1
00:00:00,030 --> 00:00:04,200
Meet NASA’s newest Arctic rover. The Goddard Remotely

2
00:00:04,220 --> 00:00:08,380
Operated Vehicle for Exploration and Research

3
00:00:08,400 --> 00:00:12,560
or GROVER, for short. Unlike its cousins on Mars

4
00:00:12,580 --> 00:00:16,750
GROVER is headed to Greenland to study the accumulation of snow and ice.

5
00:00:16,770 --> 00:00:20,920
Comberiate: This is like a spacecraft that operates on the ground.

6
00:00:20,940 --> 00:00:25,080
You see what I mean? It's just like a spacecraft because it has to survive in a hostile environment

7
00:00:25,100 --> 00:00:29,240
unattended for months at a time, while we are communicating with it

8
00:00:29,260 --> 00:00:33,390
sporadically, just like with a satellite, and then send

9
00:00:33,410 --> 00:00:37,520
it a command or two to change its operating mode and then let it alone, let it do its thing

10
00:00:37,540 --> 00:00:41,640
and then come back later and check it again.

11
00:00:41,660 --> 00:00:45,660
NARRATION: GROVER was actually designed by several teams of engineering students over the last three ye

12
00:00:45,680 --> 00:00:49,670
who tested different prototypes on different kinds of terrain.

13
00:00:49,690 --> 00:00:53,710

Koenig: GROVER is actually a great project. It brought together scientists, engineers

14
00:00:53,730 --> 00:00:57,760
and educators. And how it came to me actually as the scientist

15
00:00:57,780 --> 00:01:01,950
involved was the engineers came to me and they said hey we wanna build a robot.

16
00:01:01,970 --> 00:01:06,130
Do you have any science that a robot could do? And I said well yes, actually

17
00:01:06,150 --> 00:01:10,300
I do. I spend a lot of time studying accumulation on the ice sheets.

18
00:01:10,320 --> 00:01:14,480
And how we do that a lot is we drive snowmobiles or we fly

19
00:01:14,500 --> 00:01:18,670
aircraft with radars in them and I said well, I bet a robot

20
00:01:18,690 --> 00:01:22,860
could carry a radar and I started asking them questions because I didn't know a lot about

21
00:01:22,880 --> 00:01:27,040
robotics. And they answered my questions and I gave them kind

22
00:01:27,060 --> 00:01:31,190
requirements. Could this robot drive 50 kilometers a day?

23
00:01:31,210 --> 00:01:35,340
Could it be autonomous? What sort of terrain could it go over?

24
00:01:35,360 --> 00:01:39,470
What sort of winds could it withstand?

25
00:01:39,490 --> 00:01:43,590
NARRATION: The result was a six foot tall, 800 pound rover, comprised of a ground-penetrating radar

26
00:01:43,610 --> 00:01:47,690
large solar panels, rechargeable batteries, a computer,

27
00:01:47,710 --> 00:01:51,770
and repurposed snowmobile tracks for locomotion.

28
00:01:51,790 --> 00:01:55,830
The hope is that GROVER can collect much more data than humans could on the ground.

29
00:01:55,850 --> 00:01:59,880
Koenig: When we're on snowmobiles, we could do

30
00:01:59,900 --> 00:02:03,910
about 50 kilometers, in one day. That would be a difficult day,

31
00:02:03,930 --> 00:02:08,100
50 to 75 kilometers for scientists to be riding on a snowmobile.

32
00:02:08,120 --> 00:02:12,270
You get cold and you need to stop for the day.

33
00:02:12,290 --> 00:02:16,470
So if GROVER can meet that expectation,

34
00:02:16,490 --> 00:02:20,650
GROVER should be able to gather more data than a human could,

35
00:02:20,670 --> 00:02:24,820
working in the ice sheet environment and for a longer period of time.

36
00:02:24,840 --> 00:02:28,990
It'll go slower than we would with snowmobiles,

37
00:02:29,010 --> 00:02:33,170
but when it goes for 24 hours which a human can't, it'll actually

38
00:02:33,190 --> 00:02:37,350

gather more data for us.

39
00:02:37,370 --> 00:02:41,480
Comberiate: That whole idea is great because if you can get that to work then you can run robots like

40
00:02:41,500 --> 00:02:45,620
this all around Antarctica and Greenland and places like that where it's very