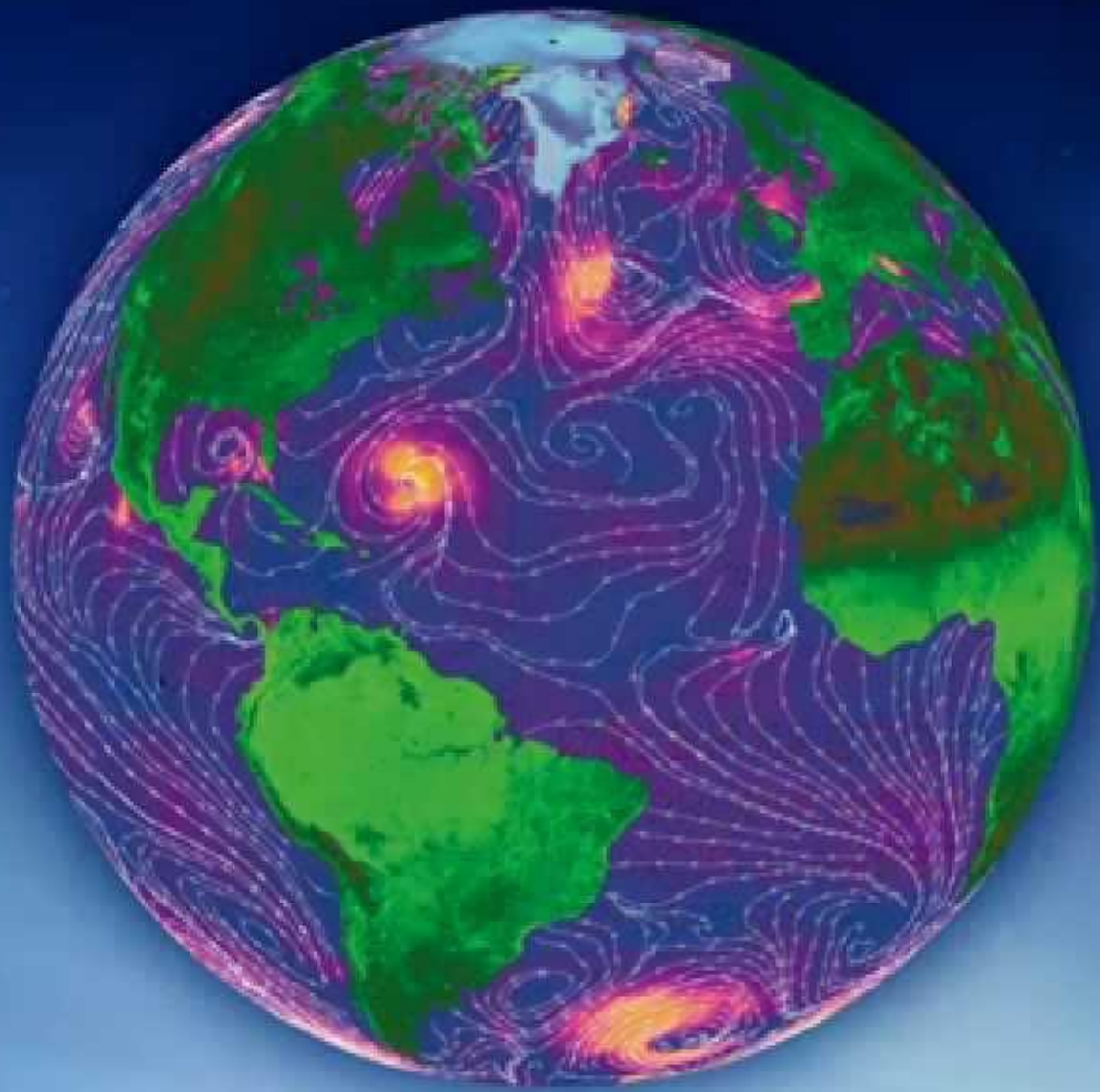

1
00:00:05,269 --> 00:00:03,189
so the crew engaged in quite a bit of

2
00:00:07,430 --> 00:00:05,279
maintenance work today but uh the focus

3
00:00:08,710 --> 00:00:07,440
of course uh every day for them

4
00:00:11,669 --> 00:00:08,720
throughout the week will be on those

5
00:00:13,830 --> 00:00:11,679
scientific investigations

6
00:00:15,749 --> 00:00:13,840
happening inside and outside of the

7
00:00:19,189 --> 00:00:15,759
station uh

8
00:00:21,910 --> 00:00:19,199
iss truly uh research platform these

9
00:00:23,269 --> 00:00:21,920
days uh it's enabling even more

10
00:00:25,750 --> 00:00:23,279
investigations

11
00:00:27,830 --> 00:00:25,760
every year to be flown new capabilities

12
00:00:30,150 --> 00:00:27,840
uh one specifically that's going to be

13
00:00:32,790 --> 00:00:30,160

arriving at the station on the next

14
00:00:35,750 --> 00:00:32,800
spacex dragon cargo flight again

15
00:00:38,950 --> 00:00:35,760
targeted to take place on september

16
00:00:40,470 --> 00:00:38,960
next month will be called iss rapidscat

17
00:00:42,630 --> 00:00:40,480
this morning we're lucky we're going to

18
00:00:45,350 --> 00:00:42,640
learn a little bit more about it

19
00:00:47,990 --> 00:00:45,360
join now by phone uh the principal

20
00:00:49,990 --> 00:00:48,000
investigator dr ernesto rodriguez from

21
00:00:52,150 --> 00:00:50,000
the jet propulsion laboratory dr

22
00:00:53,910 --> 00:00:52,160
rodriguez thanks for joining me today

23
00:00:55,910 --> 00:00:53,920
and if you could start me off just give

24
00:00:57,990 --> 00:00:55,920
me just give me an overview of this

25
00:00:59,830 --> 00:00:58,000
device i mean it's got an interesting

26
00:01:02,470 --> 00:00:59,840
name that's for sure i mean what what is

27
00:01:04,950 --> 00:01:02,480
a scatterometer

28
00:01:08,630 --> 00:01:04,960
yeah a scannerometer is an instrument

29
00:01:10,630 --> 00:01:08,640
that measures winds from space

30
00:01:12,230 --> 00:01:10,640
typically you wouldn't think that

31
00:01:14,550 --> 00:01:12,240
measuring the winds which are so

32
00:01:16,550 --> 00:01:14,560
ephemeral would be easy from space but

33
00:01:18,310 --> 00:01:16,560
what we do is we play a trick

34
00:01:21,109 --> 00:01:18,320
we use a radar

35
00:01:23,350 --> 00:01:21,119
that sends out microwave

36
00:01:25,270 --> 00:01:23,360
energy and when the wind blows over the

37
00:01:27,270 --> 00:01:25,280
water it makes little waves and the

38
00:01:29,510 --> 00:01:27,280

stronger the winds the bigger the waves

39
00:01:31,590 --> 00:01:29,520
these waves reflect the radar energy

40
00:01:34,149 --> 00:01:31,600
back to the instrument and by measuring

41
00:01:36,630 --> 00:01:34,159
the return power at the instrument we

42
00:01:38,069 --> 00:01:36,640
can actually estimate the wind speed and

43
00:01:41,190 --> 00:01:38,079
the direction by measuring from

44
00:01:42,230 --> 00:01:41,200
different incidence angles of the wind

45
00:01:43,670 --> 00:01:42,240
and so

46
00:01:45,429 --> 00:01:43,680
with this instrument

47
00:01:48,469 --> 00:01:45,439
which covers about

48
00:01:51,030 --> 00:01:48,479
1800 kilometers at any given time we can

49
00:01:53,030 --> 00:01:51,040
measure the entire earth

50
00:01:56,230 --> 00:01:53,040
from the space station will be between

51
00:01:58,630 --> 00:01:56,240
56 degrees and north and south

52
00:01:59,910 --> 00:01:58,640
within a day so we'll have a global

53
00:02:02,149 --> 00:01:59,920
snapshot

54
00:02:03,830 --> 00:02:02,159
of the winds over the earth every other

55
00:02:06,069 --> 00:02:03,840
day

56
00:02:09,270 --> 00:02:06,079
so definitely not

57
00:02:10,949 --> 00:02:09,280
um i mean at least to me not not at the

58
00:02:13,270 --> 00:02:10,959
the for the most intuitive way you would

59
00:02:15,589 --> 00:02:13,280
think to to measure wind from space but

60
00:02:17,589 --> 00:02:15,599
i mean that that's an amazing capability

61
00:02:19,190 --> 00:02:17,599
and and this instrument is being flown

62
00:02:21,270 --> 00:02:19,200
it's replacing another instrument that

63
00:02:22,710 --> 00:02:21,280

was on a different satellite so this is

64
00:02:24,229 --> 00:02:22,720
this is something that we've been you

65
00:02:26,949 --> 00:02:24,239
know trying to work for a while so

66
00:02:28,470 --> 00:02:26,959
what's what's the full story with that

67
00:02:30,150 --> 00:02:28,480
and nasa has been leading the

68
00:02:31,350 --> 00:02:30,160
measurement of winds from space for a

69
00:02:34,470 --> 00:02:31,360
long time

70
00:02:38,390 --> 00:02:34,480
and during the la the decade between

71
00:02:41,030 --> 00:02:38,400
2000 to 2009 we had an instrument called

72
00:02:43,190 --> 00:02:41,040
quickscat

73
00:02:44,470 --> 00:02:43,200
that measured the wins and in fact

74
00:02:45,990 --> 00:02:44,480
rapidscat

75
00:02:48,309 --> 00:02:46,000
is the son of quickscout in the sense

76
00:02:49,350 --> 00:02:48,319
that we've used many of its parts

77
00:02:51,110 --> 00:02:49,360
in order to

78
00:02:51,990 --> 00:02:51,120
really bring online something very

79
00:02:54,550 --> 00:02:52,000
quickly

80
00:02:56,630 --> 00:02:54,560
quickscope collected data over a decade

81
00:02:57,430 --> 00:02:56,640
it provided an invaluable climate data

82
00:02:59,910 --> 00:02:57,440
set

83
00:03:01,430 --> 00:02:59,920
but because of aging over a 10-year

84
00:03:03,430 --> 00:03:01,440
mission lifetime

85
00:03:06,229 --> 00:03:03,440
it stops spinning so one of the ways we

86
00:03:08,470 --> 00:03:06,239
build our global vision is to spin the

87
00:03:11,270 --> 00:03:08,480
antenna and collect the large swath

88
00:03:13,430 --> 00:03:11,280

so the instrument is still working

89
00:03:16,390 --> 00:03:13,440
but it can no longer spin and so it can

90
00:03:19,509 --> 00:03:16,400
no longer provide a global coverage

91
00:03:21,670 --> 00:03:19,519
every other day so we took the

92
00:03:24,710 --> 00:03:21,680
spare parts from quickscat assembled

93
00:03:27,190 --> 00:03:24,720
them tested them and in fairly short

94
00:03:28,789 --> 00:03:27,200
order after quick scat stops spinning

95
00:03:30,309 --> 00:03:28,799
we are able to

96
00:03:32,710 --> 00:03:30,319
put up space

97
00:03:35,430 --> 00:03:32,720
and help the international constellation

98
00:03:37,910 --> 00:03:35,440
of scatterometers which also right now

99
00:03:41,110 --> 00:03:37,920
has a european scatter armor called uh

100
00:03:43,910 --> 00:03:41,120
acecat from the umedsat to give a global

101
00:03:46,070 --> 00:03:43,920
picture of the earth every day

102
00:03:48,550 --> 00:03:46,080
so i mean much like the station this

103
00:03:50,470 --> 00:03:48,560
project also an international effort

104
00:03:53,190 --> 00:03:50,480
where where exactly on the station is

105
00:03:54,869 --> 00:03:53,200
rapid scat going to go

106
00:03:55,830 --> 00:03:54,879
it is mounted outside the columbus

107
00:03:57,750 --> 00:03:55,840
module

108
00:03:59,750 --> 00:03:57,760
and so actually it's a little bit tricky

109
00:04:01,190 --> 00:03:59,760
we had to trainer

110
00:04:02,149 --> 00:04:01,200
because we're using an existing

111
00:04:03,429 --> 00:04:02,159
instrument

112
00:04:05,429 --> 00:04:03,439
that uh

113
00:04:07,190 --> 00:04:05,439

we couldn't really design for the space

114
00:04:09,110 --> 00:04:07,200
station we built some mechanical

115
00:04:11,350 --> 00:04:09,120
attachments to attach to the attach

116
00:04:13,190 --> 00:04:11,360
points of the columbus module and point

117
00:04:15,270 --> 00:04:13,200
it down to earth so i believe you have

118
00:04:18,229 --> 00:04:15,280
an image there of how it's mounted on

119
00:04:20,310 --> 00:04:18,239
the columbus module and also a beam of

120
00:04:22,710 --> 00:04:20,320
how it scans has this pencil beam

121
00:04:26,230 --> 00:04:22,720
scatterometer that has a conical scan

122
00:04:28,550 --> 00:04:26,240
covering the 1800 kilometer swath

123
00:04:30,629 --> 00:04:28,560
okay and just to

124
00:04:32,390 --> 00:04:30,639
really bring it home so what what are

125
00:04:34,390 --> 00:04:32,400
the readings from this instrument going

126
00:04:39,830 --> 00:04:34,400
to be used for i mean what what will we

127
00:04:43,909 --> 00:04:41,110
there are many things that we're going

128
00:04:45,189 --> 00:04:43,919
to learn this specific mission has three

129
00:04:48,310 --> 00:04:45,199
components

130
00:04:49,270 --> 00:04:48,320
the first one is that because of the

131
00:04:50,870 --> 00:04:49,280
lack of

132
00:04:53,110 --> 00:04:50,880
the ability of quickscope to collect

133
00:04:55,670 --> 00:04:53,120
wins over a big swath

134
00:04:56,790 --> 00:04:55,680
we have a gap in our global monitoring

135
00:04:57,909 --> 00:04:56,800
of winds

136
00:04:59,909 --> 00:04:57,919
and so

137
00:05:01,510 --> 00:04:59,919
uh very importantly this instrument will

138
00:05:03,189 --> 00:05:01,520

come online and we'll be able to

139
00:05:04,070 --> 00:05:03,199
complement other instruments that are

140
00:05:07,029 --> 00:05:04,080
there

141
00:05:09,350 --> 00:05:07,039
to give us global coverage every day and

142
00:05:11,590 --> 00:05:09,360
this global coverage every day is used

143
00:05:14,390 --> 00:05:11,600
every by

144
00:05:18,390 --> 00:05:14,400
operational agencies such as noaa in the

145
00:05:21,510 --> 00:05:18,400
united states or ecmwf in europe to

146
00:05:23,830 --> 00:05:21,520
provide better forecasts of weather and

147
00:05:25,110 --> 00:05:23,840
also to do disaster management for

148
00:05:27,029 --> 00:05:25,120
instance where there are hurricanes

149
00:05:28,469 --> 00:05:27,039
approaching land

150
00:05:30,230 --> 00:05:28,479
these data can be used by weather

151
00:05:32,710 --> 00:05:30,240
forecasters to get much better

152
00:05:35,909 --> 00:05:32,720
predictions as to what the intensity and

153
00:05:37,909 --> 00:05:35,919
the track of the hurricane might be

154
00:05:40,070 --> 00:05:37,919
so an instrument and data that will be

155
00:05:42,230 --> 00:05:40,080
affecting a lot of people

156
00:05:44,070 --> 00:05:42,240
especially and i mean just personally us

157
00:05:46,390 --> 00:05:44,080
here in houston so

158
00:05:48,070 --> 00:05:46,400
again dr ernesto rodriguez from the jet

159
00:05:49,749 --> 00:05:48,080
propulsion laboratory talking to us

160
00:05:51,749 --> 00:05:49,759
about rapid scat thank you so much for

161
00:05:54,629 --> 00:05:51,759
joining us today good luck with the