Every Mars Landing Attempt, Ever

Successes, *Failures*, and Future

Viking 2
NASA lander
Launched: 9 Sep 1975
Landed: 3 Sep 1976
Last contact: 11 Apr 1980
Utopia Planitia
47.643°N, 134.288°E, −4495m

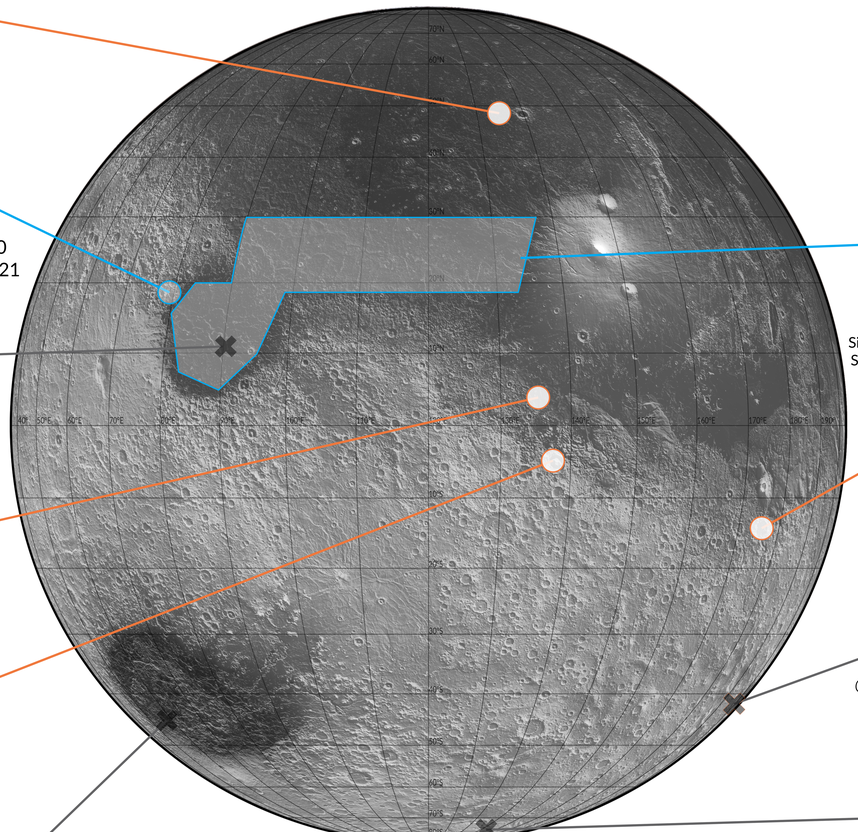
Perseverance
NASA rover
Launch: expected 17 Jul 2020
Landing: expected 18 Feb 2021
Jezero Crater
18.4386°N, 77.5031° E, −2640m

Beagle 2
ESA lander
No contact since separation
Launched: 2 Jun 2003
Last contact: 25 Dec 2003
Isidis Planitia
11.5288°N, 90.4314° E, −3725m

InSight
NASA lander
Launched: 5 May 2018
Landed: 26 Nov 2018
Elysium Planitia
4.502°N, 135.623°E, −2613m

Curiosity
NASA rover
Launched: 26 Nov 2011
Landed: 6 Aug 2012
Roved >22km
Gale Crater
4.5895°S, 137.4417°E, −4501m

Mars 2
Soviet lander and rover
Entered atmosphere too steeply
Launched: 19 May 1971
Crashed: 27 Nov 1971
Hellas Chaos
Near 45°S, 58°E, −5000m



−8000m −6000m −4000m −2000m 0m +2000m +4000m +6000m +8000m

Topography
Relative to Martian Datum

1 degree of latitude on Mars = 59.3 km

Phoenix
NASA lander
Launch 4 Aug 2007
Landing 25 May 2008
Last contact: 2 Nov 2008
Vastitas Borealis
68.2188°N, 234.2508°E, −4130m

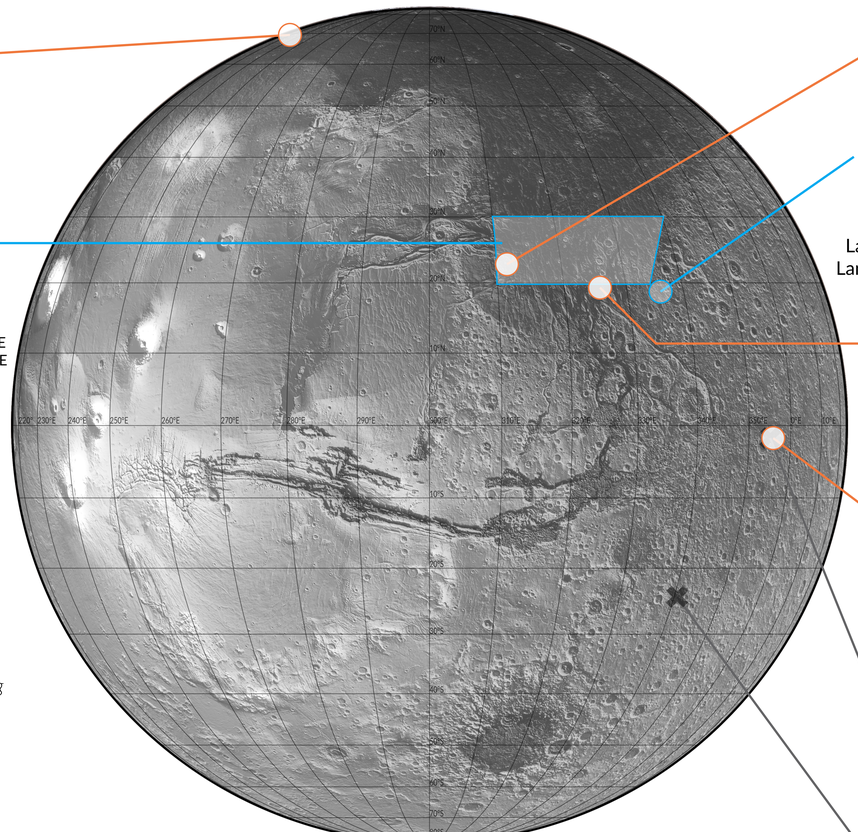
Tianwen-1
Chinese rover
Launch: expected July 2020
Landing: expected early 2021
Site 1: Chryse Planitia 20–30°N, 310-330°E
Site 2: Elysium Planitia 19–30°N, 90–134°E
or within Isidis Planitia 4-20°N, 80-98°E

Spirit
NASA rover
Launched: 10 Jun 2003
Landed: 3 Jan 2004
Roved 7.73 km
Last contact: 22 Mar 2010
Gusev Crater
14.5692°S, 175.4729°E, −1936m

Mars 3
Soviet lander and rover
Contact lost after successful landing
Launched: 28 May 1971
Last contact: 2 Dec 1971
Terra Sirenum
45.044°S, 202.019°E, +1626m

Mars Polar Lander
NASA lander
No contact since entry
Launched: 3 Jan 1999
Last contact: 3 Dec 1999
Planum Australe
Near 76.57°S, 165.2°E, +3000m

THE PLANETARY SOCIETY



Viking 1
NASA lander
Launch 20 Aug 1975
Landing 20 Jul 1976
Last contact: 13 Nov 1982
Chryse Planitia
22.269°N, 312.048°E, −3637m

Rosalind Franklin & Kazachok
ESA rover & Russian lander
Launch expected Aug–Oct 2022
Landing expected Apr or Jul 2023
Oxia Planum
Near 18.14°N, 335.7°E, −3000m

Pathfinder & Sojourner
NASA lander & rover
Launch 4 Dec 1996
Landing 4 Jul 1997
Last contact: 27 Sep 1997
Ares Vallis
19.33°N, 326.47°E, −3681m

Opportunity
NASA rover
Launched: 8 Jul 2003
Landed: 24 Jan 2004
Roved 45.16km
Last contact: 10 Jun 2018
Meridiani Planum
1.9462°S, 354.4734°E, −1387m

Schiaparelli
ESA lander
Contact lost during descent
Launched: 14 Mar 2016
Crashed: 19 Oct 2016
Meridiani Planum
2.0524°S, 353.7924°E, −1444m

Mars 6
Soviet lander
Contact lost upon landing
Launched: 5 Aug 1973
Last contact: 12 Mar 1974
Margaritifer Sinus
Near 24°S, 340.5°E, −500m

References

Landing location data compiled by E. Lakdawalla for The Planetary Society in May 2020. For failed landers whose crash sites have not been identified, actual sites could be as far as 150 km (2.5 degrees) radially from given location.

Base map by P. McGovern from MOLA GTDR [P. Smith et al. (2001) DOI: 10.1029/2000JE001364].

Beagle 2: Location: J.C. Bridges et al. (2017) DOI:10.1098/rsos.170785. Elevation: Peter Grindrod, personal communication.
Curiosity: E. Lakdawalla (2018) ISBN:978-3-319-68144-3
InSight: M. Golombek et al. (2020) DOI:10.1038/s41467-020-14679-1
Mars 2 & Mars 6: P. Stooke (2012) ISBN:978-0-521-76553-4. Landers have never been found.
Mars 3: Tom Stein and Feng Zhou, personal communication (hereinafter abbreviated SZpc).
Mars Pathfinder: Location: P. Stooke (2012). Elevation: SZpc.
Mars Polar Lander: P. Stooke (2012). Lander has never been found.
Opportunity: Location: Arvidson et al (2004) DOI: 10.1126/science.1104211. Elevation: SZpc.
Perseverance: J. A. Grant et al. (2018) DOI:10.1016/j.pss.2018.07.001
Phoenix: T. L. Hoet et al. (2008) DOI:10.1029/2009JE003416
Rosalind Franklin: M. A. Ivanov et al. (2020) DOI:10.1134/S0038094620010050
Schaparelli: A. Aboudan et al. (2018) DOI:10.1007/s11214-018-0532-3
Spirit: Location: R. E. Arvidson et al (2004) DOI:10.1126/science.1099922. Elevation: SZpc
Tianwen-1: Possible landing regions read from map posted at planetary.org/blogs/guest-blogs/china-2020-rover-sites.html in November 2018, credited to a Chinese National Space Agency presentation to the United Nations Committee on the Peaceful Uses of Outer Space in June 2018.
Viking 1 & Viking 2: National Space Science Data Center, https://nssdc.gsfc.nasa.gov/nmc/spacecraft/displayTrajectory.action?id=1975-075C and id=1975-083C, accessed 11 May 2020.

Suggested citation: E. Lakdawalla (2020) "Every Mars Landing Attempt, Ever: Successes, Failures, and Future (version 1.3)." Poster published by The Planetary Society, Pasadena, CA, USA.