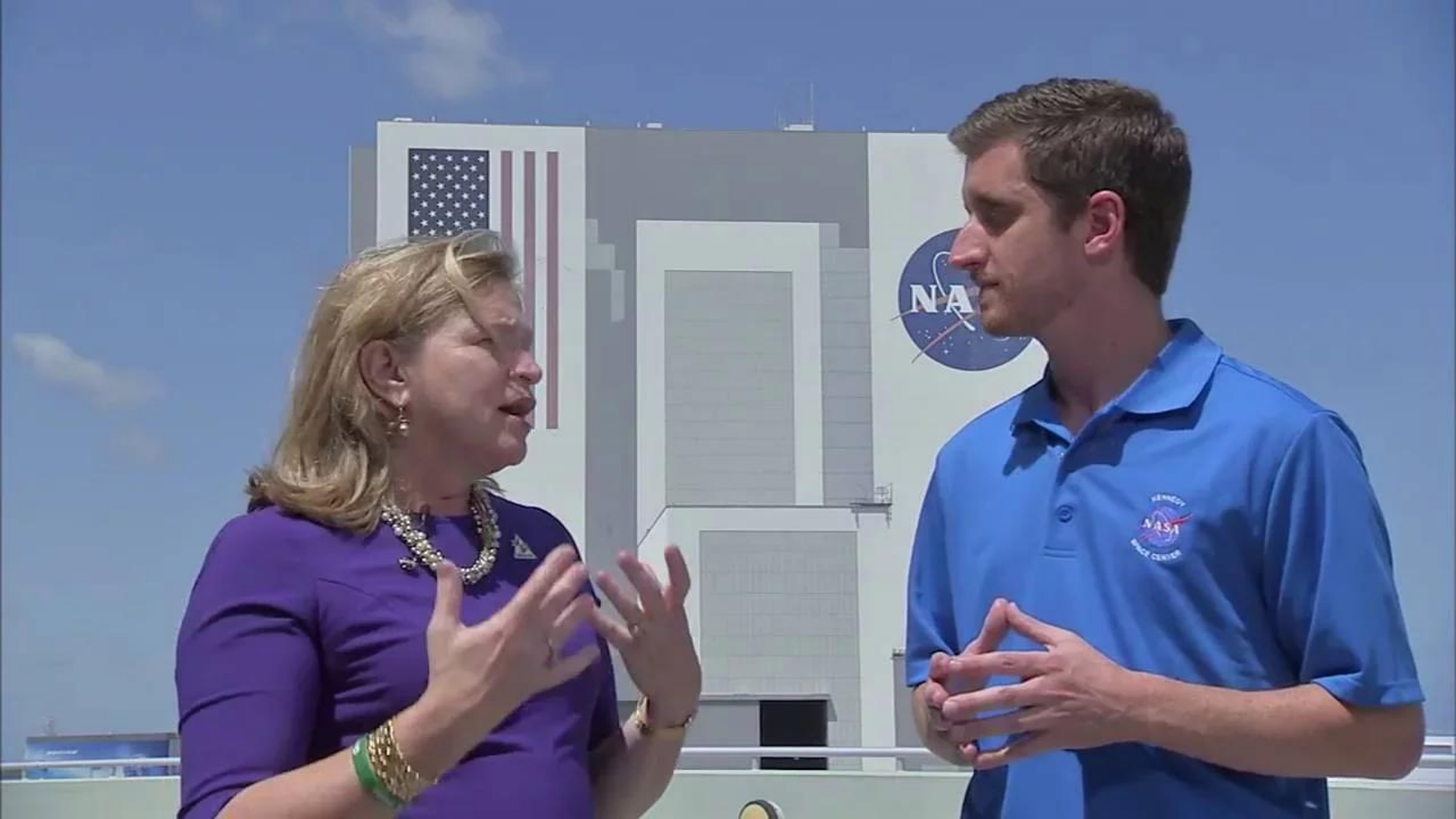
NA
NASA

1
00:00:00,359 --> 00:00:04,190
Finch: Thank you, I'm here with Dr. Ellen
Stofan NASA's Chief Scientist.

2
00:00:04,190 --> 00:00:09,740
We're just outside of the Vehicle Assembly
Building and just a few miles away is OSIRIS-REx

3
00:00:09,740 --> 00:00:13,780
on the launch pad ready to head to the asteroid
Bennu to collect a sample and then return

4
00:00:13,780 --> 00:00:14,929
it back to Earth.

5
00:00:14,929 --> 00:00:20,100
Dr. Stofan, what can we learn about asteroids
than can benefit us in learning about our

6
00:00:20,100 --> 00:00:21,270
solar system?

7
00:00:21,270 --> 00:00:25,220
Stofan: Asteroids are the primitive material
left over from when the planets formed.

8
00:00:25,220 --> 00:00:29,560
So the Earth, us, this building, everything
around us.

9
00:00:29,560 --> 00:00:34,280
Asteroids are the key to what were those materials
that everything that is around us what made.

10
00:00:34,280 --> 00:00:39,250
Now everything on the Earth has been processed,
all this material has been processed and processed.

11
00:00:39,250 --> 00:00:43,250

Asteroids are the pristine material and we
know they contain really interesting things

12
00:00:43,250 --> 00:00:49,910
like the water, that is the water that originated
our oceans and all of the water here on Earth

13
00:00:49,910 --> 00:00:53,850
and they actually also contain organic molecules
that help make us.

14
00:00:53,850 --> 00:00:58,059
Finch: And so why did NASA pick Bennu as an
asteroid to study and what are the benefits

15
00:00:58,059 --> 00:00:59,410
of a sample return mission?

16
00:00:59,410 --> 00:01:03,360
Stofan: You know Bennu is what we call a carbonaceous
asteroid.

17
00:01:03,360 --> 00:01:06,890
Now carbonaceous asteroids are the ones where
we know that they have a lot of water in them

18
00:01:06,890 --> 00:01:10,650
and, again, we think that water is the source
of the water that is here on Earth and we

19
00:01:10,650 --> 00:01:13,040
know that they have organic molecules on them.

20
00:01:13,040 --> 00:01:18,740
In fact, some of the letters in our DNA, that
make up our DNA those molecules have been

21
00:01:18,740 --> 00:01:21,710
found in carbonaceous meteorites.

22
00:01:21,710 --> 00:01:26,020
So Bennu could hold keys not just to the origins
of water on Earth but to the origins of life

23
00:01:26,020 --> 00:01:29,330
on Earth and we are particularly interested
in that type of asteroid.

24
00:01:29,330 --> 00:01:35,630
Now, when you send a spacecraft to either
a planet or an asteroid, you take along instruments

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00:01:35,630 --> 00:01:40,031
and you do the best you can characterizing
the material but you have to realize that

26
00:01:40,031 --> 00:01:46,170
when we shrink a scientific instrument to
fit down onto a spacecraft it becomes a little

27
00:01:46,170 --> 00:01:47,170
less capable.

28
00:01:47,170 --> 00:01:51,909
If we can actual bring those rocks back here
to Earth, we can analyze them with the instruments

29
00:01:51,909 --> 00:01:53,729
that fill a room basically.

30
00:01:53,729 --> 00:01:58,560
We get much more precise and better information
so scientist and, especially, geologists like

31
00:01:58,560 --> 00:02:03,220
me, we like to get those rocks back here on
Earth where we can do really amazing science

32
00:02:03,220 --> 00:02:05,280

with them that we just can’t do remotely.

33
00:02:05,280 --> 00:02:10,209
Finch: And now NASA is planning to do an Asteroid Redirect Mission and then eventually a journey

34
00:02:10,209 --> 00:02:11,209
to Mars.

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00:02:11,209 --> 00:02:12,880
How does this mission help that goal?

36
00:02:12,880 --> 00:02:16,700
Stofan: You know because small bodies are potentially really interesting in the future

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00:02:16,700 --> 00:02:19,980
for resources, they are really interesting for water, and, of course, we are concerned

38
00:02:19,980 --> 00:02:22,780
about them from a planetary hazards point of view.

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00:02:22,780 --> 00:02:26,340
Asteroids have hit this planet in the past and they will hit us again at some point in

40
00:02:26,340 --> 00:02:27,340
the future.

41
00:02:27,340 --> 00:02:32,080
The Asteroid Redirect Mission tests technology like solar electric propulsion that we are

42
00:02:32,080 --> 00:02:35,770
going to use to get cargo out to astronauts who will someday be out at Mars.

43

00:02:35,770 --> 00:02:40,000
We are also going to be testing techniques
that will help us understand how we might

44
00:02:40,000 --> 00:02:44,520
in the future potentially deflect a hazardous
asteroid.

45
00:02:44,520 --> 00:02:49,350
So it's helping us protect this planet and
the Asteroid Redirect Mission is going to

46
00:02:49,350 --> 00:02:55,990
help is to get us on our way to getting humans
to Mars and OSIRIS-REx is really the first

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00:02:55,990 --> 00:02:56,990
step.

48
00:02:56,990 --> 00:02:59,550
It's teaching us how do we get to a small
body, how do we maneuver around it, how do

49
00:02:59,550 --> 00:03:00,610
we get a sample back.

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00:03:00,610 --> 00:03:04,040
It's the first step, the Asteroid Redirect
Mission is the next step.

51
00:03:04,040 --> 00:03:05,040
Finch: Excellent.