1
00:00:34,389 --> 00:00:32,950
hello everyone this is our mission

2
00:00:38,069 --> 00:00:34,399
briefing for

3
00:00:40,950 --> 00:00:38,079
jason 3 to be launched aboard a spacex

4
00:00:42,869 --> 00:00:40,960
falcon 9 rocket on sunday

5
00:00:45,430 --> 00:00:42,879
january 17th

6
00:00:47,110 --> 00:00:45,440
we're here now to talk some about the

7
00:00:49,110 --> 00:00:47,120
jason-3 mission

8
00:00:49,910 --> 00:00:49,120
and here to do that with us

9
00:00:51,270 --> 00:00:49,920
is

10
00:00:54,310 --> 00:00:51,280
laurie miller

11
00:00:56,229 --> 00:00:54,320
the jason-3 program scientist and chief

12
00:00:59,830 --> 00:00:56,239
of the noaa laboratory for satellite

13
00:01:04,789 --> 00:01:02,389

josh willis the jason-3 project

14
00:01:09,429 --> 00:01:04,799
scientist from nasa's jet propulsion

15
00:01:17,830 --> 00:01:11,990
mark cohen associate director and chief

16
00:01:21,910 --> 00:01:19,910
and sophie coutinho

17
00:01:23,510 --> 00:01:21,920
chief of the altimetry and precise

18
00:01:25,270 --> 00:01:23,520
positioning office

19
00:01:27,910 --> 00:01:25,280
for canes

20
00:01:29,190 --> 00:01:27,920
and we'll begin first with laurie miller

21
00:01:30,390 --> 00:01:29,200
lori

22
00:01:32,149 --> 00:01:30,400
thank you

23
00:01:33,910 --> 00:01:32,159
good afternoon i'm glad that you can

24
00:01:35,990 --> 00:01:33,920
make it to our briefing

25
00:01:36,950 --> 00:01:36,000
this is an incredibly exciting moment

26
00:01:39,830 --> 00:01:36,960
for us

27
00:01:42,870 --> 00:01:39,840
after seven long years of preparation

28
00:01:45,590 --> 00:01:42,880
we're just now about to launch jason-3

29
00:01:46,630 --> 00:01:45,600
the latest in a series of u.s european

30
00:01:49,429 --> 00:01:46,640
missions

31
00:01:52,469 --> 00:01:49,439
designed expressly for monitoring sea

32
00:01:54,389 --> 00:01:52,479
level rise one of the clearest symptoms

33
00:01:57,510 --> 00:01:54,399
of global warming

34
00:01:59,910 --> 00:01:57,520
but also to help noaa forecast

35
00:02:02,550 --> 00:01:59,920
hurricanes and el ninos and other

36
00:02:05,749 --> 00:02:02,560
extreme weather events

37
00:02:08,389 --> 00:02:05,759
so regarding the climate problem

38
00:02:09,669 --> 00:02:08,399

it's now generally understood that we've

39
00:02:12,309 --> 00:02:09,679
entered into

40
00:02:15,350 --> 00:02:12,319
a new era a new norm

41
00:02:18,550 --> 00:02:15,360
marked by rapid and persistent changes

42
00:02:21,750 --> 00:02:18,560
to the entire whole earth system

43
00:02:23,990 --> 00:02:21,760
but what may not be widely understood is

44
00:02:25,190 --> 00:02:24,000
the role of the ocean in this complex

45
00:02:27,190 --> 00:02:25,200
process

46
00:02:29,110 --> 00:02:27,200
and so here's a really incredibly

47
00:02:31,030 --> 00:02:29,120
startling fact

48
00:02:34,470 --> 00:02:31,040
more than 90 percent

49
00:02:36,390 --> 00:02:34,480
of all of the heat now being trapped

50
00:02:38,550 --> 00:02:36,400
in the earth system

51
00:02:40,949 --> 00:02:38,560
due to the greenhouse effect is actually

52
00:02:43,509 --> 00:02:40,959
going into the ocean

53
00:02:45,830 --> 00:02:43,519
this makes the ocean perhaps the biggest

54
00:02:47,990 --> 00:02:45,840
player in the climate change story but

55
00:02:49,589 --> 00:02:48,000
it also helps explain the importance of

56
00:02:51,750 --> 00:02:49,599
the jason mission

57
00:02:55,110 --> 00:02:51,760
because jason allows us to get the big

58
00:02:57,509 --> 00:02:55,120
picture in terms of sea level change

59
00:02:59,670 --> 00:02:57,519
in the years to come

60
00:03:01,509 --> 00:02:59,680
in terms of severe weather

61
00:03:03,509 --> 00:03:01,519
you don't have to look very far to find

62
00:03:04,949 --> 00:03:03,519
examples

63
00:03:06,229 --> 00:03:04,959

heavy rainfall

64
00:03:08,390 --> 00:03:06,239
flooding

65
00:03:09,670 --> 00:03:08,400
tornadoes out of season

66
00:03:11,750 --> 00:03:09,680
droughts

67
00:03:13,350 --> 00:03:11,760
all of these may seem like separate

68
00:03:15,430 --> 00:03:13,360
isolated events

69
00:03:18,309 --> 00:03:15,440
but many if not all of these are

70
00:03:20,470 --> 00:03:18,319
actually connected linked in a fashion

71
00:03:22,630 --> 00:03:20,480
to changes in the ocean occurring half a

72
00:03:25,110 --> 00:03:22,640
world away

73
00:03:27,030 --> 00:03:25,120
the massive turbocharged el nino that's

74
00:03:29,670 --> 00:03:27,040
currently battering the u.s

75
00:03:31,270 --> 00:03:29,680
is perhaps one of the best examples

76
00:03:33,910 --> 00:03:31,280
i have a video

77
00:03:35,589 --> 00:03:33,920
that shows the conditions in the pacific

78
00:03:38,070 --> 00:03:35,599
right now

79
00:03:41,589 --> 00:03:38,080
and the video shows an area of high sea

80
00:03:43,110 --> 00:03:41,599
level stretching from the west coast of

81
00:03:46,630 --> 00:03:43,120
south america

82
00:03:48,789 --> 00:03:46,640
practically all across the pacific ocean

83
00:03:50,070 --> 00:03:48,799
this is the result of a drop off in the

84
00:03:53,030 --> 00:03:50,080
trade winds

85
00:03:56,149 --> 00:03:53,040
allowing a massive shift of water to

86
00:03:57,670 --> 00:03:56,159
flow backward along the equator

87
00:03:59,830 --> 00:03:57,680
this causes

88
00:04:03,110 --> 00:03:59,840

a suppression of the upwelling in the

89
00:04:05,830 --> 00:04:03,120
eastern pacific that normally keeps that

90
00:04:08,710 --> 00:04:05,840
part of the world cool

91
00:04:11,509 --> 00:04:08,720
but in this case it sets off a chain of

92
00:04:14,229 --> 00:04:11,519
events that ultimately causes higher sea

93
00:04:16,710 --> 00:04:14,239
surface temperatures and changes in the

94
00:04:18,550 --> 00:04:16,720
in the weather patterns at mid latitudes

95
00:04:21,749 --> 00:04:18,560
and in fact the severe weather that i

96
00:04:24,230 --> 00:04:21,759
spoke to you a moment ago

97
00:04:26,230 --> 00:04:24,240
noaa is using this information

98
00:04:29,270 --> 00:04:26,240
of sea level information in its

99
00:04:31,430 --> 00:04:29,280
forecasting models it assimilates the

100
00:04:33,030 --> 00:04:31,440
json information into its seasonal

101
00:04:35,189 --> 00:04:33,040
forecast model

102
00:04:37,909 --> 00:04:35,199
and is able to predict el ninos

103
00:04:40,070 --> 00:04:37,919
sometimes with remarkable accuracy many

104
00:04:42,150 --> 00:04:40,080
months in advance

105
00:04:43,590 --> 00:04:42,160
noaa is also using this information to

106
00:04:46,150 --> 00:04:43,600
help forecast

107
00:04:47,830 --> 00:04:46,160
other types of features like hurricane

108
00:04:50,310 --> 00:04:47,840
intensity

109
00:04:52,950 --> 00:04:50,320
and track oil spills

110
00:04:55,189 --> 00:04:52,960
and develop high seas wave warnings

111
00:04:58,469 --> 00:04:55,199
but i think you get the big picture

112
00:05:01,350 --> 00:04:58,479
json information is incredibly useful

113
00:05:04,230 --> 00:05:01,360

especially to noaa because it allows us

114
00:05:06,950 --> 00:05:04,240
to not only track the sea level change

115
00:05:08,070 --> 00:05:06,960
that is impacting our coastal features

116
00:05:10,310 --> 00:05:08,080
right now

117
00:05:11,430 --> 00:05:10,320
but also to help forecast extreme

118
00:05:13,749 --> 00:05:11,440
weather

119
00:05:16,390 --> 00:05:13,759
so let's get on with it let's light that

120
00:05:17,909 --> 00:05:16,400
rocket and launch jason-3

121
00:05:20,710 --> 00:05:17,919
thank you lori

122
00:05:22,390 --> 00:05:20,720
and next to josh willis the jason-3

123
00:05:24,710 --> 00:05:22,400
project scientist from nasa's jet

124
00:05:27,350 --> 00:05:24,720
propulsion laboratory josh

125
00:05:30,469 --> 00:05:27,360
thanks george uh i'm extremely excited

126
00:05:33,830 --> 00:05:30,479
to be here uh this is uh the culmination

127
00:05:37,830 --> 00:05:33,840
of a long process for me i started uh

128
00:05:39,830 --> 00:05:37,840
using data from the predecessor to json3

129
00:05:42,430 --> 00:05:39,840
and before that jason won and before

130
00:05:45,510 --> 00:05:42,440
that topex poseidon launched in

131
00:05:47,590 --> 00:05:45,520
1992. i like to say that topex is the

132
00:05:49,510 --> 00:05:47,600
satellite that got me my phd so i

133
00:05:50,230 --> 00:05:49,520
wouldn't be sitting here if it wasn't

134
00:05:53,029 --> 00:05:50,240
for

135
00:05:54,310 --> 00:05:53,039
the really amazing capabilities of these

136
00:05:58,390 --> 00:05:54,320
satellites

137
00:05:59,990 --> 00:05:58,400
technological feat

138
00:06:02,550 --> 00:06:00,000

despite the fact that you might have

139
00:06:04,550 --> 00:06:02,560
heard that jason 3 is very much like its

140
00:06:06,950 --> 00:06:04,560
predecessor jason ii

141
00:06:08,550 --> 00:06:06,960
this is a good thing in fact because

142
00:06:11,029 --> 00:06:08,560
what we're trying to do as laurie

143
00:06:14,150 --> 00:06:11,039
alluded to is build a record of the

144
00:06:18,230 --> 00:06:14,160
climate so we would really like our

145
00:06:20,629 --> 00:06:18,240
missions to have continuity and to be

146
00:06:22,710 --> 00:06:20,639
very similar from one to the next

147
00:06:24,790 --> 00:06:22,720
and jason iii much like its predecessor

148
00:06:26,230 --> 00:06:24,800
jason ii will be able to measure the

149
00:06:29,909 --> 00:06:26,240
height of the ocean

150
00:06:31,990 --> 00:06:29,919
in an area that's about six miles across

151
00:06:34,469 --> 00:06:32,000
from 800 miles up

152
00:06:35,749 --> 00:06:34,479
with an accuracy of about one inch so

153
00:06:38,309 --> 00:06:35,759
about the

154
00:06:40,309 --> 00:06:38,319
width of a quarter so uh it's really

155
00:06:43,350 --> 00:06:40,319
quite an amazing feat and

156
00:06:44,469 --> 00:06:43,360
if you average the data from

157
00:06:46,870 --> 00:06:44,479
one of these

158
00:06:49,189 --> 00:06:46,880
cycles of the jason-3 or jason ii

159
00:06:51,589 --> 00:06:49,199
missions you can actually get an

160
00:06:53,189 --> 00:06:51,599
accuracy for the levels of the ocean as

161
00:06:55,589 --> 00:06:53,199
a whole

162
00:06:57,029 --> 00:06:55,599
to within better than half a centimeter

163
00:06:58,950 --> 00:06:57,039

so really small

164
00:07:01,990 --> 00:06:58,960
so we can really see

165
00:07:03,749 --> 00:07:02,000
the rise of the global oceans and also

166
00:07:05,589 --> 00:07:03,759
as laurie mentioned this is one of the

167
00:07:07,830 --> 00:07:05,599
most important

168
00:07:09,909 --> 00:07:07,840
yardsticks we have for human-caused

169
00:07:11,830 --> 00:07:09,919
climate change with all the extra heat

170
00:07:14,550 --> 00:07:11,840
that's being absorbed by the ocean the

171
00:07:16,550 --> 00:07:14,560
waters are expanding and of course

172
00:07:18,309 --> 00:07:16,560
they're collecting the extra

173
00:07:20,150 --> 00:07:18,319
runoff from melting glaciers and ice

174
00:07:23,029 --> 00:07:20,160
sheets which are also

175
00:07:25,830 --> 00:07:23,039
reacting to the warming climate so these

176
00:07:29,350 --> 00:07:25,840
two things together cause global sea

177
00:07:32,710 --> 00:07:29,360
levels to rise and in fact that global

178
00:07:34,790 --> 00:07:32,720
rise is really our most powerful tool

179
00:07:37,110 --> 00:07:34,800
for measuring human-caused climate

180
00:07:39,350 --> 00:07:37,120
change but these missions were not

181
00:07:41,029 --> 00:07:39,360
really designed originally to measure

182
00:07:43,430 --> 00:07:41,039
climate change although that's now one

183
00:07:45,670 --> 00:07:43,440
of their primary functions originally

184
00:07:48,469 --> 00:07:45,680
they were designed to measure currents

185
00:07:50,869 --> 00:07:48,479
that incredibly high accuracy of

186
00:07:53,270 --> 00:07:50,879
measurements of the height of the ocean

187
00:07:55,430 --> 00:07:53,280
tells you about where the currents are

188
00:07:57,110 --> 00:07:55,440

and how fast they're going

189
00:08:00,309 --> 00:07:57,120
whenever there's a large current in the

190
00:08:01,670 --> 00:08:00,319
ocean it literally tilts the sea surface

191
00:08:03,110 --> 00:08:01,680
and the satellites were designed to

192
00:08:03,990 --> 00:08:03,120
measure that tilt

193
00:08:04,950 --> 00:08:04,000
now

194
00:08:07,589 --> 00:08:04,960
the

195
00:08:10,390 --> 00:08:07,599
higher sea level is also often a result

196
00:08:13,670 --> 00:08:10,400
of warmer water warmer water literally

197
00:08:15,589 --> 00:08:13,680
stands higher than colder water and this

198
00:08:17,909 --> 00:08:15,599
is a large part of the signal that we

199
00:08:20,309 --> 00:08:17,919
expect jason to measure

200
00:08:22,550 --> 00:08:20,319
and in fact this is incredibly important

201
00:08:25,430 --> 00:08:22,560
for things like el nino

202
00:08:28,790 --> 00:08:25,440
i have a short video of a loop

203
00:08:31,110 --> 00:08:28,800
showing the el nino of this year

204
00:08:33,750 --> 00:08:31,120
compared with the last really large el

205
00:08:36,550 --> 00:08:33,760
nino event in 1997.

206
00:08:38,870 --> 00:08:36,560
and if you watch the 1997 one play out

207
00:08:41,750 --> 00:08:38,880
on the left hand side the reds and

208
00:08:44,149 --> 00:08:41,760
whites designate high sea levels

209
00:08:46,070 --> 00:08:44,159
and in the eastern pacific near the

210
00:08:47,190 --> 00:08:46,080
coast of south america you have high sea

211
00:08:49,509 --> 00:08:47,200
levels

212
00:08:50,870 --> 00:08:49,519
that are almost a foot higher than

213
00:08:53,190 --> 00:08:50,880

normal

214
00:08:55,670 --> 00:08:53,200
this year we see a very similar

215
00:08:59,030 --> 00:08:55,680
evolution of this el nino and that's

216
00:08:59,910 --> 00:08:59,040
important because the 1997 event

217
00:09:02,550 --> 00:08:59,920
brought

218
00:09:04,710 --> 00:09:02,560
about twice the average rainfall for

219
00:09:07,829 --> 00:09:04,720
california and twice the average

220
00:09:09,829 --> 00:09:07,839
snowpack for california as a normal year

221
00:09:11,670 --> 00:09:09,839
so uh

222
00:09:13,829 --> 00:09:11,680
the jason missions are an incredibly

223
00:09:16,630 --> 00:09:13,839
powerful tool not just for measuring

224
00:09:18,550 --> 00:09:16,640
global climate change but also for

225
00:09:22,389 --> 00:09:18,560
watching the evolution of these things

226
00:09:23,190 --> 00:09:22,399
like uh the so-called godzilla el nino

227
00:09:25,430 --> 00:09:23,200
and

228
00:09:28,389 --> 00:09:25,440
without them we would really be turning

229
00:09:29,750 --> 00:09:28,399
a blind eye toward our oceans and our

230
00:09:31,990 --> 00:09:29,760
climate

231
00:09:34,550 --> 00:09:32,000
thanks thank you josh

232
00:09:36,870 --> 00:09:34,560
now to mark cohen the associate director

233
00:09:38,790 --> 00:09:36,880
and chief of low earth orbit programs

234
00:09:41,110 --> 00:09:38,800
for you met sat mark

235
00:09:42,949 --> 00:09:41,120
thank you george

236
00:09:45,670 --> 00:09:42,959
good afternoon

237
00:09:48,790 --> 00:09:45,680
i'm very very glad to be here and

238
00:09:51,829 --> 00:09:48,800

just coming to the to the launch

239
00:09:54,389 --> 00:09:51,839
which of this adventure which uh

240
00:09:55,269 --> 00:09:54,399
uh involved all partners across the

241
00:09:57,030 --> 00:09:55,279
world

242
00:09:59,670 --> 00:09:57,040
uh noah nasa

243
00:10:01,190 --> 00:09:59,680
kness you met sat and also all the

244
00:10:02,949 --> 00:10:01,200
industry

245
00:10:05,350 --> 00:10:02,959
as you know you might start as the

246
00:10:07,990 --> 00:10:05,360
objective to with its partners to

247
00:10:10,389 --> 00:10:08,000
deliver integrity detail in particular

248
00:10:13,430 --> 00:10:10,399
to the marine community

249
00:10:16,630 --> 00:10:13,440
and operational oceanography like

250
00:10:18,389 --> 00:10:16,640
the operational meteorology is about

251
00:10:21,030 --> 00:10:18,399
delivering relevant

252
00:10:24,310 --> 00:10:21,040
and reliable information services to

253
00:10:26,550 --> 00:10:24,320
both citizens and decision makers

254
00:10:28,630 --> 00:10:26,560
so today we are already in new mexico

255
00:10:30,949 --> 00:10:28,640
together with our partners we are

256
00:10:33,910 --> 00:10:30,959
contributing to the development of

257
00:10:36,389 --> 00:10:33,920
operational oceanography through several

258
00:10:39,430 --> 00:10:36,399
missions uh json ii

259
00:10:40,150 --> 00:10:39,440
also our mandatory programs like metop

260
00:10:42,389 --> 00:10:40,160
and

261
00:10:43,829 --> 00:10:42,399
meteosat which we also do in the

262
00:10:47,030 --> 00:10:43,839
collaboration with

263
00:10:48,310 --> 00:10:47,040

with with the us and also from other

264
00:10:50,389 --> 00:10:48,320
missions from

265
00:10:52,949 --> 00:10:50,399
from the international partners

266
00:10:54,150 --> 00:10:52,959
products are extracted in our facilities

267
00:10:56,710 --> 00:10:54,160
but also

268
00:10:58,949 --> 00:10:56,720
a bit everywhere in in europe

269
00:11:02,550 --> 00:10:58,959
and they are distributed via a system

270
00:11:05,990 --> 00:11:02,560
called umadcast and also are available

271
00:11:09,190 --> 00:11:06,000
through an earth observation portal

272
00:11:11,430 --> 00:11:09,200
in the future json3 will be

273
00:11:12,829 --> 00:11:11,440
the reference for across calibration

274
00:11:16,150 --> 00:11:12,839
with other

275
00:11:18,870 --> 00:11:16,160
oceans ultimate 3 mission and in

276
00:11:21,350 --> 00:11:18,880
particular the json 2 but also the the

277
00:11:23,190 --> 00:11:21,360
sentinel-3 which will come up

278
00:11:25,269 --> 00:11:23,200
soon

279
00:11:28,550 --> 00:11:25,279
in in 2016.

280
00:11:29,350 --> 00:11:28,560
um um will provide this

281
00:11:31,110 --> 00:11:29,360
this

282
00:11:33,269 --> 00:11:31,120
product with its partners which can be

283
00:11:35,269 --> 00:11:33,279
ingested in the ocean models

284
00:11:37,430 --> 00:11:35,279
and we we will

285
00:11:38,470 --> 00:11:37,440
in our strategy we plan to enhance this

286
00:11:41,190 --> 00:11:38,480
service

287
00:11:43,030 --> 00:11:41,200
towards the the years 17 with further

288
00:11:45,350 --> 00:11:43,040

sentinel-3

289
00:11:48,150 --> 00:11:45,360
satellites and later on with the

290
00:11:49,910 --> 00:11:48,160
follow-on of json-3 which is the json cs

291
00:11:52,790 --> 00:11:49,920
and l6

292
00:11:55,590 --> 00:11:52,800
so um the the um

293
00:11:58,629 --> 00:11:55,600
you met that is very excited in

294
00:12:00,389 --> 00:11:58,639
having this satellite launched

295
00:12:03,350 --> 00:12:00,399
because it's part of a long-term

296
00:12:05,430 --> 00:12:03,360
strategy of having these precise ocean

297
00:12:07,910 --> 00:12:05,440
ultimate tree missions over a long

298
00:12:10,870 --> 00:12:07,920
period of time and json3 is a very

299
00:12:13,350 --> 00:12:10,880
important element to complement the

300
00:12:16,230 --> 00:12:13,360
json-2 and to prepare for the future

301
00:12:18,310 --> 00:12:16,240
thank you george thank you mark

302
00:12:20,310 --> 00:12:18,320
now for comments from sophie kooten faye

303
00:12:23,350 --> 00:12:20,320
the chief of the altimetry and precise

304
00:12:24,790 --> 00:12:23,360
positioning office for canes sophie

305
00:12:25,670 --> 00:12:24,800
thank you george

306
00:12:28,389 --> 00:12:25,680
so

307
00:12:30,870 --> 00:12:28,399
in this adventure agnes

308
00:12:33,750 --> 00:12:30,880
has taken the role of

309
00:12:36,310 --> 00:12:33,760
coordinating the the system with a

310
00:12:39,030 --> 00:12:36,320
partner and developing the satellite

311
00:12:40,790 --> 00:12:39,040
with telesalinia space the french

312
00:12:44,389 --> 00:12:40,800
industry

313
00:12:45,509 --> 00:12:44,399

which was our prime contractor

314
00:12:47,190 --> 00:12:45,519
so

315
00:12:49,910 --> 00:12:47,200
this is a long

316
00:12:53,190 --> 00:12:49,920
product line because we also developed

317
00:12:54,069 --> 00:12:53,200
jason one and json2

318
00:12:56,629 --> 00:12:54,079
now

319
00:12:58,389 --> 00:12:56,639
we are going to to

320
00:13:00,710 --> 00:12:58,399
they handle the operation of the

321
00:13:02,310 --> 00:13:00,720
satellites when it will be separated

322
00:13:07,590 --> 00:13:02,320
from the launcher

323
00:13:09,750 --> 00:13:07,600
so a few days after this separation

324
00:13:12,710 --> 00:13:09,760
the satellite will be ready for

325
00:13:14,710 --> 00:13:12,720
operation but it has to

326
00:13:17,190 --> 00:13:14,720
reach the orbit

327
00:13:19,269 --> 00:13:17,200
of json 2 it will take

328
00:13:20,389 --> 00:13:19,279
17 days

329
00:13:22,069 --> 00:13:20,399
then we will

330
00:13:24,949 --> 00:13:22,079
fly

331
00:13:27,990 --> 00:13:24,959
between one minute and 10 minutes behind

332
00:13:29,750 --> 00:13:28,000
the json-2 satellite depending on the

333
00:13:32,629 --> 00:13:29,760
dispersion at

334
00:13:35,670 --> 00:13:32,639
the injection of the satellite

335
00:13:39,110 --> 00:13:35,680
and then we will uh intercalibrate the

336
00:13:41,750 --> 00:13:39,120
data between json2 and json3

337
00:13:44,069 --> 00:13:41,760
as josh said it's very important because

338
00:13:46,710 --> 00:13:44,079

it's an high accuracy mission it's very

339
00:13:49,910 --> 00:13:46,720
important to intercalibrate

340
00:13:52,389 --> 00:13:49,920
all the instrument and and the product

341
00:13:55,509 --> 00:13:52,399
and then six months later we will move

342
00:13:58,389 --> 00:13:55,519
the json-2 satellite in on an interleave

343
00:13:59,910 --> 00:13:58,399
orbit so that we have a better coverage

344
00:14:02,389 --> 00:13:59,920
of the ocean

345
00:14:03,430 --> 00:14:02,399
i think that's it for me thank you

346
00:14:05,670 --> 00:14:03,440
sophie

347
00:14:08,150 --> 00:14:05,680
we'll take questions now and we'll begin

348
00:14:10,550 --> 00:14:08,160
here with the questions here

349
00:14:12,629 --> 00:14:10,560
in the in the audience and then we'll

350
00:14:15,030 --> 00:14:12,639
take questions on the phone and then we

351
00:14:17,030 --> 00:14:15,040
also have a way to take questions for

352
00:14:18,790 --> 00:14:17,040
our social media friends

353
00:14:21,910 --> 00:14:18,800
if they go to

354
00:14:24,310 --> 00:14:21,920
ask nasa they'll be able to send us

355
00:14:25,509 --> 00:14:24,320
questions as well which our panelists

356
00:14:27,350 --> 00:14:25,519
will answer

357
00:14:28,790 --> 00:14:27,360
so we'll start please wait for the

358
00:14:30,870 --> 00:14:28,800
microphone to come to you and give your

359
00:14:33,110 --> 00:14:30,880
name and affiliation if you would and

360
00:14:35,590 --> 00:14:33,120
we'll start right here in the front

361
00:14:37,590 --> 00:14:35,600
hi stephen clark from space flight now a

362
00:14:39,430 --> 00:14:37,600
couple of questions one maybe for lori

363
00:14:41,509 --> 00:14:39,440

or mark

364
00:14:44,870 --> 00:14:41,519
can you give some examples of how

365
00:14:46,310 --> 00:14:44,880
uh ocean ocean ocean data from the json

366
00:14:49,110 --> 00:14:46,320
series of satellites is used

367
00:14:51,590 --> 00:14:49,120
operationally what sort of applications

368
00:14:53,750 --> 00:14:51,600
are there you know forecasting and are

369
00:14:55,910 --> 00:14:53,760
there also commercial applications for

370
00:14:57,189 --> 00:14:55,920
maritime shipping and things like that

371
00:14:58,870 --> 00:14:57,199
and um

372
00:15:00,710 --> 00:14:58,880
also just a

373
00:15:03,590 --> 00:15:00,720
question on when you plan to launch the

374
00:15:05,350 --> 00:15:03,600
first js jason cs satellite as a

375
00:15:06,710 --> 00:15:05,360
follow-up thanks

376
00:15:07,590 --> 00:15:06,720
did you take the

377
00:15:09,670 --> 00:15:07,600
question

378
00:15:11,990 --> 00:15:09,680
yeah i'll i'll talk briefly and then

379
00:15:14,470 --> 00:15:12,000
pass it to mark

380
00:15:17,030 --> 00:15:14,480
i think one of the

381
00:15:19,670 --> 00:15:17,040
simplest and clearest examples of the

382
00:15:21,590 --> 00:15:19,680
application of the json data

383
00:15:22,790 --> 00:15:21,600
to marine

384
00:15:25,829 --> 00:15:22,800
operations

385
00:15:27,430 --> 00:15:25,839
is in terms of being able to detect

386
00:15:28,389 --> 00:15:27,440
significant wave heights high wave

387
00:15:31,269 --> 00:15:28,399
heights

388
00:15:32,949 --> 00:15:31,279

this is a sort of a bonus measurement

389
00:15:35,350 --> 00:15:32,959
it's not the sea level measurement but

390
00:15:37,189 --> 00:15:35,360
it's another measurement that the radar

391
00:15:40,710 --> 00:15:37,199
system is able to make

392
00:15:43,189 --> 00:15:40,720
and noaa uses this information by

393
00:15:46,069 --> 00:15:43,199
supplementing what the models produce in

394
00:15:48,629 --> 00:15:46,079
terms of the wave fields the forecasters

395
00:15:51,030 --> 00:15:48,639
actually overlay the satellite data on

396
00:15:53,110 --> 00:15:51,040
top of the model fields and are able to

397
00:15:54,870 --> 00:15:53,120
verify in real time

398
00:15:56,150 --> 00:15:54,880
what the models are showing

399
00:15:58,470 --> 00:15:56,160
and so

400
00:16:01,030 --> 00:15:58,480
this is a critically important part of

401
00:16:02,470 --> 00:16:01,040
the national weather services

402
00:16:05,829 --> 00:16:02,480
service to

403
00:16:07,829 --> 00:16:05,839
mariners and also to coastal areas that

404
00:16:08,949 --> 00:16:07,839
need to know what what conditions are

405
00:16:12,470 --> 00:16:08,959
about to

406
00:16:15,030 --> 00:16:12,480
become hazardous in terms of of

407
00:16:18,150 --> 00:16:15,040
marine operations

408
00:16:20,710 --> 00:16:18,160
the applications to

409
00:16:22,629 --> 00:16:20,720
that josh was referring to in terms of

410
00:16:25,749 --> 00:16:22,639
monitoring currents

411
00:16:27,030 --> 00:16:25,759
is another area which is

412
00:16:29,189 --> 00:16:27,040
widely used

413
00:16:31,350 --> 00:16:29,199

perhaps not as widely

414
00:16:33,430 --> 00:16:31,360
recognized

415
00:16:36,230 --> 00:16:33,440
we are able to essentially determine the

416
00:16:38,389 --> 00:16:36,240
currents much like meteorologists are

417
00:16:40,550 --> 00:16:38,399
able to determine the wind patterns in

418
00:16:42,470 --> 00:16:40,560
the atmosphere the altimeter data

419
00:16:43,749 --> 00:16:42,480
provides us with the same sort of

420
00:16:46,150 --> 00:16:43,759
information

421
00:16:49,350 --> 00:16:46,160
so we put the data into the numerical

422
00:16:52,470 --> 00:16:49,360
models and outcomes essentially a

423
00:16:54,710 --> 00:16:52,480
gridded field of currents that can be

424
00:16:56,389 --> 00:16:54,720
used then for

425
00:16:58,870 --> 00:16:56,399
understanding

426
00:17:00,470 --> 00:16:58,880
for example

427
00:17:07,590 --> 00:17:00,480
the

428
00:17:10,390 --> 00:17:07,600
going to exceed a certain threshold

429
00:17:11,829 --> 00:17:10,400
value because then it poses a hazard to

430
00:17:13,829 --> 00:17:11,839
their operation

431
00:17:16,870 --> 00:17:13,839
and that information can come out of the

432
00:17:19,110 --> 00:17:16,880
models being fed by the altimeter data

433
00:17:21,669 --> 00:17:19,120
so we can give them essentially

434
00:17:23,350 --> 00:17:21,679
hour-by-hour updates that tell them when

435
00:17:26,549 --> 00:17:23,360
it's dangerous to operate and when it

436
00:17:28,870 --> 00:17:26,559
isn't so those are two examples of what

437
00:17:30,870 --> 00:17:28,880
i would call near real-time or real-time

438
00:17:33,430 --> 00:17:30,880

operations and then there are a lot of

439
00:17:35,669 --> 00:17:33,440
others but i i think

440
00:17:37,669 --> 00:17:35,679
mark should take it from there

441
00:17:41,190 --> 00:17:37,679
yes i maybe i can

442
00:17:43,669 --> 00:17:41,200
i can compliment on the json cs

443
00:17:46,630 --> 00:17:43,679
question so we are going to launch now

444
00:17:49,710 --> 00:17:46,640
the json3 which has a design lifetime of

445
00:17:51,270 --> 00:17:49,720
five years which leads us to uh

446
00:17:54,470 --> 00:17:51,280
2021.

447
00:17:56,150 --> 00:17:54,480
the current plan is to launch in 2020

448
00:17:58,789 --> 00:17:56,160
the sentinel 6

449
00:18:01,350 --> 00:17:58,799
json cs which is a copernicus

450
00:18:02,950 --> 00:18:01,360
mission at that point in time and to

451
00:18:05,430 --> 00:18:02,960
have an overlap of

452
00:18:07,430 --> 00:18:05,440
nine months to one year with the json-3

453
00:18:10,710 --> 00:18:07,440
in order to do intel calibration because

454
00:18:13,190 --> 00:18:10,720
it's a new new satellite so we need more

455
00:18:15,750 --> 00:18:13,200
more time to do inter calibration and

456
00:18:18,950 --> 00:18:15,760
then to take it from there and again

457
00:18:21,510 --> 00:18:18,960
the operations of json3 and of

458
00:18:23,990 --> 00:18:21,520
sentinel-6 are under in europe are under

459
00:18:26,549 --> 00:18:24,000
the copernicus program which is financed

460
00:18:28,789 --> 00:18:26,559
and funded by the european commission

461
00:18:33,190 --> 00:18:28,799
thank you

462
00:18:39,430 --> 00:18:35,830
hiya phillips loss nasa spaceflight.com

463
00:18:41,590 --> 00:18:39,440

um i think this is for sophie um

464
00:18:42,470 --> 00:18:41,600
post uh separation from the the launch

465
00:18:44,950 --> 00:18:42,480
vehicle

466
00:18:47,110 --> 00:18:44,960
uh you talked about it two days uh

467
00:18:49,510 --> 00:18:47,120
you'll be ready for operations after

468
00:18:53,990 --> 00:18:49,520
separation and you have 17 days to get

469
00:18:56,549 --> 00:18:55,029
in what

470
00:18:58,230 --> 00:18:56,559
sequence are you going to be doing the

471
00:19:00,070 --> 00:18:58,240
the deployments

472
00:19:01,350 --> 00:19:00,080
um is that going to be in that initial

473
00:19:03,190 --> 00:19:01,360
two-day period where you're going to be

474
00:19:04,070 --> 00:19:03,200
deploying the solar arrays

475
00:19:06,310 --> 00:19:04,080
and then

476
00:19:08,390 --> 00:19:06,320
as you move towards the target orbit are

477
00:19:11,430 --> 00:19:08,400
you going to be doing any

478
00:19:13,350 --> 00:19:11,440
taking any test uh data doing any uh

479
00:19:15,190 --> 00:19:13,360
altimetry just to test that the

480
00:19:19,270 --> 00:19:15,200
instruments are working

481
00:19:23,190 --> 00:19:19,280
yes in fact we we switch on the the

482
00:19:25,590 --> 00:19:23,200
full payload during the three first days

483
00:19:27,110 --> 00:19:25,600
and then we start to

484
00:19:29,350 --> 00:19:27,120
to measure

485
00:19:30,390 --> 00:19:29,360
the the distance between the satellites

486
00:19:31,350 --> 00:19:30,400
and the

487
00:19:34,150 --> 00:19:31,360
water

488
00:19:37,990 --> 00:19:34,160

but it's not on a regular

489
00:19:40,789 --> 00:19:38,000
track so it's not useful for scientists

490
00:19:46,470 --> 00:19:40,799
but it's useful for us to calibrate the

491
00:19:52,630 --> 00:19:48,630
hi good afternoon matt kamlet cbs los

492
00:19:54,230 --> 00:19:52,640
angeles um for mr miller one of the more

493
00:19:55,350 --> 00:19:54,240
visible phenomenons we've been seeing

494
00:19:57,350 --> 00:19:55,360
especially along the coastline in

495
00:19:59,750 --> 00:19:57,360
southern california has been the

496
00:20:03,190 --> 00:19:59,760
unprecedented number of sea lion pups

497
00:20:05,669 --> 00:20:03,200
washing on shore um the implication and

498
00:20:06,470 --> 00:20:05,679
all the fingers pointed mostly at uh

499
00:20:08,310 --> 00:20:06,480
the

500
00:20:09,590 --> 00:20:08,320
change in temperature of

501
00:20:11,270 --> 00:20:09,600
the ocean

502
00:20:12,710 --> 00:20:11,280
do you expect this

503
00:20:17,990 --> 00:20:12,720
mission to shed any light on this

504
00:20:23,510 --> 00:20:20,549
well i think it will shed light on how

505
00:20:24,549 --> 00:20:23,520
this particular el nino event will decay

506
00:20:27,270 --> 00:20:24,559
we're near

507
00:20:28,230 --> 00:20:27,280
or probably close to the maximum and

508
00:20:31,590 --> 00:20:28,240
we're

509
00:20:33,990 --> 00:20:31,600
anticipating based on noaa's forecasts

510
00:20:35,270 --> 00:20:34,000
that it will decay slowly over the

511
00:20:36,310 --> 00:20:35,280
coming months

512
00:20:37,990 --> 00:20:36,320
so

513
00:20:40,789 --> 00:20:38,000

in that sense i think that there's going

514
00:20:43,350 --> 00:20:40,799
to be a slow abatement or decline

515
00:20:45,990 --> 00:20:43,360
in the kinds of of

516
00:20:48,230 --> 00:20:46,000
phenomenon that you're talking about but

517
00:20:50,870 --> 00:20:48,240
but there's another problem that's a

518
00:20:52,390 --> 00:20:50,880
more general problem and that is relates

519
00:20:53,590 --> 00:20:52,400
to the fact that we're heating up the

520
00:20:56,070 --> 00:20:53,600
oceans

521
00:20:58,470 --> 00:20:56,080
and this is actually causing

522
00:20:59,590 --> 00:20:58,480
real dislocations in a lot of the

523
00:21:01,510 --> 00:20:59,600
fisheries

524
00:21:03,510 --> 00:21:01,520
so for example

525
00:21:05,990 --> 00:21:03,520
fish schools that used to be

526
00:21:07,430 --> 00:21:06,000
in one location are now moving northward

527
00:21:10,230 --> 00:21:07,440
because they can't

528
00:21:12,950 --> 00:21:10,240
stand the higher temperature water

529
00:21:15,110 --> 00:21:12,960
and and this is causing a ripple effect

530
00:21:17,110 --> 00:21:15,120
in ecosystems so

531
00:21:19,750 --> 00:21:17,120
the sea lion pups that you're talking

532
00:21:20,710 --> 00:21:19,760
about are partly suffering because of

533
00:21:23,110 --> 00:21:20,720
this

534
00:21:26,149 --> 00:21:23,120
but they're just one manifestation in

535
00:21:28,870 --> 00:21:26,159
fact there's just a gigantic amount of

536
00:21:31,590 --> 00:21:28,880
dislocation going on in terms of the

537
00:21:33,510 --> 00:21:31,600
world fisheries and that's going to be a

538
00:21:35,190 --> 00:21:33,520

consequence that

539
00:21:37,110 --> 00:21:35,200
it's happening right now but it's going

540
00:21:39,590 --> 00:21:37,120
to get more severe in considering how

541
00:21:41,350 --> 00:21:39,600
much of the human population depends on

542
00:21:43,510 --> 00:21:41,360
protein from the ocean

543
00:21:45,029 --> 00:21:43,520
i can see this becoming a problem in the

544
00:21:47,590 --> 00:21:45,039
very near future

545
00:21:49,669 --> 00:21:47,600
if i if i could just add to that

546
00:21:51,750 --> 00:21:49,679
very quickly you really have three

547
00:21:53,830 --> 00:21:51,760
things going on in the oceans right now

548
00:21:55,510 --> 00:21:53,840
off the coast of california

549
00:21:57,510 --> 00:21:55,520
you have global warming which has been

550
00:21:59,909 --> 00:21:57,520
going on for about 18 years since the

551
00:22:02,230 --> 00:21:59,919
last really large el nino

552
00:22:05,350 --> 00:22:02,240
you have the el nino which is unfolding

553
00:22:07,510 --> 00:22:05,360
right now and the third potential one is

554
00:22:09,430 --> 00:22:07,520
a switch in what's called the pacific

555
00:22:10,950 --> 00:22:09,440
decadal oscillation

556
00:22:13,669 --> 00:22:10,960
you can kind of think of that as el

557
00:22:16,310 --> 00:22:13,679
nino's bigger slower moving brother

558
00:22:19,270 --> 00:22:16,320
it takes about 20 years or so to switch

559
00:22:22,310 --> 00:22:19,280
from a cold phase to a warm phase and

560
00:22:25,190 --> 00:22:22,320
for about the last 18 years or so we've

561
00:22:27,590 --> 00:22:25,200
been in a phase that has brought

562
00:22:30,870 --> 00:22:27,600
cooler than average waters

563
00:22:33,190 --> 00:22:30,880

to the eastern pacific off of our coast

564
00:22:34,950 --> 00:22:33,200
here in california and there's some

565
00:22:36,070 --> 00:22:34,960
evidence that this could also be

566
00:22:38,549 --> 00:22:36,080
switching

567
00:22:42,070 --> 00:22:38,559
in conjunction with this large el nino

568
00:22:43,750 --> 00:22:42,080
so um all signs point to uh really warm

569
00:22:44,950 --> 00:22:43,760
water off the coast of california right

570
00:22:46,470 --> 00:22:44,960
now and it could be that we're getting

571
00:22:49,990 --> 00:22:46,480
hit with all three of these things at

572
00:22:56,470 --> 00:22:51,830
any further questions here in the

573
00:23:00,230 --> 00:22:58,789
i was wondering if stephen clark from

574
00:23:01,909 --> 00:23:00,240
space flight now again i was wondering

575
00:23:02,870 --> 00:23:01,919
if one of you

576
00:23:04,950 --> 00:23:02,880
can

577
00:23:07,190 --> 00:23:04,960
clarify what happens with the jason-2

578
00:23:10,070 --> 00:23:07,200
satellite after jason jason three's

579
00:23:11,110 --> 00:23:10,080
launch uh does jason two keep uh

580
00:23:13,350 --> 00:23:11,120
operating

581
00:23:15,669 --> 00:23:13,360
in tandem uh

582
00:23:21,029 --> 00:23:15,679
what's the plan for jason two basically

583
00:23:28,549 --> 00:23:25,590
um so today we the plan is to move as i

584
00:23:30,310 --> 00:23:28,559
said to move it to the interlift orbit

585
00:23:31,430 --> 00:23:30,320
after six months

586
00:23:32,630 --> 00:23:31,440
then

587
00:23:35,909 --> 00:23:32,640
we have

588
00:23:38,390 --> 00:23:35,919

an approved program for two more years

589
00:23:39,830 --> 00:23:38,400
of operations

590
00:23:42,470 --> 00:23:39,840
and then

591
00:23:44,310 --> 00:23:42,480
probably as we did for jason one we will

592
00:23:46,390 --> 00:23:44,320
decide to

593
00:23:49,669 --> 00:23:46,400
decrease the orbit

594
00:23:52,310 --> 00:23:49,679
for the end of life because we won't let

595
00:23:54,470 --> 00:23:52,320
him die on the orbit which is the

596
00:23:58,070 --> 00:23:54,480
working orbit for the

597
00:23:59,990 --> 00:23:58,080
for the following satellites

598
00:24:01,190 --> 00:24:00,000
if i could just add something to that as

599
00:24:04,070 --> 00:24:01,200
well

600
00:24:06,789 --> 00:24:04,080
in the case of jason one there was also

601
00:24:10,230 --> 00:24:06,799
a very strong scientific pull to

602
00:24:13,190 --> 00:24:10,240
continue to use the jason-1 mission

603
00:24:15,430 --> 00:24:13,200
after moving it out of the primary orbit

604
00:24:17,110 --> 00:24:15,440
it served as the interleaved satellite

605
00:24:19,269 --> 00:24:17,120
for a

606
00:24:22,470 --> 00:24:19,279
few years as well

607
00:24:24,230 --> 00:24:22,480
as jason ii will will

608
00:24:26,390 --> 00:24:24,240
in the next few years

609
00:24:29,269 --> 00:24:26,400
and after that it was moved to an orbit

610
00:24:32,470 --> 00:24:29,279
which had a very uh long repeat period

611
00:24:34,310 --> 00:24:32,480
and very closely spaced ground tracks

612
00:24:35,590 --> 00:24:34,320
and this is very useful for helping

613
00:24:37,830 --> 00:24:35,600

determine

614
00:24:41,269 --> 00:24:37,840
the marine gravity field

615
00:24:43,909 --> 00:24:41,279
and that helps us in turn figure out the

616
00:24:46,070 --> 00:24:43,919
shape of the sea floor so we've used

617
00:24:49,510 --> 00:24:46,080
data from the jason-1 end-of-life

618
00:24:51,190 --> 00:24:49,520
mission to help map out things like

619
00:24:52,950 --> 00:24:51,200
underwater mountains

620
00:24:56,390 --> 00:24:52,960
trenches and the general shape of the

621
00:24:58,390 --> 00:24:56,400
sea floor and we hope in its very last

622
00:25:00,789 --> 00:24:58,400
days that jason ii will be able to

623
00:25:03,269 --> 00:25:00,799
provide us with a similar

624
00:25:07,029 --> 00:25:03,279
improvement in the the marine gravity

625
00:25:11,510 --> 00:25:09,510
any further questions here

626
00:25:13,750 --> 00:25:11,520
at vandenberg

627
00:25:15,510 --> 00:25:13,760
you have a follow-up go right ahead

628
00:25:17,750 --> 00:25:15,520
uh for mark

629
00:25:19,669 --> 00:25:17,760
um can you comment briefly just on how

630
00:25:21,830 --> 00:25:19,679
this mission has become such an

631
00:25:24,149 --> 00:25:21,840
international effort there's so many

632
00:25:25,510 --> 00:25:24,159
uh international agencies involved on

633
00:25:26,710 --> 00:25:25,520
this can you just comment on that

634
00:25:27,510 --> 00:25:26,720
quickly

635
00:25:30,390 --> 00:25:27,520
yeah

636
00:25:32,950 --> 00:25:30,400
i i think it's a

637
00:25:34,230 --> 00:25:32,960
it's a transition from development

638
00:25:39,190 --> 00:25:34,240

programs

639
00:25:41,430 --> 00:25:39,200
at the beginning

640
00:25:43,990 --> 00:25:41,440
the development agencies started to do

641
00:25:45,269 --> 00:25:44,000
the work of developing

642
00:25:48,070 --> 00:25:45,279
systems

643
00:25:50,070 --> 00:25:48,080
then a demonstration was made that it

644
00:25:51,269 --> 00:25:50,080
could have an operational

645
00:25:52,149 --> 00:25:51,279
interest

646
00:25:54,149 --> 00:25:52,159
then

647
00:25:55,750 --> 00:25:54,159
for instance you might start

648
00:25:57,269 --> 00:25:55,760
stepped into

649
00:25:59,830 --> 00:25:57,279
jason ii

650
00:26:03,110 --> 00:25:59,840
and then increased again its role in

651
00:26:04,870 --> 00:26:03,120
json3 and this happened also

652
00:26:07,430 --> 00:26:04,880
on the other side of the atlantic and

653
00:26:09,990 --> 00:26:07,440
and this came in this way and then the

654
00:26:12,870 --> 00:26:10,000
sustainability of the of the program so

655
00:26:14,070 --> 00:26:12,880
the the long-term aspect meant in europe

656
00:26:17,750 --> 00:26:14,080
that

657
00:26:21,029 --> 00:26:17,760
this was necessary to include it in a in

658
00:26:23,830 --> 00:26:21,039
a wider frame which was the copernicus

659
00:26:27,669 --> 00:26:23,840
program and enhanced the

660
00:26:31,029 --> 00:26:28,470
actually

661
00:26:33,269 --> 00:26:31,039
if i could add one thing to that as well

662
00:26:35,190 --> 00:26:33,279
these missions of course were always

663
00:26:37,190 --> 00:26:35,200

international collaborations all the way

664
00:26:40,230 --> 00:26:37,200
back to topex poseidon which was a

665
00:26:42,549 --> 00:26:40,240
collaboration between nasa and canes so

666
00:26:44,789 --> 00:26:42,559
there's always been a strong spirit of

667
00:26:47,750 --> 00:26:44,799
international collaboration and in fact

668
00:26:50,710 --> 00:26:47,760
we have a science team that's uh

669
00:26:53,190 --> 00:26:50,720
two to four hundred people strong

670
00:26:55,750 --> 00:26:53,200
and uh they come from all over the world

671
00:26:57,830 --> 00:26:55,760
so um it's uh always had very strong

672
00:27:01,590 --> 00:26:57,840
international roots i would say

673
00:27:05,990 --> 00:27:04,149
if i could add just one thing further uh

674
00:27:07,990 --> 00:27:06,000
you would think that having a program

675
00:27:10,710 --> 00:27:08,000
that had four different agencies in it

676
00:27:13,110 --> 00:27:10,720
would be a prescription for disaster in

677
00:27:15,590 --> 00:27:13,120
fact it's been incredibly successful

678
00:27:18,789 --> 00:27:15,600
because we've worked together so well

679
00:27:21,110 --> 00:27:18,799
and interestingly for jason cs

680
00:27:22,789 --> 00:27:21,120
isa the european space agency is joining

681
00:27:24,470 --> 00:27:22,799
so we're actually going to have five

682
00:27:27,110 --> 00:27:24,480
agencies involved

683
00:27:29,909 --> 00:27:27,120
and and i look forward to that because i

684
00:27:33,669 --> 00:27:29,919
think that that's just going to be again

685
00:27:37,590 --> 00:27:35,350
we're going to take some social media

686
00:27:40,070 --> 00:27:37,600
questions now and social media if you do

687
00:27:42,710 --> 00:27:40,080
have questions you can use

688
00:27:44,630 --> 00:27:42,720

ask nasa to send your question

689
00:27:46,710 --> 00:27:44,640
and right now we're going to go to steve

690
00:27:50,149 --> 00:27:46,720
cole who's been monitoring the social

691
00:27:52,310 --> 00:27:50,159
media sites twitter and tell us i think

692
00:27:54,149 --> 00:27:52,320
he has two or three okay we have a few

693
00:27:56,630 --> 00:27:54,159
questions our first question is what

694
00:27:57,269 --> 00:27:56,640
improvements have been made from jason

695
00:28:04,070 --> 00:27:57,279
ii

696
00:28:08,950 --> 00:28:07,110
well i can say a few things about that

697
00:28:11,750 --> 00:28:08,960
well i think one of the things to

698
00:28:12,789 --> 00:28:11,760
remember about jason 3 is that

699
00:28:15,110 --> 00:28:12,799
it's

700
00:28:18,230 --> 00:28:15,120
almost identical to jason ii

701
00:28:19,510 --> 00:28:18,240
the improvements are really very small

702
00:28:21,190 --> 00:28:19,520
and

703
00:28:22,870 --> 00:28:21,200
there are a couple of things in the

704
00:28:24,389 --> 00:28:22,880
operation like

705
00:28:27,590 --> 00:28:24,399
we're going to be doing a calibration

706
00:28:30,630 --> 00:28:27,600
maneuver which will allow us to

707
00:28:32,630 --> 00:28:30,640
get a much better long-term record of

708
00:28:34,630 --> 00:28:32,640
global sea level rise with with a

709
00:28:36,549 --> 00:28:34,640
slightly better accuracy

710
00:28:39,430 --> 00:28:36,559
but as you know

711
00:28:42,230 --> 00:28:39,440
climate scientists and

712
00:28:43,830 --> 00:28:42,240
monitors of the climate we really like

713
00:28:45,029 --> 00:28:43,840

our missions to be as similar as

714
00:28:47,350 --> 00:28:45,039
possible

715
00:28:49,110 --> 00:28:47,360
because we want them to build a

716
00:28:51,669 --> 00:28:49,120
long-term

717
00:28:53,669 --> 00:28:51,679
concrete record that's unbroken and

718
00:28:55,350 --> 00:28:53,679
provide a you know we want our missions

719
00:28:58,870 --> 00:28:55,360
to tell us about changes in the ocean

720
00:29:00,630 --> 00:28:58,880
and not changes in technology so in fact

721
00:29:02,149 --> 00:29:00,640
although there are some very small

722
00:29:05,750 --> 00:29:02,159
improvements in modifications the

723
00:29:07,909 --> 00:29:05,760
satellites are almost identical

724
00:29:11,190 --> 00:29:07,919
okay our next question uh could json-3

725
00:29:13,830 --> 00:29:11,200
data be used to predict or detect rogue

726
00:29:17,909 --> 00:29:13,840
waves and help provide a quicker warning

727
00:29:21,350 --> 00:29:20,310
that's a sampling problem which these

728
00:29:24,389 --> 00:29:21,360
satellites

729
00:29:26,630 --> 00:29:24,399
are not terribly well adapted to

730
00:29:29,510 --> 00:29:26,640
because they don't sample frequently

731
00:29:32,070 --> 00:29:29,520
enough over the entire ocean to detect

732
00:29:33,669 --> 00:29:32,080
what could be a very highly specific

733
00:29:35,990 --> 00:29:33,679
wave however

734
00:29:39,830 --> 00:29:36,000
i i should actually mention that we've

735
00:29:41,669 --> 00:29:39,840
been able to detect tsunamis

736
00:29:44,389 --> 00:29:41,679
almost coincidentally

737
00:29:46,389 --> 00:29:44,399
but we've actually the the big indian

738
00:29:49,269 --> 00:29:46,399

tsunami was detected

739
00:29:51,110 --> 00:29:49,279
by our group in noaa and

740
00:29:53,990 --> 00:29:51,120
we were able to provide that information

741
00:29:56,389 --> 00:29:54,000
to modelers so there are situations

742
00:29:58,789 --> 00:29:56,399
where we can detect individual waves but

743
00:30:01,510 --> 00:29:58,799
i i wouldn't call it a primary focus of

744
00:30:05,909 --> 00:30:04,070
will json3 be part of the a train of

745
00:30:10,710 --> 00:30:05,919
earth observing satellites or does it

746
00:30:16,710 --> 00:30:14,070
well jason 3 has its own special orbit

747
00:30:19,590 --> 00:30:16,720
that was very carefully chosen in fact

748
00:30:21,029 --> 00:30:19,600
to help us better understand and predict

749
00:30:23,350 --> 00:30:21,039
the tides

750
00:30:25,909 --> 00:30:23,360
because one of the major reasons that

751
00:30:28,950 --> 00:30:25,919
the sea levels go up and down

752
00:30:29,990 --> 00:30:28,960
is the pull of the gravity from the sun

753
00:30:31,909 --> 00:30:30,000
and the moon

754
00:30:33,909 --> 00:30:31,919
this is very regular and very well

755
00:30:36,789 --> 00:30:33,919
predicted but it wasn't well measured

756
00:30:39,990 --> 00:30:36,799
everywhere everywhere before satellites

757
00:30:42,310 --> 00:30:40,000
like topex poseidon were able to help us

758
00:30:44,389 --> 00:30:42,320
better understand the tides so in fact

759
00:30:47,430 --> 00:30:44,399
our orbit comes from a

760
00:30:49,110 --> 00:30:47,440
historical choice that was started with

761
00:30:51,350 --> 00:30:49,120
topex poseidon

762
00:30:53,350 --> 00:30:51,360
and much like our desire to keep our

763
00:30:54,230 --> 00:30:53,360

satellites very similar from one to the

764
00:30:56,230 --> 00:30:54,240
next

765
00:30:58,070 --> 00:30:56,240
we also wanted our orbits to be very

766
00:30:59,669 --> 00:30:58,080
similar from one to the next to help

767
00:31:01,509 --> 00:30:59,679
ensure that we're really measuring

768
00:31:04,149 --> 00:31:01,519
changes in the climate over the long

769
00:31:07,269 --> 00:31:04,159
term and not changes in our satellites

770
00:31:11,590 --> 00:31:08,389
let me

771
00:31:13,990 --> 00:31:11,600
just add something to what josh said

772
00:31:16,789 --> 00:31:14,000
in terms of being able to to maintain

773
00:31:19,350 --> 00:31:16,799
continuity of the record we're actually

774
00:31:22,310 --> 00:31:19,360
flying the two satellites together

775
00:31:23,590 --> 00:31:22,320
the jason ii and jason iii satellites

776
00:31:26,470 --> 00:31:23,600
for about

777
00:31:30,070 --> 00:31:26,480
one minute apart for six months

778
00:31:32,549 --> 00:31:30,080
and and this is exactly to measure the

779
00:31:35,590 --> 00:31:32,559
exact same location in the ocean

780
00:31:38,630 --> 00:31:35,600
with with practically no time difference

781
00:31:40,549 --> 00:31:38,640
so if we chose a different orbit

782
00:31:41,990 --> 00:31:40,559
for each satellite we wouldn't be able

783
00:31:43,590 --> 00:31:42,000
to do that kind of lengthy

784
00:31:46,470 --> 00:31:43,600
intercomparison

785
00:31:48,470 --> 00:31:46,480
and and in a sense we'd be putting a new

786
00:31:51,590 --> 00:31:48,480
satellite up in

787
00:31:52,950 --> 00:31:51,600
in in a sense uh creating the potential

788
00:31:53,750 --> 00:31:52,960

for problems

789
00:31:56,630 --> 00:31:53,760
so

790
00:31:58,870 --> 00:31:56,640
the new or the orbit is a critical

791
00:32:01,669 --> 00:31:58,880
factor in in maintaining the continuity

792
00:32:03,590 --> 00:32:01,679
of the record

793
00:32:05,830 --> 00:32:03,600
all right we'll come back here we get

794
00:32:08,230 --> 00:32:05,840
any further questions in the audience

795
00:32:11,110 --> 00:32:10,310
all right and oh i'll have a follow-up

796
00:32:12,789 --> 00:32:11,120
good

797
00:32:14,710 --> 00:32:12,799
hi my name is

798
00:32:17,269 --> 00:32:14,720
my name is willis jacobson i'm with the

799
00:32:19,350 --> 00:32:17,279
lombok record in santa maria times uh

800
00:32:21,750 --> 00:32:19,360
can or will you guys

801
00:32:23,350 --> 00:32:21,760
care to comment on the launch vehicle

802
00:32:24,710 --> 00:32:23,360
and

803
00:32:26,710 --> 00:32:24,720
any attempts to

804
00:32:29,269 --> 00:32:26,720
land this rocket and possibly change you

805
00:32:31,110 --> 00:32:29,279
know future launches

806
00:32:32,549 --> 00:32:31,120
that's actually going to be covered in

807
00:32:34,870 --> 00:32:32,559
our next briefing when we get to the

808
00:32:36,950 --> 00:32:34,880
pre-launch news conference those folks

809
00:32:39,509 --> 00:32:36,960
are on our second panel and can go into

810
00:32:41,430 --> 00:32:39,519
more detail about that with you

811
00:32:43,430 --> 00:32:41,440
i i will say though that we're excited

812
00:32:46,389 --> 00:32:43,440
to get a ride to space

813
00:32:48,870 --> 00:32:46,399

and we hope spacex breaks a leg

814
00:32:52,070 --> 00:32:48,880
but not literally a leg just in the

815
00:32:56,149 --> 00:32:53,430
all right that will conclude this

816
00:32:58,630 --> 00:32:56,159
briefing and our next briefing will

817
00:32:59,909 --> 00:32:58,640
start in about 10 minutes

818
00:33:02,230 --> 00:32:59,919
which will be the pre-launch news

819
00:33:05,590 --> 00:33:02,240
conference and we'll discuss the

820
00:33:09,190 --> 00:33:05,600
launch coming up the spacex falcon 9