
MAKING
DRESSES
AND
SPACECRAFT
PARTS

1
00:00:28,840 --> 00:00:35,490
hmm

2
00:03:44,830 --> 00:02:06,500
[Music]

3
00:05:21,909 --> 00:03:47,250
so

4
00:05:25,189 --> 00:05:24,629
in order to be good custodians of our

5
00:05:26,629 --> 00:05:25,199
planet

6
00:05:28,390 --> 00:05:26,639
we really need to understand how it's

7
00:05:31,350 --> 00:05:28,400
changing how is it evolving

8
00:05:33,270 --> 00:05:31,360
i'm shannon statum and here at nasa jpl

9
00:05:34,870 --> 00:05:33,280
i help prepare sentinel 6 for its

10
00:05:37,590 --> 00:05:34,880
journey to space and here we are

11
00:05:38,150 --> 00:05:37,600
at high bay 2. this is actually a clean

12
00:05:40,310 --> 00:05:38,160
room

13
00:05:42,870 --> 00:05:40,320

and each component gets tested on its

14
00:05:45,189 --> 00:05:42,880
own and then we assemble it together

15
00:05:46,790 --> 00:05:45,199
sentinel 6 is a continuation of ocean

16
00:05:48,790 --> 00:05:46,800
observation missions that nasa has

17
00:05:50,390 --> 00:05:48,800
actually been doing since the early 90s

18
00:05:52,950 --> 00:05:50,400
and it's specifically capturing the

19
00:05:54,950 --> 00:05:52,960
heights of the ocean as it flies over

20
00:05:57,110 --> 00:05:54,960
we really need that long duration

21
00:05:58,390 --> 00:05:57,120
observation so we can better predict

22
00:06:00,070 --> 00:05:58,400
what is the rate of change

23
00:06:01,590 --> 00:06:00,080
what is it going to look like in a year

24
00:06:03,990 --> 00:06:01,600
five years ten years from now and so

25
00:06:07,189 --> 00:06:04,000
forth so my team was responsible for

26
00:06:08,629 --> 00:06:07,199
assembling testing and delivering amrc

27
00:06:10,870 --> 00:06:08,639
for the sentinel 6 mission

28
00:06:12,790 --> 00:06:10,880
and this is where we built it amrc is

29
00:06:15,350 --> 00:06:12,800
the advanced microwave radiometer

30
00:06:17,350 --> 00:06:15,360
one of a suite of instruments that work

31
00:06:17,990 --> 00:06:17,360
together on sentinel 6 and then give us

32
00:06:20,790 --> 00:06:18,000
the very

33
00:06:22,870 --> 00:06:20,800
high resolution heights of the oceans so

34
00:06:26,469 --> 00:06:22,880
we are in the antenna range

35
00:06:28,230 --> 00:06:26,479
at jpl and this is where we tested amrc

36
00:06:30,309 --> 00:06:28,240
we need to know that what we send into

37
00:06:32,710 --> 00:06:30,319
space is going to survive

38
00:06:34,230 --> 00:06:32,720

i've always had an affinity for arts

39
00:06:36,070 --> 00:06:34,240
singing and dancing and so one of the

40
00:06:39,110 --> 00:06:36,080
things i've been doing more recently is

41
00:06:41,350 --> 00:06:39,120
sewing and my dress i actually sewed

42
00:06:42,150 --> 00:06:41,360
you cannot do this job without being

43
00:06:45,110 --> 00:06:42,160
creative

44
00:06:46,070 --> 00:06:45,120
every mission is unique we are answering

45
00:06:48,230 --> 00:06:46,080
those really

46
00:06:50,070 --> 00:06:48,240
interesting and hard questions that we

47
00:06:50,690 --> 00:06:50,080
all have about our universe and our

48
00:06:55,430 --> 00:06:50,700
planet

49
00:06:58,150 --> 00:06:55,440
[Music]

50
00:06:59,990 --> 00:06:58,160
hi i'm brachial villanueva with nasa's

51
00:07:01,189 --> 00:07:00,000
jet propulsion laboratory in southern

52
00:07:03,430 --> 00:07:01,199
california

53
00:07:04,629 --> 00:07:03,440
you may know nasa best for exploring

54
00:07:07,430 --> 00:07:04,639
other planets

55
00:07:07,990 --> 00:07:07,440
but we are also keeping a close eye on

56
00:07:10,950 --> 00:07:08,000
our own

57
00:07:11,589 --> 00:07:10,960
planet earth nasa is about to launch the

58
00:07:13,990 --> 00:07:11,599
us

59
00:07:14,950 --> 00:07:14,000
and european sentinel 6 mycophyllic

60
00:07:19,270 --> 00:07:14,960
satellite

61
00:07:22,390 --> 00:07:19,280
accurate data yet on sea level

62
00:07:23,990 --> 00:07:22,400
and how it changes over time jpl manages

63
00:07:26,550 --> 00:07:24,000

the mission for nasa

64
00:07:27,749 --> 00:07:26,560
shannon statum is an engineer who led a

65
00:07:30,150 --> 00:07:27,759
team that developed

66
00:07:32,390 --> 00:07:30,160
one of the instruments on the satellite

67
00:07:33,510 --> 00:07:32,400
she joins us live today to answer some

68
00:07:35,350 --> 00:07:33,520
of your questions

69
00:07:36,550 --> 00:07:35,360
now if you have a question you'd like to

70
00:07:38,629 --> 00:07:36,560
ask leave them

71
00:07:39,830 --> 00:07:38,639
right here in the comments or post them

72
00:07:43,110 --> 00:07:39,840
to social media

73
00:07:45,110 --> 00:07:43,120
with the hashtag seeing the seas

74
00:07:46,869 --> 00:07:45,120
thank you so much for joining us today

75
00:07:48,629 --> 00:07:46,879
shannon

76
00:07:50,710 --> 00:07:48,639
thank you raquel i'm really excited to

77
00:07:52,710 --> 00:07:50,720
be here today to talk about sentinel 6

78
00:07:55,350 --> 00:07:52,720
and answer some questions

79
00:07:57,110 --> 00:07:55,360
it's great let's get started on the

80
00:07:59,189 --> 00:07:57,120
sentinel 6 michael freilick

81
00:08:00,150 --> 00:07:59,199
your team was responsible for the

82
00:08:03,029 --> 00:08:00,160
advanced

83
00:08:04,790 --> 00:08:03,039
microwave radiometer can you tell us how

84
00:08:06,710 --> 00:08:04,800
your instrument contributes to the

85
00:08:09,670 --> 00:08:06,720
mission

86
00:08:11,510 --> 00:08:09,680
yes absolutely well first off sentinel 6

87
00:08:13,670 --> 00:08:11,520
is an earth science mission

88
00:08:14,790 --> 00:08:13,680

that will precisely measure the heights

89
00:08:17,270 --> 00:08:14,800
of our oceans

90
00:08:18,790 --> 00:08:17,280
and it is a continuation of ocean

91
00:08:21,749 --> 00:08:18,800
observation missions that

92
00:08:24,230 --> 00:08:21,759
nasa actually started in the early 90s

93
00:08:27,430 --> 00:08:24,240
so sentinel-6 will continue that record

94
00:08:30,230 --> 00:08:27,440
for the next decade and my team was

95
00:08:33,110 --> 00:08:30,240
responsible for assembling and testing

96
00:08:34,949 --> 00:08:33,120
amrc or the advanced microwave

97
00:08:37,509 --> 00:08:34,959
radiometer for climate

98
00:08:40,630 --> 00:08:37,519
which is a bit of a mouthful and why we

99
00:08:43,909 --> 00:08:40,640
love our acronyms at nasa and jpl

100
00:08:45,269 --> 00:08:43,919
but amrc is specifically measuring water

101
00:08:48,070 --> 00:08:45,279
vapor or moisture

102
00:08:48,630 --> 00:08:48,080
in the atmosphere so think clouds and

103
00:08:51,590 --> 00:08:48,640
rain

104
00:08:53,430 --> 00:08:51,600
and snow and that data along with the

105
00:08:54,070 --> 00:08:53,440
data from the other science instruments

106
00:08:56,470 --> 00:08:54,080
on sentinel

107
00:08:57,590 --> 00:08:56,480
6 is how we're able to resolve those

108
00:09:00,870 --> 00:08:57,600
very precise

109
00:09:02,630 --> 00:09:00,880
sea level heights and

110
00:09:04,630 --> 00:09:02,640
you worked on other missions before

111
00:09:06,710 --> 00:09:04,640
sentinel 6 here at jpl

112
00:09:09,670 --> 00:09:06,720
did you encounter any new challenges

113
00:09:12,230 --> 00:09:09,680

working on this satellite

114
00:09:12,710 --> 00:09:12,240
absolutely um well you know every

115
00:09:15,910 --> 00:09:12,720
mission

116
00:09:18,630 --> 00:09:15,920
that we do at jpl and nasa is unique

117
00:09:19,509 --> 00:09:18,640
because we are always trying to push the

118
00:09:22,070 --> 00:09:19,519
envelope

119
00:09:23,829 --> 00:09:22,080
in pursuit of scientific discovery so

120
00:09:26,790 --> 00:09:23,839
every mission is going to have

121
00:09:27,829 --> 00:09:26,800
its own challenges and even though

122
00:09:30,150 --> 00:09:27,839
sentinel 6

123
00:09:31,269 --> 00:09:30,160
has this legacy of missions that come

124
00:09:33,910 --> 00:09:31,279
before it

125
00:09:36,230 --> 00:09:33,920
we are utilizing new technologies and

126
00:09:38,870 --> 00:09:36,240
advancements in modeling techniques

127
00:09:40,150 --> 00:09:38,880
and other tools and processes to get us

128
00:09:42,949 --> 00:09:40,160
even better data

129
00:09:43,670 --> 00:09:42,959
than the predecessors of sentinel 6. for

130
00:09:46,790 --> 00:09:43,680
example

131
00:09:49,350 --> 00:09:46,800
amrc is the next generation of microwave

132
00:09:51,509 --> 00:09:49,360
radiometers developed at jpl

133
00:09:53,110 --> 00:09:51,519
every mission prior to sentinel 6 for

134
00:09:56,550 --> 00:09:53,120
ocean observations has had

135
00:09:59,430 --> 00:09:56,560
some microwave radiometer on board to

136
00:10:00,389 --> 00:09:59,440
measure water vapor in the atmosphere

137
00:10:02,870 --> 00:10:00,399
and amrc

138
00:10:04,949 --> 00:10:02,880

will have a new technology component

139
00:10:07,509 --> 00:10:04,959
that will enable better measurements

140
00:10:08,150 --> 00:10:07,519
at the coastal lines and that is really

141
00:10:10,949 --> 00:10:08,160
important

142
00:10:11,750 --> 00:10:10,959
because the coast or beaches is where

143
00:10:15,269 --> 00:10:11,760
many people

144
00:10:17,110 --> 00:10:15,279
have homes and businesses and property

145
00:10:20,150 --> 00:10:17,120
that they want to protect

146
00:10:22,710 --> 00:10:20,160
so by better understanding how much

147
00:10:24,470 --> 00:10:22,720
the sea levels are rising in those areas

148
00:10:26,710 --> 00:10:24,480
and to better predict

149
00:10:28,150 --> 00:10:26,720
what the sea level is going to look like

150
00:10:31,670 --> 00:10:28,160
in years to come

151
00:10:32,150 --> 00:10:31,680
is incredibly valuable and on a personal

152
00:10:35,750 --> 00:10:32,160
note

153
00:10:37,750 --> 00:10:35,760
um you know i've been at jpl since 2011

154
00:10:39,670 --> 00:10:37,760
i came straight from school at georgia

155
00:10:41,910 --> 00:10:39,680
tech where i got my phd

156
00:10:43,430 --> 00:10:41,920
um and most of the missions i've worked

157
00:10:46,230 --> 00:10:43,440
on prior to sentinel 6

158
00:10:47,750 --> 00:10:46,240
were cubesats or which are basically

159
00:10:49,829 --> 00:10:47,760
these

160
00:10:51,030 --> 00:10:49,839
miniature satellites about the size of a

161
00:10:53,670 --> 00:10:51,040
toaster oven

162
00:10:55,670 --> 00:10:53,680
so if you can imagine i went from

163
00:10:59,190 --> 00:10:55,680

assembling and testing hardware

164
00:10:59,990 --> 00:10:59,200
that i could carry by hand to building

165
00:11:02,550 --> 00:11:00,000
and testing

166
00:11:03,030 --> 00:11:02,560
a single science instrument for an

167
00:11:06,069 --> 00:11:03,040
almost

168
00:11:06,949 --> 00:11:06,079
bus size satellite um and you just can't

169
00:11:09,750 --> 00:11:06,959
move this

170
00:11:10,710 --> 00:11:09,760
size hardware without a crane or a

171
00:11:13,829 --> 00:11:10,720
forklift

172
00:11:14,550 --> 00:11:13,839
or a semi truck um so the scale was

173
00:11:16,949 --> 00:11:14,560
definitely

174
00:11:17,590 --> 00:11:16,959
um very different from my previous

175
00:11:19,350 --> 00:11:17,600
missions

176
00:11:20,949 --> 00:11:19,360
and certainly introduced some very

177
00:11:23,990 --> 00:11:20,959
interesting challenges

178
00:11:26,550 --> 00:11:24,000
um but fortunately i had an amazing team

179
00:11:27,030 --> 00:11:26,560
you know we took it one day at a time

180
00:11:28,870 --> 00:11:27,040
and

181
00:11:32,310 --> 00:11:28,880
we were able to successfully deliver

182
00:11:34,389 --> 00:11:32,320
amrc for the project

183
00:11:36,790 --> 00:11:34,399
that is quite the size difference when

184
00:11:40,389 --> 00:11:36,800
it comes to moving things around

185
00:11:42,310 --> 00:11:40,399
yes and in the video you talked about

186
00:11:44,550 --> 00:11:42,320
the importance of creativity

187
00:11:47,350 --> 00:11:44,560
how does your love for the arts help you

188
00:11:50,710 --> 00:11:47,360

as an engineer

189
00:11:51,269 --> 00:11:50,720
yes so i grew up with a love for the

190
00:11:53,829 --> 00:11:51,279
arts

191
00:11:54,790 --> 00:11:53,839
i you know was always singing and

192
00:11:57,350 --> 00:11:54,800
dancing

193
00:11:58,150 --> 00:11:57,360
and participating in my school talent

194
00:12:01,670 --> 00:11:58,160
shows

195
00:12:04,550 --> 00:12:01,680
and musicals so art has been a part of

196
00:12:05,670 --> 00:12:04,560
my life um this entire time and in

197
00:12:08,550 --> 00:12:05,680
recent years

198
00:12:10,150 --> 00:12:08,560
i've been very passionate about sewing

199
00:12:12,069 --> 00:12:10,160
and actually the dress i'm wearing

200
00:12:14,870 --> 00:12:12,079
today i'm not sure if everyone can see

201
00:12:18,550 --> 00:12:14,880
the details um but i also sewed this one

202
00:12:20,949 --> 00:12:18,560
and it's girls doing science um

203
00:12:22,150 --> 00:12:20,959
and uh you know as i mentioned every

204
00:12:24,629 --> 00:12:22,160
mission is unique

205
00:12:25,269 --> 00:12:24,639
uh everything that we build at jpl and

206
00:12:28,470 --> 00:12:25,279
nasa

207
00:12:31,509 --> 00:12:28,480
is really one of a kind and um and

208
00:12:34,310 --> 00:12:31,519
so we're literally inventing every day

209
00:12:35,350 --> 00:12:34,320
to make these missions a reality and you

210
00:12:37,590 --> 00:12:35,360
just can't do that

211
00:12:39,829 --> 00:12:37,600
without having creativity without

212
00:12:42,310 --> 00:12:39,839
thinking outside the box

213
00:12:44,629 --> 00:12:42,320

and so that's all very important and i

214
00:12:47,509 --> 00:12:44,639
think there's this common misconception

215
00:12:48,389 --> 00:12:47,519
that um the you know arts and science

216
00:12:50,710 --> 00:12:48,399
and engineering

217
00:12:52,550 --> 00:12:50,720
are just very different fields you have

218
00:12:55,590 --> 00:12:52,560
to pick one or the other

219
00:12:58,629 --> 00:12:55,600
but i see so many parallels in my job

220
00:13:00,870 --> 00:12:58,639
for example take a sewing pattern and an

221
00:13:01,829 --> 00:13:00,880
engineering drawing they don't look too

222
00:13:04,550 --> 00:13:01,839
dissimilar

223
00:13:05,670 --> 00:13:04,560
you know they're both someone's design

224
00:13:07,670 --> 00:13:05,680
that has detailed

225
00:13:09,269 --> 00:13:07,680
instructions on how to build something

226
00:13:12,389 --> 00:13:09,279
whether that's a dress

227
00:13:14,310 --> 00:13:12,399
or a part for a spacecraft and

228
00:13:16,069 --> 00:13:14,320
take the clean room there were some

229
00:13:18,389 --> 00:13:16,079
shots in the video earlier

230
00:13:19,430 --> 00:13:18,399
where you saw engineers and flight

231
00:13:21,190 --> 00:13:19,440
technicians

232
00:13:23,350 --> 00:13:21,200
at different locations throughout the

233
00:13:24,870 --> 00:13:23,360
clean room working on different parts of

234
00:13:27,190 --> 00:13:24,880
the spacecraft

235
00:13:28,470 --> 00:13:27,200
to build these things for space to build

236
00:13:30,870 --> 00:13:28,480
them for our missions

237
00:13:31,750 --> 00:13:30,880
and i see that a lot like a dance on a

238
00:13:34,790 --> 00:13:31,760

stage

239
00:13:37,269 --> 00:13:34,800
and as the lead i am having to think

240
00:13:37,829 --> 00:13:37,279
every day about making sure that the

241
00:13:44,949 --> 00:13:37,839
right

242
00:13:46,949 --> 00:13:44,959
to make all of this happen so i'm

243
00:13:49,509 --> 00:13:46,959
effectively choreographing

244
00:13:50,230 --> 00:13:49,519
my team on a daily basis to get the job

245
00:13:53,430 --> 00:13:50,240
done

246
00:13:55,990 --> 00:13:53,440
so if you know you have a creative mind

247
00:13:56,710 --> 00:13:56,000
and a passion for space exploration and

248
00:13:59,350 --> 00:13:56,720
science

249
00:14:01,350 --> 00:13:59,360
i think jpl and nasa are a great place

250
00:14:04,550 --> 00:14:01,360
to be

251
00:14:06,230 --> 00:14:04,560
and i gotta say i love the dress

252
00:14:08,550 --> 00:14:06,240
and i've always wanted to know how long

253
00:14:12,069 --> 00:14:08,560
does it take to sew a dress from

254
00:14:14,470 --> 00:14:12,079
scratch um so it depends

255
00:14:16,310 --> 00:14:14,480
a bit on your experience sewing and

256
00:14:18,470 --> 00:14:16,320
making sure that you have all the right

257
00:14:19,990 --> 00:14:18,480
materials and can dedicate your time

258
00:14:21,750 --> 00:14:20,000
um they take me usually a couple of

259
00:14:22,790 --> 00:14:21,760
weeks because i'm primarily working on

260
00:14:24,949 --> 00:14:22,800
the weekends

261
00:14:26,790 --> 00:14:24,959
um but you know if you could dedicate

262
00:14:28,069 --> 00:14:26,800
full you know all of your time it's just

263
00:14:30,150 --> 00:14:28,079

a couple of days

264
00:14:32,629 --> 00:14:30,160
but it is funny because you know when i

265
00:14:34,550 --> 00:14:32,639
was sewing this dress for example

266
00:14:35,990 --> 00:14:34,560
i got most the way through and realized

267
00:14:38,310 --> 00:14:36,000
i didn't have a zipper

268
00:14:39,269 --> 00:14:38,320
that i needed so i had to quickly go out

269
00:14:42,150 --> 00:14:39,279
and make sure

270
00:14:44,470 --> 00:14:42,160
i um got the right zipper to work for

271
00:14:47,590 --> 00:14:44,480
this design for this dress pattern

272
00:14:49,829 --> 00:14:47,600
and that happens actually in you know

273
00:14:51,350 --> 00:14:49,839
space and for our our missions for

274
00:14:51,910 --> 00:14:51,360
building and testing you know we're

275
00:14:54,629 --> 00:14:51,920
human

276
00:14:55,509 --> 00:14:54,639
we make mistakes um we forget things but

277
00:14:58,310 --> 00:14:55,519
uh that's okay

278
00:14:59,829 --> 00:14:58,320
because we're all you know dedicated to

279
00:15:00,949 --> 00:14:59,839
the mission dedicated to making it

280
00:15:03,590 --> 00:15:00,959
successful

281
00:15:04,949 --> 00:15:03,600
and um and we just come together and and

282
00:15:07,189 --> 00:15:04,959
you know when there's problems we

283
00:15:08,710 --> 00:15:07,199
address them and we move forward

284
00:15:10,790 --> 00:15:08,720
that's all about rolling with the

285
00:15:11,350 --> 00:15:10,800
punches so those are my questions for

286
00:15:14,710 --> 00:15:11,360
now

287
00:15:17,269 --> 00:15:14,720
let's get to some viewer questions

288
00:15:18,150 --> 00:15:17,279

so let's start with gary on youtube who

289
00:15:20,790 --> 00:15:18,160
asks

290
00:15:22,310 --> 00:15:20,800
what would an underwater fault line do

291
00:15:25,350 --> 00:15:22,320
to the surf slash

292
00:15:27,910 --> 00:15:25,360
water level oh

293
00:15:31,030 --> 00:15:27,920
um that is a good question something

294
00:15:32,790 --> 00:15:31,040
that i don't think i can directly answer

295
00:15:34,150 --> 00:15:32,800
um i would assume that that can

296
00:15:37,030 --> 00:15:34,160
definitely impact

297
00:15:38,870 --> 00:15:37,040
uh the sea level heights um and that a

298
00:15:40,069 --> 00:15:38,880
sentinel 6 would be able to pick

299
00:15:43,110 --> 00:15:40,079
something up like that

300
00:15:45,110 --> 00:15:43,120
um with with our science instruments uh

301
00:15:45,990 --> 00:15:45,120
whether it causes them to increase or

302
00:15:48,870 --> 00:15:46,000
decrease

303
00:15:50,550 --> 00:15:48,880
um i'm not entirely sure that's not my

304
00:15:53,749 --> 00:15:50,560
my area of expertise

305
00:15:54,870 --> 00:15:53,759
um but you know that's why these records

306
00:15:57,670 --> 00:15:54,880
are so important

307
00:15:58,629 --> 00:15:57,680
because we need to be able to see uh how

308
00:16:01,670 --> 00:15:58,639
the sea levels

309
00:16:03,590 --> 00:16:01,680
are changing over time and one of my

310
00:16:05,590 --> 00:16:03,600
colleagues and one of these previous q

311
00:16:09,269 --> 00:16:05,600
as talked about uh you know

312
00:16:09,910 --> 00:16:09,279
the the valleys and and and hills of of

313
00:16:11,430 --> 00:16:09,920

the water

314
00:16:13,110 --> 00:16:11,440
and that's exactly true you know as

315
00:16:14,790 --> 00:16:13,120
we're looking throughout the globe

316
00:16:17,110 --> 00:16:14,800
we're seeing you know where the sea

317
00:16:19,350 --> 00:16:17,120
levels are are rising and falling

318
00:16:20,550 --> 00:16:19,360
throughout the year um but we are

319
00:16:23,509 --> 00:16:20,560
absolutely seeing

320
00:16:25,030 --> 00:16:23,519
um an increase on an annual basis by

321
00:16:27,269 --> 00:16:25,040
about three millimeters

322
00:16:28,629 --> 00:16:27,279
and so sea levels are rising and it's

323
00:16:30,310 --> 00:16:28,639
really important to have these kinds of

324
00:16:32,310 --> 00:16:30,320
missions so we can continue

325
00:16:34,069 --> 00:16:32,320
measuring that and understanding the

326
00:16:37,189 --> 00:16:34,079
impacts

327
00:16:40,310 --> 00:16:37,199
and you die on facebook asks can we

328
00:16:42,629 --> 00:16:40,320
listen to the signals

329
00:16:44,470 --> 00:16:42,639
so i don't think you can listen to the

330
00:16:46,870 --> 00:16:44,480
signals um the general public

331
00:16:47,829 --> 00:16:46,880
so what uh we do at nasa and jpl with

332
00:16:50,870 --> 00:16:47,839
our missions

333
00:16:52,389 --> 00:16:50,880
is we get spectrum licenses for uh being

334
00:16:54,629 --> 00:16:52,399
able to transmit

335
00:16:56,230 --> 00:16:54,639
to our satellite so we can talk to it

336
00:16:58,790 --> 00:16:56,240
and command it

337
00:17:00,069 --> 00:16:58,800
for specific uh you know parts of the

338
00:17:03,269 --> 00:17:00,079

operation and also

339
00:17:05,110 --> 00:17:03,279
to downlink all of that science data

340
00:17:06,470 --> 00:17:05,120
and um and those are coordinated for

341
00:17:08,630 --> 00:17:06,480
specific uh

342
00:17:09,510 --> 00:17:08,640
ground systems uh a ground system

343
00:17:11,990 --> 00:17:09,520
network uh

344
00:17:12,949 --> 00:17:12,000
around the globe to transmit and collect

345
00:17:15,110 --> 00:17:12,959
that data

346
00:17:16,789 --> 00:17:15,120
um but you know although the general

347
00:17:17,669 --> 00:17:16,799
public might not be able to listen to

348
00:17:20,710 --> 00:17:17,679
these signals

349
00:17:22,549 --> 00:17:20,720
or talk to sentinel 6 we absolutely want

350
00:17:24,309 --> 00:17:22,559
to make sure that all of the

351
00:17:26,630 --> 00:17:24,319
valuable science data that we have is

352
00:17:29,270 --> 00:17:26,640
available to the public

353
00:17:31,029 --> 00:17:29,280
that's great and uh lonnie on facebook

354
00:17:33,510 --> 00:17:31,039
actually has a question

355
00:17:36,150 --> 00:17:33,520
about your role like how many people

356
00:17:38,710 --> 00:17:36,160
were on your team

357
00:17:39,830 --> 00:17:38,720
so i had that's a great question um i

358
00:17:42,870 --> 00:17:39,840
had about

359
00:17:44,070 --> 00:17:42,880
maybe 15 to 20 people um primarily you

360
00:17:46,470 --> 00:17:44,080
know engineers

361
00:17:47,750 --> 00:17:46,480
uh from the the disciplines that are

362
00:17:49,590 --> 00:17:47,760
really important to

363
00:17:51,669 --> 00:17:49,600

our science mission so electrical

364
00:17:53,110 --> 00:17:51,679
engineers uh mechanical engineers

365
00:17:56,549 --> 00:17:53,120
thermal engineers

366
00:17:58,950 --> 00:17:56,559
um and also flight technicians those are

367
00:18:00,070 --> 00:17:58,960
you know key as well to our teams those

368
00:18:01,669 --> 00:18:00,080
are the people that

369
00:18:04,310 --> 00:18:01,679
usually are the ones working directly

370
00:18:06,789 --> 00:18:04,320
with the flight hardware hands on

371
00:18:08,150 --> 00:18:06,799
with the nuts and bolts and you know

372
00:18:09,990 --> 00:18:08,160
moving the hardware

373
00:18:12,230 --> 00:18:10,000
from from place to place operating the

374
00:18:14,310 --> 00:18:12,240
cranes so yeah so those are the types of

375
00:18:17,190 --> 00:18:14,320
disciplines that we have on our teams

376
00:18:19,350 --> 00:18:17,200
in integration and test for our flight

377
00:18:22,630 --> 00:18:19,360
missions

378
00:18:24,549 --> 00:18:22,640
and here is some stuff about your dress

379
00:18:26,549 --> 00:18:24,559
it's a big hit online so let's start

380
00:18:28,230 --> 00:18:26,559
with stella on youtube who asks

381
00:18:32,950 --> 00:18:28,240
how did you pick your pattern on your

382
00:18:37,029 --> 00:18:35,830
um yeah so well this particular dress

383
00:18:39,669 --> 00:18:37,039
you know

384
00:18:41,830 --> 00:18:39,679
girls pursuing their their dreams and

385
00:18:42,070 --> 00:18:41,840
aspirations in science and engineering

386
00:18:45,270 --> 00:18:42,080
is

387
00:18:47,750 --> 00:18:45,280
minority

388
00:18:49,750 --> 00:18:47,760

in that in those disciplines so you know

389
00:18:52,950 --> 00:18:49,760
we want to get that ratio up

390
00:18:54,230 --> 00:18:52,960
for sure um and you know anyone really

391
00:18:56,230 --> 00:18:54,240
that is interested

392
00:18:58,470 --> 00:18:56,240
in science and engineering and pursuing

393
00:18:59,110 --> 00:18:58,480
those dreams i i'm very supportive of i

394
00:19:01,590 --> 00:18:59,120
love doing

395
00:19:02,870 --> 00:19:01,600
outreach and when i was actually when i

396
00:19:06,470 --> 00:19:02,880
was searching for

397
00:19:09,110 --> 00:19:06,480
the space fabric that i had in

398
00:19:11,430 --> 00:19:09,120
the video i just happened upon this

399
00:19:13,909 --> 00:19:11,440
fabric thought oh man this is too cute

400
00:19:15,990 --> 00:19:13,919
have to get it um and i'll figure out

401
00:19:18,950 --> 00:19:16,000
you know the pattern for it later

402
00:19:19,510 --> 00:19:18,960
um so sometimes it's just a matter of

403
00:19:21,830 --> 00:19:19,520
you know

404
00:19:23,430 --> 00:19:21,840
a chance that you you find these things

405
00:19:25,590 --> 00:19:23,440
and that's what being creative is all

406
00:19:27,830 --> 00:19:25,600
about sometimes it's just a matter of

407
00:19:29,190 --> 00:19:27,840
seeing what you have in front of you and

408
00:19:32,230 --> 00:19:29,200
um and making something

409
00:19:35,590 --> 00:19:32,240
amazing with it great and

410
00:19:37,029 --> 00:19:35,600
kelly rickerson on facebook notes

411
00:19:39,590 --> 00:19:37,039
thank you for talking about the

412
00:19:41,990 --> 00:19:39,600
intersection between art and science

413
00:19:42,950 --> 00:19:42,000

i am an artist and a long time science

414
00:19:45,430 --> 00:19:42,960
enthusiast

415
00:19:46,070 --> 00:19:45,440
i'm inspired by both fields and love

416
00:19:50,630 --> 00:19:46,080
finding

417
00:19:56,230 --> 00:19:54,230
now earl on facebook is can any aspect

418
00:19:57,190 --> 00:19:56,240
of the sentinel 6 technology be applied

419
00:20:01,669 --> 00:19:57,200
to research

420
00:20:05,110 --> 00:20:03,830
hmm that is a great question so i know

421
00:20:05,990 --> 00:20:05,120
that our science instruments are

422
00:20:09,110 --> 00:20:06,000
specifically

423
00:20:12,230 --> 00:20:09,120
tuned for water um you know we use

424
00:20:14,149 --> 00:20:12,240
radio frequencies that are tuned um

425
00:20:15,590 --> 00:20:14,159
to you know the the frequencies that are

426
00:20:18,149 --> 00:20:15,600
going to detect

427
00:20:19,029 --> 00:20:18,159
water vapor and precipitation and

428
00:20:21,590 --> 00:20:19,039
moisture

429
00:20:24,070 --> 00:20:21,600
um so it's it's absolutely possible that

430
00:20:27,029 --> 00:20:24,080
these types of instruments can be used

431
00:20:28,070 --> 00:20:27,039
on other missions whether at mars or

432
00:20:30,789 --> 00:20:28,080
some of our other

433
00:20:31,909 --> 00:20:30,799
you know deep space missions radars and

434
00:20:34,789 --> 00:20:31,919
radiometers

435
00:20:36,789 --> 00:20:34,799
um and gps you know all of the science

436
00:20:38,390 --> 00:20:36,799
instruments that we have on sentinel 6

437
00:20:42,070 --> 00:20:38,400
are certainly key to

438
00:20:42,950 --> 00:20:42,080

to um completing science uh missions at

439
00:20:45,510 --> 00:20:42,960
other planets

440
00:20:47,110 --> 00:20:45,520
they just might be tweaked uh you know

441
00:20:49,029 --> 00:20:47,120
to that particular mission

442
00:20:51,029 --> 00:20:49,039
and what the scientists want to measure

443
00:20:54,549 --> 00:20:51,039
there

444
00:20:56,310 --> 00:20:54,559
and shivani on youtube says um that they

445
00:20:58,230 --> 00:20:56,320
love your dress they just want to let

446
00:21:00,630 --> 00:20:58,240
you know too

447
00:21:01,590 --> 00:21:00,640
well thank you i'm telling you it's a

448
00:21:04,310 --> 00:21:01,600
big hit

449
00:21:08,870 --> 00:21:04,320
ahmed on facebook asks what are the

450
00:21:16,149 --> 00:21:11,909
um well i don't know if there's any risk

451
00:21:18,390 --> 00:21:16,159
per se to flying sentinel six um

452
00:21:20,710 --> 00:21:18,400
you know we've been flying uh this type

453
00:21:22,070 --> 00:21:20,720
of satellite since the early 90s so

454
00:21:25,029 --> 00:21:22,080
we've absolutely

455
00:21:27,270 --> 00:21:25,039
uh learned a lot through um out that

456
00:21:28,950 --> 00:21:27,280
throughout that time almost 30 years now

457
00:21:31,190 --> 00:21:28,960
and we're also going back to the same

458
00:21:32,950 --> 00:21:31,200
orbit with same inclination that was

459
00:21:35,110 --> 00:21:32,960
actually really important because

460
00:21:37,029 --> 00:21:35,120
when we take these measurements and we

461
00:21:37,909 --> 00:21:37,039
have this long record we want to make

462
00:21:40,070 --> 00:21:37,919
sure

463
00:21:42,230 --> 00:21:40,080

that we're comparing apples to apples as

464
00:21:43,510 --> 00:21:42,240
they say um you know so if we were at a

465
00:21:44,390 --> 00:21:43,520
different orbit maybe a different

466
00:21:46,310 --> 00:21:44,400
inclination

467
00:21:47,990 --> 00:21:46,320
um you know we'd still be collecting

468
00:21:51,510 --> 00:21:48,000
similar data but maybe not

469
00:21:53,669 --> 00:21:51,520
um couldn't trust that it was exactly

470
00:21:55,110 --> 00:21:53,679
apples to apples um so we are going to

471
00:21:57,590 --> 00:21:55,120
the same orbit

472
00:21:58,310 --> 00:21:57,600
and um just continuing this mission so i

473
00:22:00,549 --> 00:21:58,320
think it's

474
00:22:02,070 --> 00:22:00,559
it's very low risk and i'm really

475
00:22:03,669 --> 00:22:02,080
excited to see it launch later this

476
00:22:05,990 --> 00:22:03,679
month

477
00:22:07,110 --> 00:22:06,000
and then brian on youtube asks will the

478
00:22:09,029 --> 00:22:07,120
data used

479
00:22:10,630 --> 00:22:09,039
you collect will it be shared with the

480
00:22:12,710 --> 00:22:10,640
public

481
00:22:14,310 --> 00:22:12,720
yes absolutely so there is some

482
00:22:17,270 --> 00:22:14,320
processing that we need to do

483
00:22:17,590 --> 00:22:17,280
uh once we get it down to the ground um

484
00:22:20,470 --> 00:22:17,600
and

485
00:22:21,110 --> 00:22:20,480
uh uh but the the intent for sure in the

486
00:22:24,310 --> 00:22:21,120
long term

487
00:22:26,470 --> 00:22:24,320
is to make it publicly available um and

488
00:22:28,630 --> 00:22:26,480

um actually our project manager barack

489
00:22:29,510 --> 00:22:28,640
vase who had a q a session a couple

490
00:22:31,990 --> 00:22:29,520
weeks ago

491
00:22:33,029 --> 00:22:32,000
shared some of the really interesting

492
00:22:35,510 --> 00:22:33,039
applications

493
00:22:37,830 --> 00:22:35,520
that other people have used sentinel 6

494
00:22:39,750 --> 00:22:37,840
is specifically looking at our oceans

495
00:22:43,029 --> 00:22:39,760
and measuring ocean heights

496
00:22:43,990 --> 00:22:43,039
but that data can be used for many other

497
00:22:45,830 --> 00:22:44,000
things

498
00:22:47,430 --> 00:22:45,840
he mentioned one of the most interesting

499
00:22:48,789 --> 00:22:47,440
ones was

500
00:22:51,190 --> 00:22:48,799
people actually looking for the

501
00:22:51,990 --> 00:22:51,200
malaysian airliner that went down a few

502
00:22:54,470 --> 00:22:52,000
years ago

503
00:22:55,110 --> 00:22:54,480
and so it's just it's really interesting

504
00:22:56,789 --> 00:22:55,120
to see

505
00:22:59,029 --> 00:22:56,799
how when you make this data publicly

506
00:22:59,909 --> 00:22:59,039
available um what kind of applications

507
00:23:03,029 --> 00:22:59,919
there are

508
00:23:03,669 --> 00:23:03,039
and so sentinel 6 will focus on our

509
00:23:05,909 --> 00:23:03,679
ocean

510
00:23:06,950 --> 00:23:05,919
um heights and continuing that

511
00:23:09,430 --> 00:23:06,960
observation

512
00:23:10,549 --> 00:23:09,440
but the data will be available to the

513
00:23:13,669 --> 00:23:10,559

public and

514
00:23:15,590 --> 00:23:13,679
used in many exciting ways wow

515
00:23:17,909 --> 00:23:15,600
i didn't know that about the data so

516
00:23:20,310 --> 00:23:17,919
rose centaur on youtube wants to know

517
00:23:20,950 --> 00:23:20,320
did you encounter any major lessons or

518
00:23:23,430 --> 00:23:20,960
challenges

519
00:23:23,990 --> 00:23:23,440
based on differences between the cubesat

520
00:23:27,350 --> 00:23:24,000
and a

521
00:23:29,830 --> 00:23:27,360
large flight mission

522
00:23:31,669 --> 00:23:29,840
um yes well you know flight hardware is

523
00:23:34,950 --> 00:23:31,679
flight hardware uh

524
00:23:35,669 --> 00:23:34,960
it's always very valuable and um and we

525
00:23:38,470 --> 00:23:35,679
test it

526
00:23:39,190 --> 00:23:38,480
in very similar ways uh we always test

527
00:23:42,390 --> 00:23:39,200
to make sure

528
00:23:46,070 --> 00:23:42,400
that um this hardware can survive the

529
00:23:49,190 --> 00:23:46,080
the rigors of of space and launch um

530
00:23:50,630 --> 00:23:49,200
so i actually had a an incident uh

531
00:23:53,190 --> 00:23:50,640
not an instant but something that came

532
00:23:55,909 --> 00:23:53,200
up in sentinel 6 with amrc

533
00:23:56,470 --> 00:23:55,919
um that was uh just kind of a funny

534
00:23:59,110 --> 00:23:56,480
story

535
00:23:59,669 --> 00:23:59,120
we were in the middle of our thermal

536
00:24:02,390 --> 00:23:59,679
vacuum

537
00:24:03,190 --> 00:24:02,400
test and so that's when we take our

538
00:24:05,590 --> 00:24:03,200

hardware

539
00:24:06,310 --> 00:24:05,600
and we put it into a thermal vacuum

540
00:24:09,190 --> 00:24:06,320
chamber

541
00:24:10,549 --> 00:24:09,200
and we simulate the extreme temperatures

542
00:24:12,789 --> 00:24:10,559
and vacuum of space

543
00:24:13,909 --> 00:24:12,799
that the flight hardware will see

544
00:24:16,470 --> 00:24:13,919
throughout its mission

545
00:24:17,990 --> 00:24:16,480
and that's where we really you know test

546
00:24:20,470 --> 00:24:18,000
the hardware and we really

547
00:24:22,390 --> 00:24:20,480
um put it through the ringer to make

548
00:24:23,590 --> 00:24:22,400
sure that it's going to operate the way

549
00:24:24,710 --> 00:24:23,600
that we need it to throughout the

550
00:24:27,669 --> 00:24:24,720
mission

551
00:24:28,549 --> 00:24:27,679
um and uh and that's uh when we run

552
00:24:31,909 --> 00:24:28,559
those tests

553
00:24:34,549 --> 00:24:31,919
they're run uh you know all the time so

554
00:24:36,070 --> 00:24:34,559
24 hours a day seven days a week until

555
00:24:38,950 --> 00:24:36,080
the test is done

556
00:24:40,390 --> 00:24:38,960
and when um we were in the middle of the

557
00:24:42,630 --> 00:24:40,400
test for amrc

558
00:24:43,830 --> 00:24:42,640
i was on call and i get a phone call

559
00:24:46,549 --> 00:24:43,840
from one of my

560
00:24:47,510 --> 00:24:46,559
engineers saying uh one of the computers

561
00:24:49,750 --> 00:24:47,520
crashed

562
00:24:50,549 --> 00:24:49,760
i was like okay well first thing don't

563
00:24:53,190 --> 00:24:50,559

panic

564
00:24:54,310 --> 00:24:53,200
um second thing um you know is the is

565
00:24:55,909 --> 00:24:54,320
the hardware safe

566
00:24:57,430 --> 00:24:55,919
that's the other key thing you know

567
00:24:58,630 --> 00:24:57,440
outside of making sure that our people

568
00:24:59,430 --> 00:24:58,640
are safe we got to make sure our flight

569
00:25:02,549 --> 00:24:59,440
hardware

570
00:25:05,110 --> 00:25:02,559
is safe um and so we checked everything

571
00:25:05,669 --> 00:25:05,120
hardware was safe um and there were no

572
00:25:07,669 --> 00:25:05,679
issues

573
00:25:09,669 --> 00:25:07,679
so then okay well now let's try to get

574
00:25:13,350 --> 00:25:09,679
this computer back online

575
00:25:15,430 --> 00:25:13,360
um and i kid you not um as my engineer

576
00:25:17,669 --> 00:25:15,440
was calling me to let me know that the

577
00:25:18,630 --> 00:25:17,679
computer is back online and everything

578
00:25:22,149 --> 00:25:18,640
looks good

579
00:25:23,590 --> 00:25:22,159
he goes oh no it crashed again and so

580
00:25:25,510 --> 00:25:23,600
it's like okay all right let's do this

581
00:25:26,950 --> 00:25:25,520
again don't panic make sure

582
00:25:29,350 --> 00:25:26,960
the instrument is safe make sure your

583
00:25:31,350 --> 00:25:29,360
amrc is safe um and at that point we

584
00:25:33,669 --> 00:25:31,360
said okay we can't trust this computer

585
00:25:34,549 --> 00:25:33,679
we need to get our backup in and so that

586
00:25:37,830 --> 00:25:34,559
was a big

587
00:25:40,310 --> 00:25:37,840
um you know lesson that oh my plan b

588
00:25:41,990 --> 00:25:40,320

always you know have a contingency plan

589
00:25:44,950 --> 00:25:42,000
have backups as much as you

590
00:25:45,990 --> 00:25:44,960
can um and so fortunately we did have

591
00:25:48,549 --> 00:25:46,000
another computer

592
00:25:49,750 --> 00:25:48,559
that was backed up ready to go if we had

593
00:25:51,590 --> 00:25:49,760
any problems

594
00:25:52,950 --> 00:25:51,600
and um and we got that one up and

595
00:25:55,350 --> 00:25:52,960
running and um

596
00:25:56,470 --> 00:25:55,360
didn't have a problem with the computer

597
00:25:59,590 --> 00:25:56,480
after that

598
00:26:02,789 --> 00:25:59,600
but you know you you try so hard to plan

599
00:26:05,269 --> 00:26:02,799
uh for these uh these missions and

600
00:26:07,590 --> 00:26:05,279
um this work and you try to think about

601
00:26:09,830 --> 00:26:07,600
all the way something can go wrong but

602
00:26:10,870 --> 00:26:09,840
we're human and and and something's

603
00:26:13,830 --> 00:26:10,880
going to happen

604
00:26:15,990 --> 00:26:13,840
and you know a computer just dying on

605
00:26:17,990 --> 00:26:16,000
you a computer that was not even a year

606
00:26:18,710 --> 00:26:18,000
old and was working fine you know weeks

607
00:26:20,549 --> 00:26:18,720
before

608
00:26:22,630 --> 00:26:20,559
to just crash on you in the middle of

609
00:26:25,430 --> 00:26:22,640
this very big test

610
00:26:27,269 --> 00:26:25,440
um was a bit stressful but uh but that's

611
00:26:30,630 --> 00:26:27,279
why we plan and that's why we have

612
00:26:34,070 --> 00:26:30,640
uh you know backups so that we can um

613
00:26:36,390 --> 00:26:34,080

you know quickly adjust and carry on

614
00:26:38,870 --> 00:26:36,400
and turns out we have some eagle eye

615
00:26:40,390 --> 00:26:38,880
viewers watching lexigon on youtube asks

616
00:26:42,310 --> 00:26:40,400
are those harry potter books behind

617
00:26:45,110 --> 00:26:42,320
shannon if so

618
00:26:46,710 --> 00:26:45,120
what house did she belong to oh my

619
00:26:49,750 --> 00:26:46,720
goodness

620
00:26:52,149 --> 00:26:49,760
those are harry potter books good eye um

621
00:26:53,510 --> 00:26:52,159
and um i guess i would go with

622
00:26:56,390 --> 00:26:53,520
gryffindor baby that's

623
00:26:56,870 --> 00:26:56,400
um obvious but i felt like i was related

624
00:27:00,230 --> 00:26:56,880
with

625
00:27:02,149 --> 00:27:00,240
the gryffindor house ah

626
00:27:03,669 --> 00:27:02,159
let's see what about everyone at home

627
00:27:04,470 --> 00:27:03,679
what house are you i'd like to know as

628
00:27:08,149 --> 00:27:04,480
well

629
00:27:10,390 --> 00:27:08,159
and uh chrissy on facebook asks

630
00:27:13,029 --> 00:27:10,400
why is it important that we study earth

631
00:27:15,190 --> 00:27:13,039
why not just focus on space missions and

632
00:27:17,909 --> 00:27:15,200
mars

633
00:27:18,310 --> 00:27:17,919
that is a great question um and i'll say

634
00:27:21,190 --> 00:27:18,320
first

635
00:27:22,870 --> 00:27:21,200
that hey earth is our home it's the only

636
00:27:25,269 --> 00:27:22,880
home we have right now

637
00:27:26,070 --> 00:27:25,279
um and there's so much about it that we

638
00:27:28,310 --> 00:27:26,080

just don't

639
00:27:30,310 --> 00:27:28,320
fully understand yet um and it's

640
00:27:33,190 --> 00:27:30,320
changing it's evolving

641
00:27:34,549 --> 00:27:33,200
and um we you know sometimes in ways we

642
00:27:37,990 --> 00:27:34,559
can't even predict

643
00:27:40,389 --> 00:27:38,000
so it is very important to nasa and jpl

644
00:27:41,909 --> 00:27:40,399
to continue these earth science missions

645
00:27:44,549 --> 00:27:41,919
to fully understand

646
00:27:45,830 --> 00:27:44,559
um our world and how it's changing and

647
00:27:48,950 --> 00:27:45,840
to better predict

648
00:27:51,029 --> 00:27:48,960
how it might change in the future um so

649
00:27:54,389 --> 00:27:51,039
that we can be good custodians

650
00:27:57,190 --> 00:27:54,399
of this planet um and so you know

651
00:27:59,110 --> 00:27:57,200
obviously space exploration and

652
00:28:01,350 --> 00:27:59,120
exploring mars and jupiter

653
00:28:02,389 --> 00:28:01,360
and other places of our solar system are

654
00:28:05,669 --> 00:28:02,399
very important

655
00:28:06,870 --> 00:28:05,679
to nasa and jpl but we also want to make

656
00:28:09,990 --> 00:28:06,880
sure we keep an eye

657
00:28:11,430 --> 00:28:10,000
on on our home on our planet can't

658
00:28:13,750 --> 00:28:11,440
forget earth

659
00:28:16,070 --> 00:28:13,760
siobhania on youtube asks can you

660
00:28:17,990 --> 00:28:16,080
discuss a bit more about your role on

661
00:28:21,750 --> 00:28:18,000
the advisory council for women

662
00:28:24,710 --> 00:28:21,760
at jpl oh yes

663
00:28:26,549 --> 00:28:24,720

um so the advisory council for women is

664
00:28:29,510 --> 00:28:26,559
an employee resource group

665
00:28:30,070 --> 00:28:29,520
at jpl we have a couple of employee

666
00:28:33,510 --> 00:28:30,080
resource

667
00:28:36,549 --> 00:28:33,520
groups mainly for minorities

668
00:28:38,389 --> 00:28:36,559
at jpl and and the advisory council for

669
00:28:41,190 --> 00:28:38,399
women is specifically for women

670
00:28:41,590 --> 00:28:41,200
and our allies at jpl and we tend to

671
00:28:45,510 --> 00:28:41,600
just

672
00:28:47,110 --> 00:28:45,520
have host events um where we can network

673
00:28:48,870 --> 00:28:47,120
and meet each other and support each

674
00:28:51,510 --> 00:28:48,880
other i mentioned earlier that

675
00:28:52,789 --> 00:28:51,520
making sure that you have um like a

676
00:28:56,230 --> 00:28:52,799
support network

677
00:28:56,630 --> 00:28:56,240
um is is really key to being successful

678
00:29:03,350 --> 00:28:56,640
and

679
00:29:05,669 --> 00:29:03,360
want to encourage

680
00:29:07,190 --> 00:29:05,679
and being a part of acw is allowing me

681
00:29:11,029 --> 00:29:07,200
to contribute there

682
00:29:13,110 --> 00:29:11,039
at jpl and pablo on facebook wants to

683
00:29:16,549 --> 00:29:13,120
know is there a next project after

684
00:29:23,590 --> 00:29:19,750
well for me personally i'm actually

685
00:29:25,750 --> 00:29:23,600
now a group supervisor at jpl

686
00:29:27,990 --> 00:29:25,760
so i'm managing other people that are

687
00:29:31,029 --> 00:29:28,000
working on these great projects

688
00:29:33,190 --> 00:29:31,039

um and i specifically am overseeing our

689
00:29:35,350 --> 00:29:33,200
environmental test laboratory

690
00:29:36,789 --> 00:29:35,360
the dynamics testing so i mentioned

691
00:29:39,269 --> 00:29:36,799
thermal vacuum testing

692
00:29:40,230 --> 00:29:39,279
where we put our spacecraft under

693
00:29:43,430 --> 00:29:40,240
temperature

694
00:29:46,070 --> 00:29:43,440
and vacuum extremes to simulate space

695
00:29:47,269 --> 00:29:46,080
on the dynamic side we actually simulate

696
00:29:50,470 --> 00:29:47,279
launch

697
00:29:54,070 --> 00:29:50,480
is quite

698
00:29:56,549 --> 00:29:54,080
um it's very exciting and um and

699
00:29:57,430 --> 00:29:56,559
it's it's a bumpy ride it's a bumpy ride

700
00:29:59,909 --> 00:29:57,440
to space

701
00:30:01,510 --> 00:29:59,919
um and it's so important that uh we test

702
00:30:02,710 --> 00:30:01,520
our hardware to make sure that it's

703
00:30:04,710 --> 00:30:02,720
going to survive

704
00:30:05,750 --> 00:30:04,720
that ride to space because if we can't

705
00:30:08,310 --> 00:30:05,760
even

706
00:30:08,950 --> 00:30:08,320
get um off the ground then we we have no

707
00:30:11,350 --> 00:30:08,960
chance in

708
00:30:13,269 --> 00:30:11,360
having a successful mission so my group

709
00:30:15,110 --> 00:30:13,279
is specifically responsible for running

710
00:30:16,070 --> 00:30:15,120
the facilities and testing the flight

711
00:30:19,190 --> 00:30:16,080
hardware under

712
00:30:21,510 --> 00:30:19,200
uh those launch conditions

713
00:30:23,029 --> 00:30:21,520

great and then i have time for one more

714
00:30:24,710 --> 00:30:23,039
question and this is actually going to

715
00:30:26,149 --> 00:30:24,720
get a bit into your background and a

716
00:30:28,549 --> 00:30:26,159
little bit of advice

717
00:30:30,630 --> 00:30:28,559
joe from london we're international here

718
00:30:32,549 --> 00:30:30,640
on facebook asks

719
00:30:34,070 --> 00:30:32,559
what would be the best way to support my

720
00:30:35,029 --> 00:30:34,080
seven-year-old daughter to get into

721
00:30:37,669 --> 00:30:35,039
science more

722
00:30:39,510 --> 00:30:37,679
she is doing coding clubs and etc but

723
00:30:41,909 --> 00:30:39,520
what's the best way to support her

724
00:30:43,830 --> 00:30:41,919
likewise my five-year-old son are there

725
00:30:44,149 --> 00:30:43,840
some online programs that you like or

726
00:30:47,510 --> 00:30:44,159
that

727
00:30:49,909 --> 00:30:47,520
you have at jpl

728
00:30:51,830 --> 00:30:49,919
uh yes well i would say first thing is

729
00:30:55,510 --> 00:30:51,840
to continue to support them

730
00:30:57,669 --> 00:30:55,520
um there is nothing um better than

731
00:30:58,870 --> 00:30:57,679
than knowing that you have the the

732
00:31:02,070 --> 00:30:58,880
support from

733
00:31:02,389 --> 00:31:02,080
your family um to empower you and enable

734
00:31:11,830 --> 00:31:02,399
you

735
00:31:14,029 --> 00:31:11,840
great educational resources online so i

736
00:31:16,950 --> 00:31:14,039
highly recommend checking out

737
00:31:18,310 --> 00:31:16,960
jpl.nasa.gov to see all the great things

738
00:31:21,190 --> 00:31:18,320

we have for

739
00:31:21,830 --> 00:31:21,200
education and outreach and for me

740
00:31:24,870 --> 00:31:21,840
personally

741
00:31:27,509 --> 00:31:24,880
i grew up in jacksonville florida so

742
00:31:28,070 --> 00:31:27,519
i wasn't too far away from kennedy space

743
00:31:30,470 --> 00:31:28,080
center

744
00:31:32,470 --> 00:31:30,480
and fortunately got to see space shuttle

745
00:31:33,750 --> 00:31:32,480
launch when i was in fourth grade which

746
00:31:36,470 --> 00:31:33,760
was very exciting

747
00:31:37,110 --> 00:31:36,480
um but actually working for nasa one day

748
00:31:40,230 --> 00:31:37,120
was

749
00:31:42,549 --> 00:31:40,240
never uh something i thought about uh

750
00:31:43,350 --> 00:31:42,559
growing up it was something that was

751
00:31:47,430 --> 00:31:43,360
really

752
00:31:50,149 --> 00:31:47,440
inspiring um and uh amazing but

753
00:31:50,789 --> 00:31:50,159
something out of reach for me my parents

754
00:31:52,549 --> 00:31:50,799
actually

755
00:31:54,630 --> 00:31:52,559
didn't go to college i'm the first one

756
00:31:56,310 --> 00:31:54,640
in my immediate family to graduate with

757
00:31:58,070 --> 00:31:56,320
a college degree

758
00:32:00,070 --> 00:31:58,080
so it's a bit of a surprise to all of us

759
00:32:02,070 --> 00:32:00,080
that i'm here today um

760
00:32:04,310 --> 00:32:02,080
but but you know they always supported

761
00:32:08,070 --> 00:32:04,320
me they always encouraged me

762
00:32:10,710 --> 00:32:08,080
to you know to to go after what i wanted

763
00:32:11,830 --> 00:32:10,720

um and you know even when i had these

764
00:32:15,029 --> 00:32:11,840
challenging

765
00:32:16,789 --> 00:32:15,039
classes or professors they you know they

766
00:32:18,149 --> 00:32:16,799
just kept telling me nope you can do it

767
00:32:21,190 --> 00:32:18,159
yeah you've got this

768
00:32:23,750 --> 00:32:21,200
um and uh and so you know

769
00:32:24,310 --> 00:32:23,760
just pushing through uh showing up every

770
00:32:26,630 --> 00:32:24,320
day

771
00:32:29,430 --> 00:32:26,640
and keeping your eye on the prize

772
00:32:32,870 --> 00:32:29,440
keeping your eye on the long-term goals

773
00:32:34,789 --> 00:32:32,880
um is really key and it's not easy

774
00:32:36,870 --> 00:32:34,799
you know uh you don't have to

775
00:32:39,269 --> 00:32:36,880
necessarily be a math whiz

776
00:32:41,669 --> 00:32:39,279
to be an engineer or to be in science i

777
00:32:42,549 --> 00:32:41,679
know that might be also a misconception

778
00:32:44,310 --> 00:32:42,559
um

779
00:32:45,590 --> 00:32:44,320
but you know there's going to be

780
00:32:48,710 --> 00:32:45,600
challenging times

781
00:32:49,430 --> 00:32:48,720
and and i personally struggled a bit in

782
00:32:52,870 --> 00:32:49,440
some of my

783
00:32:55,750 --> 00:32:52,880
classes but it was just key

784
00:32:56,549 --> 00:32:55,760
to you know keep showing up every day

785
00:33:00,710 --> 00:32:56,559
pushing through it

786
00:33:03,750 --> 00:33:00,720
have the support from your uh classmates

787
00:33:04,470 --> 00:33:03,760
from your family um and to the father

788
00:33:06,230 --> 00:33:04,480

you know just

789
00:33:08,549 --> 00:33:06,240
always be there always be there to

790
00:33:10,710 --> 00:33:08,559
support them and encourage them

791
00:33:13,430 --> 00:33:10,720
especially on the days that are more

792
00:33:15,269 --> 00:33:13,440
challenging than others

793
00:33:16,710 --> 00:33:15,279
great that is all the time for questions

794
00:33:17,590 --> 00:33:16,720
we have today thank you for your

795
00:33:19,509 --> 00:33:17,600
questions and

796
00:33:20,870 --> 00:33:19,519
thank you so much for joining us today

797
00:33:22,630 --> 00:33:20,880
shannon

798
00:33:24,630 --> 00:33:22,640
oh thank you so much it's been great and

799
00:33:26,470 --> 00:33:24,640
i really appreciate everyone's questions

800
00:33:28,630 --> 00:33:26,480
and time

801
00:33:29,909 --> 00:33:28,640
great the sentinel 6 michael freilix

802
00:33:32,470 --> 00:33:29,919
satellite is a

803
00:33:34,549 --> 00:33:32,480
true international collaboration it is

804
00:33:35,990 --> 00:33:34,559
being jointly developed by the european

805
00:33:38,630 --> 00:33:36,000
space agency

806
00:33:40,710 --> 00:33:38,640
nasa the european organization for the

807
00:33:41,590 --> 00:33:40,720
exploitation of meteorological

808
00:33:44,310 --> 00:33:41,600
satellites

809
00:33:45,509 --> 00:33:44,320
and the national oceanic and atmospheric

810
00:33:47,509 --> 00:33:45,519
administration

811
00:33:48,630 --> 00:33:47,519
with funding support from the european

812
00:33:51,029 --> 00:33:48,640
commission and

813
00:33:52,950 --> 00:33:51,039

technical support from the french space

814
00:33:54,950 --> 00:33:52,960
agency canes

815
00:33:57,190 --> 00:33:54,960
the sentinel 6 michael freilax satellite

816
00:33:58,310 --> 00:33:57,200
is now scheduled to launch on november

817
00:34:00,549 --> 00:33:58,320
21st

818
00:34:01,509 --> 00:34:00,559
for the latest on the mission follow at

819
00:34:04,230 --> 00:34:01,519
nasa earth

820
00:34:05,110 --> 00:34:04,240
on twitter facebook and instagram you

821
00:34:06,950 --> 00:34:05,120
can also watch

822
00:34:10,310 --> 00:34:06,960
all of the behind the spacecraft video

823
00:34:11,829 --> 00:34:10,320
profiles on the nasa 360 youtube channel

824
00:34:13,589 --> 00:34:11,839
we've been doing q and a's with the

825
00:34:15,990 --> 00:34:13,599
sentinel 6 michael freilix satellite

826
00:34:17,829 --> 00:34:16,000
team members for the past few weeks

827
00:34:19,990 --> 00:34:17,839
check out all of the episodes on the

828
00:34:21,510 --> 00:34:20,000
nasa jpl youtube channel

829
00:34:23,109 --> 00:34:21,520
and you can follow and subscribe for

830
00:34:26,310 --> 00:34:23,119
notifications

831
00:34:27,349 --> 00:34:26,320
at nasa earth science your home is our