



1

00:00:00,010 --> 00:00:04,030

Narrator: The Ozone Mapper Profiler Suite

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00:00:04,050 --> 00:00:08,140

or the OMPS instrument

3

00:00:08,160 --> 00:00:12,190

This instrument will fly on NASA's NPP satellite

4

00:00:12,210 --> 00:00:16,220

and it is a key component to measuring the health of the stratospheric

5

00:00:16,240 --> 00:00:20,250

ozone layer. Scott: "In the stratosphere the ozone is very important to

6

00:00:20,270 --> 00:00:24,270

block ultra violet radiation from the sun protecting

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00:00:24,290 --> 00:00:28,280

humans on Earth. Narrator: Ozone depletion is mainly caused

8

00:00:28,300 --> 00:00:32,290

by chlorine from human-produced substances called chlorofluorocarbons

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00:00:32,310 --> 00:00:36,300

or CFCs. Back in the 70s,

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00:00:36,320 --> 00:00:40,320

scientists predicted that if CFCs continued to increase,

11

00:00:40,340 --> 00:00:44,370

they would eventually destroy the Earth's ozone layer.

12

00:00:44,390 --> 00:00:48,400

Paul Newman: So, the Montreal Protocol controls the production

13

00:00:48,420 --> 00:00:52,420

and emissions of these ozone-destroying gases

14

00:00:52,440 --> 00:00:56,440

and because of that most of these gases are no longer

15

00:00:56,460 --> 00:01:00,460

produced and they are slowly beginning to decline in our

16

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

atmosphere. Narrator: A critical factor in measuring

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00:01:04,500 --> 00:01:08,480

the success of these regulations, as well as to be able to predict future fluctuations

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00:01:08,500 --> 00:01:12,540

in ozone levels, is the ability to collect long-term data

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00:01:12,560 --> 00:01:16,660

from space. Built with precision

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00:01:16,680 --> 00:01:20,690

and tested by a highly skilled team, the OMPS instrument

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00:01:20,710 --> 00:01:24,730

comes along on NPP as the next generation ozone instrument.

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00:01:24,750 --> 00:01:28,760

Paul Newman: The Ozone Mapper Profiler Suite is an

23

00:01:28,780 --> 00:01:32,790

instrument that continues a series that began

24

00:01:36,830 --> 00:01:32,820

back in the 1970s. We now have about

25

00:01:36,850 --> 00:01:40,840

40 years of measurements of total ozone

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00:01:40,860 --> 00:01:44,840

around the globe. So, this is a key instrument to maintaining that

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00:01:44,860 --> 00:01:48,870

record to follow how ozone is changing in our environment.

28

00:01:48,890 --> 00:01:52,910

Narrator: OMPS looks at the edge of the

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00:01:52,930 --> 00:01:56,960

atmosphere and builds a profile of data that helps scientists see the vertical

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00:01:56,980 --> 00:02:00,990

distribution of ozone and where it is in danger of

31

00:02:01,010 --> 00:02:05,100

depletion. Paul Newman: So that's a big improvement over

32

00:02:05,120 --> 00:02:09,120

the old mapping instruments that just mapped out the total amount of

33

00:02:09,140 --> 00:02:13,140

ozone between space and the surface. Scott: So the data you get back can

34

00:02:13,160 --> 00:02:17,160

produce maps to show you how much ozone is there

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00:02:17,180 --> 00:02:21,170

and how it varies by altitude and that's very important for

36

00:02:21,190 --> 00:02:25,220

understanding both how ozone is distributed and how it's changing over time.

37

00:02:25,240 --> 00:02:29,270

Narrator: As NPP orbits the Earth over the poles

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00:02:29,290 --> 00:02:33,310

once every 100 minutes, 14 times a day; the

39

00:02:33,330 --> 00:02:37,350

OMPS instrument delivers its data as millions of ones and zeros to a

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00:02:37,370 --> 00:02:41,370

ground station located near the North Pole in Svalbard, Norway.

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00:02:41,390 --> 00:02:45,400

Joan: The ground station then delivers this in a manner

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00:02:45,420 --> 00:02:49,420

that is then delivered to scientists and then they take that data

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00:02:49,440 --> 00:02:53,430

and can map the UV globally.

44

00:02:53,450 --> 00:02:57,440

Paul Newman: So, total ozone data can be immediately used

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00:02:57,460 --> 00:03:01,490

to compute for example UV index. In long term

46

00:03:01,510 --> 00:03:05,540

though we're going to be looking at the data to determine,

47

00:03:05,560 --> 00:03:09,570

is the Earth's ozone layer rebounding from the lower

48

00:03:09,590 --> 00:03:13,590

points we saw in the 1990's, that's the long term

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00:03:13,610 --> 00:03:17,620

science result that we'd like to see.

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00:03:17,640 --> 00:03:21,640

Music.

