

**ARE
THERE
RAINBOWS
ON MARS?**

1
00:00:02,160 --> 00:00:04,640
Are There Rainbows on Mars?
That's a great question.

2
00:00:08,345 --> 00:00:09,760
We Asked a NASA Scientist.

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00:00:09,760 --> 00:00:14,320
There are water clouds in the thin atmosphere
of Mars, so why not rainbows? You may have even

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00:00:14,320 --> 00:00:18,240
seen an image from the Perseverance rover
with an arc across the sky. That was not a

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00:00:18,240 --> 00:00:23,040
rainbow; it was a lens flare. We saw that lens
flare even in brightly lit laboratory images.

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00:00:23,040 --> 00:00:28,000
Rainbows, as it turns out, need more than just
water, the substance. In a rainbow, sunlight

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00:00:28,000 --> 00:00:32,560
enters a spherical droplet, reflects off the
back and comes back toward you. Unlike ice,

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00:00:32,560 --> 00:00:37,440
liquid water droplets are made into spheres by the
water's surface tension — it pulls itself together.

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00:00:37,440 --> 00:00:41,680
Snow does not make rainbows because it has a
complex shape. Martian clouds are far below

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00:00:41,680 --> 00:00:46,563
freezing. You do not get liquid droplets that can
make rainbows; there's just not enough water.

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00:00:46,563 --> 00:00:51,760

The droplets are 20 times smaller across than a human hair, 10 times smaller than Earth's cloud droplets,

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00:00:51,760 --> 00:00:55,360

and far smaller than rain. They would have to be more than 10 times bigger to make a rainbow

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00:00:55,360 --> 00:01:00,480

with a thousand times more water. While there aren't rainbows on Mars, there are many Earth-like

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00:01:00,480 --> 00:01:04,480

weather phenomena. There are still clouds on Mars when the season is right, both water ice like

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00:01:04,480 --> 00:01:08,480

we have on Earth and clouds of dry ice carbon dioxide. And there are dust devils, dust storms

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00:01:08,480 --> 00:01:12,720

and winds that blow the clouds and dust around. So, weather is still a big part of what the rovers are

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00:01:12,720 --> 00:01:18,534

looking at on Mars. But I'm sorry to disappoint you. Mars has some Earth-like weather, but no rainbows.