
NASA
SANDRA CAUFFMAN
Deputy Director, NASA's Earth Science Division

1
00:00:37,200 --> 00:00:34,620
good afternoon and welcome to NASA's

2
00:00:38,580 --> 00:00:37,210
Kennedy Space Center in Florida I'm Sean

3
00:00:40,799 --> 00:00:38,590
Potter from NASA's office of

4
00:00:43,410 --> 00:00:40,809
communications and we're here today to

5
00:00:46,140 --> 00:00:43,420
talk to you as part of the goes our

6
00:00:48,299 --> 00:00:46,150
mission science briefing goes our is

7
00:00:50,310 --> 00:00:48,309
NOAA's next generation geostationary

8
00:00:53,130 --> 00:00:50,320
weather satellite and is scheduled to

9
00:00:54,840 --> 00:00:53,140
launch this Saturday once it becomes

10
00:00:57,170 --> 00:00:54,850
operational it will revolutionize

11
00:01:00,090 --> 00:00:57,180
weather forecasting for years to come

12
00:01:01,740 --> 00:01:00,100
now we've assembled a panel here of

13
00:01:04,560 --> 00:01:01,750

experts to talk to you about various

14
00:01:06,270 --> 00:01:04,570
aspects of the mission and I'm going to

15
00:01:08,850 --> 00:01:06,280
introduce them now directly to my left

16
00:01:11,160 --> 00:01:08,860
is Stephen Goodman goes our program

17
00:01:13,710 --> 00:01:11,170
scientist at NOAA the National Oceanic

18
00:01:16,830 --> 00:01:13,720
and Atmospheric Administration directly

19
00:01:18,510 --> 00:01:16,840
to his left is Joe pica he is the

20
00:01:21,899 --> 00:01:18,520
director of the National Weather Service

21
00:01:22,950 --> 00:01:21,909
office of observations next to Joe is

22
00:01:24,899 --> 00:01:22,960
Sandra Cauffman

23
00:01:27,929 --> 00:01:24,909
deputy director of NASA's earth science

24
00:01:30,149 --> 00:01:27,939
division and finally Damon Penn

25
00:01:32,340 --> 00:01:30,159
assistant administrator for response at

26
00:01:35,580 --> 00:01:32,350
the Federal Emergency Management Agency

27
00:01:38,160 --> 00:01:35,590
FEMA now thank you all for being here

28
00:01:40,109 --> 00:01:38,170
and before we take questions from the

29
00:01:41,669 --> 00:01:40,119
audience of each of our panelists have a

30
00:01:43,260 --> 00:01:41,679
few opening remarks that they'd like to

31
00:01:46,590 --> 00:01:43,270
make so we'll start with you Stephen

32
00:01:49,200 --> 00:01:46,600
thank you very much so I wanted you to

33
00:01:50,639 --> 00:01:49,210
know it's a big team that's put this all

34
00:01:53,130 --> 00:01:50,649
together we have over a hundred

35
00:01:55,289 --> 00:01:53,140
scientists across the country who've

36
00:01:58,440 --> 00:01:55,299
been working on the program for one or

37
00:02:00,749 --> 00:01:58,450
two decades now developing the science

38
00:02:03,120 --> 00:02:00,759

products and the algorithms of the

39
00:02:05,039 --> 00:02:03,130
recipes for how to turn the measurements

40
00:02:08,160 --> 00:02:05,049
from the satellite into useful products

41
00:02:10,020 --> 00:02:08,170
for warning and forecasting and you've

42
00:02:12,870 --> 00:02:10,030
heard earlier that those are will make a

43
00:02:14,970 --> 00:02:12,880
tremendous difference but I think we

44
00:02:19,050 --> 00:02:14,980
even underestimate what the capabilities

45
00:02:21,690 --> 00:02:19,060
will be we only have about 30 new

46
00:02:24,030 --> 00:02:21,700
products that we make with the satellite

47
00:02:27,030 --> 00:02:24,040
and we know there'll be hundreds more if

48
00:02:29,250 --> 00:02:27,040
we learn how to use the satellite the

49
00:02:30,809 --> 00:02:29,260
main purpose of these products is to

50
00:02:32,490 --> 00:02:30,819
provide continuity from today's

51
00:02:34,380 --> 00:02:32,500
satellites into the future

52
00:02:38,310 --> 00:02:34,390
but because of the advanced capabilities

53
00:02:40,200 --> 00:02:38,320
with five times as many spectral

54
00:02:41,850 --> 00:02:40,210
channels that lets us see different

55
00:02:44,670 --> 00:02:41,860
properties of the earth and Atmos

56
00:02:46,140 --> 00:02:44,680
here as well as the rapid refresh that

57
00:02:48,960 --> 00:02:46,150
we're able to do which is five times

58
00:02:52,320 --> 00:02:48,970
faster than the current satellite and

59
00:02:54,330 --> 00:02:52,330
then we have spatial resolution that's

60
00:02:56,400 --> 00:02:54,340
four times better and so we see features

61
00:02:59,850 --> 00:02:56,410
now with gozar that we've never been

62
00:03:02,100 --> 00:02:59,860
able to see before for example we can

63
00:03:04,380 --> 00:03:02,110

see waves and the clouds which are

64
00:03:05,760 --> 00:03:04,390
related to the turbulence that if you're

65
00:03:08,250 --> 00:03:05,770
flying on an airplane you might

66
00:03:11,220 --> 00:03:08,260
encounter and so we'll have our early

67
00:03:12,570 --> 00:03:11,230
indication of areas to avoid which we

68
00:03:15,210 --> 00:03:12,580
couldn't see before with our lower

69
00:03:16,890 --> 00:03:15,220
resolution it was all smeared out and I

70
00:03:18,870 --> 00:03:16,900
also put in a plug for a space weather

71
00:03:22,020 --> 00:03:18,880
our new capability to image the Sun will

72
00:03:25,500 --> 00:03:22,030
be four times that of our current sxi

73
00:03:27,870 --> 00:03:25,510
x-ray imager and because the forecasters

74
00:03:29,280 --> 00:03:27,880
when they try and diagnose the features

75
00:03:32,930 --> 00:03:29,290
on the Sun that are going to lead to

76
00:03:37,710 --> 00:03:32,940
navigation problems and geomagnetic

77
00:03:39,690 --> 00:03:37,720
effects and communication outages they

78
00:03:42,479 --> 00:03:39,700
take all the information they see and it

79
00:03:44,160 --> 00:03:42,489
takes a minute two minutes to assemble

80
00:03:45,720 --> 00:03:44,170
that information well now they have what

81
00:03:46,830 --> 00:03:45,730
they call the medic map they can put

82
00:03:49,289 --> 00:03:46,840
together where they take all the

83
00:03:51,420 --> 00:03:49,299
information and within seconds now they

84
00:03:53,729 --> 00:03:51,430
can see how things are evolving so we

85
00:03:56,009 --> 00:03:53,739
can do it for the earth-based high

86
00:03:59,160 --> 00:03:56,019
impact weather volcanic eruptions -

87
00:04:02,610 --> 00:03:59,170
typhoons and hurricanes and severe

88
00:04:05,100 --> 00:04:02,620

storms and right now we have a major

89
00:04:07,370 --> 00:04:05,110
fire outbreak in the southeast and we'll

90
00:04:09,479 --> 00:04:07,380
be able to see the aerosols and the

91
00:04:12,390 --> 00:04:09,489
characteristics of the smoke and dust

92
00:04:13,530 --> 00:04:12,400
and that fire as well as Matthew which

93
00:04:14,520 --> 00:04:13,540
someone mentioned earlier and I'll

94
00:04:16,800 --> 00:04:14,530
comment on that later

95
00:04:20,849 --> 00:04:16,810
thank you great Thank You Steven I will

96
00:04:22,770 --> 00:04:20,859
turn it over to Joe Thank You Shawn it's

97
00:04:25,200 --> 00:04:22,780
an honor to be here for this a momentous

98
00:04:28,170 --> 00:04:25,210
occasion it knows National Weather

99
00:04:30,390 --> 00:04:28,180
Service we're very excited about the

100
00:04:32,790 --> 00:04:30,400
launch of NOAA's goes goes our satellite

101
00:04:36,450 --> 00:04:32,800
and most importantly we're ready to use

102
00:04:38,190 --> 00:04:36,460
the information when it's available we

103
00:04:40,770 --> 00:04:38,200
specifically want to recognize the note

104
00:04:43,110 --> 00:04:40,780
Enola goes our program specifically Greg

105
00:04:44,969 --> 00:04:43,120
Mann the program manager and Steve my

106
00:04:47,430 --> 00:04:44,979
panelists still left for all their

107
00:04:50,100 --> 00:04:47,440
efforts over the past few years to

108
00:04:52,020 --> 00:04:50,110
ensure that there was collaboration and

109
00:04:53,670 --> 00:04:52,030
support for activities to make sure that

110
00:04:55,189 --> 00:04:53,680
we're ready to use all these

111
00:04:59,400 --> 00:04:55,199
revolutionary product

112
00:05:00,629 --> 00:04:59,410
so thank you Steve it's our mission at

113
00:05:02,879 --> 00:05:00,639

the National Weather Service to provide

114
00:05:04,980 --> 00:05:02,889
weather and water forecasts warning and

115
00:05:08,820 --> 00:05:04,990
watches for the protection of life and

116
00:05:11,250 --> 00:05:08,830
property to do our job we rely on a

117
00:05:14,640 --> 00:05:11,260
whole host of observations a whole

118
00:05:17,310 --> 00:05:14,650
portfolio a key one being geostationary

119
00:05:19,020 --> 00:05:17,320
satellites not only to monitor and

120
00:05:21,420 --> 00:05:19,030
provide information about evolving

121
00:05:23,580 --> 00:05:21,430
weather systems but also to feed into

122
00:05:25,650 --> 00:05:23,590
our weather models to help forecast

123
00:05:28,950 --> 00:05:25,660
weather for tomorrow this weekend next

124
00:05:30,440 --> 00:05:28,960
week we're excited about gozar because

125
00:05:33,379 --> 00:05:30,450
it's gonna help us to do our jobs better

126
00:05:36,600 --> 00:05:33,389
you've heard the terms game-changer

127
00:05:38,760 --> 00:05:36,610
revolutionary it really is it's going to

128
00:05:42,600 --> 00:05:38,770
be like looking at you know instead of

129
00:05:44,310 --> 00:05:42,610
black-and-white TV HD Noah's gozar will

130
00:05:46,320 --> 00:05:44,320
scan the sky is five times faster than

131
00:05:48,390 --> 00:05:46,330
the current go system with four times

132
00:05:50,610 --> 00:05:48,400
the spatial resolution and with three

133
00:05:52,620 --> 00:05:50,620
times the spectral bands this means

134
00:05:54,629 --> 00:05:52,630
we'll have better quality data at high

135
00:05:56,210 --> 00:05:54,639
resolution far more often than we do

136
00:05:58,950 --> 00:05:56,220
today

137
00:06:01,920 --> 00:05:58,960
forecasters will have far more detailed

138
00:06:03,840 --> 00:06:01,930

views of weather systems will be able to

139
00:06:06,629 --> 00:06:03,850
see rapidly developing events in real

140
00:06:09,810 --> 00:06:06,639
time and when we see an evolving weather

141
00:06:12,120 --> 00:06:09,820
system will be able to zoom in and do

142
00:06:13,830 --> 00:06:12,130
use that high spatial resolution to take

143
00:06:17,760 --> 00:06:13,840
pictures in sixteen different spectral

144
00:06:20,219 --> 00:06:17,770
channels every 30 seconds this spectral

145
00:06:22,740 --> 00:06:20,229
imagery combined with our Doppler radar

146
00:06:24,480 --> 00:06:22,750
data for example will improve our

147
00:06:27,540 --> 00:06:24,490
understanding whether a storm is growing

148
00:06:30,900 --> 00:06:27,550
or decaying it'll help us track severe

149
00:06:33,180 --> 00:06:30,910
storms including tornadoes forecasts

150
00:06:35,430 --> 00:06:33,190
wildfire movement tract plumes from

151
00:06:38,790 --> 00:06:35,440
volcanic eruptions and tell whether a

152
00:06:40,950 --> 00:06:38,800
hurricane is intensifying this past year

153
00:06:43,350 --> 00:06:40,960
we've seen a number of destructive heavy

154
00:06:46,110 --> 00:06:43,360
rainfall and flooding events with better

155
00:06:47,610 --> 00:06:46,120
quality data from gozar forecasters will

156
00:06:50,640 --> 00:06:47,620
be able to better see where those rain

157
00:06:52,320 --> 00:06:50,650
bands are actually impacting us giving

158
00:06:55,379 --> 00:06:52,330
them more confidence in predicting where

159
00:06:56,879 --> 00:06:55,389
that flash flooding will occur getting

160
00:06:59,100 --> 00:06:56,889
this out to the public in a more timely

161
00:07:02,260 --> 00:06:59,110
manner and even to our partners in FEMA

162
00:07:04,420 --> 00:07:02,270
so they can manage the response

163
00:07:06,700 --> 00:07:04,430

our aviation weather forecasting ability

164
00:07:08,439 --> 00:07:06,710
will also be improved more accurate and

165
00:07:11,650 --> 00:07:08,449
detailed information on the occurrence

166
00:07:13,930 --> 00:07:11,660
of fog and ice wind and lightning from

167
00:07:16,089 --> 00:07:13,940
gozar will help with aircraft flight

168
00:07:18,490 --> 00:07:16,099
routing making sure that all of our

169
00:07:20,439 --> 00:07:18,500
family members are especially traveling

170
00:07:22,450 --> 00:07:20,449
well during the holiday season that that

171
00:07:25,960 --> 00:07:22,460
comes up like we're doing today with our

172
00:07:27,219 --> 00:07:25,970
current goes Network so I mentioned the

173
00:07:29,080 --> 00:07:27,229
Lightning mapper we're very excited

174
00:07:31,180 --> 00:07:29,090
about this new capability in space

175
00:07:33,640 --> 00:07:31,190
because it helps forecasters they do

176
00:07:37,089 --> 00:07:33,650
identify storms that are the biggest

177
00:07:39,879 --> 00:07:37,099
threat basically lightning is correlated

178
00:07:41,529 --> 00:07:39,889
to some of the most severe weather so we

179
00:07:43,960 --> 00:07:41,539
can see where hazardous conditions such

180
00:07:48,040 --> 00:07:43,970
as damaging winds tornadoes large hail

181
00:07:50,860 --> 00:07:48,050
and flash flooding will occur gozar will

182
00:07:53,230 --> 00:07:50,870
also improve forecasts for space weather

183
00:07:55,809 --> 00:07:53,240
space weather instruments will monitor

184
00:07:57,879 --> 00:07:55,819
the Sun and the environment in space so

185
00:07:59,409 --> 00:07:57,889
we can provide watches and warnings they

186
00:08:01,420 --> 00:07:59,419
have to do with radio communication

187
00:08:05,290 --> 00:08:01,430
outages navigation and power grid

188
00:08:07,480 --> 00:08:05,300

impacts NOAA's gozar is a major step

189
00:08:09,909 --> 00:08:07,490
forward in our effort to build a

190
00:08:11,560 --> 00:08:09,919
weather-ready nation by advancing our

191
00:08:13,689 --> 00:08:11,570
observation capabilities to the next

192
00:08:16,420 --> 00:08:13,699
level we will be able to offer new and

193
00:08:19,180 --> 00:08:16,430
improved forecasts products and services

194
00:08:20,860 --> 00:08:19,190
to help save lives and property it's an

195
00:08:21,189 --> 00:08:20,870
honor to be here for this event thank

196
00:08:24,219 --> 00:08:21,199
you

197
00:08:27,010 --> 00:08:24,229
next

198
00:08:30,219 --> 00:08:27,020
thank you so much on the Mesa really

199
00:08:32,230 --> 00:08:30,229
truly pleasure to be here today part of

200
00:08:36,010 --> 00:08:32,240
my career has touched girls in many ways

201
00:08:37,510 --> 00:08:36,020
and in my in a past big non nation I was

202
00:08:41,260 --> 00:08:37,520
the deputy systems program director for

203
00:08:44,590 --> 00:08:41,270
Gosar so to see this mission finally

204
00:08:46,870 --> 00:08:44,600
launch is truly a treat for me

205
00:08:48,460 --> 00:08:46,880
so NOAA NASA has had a long

206
00:08:50,139 --> 00:08:48,470
collaboration developing and launching

207
00:08:52,449 --> 00:08:50,149
the geostationary meteorological

208
00:08:55,019 --> 00:08:52,459
satellites that dates back more than 40

209
00:08:58,600 --> 00:08:55,029
years as we have heard many times before

210
00:09:02,980 --> 00:08:58,610
with girls one that was launched on goes

211
00:09:05,079 --> 00:09:02,990
October 16th 1975 with this latest just

212
00:09:07,300 --> 00:09:05,089
a scenario satellite it is this is a

213
00:09:09,699 --> 00:09:07,310

quantum leap in science and technology

214
00:09:12,160 --> 00:09:09,709
and it will be truly revolutionized

215
00:09:15,380 --> 00:09:12,170
weather forecasting once operational

216
00:09:17,840 --> 00:09:15,390
goals are will become ghost 16

217
00:09:21,110 --> 00:09:17,850
no ghosts I will provide three times

218
00:09:23,300 --> 00:09:21,120
more spectral bands the current ghost

219
00:09:25,640 --> 00:09:23,310
has five the new ghost is gonna have

220
00:09:27,890 --> 00:09:25,650
sixteen bands it's gonna have four times

221
00:09:30,620 --> 00:09:27,900
better a spatial resolution and it will

222
00:09:32,660 --> 00:09:30,630
be five times faster which means more

223
00:09:34,580 --> 00:09:32,670
frequent and detailed information for

224
00:09:37,210 --> 00:09:34,590
forecasters to consider in support to

225
00:09:39,740 --> 00:09:37,220
the public in the aviation community

226
00:09:41,510 --> 00:09:39,750
that means the ghost art will be able to

227
00:09:43,460 --> 00:09:41,520
image everything and the hemisphere in

228
00:09:46,460 --> 00:09:43,470
the same length of time it takes the

229
00:09:50,380 --> 00:09:46,470
current go series to provide one small

230
00:09:53,270 --> 00:09:50,390
image of one little stormy stormy region

231
00:09:55,210 --> 00:09:53,280
so increased imagery over the short time

232
00:09:57,740 --> 00:09:55,220
period will provide more timely and

233
00:10:00,160 --> 00:09:57,750
informative data to forecasters

234
00:10:03,230 --> 00:10:00,170
everywhere in the Western Hemisphere

235
00:10:05,450 --> 00:10:03,240
consist and goes west right now do not

236
00:10:07,760 --> 00:10:05,460
have the capability to take those full

237
00:10:09,470 --> 00:10:07,770
images every five minutes the current

238
00:10:12,410 --> 00:10:09,480

goes satellite scan the full hemisphere

239
00:10:15,080 --> 00:10:12,420
every 30 minutes or the United States

240
00:10:17,960 --> 00:10:15,090
every 15 minutes or a stormy region

241
00:10:21,620 --> 00:10:17,970
every five minutes but not all at the

242
00:10:23,570 --> 00:10:21,630
same time this change in imaging is a

243
00:10:25,940 --> 00:10:23,580
mission requirement for gozar that will

244
00:10:28,040 --> 00:10:25,950
enable simultaneous rapid regional

245
00:10:32,060 --> 00:10:28,050
coverage and continuous hemispheric

246
00:10:33,920 --> 00:10:32,070
weather monitoring as a result we can

247
00:10:37,450 --> 00:10:33,930
expect noticeable improvements in the

248
00:10:39,650 --> 00:10:37,460
quality detail and speed of forecast

249
00:10:42,220 --> 00:10:39,660
including the prediction of severe

250
00:10:45,860 --> 00:10:42,230
weather events tropical storms and

251
00:10:48,670 --> 00:10:45,870
hurricanes that pose danger gosar will

252
00:10:52,610 --> 00:10:48,680
feature six brand-new instruments ABI

253
00:10:55,130 --> 00:10:52,620
exists size GLM su V and the

254
00:10:58,160 --> 00:10:55,140
magnetometer briefly I want to highlight

255
00:11:00,170 --> 00:10:58,170
the gossaert lightning mapper this

256
00:11:02,510 --> 00:11:00,180
instrument will be the first operational

257
00:11:04,900 --> 00:11:02,520
space based detection system for total

258
00:11:07,790 --> 00:11:04,910
lightning activity over land in water

259
00:11:10,580 --> 00:11:07,800
the basis for the GLM is the lining

260
00:11:14,090 --> 00:11:10,590
imaging sensor that flew on the NASA

261
00:11:17,990 --> 00:11:14,100
JAXA trim mission from November 1997

262
00:11:19,660 --> 00:11:18,000
through April 2015 providing for several

263
00:11:22,520 --> 00:11:19,670

tropical lining climatologies

264
00:11:23,690 --> 00:11:22,530
we are very excited about the GLM

265
00:11:26,360 --> 00:11:23,700
because they will tell us more about

266
00:11:28,759 --> 00:11:26,370
lining activity then we have ever known

267
00:11:31,669 --> 00:11:28,769
which will include forecast and the

268
00:11:33,470 --> 00:11:31,679
making trends in total lining that will

269
00:11:35,059 --> 00:11:33,480
be available with the GLM have the

270
00:11:38,119 --> 00:11:35,069
promise of providing critical

271
00:11:40,100 --> 00:11:38,129
information to forecasters which will

272
00:11:41,749 --> 00:11:40,110
allow them to focus on developing severe

273
00:11:44,030 --> 00:11:41,759
storms much earlier than they can

274
00:11:46,639 --> 00:11:44,040
currently and before these storms

275
00:11:49,669 --> 00:11:46,649
produce damaging winds hell or even

276
00:11:51,619 --> 00:11:49,679
tornadoes NOAA's Gosar will be a

277
00:11:53,840 --> 00:11:51,629
game-changer for weather forecasts for

278
00:11:57,769 --> 00:11:53,850
our nation and throughout Latin America

279
00:12:00,679 --> 00:11:57,779
and the Caribbean each day weather

280
00:12:02,449 --> 00:12:00,689
forecasters throughout Latin America use

281
00:12:04,910 --> 00:12:02,459
data from NOAA's geostationary

282
00:12:07,249 --> 00:12:04,920
satellites in similar ways as their US

283
00:12:10,280 --> 00:12:07,259
counterparts the key difference is that

284
00:12:12,319 --> 00:12:10,290
data from radars soundings and aircraft

285
00:12:14,539 --> 00:12:12,329
which are incorporated into Noah's

286
00:12:15,789 --> 00:12:14,549
forecast models are spares throughout

287
00:12:18,109 --> 00:12:15,799
Latin America

288
00:12:20,449 --> 00:12:18,119

that's why Noah's geostationary

289
00:12:23,689 --> 00:12:20,459
satellites in the upcoming advance

290
00:12:25,579 --> 00:12:23,699
co-star satellite are so crucial in

291
00:12:28,759 --> 00:12:25,589
protecting lives and property throughout

292
00:12:30,199 --> 00:12:28,769
Latin America and the Caribbean we are

293
00:12:31,999 --> 00:12:30,209
looking forward to working with our

294
00:12:34,819 --> 00:12:32,009
colleagues there to help bring about

295
00:12:36,530 --> 00:12:34,829
forecast improvements into the future

296
00:12:38,720 --> 00:12:36,540
the ghosts of our satellite will

297
00:12:40,759 --> 00:12:38,730
significantly improve the detection and

298
00:12:43,129 --> 00:12:40,769
observation of environmental phenomena

299
00:12:45,769 --> 00:12:43,139
that directly affects public safety

300
00:12:47,720 --> 00:12:45,779
protection and property in our nation's

301
00:12:50,329 --> 00:12:47,730
economic health and property and dad of

302
00:12:51,859 --> 00:12:50,339
Latin America and the Caribbean I want

303
00:12:55,340 --> 00:12:51,869
to repeat this last sentence in Spanish

304
00:12:57,470 --> 00:12:55,350
for our Latin American friends else at

305
00:12:59,900 --> 00:12:57,480
Anita Hill station area goes mejora

306
00:13:02,269 --> 00:12:59,910
significative lament a la de taxi oh no

307
00:13:04,549 --> 00:13:02,279
Sebastian the phenomena zambian Tallis

308
00:13:07,519 --> 00:13:04,559
que afectan directamente la seguridad

309
00:13:09,799 --> 00:13:07,529
pública la protección de la propiedad de

310
00:13:12,259 --> 00:13:09,809
la salud economical Prospera da de

311
00:13:15,619 --> 00:13:12,269
nuestra nación America latina D El

312
00:13:17,809 --> 00:13:15,629
Caribe back to English Nora in NASA's

313
00:13:20,299 --> 00:13:17,819

collaboration goes beyond the

314
00:13:23,119 --> 00:13:20,309
meteorological satellites NASA's earth

315
00:13:25,549 --> 00:13:23,129
science divisions provides new real-time

316
00:13:27,859 --> 00:13:25,559
data and information products from our

317
00:13:29,600 --> 00:13:27,869
NASA's research satellites which are

318
00:13:33,139 --> 00:13:29,610
used routinely by NOAA and other

319
00:13:35,989 --> 00:13:33,149
operational agencies we support NOAA's

320
00:13:38,780 --> 00:13:35,999
operational capability by by supplying

321
00:13:42,050 --> 00:13:38,790
data products ranging from animal spirit

322
00:13:44,140 --> 00:13:42,060
dynamics atmospheric composition

323
00:13:48,140 --> 00:13:44,150
see surface wind speed and direction

324
00:13:50,450 --> 00:13:48,150
wave conditions aerosol data and many

325
00:13:52,220 --> 00:13:50,460
other products that are fed into the

326
00:13:56,480 --> 00:13:52,230
numerical models to help the weather

327
00:13:59,180 --> 00:13:56,490
forecasters in addition together NOAA

328
00:14:02,270 --> 00:13:59,190
NASA developed in our operating suomi

329
00:14:04,460 --> 00:14:02,280
npp a complementarily omission that both

330
00:14:07,130 --> 00:14:04,470
advances research and serves the

331
00:14:09,020 --> 00:14:07,140
operational NOAA community we are very

332
00:14:11,300 --> 00:14:09,030
very proud of our partnership with NOAA

333
00:14:13,460 --> 00:14:11,310
and we are looking forward to many more

334
00:14:15,920 --> 00:14:13,470
years of collaboration Thank You Shawn

335
00:14:18,500 --> 00:14:15,930
back to you Thank You Sandra and finally

336
00:14:20,480 --> 00:14:18,510
we'll hear from Damon Penn Thank You

337
00:14:22,070 --> 00:14:20,490
Shawn thanks for having us today

338
00:14:24,710 --> 00:14:22,080

I don't think it'll come as any surprise

339
00:14:26,420 --> 00:14:24,720
when I tell you that weather forecasting

340
00:14:28,790 --> 00:14:26,430
is critical to decisions that emergency

341
00:14:31,100 --> 00:14:28,800
managers make not just at FEMA but at

342
00:14:32,390 --> 00:14:31,110
the state and local level and our days

343
00:14:34,400 --> 00:14:32,400
all begin and in with the weather

344
00:14:37,610 --> 00:14:34,410
forecast and not just the traditional

345
00:14:39,740 --> 00:14:37,620
forecast where during to an hurricane

346
00:14:41,720 --> 00:14:39,750
season we'll talk about what the cone of

347
00:14:43,490 --> 00:14:41,730
uncertainty looks like and not just

348
00:14:45,500 --> 00:14:43,500
during tornado season when we'll talk

349
00:14:48,350 --> 00:14:45,510
about what kind of conditions are

350
00:14:50,180 --> 00:14:48,360
favorable for tornado formation but

351
00:14:53,860 --> 00:14:50,190
wildland fires as we mentioned in the

352
00:14:56,660 --> 00:14:53,870
southeast flood inundation mapping and

353
00:14:58,430 --> 00:14:56,670
prediction and surge products all of

354
00:15:00,230 --> 00:14:58,440
those things together all turn into

355
00:15:03,110 --> 00:15:00,240
decisions that emergency managers have

356
00:15:07,130 --> 00:15:03,120
to make and the importance of having

357
00:15:10,220 --> 00:15:07,140
accurate forecasts is because the

358
00:15:11,650 --> 00:15:10,230
accuracy turns into time for us and one

359
00:15:14,840 --> 00:15:11,660
thing you can't get back during a

360
00:15:16,280 --> 00:15:14,850
response to an emergency as time and

361
00:15:18,770 --> 00:15:16,290
once you get behind you never catch up

362
00:15:21,200 --> 00:15:18,780
and there are decisions that have to be

363
00:15:22,810 --> 00:15:21,210

made several days in advance for

364
00:15:25,730 --> 00:15:22,820
instance if you're talking about

365
00:15:27,260 --> 00:15:25,740
evacuating a major metropolitan area you

366
00:15:29,480 --> 00:15:27,270
may have to make that decision four days

367
00:15:31,580 --> 00:15:29,490
out just to be able to get everything

368
00:15:33,320 --> 00:15:31,590
going get people out of the area if

369
00:15:35,200 --> 00:15:33,330
you're talking about moving in supplies

370
00:15:37,280 --> 00:15:35,210
and commodities that takes several days

371
00:15:39,530 --> 00:15:37,290
if you're talking about solar weather

372
00:15:42,410 --> 00:15:39,540
events that may take several seconds or

373
00:15:44,540 --> 00:15:42,420
several minutes so accuracy turns in the

374
00:15:47,960 --> 00:15:44,550
time and time can be important four

375
00:15:50,960 --> 00:15:47,970
minutes for us to two hours two days but

376
00:15:53,380 --> 00:15:50,970
all all are important and all really

377
00:15:55,700 --> 00:15:53,390
impact on decisions that we make because

378
00:15:58,100 --> 00:15:55,710
really once you make a disaster

379
00:16:00,650 --> 00:15:58,110
decision it's made once you decide to

380
00:16:02,750 --> 00:16:00,660
evacuate you can't unev aq8 once you

381
00:16:04,340 --> 00:16:02,760
decide to put commodities on the ground

382
00:16:05,360 --> 00:16:04,350
and you put them in on the ground in the

383
00:16:08,360 --> 00:16:05,370
path of the storm

384
00:16:10,880 --> 00:16:08,370
you can't pick them back up so our

385
00:16:12,350 --> 00:16:10,890
relationship with NOAA and the kinds of

386
00:16:14,810 --> 00:16:12,360
products that NOAA provides us are

387
00:16:16,310 --> 00:16:14,820
critical what it is that we do and the

388
00:16:18,020 --> 00:16:16,320

more accuracy and the more information

389
00:16:19,850 --> 00:16:18,030
that we can get then the better we can

390
00:16:21,830 --> 00:16:19,860
serve the public and the better we can

391
00:16:24,670 --> 00:16:21,840
help manage disasters and take care of

392
00:16:26,720 --> 00:16:24,680
our survivors on the ground so thank you

393
00:16:27,920 --> 00:16:26,730
great Thank You Daymond and thank you

394
00:16:29,720 --> 00:16:27,930
once again to all of our panelists now

395
00:16:31,610 --> 00:16:29,730
we're gonna take your questions in just

396
00:16:35,000 --> 00:16:31,620
a moment but before we do we're gonna go

397
00:16:36,980 --> 00:16:35,010
back to Stephen Goodman who has a video

398
00:16:39,560 --> 00:16:36,990
to show us demonstrating some of the

399
00:16:41,810 --> 00:16:39,570
capabilities that goes r right so I've

400
00:16:43,340 --> 00:16:41,820
always told people that the imagery will

401
00:16:49,210 --> 00:16:43,350
speak for itself and I don't need to

402
00:16:54,920 --> 00:16:52,300
what you're looking at is a developing

403
00:16:56,330 --> 00:16:54,930
outbreak of severe storms this is taken

404
00:16:58,580 --> 00:16:56,340
with the spare satellite that was

405
00:17:00,230 --> 00:16:58,590
mentioned early earlier today and what

406
00:17:02,390 --> 00:17:00,240
you see there that line of clouds moving

407
00:17:04,220 --> 00:17:02,400
south is called an outflow boundary and

408
00:17:06,560 --> 00:17:04,230
you can see the differential motion of

409
00:17:09,020 --> 00:17:06,570
the clouds over on the right hand side

410
00:17:12,020 --> 00:17:09,030
you see clouds at low levels coming into

411
00:17:15,470 --> 00:17:12,030
the storm and you see the storms

412
00:17:17,780 --> 00:17:15,480
developing as that line comes through so

413
00:17:19,760 --> 00:17:17,790

when that outflow boundary hits these

414
00:17:22,850 --> 00:17:19,770
developing cumulus clouds to the south

415
00:17:26,960 --> 00:17:22,860
that develops into another major storm

416
00:17:29,030 --> 00:17:26,970
system and it's the the animation is so

417
00:17:32,570 --> 00:17:29,040
quick I guess it's hard to pick up on on

418
00:17:34,940 --> 00:17:32,580
this video so I did animate I did

419
00:17:36,410 --> 00:17:34,950
narrate it a bit but this is what the

420
00:17:38,810 --> 00:17:36,420
spare satellite so what you just saw

421
00:17:40,730 --> 00:17:38,820
would have been the rapid scan

422
00:17:42,410 --> 00:17:40,740
capability of gozar but at low

423
00:17:45,140 --> 00:17:42,420
resolution because the current

424
00:17:47,060 --> 00:17:45,150
satellites in orbit only have 1/4 the

425
00:17:49,940 --> 00:17:47,070
spatial resolution so a lot of the

426
00:17:51,980 --> 00:17:49,950
detail we can see at cloud top and what

427
00:17:54,110 --> 00:17:51,990
the convergence to clouds will help the

428
00:17:55,820 --> 00:17:54,120
forecaster especially if there's a

429
00:17:57,530 --> 00:17:55,830
severe storm outbreak it can help them

430
00:18:00,560 --> 00:17:57,540
to determine if they need to extend

431
00:18:02,180 --> 00:18:00,570
their watch area beyond the current time

432
00:18:04,190 --> 00:18:02,190
because they can see the new development

433
00:18:05,900 --> 00:18:04,200
that's happening thank you great thank

434
00:18:08,690 --> 00:18:05,910
you thank you Steve some exciting

435
00:18:09,350 --> 00:18:08,700
changes coming with gozar now we're

436
00:18:11,630 --> 00:18:09,360
ready

437
00:18:13,460 --> 00:18:11,640
take your questions and we have several

438
00:18:15,919 --> 00:18:13,470

reporters here in the audience with us

439
00:18:18,289 --> 00:18:15,929
we'll take questions from them as well

440
00:18:20,630 --> 00:18:18,299
as questions from folks calling in on

441
00:18:22,610 --> 00:18:20,640
the phone and if you're joining us via

442
00:18:25,400 --> 00:18:22,620
social media you can ask a question

443
00:18:26,960 --> 00:18:25,410
using the hashtag ask goes and we'll get

444
00:18:29,210 --> 00:18:26,970
to those in just a few minutes but we'll

445
00:18:30,710 --> 00:18:29,220
start with a question here in the room

446
00:18:31,700 --> 00:18:30,720
and we've got one right here in the

447
00:18:32,450 --> 00:18:31,710
front row could you please identify

448
00:18:34,430 --> 00:18:32,460
yourself

449
00:18:36,590 --> 00:18:34,440
sure ken Kramer Universe Today and the

450
00:18:39,110 --> 00:18:36,600
Northeast astronomy forum my question is

451
00:18:40,520 --> 00:18:39,120
specifically about the the lightning map

452
00:18:43,970 --> 00:18:40,530
for this first lightning member can you

453
00:18:46,760 --> 00:18:43,980
talk a little bit more in detail how

454
00:18:49,640 --> 00:18:46,770
will you use this lightning data to to

455
00:18:53,840 --> 00:18:49,650
warn about severe weather how will you

456
00:18:55,669 --> 00:18:53,850
use it to warn about tornadoes and get

457
00:18:58,610 --> 00:18:55,679
that data because the latency period is

458
00:19:00,770 --> 00:18:58,620
critical to get that data to FEMA to so

459
00:19:05,780 --> 00:19:00,780
they can issue tornado warnings how will

460
00:19:07,730 --> 00:19:05,790
that all work let me start on that one

461
00:19:11,840 --> 00:19:07,740
since I started with that instrument in

462
00:19:14,450 --> 00:19:11,850
1979 we worked on it a very long time

463
00:19:16,340 --> 00:19:14,460

when we started development at NASA and

464
00:19:19,039 --> 00:19:16,350
then it became the new instrument for

465
00:19:21,020 --> 00:19:19,049
gozar so the idea behind the instrument

466
00:19:22,669 --> 00:19:21,030
is that when you have rapidly developed

467
00:19:24,590 --> 00:19:22,679
being storms that can give us an

468
00:19:27,380 --> 00:19:24,600
indirect indication of the strength of

469
00:19:28,669 --> 00:19:27,390
the storm updraft and the storm updraft

470
00:19:30,620 --> 00:19:28,679
does all the work and we don't have any

471
00:19:32,630 --> 00:19:30,630
instrument even the radars that directly

472
00:19:33,830 --> 00:19:32,640
tell us how the updrafts are

473
00:19:36,080 --> 00:19:33,840
intensifying we can see the

474
00:19:38,539 --> 00:19:36,090
precipitation cores as they ascend and

475
00:19:40,700 --> 00:19:38,549
what happens is you take the raindrops

476
00:19:42,830 --> 00:19:40,710
and lift them up higher in the cloud

477
00:19:45,650 --> 00:19:42,840
they freeze and they form ice and it's

478
00:19:48,740 --> 00:19:45,660
the collision of ice particles in a rich

479
00:19:51,169 --> 00:19:48,750
rich region of liquid water or water

480
00:19:53,930 --> 00:19:51,179
vapor that enhances the electrification

481
00:19:55,430 --> 00:19:53,940
process so the stronger the updraft the

482
00:19:57,770 --> 00:19:55,440
more collision of particles and the

483
00:19:59,180 --> 00:19:57,780
faster the rate of electrification and

484
00:20:01,520 --> 00:19:59,190
then that's released by the lightning

485
00:20:03,409 --> 00:20:01,530
and so we connect the lightning to the

486
00:20:06,230 --> 00:20:03,419
rapid development and intensity of the

487
00:20:09,140 --> 00:20:06,240
storm updraft and if you have a rotating

488
00:20:10,520 --> 00:20:09,150

thunderstorm say an incipient tornado

489
00:20:12,919 --> 00:20:10,530
they take wind shear from the

490
00:20:16,700 --> 00:20:12,929
environment and taking that wind shear

491
00:20:18,830 --> 00:20:16,710
then and the updraft turns that rotation

492
00:20:20,720 --> 00:20:18,840
we call vorticity up into the upper

493
00:20:22,220 --> 00:20:20,730
parts of the cloud you're connecting

494
00:20:22,730 --> 00:20:22,230
both what's happened in aloft in the

495
00:20:24,799 --> 00:20:22,740
cloud and

496
00:20:26,090 --> 00:20:24,809
happening down below and that's where

497
00:20:27,830 --> 00:20:26,100
the Lightning is giving us this

498
00:20:30,290 --> 00:20:27,840
additional lead time because we see

499
00:20:32,270 --> 00:20:30,300
these surges we call lightning jump and

500
00:20:34,250 --> 00:20:32,280
we're able to relate that then to the

501
00:20:36,799 --> 00:20:34,260
intensifying storm so imagine a sea of

502
00:20:38,930 --> 00:20:36,809
storms out there your forecaster you got

503
00:20:41,030 --> 00:20:38,940
20 storms that you're focused on and

504
00:20:42,860 --> 00:20:41,040
when you see one of these storms with a

505
00:20:45,130 --> 00:20:42,870
rapid increase in the lightning you see

506
00:20:47,090 --> 00:20:45,140
the radar echo is Joe was saying

507
00:20:49,040 --> 00:20:47,100
intensify and then we're looking down

508
00:20:51,140 --> 00:20:49,050
with the imager and we're seeing cloud

509
00:20:52,549 --> 00:20:51,150
tops growing you connect all that

510
00:20:54,410 --> 00:20:52,559
together and it really helps the

511
00:20:56,480 --> 00:20:54,420
forecaster what we call the situational

512
00:20:58,310 --> 00:20:56,490
awareness and so from that they're able

513
00:20:59,960 --> 00:20:58,320

to discern that dee I need to pay more

514
00:21:01,580 --> 00:20:59,970
attention to that store but that storm

515
00:21:03,320 --> 00:21:01,590
and then they have the diagnostic

516
00:21:07,790 --> 00:21:03,330
information that's going to help them

517
00:21:11,600 --> 00:21:10,190
so I'm just add a small piece is that

518
00:21:13,669 --> 00:21:11,610
it's you know it's a complimentary

519
00:21:15,230 --> 00:21:13,679
observing network and it basically will

520
00:21:17,150 --> 00:21:15,240
give us advance notice to where do we

521
00:21:19,370 --> 00:21:17,160
focus looking at the radars where do we

522
00:21:21,440 --> 00:21:19,380
focus so that we do can provide that

523
00:21:23,930 --> 00:21:21,450
additional time and and the Lightning

524
00:21:25,280 --> 00:21:23,940
was one of those early contributors I

525
00:21:26,810 --> 00:21:25,290
think we're gonna learn a lot because

526
00:21:28,610 --> 00:21:26,820
it'll be the first one we have in orbit

527
00:21:31,580 --> 00:21:28,620
so I don't think we know everything that

528
00:21:33,260 --> 00:21:31,590
how we're gonna use it yet as well okay

529
00:21:35,690 --> 00:21:33,270
thank you okay we've got a question over

530
00:21:37,190 --> 00:21:35,700
here and satterfield WBOC in Salisbury

531
00:21:39,500 --> 00:21:37,200
Steve you and I have been down to the

532
00:21:41,090 --> 00:21:39,510
new goes our dishes goes our is down

533
00:21:43,190 --> 00:21:41,100
linked at Wallops Island which is my

534
00:21:46,310 --> 00:21:43,200
viewing area so two-part question one

535
00:21:49,520 --> 00:21:46,320
are the dish is now ready to go and two

536
00:21:51,710 --> 00:21:49,530
how long after launch will the data be

537
00:21:56,240 --> 00:21:51,720
acquired at Wallops Island and start

538
00:21:59,150 --> 00:21:56,250

coming down there better question for

539
00:22:03,620 --> 00:21:59,160
the earlier panel but my understanding

540
00:22:06,200 --> 00:22:03,630
is that they are ready to go and our

541
00:22:08,930 --> 00:22:06,210
game plan is that once we launch the

542
00:22:10,850 --> 00:22:08,940
satellite we have to do outgassing after

543
00:22:12,919 --> 00:22:10,860
we reach orbit about 15 days to reach

544
00:22:14,960 --> 00:22:12,929
orbit 30 days to get all the

545
00:22:17,510 --> 00:22:14,970
contaminants away from the satellite

546
00:22:19,900 --> 00:22:17,520
instruments and then we turn it on and

547
00:22:22,760 --> 00:22:19,910
then we'll start providing data to our

548
00:22:24,830 --> 00:22:22,770
calibration validation teams and we'll

549
00:22:26,240 --> 00:22:24,840
continue doing that for about six months

550
00:22:29,060 --> 00:22:26,250
and then NASA will hand over the

551
00:22:32,510 --> 00:22:29,070
satellite to know and that will continue

552
00:22:34,669 --> 00:22:32,520
another six months of validation when we

553
00:22:36,140 --> 00:22:34,679
reach the value point on the products

554
00:22:37,970 --> 00:22:36,150
that we determine

555
00:22:40,010 --> 00:22:37,980
there are fit for use by the forecasters

556
00:22:41,840 --> 00:22:40,020
we'll turn on the ghost broadcast system

557
00:22:43,700 --> 00:22:41,850
which is the downlink and then the

558
00:22:45,980 --> 00:22:43,710
forecasters will have the data and they

559
00:22:48,950 --> 00:22:45,990
know that we're still tweaking things

560
00:22:51,140 --> 00:22:48,960
and trying to get it all optimized and

561
00:22:53,990 --> 00:22:51,150
so they'll take things with a grain of

562
00:22:56,030 --> 00:22:54,000
salt but then by the end of the year on

563
00:22:57,440 --> 00:22:56,040

orbit then well-validated our products

564
00:23:01,280 --> 00:22:57,450
and they'll be ready for everybody to

565
00:23:03,500 --> 00:23:01,290
use thank you and see we have any more

566
00:23:15,410 --> 00:23:03,510
questions here in the audience second

567
00:23:17,270 --> 00:23:15,420
row here by the aisle hi I'm Kelly

568
00:23:19,220 --> 00:23:17,280
Kalani with Northwestern University

569
00:23:20,420 --> 00:23:19,230
middle and I was wondering if you could

570
00:23:22,730 --> 00:23:20,430
tell us a little bit about how the

571
00:23:24,650 --> 00:23:22,740
satellite can or will be used in climate

572
00:23:28,310 --> 00:23:24,660
change research or studying climate

573
00:23:29,810 --> 00:23:28,320
change make a couple comments and there

574
00:23:32,060 --> 00:23:29,820
so one thing the satellite has that we

575
00:23:35,450 --> 00:23:32,070
haven't had before is as an on-orbit

576
00:23:37,070 --> 00:23:35,460
solar calibrator for the instrument for

577
00:23:39,740 --> 00:23:37,080
the imagery we've not had that the low

578
00:23:41,780 --> 00:23:39,750
Earth orbiting NASA research satellites

579
00:23:44,270 --> 00:23:41,790
have such a capability and we basically

580
00:23:45,890 --> 00:23:44,280
have now replicated that for

581
00:23:47,600 --> 00:23:45,900
geostationary orbits so one the data

582
00:23:48,800 --> 00:23:47,610
will in fact be more accurate people

583
00:23:50,350 --> 00:23:48,810
have always said the weather data

584
00:23:53,660 --> 00:23:50,360
doesn't need to be as accurate as

585
00:23:55,910 --> 00:23:53,670
climate data but the new data from those

586
00:23:58,220 --> 00:23:55,920
are will actually be more accurate than

587
00:24:00,320 --> 00:23:58,230
we've had before one of the things that

588
00:24:02,450 --> 00:24:00,330

goes our contributes is unraveling the

589
00:24:05,060 --> 00:24:02,460
diurnal cycle what I mean by the dural

590
00:24:07,010 --> 00:24:05,070
cycle is we have generally the global

591
00:24:10,130 --> 00:24:07,020
observations are in low-earth orbit and

592
00:24:11,960 --> 00:24:10,140
so you get a snapshot every maybe 12

593
00:24:14,420 --> 00:24:11,970
hours if you're lucky maybe ever four

594
00:24:16,520 --> 00:24:14,430
hours if you've got a constellation with

595
00:24:18,170 --> 00:24:16,530
many satellites and yet it's still

596
00:24:20,090 --> 00:24:18,180
difficult to determine say we're trying

597
00:24:22,010 --> 00:24:20,100
to diagnose cloud properties and we know

598
00:24:24,380 --> 00:24:22,020
how to how to cloud properties change

599
00:24:26,210 --> 00:24:24,390
over decades or how do they change even

600
00:24:28,820 --> 00:24:26,220
in terrain you and say we have an El

601
00:24:30,740 --> 00:24:28,830
Nino event or now La Nina event and we

602
00:24:32,540 --> 00:24:30,750
actually are going to have a learning

603
00:24:35,210 --> 00:24:32,550
event most likely this coming winter

604
00:24:37,250 --> 00:24:35,220
going into February and so what does

605
00:24:38,690 --> 00:24:37,260
what the satellite would tell us is what

606
00:24:40,940 --> 00:24:38,700
are we missing when we're trying to

607
00:24:43,340 --> 00:24:40,950
characterize the clouds by having

608
00:24:45,230 --> 00:24:43,350
sampling throughout the day that's what

609
00:24:46,730 --> 00:24:45,240
I mean by the dural cycle instead of

610
00:24:48,800 --> 00:24:46,740
coming over at one o'clock every

611
00:24:49,580 --> 00:24:48,810
afternoon the clouds aren't the same at

612
00:24:51,049 --> 00:24:49,590
one o'clock

613
00:24:53,510 --> 00:24:51,059

Droon sometimes they're still developing

614
00:24:54,940 --> 00:24:53,520
they're not mature so it'll help us with

615
00:24:57,560 --> 00:24:54,950
that the other way I would say is

616
00:25:00,019 --> 00:24:57,570
extreme weather so right now we don't

617
00:25:02,269 --> 00:25:00,029
know what the the variation of extreme

618
00:25:03,890 --> 00:25:02,279
weather is but we know from Sandra

619
00:25:06,289 --> 00:25:03,900
mentioned we had a lightning mapper and

620
00:25:08,600 --> 00:25:06,299
low Earth orbit on the nasa tropical

621
00:25:10,519 --> 00:25:08,610
rainfall measuring mission for 17 years

622
00:25:13,970 --> 00:25:10,529
and now we're gonna have 20 years more

623
00:25:15,620 --> 00:25:13,980
extending that that climate data set so

624
00:25:17,360 --> 00:25:15,630
once you have 30 years generally people

625
00:25:19,460 --> 00:25:17,370
say I got a climate data set and we can

626
00:25:22,090 --> 00:25:19,470
look for those variations so I think

627
00:25:24,760 --> 00:25:22,100
gozar and the rest of the geostationary

628
00:25:27,680 --> 00:25:24,770
satellites that Europe is launching

629
00:25:29,419 --> 00:25:27,690
Japan you heard has launched China will

630
00:25:31,730 --> 00:25:29,429
launch and so we're going to have a

631
00:25:33,710 --> 00:25:31,740
global constellation of geostationary

632
00:25:36,590 --> 00:25:33,720
satellites that have nominally the same

633
00:25:39,110 --> 00:25:36,600
capability as gozar and so I think it'll

634
00:25:40,789 --> 00:25:39,120
contribute both and how do the storms

635
00:25:42,560 --> 00:25:40,799
and clouds and the environment vary over

636
00:25:44,810 --> 00:25:42,570
the course of the day and then also

637
00:25:49,070 --> 00:25:44,820
extreme storm severe storms how do they

638
00:25:52,850 --> 00:25:49,080

vary say over decades thank you over

639
00:25:55,639 --> 00:25:52,860
here in the second row I had a question

640
00:25:57,940 --> 00:25:55,649
about accessing the imagery afterwards

641
00:26:00,230 --> 00:25:57,950
so even right now with say 1-minute

642
00:26:02,210 --> 00:26:00,240
imagery satellite imagery for example it

643
00:26:04,399 --> 00:26:02,220
can be difficult to find for a TV

644
00:26:06,350 --> 00:26:04,409
meteorologists we have access to our

645
00:26:08,149 --> 00:26:06,360
data service providers and the data that

646
00:26:09,440 --> 00:26:08,159
they and images they provide us but for

647
00:26:10,850 --> 00:26:09,450
the general public who are more savvy

648
00:26:13,010 --> 00:26:10,860
about just going to the weapon looking

649
00:26:15,139 --> 00:26:13,020
for the data will to be a way to get at

650
00:26:17,690 --> 00:26:15,149
this really cool you know 30-second high

651
00:26:18,950 --> 00:26:17,700
spatial resolution satellite imagery I'm

652
00:26:20,750 --> 00:26:18,960
sorry and can you just identify yourself

653
00:26:26,720 --> 00:26:20,760
oh yes I'm sorry Jen car phagon up on

654
00:26:29,720 --> 00:26:26,730
the Weather Channel analysis branch and

655
00:26:32,090 --> 00:26:29,730
and Estes and the satellite service and

656
00:26:33,889 --> 00:26:32,100
they have a web page and they're going

657
00:26:35,990 --> 00:26:33,899
to update their web page that we

658
00:26:38,899 --> 00:26:36,000
currently have to show the native

659
00:26:41,779 --> 00:26:38,909
temporal resolution of the data so when

660
00:26:43,490 --> 00:26:41,789
we take one minute imagery or 30-second

661
00:26:45,470 --> 00:26:43,500
imagery with the imager and we have the

662
00:26:48,139 --> 00:26:45,480
20 second latency from the Lightning

663
00:26:50,389 --> 00:26:48,149

mapper they will have webpages that

664
00:26:51,860 --> 00:26:50,399
anyone will be able to access to see

665
00:26:54,730 --> 00:26:51,870
that and also I should mention we've

666
00:26:57,520 --> 00:26:54,740
been working with the broadcast

667
00:27:00,350 --> 00:26:57,530
meteorology providers providers and

668
00:27:01,700 --> 00:27:00,360
showing them the value that they didn't

669
00:27:03,500 --> 00:27:01,710
say don't let this rapid scan

670
00:27:05,120 --> 00:27:03,510
information drop on the floor

671
00:27:07,490 --> 00:27:05,130
I don't know if I can mention the who

672
00:27:08,930 --> 00:27:07,500
the providers are but one of them was at

673
00:27:11,000 --> 00:27:08,940
a conference with me and he pulled out

674
00:27:13,790 --> 00:27:11,010
his cell phone and he says here's the

675
00:27:16,460 --> 00:27:13,800
Japanese rapid scan imagery isn't this

676
00:27:18,380 --> 00:27:16,470
amazing I said you bet it's amazing so

677
00:27:21,080 --> 00:27:18,390
so they're attuned to that and I've been

678
00:27:23,090 --> 00:27:21,090
talking with Dan here for four years -

679
00:27:25,910 --> 00:27:23,100
and he's helped to advocate that they

680
00:27:27,860 --> 00:27:25,920
need to update their delivery system so

681
00:27:30,230 --> 00:27:27,870
that you the users in the broadcast

682
00:27:31,820 --> 00:27:30,240
industry can take full advantage of what

683
00:27:34,370 --> 00:27:31,830
goes our can offer and I should say

684
00:27:37,370 --> 00:27:34,380
we've been doing a demonstration at

685
00:27:39,830 --> 00:27:37,380
NOAA's hazardous weather testbed it's

686
00:27:41,240 --> 00:27:39,840
some of the broadcasters attuned to what

687
00:27:44,210 --> 00:27:41,250
we might be able for and one of the

688
00:27:45,770 --> 00:27:44,220

reasons we did that was because the Ojo

689
00:27:48,650 --> 00:27:45,780
and The Weather Service are putting out

690
00:27:51,260 --> 00:27:48,660
the weather information to the the

691
00:27:53,570 --> 00:27:51,270
viewer and the TVs it's really that last

692
00:27:56,540 --> 00:27:53,580
mile that's going to have the big impact

693
00:27:58,400 --> 00:27:56,550
for more public and this loop that I

694
00:28:00,680 --> 00:27:58,410
showed you if we can show that kind of

695
00:28:03,260 --> 00:28:00,690
loop on the air I think the viewer can

696
00:28:04,850 --> 00:28:03,270
personalize that the risk is real and

697
00:28:07,190 --> 00:28:04,860
the storm is coming at them and they'll

698
00:28:08,990 --> 00:28:07,200
maybe be more likely to take action and

699
00:28:14,510 --> 00:28:09,000
that's what we need is people to take

700
00:28:26,050 --> 00:28:14,520
action to be safe great next question in

701
00:28:30,020 --> 00:28:28,580
I'm Ike Augusta neck with CBS in

702
00:28:31,790 --> 00:28:30,030
Minneapolis I'm sorry if I missed you

703
00:28:34,880 --> 00:28:31,800
already answering this question we know

704
00:28:36,410 --> 00:28:34,890
the new temporal resolution of the the

705
00:28:40,700 --> 00:28:36,420
lightning map or what's the spatial

706
00:28:43,520 --> 00:28:40,710
resolution the space or spatial

707
00:28:47,420 --> 00:28:43,530
resolution for the visible Channel is

708
00:28:50,090 --> 00:28:47,430
500 meters third of a mile or so it's

709
00:28:54,080 --> 00:28:50,100
four times better and then for GLM it's

710
00:28:56,870 --> 00:28:54,090
eight kilometers spatial resolution and

711
00:28:58,880 --> 00:28:56,880
there's an interesting innovation in the

712
00:29:02,150 --> 00:28:58,890
design of the detector that allows us to

713
00:29:05,120 --> 00:29:02,160

keep that spatial resolution across the

714
00:29:06,980 --> 00:29:05,130
oceans and so had we not done that we

715
00:29:09,170 --> 00:29:06,990
would have spatial resolution say if 30

716
00:29:10,910 --> 00:29:09,180
kilometers which is larger than an

717
00:29:13,520 --> 00:29:10,920
individual storm and that's what we

718
00:29:16,700 --> 00:29:13,530
would present to aviation industry and

719
00:29:18,800 --> 00:29:16,710
the FAA but because we're able to pull

720
00:29:20,870 --> 00:29:18,810
in the resolution as as the instrument

721
00:29:23,600 --> 00:29:20,880
is looking further out from directly

722
00:29:26,570 --> 00:29:23,610
that we'll be able to have storm scale

723
00:29:28,160 --> 00:29:26,580
spatial resolution pretty much all the

724
00:29:28,940 --> 00:29:28,170
way across the field of view and the

725
00:29:31,610 --> 00:29:28,950
field of view

726
00:29:34,760 --> 00:29:31,620
GLM will from both satellites combined

727
00:29:37,550 --> 00:29:34,770
will be from the west coast of Africa up

728
00:29:40,820 --> 00:29:37,560
to Edmonton Canada it's about 54 degrees

729
00:29:43,400 --> 00:29:40,830
latitude same down to the South American

730
00:29:45,770 --> 00:29:43,410
and Chile and then all the way over to

731
00:29:47,420 --> 00:29:45,780
the east coast of New Zealand and so

732
00:29:49,220 --> 00:29:47,430
while the imager gives us a larger field

733
00:29:52,850 --> 00:29:49,230
of view that GLM will cover most of that

734
00:29:54,920 --> 00:29:52,860
airspace and we know from talking to

735
00:29:57,320 --> 00:29:54,930
Joe's director at the aviation weather

736
00:29:59,120 --> 00:29:57,330
center that they're they're very excited

737
00:30:02,390 --> 00:29:59,130
because they don't have radar over the

738
00:30:04,310 --> 00:30:02,400

ocean the aircraft radars are small and

739
00:30:06,410 --> 00:30:04,320
then they don't see over the horizon and

740
00:30:08,480 --> 00:30:06,420
now you can take the imager and the

741
00:30:11,330 --> 00:30:08,490
Lightning map or combine it together and

742
00:30:14,030 --> 00:30:11,340
effectively provide radar like

743
00:30:16,820 --> 00:30:14,040
information out over the oceans worthy

744
00:30:18,860 --> 00:30:16,830
hazardous storms would be Joe do you

745
00:30:20,540 --> 00:30:18,870
have anything want to add to that no I

746
00:30:23,210 --> 00:30:20,550
think you've covered that very well

747
00:30:25,670 --> 00:30:23,220
great next caller is we've got a

748
00:30:27,860 --> 00:30:25,680
question on the phone from mark dodge go

749
00:30:29,840 --> 00:30:27,870
ahead mark yes good afternoon

750
00:30:31,940 --> 00:30:29,850
thank you for this very informative

751
00:30:35,030 --> 00:30:31,950
science briefing this afternoon

752
00:30:38,750 --> 00:30:35,040
mark dodge historical aerospace news

753
00:30:42,080 --> 00:30:38,760
please can you explain how the advanced

754
00:30:45,260 --> 00:30:42,090
baseline imager technology was developed

755
00:30:48,260 --> 00:30:45,270
and how will it be used going forward

756
00:30:51,830 --> 00:30:48,270
and also one other question how will

757
00:30:54,170 --> 00:30:51,840
solar flares be seen differently and

758
00:30:59,480 --> 00:30:54,180
what will this mean to the future of

759
00:31:02,060 --> 00:30:59,490
forecasting thank you thank you I'm not

760
00:31:03,890 --> 00:31:02,070
sure remember all the pieces if I start

761
00:31:06,590 --> 00:31:03,900
at the beginning

762
00:31:08,030 --> 00:31:06,600
Harris Corporation has developed the

763
00:31:11,630 --> 00:31:08,040

imagers that we've been flying on our

764
00:31:15,230 --> 00:31:11,640
satellites for the current series the

765
00:31:17,690 --> 00:31:15,240
previous series and back into to around

766
00:31:19,910 --> 00:31:17,700
2004 we did some feasibility studies

767
00:31:22,400 --> 00:31:19,920
with a number of vendors on the

768
00:31:24,230 --> 00:31:22,410
different possible architectures for the

769
00:31:28,160 --> 00:31:24,240
different instruments and so we settled

770
00:31:30,140 --> 00:31:28,170
on the Harris design which was able to

771
00:31:31,640 --> 00:31:30,150
give us 16 spectral bands initially we

772
00:31:33,980 --> 00:31:31,650
were hoping to get even more spectral

773
00:31:37,760 --> 00:31:33,990
bands but it's expensive than

774
00:31:40,700 --> 00:31:37,770
challenging so we settled on 16 spectral

775
00:31:42,440 --> 00:31:40,710
bands and the scientists had done

776
00:31:44,600 --> 00:31:42,450
studies as to what each individual

777
00:31:49,610 --> 00:31:44,610
spectral band might offer for example we

778
00:31:51,770 --> 00:31:49,620
have a spectral band at at 1.39 microns

779
00:31:53,480 --> 00:31:51,780
which allows us to see cirrus clouds and

780
00:31:56,390 --> 00:31:53,490
so that was something we weren't able to

781
00:31:59,000 --> 00:31:56,400
see before we have three water vapor

782
00:32:01,610 --> 00:31:59,010
bands and so for you who watched the

783
00:32:04,070 --> 00:32:01,620
water vapor image on TV that's the upper

784
00:32:06,020 --> 00:32:04,080
level water vapor but now we can see

785
00:32:08,510 --> 00:32:06,030
deeper into the atmosphere that'll let

786
00:32:11,420 --> 00:32:08,520
us see when the atmosphere where the

787
00:32:13,040 --> 00:32:11,430
atmosphere is destabilizing more and I

788
00:32:17,060 --> 00:32:13,050

should mention that let me use that as a

789
00:32:19,490 --> 00:32:17,070
segue into the tropical storms so from

790
00:32:21,850 --> 00:32:19,500
the Himawari Japanese satellite which is

791
00:32:23,810 --> 00:32:21,860
also purchased from Harris the same

792
00:32:26,750 --> 00:32:23,820
instrument technology the only

793
00:32:28,520 --> 00:32:26,760
difference really is that we're

794
00:32:30,890 --> 00:32:28,530
operating the satellite taking

795
00:32:33,700 --> 00:32:30,900
one-minute images and they take them two

796
00:32:36,350 --> 00:32:33,710
and a half minutes apart but we have

797
00:32:39,260 --> 00:32:36,360
some data from a typhoon called Sol de

798
00:32:42,500 --> 00:32:39,270
lor that hit Taiwan and I asked our

799
00:32:44,540 --> 00:32:42,510
scientists who work with the the wind em

800
00:32:46,820 --> 00:32:44,550
calm atmospheric motion vectors you can

801
00:32:48,680 --> 00:32:46,830
use the cloud and water vapor as wind

802
00:32:51,890 --> 00:32:48,690
tracers so anyway they took that and the

803
00:32:53,390 --> 00:32:51,900
water vapor channels I said so I know

804
00:32:55,310 --> 00:32:53,400
that we can see things but what's the

805
00:32:57,740 --> 00:32:55,320
real impact is their impact on the model

806
00:33:00,560 --> 00:32:57,750
so they did a process we call data

807
00:33:02,960 --> 00:33:00,570
simulation and they bring these data

808
00:33:05,720 --> 00:33:02,970
into a best analysis and to my surprise

809
00:33:07,490 --> 00:33:05,730
even when they did the forecast track

810
00:33:09,470 --> 00:33:07,500
for this typhoon they actually reduced

811
00:33:12,290 --> 00:33:09,480
the forecast track here where I expected

812
00:33:15,020 --> 00:33:12,300
improvement was in the intensity and the

813
00:33:17,090 --> 00:33:15,030

intensity in that case was indeterminate

814
00:33:19,130 --> 00:33:17,100
so we've only done a couple of cases and

815
00:33:21,080 --> 00:33:19,140
you have to give us time to collect

816
00:33:23,480 --> 00:33:21,090
enough samples with the actual goes our

817
00:33:25,220 --> 00:33:23,490
satellite to know what the true impact

818
00:33:27,890 --> 00:33:25,230
is and if you just give me another

819
00:33:29,630 --> 00:33:27,900
second let me come in on Matthew so I

820
00:33:30,080 --> 00:33:29,640
figured someone would ask about Matthew

821
00:33:32,150 --> 00:33:30,090
right

822
00:33:33,920 --> 00:33:32,160
and so I talked to the National

823
00:33:36,260 --> 00:33:33,930
Hurricane Center the folks we work with

824
00:33:38,570 --> 00:33:36,270
very closely and I said you know what

825
00:33:41,240 --> 00:33:38,580
would that then the possible impact of

826
00:33:43,160 --> 00:33:41,250
having goes our on orbit and it turns

827
00:33:45,110 --> 00:33:43,170
out that were the forecast models and

828
00:33:47,900 --> 00:33:45,120
the forecasters missed it was down in

829
00:33:52,940 --> 00:33:47,910
the Caribbean when they were expecting

830
00:33:56,240 --> 00:33:52,950
the storm to to not intensify so quickly

831
00:33:57,800 --> 00:33:56,250
and it turns out that for all the

832
00:33:59,030 --> 00:33:57,810
information that goes our provides for

833
00:34:00,400 --> 00:33:59,040
example we mentioned the Lightning

834
00:34:02,720 --> 00:34:00,410
mapper they've been doing some work

835
00:34:05,330 --> 00:34:02,730
looking at how the lightnings related to

836
00:34:07,430 --> 00:34:05,340
her rapid intensification of tropical

837
00:34:09,290 --> 00:34:07,440
storms and hurricanes and it turns out

838
00:34:11,630 --> 00:34:09,300

that from ground-based networks that we

839
00:34:13,310 --> 00:34:11,640
have today they didn't see the lightning

840
00:34:15,380 --> 00:34:13,320
signatures that would have told them

841
00:34:17,030 --> 00:34:15,390
that they would have had the strong

842
00:34:19,310 --> 00:34:17,040
shear and so that's the key thing

843
00:34:21,680 --> 00:34:19,320
hurricanes don't like shear they tears

844
00:34:24,200 --> 00:34:21,690
them apart and so they they didn't see

845
00:34:26,270 --> 00:34:24,210
that signal so I think those are because

846
00:34:28,940 --> 00:34:26,280
we're able to map the motions of the

847
00:34:30,320 --> 00:34:28,950
clouds and also to be able to map the

848
00:34:33,200 --> 00:34:30,330
lightning I think both will contribute

849
00:34:35,420 --> 00:34:33,210
to picking up signals like that that you

850
00:34:37,210 --> 00:34:35,430
might be might be missing so that that's

851
00:34:39,620 --> 00:34:37,220
what they say the Hurricane Center

852
00:34:41,210 --> 00:34:39,630
forecasters is a potential benefit we

853
00:34:44,530 --> 00:34:41,220
would have had had we had those are

854
00:34:47,840 --> 00:34:44,540
maybe Joe you have something to add I

855
00:34:49,190 --> 00:34:47,850
would just add you know that we are very

856
00:34:50,990 --> 00:34:49,200
excited and we are preparing to use

857
00:34:54,140 --> 00:34:51,000
those atmospheric motion vectors those

858
00:34:56,120 --> 00:34:54,150
derive motion winds from the imager so

859
00:34:58,580 --> 00:34:56,130
we're very excited what about what the

860
00:35:00,839 --> 00:34:58,590
possibility is for how that can improve

861
00:35:03,000 --> 00:35:00,849
our regional modeling

862
00:35:05,220 --> 00:35:03,010
another way we're trying to use the

863
00:35:07,170 --> 00:35:05,230

spectral analysis Steve gave some

864
00:35:09,720 --> 00:35:07,180
examples of that but if you're looking

865
00:35:11,819 --> 00:35:09,730
at fires in the southeast we're gonna be

866
00:35:13,680 --> 00:35:11,829
able to look at it very closely and even

867
00:35:15,839 --> 00:35:13,690
see based on the spectral bands you know

868
00:35:18,329 --> 00:35:15,849
what's burning what what is it doing

869
00:35:20,670 --> 00:35:18,339
which way is it going and so that can

870
00:35:22,170 --> 00:35:20,680
really inform some of the efforts that's

871
00:35:23,910 --> 00:35:22,180
that's being provided for fighting those

872
00:35:26,190 --> 00:35:23,920
fires so those are you know some of the

873
00:35:30,660 --> 00:35:26,200
new ways we'll be able to use the

874
00:35:33,359 --> 00:35:30,670
capabilities on goes are the original

875
00:35:37,380 --> 00:35:33,369
question on how the technology came

876
00:35:41,630 --> 00:35:37,390
about and it was really way early around

877
00:35:44,579 --> 00:35:41,640
2000 and we issued competed formulation

878
00:35:48,180 --> 00:35:44,589
contracts working with various companies

879
00:35:51,000 --> 00:35:48,190
to develop mature the approaches that we

880
00:35:54,510 --> 00:35:51,010
ultimately chose in 2004 to develop the

881
00:35:56,940 --> 00:35:54,520
the ABI instrument and as Steve pointed

882
00:35:58,950 --> 00:35:56,950
out you know we have a long history

883
00:36:01,019 --> 00:35:58,960
working with hair is developing the go

884
00:36:04,579 --> 00:36:01,029
site through an imager and sounder which

885
00:36:07,349 --> 00:36:04,589
also flew on NOP and and ultimately

886
00:36:11,010 --> 00:36:07,359
Harris were supposed to pick to develop

887
00:36:13,140 --> 00:36:11,020
the ABI for that go sorry I know the

888
00:36:15,690 --> 00:36:13,150

question also asked about imaging the

889
00:36:18,359 --> 00:36:15,700
Sun right um but before I answer that

890
00:36:20,190 --> 00:36:18,369
let me make one comment I don't about

891
00:36:22,589 --> 00:36:20,200
the miracle weather prediction forecast

892
00:36:24,839 --> 00:36:22,599
models where we're seeing the impact but

893
00:36:26,190 --> 00:36:24,849
these motion vectors it's it's a largely

894
00:36:29,220 --> 00:36:26,200
attributable to the higher spatial

895
00:36:31,109 --> 00:36:29,230
resolution so when we calculate how the

896
00:36:32,609 --> 00:36:31,119
clouds are moving in the water vapors

897
00:36:35,700 --> 00:36:32,619
moving and we get a wind vector from

898
00:36:37,380 --> 00:36:35,710
that that depends on how well we did the

899
00:36:40,019 --> 00:36:37,390
clouds and it turns out because we have

900
00:36:41,130 --> 00:36:40,029
four times the spatial resolution to get

901
00:36:43,230 --> 00:36:41,140
the clouds we can more accurately

902
00:36:45,599 --> 00:36:43,240
accurately assign the height of that

903
00:36:47,819 --> 00:36:45,609
motion vector so if we have the right

904
00:36:49,289 --> 00:36:47,829
vector of the wind but we put it at the

905
00:36:51,599 --> 00:36:49,299
wrong altitude that's going to mess up

906
00:36:53,430 --> 00:36:51,609
the models so the more accurate we can

907
00:36:56,160 --> 00:36:53,440
do that and we've actually determined

908
00:36:57,930 --> 00:36:56,170
from our goes our algorithm our recipe

909
00:37:00,539 --> 00:36:57,940
that we're using that we can reduce the

910
00:37:02,640 --> 00:37:00,549
speed bias by one meter per second based

911
00:37:05,430 --> 00:37:02,650
on experiments with the Himawari which

912
00:37:08,339 --> 00:37:05,440
is a huge benefit to the global models

913
00:37:10,680 --> 00:37:08,349

so the question earlier about how do the

914
00:37:12,510 --> 00:37:10,690
mid-latitudes going to benefit from

915
00:37:13,770 --> 00:37:12,520
gozar it's the fact that we're able to

916
00:37:16,020 --> 00:37:13,780
put these

917
00:37:18,150 --> 00:37:16,030
vectors into the numerical models and

918
00:37:21,030 --> 00:37:18,160
that's going to have a the biggest

919
00:37:22,740 --> 00:37:21,040
impact say on the extra tropics by

920
00:37:25,050 --> 00:37:22,750
making those model forecasts more

921
00:37:27,990 --> 00:37:25,060
accurate on the Sun so I don't forget

922
00:37:29,940 --> 00:37:28,000
Suvi and the Sun I mentioned earlier so

923
00:37:33,090 --> 00:37:29,950
we have 4 times the spatial resolution

924
00:37:35,700 --> 00:37:33,100
you'll have crisp imagery to better see

925
00:37:37,380 --> 00:37:35,710
for example solar flares if we have a

926
00:37:40,920 --> 00:37:37,390
solar flare we'll be able to determine

927
00:37:44,070 --> 00:37:40,930
more accurately its extent so weird word

928
00:37:45,210 --> 00:37:44,080
sources and words extended extended tube

929
00:37:48,030 --> 00:37:45,220
and we're also going to be able to

930
00:37:51,480 --> 00:37:48,040
diagnose that more rapidly because we

931
00:37:54,570 --> 00:37:51,490
have the the higher higher resolution

932
00:37:57,240 --> 00:37:54,580
and actually Suvi is a bit faster than

933
00:37:59,370 --> 00:37:57,250
the current satellite as well

934
00:38:02,550 --> 00:37:59,380
so everything's faster everything's got

935
00:38:06,180 --> 00:38:02,560
more resolution and it's gonna be

936
00:38:07,950 --> 00:38:06,190
amazing great thank you very much i we

937
00:38:10,170 --> 00:38:07,960
have I believe one question on social

938
00:38:12,990 --> 00:38:10,180

media so Johnny Emmerich from our social

939
00:38:16,740 --> 00:38:13,000
media team please question thanks Sean

940
00:38:19,980 --> 00:38:16,750
this question is once in orbit what

941
00:38:21,510 --> 00:38:19,990
potential hazards or fail points are

942
00:38:29,390 --> 00:38:21,520
there where it may be prohibits you from

943
00:38:32,430 --> 00:38:29,400
getting accurate data well I can speak

944
00:38:35,280 --> 00:38:32,440
mostly to the Lightning mapper it's it's

945
00:38:38,640 --> 00:38:35,290
got a charge coupled device detector and

946
00:38:40,860 --> 00:38:38,650
so high-energy particles can penetrate

947
00:38:43,770 --> 00:38:40,870
the spacecraft skin and they can get to

948
00:38:47,310 --> 00:38:43,780
the instrument and so in that case we

949
00:38:50,580 --> 00:38:47,320
cook those pixels if we had high energy

950
00:38:53,130 --> 00:38:50,590
that would impact detectors so right now

951
00:38:54,990 --> 00:38:53,140
we've the the mission that Sandra

952
00:38:57,720 --> 00:38:55,000
mentioned that down orbit for 17 years

953
00:39:00,420 --> 00:38:57,730
we never lost any pixels over that time

954
00:39:02,190 --> 00:39:00,430
it's a solid-state device so things like

955
00:39:04,770 --> 00:39:02,200
that could happen and it degraded over

956
00:39:06,420 --> 00:39:04,780
time then maybe we would lose a piece of

957
00:39:08,850 --> 00:39:06,430
our field of view if that were to happen

958
00:39:11,550 --> 00:39:08,860
in the case of the Suvi instrument it's

959
00:39:13,740 --> 00:39:11,560
got an ultraviolet filter ultraviolet

960
00:39:15,570 --> 00:39:13,750
filters are very touchy and very

961
00:39:17,610 --> 00:39:15,580
difficult to manufacture in fact I

962
00:39:19,470 --> 00:39:17,620
believe we're replacing the UV filters

963
00:39:20,400 --> 00:39:19,480

right before we launched maybe we've

964
00:39:23,220 --> 00:39:20,410
done that already

965
00:39:26,420 --> 00:39:23,230
they don't like water why don't water is

966
00:39:28,430 --> 00:39:26,430
an enemy of ultraviolet filters so

967
00:39:31,040 --> 00:39:28,440
if something were to happen in

968
00:39:32,720 --> 00:39:31,050
contamination then that could affect you

969
00:39:35,060 --> 00:39:32,730
know the full field of view that we

970
00:39:36,470 --> 00:39:35,070
would get from the instruments and of

971
00:39:39,320 --> 00:39:36,480
course hopefully there's be no issues

972
00:39:40,880 --> 00:39:39,330
with the telecommunication aspects of

973
00:39:46,330 --> 00:39:40,890
the satellite I get the data down to

974
00:39:47,600 --> 00:39:46,340
earth to use it you know with the launch

975
00:39:50,960 --> 00:39:47,610
dangers

976
00:39:53,870 --> 00:39:50,970
deployment of appendages there is danger

977
00:39:55,250 --> 00:39:53,880
and we have to still achieve Joe

978
00:39:57,440 --> 00:39:55,260
stationary orbit it's gonna take nine

979
00:39:59,660 --> 00:39:57,450
days to to get there you know so the

980
00:40:01,640 --> 00:39:59,670
thrusters have to be able to get us all

981
00:40:04,070 --> 00:40:01,650
tamale to where we want to go so you

982
00:40:06,560 --> 00:40:04,080
know that's why we test and test until

983
00:40:10,310 --> 00:40:06,570
you know we we know that things are

984
00:40:13,610 --> 00:40:10,320
gonna work okay other questions here in

985
00:40:19,790 --> 00:40:13,620
the room we've got one right here near

986
00:40:22,310 --> 00:40:19,800
the back Matt Sofia no KGW TV back to

987
00:40:24,700 --> 00:40:22,320
the GLM if I if I heard correctly the

988
00:40:28,970 --> 00:40:24,710

the technology of the Lightning

989
00:40:32,740 --> 00:40:28,980
technology on trim was based on 1997

990
00:40:35,630 --> 00:40:32,750
technology so was the new GLM instrument

991
00:40:38,810 --> 00:40:35,640
similar to that or have we advanced

992
00:40:41,330 --> 00:40:38,820
beyond that and how much advancement

993
00:40:44,720 --> 00:40:41,340
over what we had with the Lightning

994
00:40:48,470 --> 00:40:44,730
imaging sensor it had 128 128 pixel

995
00:40:50,690 --> 00:40:48,480
array now we're talking 13 60 by 1320 so

996
00:40:52,880 --> 00:40:50,700
we got a much bigger array that were

997
00:40:54,890 --> 00:40:52,890
detecting the near the full disk of the

998
00:40:57,940 --> 00:40:54,900
earth and the the thing that's gonna

999
00:41:00,110 --> 00:40:57,950
really change things is we had

1000
00:41:03,200 --> 00:41:00,120
transponder bandwidth for that mission

1001
00:41:05,150 --> 00:41:03,210
of 8 kilobits per second and what would

1002
00:41:06,890 --> 00:41:05,160
happen is we would fly over a very

1003
00:41:10,700 --> 00:41:06,900
intense storm or over the South Atlantic

1004
00:41:13,010 --> 00:41:10,710
anomaly which is a high radiation area

1005
00:41:15,890 --> 00:41:13,020
off of South to South America and East

1006
00:41:17,990 --> 00:41:15,900
Coast we would saturate the instrument

1007
00:41:20,120 --> 00:41:18,000
and so we couldn't take any data so now

1008
00:41:21,560 --> 00:41:20,130
on goes our thanks to all the developers

1009
00:41:24,860 --> 00:41:21,570
we have 7.6

1010
00:41:26,480 --> 00:41:24,870
sorry 7.7 megabits per second what does

1011
00:41:28,010 --> 00:41:26,490
that mean that's a huge difference that

1012
00:41:30,650 --> 00:41:28,020
means that we can lower our detection

1013
00:41:32,270 --> 00:41:30,660

threshold and see more of the lightening

1014
00:41:34,880 --> 00:41:32,280
even the weaker lightening that we could

1015
00:41:37,250 --> 00:41:34,890
before we're predicting a greater than

1016
00:41:39,080 --> 00:41:37,260
80 percent detection probability of all

1017
00:41:40,070 --> 00:41:39,090
types of lightning even if it goes to

1018
00:41:42,470 --> 00:41:40,080
ground because the

1019
00:41:44,660 --> 00:41:42,480
strike has channels up into the cloud

1020
00:41:47,870 --> 00:41:44,670
and the light that's emitted makes its

1021
00:41:49,130 --> 00:41:47,880
way to cloud top and and we see it and

1022
00:41:51,620 --> 00:41:49,140
so we have a number of filtering

1023
00:41:53,210 --> 00:41:51,630
algorithms we have eight right now that

1024
00:41:55,610 --> 00:41:53,220
take the raw data that's sent to the

1025
00:41:57,980 --> 00:41:55,620
ground from GLM and remove things like

1026
00:42:00,680 --> 00:41:57,990
glint that you get from the Sun

1027
00:42:03,200 --> 00:42:00,690
reflecting off the ocean surface we also

1028
00:42:04,970 --> 00:42:03,210
have radiation effects as I mentioned

1029
00:42:07,670 --> 00:42:04,980
earlier and so actually after all that

1030
00:42:09,320 --> 00:42:07,680
filtering is done we really see the

1031
00:42:11,750 --> 00:42:09,330
lightning very well that's a huge

1032
00:42:13,760 --> 00:42:11,760
advantage over what we had with the

1033
00:42:15,080 --> 00:42:13,770
original instrument we still operate at

1034
00:42:17,720 --> 00:42:15,090
the same wavelength in the near-infrared

1035
00:42:19,700 --> 00:42:17,730
because that's where we get about 10% of

1036
00:42:22,280 --> 00:42:19,710
the total energy from lightning so

1037
00:42:24,410 --> 00:42:22,290
there's no reason to change that so it's

1038
00:42:27,760 --> 00:42:24,420

the bandwidth is really the big

1039
00:42:30,170 --> 00:42:27,770
innovation since the earlier instrument

1040
00:42:33,650 --> 00:42:30,180
great I think we have time for one or

1041
00:42:37,700 --> 00:42:33,660
two more questions the audience do we

1042
00:42:40,550 --> 00:42:37,710
have any any more if not in the back we

1043
00:42:43,220 --> 00:42:40,560
have one more okay I Nick Stewart KHQ a

1044
00:42:44,480 --> 00:42:43,230
Quincy Illinois a question for FEMA we

1045
00:42:46,520 --> 00:42:44,490
talked obviously very well about how

1046
00:42:47,750 --> 00:42:46,530
there's going to you know product and

1047
00:42:48,740 --> 00:42:47,760
predict disasters how you might be able

1048
00:42:50,360 --> 00:42:48,750
to prepare for that

1049
00:42:52,130 --> 00:42:50,370
how about post disaster how are you

1050
00:42:54,050 --> 00:42:52,140
looking to use this technology to kind

1051
00:42:55,970 --> 00:42:54,060
of look at recovery efforts that's a

1052
00:42:58,100 --> 00:42:55,980
great question because people tend to

1053
00:43:00,920 --> 00:42:58,110
think that disasters in wants response

1054
00:43:03,770 --> 00:43:00,930
in and it really does not recovery goes

1055
00:43:06,260 --> 00:43:03,780
on for several years but immediately

1056
00:43:07,310 --> 00:43:06,270
following a response as you know you

1057
00:43:08,930 --> 00:43:07,320
have quite a vulnerable population

1058
00:43:10,700 --> 00:43:08,940
you've got people have been displaced

1059
00:43:13,910 --> 00:43:10,710
you've got people that have damaged

1060
00:43:15,440 --> 00:43:13,920
homes you have limited transport ability

1061
00:43:17,930 --> 00:43:15,450
because you have debris in the roads you

1062
00:43:20,030 --> 00:43:17,940
have all those kinds of things so having

1063
00:43:21,710 --> 00:43:20,040

accurate weather forecasting this is

1064
00:43:24,710 --> 00:43:21,720
important as it is prior to the event

1065
00:43:27,320 --> 00:43:24,720
because that will determine how we can

1066
00:43:28,340 --> 00:43:27,330
actually get the commodities moved and

1067
00:43:33,650 --> 00:43:28,350
distributed throughout

1068
00:43:35,510 --> 00:43:33,660
how we can actually evacuate the are our

1069
00:43:37,190 --> 00:43:35,520
vulnerable populations how we can get

1070
00:43:39,920 --> 00:43:37,200
people back into there is that they came

1071
00:43:41,810 --> 00:43:39,930
from all of those things so we pay as

1072
00:43:44,060 --> 00:43:41,820
much attention post event as we do pre

1073
00:43:46,130 --> 00:43:44,070
event so again the better of forecast

1074
00:43:49,280 --> 00:43:46,140
the the better decisions we can make and

1075
00:43:50,960 --> 00:43:49,290
more timely our decisions great Thank

1076
00:43:53,270 --> 00:43:50,970
You Damon thank you once again to all of

1077
00:43:54,350 --> 00:43:53,280
our panelists as all the time we have

1078
00:43:55,550 --> 00:43:54,360
today for this briefing

1079
00:43:57,560 --> 00:43:55,560
but I want to remind you that you can

1080
00:43:59,360 --> 00:43:57,570
find out much more about goes our

1081
00:44:02,180 --> 00:43:59,370
mission by going to the website that

1082
00:44:05,060 --> 00:44:02,190
you'll see on your screen and you can

1083
00:44:07,130 --> 00:44:05,070
also follow us online and on social

1084
00:44:09,710 --> 00:44:07,140
media in the days leading up to launch

1085
00:44:11,150 --> 00:44:09,720
this Saturday and be sure to tune back

1086
00:44:13,670 --> 00:44:11,160
for more