

# WHAT IS WINTER LIKE ON MARS?



Jet Propulsion Laboratory  
California Institute of Technology

1  
00:00:05,809 --> 00:00:03,169  
this time of the year many of us are

2  
00:00:07,970 --> 00:00:05,819  
dreaming of a winter wonderland here on

3  
00:00:09,470 --> 00:00:07,980  
Earth but did you know that Mars our

4  
00:00:13,129 --> 00:00:09,480  
closest neighbor in the solar system

5  
00:00:14,150 --> 00:00:13,139  
also experiences snow ice and a real

6  
00:00:16,010 --> 00:00:14,160  
winter

7  
00:00:16,950 --> 00:00:16,020  
let's go check it out with our NASA

8  
00:00:23,929 --> 00:00:16,960  
spacecraft

9  
00:00:27,050 --> 00:00:23,939  
[Music]

10  
00:00:30,170 --> 00:00:27,060  
whole new meaning on Mars I'm Marina

11  
00:00:34,910 --> 00:00:30,180  
jurika here with Silvan Pico and we are

12  
00:00:37,729 --> 00:00:34,920  
talking about snow ice and frost on the

13  
00:00:39,770 --> 00:00:37,739

red planet welcome Silva now I know it's

14

00:00:42,590 --> 00:00:39,780

really cold on Mars but there's also

15

00:00:45,110 --> 00:00:42,600

snow and ice moss is a very dry place

16

00:00:47,869 --> 00:00:45,120

but if you go to the right locations you

17

00:00:50,990 --> 00:00:47,879

will find water ice just like the one we

18

00:00:53,690 --> 00:00:51,000

have on Earth but also CO2 ice or dry

19

00:00:55,490 --> 00:00:53,700

ice now I know we can see Frost at the

20

00:00:58,729 --> 00:00:55,500

poles but can you see Frost anywhere

21

00:01:01,970 --> 00:00:58,739

else on Mars in the 1970s the Viking

22

00:01:04,310 --> 00:01:01,980

landers observed water Frost forming on

23

00:01:06,770 --> 00:01:04,320

the ground far away from the poles so we

24

00:01:09,770 --> 00:01:06,780

know that the frost similar to what we

25

00:01:12,710 --> 00:01:09,780

have on Earth forms in those Landscapes

26

00:01:16,370 --> 00:01:12,720

on Mars that is cool we also know from

27

00:01:19,370 --> 00:01:16,380

Mars Odyssey that we have two kinds of

28

00:01:21,950 --> 00:01:19,380

frost we can observe water Frost in many

29

00:01:25,490 --> 00:01:21,960

other locations than what Viking observe

30

00:01:28,490 --> 00:01:25,500

but also CO<sub>2</sub> Frost something that we

31

00:01:31,370 --> 00:01:28,500

don't have on Earth it is extremely cold

32

00:01:32,830 --> 00:01:31,380

where you'll find CO<sub>2</sub> ice something like

33

00:01:36,890 --> 00:01:32,840

minus

34

00:01:40,010 --> 00:01:36,900

190 degrees Fahrenheit the CO<sub>2</sub> ice does

35

00:01:43,370 --> 00:01:40,020

not melt instead it goes back from solid

36

00:01:46,190 --> 00:01:43,380

to gas directly in the atmosphere that

37

00:01:49,190 --> 00:01:46,200

leads to the formation of really unique

38

00:01:53,050 --> 00:01:49,200

surface features for example we see

39

00:01:57,190 --> 00:01:53,060

spider shaped features fans geysers

40

00:01:59,749 --> 00:01:57,200

dalmatian spots fried eggs all kinds of

41

00:02:01,670 --> 00:01:59,759

unique objects that are really

42

00:02:03,950 --> 00:02:01,680

challenging to understand but that are

43

00:02:05,929 --> 00:02:03,960

beautiful and unique to Mars what else

44

00:02:07,910 --> 00:02:05,939

have our various Mars missions taught us

45

00:02:11,150 --> 00:02:07,920

about the snow on the red planet

46

00:02:13,190 --> 00:02:11,160

few things first the Phoenix lander a

47

00:02:17,089 --> 00:02:13,200

NASA mission that arrived at Mars in

48

00:02:19,729 --> 00:02:17,099

2008 observed beautiful frost Landscapes

49

00:02:22,250 --> 00:02:19,739

that formed around it the Phoenix lander

50

00:02:24,770 --> 00:02:22,260

had a lighter this is an instrument that

51  
00:02:27,050 --> 00:02:24,780  
shoots the laser up and if there's a

52  
00:02:29,330 --> 00:02:27,060  
cloud or something that's falling down

53  
00:02:32,270 --> 00:02:29,340  
from the sky like snow you get a return

54  
00:02:35,089 --> 00:02:32,280  
basically you light up the sky and you

55  
00:02:35,809 --> 00:02:35,099  
can see when snow forms and falls and it

56  
00:02:38,150 --> 00:02:35,819  
did

57  
00:02:40,610 --> 00:02:38,160  
the Phoenix lender was also able to

58  
00:02:43,490 --> 00:02:40,620  
scratch the surface and for the first

59  
00:02:45,290 --> 00:02:43,500  
time see these water ice just below the

60  
00:02:48,589 --> 00:02:45,300  
ground this is the kind of water ice

61  
00:02:51,050 --> 00:02:48,599  
that astronauts could potentially use in

62  
00:02:53,449 --> 00:02:51,060  
the future when we go there

63  
00:02:55,130 --> 00:02:53,459

thank you so much Silvan for teaching us

64

00:02:57,229 --> 00:02:55,140

about the winter wonderland that's on

65

00:03:00,710 --> 00:02:57,239

Mars my pleasure to get the latest

66

00:03:03,170 --> 00:03:00,720

updates follow at NASA JPL and at NASA

67

00:03:04,729 --> 00:03:03,180

Mars on social media or take a deeper

68

00:03:06,790 --> 00:03:04,739

dive on the mission website at