1
00:00:00,000 --> 00:00:03,000
(Music)

2
00:00:03,000 --> 00:00:08,000
We were looking at these strange features on Mars. They're what we call, 'linear gullies,'

3
00:00:08,000 --> 00:00:12,000
because they're long troughs. They can extend up to two kilometers,

4
00:00:12,000 --> 00:00:15,000
which is just over a mile and they're really strange because

5
00:00:15,000 --> 00:00:19,000
they go down and then they end abruptly in a pit.

6
00:00:19,000 --> 00:00:23,000
A lot of features on the Earth that are similar do end in a debris apron

7
00:00:23,000 --> 00:00:27,000
because stuff has been moved from the top to the bottom. But these don't have the apron.

8
00:00:27,000 --> 00:00:30,000
They just have a pit at the end. And so we were wondering how they could form.

9
00:00:30,000 --> 00:00:34,000
Frozen carbon dioxide accumulates on the surface

10
00:00:34,000 --> 00:00:40,000
and we think that some of this accumulation will compress down and actually form ice slabs and ice blocks.

11
00:00:40,000 --> 00:00:44,000
We bought some frozen carbon dioxide dry ice blocks

12
00:00:44,000 --> 00:00:48,000
and we took it out to a dune slope, and we put it down and we saw what happened.

13
00:00:48,000 --> 00:00:52,000

Most dune slopes will be at 33 degrees and that's a nice steep slope.

14
00:00:52,000 --> 00:00:57,000
And so we did it with a water ice block and the sand got wet and it didn't move.

15
00:00:57,000 --> 00:01:01,000
And we did it with a wooden block and, you know, it moved three inches and then it stopped.

16
00:01:01,000 --> 00:01:06,000
The dry ice block, we expected it to see a bit more activity,

17
00:01:06,000 --> 00:01:11,000
but we didn't expect it to just move and move and move and move and keep moving all the way to the bottom.

18
00:01:11,000 --> 00:01:16,000
But even on the other side of the dune, which is more like six degrees -- it's very shallow --

19
00:01:16,000 --> 00:01:21,000
we put the block on and we pushed it and it would just slide right down

20
00:01:21,000 --> 00:01:24,000
and the only reason it stopped was because it hit the bushes at the bottom.

21
00:01:24,000 --> 00:01:31,000
Dry ice, as it heats up, turns into gas that pushes against the sand as it comes out.

22
00:01:31,000 --> 00:01:34,000
After a few hours, it's scooped out a nice little area.

23
00:01:34,000 --> 00:01:36,000
And so you have a feature that looks like what we see on Mars.

24
00:01:36,000 --> 00:01:42,000
They will move down that dune slope and carve out a shallow trough.

25
00:01:42,000 --> 00:01:47,000
When the block of ice is on the sand surface, that sand is just a little bit warmer.

26
00:01:47,000 --> 00:01:53,000
And so it causes a cushion of air to form. And that lifts that block just a little bit

27
00:01:53,000 --> 00:01:57,000
so when it moves forward, it's like its lubricated and it can just slide very easily.

28
00:01:57,000 --> 00:02:00,000
And when it got to the bottom, instead of just sitting there,

29
00:02:00,000 --> 00:02:04,000
it would disappear as the area heated up and then that could possibly leave a pit.

30
00:02:04,000 --> 00:02:10,000
I'm looking forward to the day when astronauts can engage in a whole new area of extreme sports.