
NASA
SPACESTATION
LIVE

1
00:00:11,190 --> 00:00:09,509
among the science experiments and

2
00:00:13,509 --> 00:00:11,200
hardware being delivered to the space

3
00:00:15,829 --> 00:00:13,519
station on the new cygnus cargo craft is

4
00:00:17,990 --> 00:00:15,839
a special camera meant to record meteor

5
00:00:19,670 --> 00:00:18,000
showers to help us learn more about the

6
00:00:21,349 --> 00:00:19,680
behavior and composition of asteroids

7
00:00:22,390 --> 00:00:21,359
and comments that cross paths with the

8
00:00:24,550 --> 00:00:22,400
earth

9
00:00:26,470 --> 00:00:24,560
it's called the meteor experiment and

10
00:00:28,310 --> 00:00:26,480
recently my colleague dan hewitt spoke

11
00:00:29,990 --> 00:00:28,320
with a payload developer michael

12
00:00:31,830 --> 00:00:30,000
hortonberry a principal engineer in the

13
00:00:34,709 --> 00:00:31,840

space science and engineering division

14
00:00:37,190 --> 00:00:34,719
at the southwest research institute

15
00:00:38,549 --> 00:00:37,200
at san antonio texas and asked him what

16
00:00:43,590 --> 00:00:38,559
prompted the development of this

17
00:00:48,150 --> 00:00:46,069
well meteor's a collaboration between

18
00:00:50,549 --> 00:00:48,160
southwest research institute and the

19
00:00:52,869 --> 00:00:50,559
chiba institute of technology in japan

20
00:00:55,189 --> 00:00:52,879
so our goal with this instrument is to

21
00:00:57,029 --> 00:00:55,199
use image analysis

22
00:01:00,790 --> 00:00:57,039
of meteors entering the earth's

23
00:01:02,709 --> 00:01:00,800
atmosphere to provide information on

24
00:01:05,270 --> 00:01:02,719
chemical and physical properties of the

25
00:01:07,270 --> 00:01:05,280
meteors like size density chemical

26
00:01:09,190 --> 00:01:07,280
composition

27
00:01:10,710 --> 00:01:09,200
so to do that for

28
00:01:11,670 --> 00:01:10,720
meteor showers that are well known and

29
00:01:13,510 --> 00:01:11,680
also

30
00:01:16,070 --> 00:01:13,520
during slow times to look for new meteor

31
00:01:17,350 --> 00:01:16,080
showers that possibly nobody's observed

32
00:01:19,109 --> 00:01:17,360
on here

33
00:01:20,870 --> 00:01:19,119
and there's something special about the

34
00:01:23,109 --> 00:01:20,880
camera you guys are going to be using

35
00:01:25,350 --> 00:01:23,119
what what can this camera capture that

36
00:01:27,749 --> 00:01:25,360
others can't necessarily

37
00:01:30,230 --> 00:01:27,759
well this camera it it's a pretty

38
00:01:31,910 --> 00:01:30,240

standard high-def high definition uh

39
00:01:33,910 --> 00:01:31,920
television camera

40
00:01:36,469 --> 00:01:33,920
that can capture normal video but in

41
00:01:39,109 --> 00:01:36,479
addition we have a customized lens that

42
00:01:41,350 --> 00:01:39,119
we can put diffraction gradings into

43
00:01:44,069 --> 00:01:41,360
and the diffraction gratings are are

44
00:01:46,789 --> 00:01:44,079
like tiny lines with tiny prisms that

45
00:01:49,350 --> 00:01:46,799
will take the light coming into the lens

46
00:01:50,870 --> 00:01:49,360
and split it into different wavelengths

47
00:01:52,630 --> 00:01:50,880
and then we can look at the different

48
00:01:54,550 --> 00:01:52,640
wavelengths of light coming in as the

49
00:01:56,870 --> 00:01:54,560
meteor enters the atmosphere and

50
00:01:58,709 --> 00:01:56,880
determine what the chemical composition

51
00:02:00,550 --> 00:01:58,719
of the meteor is

52
00:02:02,630 --> 00:02:00,560
and what the percentage of each chemical

53
00:02:04,389 --> 00:02:02,640
on the meteor is and we can right now we

54
00:02:06,950 --> 00:02:04,399
can do that with this lens for four

55
00:02:09,029 --> 00:02:06,960
different elements so where exactly is

56
00:02:11,029 --> 00:02:09,039
the camera going to be installed on the

57
00:02:12,790 --> 00:02:11,039
station and are the crew members on

58
00:02:15,110 --> 00:02:12,800
board going to have interaction with it

59
00:02:17,190 --> 00:02:15,120
how's it going to be operated

60
00:02:19,430 --> 00:02:17,200
well the camera gets installed in the uh

61
00:02:21,270 --> 00:02:19,440
it's called the wharf like the klingon

62
00:02:22,550 --> 00:02:21,280
security officer in the next generation

63
00:02:24,550 --> 00:02:22,560

of star trek

64
00:02:27,030 --> 00:02:24,560
uh it's the window observational

65
00:02:27,910 --> 00:02:27,040
research facility in the the us national

66
00:02:30,309 --> 00:02:27,920
lab

67
00:02:33,430 --> 00:02:30,319
uh and the wharf is an express rack with

68
00:02:34,150 --> 00:02:33,440
a window that looks down on the earth

69
00:02:36,630 --> 00:02:34,160
so

70
00:02:38,710 --> 00:02:36,640
the crew will be involved uh but mainly

71
00:02:40,309 --> 00:02:38,720
for doing the installation and then for

72
00:02:42,070 --> 00:02:40,319
helping us uh

73
00:02:43,990 --> 00:02:42,080
maintain the camera for doing things

74
00:02:44,710 --> 00:02:44,000
like changing out diffraction gratings

75
00:02:50,630 --> 00:02:44,720
and

76
00:02:51,670 --> 00:02:50,640
hard drives things like that so most of

77
00:02:54,470 --> 00:02:51,680
the time

78
00:02:56,070 --> 00:02:54,480
the crew will install the instrument

79
00:02:57,030 --> 00:02:56,080
and then it'll be operated from the

80
00:02:59,509 --> 00:02:57,040
ground

81
00:03:01,350 --> 00:02:59,519
uh primarily and then when we need

82
00:03:03,190 --> 00:03:01,360
something done to it the crew will help

83
00:03:04,869 --> 00:03:03,200
us out and they'll go in and swap out a

84
00:03:07,190 --> 00:03:04,879
diffraction grating or change out hard

85
00:03:08,710 --> 00:03:07,200
drive and then for your team this launch

86
00:03:10,630 --> 00:03:08,720
is going to be special because this has

87
00:03:12,630 --> 00:03:10,640
kind of been a long road for you guys

88
00:03:14,149 --> 00:03:12,640

this is going to be your third attempt

89
00:03:16,070 --> 00:03:14,159
to send meteor to the international

90
00:03:18,309 --> 00:03:16,080
space station what's it been like to

91
00:03:19,830 --> 00:03:18,319
kind of overcome these setbacks and get

92
00:03:22,309 --> 00:03:19,840
the hardware ready

93
00:03:25,350 --> 00:03:22,319
for the third time now

94
00:03:27,910 --> 00:03:25,360
it's been uh it's been a long road uh

95
00:03:29,830 --> 00:03:27,920
each you know we've had the a camera

96
00:03:32,630 --> 00:03:29,840
destroyed the two previous time two

97
00:03:33,990 --> 00:03:32,640
previous times this this third time's a

98
00:03:36,149 --> 00:03:34,000
charm for us

99
00:03:38,869 --> 00:03:36,159
uh you know when we had the first one

100
00:03:41,270 --> 00:03:38,879
destroyed we had a ground spare

101
00:03:42,630 --> 00:03:41,280
that we prepared for flight so that went

102
00:03:44,789 --> 00:03:42,640
pretty fast

103
00:03:47,270 --> 00:03:44,799
after the second one was destroyed the

104
00:03:50,070 --> 00:03:47,280
science team started looking at uh at

105
00:03:52,149 --> 00:03:50,080
the instrument and decided that we could

106
00:03:54,229 --> 00:03:52,159
actually since we had to have new camera

107
00:03:56,309 --> 00:03:54,239
and lens built anyway we could actually

108
00:03:57,429 --> 00:03:56,319
re-engineer some of the the lens

109
00:03:59,350 --> 00:03:57,439
assembly

110
00:04:01,190 --> 00:03:59,360
so we re-engineer some of the lens

111
00:04:03,670 --> 00:04:01,200
assembly to change the way the

112
00:04:05,429 --> 00:04:03,680
diffraction gratings are installed and

113
00:04:07,110 --> 00:04:05,439

make everything

114
00:04:08,949 --> 00:04:07,120
a little tighter tolerance and a little

115
00:04:11,350 --> 00:04:08,959
easier to adjust and make it easier for

116
00:04:12,949 --> 00:04:11,360
the crew to install so we're very

117
00:04:14,869 --> 00:04:12,959
hopeful that this third attempt is going

118
00:04:16,550 --> 00:04:14,879
to be successful all right well like you

119
00:04:18,870 --> 00:04:16,560
said i'm sure the third time will be the

120
00:04:20,469 --> 00:04:18,880
charm now for me you've already

121
00:04:21,909 --> 00:04:20,479
programmed you've already targeted a

122
00:04:23,270 --> 00:04:21,919
couple of big events what's going to be

123
00:04:24,790 --> 00:04:23,280
the first big event that you guys are

124
00:04:26,390 --> 00:04:24,800
looking forward to

125
00:04:28,390 --> 00:04:26,400
well the very first one that occurs

126
00:04:29,510 --> 00:04:28,400
right after we get on orbit is the the

127
00:04:31,909 --> 00:04:29,520
lyrids

128
00:04:34,310 --> 00:04:31,919
uh and then we get the awkwards after

129
00:04:36,469 --> 00:04:34,320
that and then the really big one which

130
00:04:37,909 --> 00:04:36,479
hopefully when we get installed at the

131
00:04:38,710 --> 00:04:37,919
end of april

132
00:04:40,150 --> 00:04:38,720
we'll

133
00:04:41,830 --> 00:04:40,160
do a little bit of check out over the

134
00:04:44,390 --> 00:04:41,840
first month or so and then we'll be

135
00:04:46,710 --> 00:04:44,400
really ready in august for the perseids

136
00:04:48,230 --> 00:04:46,720
which is the first big meteor shower and

137
00:04:49,830 --> 00:04:48,240
that's probably the one that most people

138
00:04:52,070 --> 00:04:49,840

are familiar with

139
00:04:54,070 --> 00:04:52,080
that and the leonids in november the

140
00:04:55,590 --> 00:04:54,080
really big ones that are really popular

141
00:04:57,830 --> 00:04:55,600
on the ground just because the number of

142
00:04:59,909 --> 00:04:57,840
meteors that enter the atmosphere and so

143
00:05:01,590 --> 00:04:59,919
after you guys get the video after it's

144
00:05:03,029 --> 00:05:01,600
all recorded how does it get back down

145
00:05:05,189 --> 00:05:03,039
here to the ground and what do you end

146
00:05:06,710 --> 00:05:05,199
up doing with that data you know what

147
00:05:07,990 --> 00:05:06,720
are we really looking to learn from this

148
00:05:10,230 --> 00:05:08,000
experiment

149
00:05:13,430 --> 00:05:10,240
yeah well like i said we're looking to

150
00:05:15,189 --> 00:05:13,440
learn you know more about meteors and

151
00:05:16,950 --> 00:05:15,199
more about their size their density

152
00:05:18,230 --> 00:05:16,960
their composition and what that'll tell

153
00:05:19,110 --> 00:05:18,240
us is

154
00:05:21,189 --> 00:05:19,120
uh

155
00:05:23,270 --> 00:05:21,199
more about the comets that most of the

156
00:05:25,430 --> 00:05:23,280
meteors came from so most of the meteor

157
00:05:27,909 --> 00:05:25,440
showers that that we're familiar with

158
00:05:28,710 --> 00:05:27,919
like the perseids and leonids are

159
00:05:30,390 --> 00:05:28,720
are

160
00:05:33,510 --> 00:05:30,400
all of those meteors came from a

161
00:05:35,110 --> 00:05:33,520
specific comet so if you know more about

162
00:05:37,189 --> 00:05:35,120
the meteors you know more about the

163
00:05:39,670 --> 00:05:37,199

comet that came from

164
00:05:41,430 --> 00:05:39,680
and so as far as getting the data back

165
00:05:45,110 --> 00:05:41,440
we have we have two ways to get the data

166
00:05:47,029 --> 00:05:45,120
back uh every day as as meteor

167
00:05:49,510 --> 00:05:47,039
looks down during the night passes from

168
00:05:50,870 --> 00:05:49,520
the station and takes data

169
00:05:53,990 --> 00:05:50,880
we

170
00:05:55,350 --> 00:05:54,000
will record data and the software on

171
00:05:57,990 --> 00:05:55,360
board will go through and look through

172
00:05:58,790 --> 00:05:58,000
that and try to find meteors

173
00:06:01,590 --> 00:05:58,800
and

174
00:06:03,749 --> 00:06:01,600
basically send us a list of times that

175
00:06:06,309 --> 00:06:03,759
it thinks it found meteors and little

176
00:06:09,029 --> 00:06:06,319
bitty short video clips

177
00:06:11,110 --> 00:06:09,039
to show what the meteors look like

178
00:06:13,430 --> 00:06:11,120
and then if we find some that are really

179
00:06:15,909 --> 00:06:13,440
interesting we can tell the software to

180
00:06:18,150 --> 00:06:15,919
download a larger

181
00:06:19,749 --> 00:06:18,160
higher resolution video of that but

182
00:06:22,390 --> 00:06:19,759
that's still only a fraction of the data

183
00:06:25,029 --> 00:06:22,400
so most of the data is stored on uh

184
00:06:26,629 --> 00:06:25,039
we've got 35 hard drives total so most

185
00:06:28,309 --> 00:06:26,639
of the data is stored on hard drives and

186
00:06:30,469 --> 00:06:28,319
that'll be sent back

187
00:06:32,469 --> 00:06:30,479
as we fill up a hard drive it'll be sent

188
00:06:33,830 --> 00:06:32,479

back down to the earth with a return

189
00:06:35,430 --> 00:06:33,840
vehicle and we'll look at it on the

190
00:06:37,270 --> 00:06:35,440
ground also

191
00:06:39,350 --> 00:06:37,280
all right well again michael fortenberry

192
00:06:41,110 --> 00:06:39,360
one of the primary team members for the

193
00:06:43,029 --> 00:06:41,120
meteor experiment and one of the

194
00:06:44,390 --> 00:06:43,039
principal engineers at the space science

195
00:06:46,309 --> 00:06:44,400
and engineering division at the

196
00:06:48,309 --> 00:06:46,319
southwest research institute in san

197
00:06:50,309 --> 00:06:48,319
antonio texas thanks so much for joining

198
00:06:51,510 --> 00:06:50,319
me today and again third time's a charm

199
00:06:52,870 --> 00:06:51,520
really looking forward to that launch

200
00:06:54,150 --> 00:06:52,880
and looking forward to getting some

201
00:06:55,749 --> 00:06:54,160
video and seeing some of those meteors