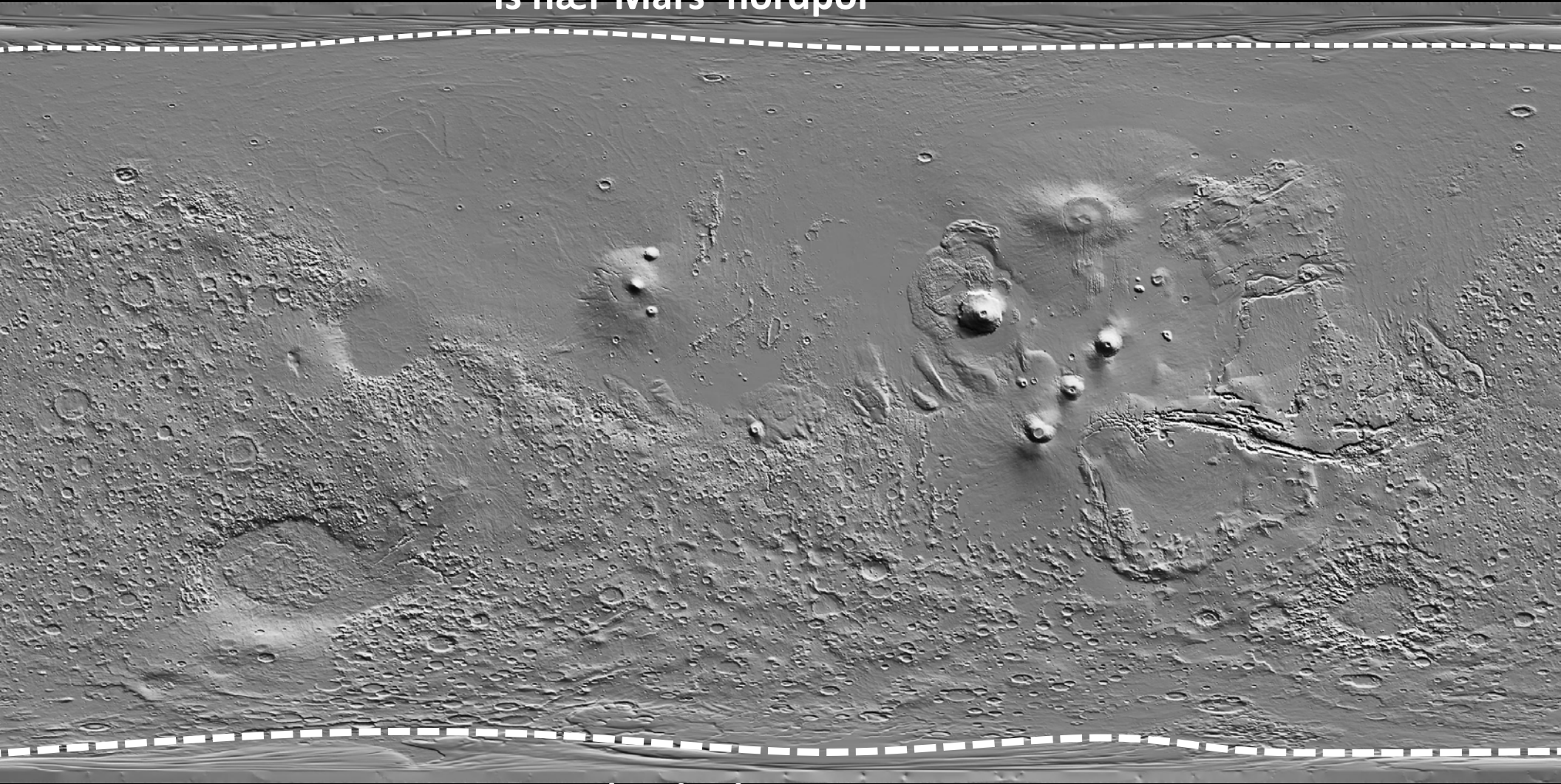
Is nær Mars' nordpol



Is nær Mars' sydpol

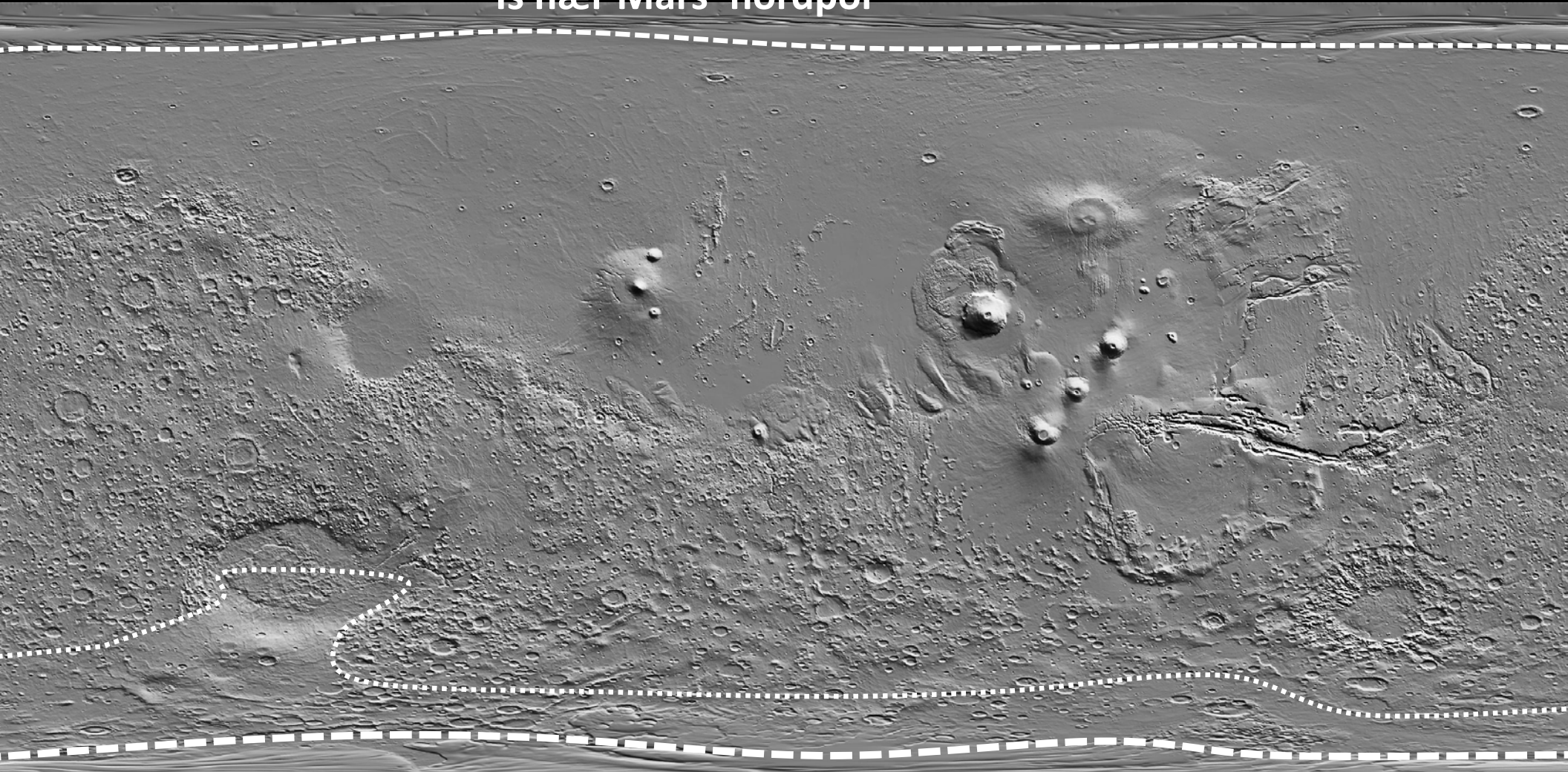


Is nær Mars' nordpol



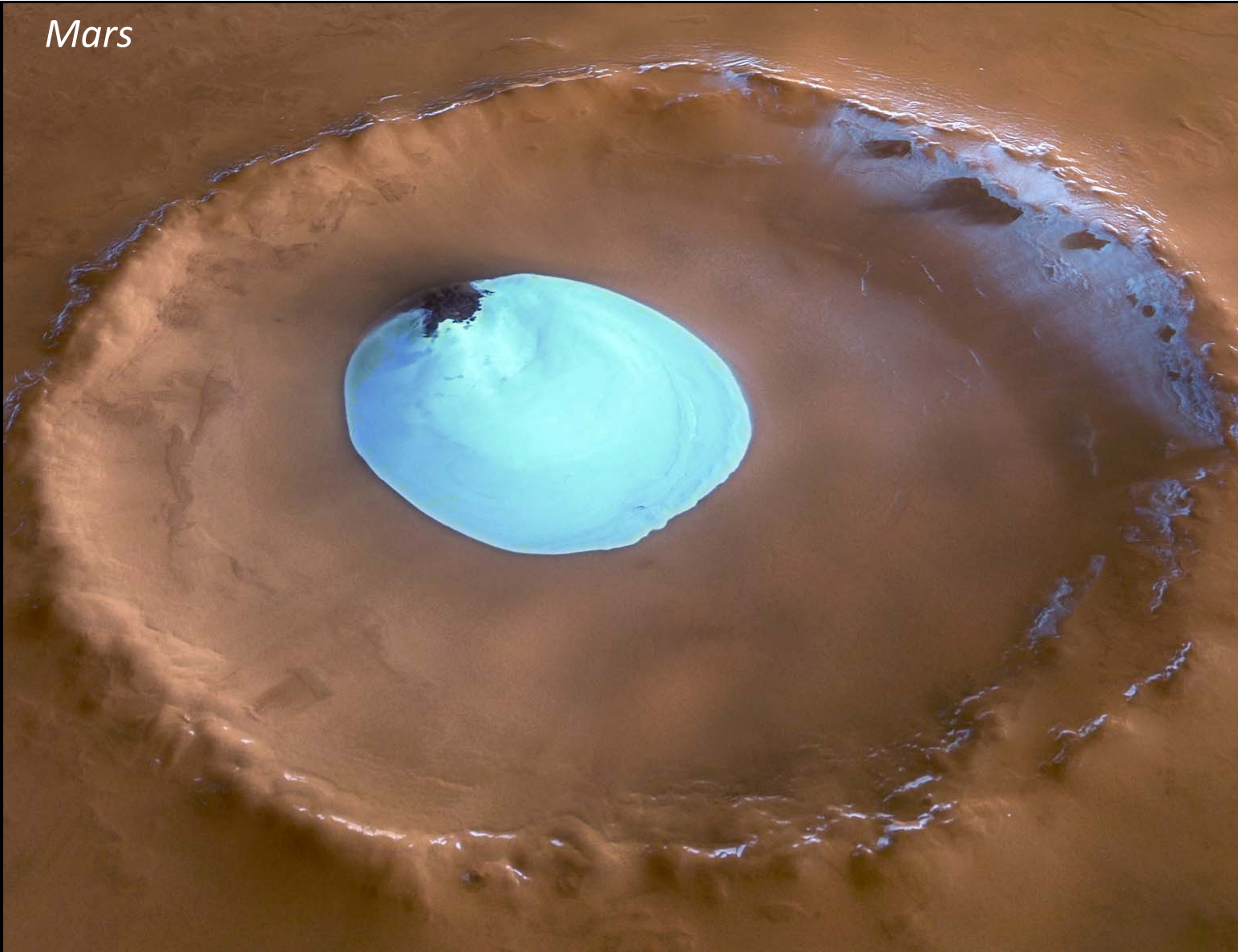
Is nær Mars' sydpol

Is nær Mars' nordpol



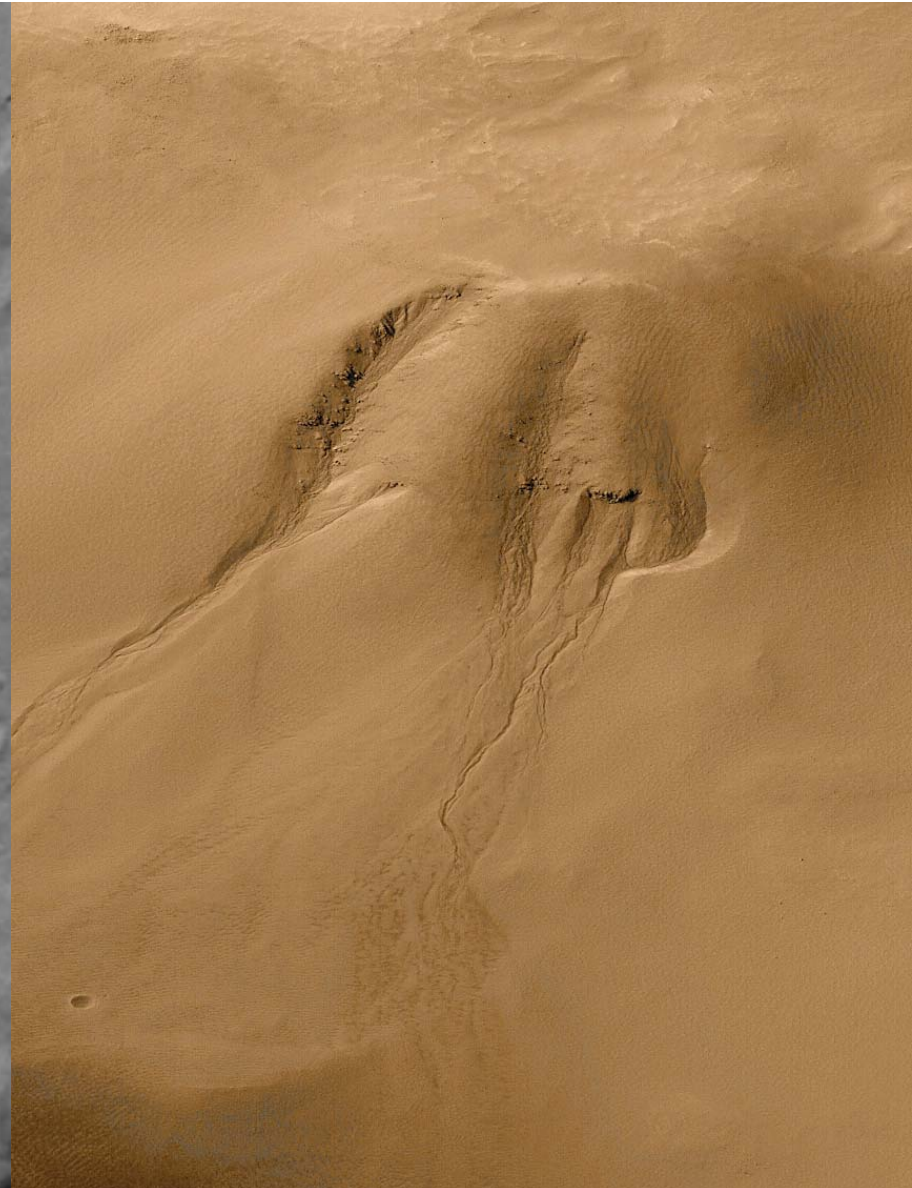
Is nær Mars' sydpol

Mars



35 km i diameter

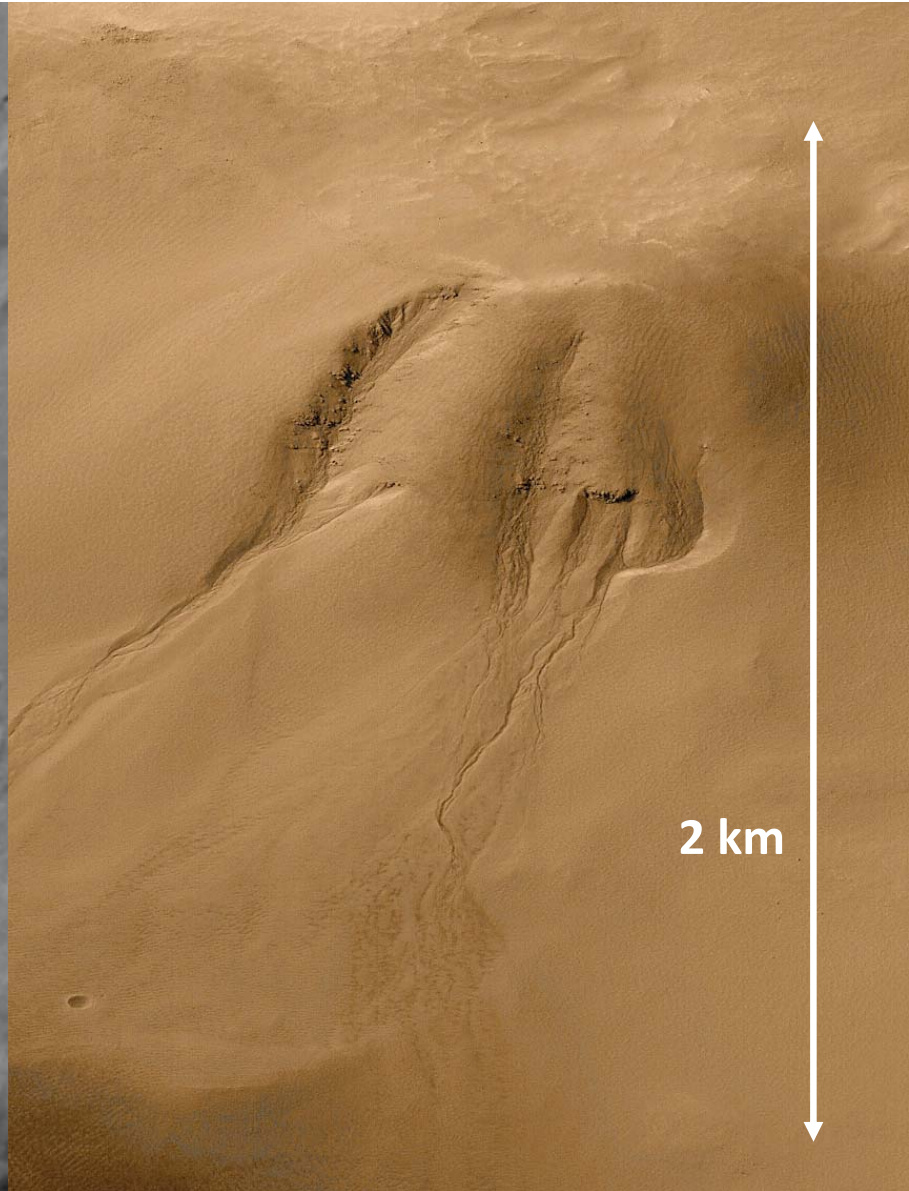
Findes der flydende vand på
Mars' overflade i dag?

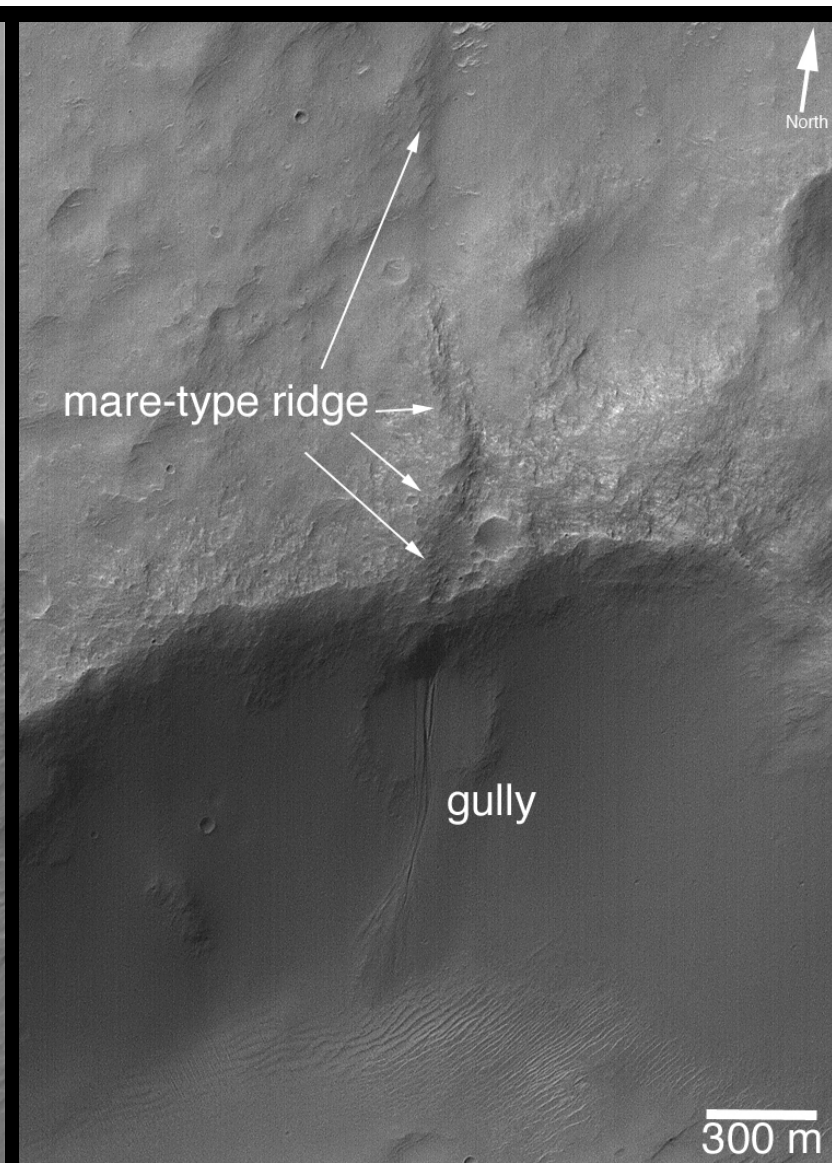
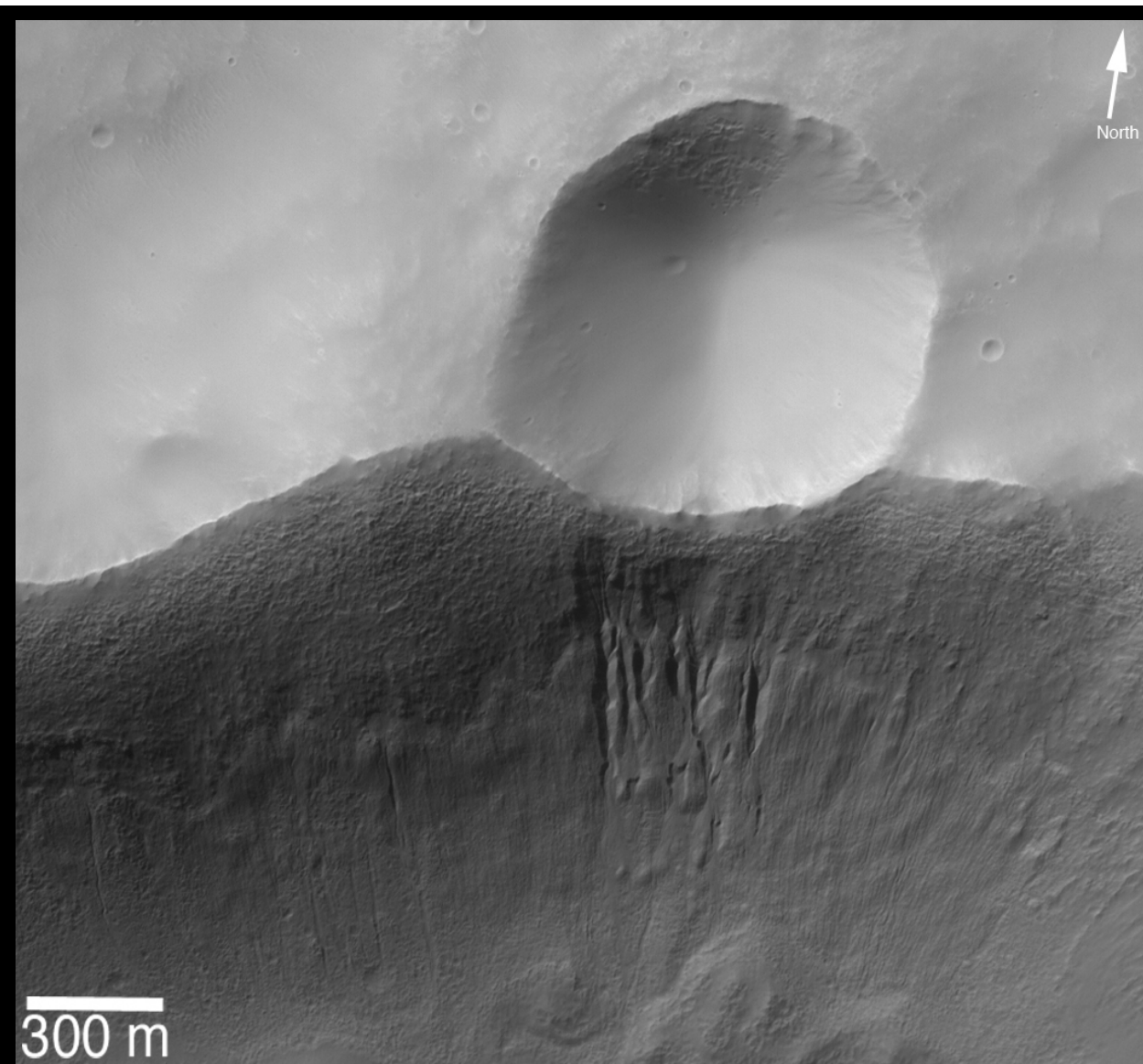


Findes der flydende vand på Mars' overflade i dag?

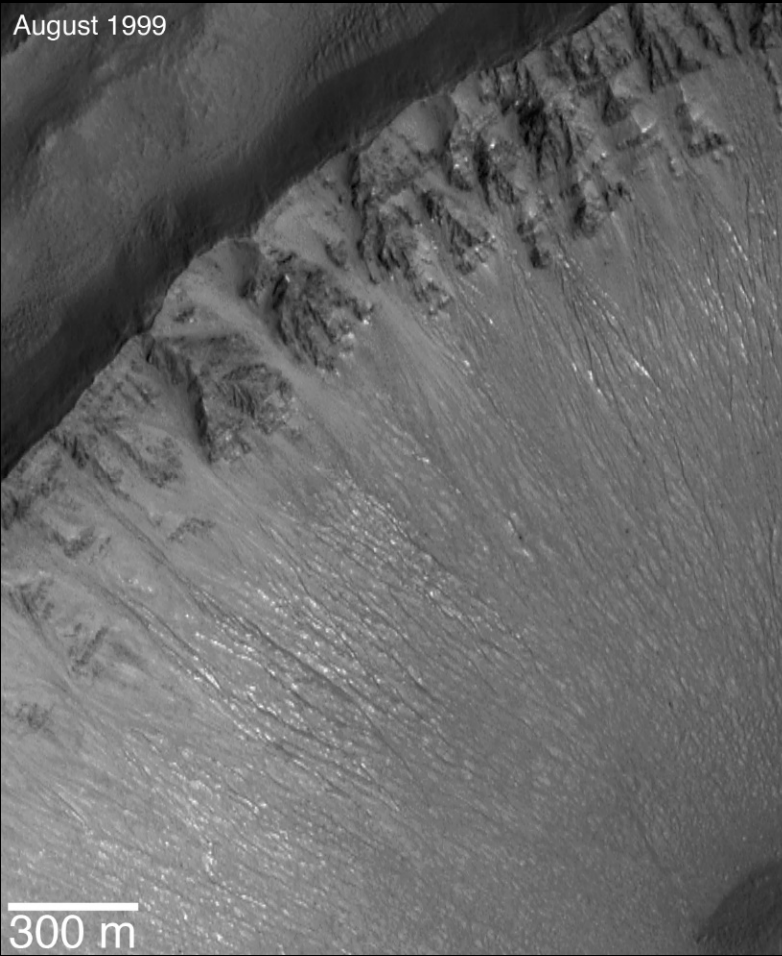
5 km

2 km



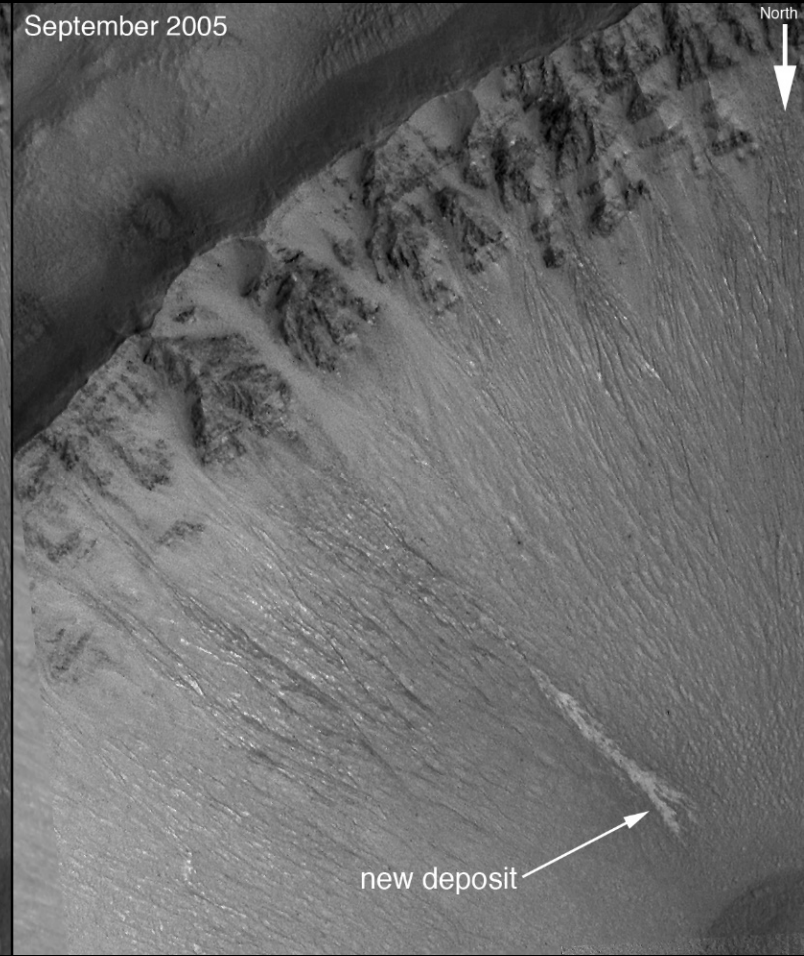


August 1999



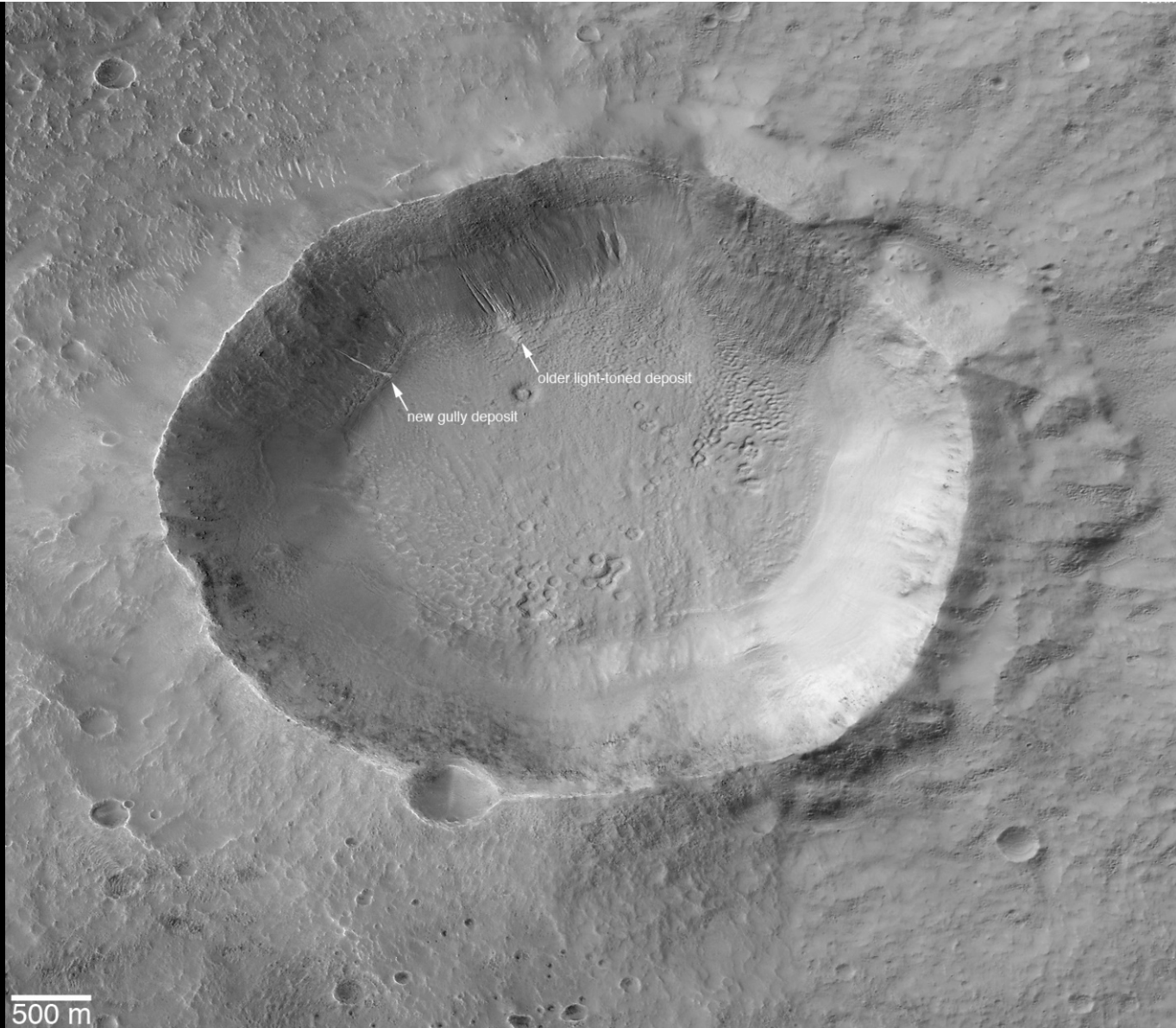
300 m

September 2005



North

new deposit

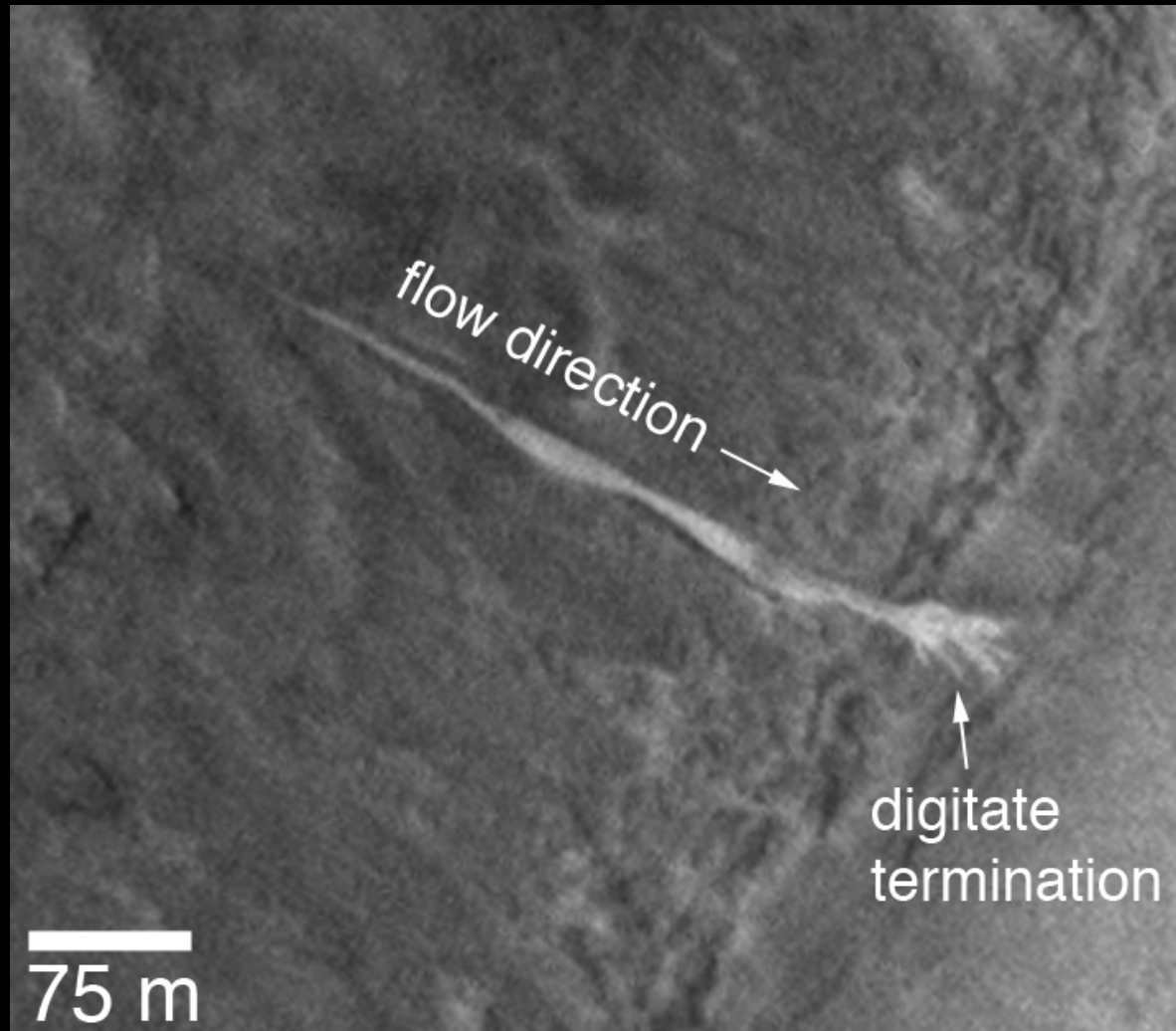


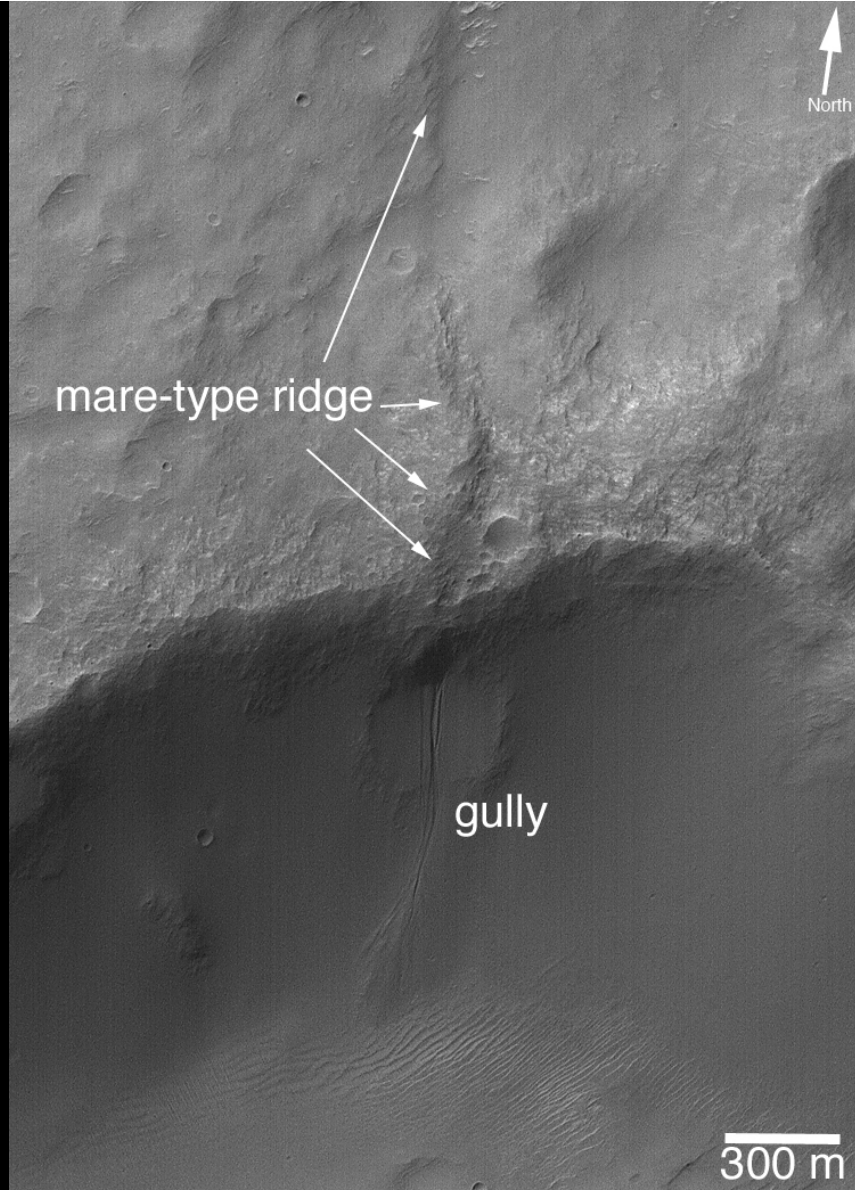
new gully deposit

older light-toned deposit

500 m





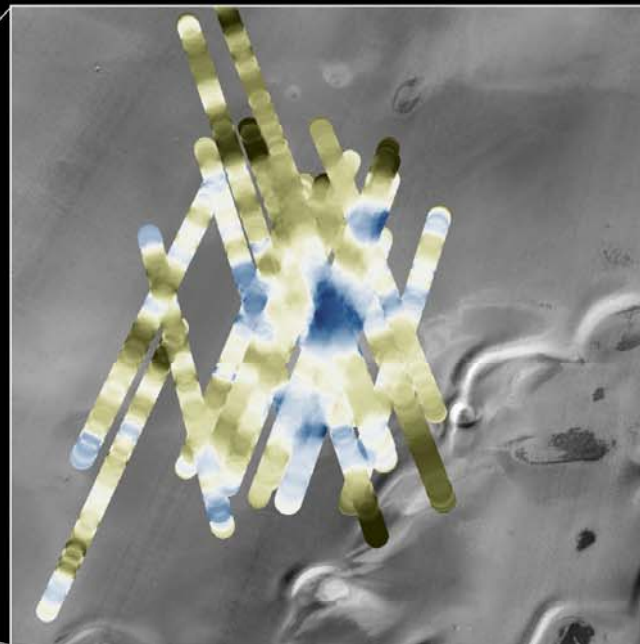


Sø under overfladen på Mars

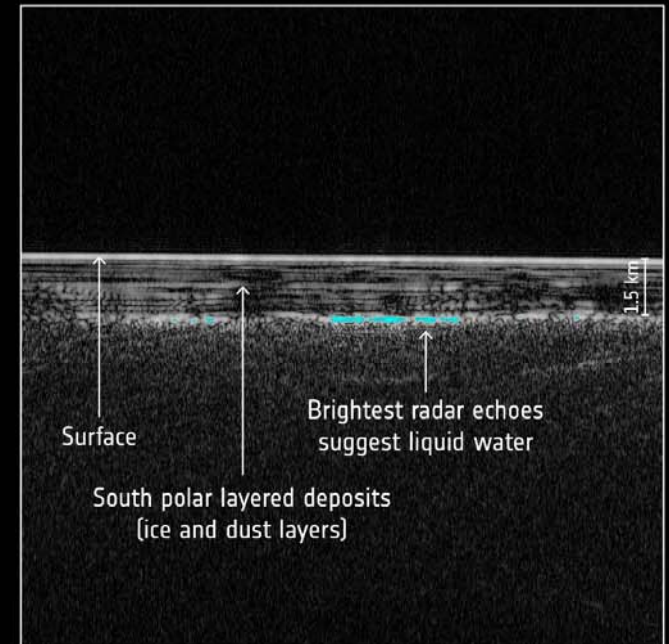
Mars south polar region

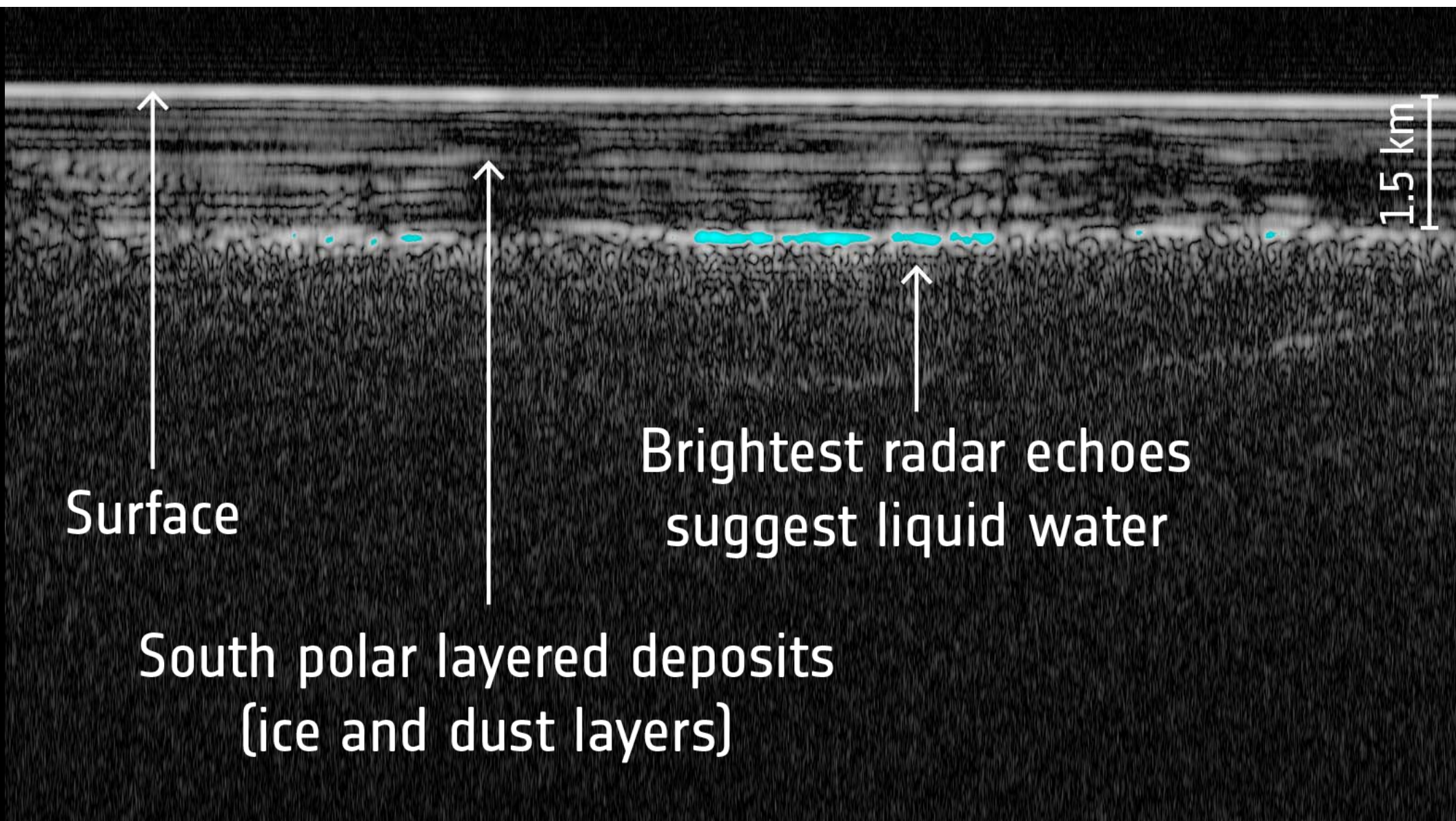


Mars Express radar footprints
(blue = brightest radar echo)



Radar image of subsurface





Surface

South polar layered deposits
(ice and dust layers)

Brightest radar echoes
suggest liquid water

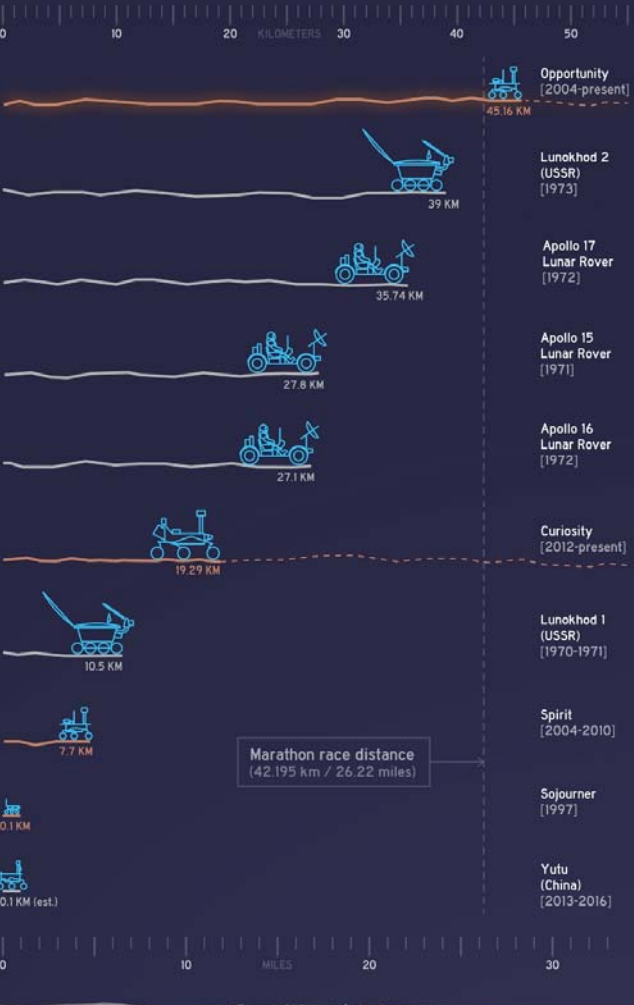
1.5 km

Spirit og
Opportunity
2004



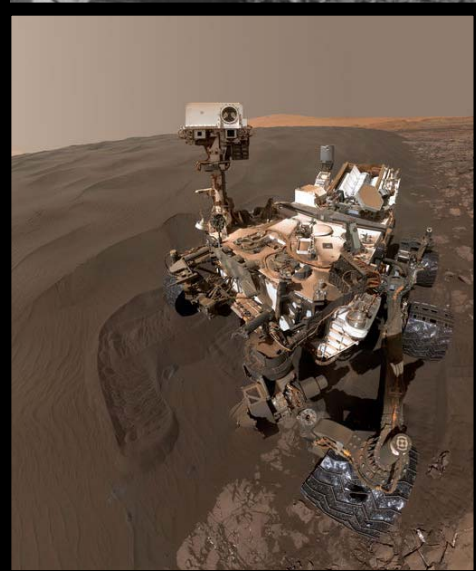
OUT-OF-THIS-WORLD RECORDS! DRIVING DISTANCES ON MARS AND THE MOON

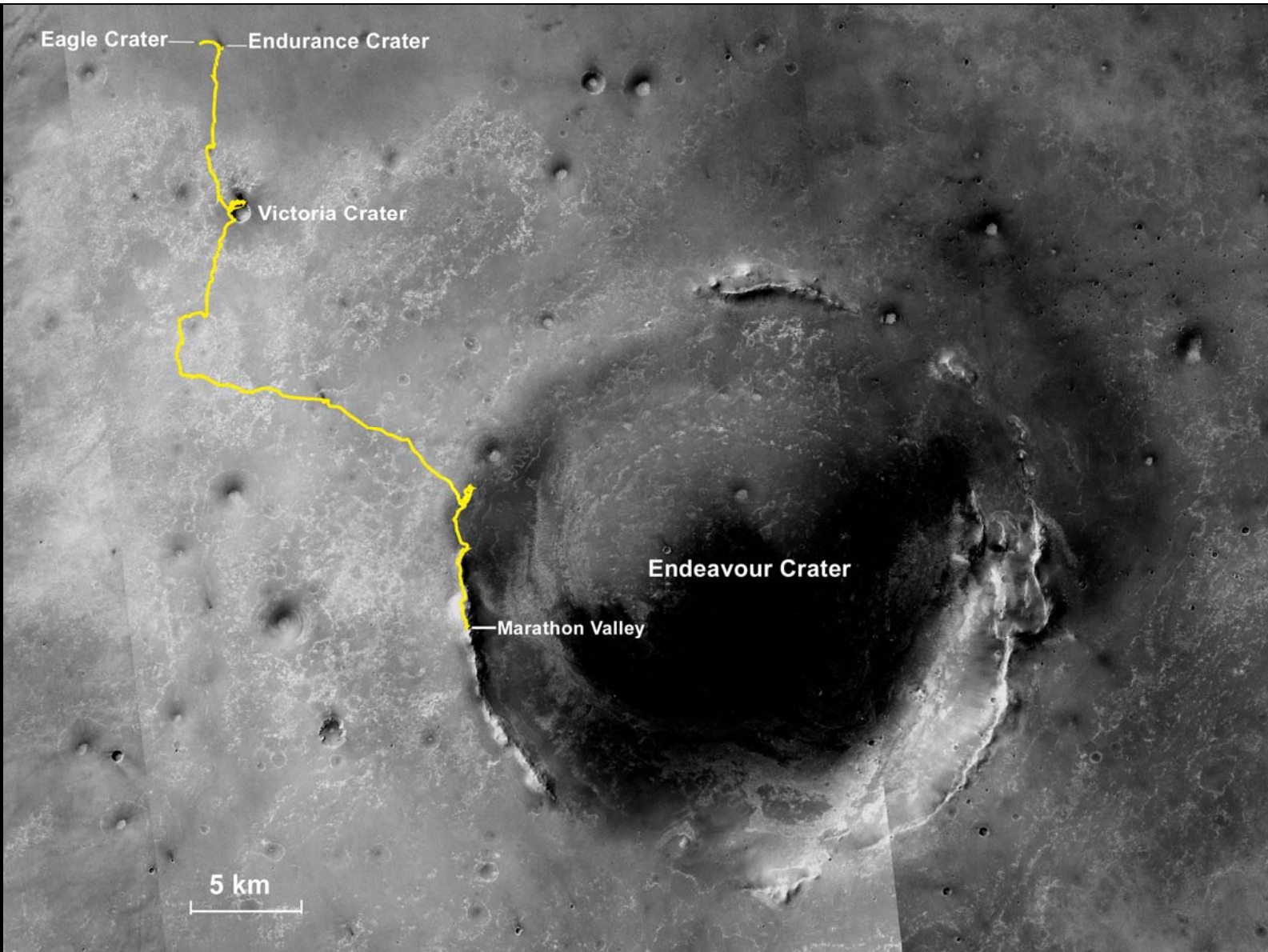
(AS OF JUNE 18, 2018)
MARS — MOON —



Marathon race distance
(42.195 km / 26.22 miles)

FOR MORE INFO, VISIT
MARS.NASA.GOV





Cape Tribulation
summit

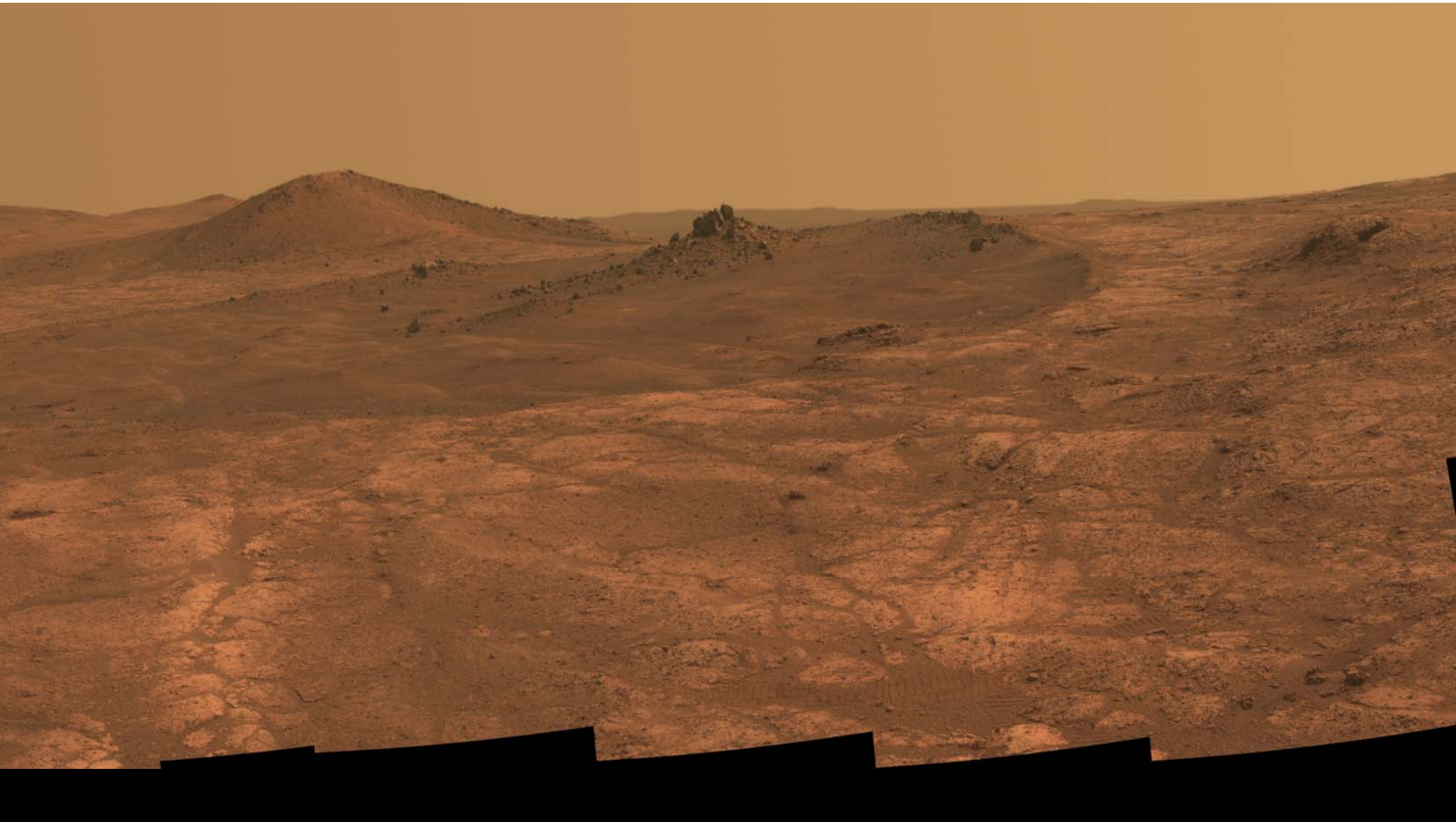
Marathon Valley

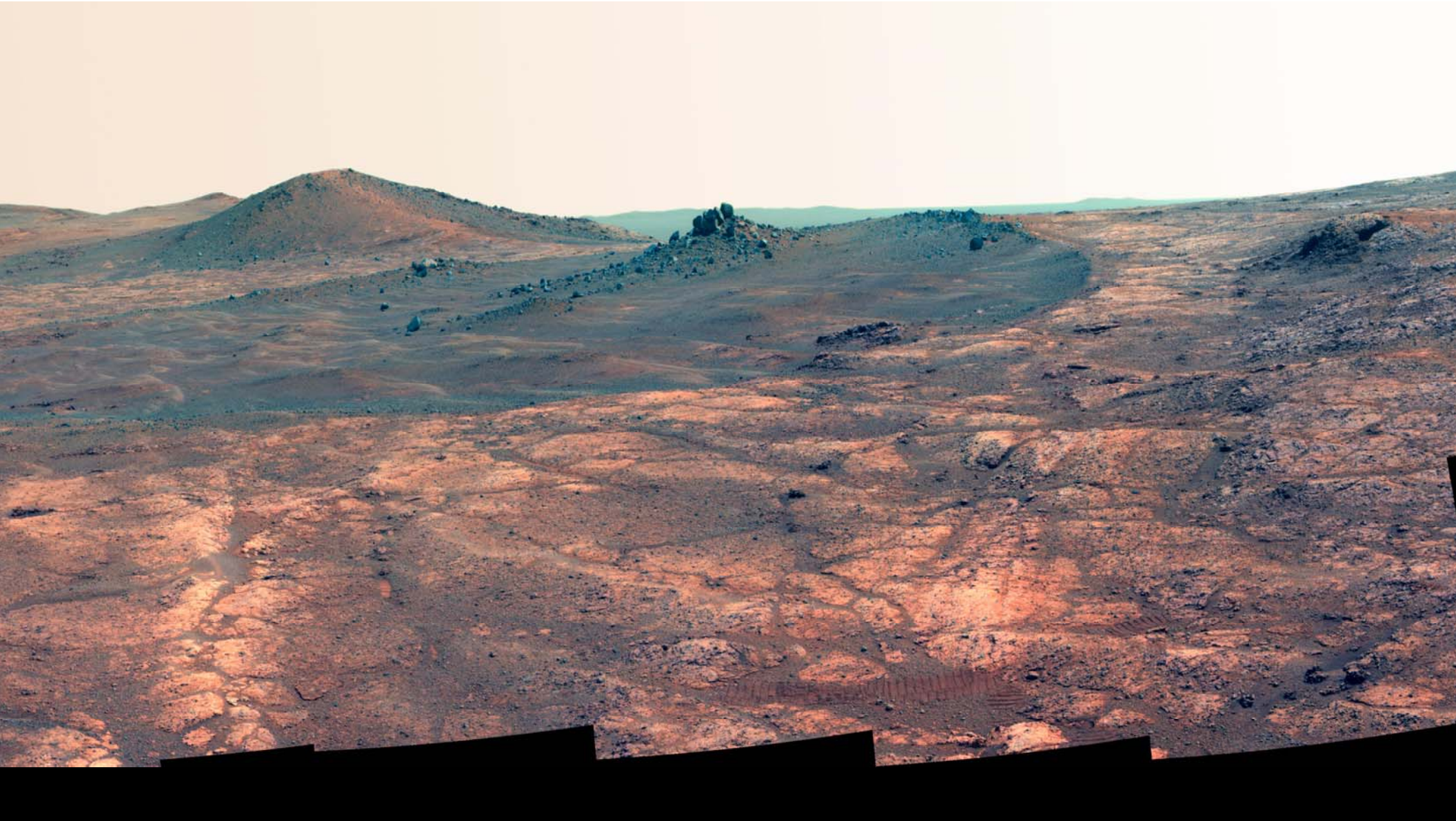
Spirit of St. Louis Crater

first
marathon
completed

42,195 km

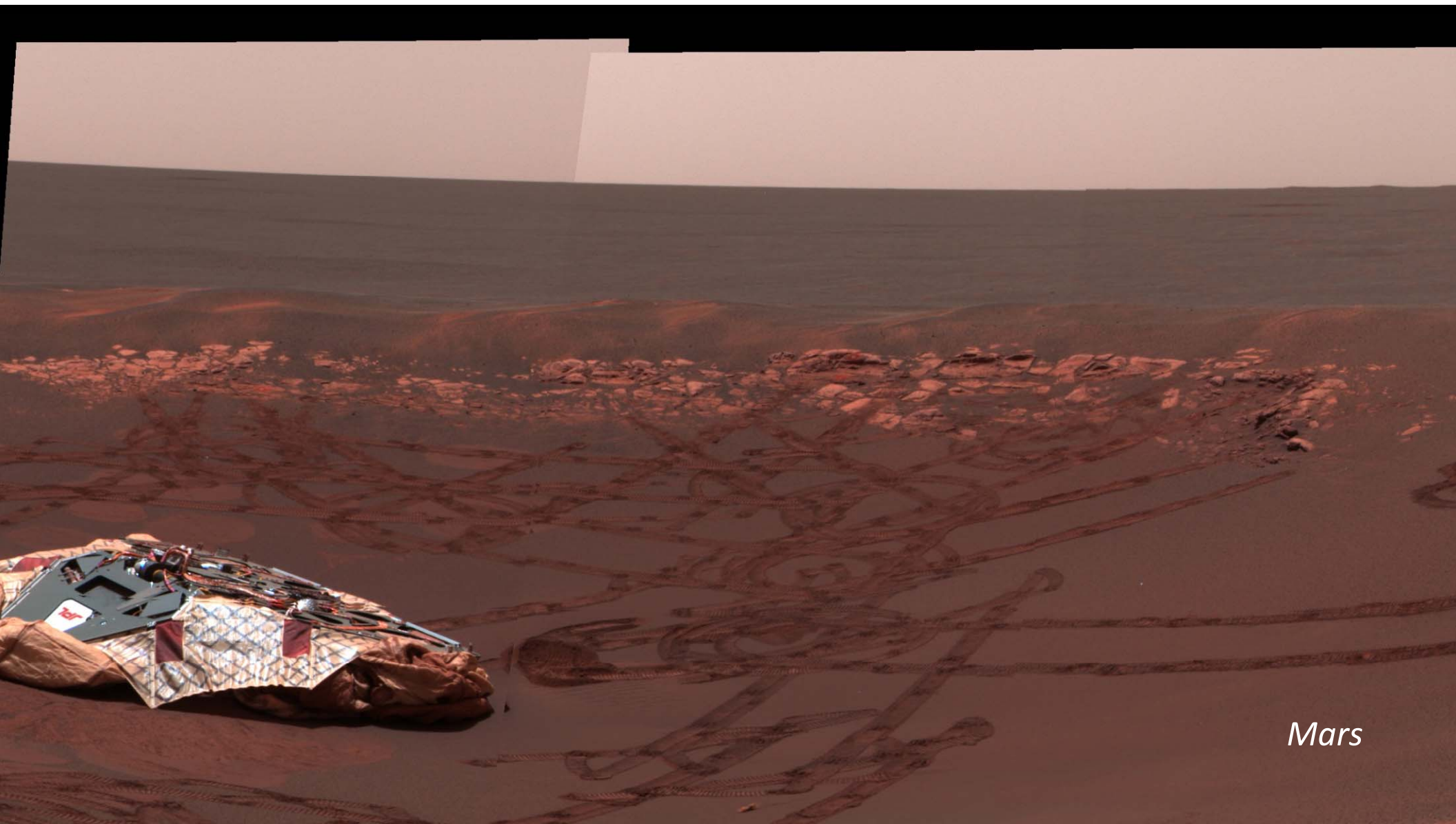






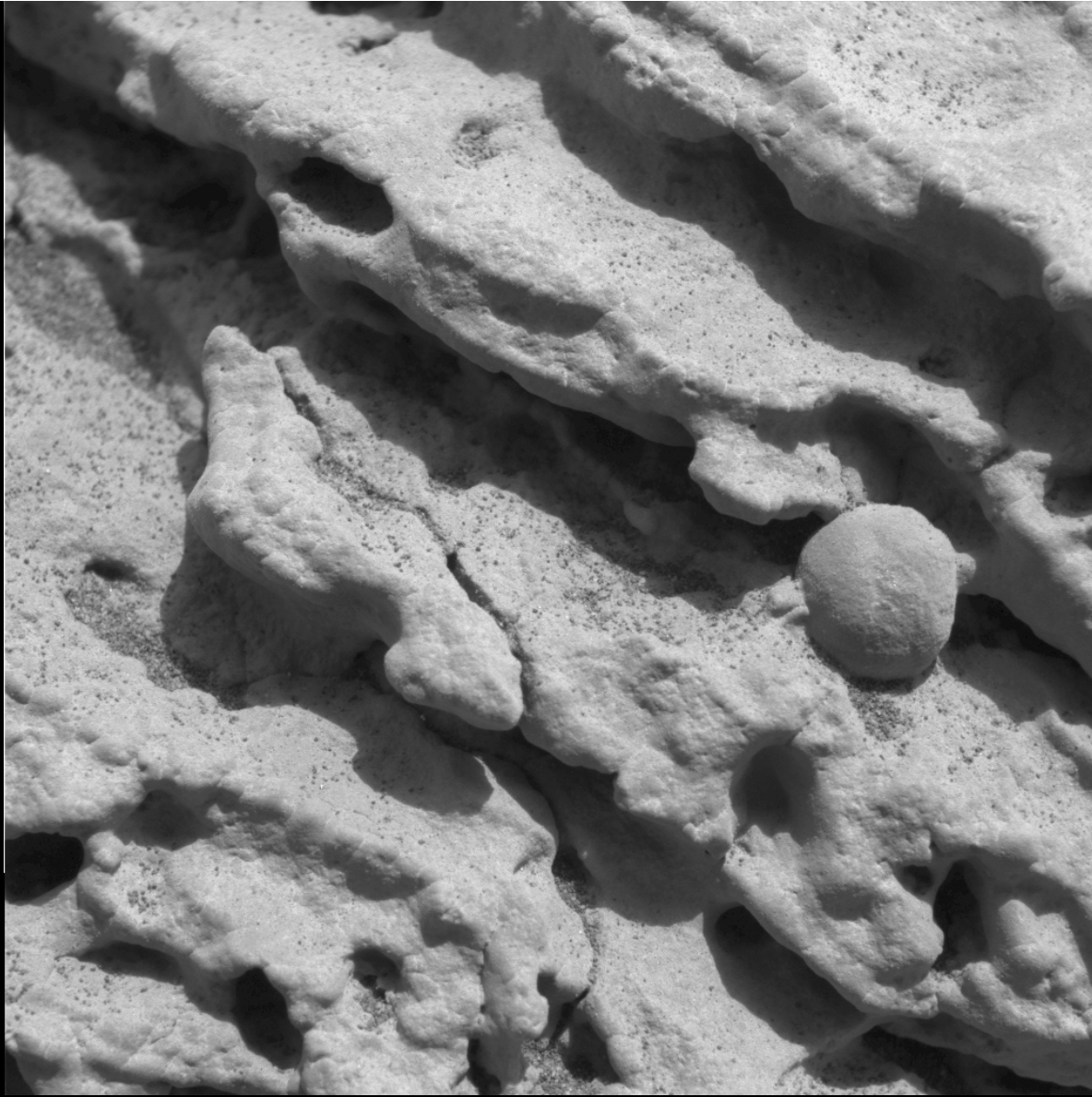


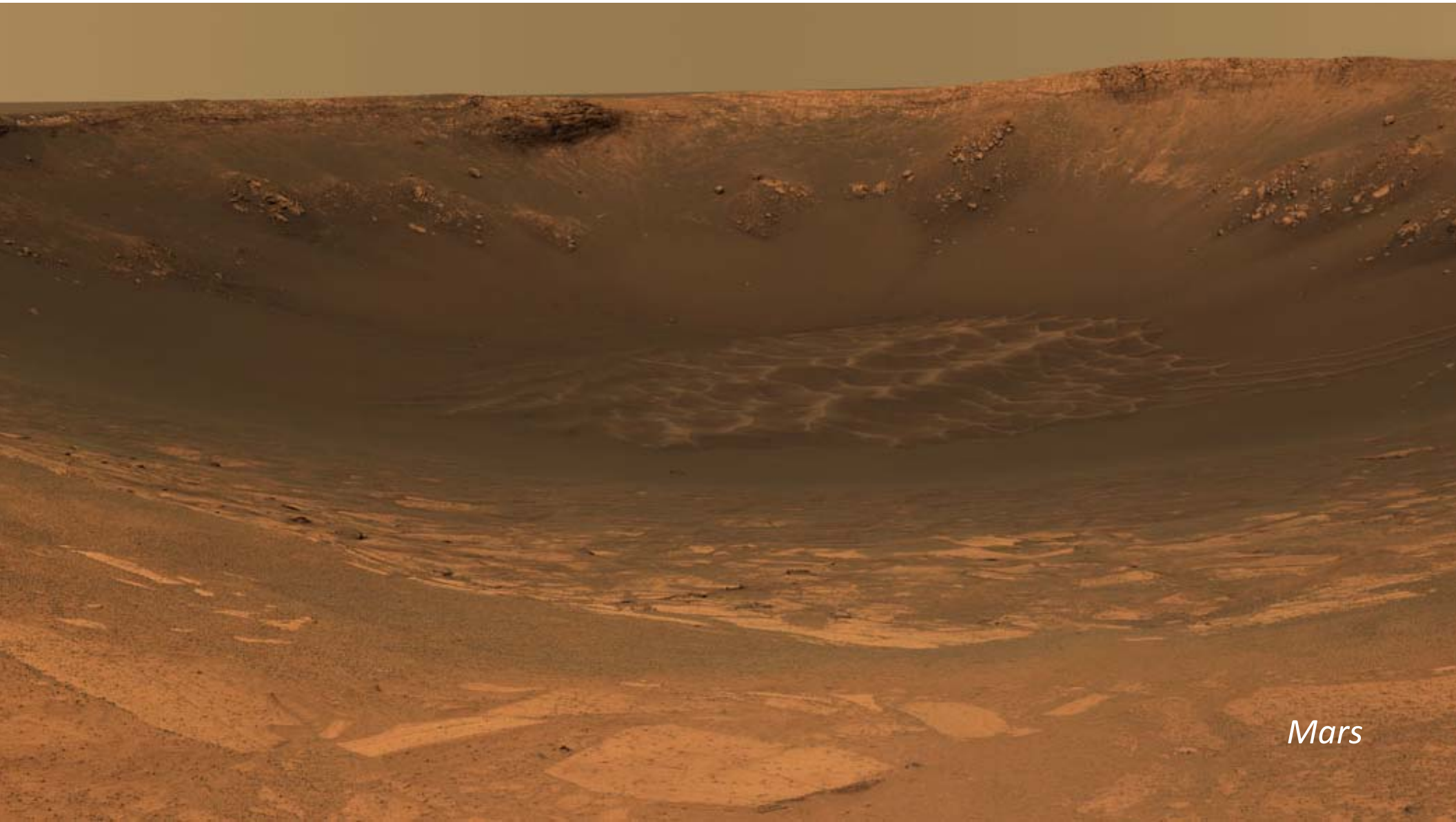




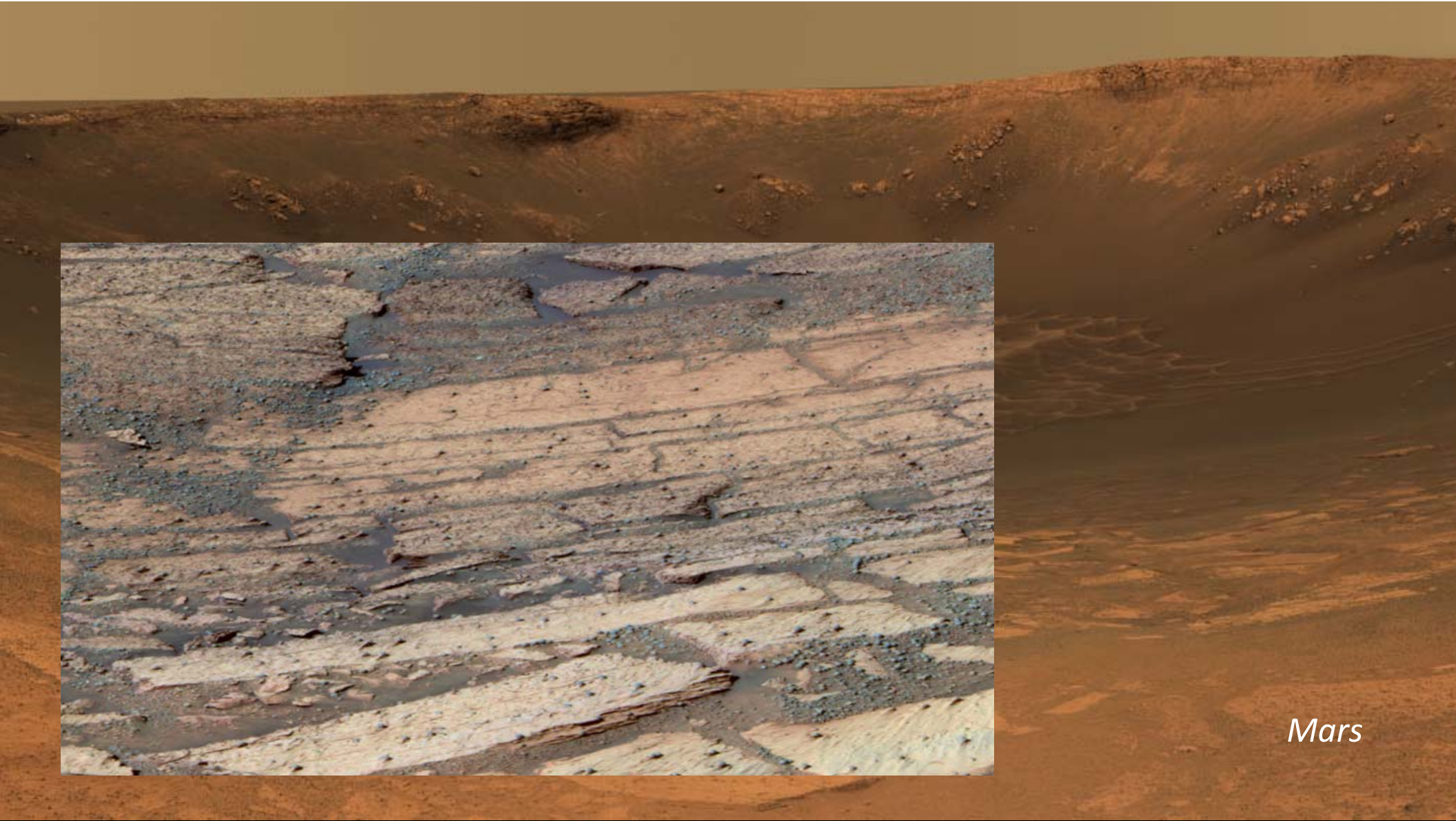
Mars



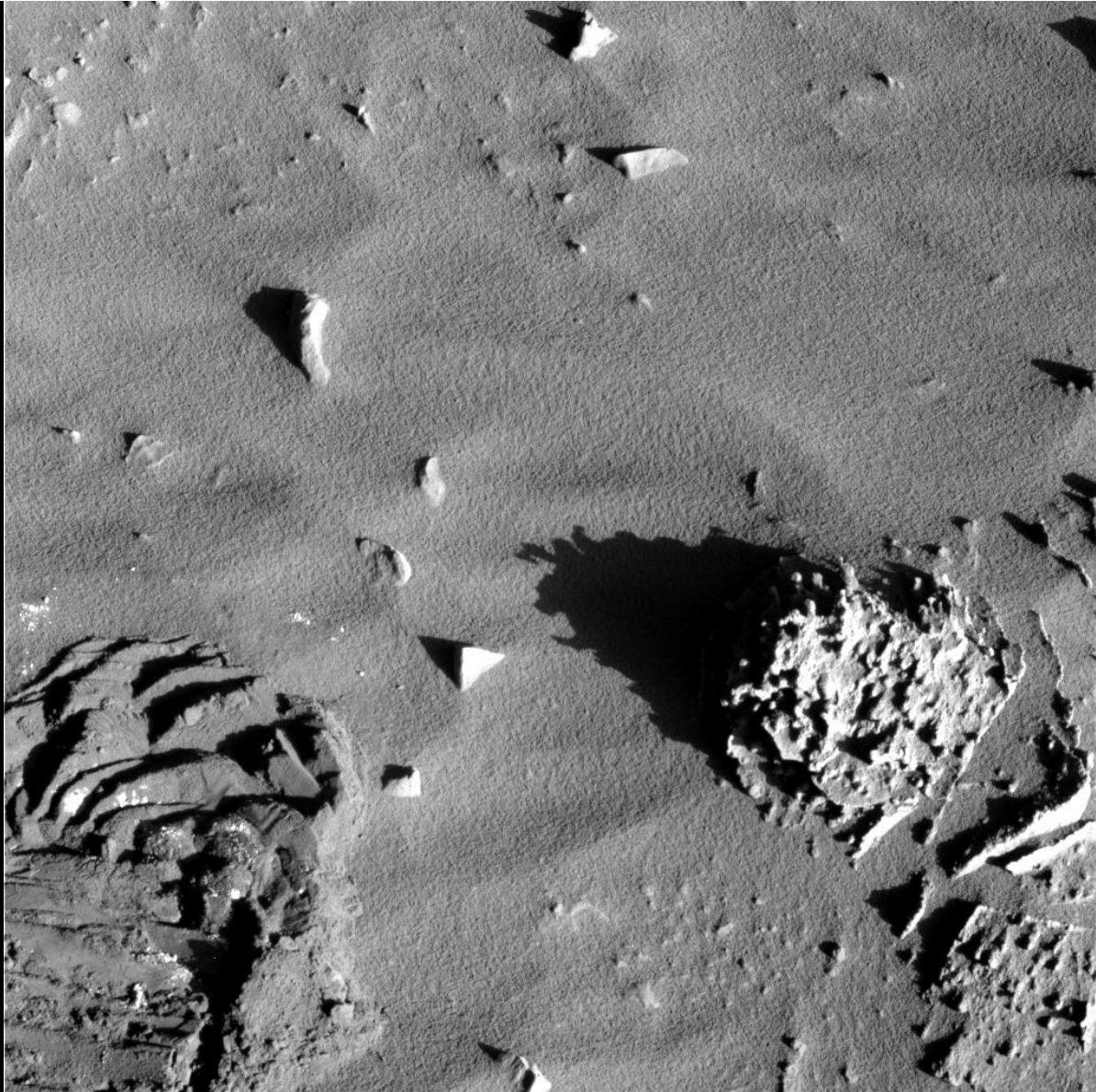


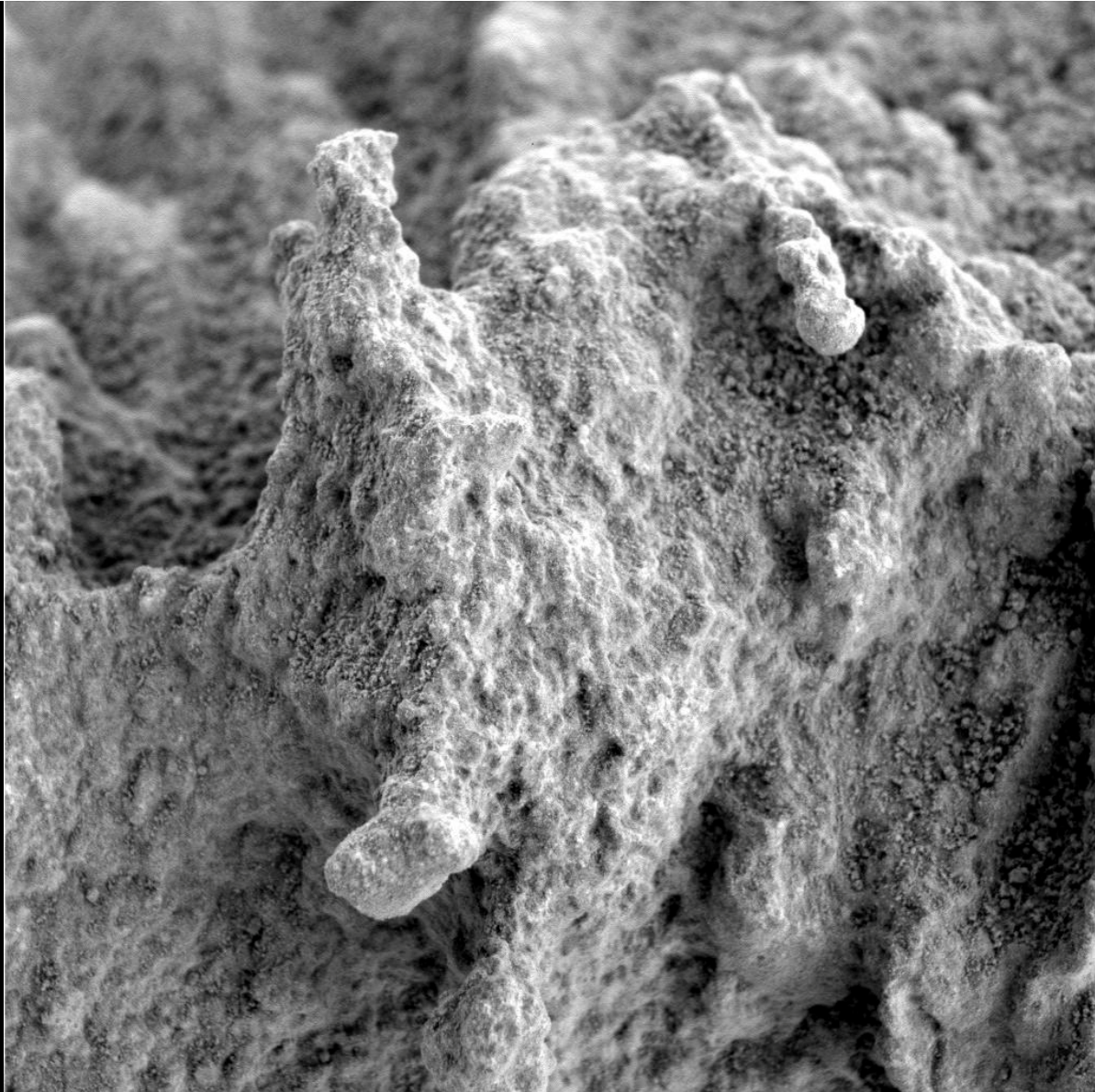


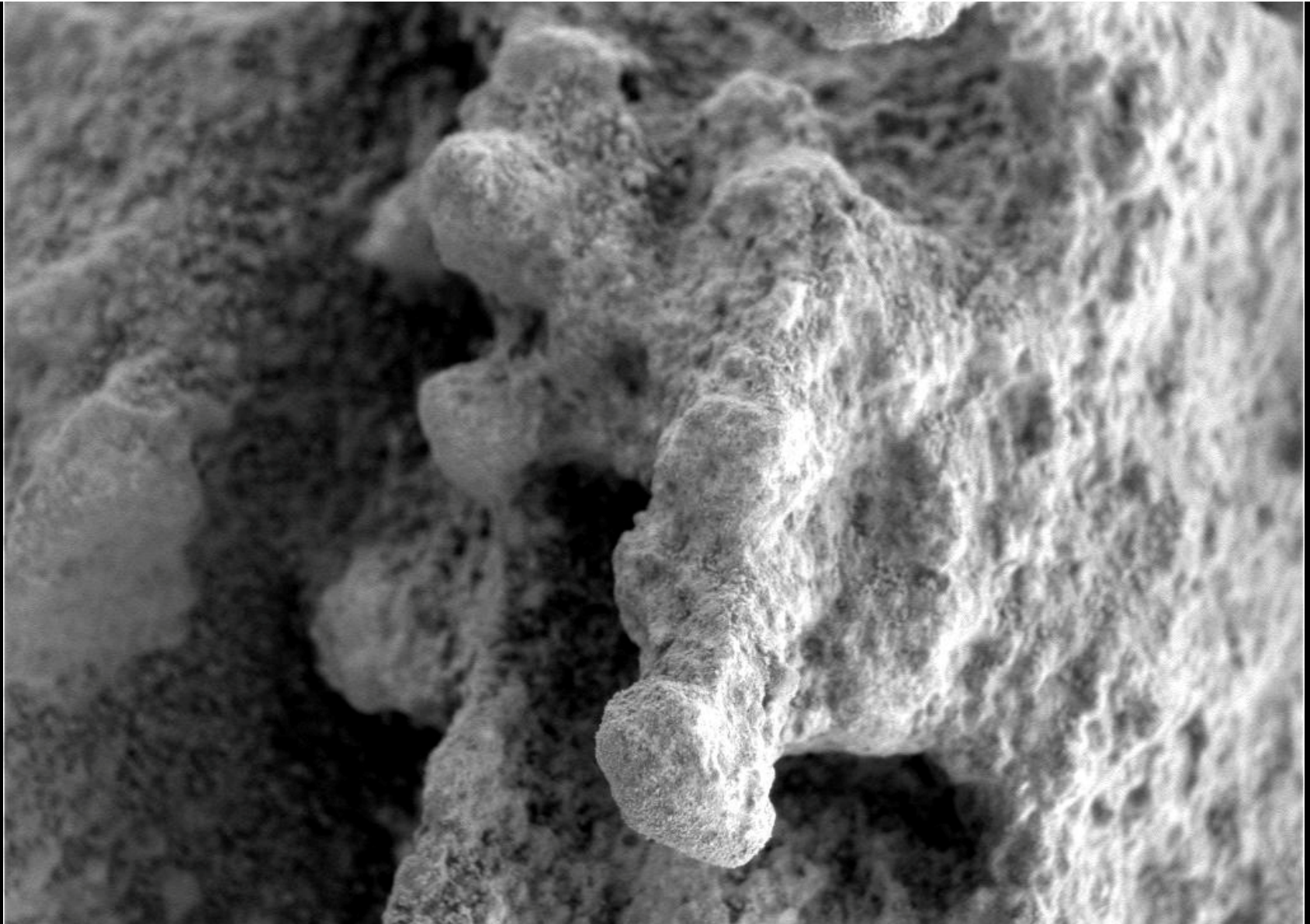
Mars



Mars





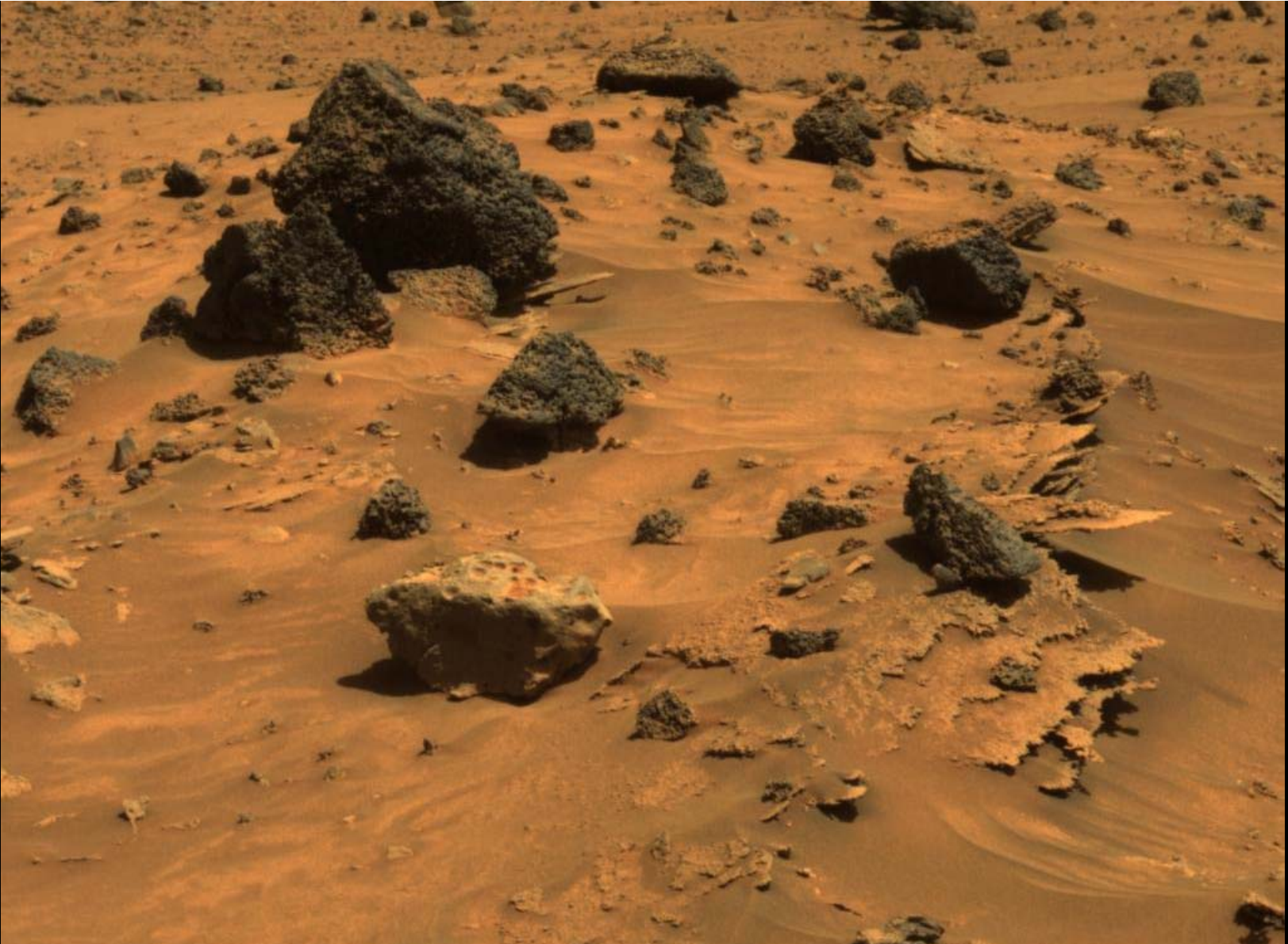












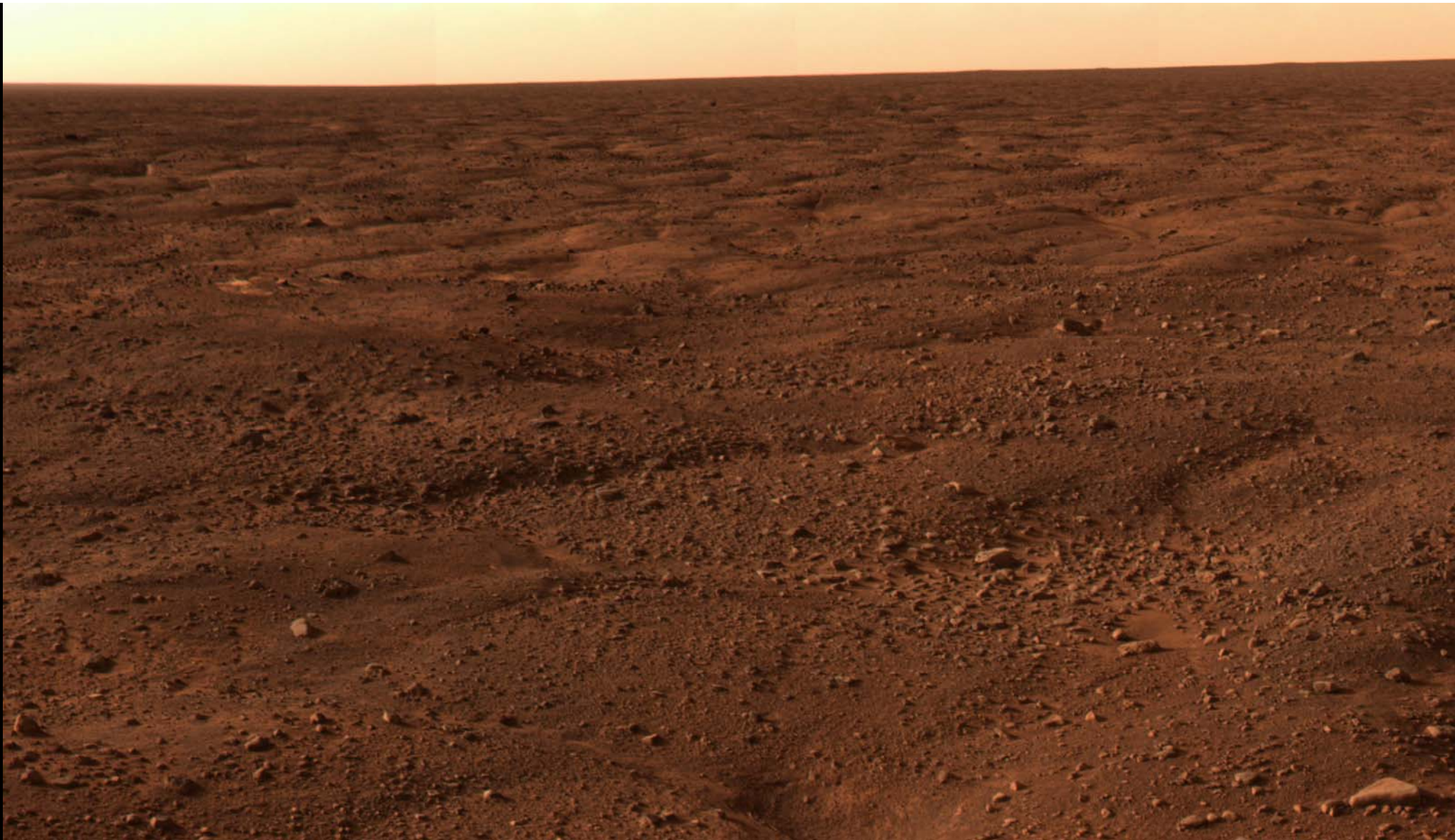
Aflejringer i bunden af en sø
for omkring 3,5 milliarder år siden

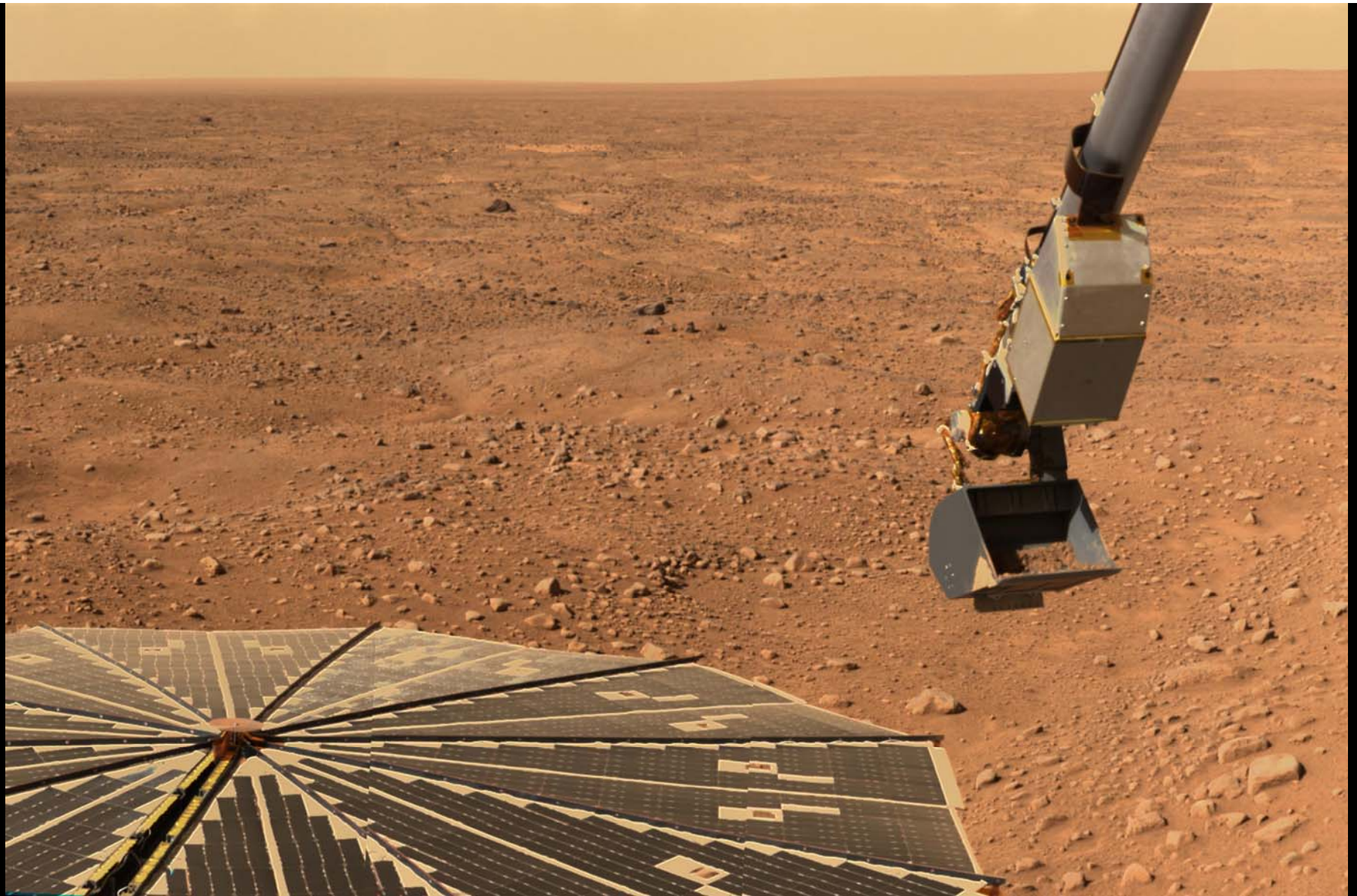


Landing på Mars den 25. maj 2008

Phoenix





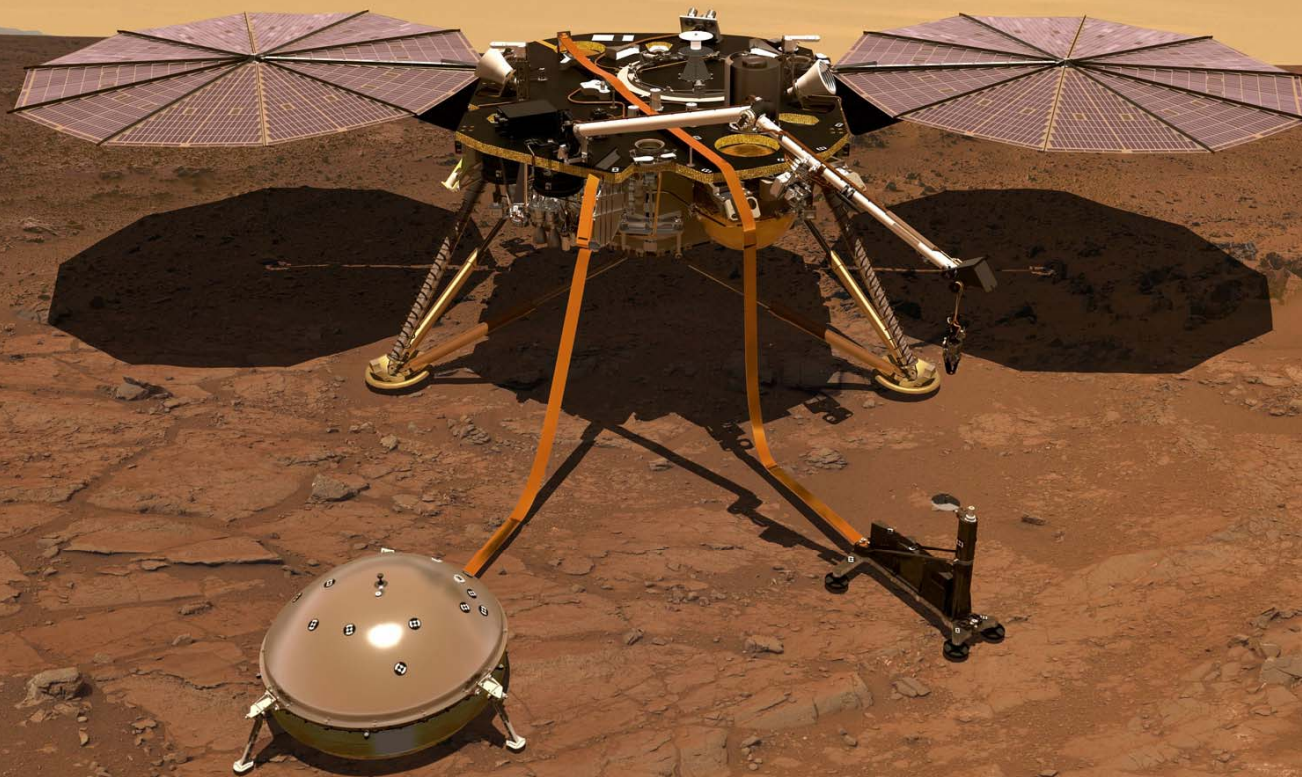


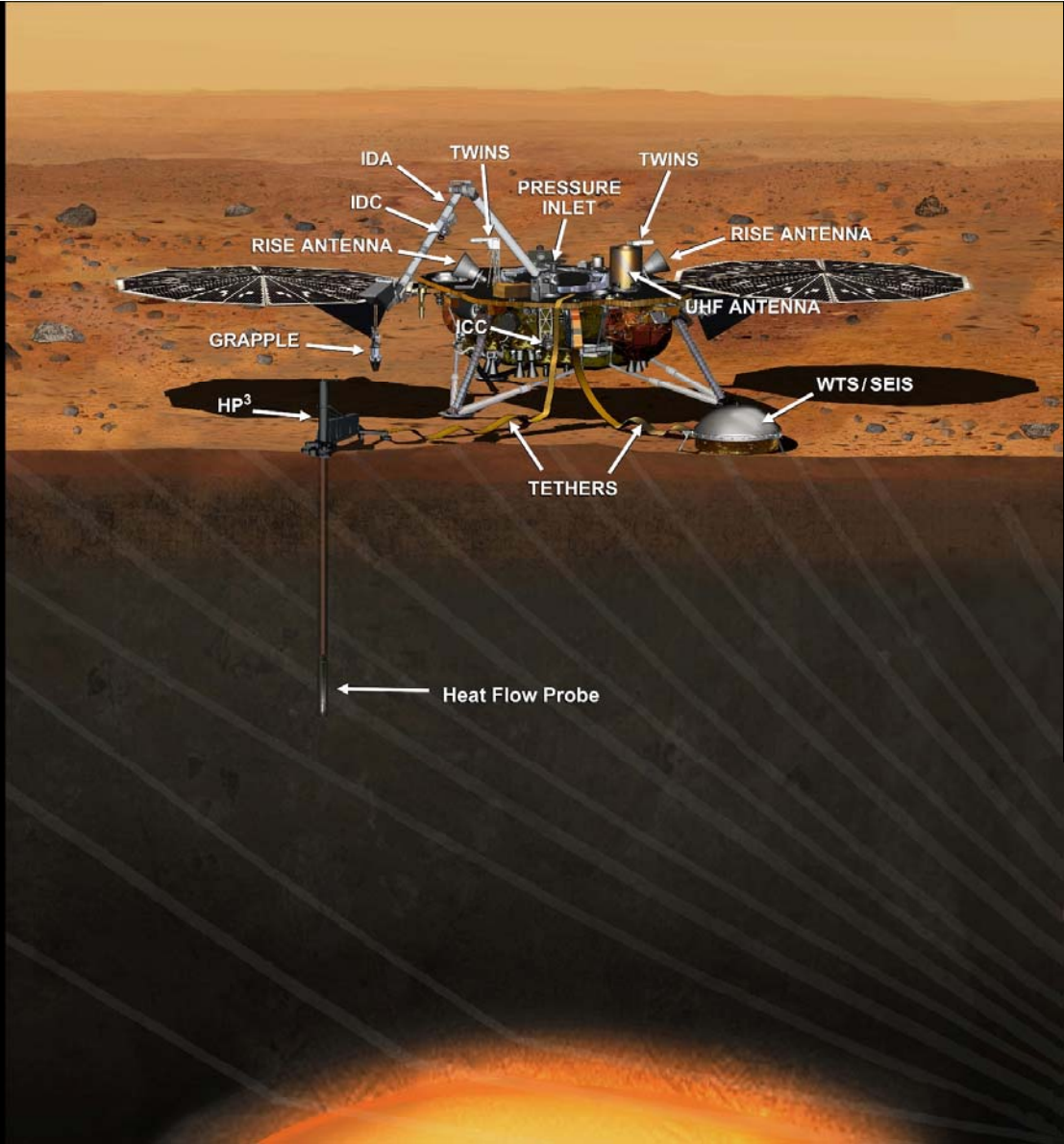


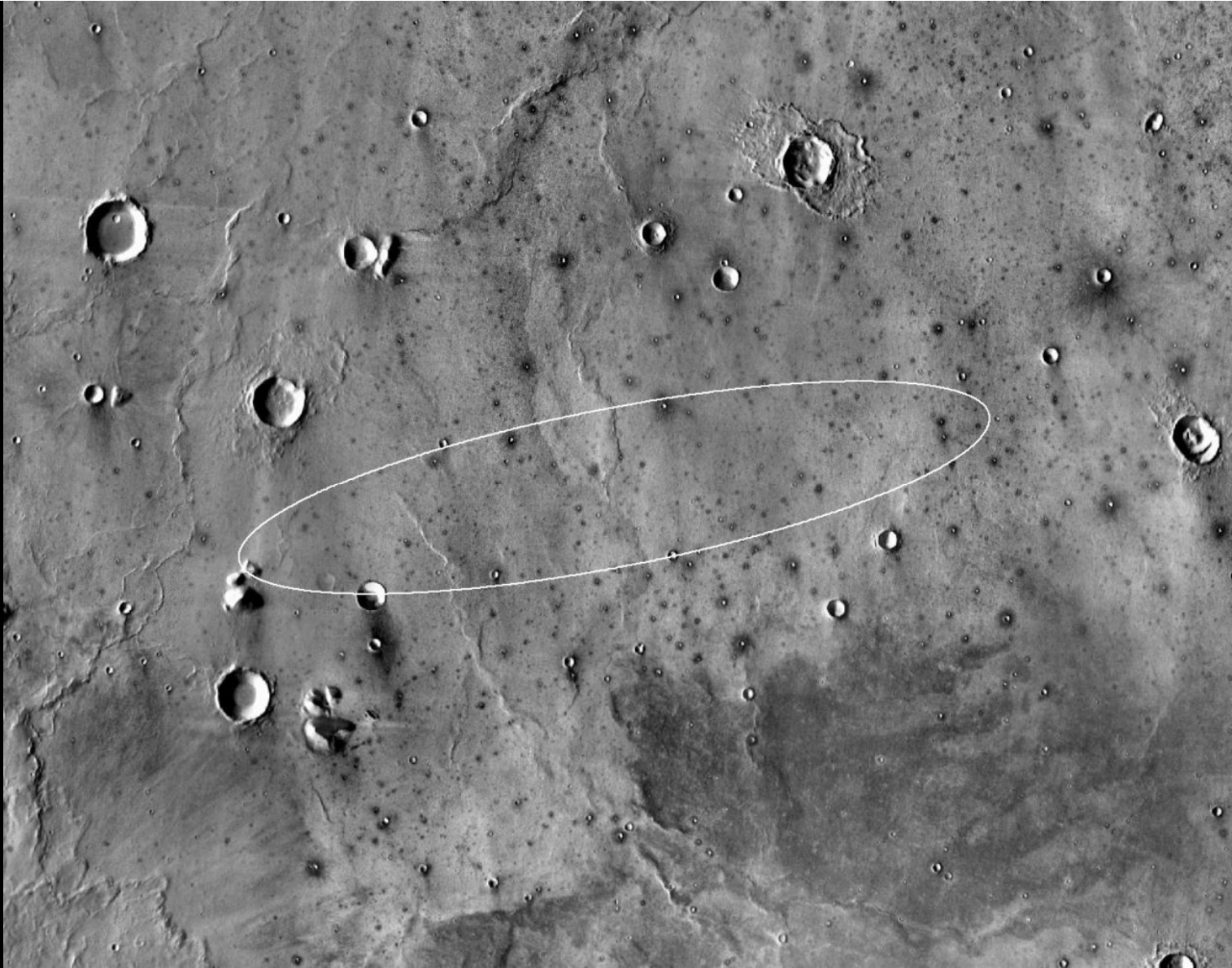
COUNTDOWN
TO LANDING

NOV 118:10:15:52
26 DAYS HRS MINS SECS

InSight (NASA) blev opsendt 5. maj 2018





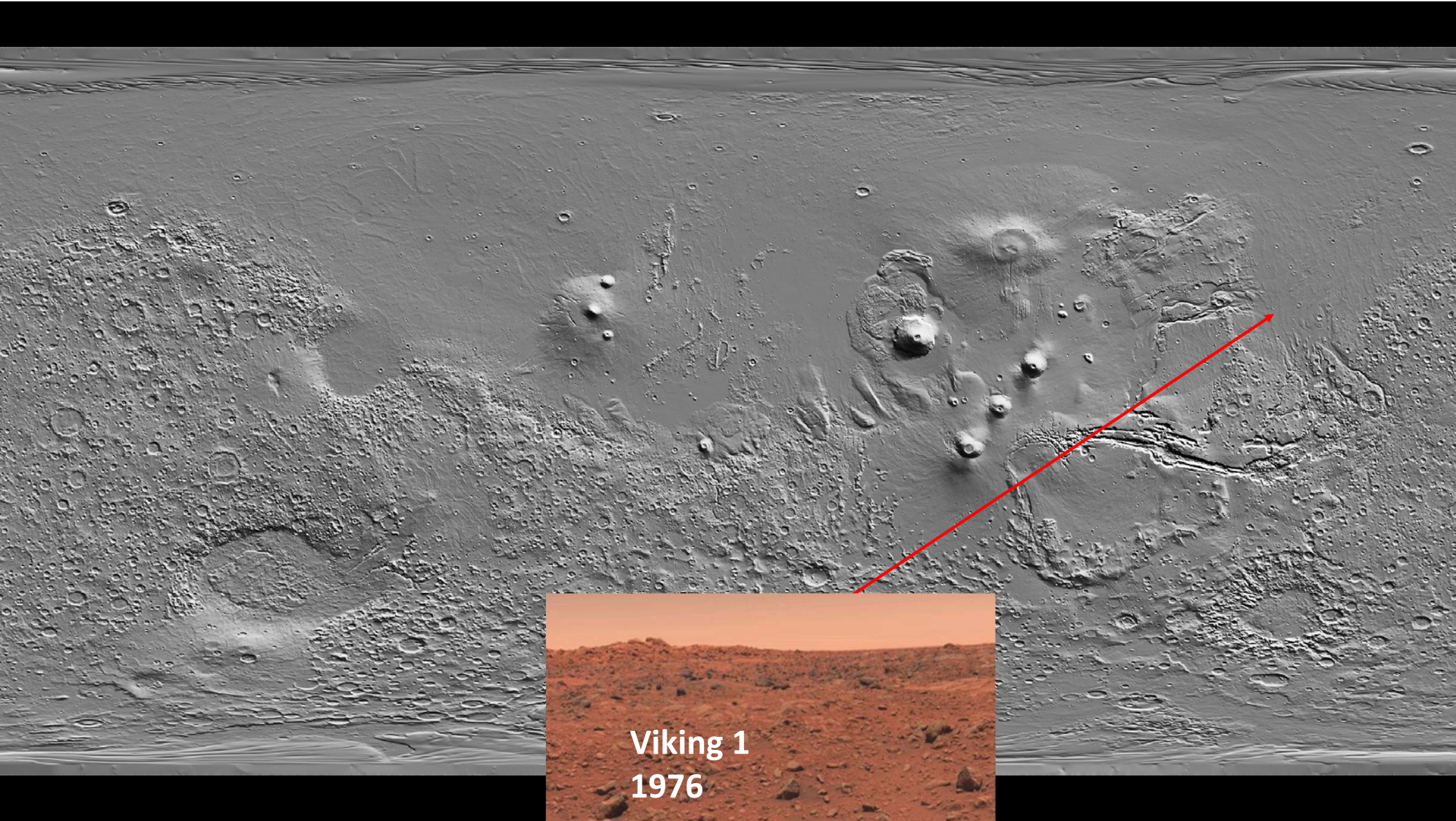


Mars

Nord



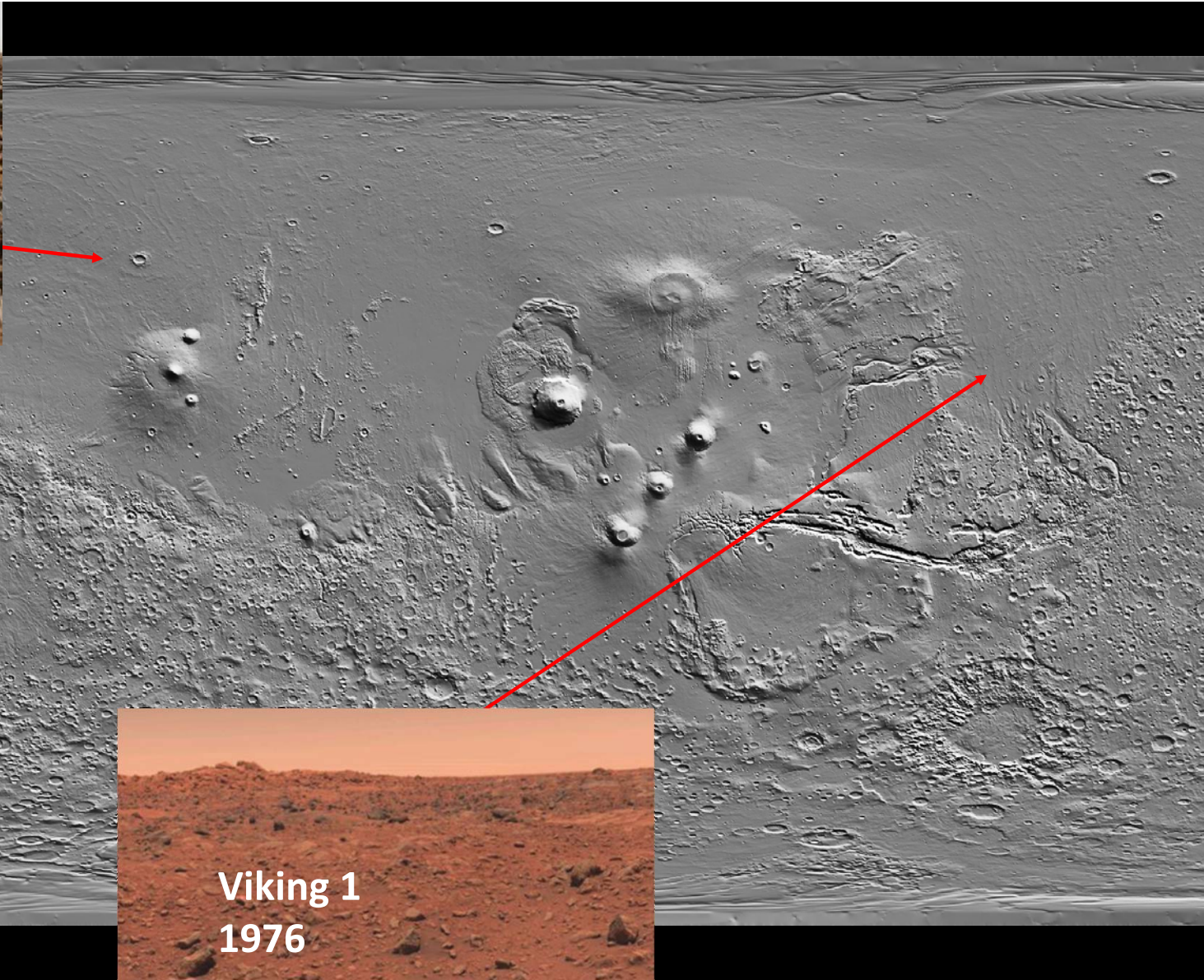
Syd



Viking 1
1976



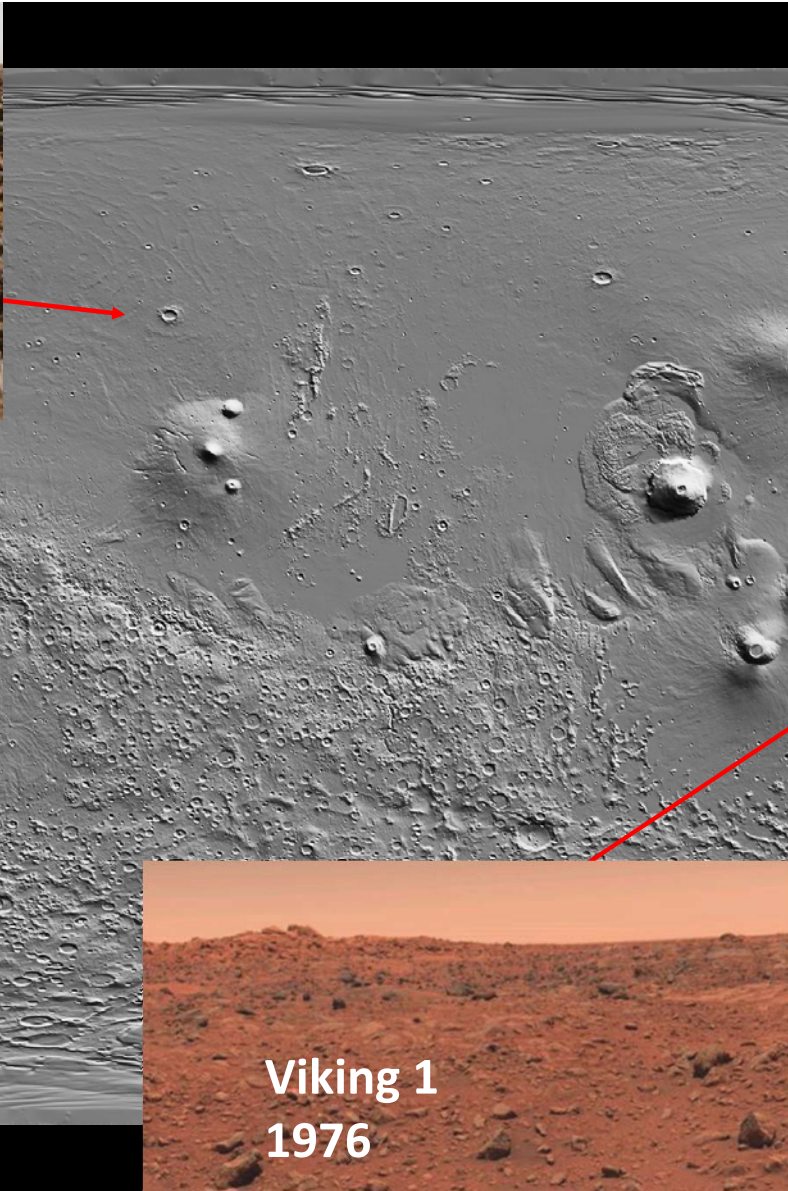
Viking 2
1976



Viking 1
1976



**Viking 2
1976**



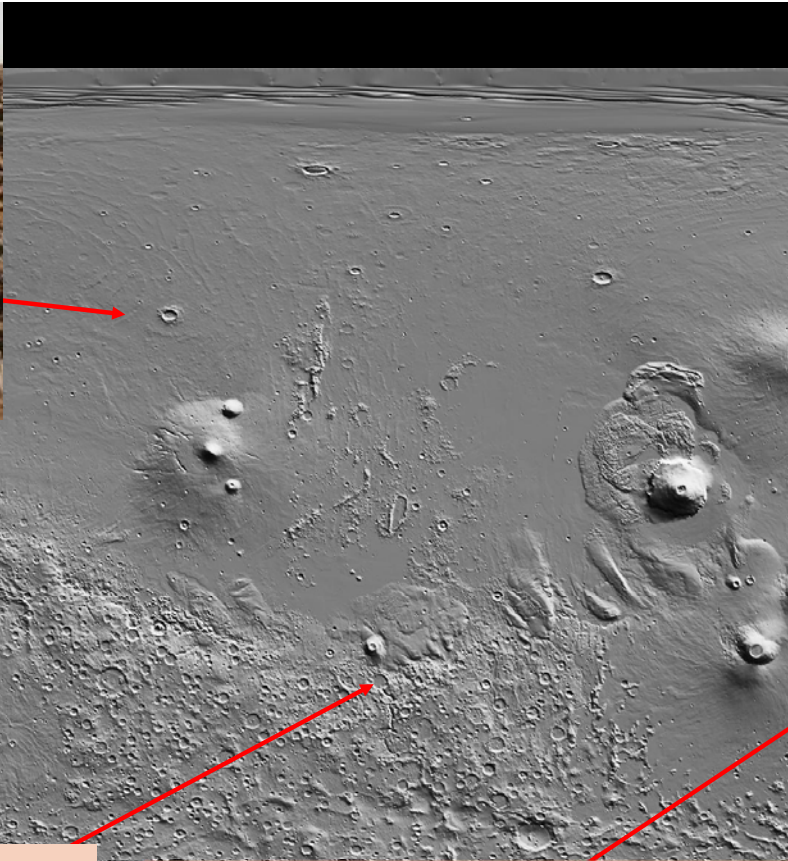
**Pathfinder
1997**



**Viking 1
1976**



Viking 2
1976



Pathfinder
1997



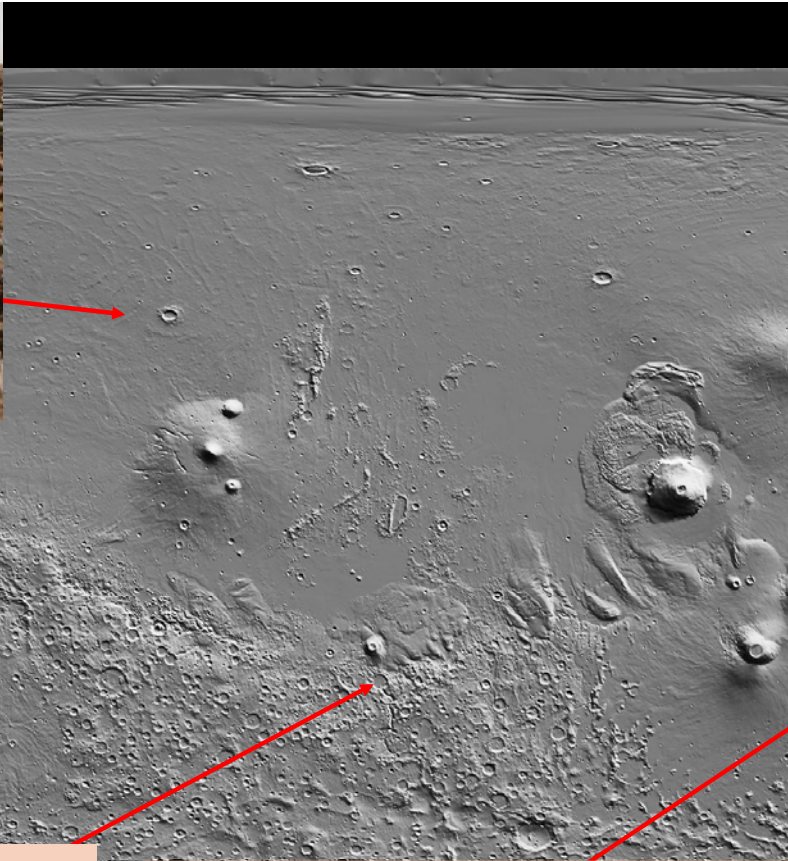
Spirit
2004



Viking 1
1976



Viking 2
1976



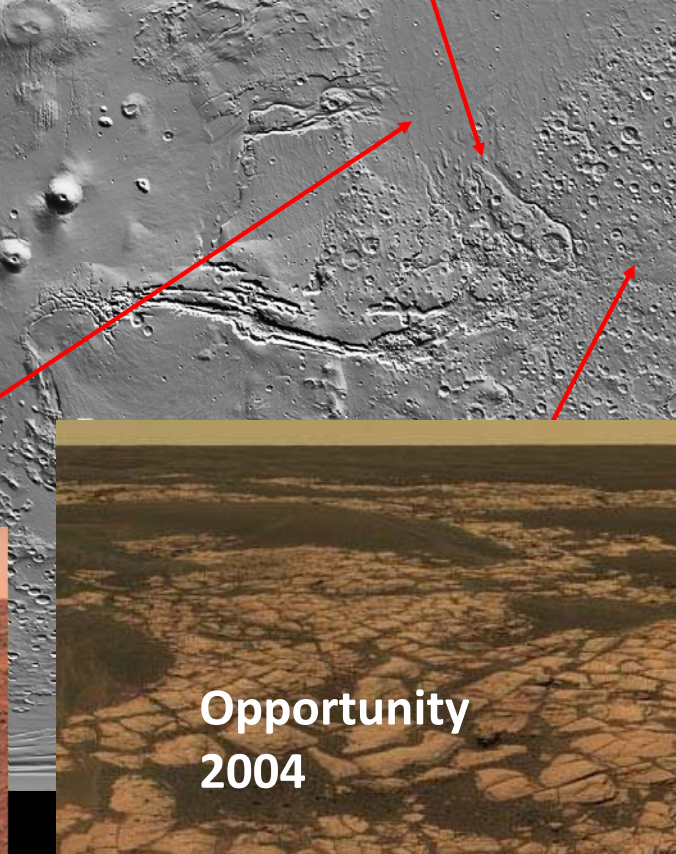
Pathfinder
1997



Spirit
2004



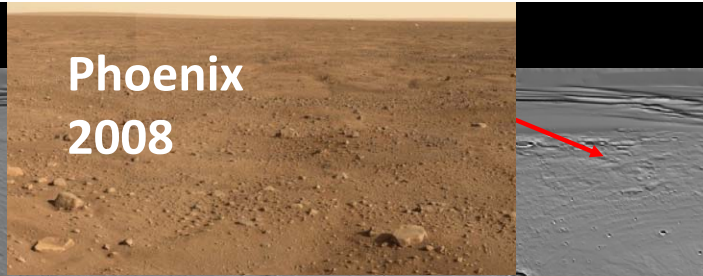
Viking 1
1976



Opportunity
2004



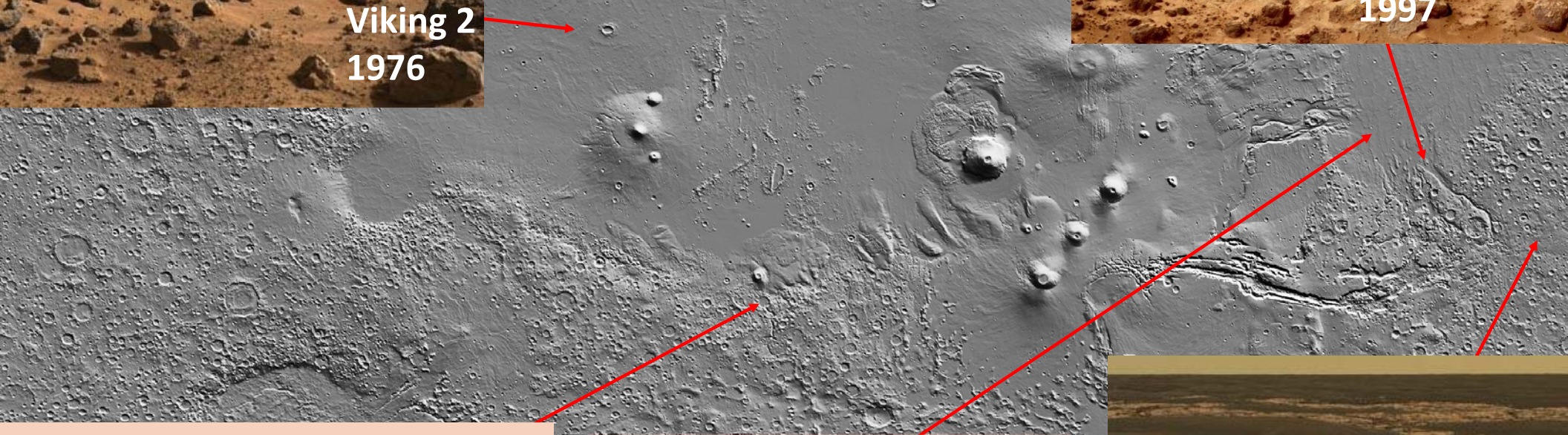
Viking 2
1976



Phoenix
2008



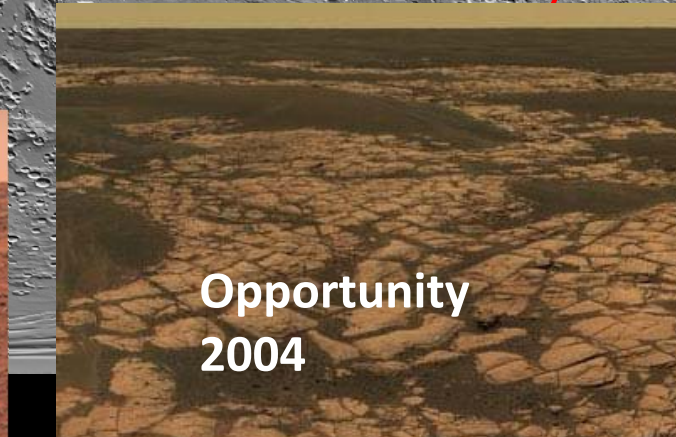
Pathfinder
1997



Spirit
2004



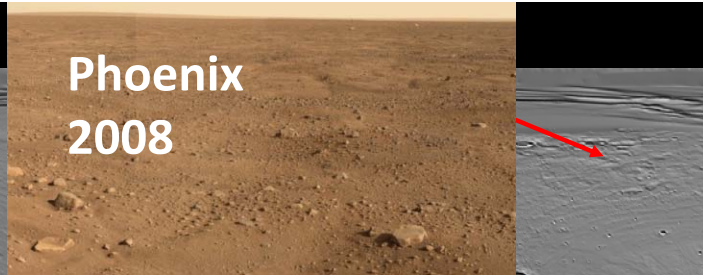
Viking 1
1976



Opportunity
2004



Viking 2
1976



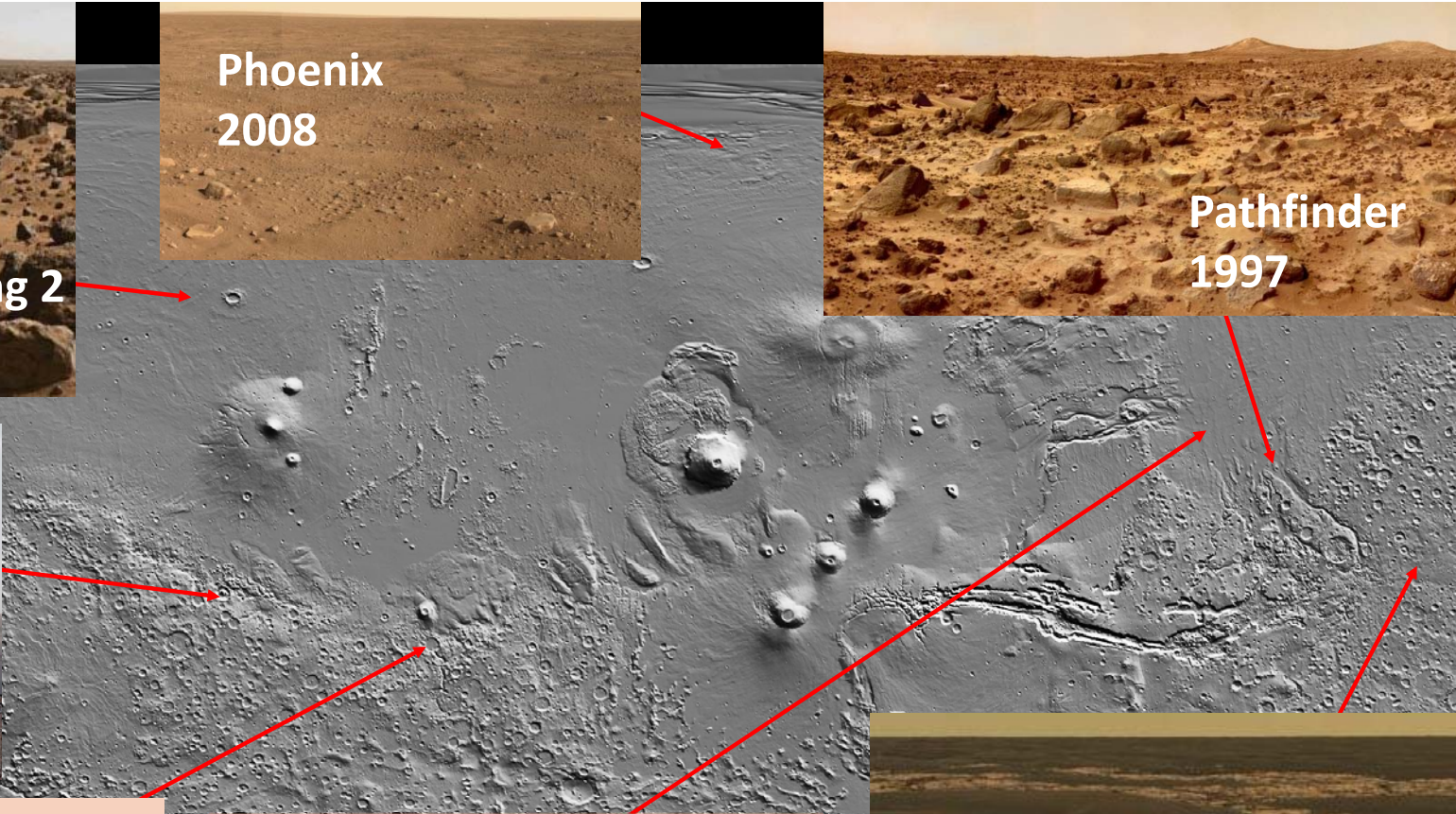
Phoenix
2008



Pathfinder
1997



Curiosity
2012



Spirit
2004



Viking 1
1976



Opportunity
2004



Viking 2
1976



Phoenix
2008



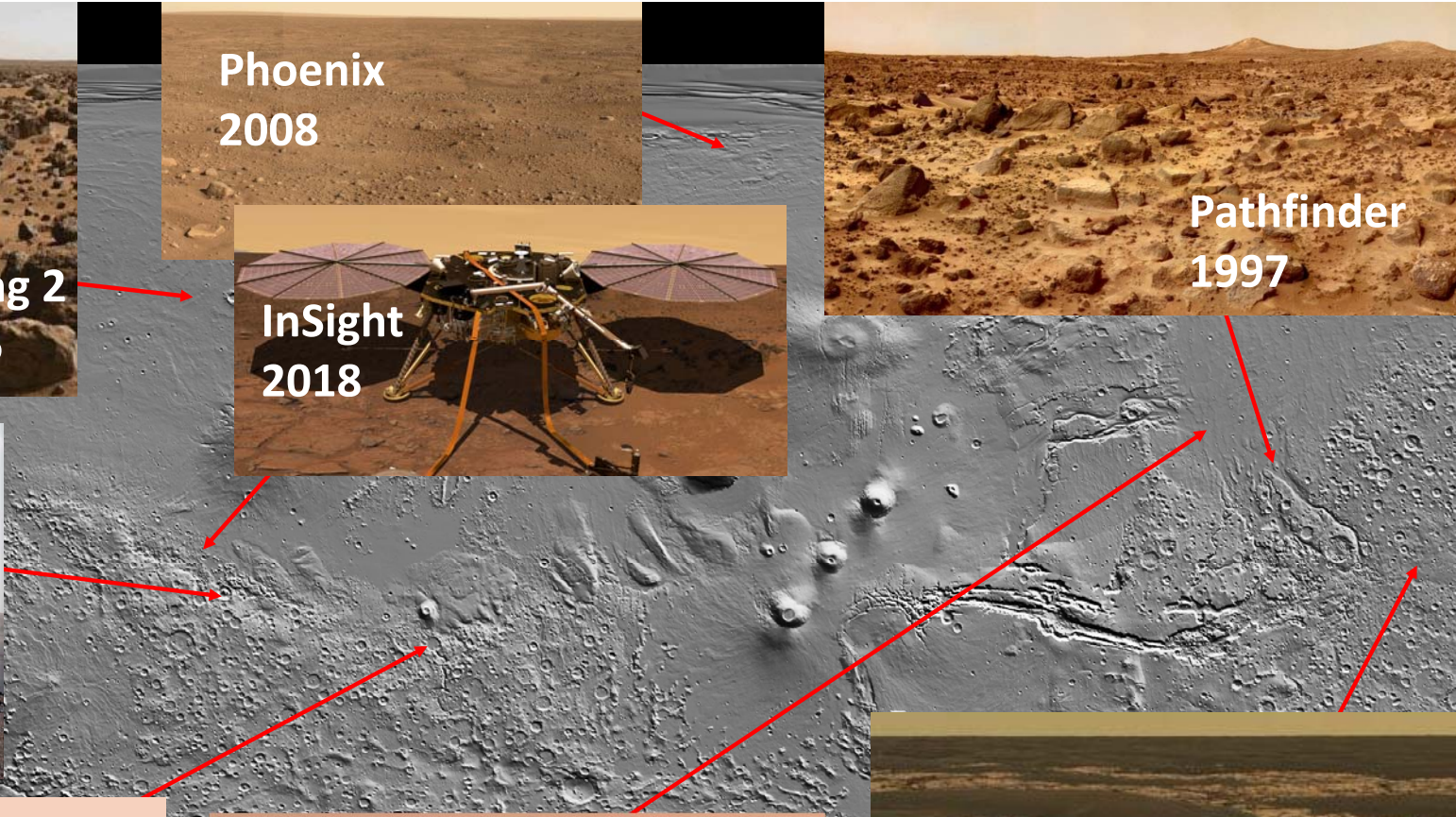
Pathfinder
1997



InSight
2018



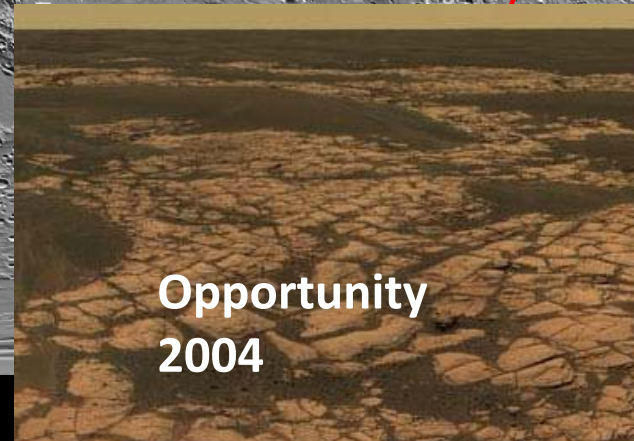
Curiosity
2012



Spirit
2004

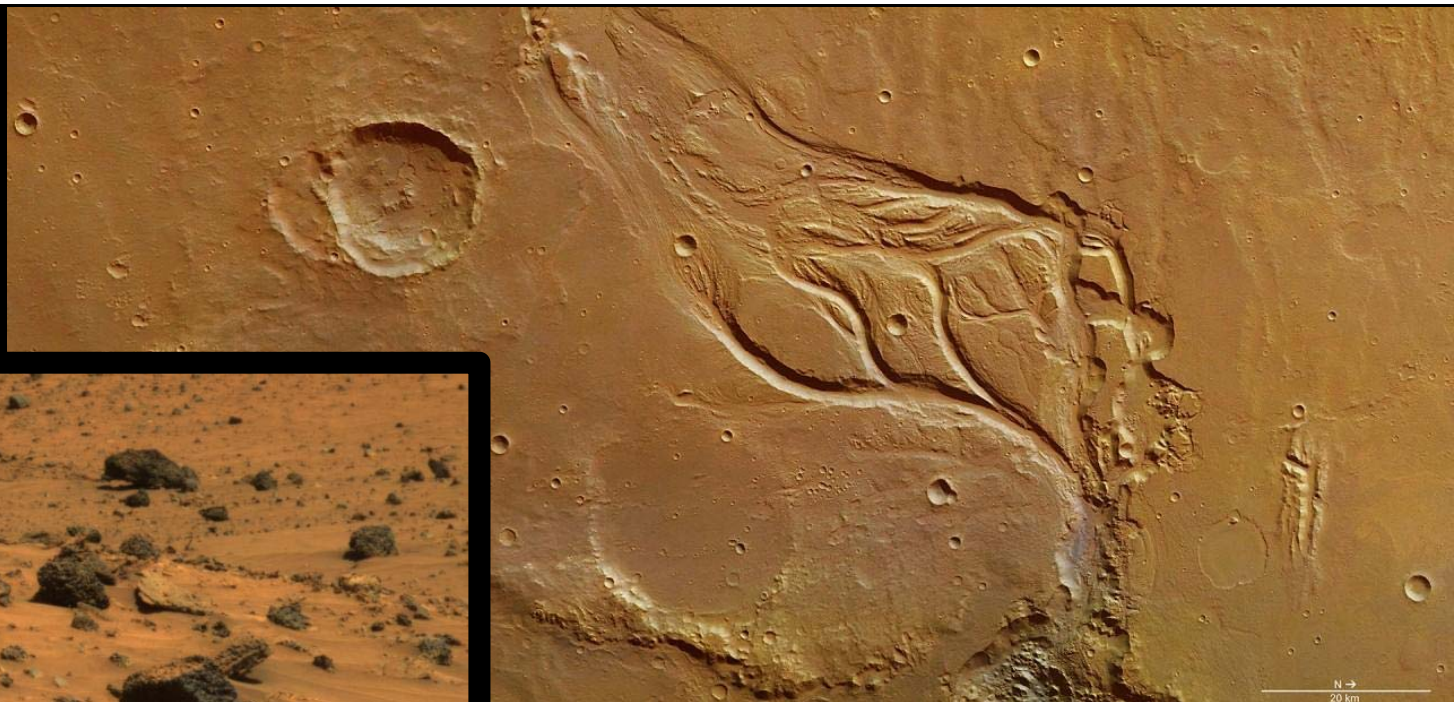


Viking 1
1976



Opportunity
2004

Vand på Mars
Støv på Mars

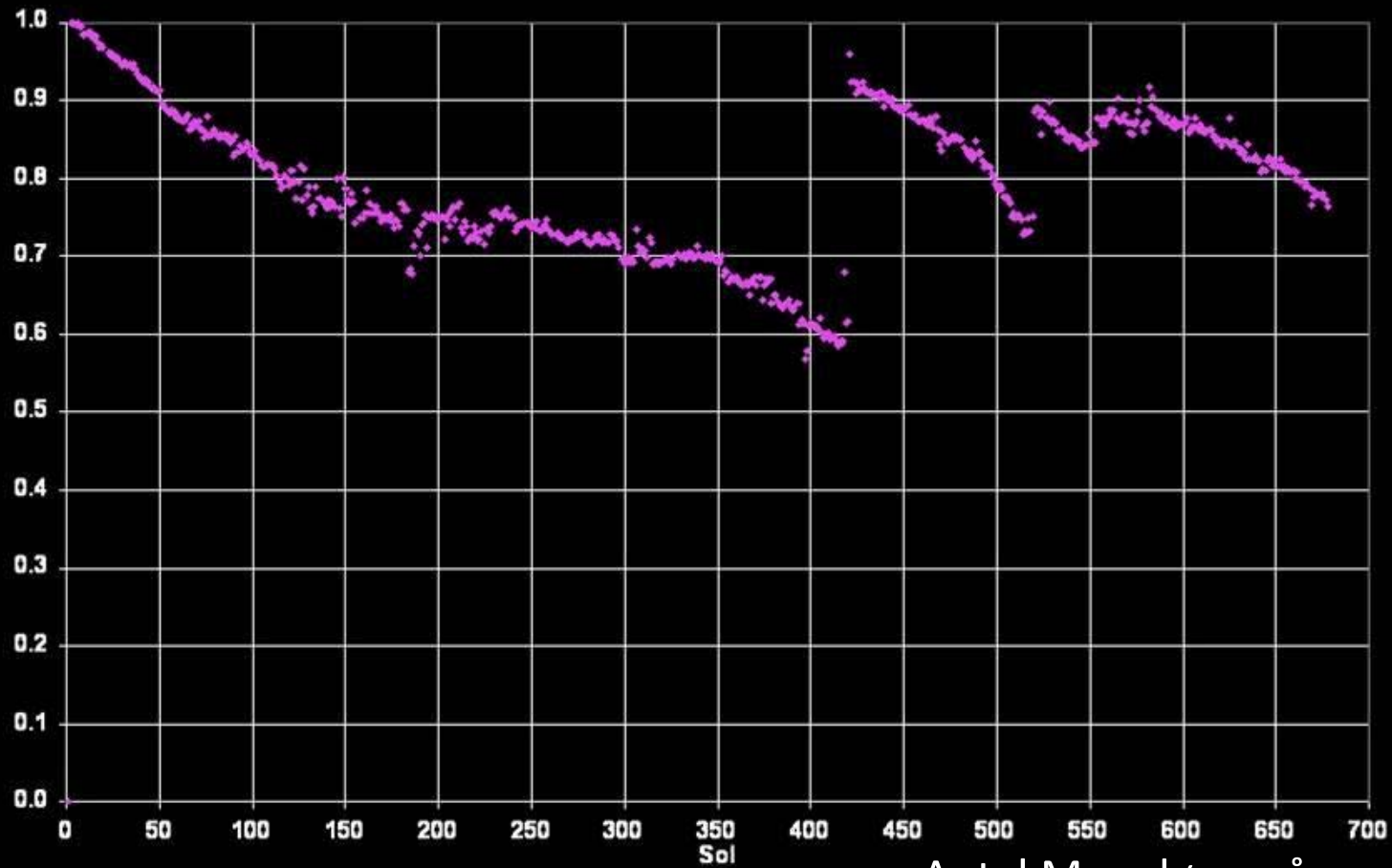




Mars



Energiproduktion fra solpanelerne på Spirit



Antal Marsdøgn på overfladen

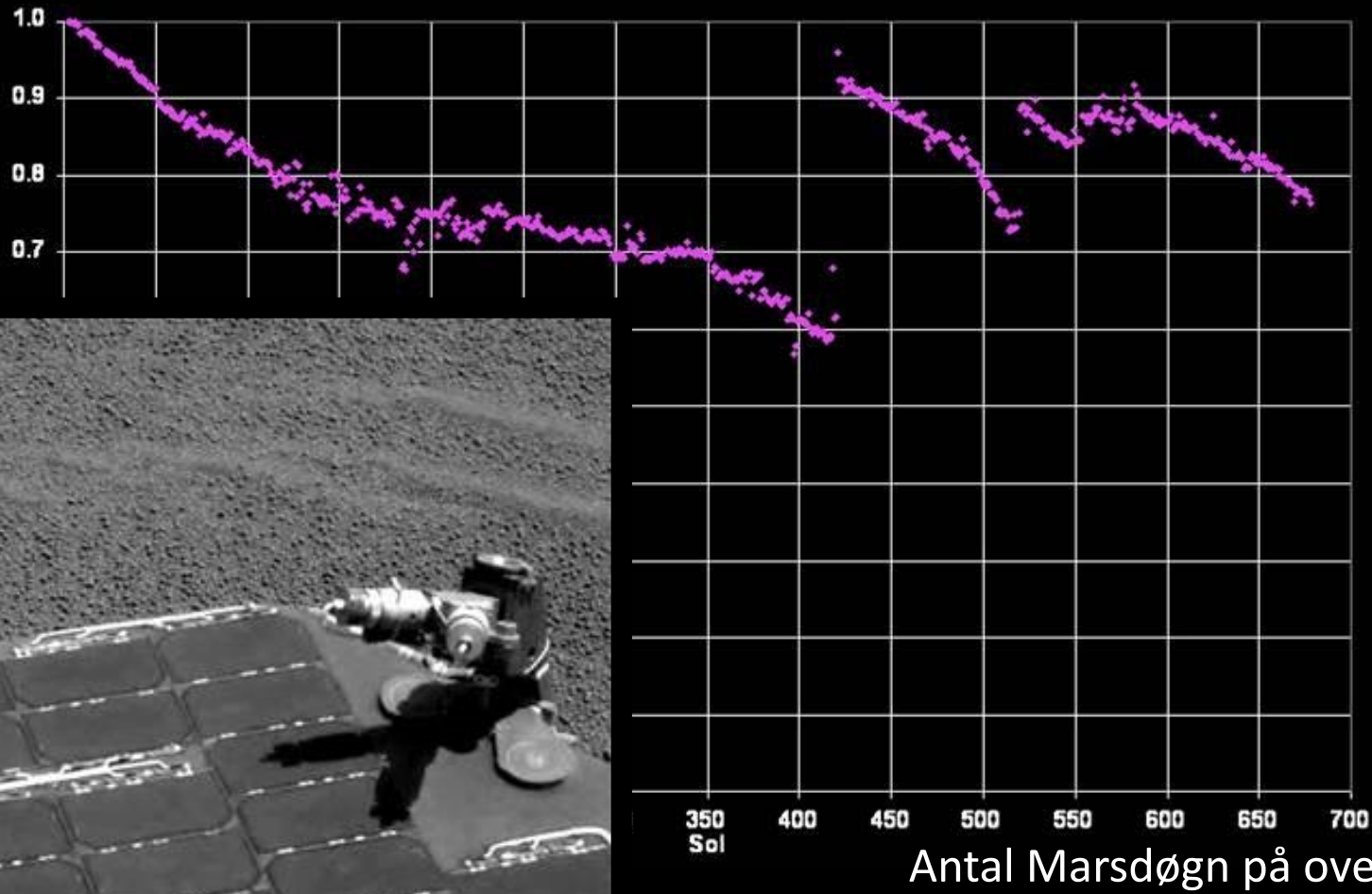
Energiproduktion fra solpanelerne på Spirit



Hvordan er solpanelerne blevet rene?

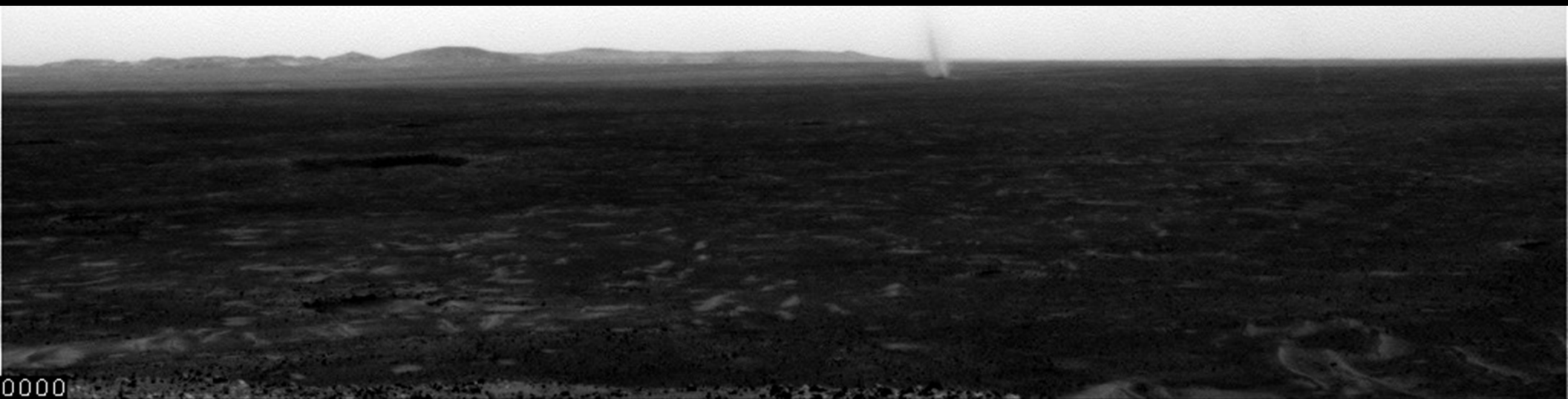


Energiproduktion fra solpanelerne på Spirit

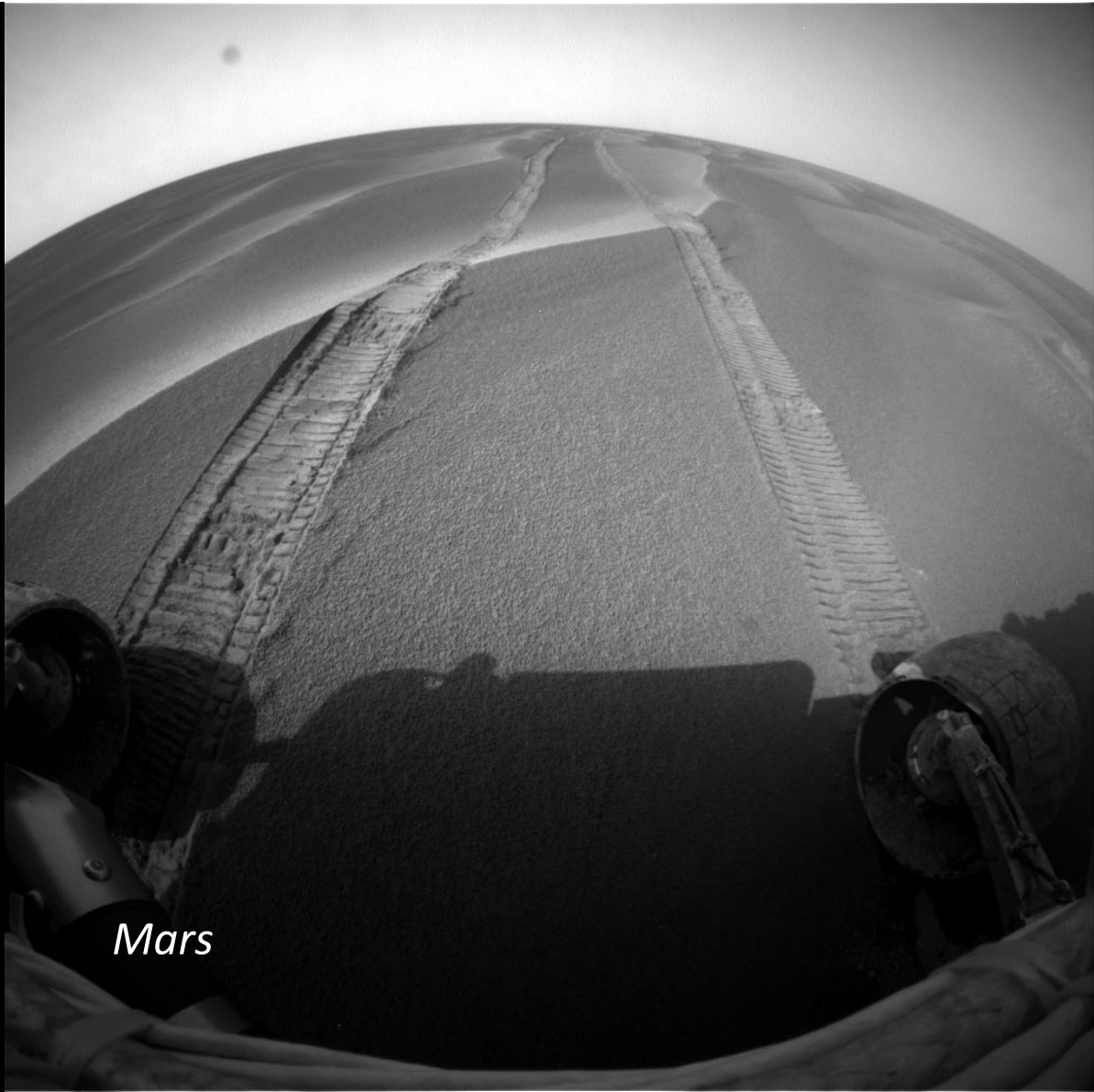


Mars

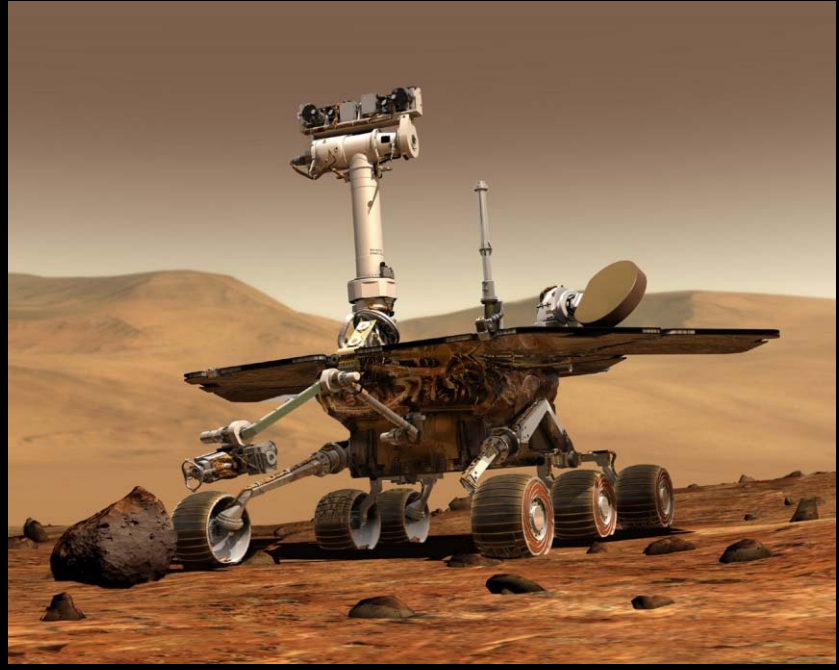
0000



0000



Mars

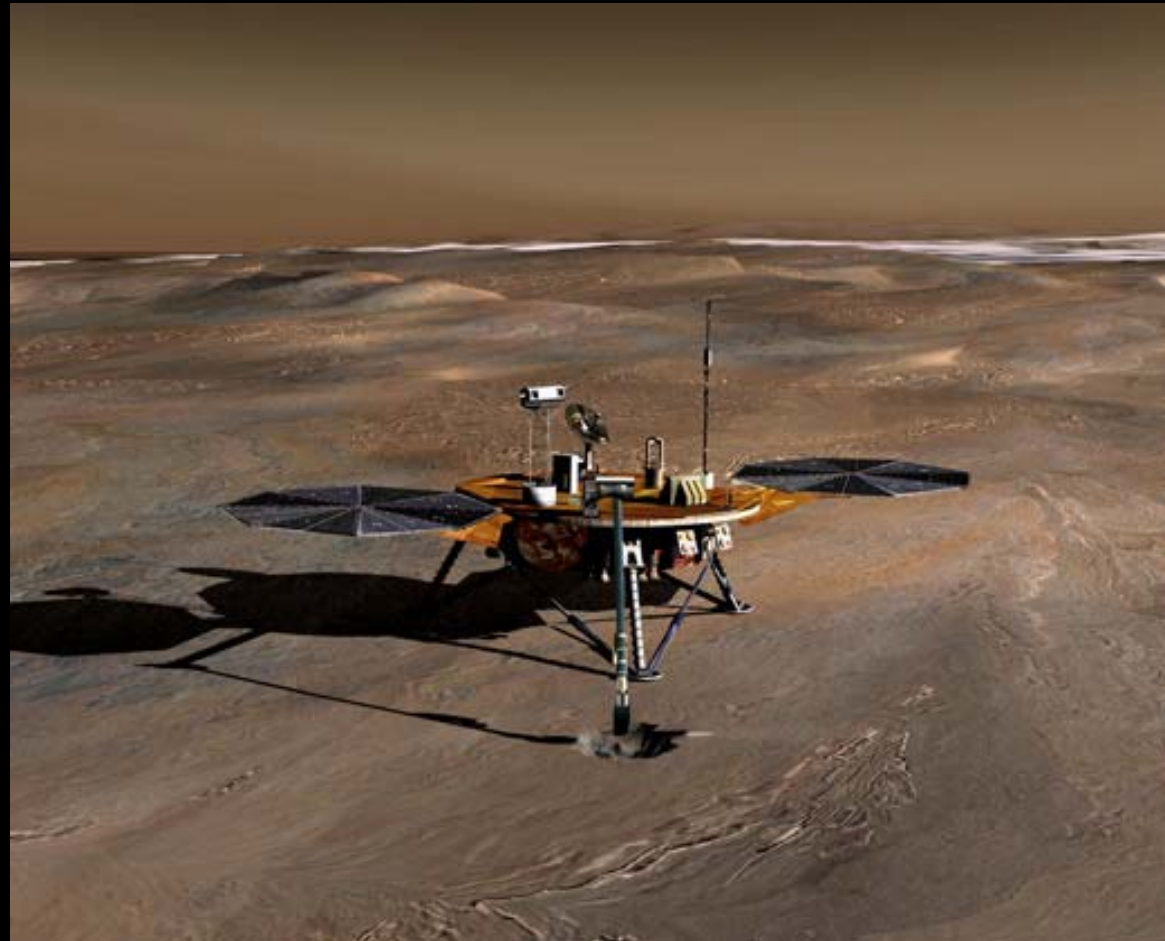


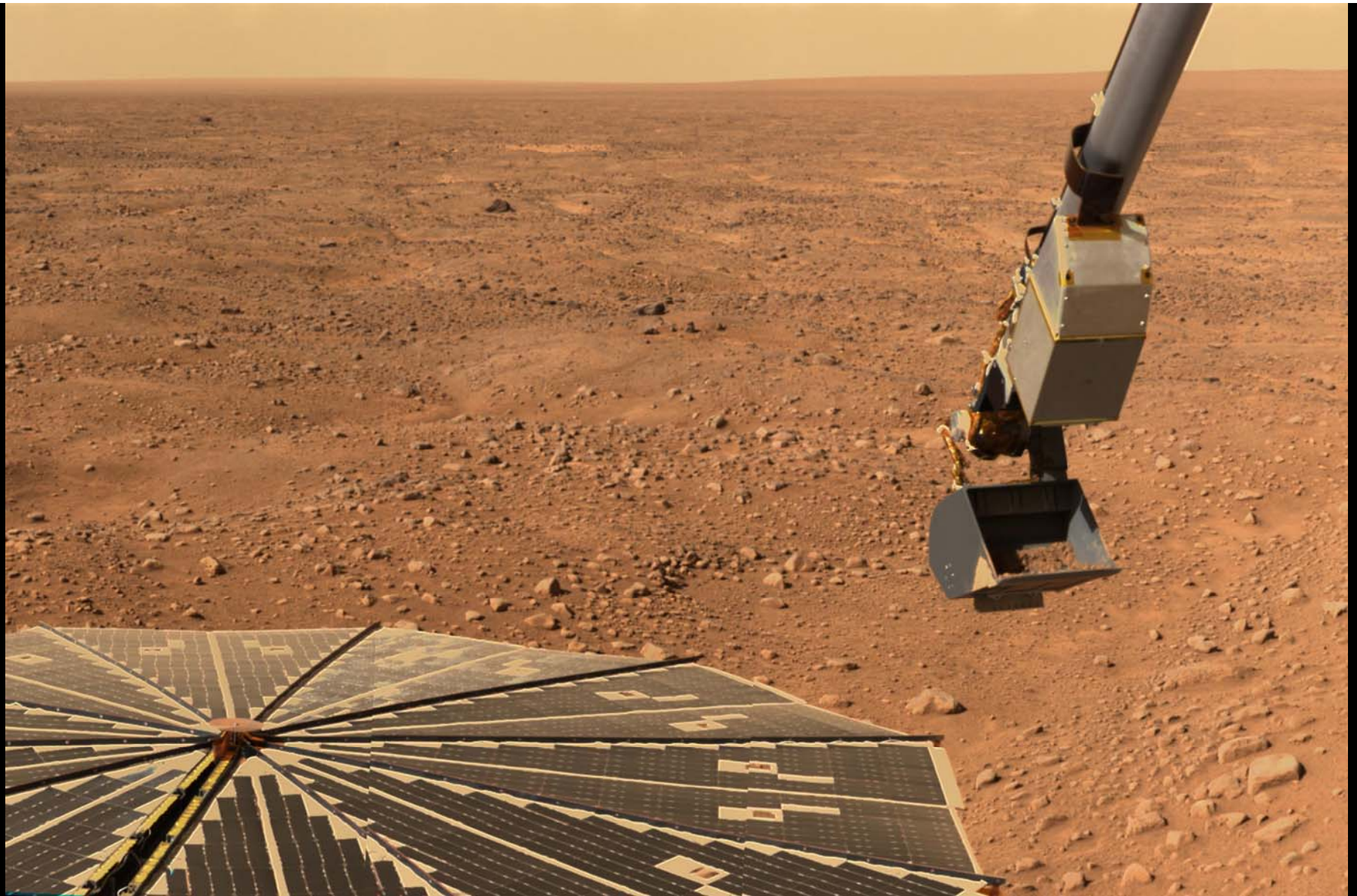


Mars

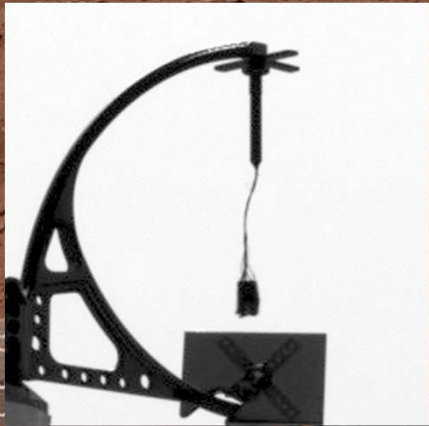
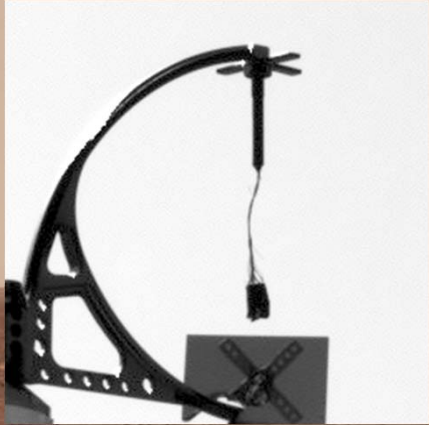
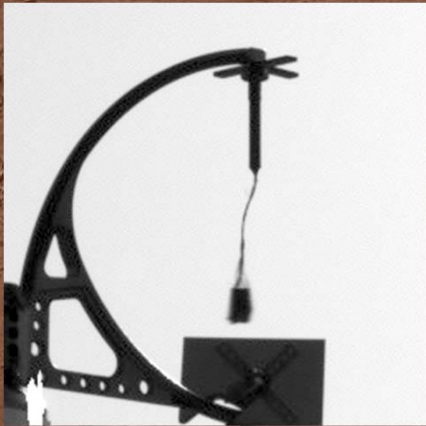
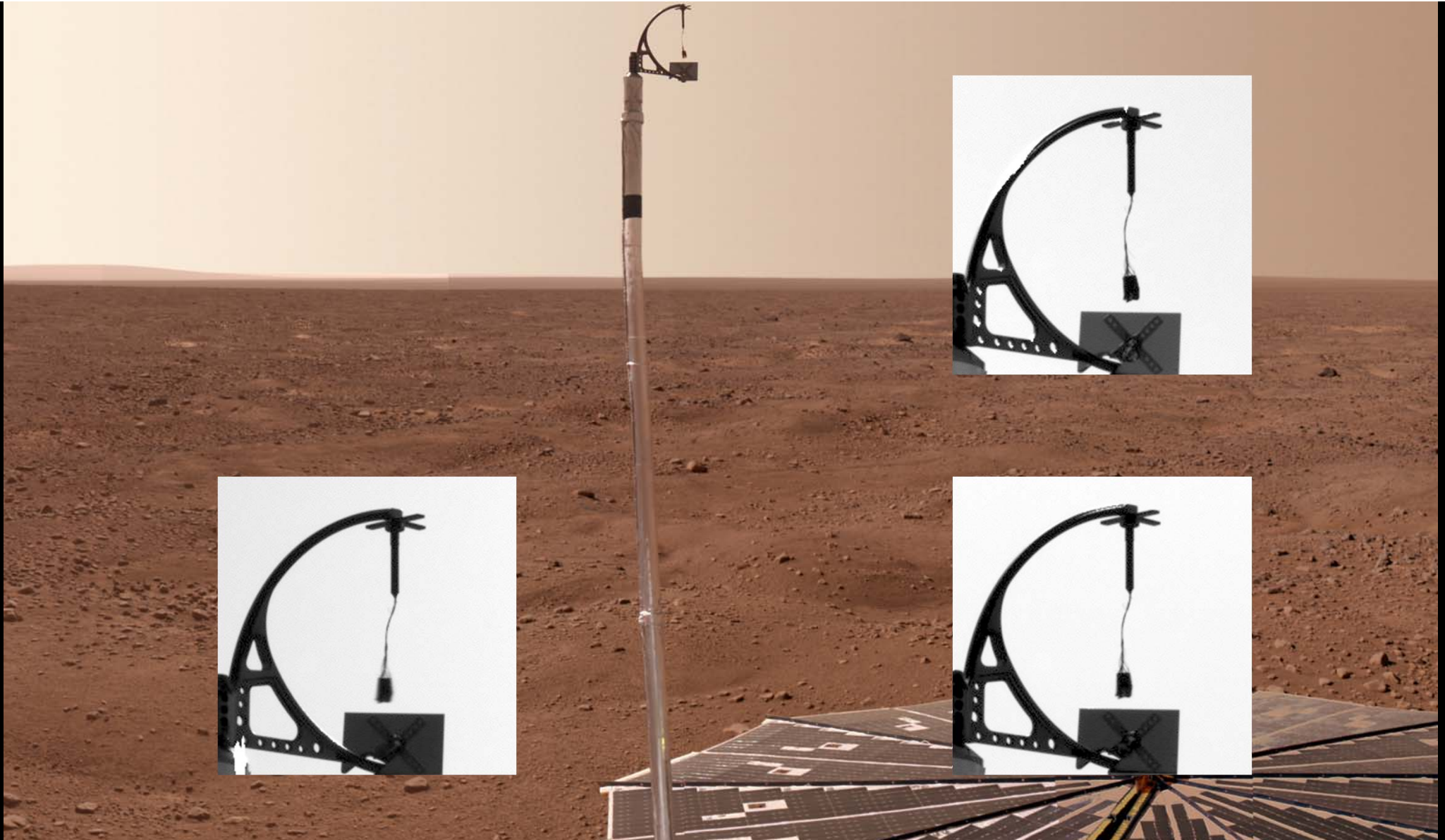


Phoenix





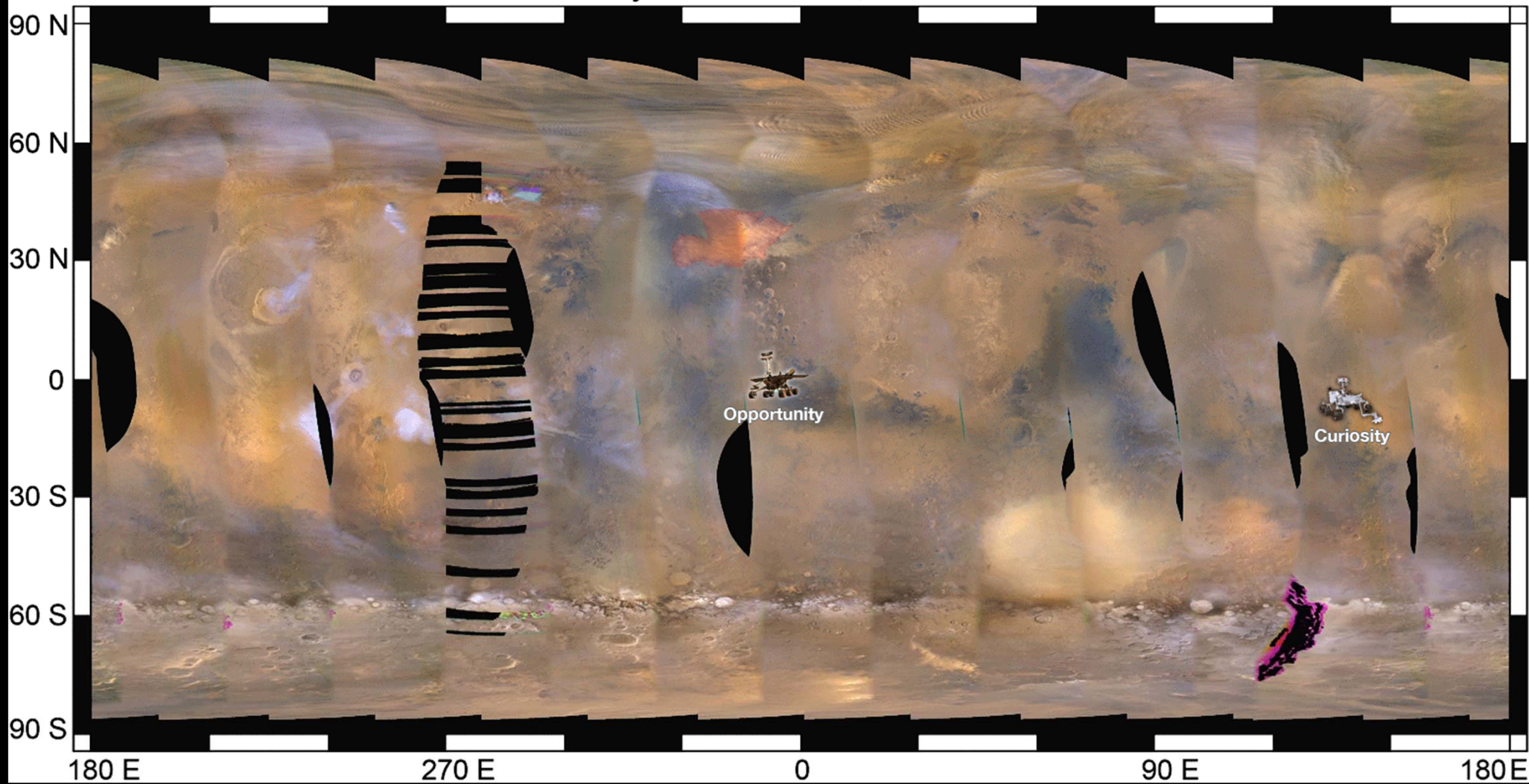


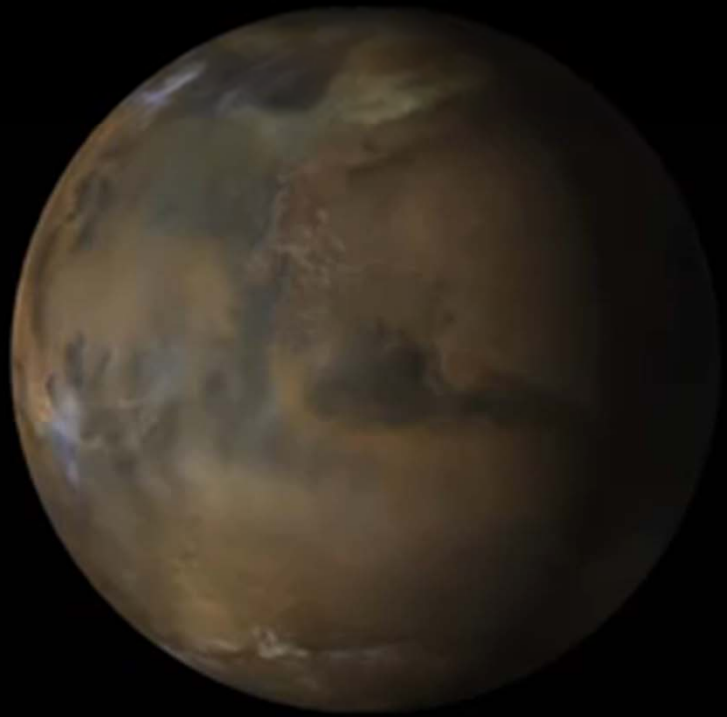




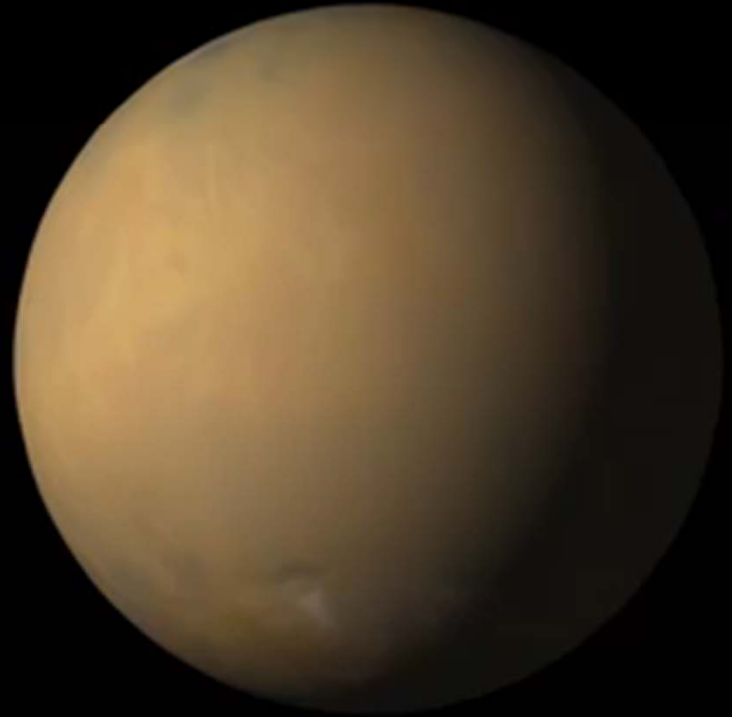
Roveren Curiosity... Selfie

May 31 - June 11, 2018





May 28



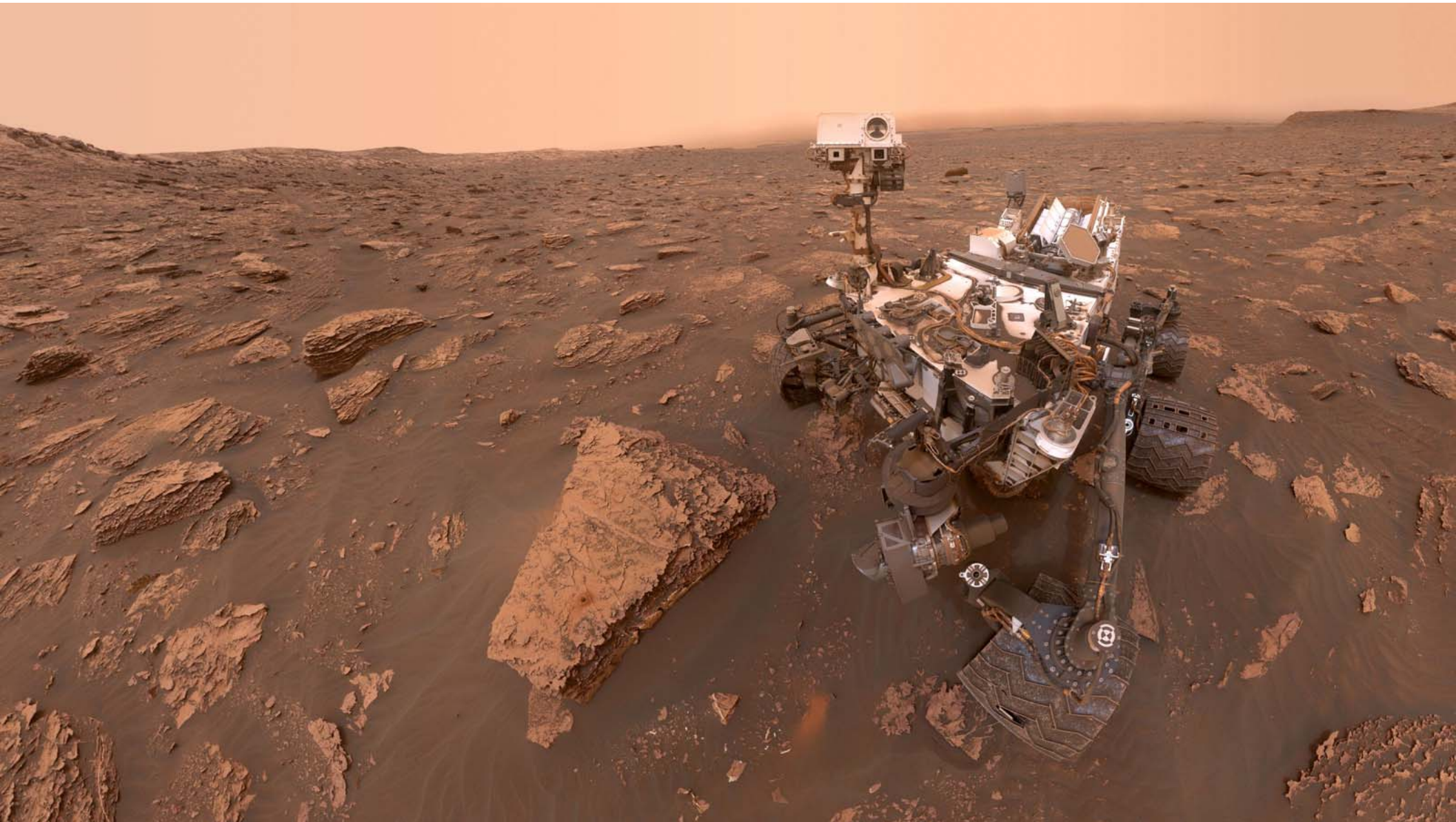
July 1

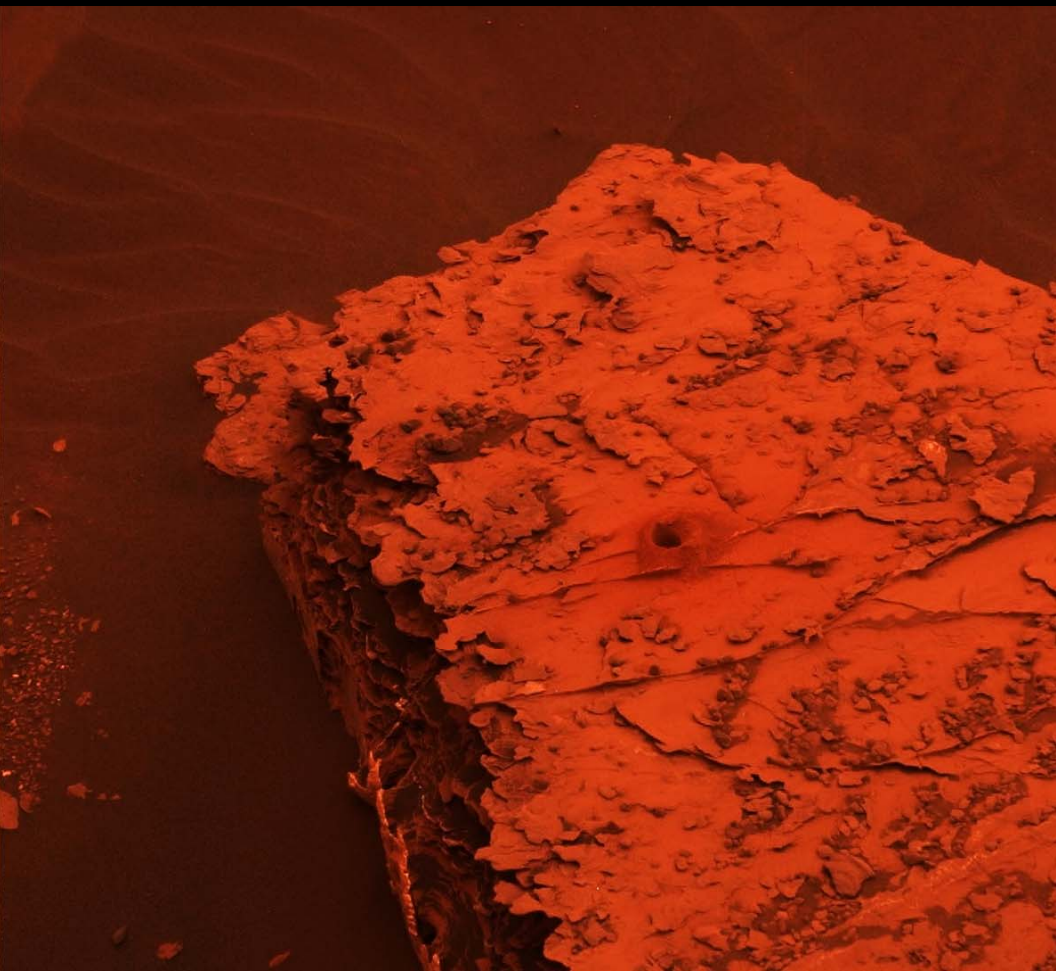
June 7

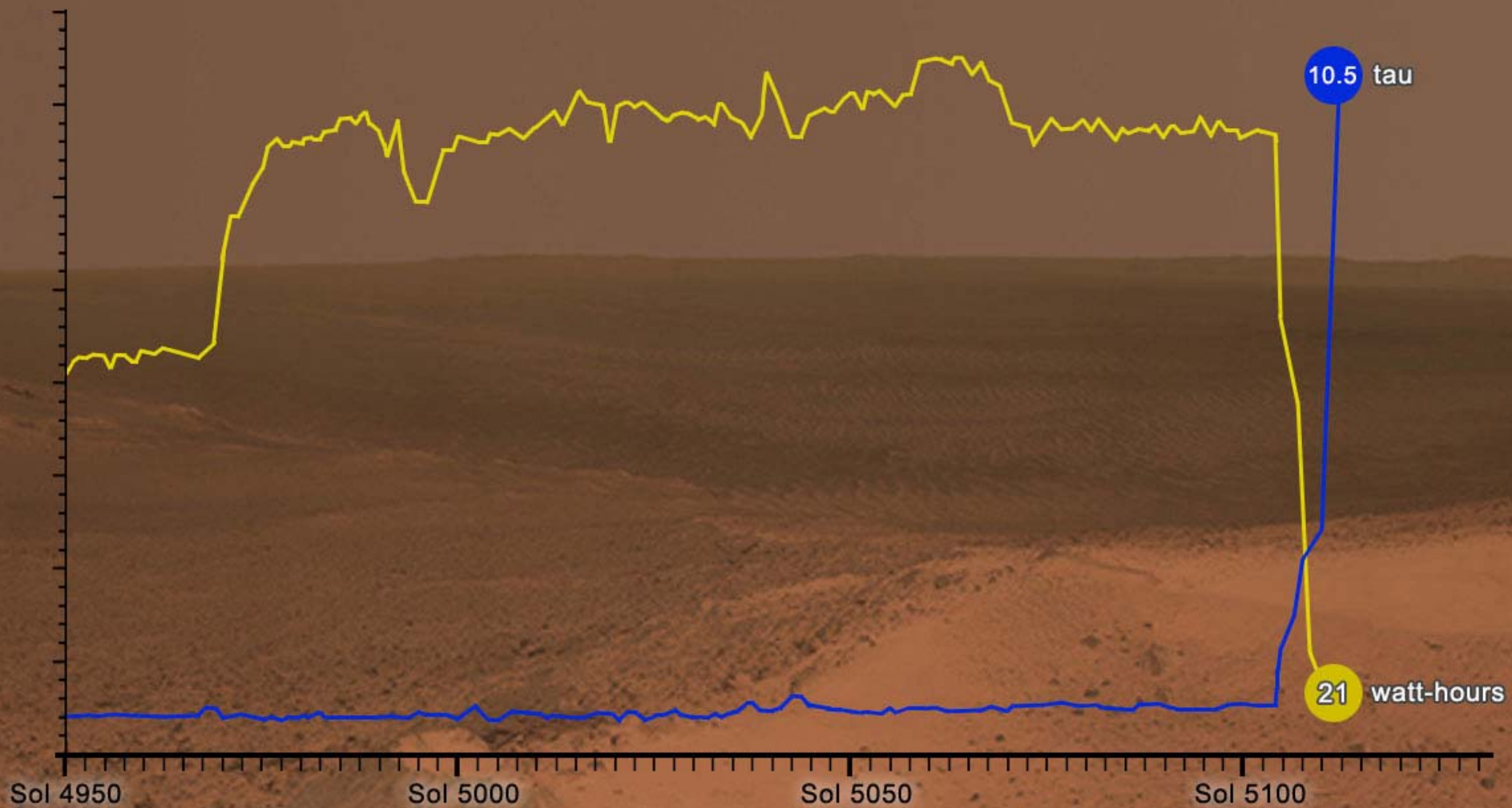


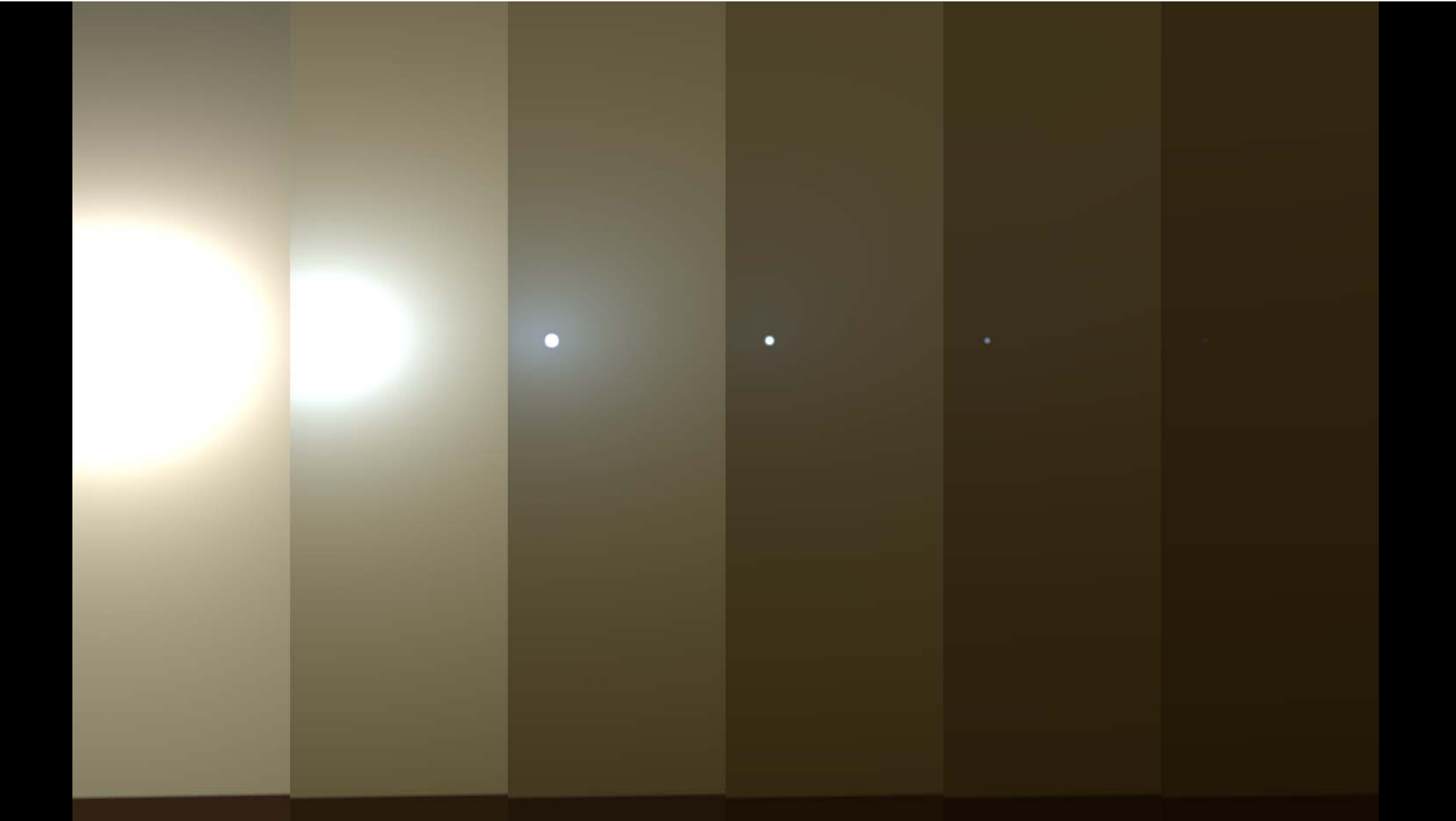
June 10

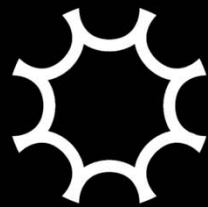












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