
6
7
10
11
12
13
14
15
16

1
00:00:09,490 --> 00:00:07,120
hello everyone this is the pre-launch

2
00:00:12,669 --> 00:00:09,500
news conference for soil moisture active

3
00:00:16,119 --> 00:00:12,679
passive or snap be launched aboard a

4
00:00:19,120 --> 00:00:16,129
delta 2 rocket on thursday at six-twenty

5
00:00:21,220 --> 00:00:19,130
a.m. pacific time and all of our launch

6
00:00:22,750 --> 00:00:21,230
countdown activities are going to be

7
00:00:25,420 --> 00:00:22,760
discussed here today including the

8
00:00:28,120 --> 00:00:25,430
flight of the Delta 2 and what will be

9
00:00:31,420 --> 00:00:28,130
happening to the SMAP spacecraft as it

10
00:00:32,979 --> 00:00:31,430
leaves the delta 2 rocket so we'll start

11
00:00:35,439 --> 00:00:32,989
our briefing first of all with some

12
00:00:38,860 --> 00:00:35,449
opening remarks from Christine Banach

13
00:00:43,000 --> 00:00:38,870

son the snap program executive from NASA

14
00:00:45,669 --> 00:00:43,010
headquarters then we'll hear from Tim

15
00:00:51,039 --> 00:00:45,679
Dunn who is the NASA launch manager from

16
00:00:53,319 --> 00:00:51,049
the Kennedy Space Center in Florida burn

17
00:00:55,049 --> 00:00:53,329
for the program manager for NASA

18
00:01:00,250 --> 00:00:55,059
missions for United Launch Alliance

19
00:01:02,109 --> 00:01:00,260
Centennial Colorado Kent Kellogg the

20
00:01:03,430 --> 00:01:02,119
SMAP project manager from the Jet

21
00:01:08,649 --> 00:01:03,440
Propulsion Laboratory Pasadena

22
00:01:10,179 --> 00:01:08,659
California dhara anta kabhi the SMAP

23
00:01:12,370 --> 00:01:10,189
science team leader from the

24
00:01:17,319 --> 00:01:12,380
Massachusetts Institute of Technology in

25
00:01:19,209 --> 00:01:17,329
Cambridge and Lieutenant John Martin the

26
00:01:20,889 --> 00:01:19,219
launch weather officer from the 30th

27
00:01:24,069 --> 00:01:20,899
operations support squadron at

28
00:01:25,840 --> 00:01:24,079
Vandenberg Air Force Base and we'll

29
00:01:28,209 --> 00:01:25,850
start first with our opening comments

30
00:01:32,289 --> 00:01:28,219
from Christine bond accent Kristin thank

31
00:01:34,359 --> 00:01:32,299
you George a snap or as we call it the

32
00:01:36,789 --> 00:01:34,369
soil moisture active passive project

33
00:01:38,889 --> 00:01:36,799
will be monitoring the water that lives

34
00:01:41,739 --> 00:01:38,899
and moves through the soil could you

35
00:01:44,139 --> 00:01:41,749
bring up the first slide please snap

36
00:01:46,389 --> 00:01:44,149
will be joining our 19 operational

37
00:01:48,760 --> 00:01:46,399
satellites which along with air and

38
00:01:51,639 --> 00:01:48,770

ground sensors monitor the Earth's vital

39
00:01:56,739 --> 00:01:51,649
signs so that we can address issues like

40
00:01:59,919 --> 00:01:56,749
whether climate change fresh water water

41
00:02:01,719 --> 00:01:59,929
hazards and its really kind of exciting

42
00:02:04,450 --> 00:02:01,729
that we're launching this in the UN year

43
00:02:07,359 --> 00:02:04,460
of the soil because we have a large

44
00:02:09,669 --> 00:02:07,369
number of international organizations

45
00:02:12,039 --> 00:02:09,679
that have volunteered to support the

46
00:02:13,480 --> 00:02:12,049
SMAP project from countries such as

47
00:02:20,410 --> 00:02:13,490
Kenya oh

48
00:02:23,950 --> 00:02:20,420
raelia canada and and argentina they are

49
00:02:26,380 --> 00:02:23,960
going to be helping us assess the verify

50
00:02:28,690 --> 00:02:26,390
the algorithms and do data collection to

51
00:02:31,000 --> 00:02:28,700
support that activity and help us to

52
00:02:34,500 --> 00:02:31,010
analyze the massive amounts of data that

53
00:02:40,900 --> 00:02:38,920
soil moisture is a key part of the three

54
00:02:44,140 --> 00:02:40,910
cycles that support life on this planet

55
00:02:47,410 --> 00:02:44,150
the water cycle the energy cycle and the

56
00:02:52,330 --> 00:02:47,420
carbon cycle and these things affect

57
00:02:56,440 --> 00:02:52,340
human interests flood drought disease

58
00:03:01,960 --> 00:02:56,450
control weather if you would run the

59
00:03:03,910 --> 00:03:01,970
video please SMAP has two instruments on

60
00:03:05,530 --> 00:03:03,920
it an active instrument which is the

61
00:03:08,410 --> 00:03:05,540
radar which we've providing

62
00:03:10,480 --> 00:03:08,420
high-resolution data and a passive

63
00:03:13,390 --> 00:03:10,490

entrant instrument the radiometer which

64
00:03:16,210 --> 00:03:13,400
provides us high accuracy data these two

65
00:03:18,160 --> 00:03:16,220
interests instruments give us a picture

66
00:03:21,370 --> 00:03:18,170
similar to looking through both lenses

67
00:03:23,590 --> 00:03:21,380
of your bifocals at the same time so we

68
00:03:27,670 --> 00:03:23,600
end up with a very high accurate global

69
00:03:30,190 --> 00:03:27,680
map of the soil moisture content this

70
00:03:32,620 --> 00:03:30,200
dual vision activity was one of the

71
00:03:35,680 --> 00:03:32,630
reasons why the measurements that we're

72
00:03:37,990 --> 00:03:35,690
getting on snap was ranked so highly by

73
00:03:41,350 --> 00:03:38,000
the National Academies of science earth

74
00:03:43,030 --> 00:03:41,360
science 2007 decadal survey and we're

75
00:03:44,710 --> 00:03:43,040
really excited that we're able to launch

76
00:03:48,550 --> 00:03:44,720
this mission within 10 years of

77
00:03:51,430 --> 00:03:48,560
receiving that recommendation global

78
00:03:52,810 --> 00:03:51,440
this global soil moisture map will give

79
00:03:55,630 --> 00:03:52,820
us both the soil moisture and the

80
00:03:59,110 --> 00:03:55,640
freeze-thaw state of all of the moisture

81
00:04:02,740 --> 00:03:59,120
in our soil every two to three days NASA

82
00:04:04,540 --> 00:04:02,750
is currently very focused on on this

83
00:04:06,010 --> 00:04:04,550
launch coming up and the knowledge we're

84
00:04:09,070 --> 00:04:06,020
going to get from that if you would

85
00:04:10,990 --> 00:04:09,080
bring up the next slide please the SMAP

86
00:04:13,480 --> 00:04:11,000
launch completes a series of five

87
00:04:15,400 --> 00:04:13,490
launches that we've done in 11 months

88
00:04:16,900 --> 00:04:15,410

that started with the global

89
00:04:20,020 --> 00:04:16,910
precipitation measurement launch in

90
00:04:23,050 --> 00:04:20,030
February out of Japan and we're really

91
00:04:24,760 --> 00:04:23,060
looking forward to the synergism of all

92
00:04:27,340 --> 00:04:24,770
these instruments that we've lost and

93
00:04:29,260 --> 00:04:27,350
the amazing

94
00:04:32,080 --> 00:04:29,270
knowledge that we're going to gain as we

95
00:04:34,450 --> 00:04:32,090
start analyzing this data back to you

96
00:04:37,090 --> 00:04:34,460
George Thank You Christine and now to

97
00:04:39,190 --> 00:04:37,100
Tim Dunn who will be the NASA launch

98
00:04:40,950 --> 00:04:39,200
manager for the countdown on Thursday 10

99
00:04:45,100 --> 00:04:40,960
from the Kennedy Space Center in Florida

100
00:04:46,690 --> 00:04:45,110
Tim thank you George I'm proud to be

101
00:04:48,520 --> 00:04:46,700
here today representing the men and

102
00:04:51,730 --> 00:04:48,530
women of NASA's launch services program

103
00:04:53,380 --> 00:04:51,740
I'm the NASA launch manager for the SMAP

104
00:04:56,050 --> 00:04:53,390
mission and I'm thrilled to serve as

105
00:04:58,960 --> 00:04:56,060
launch director for a delta to launched

106
00:05:01,690 --> 00:04:58,970
NASA spacecraft that will measure in map

107
00:05:05,770 --> 00:05:01,700
earth soil moisture distribution with

108
00:05:08,410 --> 00:05:05,780
unprecedented accuracy and coverage my

109
00:05:10,810 --> 00:05:08,420
high school agribusiness teacher mr.

110
00:05:13,480 --> 00:05:10,820
brittle he would have loved to have

111
00:05:15,610 --> 00:05:13,490
snaps data to correct the results of my

112
00:05:21,310 --> 00:05:15,620
11th grade Future Farmers of America

113
00:05:24,160 --> 00:05:21,320

soil judging team after last summer's

114
00:05:26,500 --> 00:05:24,170
successful oco-2 launch the launch team

115
00:05:30,190 --> 00:05:26,510
is back at Vandenberg Air Force Base and

116
00:05:32,110 --> 00:05:30,200
happy to be launching Delta 2 again SMAP

117
00:05:35,230 --> 00:05:32,120
will launch on a delta 2 vehicle from

118
00:05:38,490 --> 00:05:35,240
space launch complex to the pad we call

119
00:05:41,530 --> 00:05:38,500
slick to the SMAP mission will be the

120
00:05:44,620 --> 00:05:41,540
370 a--the delta rocket to launch since

121
00:05:47,590 --> 00:05:44,630
may of nineteen sixty and slick to is

122
00:05:51,580 --> 00:05:47,600
proud to have hosted 82 of those Delta's

123
00:05:54,100 --> 00:05:51,590
launches I'd like to recognize the Delta

124
00:05:57,040 --> 00:05:54,110
two team I can't say enough good things

125
00:06:03,520 --> 00:05:57,050
about the entire launch team for this

126
00:06:07,420 --> 00:06:03,530
mission ula nasa/jpl the Air Force 30th

127
00:06:09,850 --> 00:06:07,430
Space Wing the assembled group of

128
00:06:12,310 --> 00:06:09,860
professionals that we have their

129
00:06:15,160 --> 00:06:12,320
knowledgeable certainly competent and

130
00:06:17,200 --> 00:06:15,170
they're very enjoyable to work with I'm

131
00:06:20,860 --> 00:06:17,210
blessed to be able to call myself a

132
00:06:23,710 --> 00:06:20,870
member of this team over the past week

133
00:06:26,560 --> 00:06:23,720
our team has been busy with a mini final

134
00:06:29,950 --> 00:06:26,570
launch preparations last Thursday that

135
00:06:31,930 --> 00:06:29,960
combined NASA ula and 30th Space Wing

136
00:06:34,900 --> 00:06:31,940
launch team held our Flight Readiness

137
00:06:37,960 --> 00:06:34,910
review we assess the preparations of the

138
00:06:41,110 --> 00:06:37,970

rocket range and facility assets and the

139
00:06:44,570 --> 00:06:41,120
readiness of the space map spacecraft

140
00:06:48,710 --> 00:06:44,580
last Friday we performed our mission

141
00:06:52,280 --> 00:06:48,720
readiness rehearsal with the entire team

142
00:06:55,430 --> 00:06:52,290
participating also beginning last Friday

143
00:06:57,980 --> 00:06:55,440
and completing yesterday the ula crew

144
00:07:00,830 --> 00:06:57,990
loaded the hypergolic propellants of

145
00:07:04,520 --> 00:07:00,840
nitrogen tetroxide and air zine 50 on

146
00:07:06,560 --> 00:07:04,530
the delta to second stage now I'd like

147
00:07:08,690 --> 00:07:06,570
to show a video of the ula crew

148
00:07:10,760 --> 00:07:08,700
assembling the Delta to launch vehicle

149
00:07:14,270 --> 00:07:10,770
that will launch our spacecraft from

150
00:07:16,460 --> 00:07:14,280
slick to please roll the tape here you

151
00:07:19,610 --> 00:07:16,470
see the arrival of the Delta to first

152
00:07:21,590 --> 00:07:19,620
stage at Vandenberg Air Force Base the

153
00:07:24,050 --> 00:07:21,600
Delta 2 is assembled in decatur alabama

154
00:07:27,650 --> 00:07:24,060
and then trucked over the road to

155
00:07:30,080 --> 00:07:27,660
California after we bring it out of its

156
00:07:32,360 --> 00:07:30,090
shipping container it's taken across

157
00:07:35,330 --> 00:07:32,370
Vandenberg Air Force Base up to the pad

158
00:07:38,210 --> 00:07:35,340
and here you see the morning of August

159
00:07:40,760 --> 00:07:38,220
fourth where we are erecting the first

160
00:07:42,590 --> 00:07:40,770
stage of Delta 2 onto the launch mount

161
00:07:44,870 --> 00:07:42,600
at slick two you'll see here we're using

162
00:07:49,310 --> 00:07:44,880
the mobile service tower as a mobile

163
00:07:51,620 --> 00:07:49,320

crane to erect the first stage SMAP is

164
00:07:54,110 --> 00:07:51,630
going to fly in the 7320 configuration

165
00:07:58,130 --> 00:07:54,120
meaning it has three solid rocket motors

166
00:08:00,160 --> 00:07:58,140
on the sides or srms these are Jim 40s

167
00:08:03,860 --> 00:08:00,170
we call them for their 40 inch diameters

168
00:08:05,810 --> 00:08:03,870
they're made by ATK in Utah transported

169
00:08:07,730 --> 00:08:05,820
here to Vandenberg and you'll see the

170
00:08:12,500 --> 00:08:07,740
ula crew very carefully and methodically

171
00:08:14,930 --> 00:08:12,510
mating to the first stage the spacecraft

172
00:08:17,750 --> 00:08:14,940
will be encapsulated in a payload

173
00:08:20,510 --> 00:08:17,760
fairing we fly a bisector payload

174
00:08:22,370 --> 00:08:20,520
fairing that means two halves and we put

175
00:08:25,100 --> 00:08:22,380
that into the mobile service tower clean

176
00:08:27,530 --> 00:08:25,110
room prior to direction this is the

177
00:08:29,990 --> 00:08:27,540
second stage power plant for the Delta

178
00:08:32,480 --> 00:08:30,000
two rocket and you'll see it is being

179
00:08:35,450 --> 00:08:32,490
erected there with the AJ ten engine on

180
00:08:37,130 --> 00:08:35,460
the aft end that will be made it to the

181
00:08:40,130 --> 00:08:37,140
top of the first stage and interstage

182
00:08:42,560 --> 00:08:40,140
assembly here we are fast forward to the

183
00:08:44,360 --> 00:08:42,570
morning of January thirteenth raising

184
00:08:46,280 --> 00:08:44,370
the spacecraft in its protective

185
00:08:50,150 --> 00:08:46,290
transportation can and there's the ula

186
00:08:52,160 --> 00:08:50,160
crew on assembling that can and now you

187
00:08:53,879 --> 00:08:52,170
see the payload fairings which were

188
00:08:57,030 --> 00:08:53,889

stored in the white room being

189
00:08:59,929 --> 00:08:57,040
very carefully mated around the SMAP

190
00:09:03,809 --> 00:08:59,939
spacecraft here's a view of the

191
00:09:11,069 --> 00:09:03,819
completely mated payload fairing inside

192
00:09:12,509 --> 00:09:11,079
the cleanroom at slick to this morning

193
00:09:14,669 --> 00:09:12,519
we held the launch readiness review

194
00:09:17,220 --> 00:09:14,679
where we received approval from senior

195
00:09:19,289 --> 00:09:17,230
NASA and ula management as well as

196
00:09:21,179 --> 00:09:19,299
spacecraft and range agencies to

197
00:09:23,449 --> 00:09:21,189
continue processing toward launch

198
00:09:27,299 --> 00:09:23,459
countdown early thursday morning at

199
00:09:30,059 --> 00:09:27,309
slick to today we performed Delta to

200
00:09:32,039 --> 00:09:30,069
Range Safety and beacon checks with our

201
00:09:34,979 --> 00:09:32,049
first and second stage engine slowing

202
00:09:38,609 --> 00:09:34,989
and the final azmuth update for the

203
00:09:40,710 --> 00:09:38,619
flight computer tomorrow afternoon we

204
00:09:43,129 --> 00:09:40,720
will begin final launch pad preparations

205
00:09:47,849 --> 00:09:43,139
at approximately 7 p.m. pacific time

206
00:09:50,909 --> 00:09:47,859
when we load refined kerosene fuel or RP

207
00:09:52,979 --> 00:09:50,919
one onto the first stage and then move

208
00:09:56,879 --> 00:09:52,989
the mobile service tower away from the

209
00:09:58,949 --> 00:09:56,889
rocket to the launch position the launch

210
00:10:01,169 --> 00:09:58,959
team will arrive on console just after

211
00:10:03,269 --> 00:10:01,179
one a.m. thursday morning and will

212
00:10:05,600 --> 00:10:03,279
perform the final preparations of flight

213
00:10:08,460 --> 00:10:05,610

computer turn on and stage

214
00:10:11,280 --> 00:10:08,470
pressurization around midnight followed

215
00:10:14,669 --> 00:10:11,290
by first stage liquid oxygen loading at

216
00:10:16,590 --> 00:10:14,679
430am Tuesday morning final engine

217
00:10:20,039 --> 00:10:16,600
sloughs will be performed approximately

218
00:10:24,629 --> 00:10:20,049
5 25 a.m. pacific time and then we'll be

219
00:10:27,389 --> 00:10:24,639
ready for launch at 620 and 42 seconds

220
00:10:31,799 --> 00:10:27,399
a.m. pacific time with a three minute

221
00:10:33,869 --> 00:10:31,809
launch window in summary the delta 2

222
00:10:35,939 --> 00:10:33,879
rocket and SMAP spacecraft are ready and

223
00:10:37,919 --> 00:10:35,949
the launch team is prepared and excited

224
00:10:40,289 --> 00:10:37,929
to be here at Vandenberg Air Force Base

225
00:10:45,419 --> 00:10:40,299
to launch this important mission for our

226
00:10:47,909 --> 00:10:45,429
nation thank you Tim and now to Vern

227
00:10:49,939 --> 00:10:47,919
Thorpe he's the program manager for NASA

228
00:10:52,799 --> 00:10:49,949
missions for United Launch Alliance

229
00:10:55,289 --> 00:10:52,809
headquartered in Centennial Colorado run

230
00:10:58,199 --> 00:10:55,299
we'll discuss the ula roll with the

231
00:11:02,639 --> 00:10:58,209
Delta 2 and NASA and then the flight of

232
00:11:04,949 --> 00:11:02,649
the vehicle fern hey good afternoon the

233
00:11:07,290 --> 00:11:04,959
United Launch Alliance is honored to be

234
00:11:10,110 --> 00:11:07,300
here again two days before the launch of

235
00:11:12,060 --> 00:11:10,120
mapsatellite and I'm excited to be here

236
00:11:13,949 --> 00:11:12,070
for this first NASA launch of the year

237
00:11:16,949 --> 00:11:13,959
and also for the first of our ula

238
00:11:19,800 --> 00:11:16,959

launches during 2015 out of Vandenberg

239
00:11:22,290 --> 00:11:19,810
our ula team started working with NASA

240
00:11:23,790 --> 00:11:22,300
to integrate the SMAP spacecraft about

241
00:11:27,389 --> 00:11:23,800
two and a half years ago we started

242
00:11:29,220 --> 00:11:27,399
about July of 2014 we began building the

243
00:11:31,350 --> 00:11:29,230
vehicle for this particular mission in

244
00:11:34,470 --> 00:11:31,360
our factory in decatur alabama shortly

245
00:11:36,090 --> 00:11:34,480
after that and the entire time you la

246
00:11:38,970 --> 00:11:36,100
has worked very closely with the NASA

247
00:11:40,710 --> 00:11:38,980
launch services program the spacecraft

248
00:11:43,319 --> 00:11:40,720
team at the Jet Propulsion Laboratory

249
00:11:46,050 --> 00:11:43,329
and with our industry partners to get us

250
00:11:48,210 --> 00:11:46,060
to this day as always it's been a it's

251
00:11:49,380 --> 00:11:48,220
been a tremendous team effort and we

252
00:11:52,319 --> 00:11:49,390
look forward to a great launch on

253
00:11:55,710 --> 00:11:52,329
Thursday morning SMAP will actually be

254
00:11:57,509 --> 00:11:55,720
you la's second launch of 2015 following

255
00:11:59,670 --> 00:11:57,519
on the heels of our Atlas launch of the

256
00:12:03,750 --> 00:11:59,680
mules three spacecraft just one week ago

257
00:12:06,600 --> 00:12:03,760
today SMAP will also be the 150 third

258
00:12:10,560 --> 00:12:06,610
Delta two mission and it will be our

259
00:12:12,449 --> 00:12:10,570
52nd Delta two mission for NASA the SMAP

260
00:12:15,660 --> 00:12:12,459
mission will be launched aboard the

261
00:12:18,060 --> 00:12:15,670
Delta 273 20 configuration that includes

262
00:12:21,690 --> 00:12:18,070
a first-stage booster powered by the

263
00:12:23,360 --> 00:12:21,700

Aerojet Rocketdyne RS 27a engine and as

264
00:12:25,949 --> 00:12:23,370
Tim mentioned we'll have the three

265
00:12:29,430 --> 00:12:25,959
strapon solid rocket boosters provided

266
00:12:32,819 --> 00:12:29,440
by alliant techsystems or ATK the upper

267
00:12:36,480 --> 00:12:32,829
stage will be powered by the AJ ten 118k

268
00:12:38,639 --> 00:12:36,490
engine and the payload will be enclosed

269
00:12:40,319 --> 00:12:38,649
in that 10-foot diameter payload fairing

270
00:12:41,819 --> 00:12:40,329
that you saw that's a composite payload

271
00:12:43,740 --> 00:12:41,829
fairing we'll use that for the first few

272
00:12:46,050 --> 00:12:43,750
minutes of flight and jettison that once

273
00:12:47,910 --> 00:12:46,060
we're out of the atmosphere now I'd like

274
00:12:49,139 --> 00:12:47,920
to show you a video of the launch

275
00:12:50,400 --> 00:12:49,149
sequence and this will give you a

276
00:12:53,939 --> 00:12:50,410
preview of what we're going to see on

277
00:12:56,310 --> 00:12:53,949
thursday morning so here's the vehicle

278
00:12:59,970 --> 00:12:56,320
on the pad we're going to lift off

279
00:13:02,189 --> 00:12:59,980
shortly after 6 20 in the morning the

280
00:13:04,530 --> 00:13:02,199
window opens 43 seconds after that for

281
00:13:06,630 --> 00:13:04,540
three minutes as Tim said and the first

282
00:13:08,430 --> 00:13:06,640
major event you'll see after liftoff for

283
00:13:11,220 --> 00:13:08,440
this mission will happen when we

284
00:13:13,860 --> 00:13:11,230
jettison the SRBs 99 seconds into flight

285
00:13:15,420 --> 00:13:13,870
those SRBs actually burn out about a

286
00:13:17,569 --> 00:13:15,430
minute in the flight but we hang on to

287
00:13:19,800 --> 00:13:17,579
them until the predicted splashdown

288
00:13:20,420 --> 00:13:19,810

locations have cleared the the local

289
00:13:23,990 --> 00:13:20,430
offshore

290
00:13:27,019 --> 00:13:24,000
oil platforms so you'll see the SRBs

291
00:13:30,230 --> 00:13:27,029
jettison here in a moment once the SRBs

292
00:13:31,970 --> 00:13:30,240
of jettisoned the first stage will

293
00:13:39,230 --> 00:13:31,980
continue to fly for a total of about

294
00:13:40,820 --> 00:13:39,240
four minutes and 20 seconds and once

295
00:13:42,620 --> 00:13:40,830
we've used up the propellants in that

296
00:13:47,510 --> 00:13:42,630
first stage will shut down the engine

297
00:13:50,600 --> 00:13:47,520
and six seconds after that will separate

298
00:13:53,329 --> 00:13:50,610
the upper stage and eight seconds after

299
00:13:54,920 --> 00:13:53,339
that we will light the engine on that

300
00:13:58,579 --> 00:13:54,930
upper stage for the first as several

301
00:14:02,420 --> 00:13:58,589
burns for this mission now this first

302
00:14:05,750 --> 00:14:02,430
burn of the upper stage will last just a

303
00:14:07,370 --> 00:14:05,760
little bit more than six minutes shortly

304
00:14:13,370 --> 00:14:07,380
into that first stage burn will jettison

305
00:14:14,840 --> 00:14:13,380
the payload fairing as you see here and

306
00:14:16,490 --> 00:14:14,850
once we're done with that first burn

307
00:14:18,650 --> 00:14:16,500
will be in a parking orbit that parking

308
00:14:20,990 --> 00:14:18,660
orbit will last about 41 minutes and

309
00:14:22,970 --> 00:14:21,000
then we'll do a short second burn

310
00:14:25,010 --> 00:14:22,980
followed by spacecraft separation as you

311
00:14:27,500 --> 00:14:25,020
see right here spacecraft separation

312
00:14:30,680 --> 00:14:27,510
will occur about 57 minutes after

313
00:14:32,600 --> 00:14:30,690

liftoff for this mission now when we're

314
00:14:34,790 --> 00:14:32,610
done with the primary mission with

315
00:14:36,440 --> 00:14:34,800
separating the SMAP spacecraft we're

316
00:14:38,329 --> 00:14:36,450
actually going to do a third engine burn

317
00:14:41,230 --> 00:14:38,339
it'll be a very short burn about eight

318
00:14:43,730 --> 00:14:41,240
seconds to adjust the orbit slightly and

319
00:14:46,490 --> 00:14:43,740
following that we will actually be

320
00:14:48,860 --> 00:14:46,500
separating for cube sets we have three p

321
00:14:50,990 --> 00:14:48,870
pot dispensers on board that contain a

322
00:14:53,390 --> 00:14:51,000
total of four cube sets and then when

323
00:14:55,130 --> 00:14:53,400
we're done with the CubeSat separations

324
00:14:58,460 --> 00:14:55,140
will actually do a fourth engine burn

325
00:14:59,780 --> 00:14:58,470
and that fourth engine burn will burn

326
00:15:01,970 --> 00:14:59,790
all the propellants that are remaining

327
00:15:03,890 --> 00:15:01,980
in the second stage and that will allow

328
00:15:06,500 --> 00:15:03,900
us to actually do a controlled reentry

329
00:15:09,949 --> 00:15:06,510
of the second stage in about 2 hours and

330
00:15:11,600 --> 00:15:09,959
10 minutes after launch the second stage

331
00:15:14,210 --> 00:15:11,610
will splashdown in the Southern Pacific

332
00:15:17,750 --> 00:15:14,220
Ocean several hundred miles east of New

333
00:15:19,579 --> 00:15:17,760
Zealand so the men of women in ula are

334
00:15:21,650 --> 00:15:19,589
proud to serve a critical role in

335
00:15:22,990 --> 00:15:21,660
delivering payloads to orbit for all of

336
00:15:25,730 --> 00:15:23,000
our government and commercial customers

337
00:15:27,530 --> 00:15:25,740
it's our honor to launch this important

338
00:15:29,360 --> 00:15:27,540

earth science mission to help scientists

339
00:15:33,199 --> 00:15:29,370
better understand Earth's overall water

340
00:15:34,190 --> 00:15:33,209
energy and carbon cycles and ula always

341
00:15:35,990 --> 00:15:34,200
maintains a relentless

342
00:15:38,240 --> 00:15:36,000
focus on successfully delivering

343
00:15:39,920 --> 00:15:38,250
critical capabilities like this to orbit

344
00:15:42,470 --> 00:15:39,930
and we are very proud to be America's

345
00:15:44,330 --> 00:15:42,480
right to space so I'd like to say thank

346
00:15:47,450 --> 00:15:44,340
you again to all of our mission partners

347
00:15:49,070 --> 00:15:47,460
the entire ula team looks forward to a

348
00:15:50,570 --> 00:15:49,080
great launch on Thursday morning and

349
00:15:53,060 --> 00:15:50,580
with that I'll turn it back to you

350
00:15:55,520 --> 00:15:53,070
George Thank You Vern and now to

351
00:15:57,620 --> 00:15:55,530
continue with that threat of events and

352
00:16:00,500 --> 00:15:57,630
also talk some about this smash

353
00:16:02,240 --> 00:16:00,510
spacecraft is Kent Kellogg the SMAP

354
00:16:05,090 --> 00:16:02,250
project manager from the Jet Propulsion

355
00:16:07,460 --> 00:16:05,100
Laboratory in Pasadena California yeah

356
00:16:10,820 --> 00:16:07,470
thank you George and I want to add my

357
00:16:14,720 --> 00:16:10,830
thanks to NASA and the KSC launch

358
00:16:16,790 --> 00:16:14,730
services program team the SMAP project

359
00:16:19,580 --> 00:16:16,800
is absolutely thrilled to be catching a

360
00:16:23,420 --> 00:16:19,590
ride space on the Delta two vehicle

361
00:16:24,980 --> 00:16:23,430
vehicle with a very long and well proven

362
00:16:26,840 --> 00:16:24,990
history so we feel like we've been in

363
00:16:29,750 --> 00:16:26,850

very good hands and very well treated

364
00:16:32,240 --> 00:16:29,760
here at Vandenberg by the team's over

365
00:16:35,360 --> 00:16:32,250
the last few months I want to pick up

366
00:16:36,980 --> 00:16:35,370
where Verne left off by talking about

367
00:16:39,350 --> 00:16:36,990
what's going to happen with a spacecraft

368
00:16:41,270 --> 00:16:39,360
after we separate from the Delta two

369
00:16:45,200 --> 00:16:41,280
upper stage so if we could run that

370
00:16:48,980 --> 00:16:45,210
mission animation please so once we

371
00:16:52,070 --> 00:16:48,990
separate from the upper stage the upper

372
00:16:54,920 --> 00:16:52,080
stage will has a high-definition camera

373
00:16:58,310 --> 00:16:54,930
aboard that will stay focused on us for

374
00:17:00,370 --> 00:16:58,320
about 150 seconds after we separate we

375
00:17:03,560 --> 00:17:00,380
hope in that time to be able to catch

376
00:17:05,420 --> 00:17:03,570
the start of the solar array deployment

377
00:17:08,030 --> 00:17:05,430
on board sequences on the spacecraft

378
00:17:11,860 --> 00:17:08,040
will begin communicating back with the

379
00:17:15,800 --> 00:17:11,870
ground well deploy the solar arrays and

380
00:17:18,170 --> 00:17:15,810
will point the spacecraft and solar

381
00:17:21,230 --> 00:17:18,180
arrays toward the Sun we expect that

382
00:17:22,970 --> 00:17:21,240
process to be completed as early as

383
00:17:25,310 --> 00:17:22,980
eight minutes after we separate

384
00:17:27,890 --> 00:17:25,320
depending on the spacecraft attitude as

385
00:17:29,660 --> 00:17:27,900
we leave the Delta 2 or it could take as

386
00:17:31,730 --> 00:17:29,670
long as about 50 minutes so there's a

387
00:17:33,770 --> 00:17:31,740
little variation there we'll spend the

388
00:17:36,350 --> 00:17:33,780

first two weeks checking out the

389
00:17:39,110 --> 00:17:36,360
spacecraft system and then we will

390
00:17:41,570 --> 00:17:39,120
deploy our large instrument antenna that

391
00:17:43,340 --> 00:17:41,580
you see here on the screen will deploy

392
00:17:47,220 --> 00:17:43,350
the boom first and then four days later

393
00:17:49,799 --> 00:17:47,230
we'll deploy the large 20-foot reflector

394
00:17:52,740 --> 00:17:49,809
and then 50 days after launch we will

395
00:17:55,020 --> 00:17:52,750
spin up the reflector to have a fully

396
00:17:58,289 --> 00:17:55,030
operational observatory you'll notice

397
00:18:01,590 --> 00:17:58,299
the spacecraft counter rotates in the in

398
00:18:03,690 --> 00:18:01,600
the animation that's by design because

399
00:18:06,990 --> 00:18:03,700
of the large spinning mass that we are

400
00:18:09,450 --> 00:18:07,000
spinning up the antenna beam points off

401
00:18:11,760 --> 00:18:09,460
at an angle it doesn't point directly

402
00:18:14,310 --> 00:18:11,770
below the spacecraft and that allows us

403
00:18:17,850 --> 00:18:14,320
to map a large swath about a thousand

404
00:18:19,530 --> 00:18:17,860
kilometer wide swath below the

405
00:18:22,530 --> 00:18:19,540
spacecraft that allows us to map the

406
00:18:24,870 --> 00:18:22,540
entire globe in less than three days

407
00:18:28,490 --> 00:18:24,880
it's quite an efficient mapping system

408
00:18:33,240 --> 00:18:28,500
I've been working on this project for

409
00:18:35,460 --> 00:18:33,250
about six years now and a lot of design

410
00:18:37,770 --> 00:18:35,470
and effort has gone into it certainly

411
00:18:40,530 --> 00:18:37,780
some of the science folks working on the

412
00:18:43,620 --> 00:18:40,540
project have invested far more time in

413
00:18:46,200 --> 00:18:43,630

that 15 years and earlier and more in

414
00:18:48,570 --> 00:18:46,210
some cases a lot of effort has gone into

415
00:18:49,830 --> 00:18:48,580
this I want to share with you a little

416
00:18:54,180 --> 00:18:49,840
bit of the work if we could roll the

417
00:18:57,990 --> 00:18:54,190
hardware flow video we began assembling

418
00:19:01,200 --> 00:18:58,000
the spacecraft bus about a year and a

419
00:19:03,060 --> 00:19:01,210
half ago at JPL you can see here the

420
00:19:06,630 --> 00:19:03,070
solar arrays being deployed this is the

421
00:19:09,870 --> 00:19:06,640
radar panel being installed onto the

422
00:19:12,180 --> 00:19:09,880
spacecraft there's a lot of testing that

423
00:19:15,960 --> 00:19:12,190
goes into this this is a spin test of

424
00:19:18,169 --> 00:19:15,970
the radiometer and feed horn that was

425
00:19:22,070 --> 00:19:18,179
done before we installed it atop the

426
00:19:24,690 --> 00:19:22,080
spacecraft we go through vibration

427
00:19:27,270 --> 00:19:24,700
environments we test the large antenna

428
00:19:29,340 --> 00:19:27,280
that that obviously got a lot of

429
00:19:31,650 --> 00:19:29,350
attention to make sure we had well

430
00:19:36,180 --> 00:19:31,660
tested that to make sure we have a good

431
00:19:37,710 --> 00:19:36,190
system when we get into space we go

432
00:19:39,900 --> 00:19:37,720
through environmental testing to make

433
00:19:42,000 --> 00:19:39,910
sure that we're going to work as

434
00:19:44,039 --> 00:19:42,010
intended as we after we go through the

435
00:19:46,950 --> 00:19:44,049
vibration of the the launch environment

436
00:19:50,760 --> 00:19:46,960
and also in the vacuum environment and

437
00:19:54,120 --> 00:19:50,770
thermal environment in space so here you

438
00:19:57,149 --> 00:19:54,130

see some scenes of the spacecraft being

439
00:20:00,750 --> 00:19:57,159
put into our large 25-foot space

440
00:20:01,320 --> 00:20:00,760
simulator facility at JPL and then last

441
00:20:04,440 --> 00:20:01,330
July

442
00:20:09,170 --> 00:20:04,450
we did a final spin test of the spin

443
00:20:13,920 --> 00:20:09,180
platform on the observatory and then in

444
00:20:17,550 --> 00:20:13,930
October we shipped the observatory to

445
00:20:19,860 --> 00:20:17,560
Vandenberg so on October 15th we loaded

446
00:20:22,560 --> 00:20:19,870
the observatory into a truck and then

447
00:20:25,110 --> 00:20:22,570
early early that morning it arrived at

448
00:20:28,260 --> 00:20:25,120
Vandenberg at the Astra tech payload

449
00:20:31,470 --> 00:20:28,270
processing facility where we completed

450
00:20:34,110 --> 00:20:31,480
the last of the functional checkouts to

451
00:20:38,490 --> 00:20:34,120
make sure the observatory was operating

452
00:20:42,900 --> 00:20:38,500
properly after its transportation to

453
00:20:45,570 --> 00:20:42,910
Vandenberg we fueled the spacecraft went

454
00:20:49,440 --> 00:20:45,580
through the final checks everything went

455
00:20:52,530 --> 00:20:49,450
very smoothly we had no no issues or

456
00:20:55,980 --> 00:20:52,540
problems during that time and then as

457
00:21:00,000 --> 00:20:55,990
Tim described we begin the process of

458
00:21:03,870 --> 00:21:00,010
putting it inside it's a can to move out

459
00:21:07,110 --> 00:21:03,880
to space launch complex too so we've

460
00:21:10,530 --> 00:21:07,120
invested a lot of time testing testing

461
00:21:12,680 --> 00:21:10,540
the observatory we feel we've got a very

462
00:21:15,300 --> 00:21:12,690
reliable design we've got a very

463
00:21:17,520 --> 00:21:15,310

committed and passionate group of people

464
00:21:20,640 --> 00:21:17,530
that have worked on the project over

465
00:21:22,260 --> 00:21:20,650
many years we feel that we've got a lot

466
00:21:26,790 --> 00:21:22,270
of confidence that this mission is going

467
00:21:30,060 --> 00:21:26,800
to provide top quality science data for

468
00:21:32,370 --> 00:21:30,070
many many years in space I want to

469
00:21:35,670 --> 00:21:32,380
acknowledge that our mission partner

470
00:21:38,100 --> 00:21:35,680
here besides JPL who had project

471
00:21:39,840 --> 00:21:38,110
management responsibilities developed

472
00:21:42,120 --> 00:21:39,850
the spacecraft at the radar instrument

473
00:21:44,160 --> 00:21:42,130
we also had a lot of support from the

474
00:21:47,430 --> 00:21:44,170
NASA's Goddard Space Flight assembly

475
00:21:51,540 --> 00:21:47,440
that provided the radiometer instrument

476
00:21:55,020 --> 00:21:51,550
science support both centers share in

477
00:22:00,240 --> 00:21:55,030
the science data processing that will be

478
00:22:05,370 --> 00:22:00,250
performed once we get the data flowing

479
00:22:08,640 --> 00:22:05,380
from space so with that I think we still

480
00:22:11,660 --> 00:22:08,650
are showing some video here this is of

481
00:22:13,940 --> 00:22:11,670
the spacecraft being attached to its

482
00:22:16,580 --> 00:22:13,950
launch vehicle adapter

483
00:22:23,590 --> 00:22:16,590
at Astro tech before it was put inside

484
00:22:26,360 --> 00:22:23,600
the can it was moved to slick to on

485
00:22:29,930 --> 00:22:26,370
January thirteenth so we've had a very

486
00:22:31,759 --> 00:22:29,940
smooth operation getting it installed on

487
00:22:36,110 --> 00:22:31,769
the launch vehicle adapter you see here

488
00:22:43,190 --> 00:22:36,120

and getting it transported out to out

489
00:22:46,310 --> 00:22:43,200
too slick to so with that George well

490
00:22:48,500 --> 00:22:46,320
the video winds up I'll turn it back to

491
00:22:51,169 --> 00:22:48,510
you thank you all right Thank You cat

492
00:22:53,840 --> 00:22:51,179
and now to learn more about this map

493
00:22:55,279 --> 00:22:53,850
mission Dhara anto kabhi the SMAP

494
00:22:57,470 --> 00:22:55,289
science team leader from the

495
00:23:00,230 --> 00:22:57,480
massachusetts institute of technology in

496
00:23:03,190 --> 00:23:00,240
cambridge massachusetts tara thank

497
00:23:07,909 --> 00:23:03,200
George smot is in a unique position

498
00:23:10,879 --> 00:23:07,919
because its measurements impact two

499
00:23:13,549 --> 00:23:10,889
distinct domains one of course as a

500
00:23:15,470 --> 00:23:13,559
science mission it impacts how we

501
00:23:17,539 --> 00:23:15,480
fundamentally understand how the

502
00:23:20,539 --> 00:23:17,549
environment works and peer into the

503
00:23:23,600 --> 00:23:20,549
metabolism of the environment and second

504
00:23:25,279 --> 00:23:23,610
it impacts some of the applications that

505
00:23:27,379 --> 00:23:25,289
touch our of their lives I would like to

506
00:23:31,360 --> 00:23:27,389
give you examples of each one of those

507
00:23:35,450 --> 00:23:31,370
and to the first slide in the area of

508
00:23:38,389 --> 00:23:35,460
science impacts as a science mission the

509
00:23:40,279 --> 00:23:38,399
three cycles that maintain life on Earth

510
00:23:42,740 --> 00:23:40,289
are our fundamental cycles of the earth

511
00:23:47,779 --> 00:23:42,750
system the water cycle unique to earth

512
00:23:49,700 --> 00:23:47,789
the energy cycle and the carbon cycle d3

513
00:23:51,169 --> 00:23:49,710

are linked together through soil

514
00:23:53,930 --> 00:23:51,179
moisture and free stock they're like

515
00:23:56,870 --> 00:23:53,940
three gears in a clock if one of them

516
00:24:00,200 --> 00:23:56,880
speeds up it affects the others and as a

517
00:24:02,090 --> 00:24:00,210
cascading downstream effect if it wasn't

518
00:24:04,820 --> 00:24:02,100
for soil moisture these three gears

519
00:24:07,310 --> 00:24:04,830
would act independently and would vary

520
00:24:09,409 --> 00:24:07,320
without any synchronization but we know

521
00:24:12,470 --> 00:24:09,419
that's not the case as soil water

522
00:24:14,000 --> 00:24:12,480
evaporates that's precipitation that has

523
00:24:16,639 --> 00:24:14,010
gone into the soil so it's the history

524
00:24:19,009 --> 00:24:16,649
of precipitation as that evaporates it

525
00:24:20,899 --> 00:24:19,019
feeds the clouds and returns that

526
00:24:23,869 --> 00:24:20,909
precipitation back to the atmosphere and

527
00:24:26,720 --> 00:24:23,879
you got a water cycle going just as

528
00:24:27,919 --> 00:24:26,730
humans have adapted to perspire in order

529
00:24:30,019 --> 00:24:27,929
to maintain their body temp

530
00:24:32,810 --> 00:24:30,029
the earth does the same it takes energy

531
00:24:36,409 --> 00:24:32,820
to vaporize that water so it's involved

532
00:24:38,060 --> 00:24:36,419
in the energy cycle the solar radiation

533
00:24:40,460 --> 00:24:38,070
that's incidents that the surface gets

534
00:24:42,350 --> 00:24:40,470
absorbed and gets released back or

535
00:24:43,940 --> 00:24:42,360
dissipated through the evaporation

536
00:24:46,389 --> 00:24:43,950
process so that's how the water and

537
00:24:51,169 --> 00:24:46,399
energy cycles are intimately linked and

538
00:24:53,539 --> 00:24:51,179

also plants as they transpire what they

539
00:24:55,940 --> 00:24:53,549
do is take carbon dioxide gas from the

540
00:24:58,039 --> 00:24:55,950
atmosphere take energy from sunlight and

541
00:25:00,169 --> 00:24:58,049
convert that into the leaves and

542
00:25:03,049 --> 00:25:00,179
branches that they have by releasing

543
00:25:05,149 --> 00:25:03,059
water vapor so the carbon cycle gets

544
00:25:07,759 --> 00:25:05,159
engaged with the water and energy cycles

545
00:25:09,529 --> 00:25:07,769
these three work again like gears in a

546
00:25:11,659 --> 00:25:09,539
clock and have to be synchronized our

547
00:25:13,669 --> 00:25:11,669
models of the environment whether they

548
00:25:17,450 --> 00:25:13,679
used for short-term numerical weather

549
00:25:19,930 --> 00:25:17,460
prediction or longer-term projections of

550
00:25:22,700 --> 00:25:19,940
the impacts of climate variability and

551
00:25:25,340 --> 00:25:22,710
climate change on regional water cycle

552
00:25:27,019 --> 00:25:25,350
need to get this coupling between the

553
00:25:29,359 --> 00:25:27,029
three cycles correctly and therefore

554
00:25:32,330 --> 00:25:29,369
need the store moisture information that

555
00:25:34,700 --> 00:25:32,340
map is going to provide so that's the

556
00:25:37,519 --> 00:25:34,710
science impact of peering into how the

557
00:25:40,549 --> 00:25:37,529
earth environments metabolism functions

558
00:25:42,889 --> 00:25:40,559
in the area of applications by go to the

559
00:25:45,919 --> 00:25:42,899
next slide here's an example that

560
00:25:47,749 --> 00:25:45,929
touches are over their lives this is

561
00:25:50,149 --> 00:25:47,759
from the National Weather Service from

562
00:25:52,970 --> 00:25:50,159
their website this is their flash flood

563
00:25:55,249 --> 00:25:52,980

guidance it's produced daily and the

564
00:25:57,320 --> 00:25:55,259
date on the top indicates what day that

565
00:25:59,749 --> 00:25:57,330
was the validity of this particular map

566
00:26:02,869 --> 00:25:59,759
and it's basically so much your deficit

567
00:26:05,299 --> 00:26:02,879
how much the soil can hold beyond what

568
00:26:07,850 --> 00:26:05,309
the current so moisture conditions are

569
00:26:10,730 --> 00:26:07,860
and it's in units of inches this is

570
00:26:13,070 --> 00:26:10,740
produced daily updated daily and shipped

571
00:26:15,379 --> 00:26:13,080
out to about 120 weather forecast

572
00:26:19,460 --> 00:26:15,389
offices spread around the country the

573
00:26:21,680 --> 00:26:19,470
forecaster looks at this map looks at

574
00:26:24,200 --> 00:26:21,690
the NEXRAD radar ground-based radar

575
00:26:26,330 --> 00:26:24,210
precipitation map also in units of

576
00:26:28,220 --> 00:26:26,340
inches of precipitation and whatever the

577
00:26:31,340 --> 00:26:28,230
precipitation exceeds the flight

578
00:26:34,399 --> 00:26:31,350
guidance immediately a flood warning is

579
00:26:36,889 --> 00:26:34,409
issued now this map of surface soil

580
00:26:39,909 --> 00:26:36,899
moisture or soil moisture deficit is not

581
00:26:41,360 --> 00:26:39,919
produced based upon ground-based

582
00:26:42,650 --> 00:26:41,370
instruments

583
00:26:46,690 --> 00:26:42,660
that measures one measure around the

584
00:26:49,400 --> 00:26:46,700
country because there's far too few as

585
00:26:51,920 --> 00:26:49,410
ground-based sensors to come close to

586
00:26:55,130 --> 00:26:51,930
producing such a map so this is produced

587
00:26:57,170 --> 00:26:55,140
by models best guesses of what the soil

588
00:27:00,730 --> 00:26:57,180

moisture congestion should be any one

589
00:27:03,710 --> 00:27:00,740
day now what's map will provide is

590
00:27:07,070 --> 00:27:03,720
exactly that measurement but at higher

591
00:27:09,049 --> 00:27:07,080
resolution and directly and with great

592
00:27:12,590 --> 00:27:09,059
accuracy so it's going to help improve

593
00:27:15,200 --> 00:27:12,600
this daily operation that goes on in a

594
00:27:18,650 --> 00:27:15,210
second example and the final example

595
00:27:21,260 --> 00:27:18,660
here's a daughter extreme this is a

596
00:27:23,990 --> 00:27:21,270
weekly map produced by a collaboration

597
00:27:26,660 --> 00:27:24,000
between US Department of Agriculture EPA

598
00:27:30,080 --> 00:27:26,670
and so noah and some other agencies and

599
00:27:32,660 --> 00:27:30,090
its validity of this one is just a few

600
00:27:36,880 --> 00:27:32,670
days ago and this is an estimate of

601
00:27:39,380 --> 00:27:36,890
drought conditions this drought is

602
00:27:41,930 --> 00:27:39,390
agricultural drought is defined in terms

603
00:27:44,120 --> 00:27:41,940
of deficit in soil moisture so the very

604
00:27:45,980 --> 00:27:44,130
definition of drought is a deficit in

605
00:27:48,740 --> 00:27:45,990
soil moisture and you can see the big

606
00:27:51,110 --> 00:27:48,750
dry in California on this map again

607
00:27:53,240 --> 00:27:51,120
what's map can provide is a direct

608
00:27:56,410 --> 00:27:53,250
measurement of this quantity at high

609
00:28:00,950 --> 00:27:56,420
resolution and from space and globally

610
00:28:02,690 --> 00:28:00,960
so with that George Thank You Dora and

611
00:28:05,120 --> 00:28:02,700
we'll look now at the weather forecast

612
00:28:06,740 --> 00:28:05,130
for Thursday morning from First

613
00:28:08,660 --> 00:28:06,750

Lieutenant John Martin they launch

614
00:28:11,060 --> 00:28:08,670
weather officer for the countdown on

615
00:28:13,970 --> 00:28:11,070
Thursday from the 30th operation support

616
00:28:16,010 --> 00:28:13,980
quadrant at Vandenberg thank you George

617
00:28:18,049 --> 00:28:16,020
weather along the central California

618
00:28:20,000 --> 00:28:18,059
coast and January typically consist of

619
00:28:21,919 --> 00:28:20,010
shallow high pressure with occasional

620
00:28:24,169 --> 00:28:21,929
low pressure systems that transition

621
00:28:25,549 --> 00:28:24,179
through the region currently California

622
00:28:27,110 --> 00:28:25,559
is seeing some of the shallow high

623
00:28:29,390 --> 00:28:27,120
pressure building into the region with

624
00:28:31,910 --> 00:28:29,400
upper area upper level areas of low

625
00:28:33,799 --> 00:28:31,920
pressure skirting into over the high and

626
00:28:36,020 --> 00:28:33,809
causing increased cloud cover in the mid

627
00:28:38,600 --> 00:28:36,030
to upper levels if we could take a look

628
00:28:40,310 --> 00:28:38,610
at the satellite coverage here you can

629
00:28:41,750 --> 00:28:40,320
see clear skies over most of the range

630
00:28:43,760 --> 00:28:41,760
with the lingering upper level low

631
00:28:45,200 --> 00:28:43,770
causing increased cloud cover along the

632
00:28:47,660 --> 00:28:45,210
northern portion of the western range

633
00:28:49,370 --> 00:28:47,670
the upper level feature is tracking to

634
00:28:51,830 --> 00:28:49,380
the north east and is not expected to be

635
00:28:53,360 --> 00:28:51,840
an impact for Thursday's launch if we

636
00:28:54,409 --> 00:28:53,370
could move on to the launch forecast

637
00:28:57,139 --> 00:28:54,419
slide

638
00:28:59,269 --> 00:28:57,149

alright so for Thursday we are expecting

639
00:29:00,919 --> 00:28:59,279
another slight upper level low pressure

640
00:29:02,899 --> 00:29:00,929
system that will move over the region

641
00:29:05,029 --> 00:29:02,909
late Wednesday and into early Thursday

642
00:29:06,889 --> 00:29:05,039
morning bringing thicker mid-level to

643
00:29:08,690 --> 00:29:06,899
upper level clouds with a little bit of

644
00:29:10,070 --> 00:29:08,700
Cirrus over the range forty zero

645
00:29:12,019 --> 00:29:10,080
visibility will be under strict

646
00:29:15,109 --> 00:29:12,029
unrestricted with winds out of the north

647
00:29:16,970 --> 00:29:15,119
northeast between eight to 12 knots at

648
00:29:18,979 --> 00:29:16,980
slick two temperatures will be

649
00:29:21,139 --> 00:29:18,989
comfortably in the low to mid 50s the

650
00:29:23,060 --> 00:29:21,149
overall probability of violation for t0

651
00:29:25,039 --> 00:29:23,070
is twenty percent with the only

652
00:29:27,200 --> 00:29:25,049
constraint of concern being for thick

653
00:29:29,930 --> 00:29:27,210
clouds if we could shift to the scrub

654
00:29:31,460 --> 00:29:29,940
forecast line lingering moisture from

655
00:29:34,070 --> 00:29:31,470
that upper level low will move east of

656
00:29:35,869 --> 00:29:34,080
the range for Friday resulting in

657
00:29:37,609 --> 00:29:35,879
thinning clouds aloft and the thick

658
00:29:40,070 --> 00:29:37,619
cloud probability of violation dropping

659
00:29:42,109 --> 00:29:40,080
20 percent for the scrub day winds will

660
00:29:45,049 --> 00:29:42,119
shift to a northwesterly component pick

661
00:29:46,909 --> 00:29:45,059
up to around 15 to 18 knots at slick to

662
00:29:48,889 --> 00:29:46,919
with visibility still remaining

663
00:29:50,419 --> 00:29:48,899

unrestricted and temperatures will start

664
00:29:52,609 --> 00:29:50,429
to climb a little bit to the mid to

665
00:29:54,259 --> 00:29:52,619
upper 50s overall probability of

666
00:29:55,700 --> 00:29:54,269
violation for the scrub day will be ten

667
00:29:57,619 --> 00:29:55,710
percent with the only constraint of

668
00:29:59,779 --> 00:29:57,629
concern being the surface winds that

669
00:30:01,609 --> 00:29:59,789
slick too and that is all for weather

670
00:30:03,529 --> 00:30:01,619
back to you George all right thank you

671
00:30:06,320 --> 00:30:03,539
very much lieutenant Martin and we're

672
00:30:09,379 --> 00:30:06,330
ready now to take questions for the

673
00:30:13,070 --> 00:30:09,389
social media you can use hashtag ask

674
00:30:15,080 --> 00:30:13,080
NASA and we will go right now to some

675
00:30:16,669 --> 00:30:15,090
questions here in the room and take some

676
00:30:18,229 --> 00:30:16,679
social media questions so we'll start

677
00:30:20,210 --> 00:30:18,239
here in the front and please give your

678
00:30:23,419 --> 00:30:20,220
name and affiliation when you get the

679
00:30:26,149 --> 00:30:23,429
microphone Justin Justin ray with the

680
00:30:27,440 --> 00:30:26,159
spaceflight now calm for Kent I was

681
00:30:29,810 --> 00:30:27,450
wondering if you could explain a little

682
00:30:34,369 --> 00:30:29,820
bit more about how they antenna is

683
00:30:38,590 --> 00:30:34,379
deployed what actually drives it out ok

684
00:30:42,680 --> 00:30:38,600
so the antenna as a motor actuator that

685
00:30:46,070 --> 00:30:42,690
drives a drives the system it basically

686
00:30:50,330 --> 00:30:46,080
unfolds like a like a like a rhombus if

687
00:30:53,539 --> 00:30:50,340
you will that moves from a you know

688
00:30:56,060 --> 00:30:53,549

collapsed state into a deployed state so

689
00:30:58,399 --> 00:30:56,070
it is initially blooms out you saw in

690
00:31:00,470 --> 00:30:58,409
the animation right after it releases it

691
00:31:02,810 --> 00:31:00,480
blooms out to about 78 feet in diameter

692
00:31:06,470 --> 00:31:02,820
and then there's a cable drive system

693
00:31:07,520 --> 00:31:06,480
that powers it out to the remaining 20

694
00:31:09,980 --> 00:31:07,530
feet in diameter

695
00:31:12,470 --> 00:31:09,990
that process takes about 30 minutes in

696
00:31:14,630 --> 00:31:12,480
space so we were able to show it the

697
00:31:17,870 --> 00:31:14,640
animation running much more rapidly than

698
00:31:20,780 --> 00:31:17,880
it would in real time when we deploy it

699
00:31:23,120 --> 00:31:20,790
we would have full telemetry visibility

700
00:31:25,670 --> 00:31:23,130
via t dress we've designed that process

701
00:31:29,080 --> 00:31:25,680
very carefully so we can we can watch it

702
00:31:32,000 --> 00:31:29,090
but the deployment is dealt with

703
00:31:34,910 --> 00:31:32,010
autonomously by the by the spacecraft

704
00:31:36,560 --> 00:31:34,920
while it's while it's happening so did I

705
00:31:38,540 --> 00:31:36,570
answer your questions yep and just a

706
00:31:40,070 --> 00:31:38,550
quick follow-up when do you actually

707
00:31:44,690 --> 00:31:40,080
expect the spacecraft to become

708
00:31:47,750 --> 00:31:44,700
operational so operational is maybe

709
00:31:51,980 --> 00:31:47,760
that's a bit of ambiguous it can be an

710
00:31:54,110 --> 00:31:51,990
ambiguous term the we will spend 90 days

711
00:31:56,900 --> 00:31:54,120
checking out the spacecraft system

712
00:31:59,020 --> 00:31:56,910
deploying the antenna spinning it up

713
00:32:01,820 --> 00:31:59,030

getting the instrument fully checked out

714
00:32:05,210 --> 00:32:01,830
making sure all the systems are working

715
00:32:08,660 --> 00:32:05,220
properly we've allowed 90 days for that

716
00:32:10,700 --> 00:32:08,670
to occur after the 90-day period we will

717
00:32:12,860 --> 00:32:10,710
go into what's called a calibration and

718
00:32:14,930 --> 00:32:12,870
validation phase that's where we're

719
00:32:18,410 --> 00:32:14,940
actively using the instrument to collect

720
00:32:22,040 --> 00:32:18,420
data on soil moisture and then we have a

721
00:32:23,540 --> 00:32:22,050
science calibration validation team that

722
00:32:26,060 --> 00:32:23,550
takes the data coming from the

723
00:32:28,190 --> 00:32:26,070
spacecraft and compares it the ground

724
00:32:30,790 --> 00:32:28,200
truth sensors so we can bring the

725
00:32:33,950 --> 00:32:30,800
spacecraft data into alignment with

726
00:32:35,450 --> 00:32:33,960
specific sites around the globe to make

727
00:32:40,070 --> 00:32:35,460
sure that we're meeting our data

728
00:32:42,290 --> 00:32:40,080
accuracy requirements that that soil

729
00:32:46,100 --> 00:32:42,300
moisture data will be basically

730
00:32:49,400 --> 00:32:46,110
available not fully calibrated six

731
00:32:51,020 --> 00:32:49,410
months well six months after we complete

732
00:32:54,740 --> 00:32:51,030
the checkout period nine months after

733
00:32:57,170 --> 00:32:54,750
launch the validated science data

734
00:33:00,170 --> 00:32:57,180
calibrated soil moisture science data

735
00:33:03,500 --> 00:33:00,180
will be available 12 months after the

736
00:33:08,060 --> 00:33:03,510
checkout period is is complete 15 months

737
00:33:10,280 --> 00:33:08,070
after launch Janine Janine Scully

738
00:33:12,110 --> 00:33:10,290

Noozhawk calm you talked about working

739
00:33:14,720 --> 00:33:12,120
on this program for quite a few years

740
00:33:17,150 --> 00:33:14,730
how eager are you to finally get to this

741
00:33:21,170 --> 00:33:17,160
day and basically get to Thursday and

742
00:33:21,170 --> 00:33:21,180
get this get this process going

743
00:33:29,000 --> 00:33:25,520
I'm extremely eager my wife is probably

744
00:33:32,690 --> 00:33:29,010
even more extremely eager you know I you

745
00:33:34,610 --> 00:33:32,700
you you work a lot of time to spend

746
00:33:36,950 --> 00:33:34,620
a lot of time to reach this point you

747
00:33:39,560 --> 00:33:36,960
know you invest a lot long hours

748
00:33:41,660 --> 00:33:39,570
weekends you know everyone that works on

749
00:33:43,370 --> 00:33:41,670
these kind of projects is very

750
00:33:47,570 --> 00:33:43,380
passionate they they invest a lot of

751
00:33:49,730 --> 00:33:47,580
themselves in it and it's great to reach

752
00:33:50,930 --> 00:33:49,740
this point it's also a point where

753
00:33:52,730 --> 00:33:50,940
you're putting all the marbles on the

754
00:33:54,830 --> 00:33:52,740
table this is the point where you know

755
00:33:56,390 --> 00:33:54,840
you're it's like adding over the keys to

756
00:33:59,960 --> 00:33:56,400
your car to your teenager you know you

757
00:34:03,680 --> 00:33:59,970
you hope you've prepared them well you

758
00:34:06,710 --> 00:34:03,690
hope all the lessons stick and and then

759
00:34:09,620 --> 00:34:06,720
you send them off and most of the time

760
00:34:12,530 --> 00:34:09,630
you're very pleasantly surprised but

761
00:34:14,710 --> 00:34:12,540
yeah we're very excited and we think

762
00:34:17,600 --> 00:34:14,720
we're going to have a great mission here

763
00:34:19,730 --> 00:34:17,610

and for those of us that are writing for

764
00:34:21,770 --> 00:34:19,740
the more general population can you help

765
00:34:25,010 --> 00:34:21,780
us explain exactly why Joe citizen

766
00:34:28,940 --> 00:34:25,020
should really care about this this

767
00:34:33,050 --> 00:34:28,950
mission I think Dara your why don't you

768
00:34:35,960 --> 00:34:33,060
answer that yeah so what the so much

769
00:34:38,330 --> 00:34:35,970
measurements will do is improve our

770
00:34:40,900 --> 00:34:38,340
weather forecasts improve our

771
00:34:45,530 --> 00:34:40,910
assessments or water availability and

772
00:34:47,680 --> 00:34:45,540
also address some issues dealing with

773
00:34:51,530 --> 00:34:47,690
long-term climate variability and

774
00:34:52,880 --> 00:34:51,540
assessments of the impact of human

775
00:34:56,720 --> 00:34:52,890
intervention in the global environment

776
00:34:58,790 --> 00:34:56,730
so all of these come together and it's

777
00:35:01,010 --> 00:34:58,800
the metabolism of the system how it

778
00:35:03,740 --> 00:35:01,020
responds just like a human body if you

779
00:35:06,470 --> 00:35:03,750
perturb it by feeding it something we

780
00:35:08,780 --> 00:35:06,480
want to know how it the entire

781
00:35:10,820 --> 00:35:08,790
metabolism working together response and

782
00:35:12,980 --> 00:35:10,830
that's the water engine carbon cycles

783
00:35:16,430 --> 00:35:12,990
this is the variable that links all of

784
00:35:19,220 --> 00:35:16,440
them so whether its water availability

785
00:35:22,190 --> 00:35:19,230
weather forecast climate seasonal

786
00:35:24,250 --> 00:35:22,200
climate forecast agriculture early

787
00:35:29,600 --> 00:35:24,260
famine warning all these applications

788
00:35:31,670 --> 00:35:29,610

really depend on this key valuable right

789
00:35:35,239 --> 00:35:31,680
any other questions here in the room we

790
00:35:39,809 --> 00:35:38,039
hi Patrick Healy from NBC 4 in Los

791
00:35:41,460 --> 00:35:39,819
Angeles and dr. inta copy if I could

792
00:35:43,859 --> 00:35:41,470
follow up on that and ask you to be

793
00:35:45,299 --> 00:35:43,869
perhaps a little more granular are we

794
00:35:46,799 --> 00:35:45,309
talking about in the case of flood

795
00:35:49,079 --> 00:35:46,809
prevention actually being able to go to

796
00:35:50,940 --> 00:35:49,089
a region and telling people you should

797
00:35:53,009 --> 00:35:50,950
leave this area because the probability

798
00:35:54,839 --> 00:35:53,019
of flooding is very high and conversely

799
00:35:57,289 --> 00:35:54,849
in California where we're dealing with

800
00:36:00,299 --> 00:35:57,299
this drought up are there specific

801
00:36:02,940 --> 00:36:00,309
decision making data that will become

802
00:36:04,859 --> 00:36:02,950
available and that could be utilized so

803
00:36:07,920 --> 00:36:04,869
let me go back to the first one the

804
00:36:09,749 --> 00:36:07,930
flood case as you saw that was a map of

805
00:36:11,970 --> 00:36:09,759
daily Sun worship without by the

806
00:36:15,390 --> 00:36:11,980
National Weather Service so if you have

807
00:36:18,269 --> 00:36:15,400
real data to test that operational

808
00:36:22,140 --> 00:36:18,279
product and that application you will

809
00:36:26,099 --> 00:36:22,150
impact the entire operation of flood

810
00:36:28,229 --> 00:36:26,109
forecasting in the country and also that

811
00:36:29,640 --> 00:36:28,239
applies internationally as well which is

812
00:36:32,279 --> 00:36:29,650
important because it's a satellite

813
00:36:34,650 --> 00:36:32,289

measurements in terms of drought the

814
00:36:36,960 --> 00:36:34,660
very definition of drought when you say

815
00:36:39,390 --> 00:36:36,970
this county is in drought condition this

816
00:36:42,509 --> 00:36:39,400
one's not is based upon what the soil

817
00:36:45,029 --> 00:36:42,519
moisture is right now we're making that

818
00:36:46,680 --> 00:36:45,039
decision based upon models this would be

819
00:36:49,910 --> 00:36:46,690
a direct measurement of that quantity

820
00:36:53,150 --> 00:36:49,920
that it could affect things like

821
00:36:56,160 --> 00:36:53,160
agricultural operations insurance

822
00:37:02,339 --> 00:36:56,170
disaster relief emergency declarations

823
00:37:05,249 --> 00:37:02,349
and other activities alright I think

824
00:37:07,829 --> 00:37:05,259
we're ready now to take social media

825
00:37:11,789 --> 00:37:07,839
questions and if you do in social media

826
00:37:14,900 --> 00:37:11,799
have a question you can use the hashtag

827
00:37:17,160 --> 00:37:14,910
ask NASA to send your question to us and

828
00:37:20,460 --> 00:37:17,170
have we got questions that have come in

829
00:37:23,279 --> 00:37:20,470
already indeed twitter user Kevin asks

830
00:37:24,120 --> 00:37:23,289
how long will nasus map be in space so

831
00:37:31,680 --> 00:37:24,130
if you want to talk about the mission

832
00:37:33,660 --> 00:37:31,690
duration so I'll take that so we have an

833
00:37:38,309 --> 00:37:33,670
operator we have a requirement to

834
00:37:42,690 --> 00:37:38,319
operates map for three years that's more

835
00:37:45,240 --> 00:37:42,700
of a funding of planning constraint if

836
00:37:49,320 --> 00:37:45,250
the spacecraft is returning healthy

837
00:37:52,020 --> 00:37:49,330
the data and as useful nASA has the

838
00:37:55,260 --> 00:37:52,030

option to extend the mission typically

839
00:37:58,170 --> 00:37:55,270
these missions you know can last for a

840
00:37:59,670 --> 00:37:58,180
decade or more and we expect if the

841
00:38:02,400 --> 00:37:59,680
spacecraft is healthy it should be

842
00:38:04,800 --> 00:38:02,410
capable of that nASA has a process that

843
00:38:06,630 --> 00:38:04,810
they go through once we've reached the

844
00:38:08,520 --> 00:38:06,640
end of our primary life that three-year

845
00:38:11,340 --> 00:38:08,530
period where they're well where they

846
00:38:13,080 --> 00:38:11,350
will evaluate whether they want to

847
00:38:16,410 --> 00:38:13,090
allocate additional funding to extend

848
00:38:17,730 --> 00:38:16,420
the mission so that's we expect the

849
00:38:20,190 --> 00:38:17,740
spacecraft itself though and the

850
00:38:24,360 --> 00:38:20,200
instrument to be healthy and last for

851
00:38:26,220 --> 00:38:24,370
many many many years wonderful this next

852
00:38:28,050 --> 00:38:26,230
question comes from amber who asks can

853
00:38:30,090 --> 00:38:28,060
you explain the use of stages in

854
00:38:31,530 --> 00:38:30,100
deploying the cube SATs so you can

855
00:38:38,220 --> 00:38:31,540
explain the deployment process for that

856
00:38:40,620 --> 00:38:38,230
a little bit I can give it a try yeah so

857
00:38:45,660 --> 00:38:40,630
for the cube sets we use what are called

858
00:38:47,970 --> 00:38:45,670
pea pods and essentially it's a box

859
00:38:49,170 --> 00:38:47,980
about the size of a loaf of bread a

860
00:38:55,160 --> 00:38:49,180
little bit bigger and it has a door on

861
00:38:58,020 --> 00:38:55,170
one end and inside you can have a small

862
00:38:59,340 --> 00:38:58,030
cube that hence the name cube SATs you

863
00:39:02,220 --> 00:38:59,350

can have one two or three of those

864
00:39:04,560 --> 00:39:02,230
inside and when it comes time to deploy

865
00:39:06,780 --> 00:39:04,570
those we simply send a command that

866
00:39:08,820 --> 00:39:06,790
allows a spring-loaded door to pop open

867
00:39:10,650 --> 00:39:08,830
on one end of that box and there's a

868
00:39:14,280 --> 00:39:10,660
spring deployment mechanism that just

869
00:39:15,960 --> 00:39:14,290
pushes the satellites out so we do have

870
00:39:17,640 --> 00:39:15,970
a briefing immediately following this

871
00:39:19,500 --> 00:39:17,650
one on the cube set so we'll go in a

872
00:39:22,770 --> 00:39:19,510
little bit more bead detail and help how

873
00:39:24,030 --> 00:39:22,780
that's going to work wonderful an

874
00:39:26,130 --> 00:39:24,040
additional question here comes from

875
00:39:28,080 --> 00:39:26,140
twitter user harris who asks how does a

876
00:39:30,360 --> 00:39:28,090
satellite that high in space accurately

877
00:39:35,640 --> 00:39:30,370
measure moisture in the soil underground

878
00:39:38,370 --> 00:39:35,650
on earth that's the that's the beauty of

879
00:39:40,890 --> 00:39:38,380
the microwave range is that you can see

880
00:39:45,420 --> 00:39:40,900
through clouds you can see regardless of

881
00:39:48,720 --> 00:39:45,430
daylight or no sunlight see through

882
00:39:51,120 --> 00:39:48,730
vegetation moderate vegetation and the

883
00:39:55,740 --> 00:39:51,130
signal is sensitive to the amount of

884
00:39:58,080 --> 00:39:55,750
moisture in the ground and the the

885
00:40:00,090 --> 00:39:58,090
radiometer acts like a camera it

886
00:40:02,220 --> 00:40:00,100
catcher catches the ambient amount of

887
00:40:04,110 --> 00:40:02,230
radiation being emitted but it's

888
00:40:07,830 --> 00:40:04,120

resolution is limited by the size of the

889
00:40:09,600 --> 00:40:07,840
antenna the radar acts like a flash

890
00:40:11,790 --> 00:40:09,610
camera it actually emits a pulse of

891
00:40:14,160 --> 00:40:11,800
radiation looks at what comes back it

892
00:40:16,440 --> 00:40:14,170
has the advantage of resolution the

893
00:40:18,810 --> 00:40:16,450
combination of these two is what makes

894
00:40:22,350 --> 00:40:18,820
the soil moisture measurements possible

895
00:40:25,650 --> 00:40:22,360
now the the pairing of these two

896
00:40:28,110 --> 00:40:25,660
instruments and the way they're operated

897
00:40:29,400 --> 00:40:28,120
are optimized for the problem of soil

898
00:40:34,800 --> 00:40:29,410
moisture and that's what's unique about

899
00:40:36,420 --> 00:40:34,810
the mission alright another question

900
00:40:38,310 --> 00:40:36,430
here from Twitter user amber who asks

901
00:40:40,080 --> 00:40:38,320
how long before SMAP data will be made

902
00:40:45,170 --> 00:40:40,090
available and will there be a certain

903
00:40:50,190 --> 00:40:48,270
I will I will answer the first part of

904
00:40:52,680 --> 00:40:50,200
that NASA actually chose to put the snap

905
00:40:54,960 --> 00:40:52,690
data into two different Dax one for the

906
00:40:59,850 --> 00:40:54,970
radar and one for the radiometer the

907
00:41:02,490 --> 00:40:59,860
national ice centre in Boulder and the

908
00:41:05,280 --> 00:41:02,500
Alaskan satellite facility up in

909
00:41:09,060 --> 00:41:05,290
Fairbanks Alaska can't do you want to

910
00:41:11,100 --> 00:41:09,070
cover the rest of that yes so there's

911
00:41:15,870 --> 00:41:11,110
there's two answers the question of when

912
00:41:18,540 --> 00:41:15,880
the datas will be available we want to

913
00:41:19,980 --> 00:41:18,550

give ourselves a little time to make

914
00:41:22,440 --> 00:41:19,990
sure that the measurements are

915
00:41:25,940 --> 00:41:22,450
calibrated and checked out we'll begin

916
00:41:28,470 --> 00:41:25,950
releasing uncalibrated unvalidated data

917
00:41:32,280 --> 00:41:28,480
six months after launch that'll be the

918
00:41:35,040 --> 00:41:32,290
basic radar and radiometer data the the

919
00:41:38,580 --> 00:41:35,050
calibrated radiometer and radar data

920
00:41:41,850 --> 00:41:38,590
will be released nine months after

921
00:41:45,060 --> 00:41:41,860
launch and as I mentioned earlier in the

922
00:41:47,670 --> 00:41:45,070
briefing the soil moisture data the

923
00:41:50,460 --> 00:41:47,680
unvalidated data will be released nine

924
00:41:52,650 --> 00:41:50,470
months after launch and the calibrated

925
00:41:54,980 --> 00:41:52,660
data will be released 15 months after

926
00:41:57,960 --> 00:41:54,990
launch now once the data starts flowing

927
00:42:00,510 --> 00:41:57,970
it will be sent to the DAC on an ongoing

928
00:42:02,490 --> 00:42:00,520
basis every day the satellite will

929
00:42:04,860 --> 00:42:02,500
download

930
00:42:07,770 --> 00:42:04,870
large amounts of global soil moisture

931
00:42:11,430 --> 00:42:07,780
data its pipeline directly to JPL and

932
00:42:14,510 --> 00:42:11,440
Goddard for science data processing and

933
00:42:19,320 --> 00:42:14,520
it will be released to the the dax

934
00:42:21,510 --> 00:42:19,330
within a matter of 24 hours to 36 hours

935
00:42:22,950 --> 00:42:21,520
depending on what level of data we're

936
00:42:26,130 --> 00:42:22,960
talking about so there'll be a

937
00:42:28,770 --> 00:42:26,140
continuous ongoing flow of delivered

938
00:42:30,420 --> 00:42:28,780

data going to both the both of the dax i

939
00:42:32,100 --> 00:42:30,430
spend one of the objectives of the

940
00:42:34,620 --> 00:42:32,110
mission to get the data from the

941
00:42:36,360 --> 00:42:34,630
satellite to the DAC as quickly as we

942
00:42:39,060 --> 00:42:36,370
can because we know that there's a lot

943
00:42:42,360 --> 00:42:39,070
of interest in having very fast access

944
00:42:44,250 --> 00:42:42,370
to near real-time data alright we have

945
00:42:46,080 --> 00:42:44,260
time for one more social media question

946
00:42:48,630 --> 00:42:46,090
alright this last question comes from

947
00:42:51,890 --> 00:42:48,640
twitter user Frankie who asks how do you

948
00:42:56,130 --> 00:42:51,900
counteract the spin of the reflector

949
00:42:59,070 --> 00:42:56,140
okay so I'll take that we have very

950
00:43:01,920 --> 00:42:59,080
large reaction wheels inside the

951
00:43:04,200 --> 00:43:01,930
spacecraft bus you don't see them from

952
00:43:06,450 --> 00:43:04,210
from the outside view but they're

953
00:43:09,200 --> 00:43:06,460
basically very large wheels that spend

954
00:43:11,610 --> 00:43:09,210
very fast they're like a gyroscope and

955
00:43:14,610 --> 00:43:11,620
and that's how we counteract the

956
00:43:16,800 --> 00:43:14,620
momentum of the large spinning reflector

957
00:43:19,920 --> 00:43:16,810
very good question it was something we

958
00:43:23,250 --> 00:43:19,930
was one of the early design trades that

959
00:43:25,260 --> 00:43:23,260
we considered very carefully and it's a

960
00:43:28,350 --> 00:43:25,270
great great insight to think to ask that

961
00:43:31,380 --> 00:43:28,360
question so very good any more questions

962
00:43:33,540 --> 00:43:31,390
for me to you here in the room all right

963
00:43:35,910 --> 00:43:33,550

in that event we're going to pause just

964
00:43:38,070 --> 00:43:35,920
long enough to change the participants

965
00:43:41,700 --> 00:43:38,080
on the Dyess so that we can discuss the

966
00:43:44,070 --> 00:43:41,710
cube SATs and the spacecraft that are

967
00:43:46,380 --> 00:43:44,080
also flying on the delta to second stage