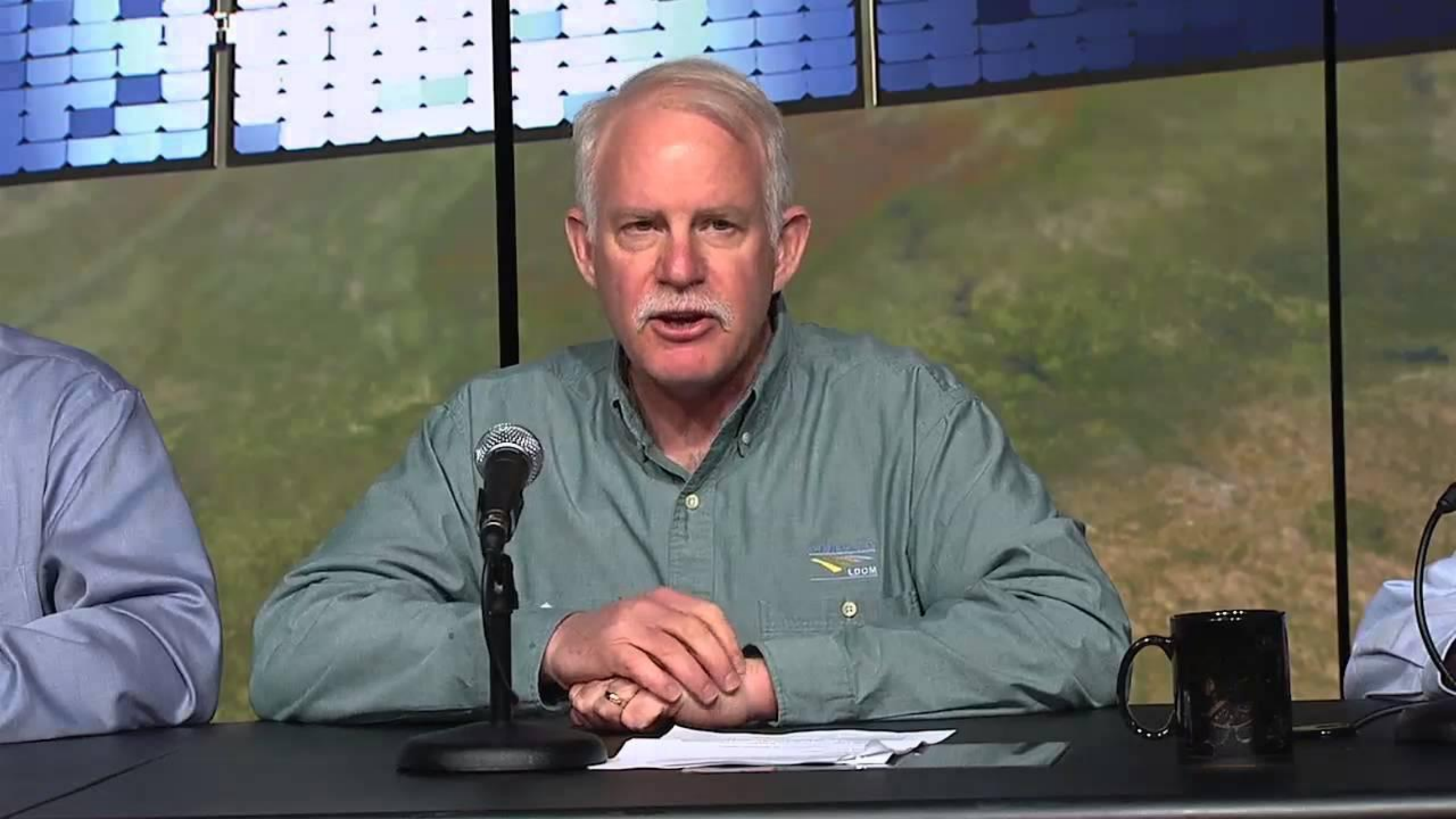
LDOM

1
00:00:24,710 --> 00:00:22,230
welcome to nasa headquarters in

2
00:00:26,710 --> 00:00:24,720
washington d.c i'm steve cole with the

3
00:00:28,710 --> 00:00:26,720
office of communications we're here

4
00:00:31,189 --> 00:00:28,720
today to give you a preview of nasa's

5
00:00:33,590 --> 00:00:31,199
next earth observing satellite the

6
00:00:35,670 --> 00:00:33,600
landsat data continuity mission

7
00:00:38,389 --> 00:00:35,680
scheduled to launch next month in just

8
00:00:39,830 --> 00:00:38,399
one month from vandenberg air force base

9
00:00:41,670 --> 00:00:39,840
in california

10
00:00:43,590 --> 00:00:41,680
we have four panelists to talk with you

11
00:00:47,350 --> 00:00:43,600
today and to answer your questions about

12
00:00:50,310 --> 00:00:47,360
the mission which we call ldcm

13
00:00:52,790 --> 00:00:50,320

our first panelist is dave jarrett

14
00:00:55,510 --> 00:00:52,800
who's ldcm program executive here at

15
00:00:58,549 --> 00:00:55,520
nasa headquarters

16
00:01:00,790 --> 00:00:58,559
ken schwer ldcm project manager at

17
00:01:02,549 --> 00:01:00,800
goddard space flight center in greenbelt

18
00:01:05,990 --> 00:01:02,559
maryland

19
00:01:07,830 --> 00:01:06,000
jim irons ldcm project scientist also at

20
00:01:10,230 --> 00:01:07,840
nasa goddard

21
00:01:12,950 --> 00:01:10,240
and matthew larson the associate

22
00:01:15,510 --> 00:01:12,960
director for climate and land use change

23
00:01:17,270 --> 00:01:15,520
at the u.s geological survey in western

24
00:01:18,870 --> 00:01:17,280
virginia

25
00:01:21,030 --> 00:01:18,880
after our presentations we'll take

26
00:01:23,190 --> 00:01:21,040
questions from the media here in the

27
00:01:25,109 --> 00:01:23,200
auditorium on the phone lines and from

28
00:01:26,789 --> 00:01:25,119
you watching online

29
00:01:29,230 --> 00:01:26,799
to ask questions

30
00:01:31,910 --> 00:01:29,240
use the hashtag

31
00:01:33,830 --> 00:01:31,920
asknasa on twitter

32
00:01:35,109 --> 00:01:33,840
you can also find out more about the

33
00:01:41,350 --> 00:01:35,119
mission

34
00:01:44,870 --> 00:01:43,109
landsat

35
00:01:47,429 --> 00:01:44,880
so we'll start the briefing

36
00:01:49,510 --> 00:01:47,439
with dave jarrett thank you steve good

37
00:01:51,350 --> 00:01:49,520
afternoon we're very happy to be here

38
00:01:53,749 --> 00:01:51,360

today to brief you

39
00:01:56,550 --> 00:01:53,759
on the ldcm mission as we head down the

40
00:01:58,389 --> 00:01:56,560
home stretch to launch next month

41
00:01:59,670 --> 00:01:58,399
nasa's earth science division is pleased

42
00:02:02,550 --> 00:01:59,680
to work with the department of the

43
00:02:04,709 --> 00:02:02,560
interior's u.s geological survey and our

44
00:02:06,950 --> 00:02:04,719
industry and research partners

45
00:02:10,550 --> 00:02:06,960
to continue the landsat legacy with the

46
00:02:12,390 --> 00:02:10,560
launch of our new ldcm observatory

47
00:02:15,190 --> 00:02:12,400
nasa's earth observing program is

48
00:02:17,750 --> 00:02:15,200
dedicated to the global observations of

49
00:02:20,550 --> 00:02:17,760
the entire earth system for both basic

50
00:02:22,790 --> 00:02:20,560
science and new applications

51
00:02:25,510 --> 00:02:22,800
together with other u.s agencies and

52
00:02:27,430 --> 00:02:25,520
foreign partners we work to develop

53
00:02:29,430 --> 00:02:27,440
and incorporate new and innovative

54
00:02:32,229 --> 00:02:29,440
observing capabilities into all of our

55
00:02:33,910 --> 00:02:32,239
missions including ldcm

56
00:02:36,630 --> 00:02:33,920
the new instruments to be flown on this

57
00:02:39,030 --> 00:02:36,640
mission the operational land imager and

58
00:02:41,750 --> 00:02:39,040
the thermal infrared sensor are an

59
00:02:44,070 --> 00:02:41,760
evolutionary step in sensor design

60
00:02:46,070 --> 00:02:44,080
with improved capabilities over previous

61
00:02:48,869 --> 00:02:46,080
landsat missions

62
00:02:51,110 --> 00:02:48,879
ldcm is the latest collaboration between

63
00:02:53,350 --> 00:02:51,120

nasa and the usgs

64
00:02:55,990 --> 00:02:53,360
the landsat program is very important

65
00:02:57,990 --> 00:02:56,000
endeavor for the nation in the world

66
00:02:59,430 --> 00:02:58,000
that has been going strong now for over

67
00:03:02,470 --> 00:02:59,440
four decades

68
00:03:04,390 --> 00:03:02,480
as you can see in the landsat timeline

69
00:03:07,670 --> 00:03:04,400
just this past summer we celebrated the

70
00:03:11,190 --> 00:03:07,680
40th anniversary of the landsat 1 launch

71
00:03:13,589 --> 00:03:11,200
at the museum here in washington

72
00:03:16,630 --> 00:03:13,599
ldcm follows closely on the heels of the

73
00:03:18,630 --> 00:03:16,640
retirement of the landsat 5 last month a

74
00:03:21,910 --> 00:03:18,640
remarkable mission that has provided a

75
00:03:24,710 --> 00:03:21,920
wealth of data for the past 28 years

76
00:03:28,630 --> 00:03:24,720
and landsat 7 continues to provide

77
00:03:31,750 --> 00:03:28,640
valuable data since its launch in 1999.

78
00:03:33,750 --> 00:03:31,760
ldcm will deliver more data per day

79
00:03:35,190 --> 00:03:33,760
than any of the previous landsat

80
00:03:38,550 --> 00:03:35,200
missions

81
00:03:40,949 --> 00:03:38,560
in 2008 the usgs adopted a policy of

82
00:03:42,630 --> 00:03:40,959
making landsat data available for free

83
00:03:45,110 --> 00:03:42,640
over the internet

84
00:03:47,110 --> 00:03:45,120
since then a much wider community has

85
00:03:50,309 --> 00:03:47,120
had free and open access

86
00:03:51,670 --> 00:03:50,319
to the 40-year landsat data record

87
00:03:53,589 --> 00:03:51,680
this policy

88
00:03:55,910 --> 00:03:53,599

will continue to give the united states

89
00:03:57,990 --> 00:03:55,920
and the world a better understanding

90
00:03:59,110 --> 00:03:58,000
of changes occurring to the planet's

91
00:04:00,949 --> 00:03:59,120
surface

92
00:04:03,830 --> 00:04:00,959
do both

93
00:04:05,429 --> 00:04:03,840
natural and human impacts

94
00:04:07,589 --> 00:04:05,439
i'd like to take this opportunity to

95
00:04:09,589 --> 00:04:07,599
give special thanks to our colleagues at

96
00:04:11,990 --> 00:04:09,599
the usgs

97
00:04:14,070 --> 00:04:12,000
goddard ball aerospace

98
00:04:15,270 --> 00:04:14,080
hammers and the united launch alliance

99
00:04:16,789 --> 00:04:15,280
for all of their hard work and

100
00:04:18,949 --> 00:04:16,799
dedication

101
00:04:21,270 --> 00:04:18,959
in getting us to this exciting point

102
00:04:24,230 --> 00:04:21,280
prior to launch which is on track for

103
00:04:25,909 --> 00:04:24,240
monday january or february 11th

104
00:04:27,350 --> 00:04:25,919
now i'll turn it over to ken for more on

105
00:04:28,629 --> 00:04:27,360
the mission

106
00:04:30,870 --> 00:04:28,639
thank you dave

107
00:04:32,310 --> 00:04:30,880
i am so very excited to be here today

108
00:04:33,189 --> 00:04:32,320
because when this press conference

109
00:04:35,830 --> 00:04:33,199
happens

110
00:04:37,749 --> 00:04:35,840
that means my team is close to launch

111
00:04:40,390 --> 00:04:37,759
today the ldcm satellite is at the

112
00:04:42,310 --> 00:04:40,400
vandenberg air force base in california

113
00:04:45,670 --> 00:04:42,320

preparing for our launch on february

114
00:04:48,390 --> 00:04:45,680
11th and board an atlas v launch vehicle

115
00:04:51,110 --> 00:04:48,400
the ldcm satellite is about 19 feet long

116
00:04:53,510 --> 00:04:51,120
and weighs about 6 000 pounds about the

117
00:04:55,990 --> 00:04:53,520
size of a very large suv

118
00:04:58,070 --> 00:04:56,000
it's also considered very large for an

119
00:05:00,310 --> 00:04:58,080
earth observing satellite

120
00:05:01,590 --> 00:05:00,320
my ldcm team recently completed a

121
00:05:03,590 --> 00:05:01,600
three-month

122
00:05:05,749 --> 00:05:03,600
comprehensive satellite environmental

123
00:05:08,230 --> 00:05:05,759
test program it's where we simulated

124
00:05:11,110 --> 00:05:08,240
launch and on orbit environments that's

125
00:05:13,430 --> 00:05:11,120
where we shake it we inject noise and we

126
00:05:15,590 --> 00:05:13,440
push the satellite to thermal extremes

127
00:05:17,189 --> 00:05:15,600
all to make sure this satellite is good

128
00:05:19,110 --> 00:05:17,199
to go for launch

129
00:05:21,350 --> 00:05:19,120
my ldcm team which will operate the

130
00:05:24,870 --> 00:05:21,360
satellite after launch is busy preparing

131
00:05:27,830 --> 00:05:24,880
for and training for that exciting day

132
00:05:30,150 --> 00:05:27,840
when our satellite is on orbit

133
00:05:33,029 --> 00:05:30,160
her home

134
00:05:33,830 --> 00:05:33,039
the ldcm spacecraft was built by orbital

135
00:05:36,550 --> 00:05:33,840
in

136
00:05:38,070 --> 00:05:36,560
gilbert arizona where both the oli and

137
00:05:41,189 --> 00:05:38,080
tears instruments were delivered and

138
00:05:43,430 --> 00:05:41,199

integrated the operational land imager

139
00:05:45,029 --> 00:05:43,440
oli was built by ball aerospace in

140
00:05:47,510 --> 00:05:45,039
boulder colorado

141
00:05:49,430 --> 00:05:47,520
the thermal infrared sensor tiers was

142
00:05:52,310 --> 00:05:49,440
built by nasa's goddard space flight

143
00:05:54,230 --> 00:05:52,320
center in greenbelt maryland over my

144
00:05:55,990 --> 00:05:54,240
career i have had the wonderful

145
00:05:58,790 --> 00:05:56,000
opportunity work with all of these

146
00:06:02,230 --> 00:05:58,800
organizations and they have once again

147
00:06:04,230 --> 00:06:02,240
delivered excellent flight systems

148
00:06:06,469 --> 00:06:04,240
the ldcm team recently completed the

149
00:06:08,870 --> 00:06:06,479
satellite pre-ship review just last

150
00:06:11,830 --> 00:06:08,880
month which led to the satellite being

151
00:06:14,870 --> 00:06:11,840
shipped via tractor trailer ground

152
00:06:17,350 --> 00:06:14,880
transporter and arrived december 19th at

153
00:06:19,430 --> 00:06:17,360
the vandenberg air force base astrotech

154
00:06:21,990 --> 00:06:19,440
processing facility

155
00:06:24,870 --> 00:06:22,000
since then the ldcm spacecraft and

156
00:06:27,029 --> 00:06:24,880
instruments have completed post shipment

157
00:06:29,430 --> 00:06:27,039
inspections and testing

158
00:06:32,390 --> 00:06:29,440
actually today the ldcm satellite

159
00:06:35,430 --> 00:06:32,400
propulsion system is being fueled and

160
00:06:37,590 --> 00:06:35,440
next week we already start operations

161
00:06:39,830 --> 00:06:37,600
integrated with the atlas v launch

162
00:06:42,710 --> 00:06:39,840
vehicle systems

163
00:06:44,790 --> 00:06:42,720

on the 23rd of this month the ldcm

164
00:06:47,110 --> 00:06:44,800
satellite will be encapsulated in the

165
00:06:49,350 --> 00:06:47,120
atlas v payload fairing and then

166
00:06:50,629 --> 00:06:49,360
transported out to the pad on january

167
00:06:52,790 --> 00:06:50,639
25th

168
00:06:55,350 --> 00:06:52,800
the atlas v launch vehicle is built by

169
00:06:57,430 --> 00:06:55,360
united launch alliance ula and managed

170
00:06:59,510 --> 00:06:57,440
by our nasa's kennedy space center

171
00:07:02,230 --> 00:06:59,520
launch services program

172
00:07:04,309 --> 00:07:02,240
the ldacm team and the atlas team though

173
00:07:06,550 --> 00:07:04,319
the next few weeks will complete all the

174
00:07:09,350 --> 00:07:06,560
final reviews and the mission dress

175
00:07:11,110 --> 00:07:09,360
rehearsal on february 11th

176
00:07:13,990 --> 00:07:11,120
the nasa goddard space flight center

177
00:07:15,430 --> 00:07:14,000
role on ldcm is to manage the entire

178
00:07:17,510 --> 00:07:15,440
mission for nasa's earth science

179
00:07:19,749 --> 00:07:17,520
division which includes acquiring the

180
00:07:20,710 --> 00:07:19,759
spacecraft the instruments the launch

181
00:07:22,710 --> 00:07:20,720
vehicle

182
00:07:24,950 --> 00:07:22,720
overall mission systems engineering and

183
00:07:27,110 --> 00:07:24,960
early orbit operations

184
00:07:30,790 --> 00:07:27,120
the us department of interior through

185
00:07:33,029 --> 00:07:30,800
the u.s geological survey usgs

186
00:07:34,870 --> 00:07:33,039
is responsible for the ground system

187
00:07:36,790 --> 00:07:34,880
mission operations

188
00:07:38,230 --> 00:07:36,800

and the data processing and archive

189
00:07:41,189 --> 00:07:38,240
system

190
00:07:44,230 --> 00:07:41,199
after launch and nasa's initial checkout

191
00:07:46,390 --> 00:07:44,240
usgs will take over operational control

192
00:07:49,350 --> 00:07:46,400
of the ldn sam satellite

193
00:07:51,110 --> 00:07:49,360
and distribute and archive oli and tiers

194
00:07:54,309 --> 00:07:51,120
data

195
00:07:56,550 --> 00:07:54,319
once ldcm is on orbit which is 438 miles

196
00:07:58,950 --> 00:07:56,560
above our homes our satellite will

197
00:08:00,230 --> 00:07:58,960
follow the same ground track of previous

198
00:08:02,550 --> 00:08:00,240
landsats

199
00:08:05,430 --> 00:08:02,560
this is to ensure the continuity of the

200
00:08:07,749 --> 00:08:05,440
landsat 40-year data record

201
00:08:10,629 --> 00:08:07,759
i know all of you have seen videos where

202
00:08:12,309 --> 00:08:10,639
family has recorded their child's every

203
00:08:15,110 --> 00:08:12,319
birthday for a couple years couple

204
00:08:18,950 --> 00:08:17,350
the changes in growth are just

205
00:08:22,070 --> 00:08:18,960
captivating

206
00:08:24,790 --> 00:08:22,080
well think of this the landsat program

207
00:08:27,350 --> 00:08:24,800
has been doing this every day

208
00:08:28,950 --> 00:08:27,360
for 40 years

209
00:08:31,110 --> 00:08:28,960
which is vital

210
00:08:32,790 --> 00:08:31,120
for accommodating seven billion people

211
00:08:35,029 --> 00:08:32,800
on our planet

212
00:08:37,909 --> 00:08:35,039
as you can see i am very excited about

213
00:08:40,630 --> 00:08:37,919

this mission and the accomplishments of

214
00:08:43,110 --> 00:08:40,640
my extended ldcm team and we look

215
00:08:44,389 --> 00:08:43,120
forward to a smooth launch and a great

216
00:08:46,230 --> 00:08:44,399
mission

217
00:08:48,710 --> 00:08:46,240
thank you at this time i'd like to turn

218
00:08:49,750 --> 00:08:48,720
over to jim who will talk about ldcm

219
00:08:52,630 --> 00:08:49,760
science

220
00:08:54,550 --> 00:08:52,640
thanks ken i share ken's excitement

221
00:08:57,350 --> 00:08:54,560
about the approaching launch of the

222
00:08:59,190 --> 00:08:57,360
landsat dayton data continuity mission

223
00:09:00,630 --> 00:08:59,200
and i'd like to discuss a couple of

224
00:09:01,590 --> 00:09:00,640
reasons why

225
00:09:05,269 --> 00:09:01,600
first

226
00:09:07,750 --> 00:09:05,279
ldcm has a really important mission

227
00:09:10,949 --> 00:09:07,760
that will make the satellite a critical

228
00:09:13,750 --> 00:09:10,959
and extremely valuable national asset

229
00:09:15,829 --> 00:09:13,760
the ldcm will continue the monitoring of

230
00:09:19,430 --> 00:09:15,839
the global land surface

231
00:09:21,670 --> 00:09:19,440
begun by landsat 1 40 years ago

232
00:09:22,470 --> 00:09:21,680
since the launch of landsat 1 we have

233
00:09:24,310 --> 00:09:22,480
seen

234
00:09:26,710 --> 00:09:24,320
and we have caused

235
00:09:28,870 --> 00:09:26,720
dramatic changes to the land surface to

236
00:09:31,829 --> 00:09:28,880
the global land surface that continued

237
00:09:33,269 --> 00:09:31,839
today at rates unprecedented in human

238
00:09:35,110 --> 00:09:33,279

history

239
00:09:36,470 --> 00:09:35,120
these changes are due to an increasing

240
00:09:38,710 --> 00:09:36,480
population

241
00:09:40,070 --> 00:09:38,720
advancing technologies and climate

242
00:09:42,150 --> 00:09:40,080
change

243
00:09:44,710 --> 00:09:42,160
some examples of the far-reaching

244
00:09:45,670 --> 00:09:44,720
changes observed from landsat satellites

245
00:09:47,910 --> 00:09:45,680
include

246
00:09:51,030 --> 00:09:47,920
tropical deforestation

247
00:09:53,750 --> 00:09:51,040
we see here a time series of landsat

248
00:09:57,110 --> 00:09:53,760
images collected over the disappearing

249
00:09:59,990 --> 00:09:57,120
forest in the state of rondonio brazil

250
00:10:03,670 --> 00:10:00,000
another example is urban expansion we've

251
00:10:06,870 --> 00:10:03,680
been able to watch cities like las vegas

252
00:10:09,509 --> 00:10:06,880
grow from year to year from space

253
00:10:11,430 --> 00:10:09,519
we've seen impacts of natural disasters

254
00:10:12,949 --> 00:10:11,440
this is mount saint helens before its

255
00:10:14,470 --> 00:10:12,959
eruption

256
00:10:16,630 --> 00:10:14,480
soon you'll see the

257
00:10:18,790 --> 00:10:16,640
dramatic transformation of the landscape

258
00:10:21,110 --> 00:10:18,800
due to the and the devastation due to

259
00:10:23,829 --> 00:10:21,120
the interruption and then we are able to

260
00:10:26,310 --> 00:10:23,839
watch as the landscape recovers in the

261
00:10:28,630 --> 00:10:26,320
subsequent years

262
00:10:30,710 --> 00:10:28,640
we've also looked at glacial retreat

263
00:10:33,110 --> 00:10:30,720

globally this is a

264
00:10:35,910 --> 00:10:33,120
example of a glacier in alaska the

265
00:10:37,430 --> 00:10:35,920
columbia glacier that has re

266
00:10:41,110 --> 00:10:37,440
retreated in on

267
00:10:44,230 --> 00:10:41,120
on an annual basis as seen from landsat

268
00:10:46,870 --> 00:10:44,240
and we've also seen increased use of

269
00:10:48,230 --> 00:10:46,880
fresh water resources for agricultural

270
00:10:50,870 --> 00:10:48,240
irrigation

271
00:10:51,990 --> 00:10:50,880
these are images of the desert in saudi

272
00:10:55,110 --> 00:10:52,000
arabia

273
00:10:58,150 --> 00:10:55,120
where they have begun to tap deep water

274
00:11:01,430 --> 00:10:58,160
aquifers and as a result you can see in

275
00:11:03,990 --> 00:11:01,440
these landsat images irrigated

276
00:11:06,949 --> 00:11:04,000
agricultural fields springing up

277
00:11:13,590 --> 00:11:10,069
the ldcm will extend and approve upon

278
00:11:15,190 --> 00:11:13,600
the landsat record of landscape change

279
00:11:18,230 --> 00:11:15,200
the resulting observations and

280
00:11:20,790 --> 00:11:18,240
information will be critical to managing

281
00:11:22,949 --> 00:11:20,800
increasing demands on land resources and

282
00:11:24,949 --> 00:11:22,959
preparing for inevitable changes to the

283
00:11:27,110 --> 00:11:24,959
global land surface

284
00:11:29,110 --> 00:11:27,120
a second reason i'm really excited about

285
00:11:31,829 --> 00:11:29,120
the the approaching launch

286
00:11:33,910 --> 00:11:31,839
is that ldcm will be the best landsat

287
00:11:36,630 --> 00:11:33,920
satellite launched today the best

288
00:11:39,030 --> 00:11:36,640

landsat satellite ever in terms of the

289
00:11:42,389 --> 00:11:39,040
quality and quantity of the data

290
00:11:44,150 --> 00:11:42,399
collected by the ldcm sensors

291
00:11:46,230 --> 00:11:44,160
while the data will be backward

292
00:11:49,110 --> 00:11:46,240
compatible with data from the earlier

293
00:11:52,069 --> 00:11:49,120
landsat satellites the operational land

294
00:11:54,069 --> 00:11:52,079
imager the oli and the thermal infrared

295
00:11:56,389 --> 00:11:54,079
sensor tears

296
00:11:58,230 --> 00:11:56,399
both employed technological advances

297
00:12:00,470 --> 00:11:58,240
that will make the observations more

298
00:12:03,190 --> 00:12:00,480
sensitive to variation

299
00:12:05,350 --> 00:12:03,200
of land cover across the landscape and

300
00:12:07,910 --> 00:12:05,360
sense and more sensitive to changes in

301
00:12:10,069 --> 00:12:07,920
the land surface over time

302
00:12:13,030 --> 00:12:10,079
additionally the number of landsat

303
00:12:15,269 --> 00:12:13,040
images downlinked to the ground stations

304
00:12:17,990 --> 00:12:15,279
managed by our interagency partner the

305
00:12:21,030 --> 00:12:18,000
u.s geological survey

306
00:12:23,190 --> 00:12:21,040
will increase to 400 images per day a

307
00:12:24,949 --> 00:12:23,200
rate that exceeds the data collection

308
00:12:27,190 --> 00:12:24,959
rate of any of the other landsat

309
00:12:30,629 --> 00:12:27,200
missions

310
00:12:33,430 --> 00:12:30,639
investigators are mining the full usgs

311
00:12:35,110 --> 00:12:33,440
landsat data archive for long-term and

312
00:12:38,230 --> 00:12:35,120
broad scale

313
00:12:40,870 --> 00:12:38,240

studies and applications the ldcm will

314
00:12:42,710 --> 00:12:40,880
increase the depth of that archive and i

315
00:12:45,269 --> 00:12:42,720
expect that ultimately hundreds of

316
00:12:48,150 --> 00:12:45,279
thousands even millions of people will

317
00:12:51,509 --> 00:12:48,160
directly access these data

318
00:12:53,110 --> 00:12:51,519
through the services offered by the usgs

319
00:12:55,350 --> 00:12:53,120
i further believe that the

320
00:12:57,190 --> 00:12:55,360
investigations and applications enabled

321
00:12:59,269 --> 00:12:57,200
by this access

322
00:13:01,590 --> 00:12:59,279
to the images will greatly

323
00:13:04,790 --> 00:13:01,600
benefit our global society now

324
00:13:07,910 --> 00:13:04,800
increasing beyond seven billion people i

325
00:13:10,550 --> 00:13:07,920
do not think it hyperbole to suggest

326
00:13:12,710 --> 00:13:10,560
that this all seven billion of us will

327
00:13:14,870 --> 00:13:12,720
benefit from the results of the landsat

328
00:13:16,870 --> 00:13:14,880
data continuity mission

329
00:13:18,710 --> 00:13:16,880
thank you and next please let me

330
00:13:20,710 --> 00:13:18,720
introduce matt larson of the u.s

331
00:13:25,269 --> 00:13:20,720
geological survey

332
00:13:26,870 --> 00:13:25,279
the department of interior share the

333
00:13:28,949 --> 00:13:26,880
enthusiasm that you've been hearing from

334
00:13:31,110 --> 00:13:28,959
my colleagues here at nasa

335
00:13:33,990 --> 00:13:31,120
this uh reflects the

336
00:13:37,590 --> 00:13:34,000
long-standing and close partnership that

337
00:13:39,910 --> 00:13:37,600
our agency usgs has with nasa as we've

338
00:13:42,710 --> 00:13:39,920

developed and collaborated to

339
00:13:44,310 --> 00:13:42,720
get this newest landsat mission off the

340
00:13:46,790 --> 00:13:44,320
ground quite literally

341
00:13:48,470 --> 00:13:46,800
there's no other satellite program in

342
00:13:50,310 --> 00:13:48,480
the history of our country or any other

343
00:13:52,550 --> 00:13:50,320
country for that matter that comes close

344
00:13:54,550 --> 00:13:52,560
to having the types of information and

345
00:13:56,550 --> 00:13:54,560
historical continuity

346
00:13:57,350 --> 00:13:56,560
and coverage that the landsat mission

347
00:13:59,990 --> 00:13:57,360
has

348
00:14:01,910 --> 00:14:00,000
it advances our scientific understanding

349
00:14:03,910 --> 00:14:01,920
of the earth service and provides

350
00:14:05,590 --> 00:14:03,920
comprehensive and impartial information

351
00:14:07,910 --> 00:14:05,600
about anywhere on the terrestrial

352
00:14:10,710 --> 00:14:07,920
service of the earth this is critical

353
00:14:12,629 --> 00:14:10,720
for our ability uh as a nation and for

354
00:14:13,910 --> 00:14:12,639
other nations to manage our natural

355
00:14:15,829 --> 00:14:13,920
resources

356
00:14:17,750 --> 00:14:15,839
you've heard some comment about our free

357
00:14:19,990 --> 00:14:17,760
data policy this is something we're very

358
00:14:23,350 --> 00:14:20,000
proud of at interior and the u.s

359
00:14:25,829 --> 00:14:23,360
geological survey in 2008

360
00:14:27,990 --> 00:14:25,839
we opened our 40-year archive of landsat

361
00:14:30,710 --> 00:14:28,000
data to the public for people here in

362
00:14:32,230 --> 00:14:30,720
the u.s and anywhere in the world prior

363
00:14:35,350 --> 00:14:32,240

to that

364
00:14:38,550 --> 00:14:35,360
time we charged for the data and it

365
00:14:40,230 --> 00:14:38,560
we had an average of about 15 000 images

366
00:14:41,990 --> 00:14:40,240
being downloaded and accessed on an

367
00:14:43,670 --> 00:14:42,000
annual basis

368
00:14:46,710 --> 00:14:43,680
since the free data policy we've seen

369
00:14:48,470 --> 00:14:46,720
that number go up to about 3 million

370
00:14:49,829 --> 00:14:48,480
downloads per year as you can see on

371
00:14:51,430 --> 00:14:49,839
this graph

372
00:14:54,069 --> 00:14:51,440
it's really gone through the roof and

373
00:14:57,350 --> 00:14:54,079
what this means is that we now have a

374
00:14:59,350 --> 00:14:57,360
robust and long data set available to

375
00:15:02,150 --> 00:14:59,360
government to universities to the

376
00:15:04,310 --> 00:15:02,160
private sector for analyzing land cover

377
00:15:07,350 --> 00:15:04,320
land change developing applications

378
00:15:08,629 --> 00:15:07,360
scientific and resource management wise

379
00:15:11,350 --> 00:15:08,639
to

380
00:15:13,590 --> 00:15:11,360
better manage our earth resources so

381
00:15:16,389 --> 00:15:13,600
here you can see an example of of one of

382
00:15:18,949 --> 00:15:16,399
those types of applications this is the

383
00:15:20,790 --> 00:15:18,959
use of landsat data to monitor the pine

384
00:15:23,430 --> 00:15:20,800
bark beetles so forest researchers and

385
00:15:26,150 --> 00:15:23,440
forest managers have been tracking the

386
00:15:28,550 --> 00:15:26,160
expansion of this invasive pest through

387
00:15:29,829 --> 00:15:28,560
the northern rockies you by using

388
00:15:31,670 --> 00:15:29,839

landsat

389
00:15:33,430 --> 00:15:31,680
data another

390
00:15:35,910 --> 00:15:33,440
application that's extremely important

391
00:15:38,389 --> 00:15:35,920
economically for the united states is

392
00:15:39,350 --> 00:15:38,399
the use of landsat data

393
00:15:41,590 --> 00:15:39,360
for

394
00:15:43,910 --> 00:15:41,600
water resources management and what

395
00:15:46,629 --> 00:15:43,920
we've seen in the last decade or so are

396
00:15:49,430 --> 00:15:46,639
the development of of very sophisticated

397
00:15:51,990 --> 00:15:49,440
but uh easily applied models using

398
00:15:55,470 --> 00:15:52,000
landsat data and thermal data from

399
00:15:57,030 --> 00:15:55,480
landsat uh platforms to estimate uh the

400
00:15:59,030 --> 00:15:57,040
evapotranspiration from the earth's

401
00:16:01,509 --> 00:15:59,040
surface this is used to calibrate

402
00:16:03,350 --> 00:16:01,519
irrigated agriculture how much water do

403
00:16:05,509 --> 00:16:03,360
we need to apply to crops particularly

404
00:16:08,710 --> 00:16:05,519
in the west where water is

405
00:16:10,389 --> 00:16:08,720
under multiple competing interests not

406
00:16:12,069 --> 00:16:10,399
only does it allow us to better manage

407
00:16:14,069 --> 00:16:12,079
that water but it also allows us to

408
00:16:16,389 --> 00:16:14,079
support other interests ecosystem

409
00:16:19,030 --> 00:16:16,399
interests industrial

410
00:16:20,949 --> 00:16:19,040
supplies for water municipal supplies

411
00:16:23,269 --> 00:16:20,959
energy for

412
00:16:24,150 --> 00:16:23,279
water for cooling of power plants so

413
00:16:25,910 --> 00:16:24,160

we're

414
00:16:28,389 --> 00:16:25,920
looking forward to this

415
00:16:29,269 --> 00:16:28,399
new landsat mission which as jim noted

416
00:16:30,949 --> 00:16:29,279
brings

417
00:16:32,310 --> 00:16:30,959
extra capabilities and enhanced

418
00:16:34,710 --> 00:16:32,320
capabilities

419
00:16:38,230 --> 00:16:34,720
for the landsat

420
00:16:41,269 --> 00:16:38,240
data record and our archive and we

421
00:16:44,150 --> 00:16:41,279
expect to see an uh ever increasing use

422
00:16:46,389 --> 00:16:44,160
of these data as we go forward into this

423
00:16:48,710 --> 00:16:46,399
next phase of the landsat mission thank

424
00:16:50,949 --> 00:16:48,720
you very much and back to you steve

425
00:16:53,670 --> 00:16:50,959
okay thank you to our panelists and now

426
00:16:56,870 --> 00:16:53,680
we'll take questions um

427
00:16:59,829 --> 00:16:56,880
any press in the room with questions

428
00:17:01,269 --> 00:16:59,839
at this point otherwise we'll

429
00:17:03,590 --> 00:17:01,279
check with our folks who are listening

430
00:17:05,909 --> 00:17:03,600
on the phone line and again to remind

431
00:17:09,110 --> 00:17:05,919
people who are watching

432
00:17:10,150 --> 00:17:09,120
um on online you can ask questions via

433
00:17:13,189 --> 00:17:10,160
twitter

434
00:17:15,909 --> 00:17:13,199
by just using the hashtag ask

435
00:17:20,949 --> 00:17:18,470
okay we have one question from twitter

436
00:17:24,230 --> 00:17:20,959
uh this i think gets to the issue of

437
00:17:25,669 --> 00:17:24,240
the improved resolution of

438
00:17:28,230 --> 00:17:25,679

landsat

439
00:17:31,270 --> 00:17:28,240
being able to see closer than other

440
00:17:36,150 --> 00:17:31,280
other satellites that nasa has can ldcm

441
00:17:41,750 --> 00:17:39,350
no absolutely not

442
00:17:45,110 --> 00:17:41,760
we collect data with a spatial

443
00:17:47,510 --> 00:17:45,120
resolution of 30 meters that is

444
00:17:49,029 --> 00:17:47,520
every picture element or pixel in a

445
00:17:51,110 --> 00:17:49,039
landsat image

446
00:17:53,510 --> 00:17:51,120
represents an area approximately a

447
00:17:55,669 --> 00:17:53,520
hundred feet by a hundred feet

448
00:17:56,789 --> 00:17:55,679
and that's about the size of a baseball

449
00:17:59,990 --> 00:17:56,799
diamond

450
00:18:02,710 --> 00:18:00,000
so we are looking at the collective

451
00:18:04,710 --> 00:18:02,720
change that occurs across the landscape

452
00:18:06,390 --> 00:18:04,720
at a broader scale

453
00:18:08,789 --> 00:18:06,400
we not so much look in people's

454
00:18:09,990 --> 00:18:08,799
backyards we look at their cities and

455
00:18:12,230 --> 00:18:10,000
their towns

456
00:18:14,549 --> 00:18:12,240
and the collective impact of people on

457
00:18:15,590 --> 00:18:14,559
on the landscape we are not able to zoom

458
00:18:17,430 --> 00:18:15,600
in

459
00:18:19,510 --> 00:18:17,440
and resolve uh your cell phone

460
00:18:21,830 --> 00:18:19,520
definitely not

461
00:18:24,950 --> 00:18:21,840
okay well that's good news uh we have a

462
00:18:31,909 --> 00:18:24,960
question from bbc news john amos go

463
00:18:36,150 --> 00:18:33,830

all right i'm not sure john we're not

464
00:18:38,310 --> 00:18:36,160
hearing you if

465
00:18:39,669 --> 00:18:38,320
perhaps we could try that again

466
00:18:43,830 --> 00:18:39,679
uh

467
00:18:45,830 --> 00:18:43,840
okay let's do john try john amos again

468
00:18:48,390 --> 00:18:45,840
hi steve can you hear me at all yes we

469
00:18:51,029 --> 00:18:48,400
got you now go

470
00:18:51,830 --> 00:18:51,039
okay i'll try and keep my question short

471
00:18:53,830 --> 00:18:51,840
um

472
00:18:56,150 --> 00:18:53,840
can you give us us an update on the

473
00:19:01,029 --> 00:18:56,160
status of of landsat 7 because i

474
00:19:07,110 --> 00:19:04,070
uh this is matt larson with usgs landsat

475
00:19:10,150 --> 00:19:07,120
7 continues to operate as it has for uh

476
00:19:12,549 --> 00:19:10,160
quite a few years now with a 22 percent

477
00:19:14,230 --> 00:19:12,559
data gap in each image sort of a

478
00:19:17,909 --> 00:19:14,240
venetian blinds

479
00:19:21,510 --> 00:19:17,919
pattern but the other 78 of the data are

480
00:19:23,110 --> 00:19:21,520
there and our mission scientists at usgs

481
00:19:25,669 --> 00:19:23,120
and at nasa have

482
00:19:29,029 --> 00:19:25,679
developed ways to mosaic images so that

483
00:19:31,909 --> 00:19:29,039
uh we have uh complete uh image coverage

484
00:19:34,470 --> 00:19:31,919
uh from overlap of those images

485
00:19:37,110 --> 00:19:34,480
you may be thinking also of landsat 5

486
00:19:38,230 --> 00:19:37,120
which is about to come to its end in

487
00:19:41,029 --> 00:19:38,240
another

488
00:19:45,750 --> 00:19:41,039

week or so that mission has now reached

489
00:19:50,390 --> 00:19:47,750
okay and we have another question on the

490
00:19:54,310 --> 00:19:50,400
phone lines this from jeff tollefson at

491
00:19:54,320 --> 00:19:57,909
hi there can you hear me yes

492
00:20:00,870 --> 00:19:58,710
um

493
00:20:03,110 --> 00:20:00,880
so yeah i guess uh i guess i was hoping

494
00:20:05,909 --> 00:20:03,120
for just a little bit more uh detail in

495
00:20:07,830 --> 00:20:05,919
terms of kind of the the you've already

496
00:20:09,110 --> 00:20:07,840
answered questions about the resolution

497
00:20:10,630 --> 00:20:09,120
but i guess i'm wondering about the

498
00:20:13,270 --> 00:20:10,640
quality of the image

499
00:20:15,430 --> 00:20:13,280
um in in terms of both the thermal and

500
00:20:17,909 --> 00:20:15,440
the optical i mean a lot of questions

501
00:20:21,270 --> 00:20:17,919
are out there uh in say tropical

502
00:20:23,350 --> 00:20:21,280
deforestation that depend on on you know

503
00:20:25,029 --> 00:20:23,360
how many frequencies you're collecting

504
00:20:26,230 --> 00:20:25,039
at can you kind of go into that a little

505
00:20:28,149 --> 00:20:26,240
bit i mean

506
00:20:30,470 --> 00:20:28,159
what will the quality of these images be

507
00:20:33,750 --> 00:20:30,480
like in addition to the quantity

508
00:20:36,310 --> 00:20:33,760
absolutely the biggest improvement

509
00:20:38,870 --> 00:20:36,320
of the sensors on ldcm

510
00:20:41,669 --> 00:20:38,880
are that both sensors the oli and tiers

511
00:20:43,669 --> 00:20:41,679
use a push proof what we call push broom

512
00:20:46,149 --> 00:20:43,679
approach to imaging

513
00:20:50,390 --> 00:20:46,159

that is the images are collected by long

514
00:20:52,310 --> 00:20:50,400
arrays that span the focal planes of the

515
00:20:53,750 --> 00:20:52,320
of the sensors

516
00:20:55,510 --> 00:20:53,760
and

517
00:20:57,909 --> 00:20:55,520
every one of those arrays

518
00:20:59,310 --> 00:20:57,919
seven thousand over seven thousand per

519
00:21:02,390 --> 00:20:59,320
spectral band

520
00:21:04,710 --> 00:21:02,400
simultaneously collect data

521
00:21:08,870 --> 00:21:04,720
the previous landsat sensors were all

522
00:21:13,590 --> 00:21:08,880
what we call wisp room sensors they used

523
00:21:17,750 --> 00:21:15,110
scanned the

524
00:21:20,950 --> 00:21:17,760
field of view of just a few detectors

525
00:21:22,950 --> 00:21:20,960
across the ground path of the satellite

526
00:21:25,590 --> 00:21:22,960
and as a consequence those detectors

527
00:21:27,430 --> 00:21:25,600
would only get a very short glimpse at

528
00:21:29,909 --> 00:21:27,440
each parcel of land

529
00:21:30,950 --> 00:21:29,919
the detectors on oli and tiers get a

530
00:21:33,990 --> 00:21:30,960
longer

531
00:21:35,990 --> 00:21:34,000
look at each parcel of land therefore

532
00:21:38,710 --> 00:21:36,000
the quality of the data what we call

533
00:21:41,430 --> 00:21:38,720
signal-to-noise ratio increases what

534
00:21:44,710 --> 00:21:41,440
that means what what that translates to

535
00:21:47,110 --> 00:21:44,720
is the data from oli and tiers will be

536
00:21:50,950 --> 00:21:47,120
more sensitive than the data from the

537
00:21:54,549 --> 00:21:53,270
okay our next question comes from randy

538
00:21:56,070 --> 00:21:54,559

shostak

539
00:21:57,669 --> 00:21:56,080
at the american geophysical union's

540
00:21:59,270 --> 00:21:57,679
newspaper eos

541
00:22:00,230 --> 00:21:59,280
randy go ahead

542
00:22:05,350 --> 00:22:00,240
uh

543
00:22:07,510 --> 00:22:05,360
about to launch could you discuss the

544
00:22:10,470 --> 00:22:07,520
future of the landsat satellites and the

545
00:22:11,270 --> 00:22:10,480
landsat program following ldcm

546
00:22:12,870 --> 00:22:11,280
what

547
00:22:14,950 --> 00:22:12,880
are the plans to

548
00:22:16,710 --> 00:22:14,960
to follow for follow-on satellites will

549
00:22:18,470 --> 00:22:16,720
landsat continue to be a stand-alone

550
00:22:22,470 --> 00:22:18,480
satellite or what would it piggyback

551
00:22:26,390 --> 00:22:24,870
thanks randy's matt larson that's an

552
00:22:29,590 --> 00:22:26,400
excellent question it's one that we've

553
00:22:32,630 --> 00:22:29,600
been working at hard uh with nasa with

554
00:22:35,270 --> 00:22:32,640
our colleagues at nasa between usgs

555
00:22:37,510 --> 00:22:35,280
interior and also with the white house

556
00:22:39,830 --> 00:22:37,520
office of science and technology policy

557
00:22:42,230 --> 00:22:39,840
so we've we're looking at some options

558
00:22:44,470 --> 00:22:42,240
and alternatives to how we move forward

559
00:22:46,710 --> 00:22:44,480
beyond landsat 8

560
00:22:47,830 --> 00:22:46,720
and i'm optimistic they will that we

561
00:22:50,710 --> 00:22:47,840
will

562
00:22:52,950 --> 00:22:50,720
reach some new new new capabilities new

563
00:22:54,390 --> 00:22:52,960

agreements new arrangements a lot of

564
00:22:56,789 --> 00:22:54,400
that of course is dependent on the

565
00:22:58,390 --> 00:22:56,799
federal budget and uh we're we're

566
00:23:01,110 --> 00:22:58,400
anxiously awaiting the release of the

567
00:23:02,789 --> 00:23:01,120
2014 budget and what messages uh that

568
00:23:05,590 --> 00:23:02,799
will include and what we can then

569
00:23:09,270 --> 00:23:07,430
okay i think that's our last question on

570
00:23:10,549 --> 00:23:09,280
the phone lines at the moment any other

571
00:23:13,270 --> 00:23:10,559
questions

572
00:23:15,190 --> 00:23:13,280
in the audience here

573
00:23:17,110 --> 00:23:15,200
we have nothing online at the moment so

574
00:23:18,070 --> 00:23:17,120
i guess that wraps up our briefing for

575
00:23:18,789 --> 00:23:18,080
today

576
00:23:20,310 --> 00:23:18,799
uh

577
00:23:22,950 --> 00:23:20,320
if you want more information on the

578
00:23:25,590 --> 00:23:22,960
landsat program as well as the ldcm

579
00:23:29,190 --> 00:23:25,600
mission please visit our website which

580
00:23:33,029 --> 00:23:31,590
landsat and you can continue to follow

581
00:23:34,549 --> 00:23:33,039
the conversation all the way through

582
00:23:37,909 --> 00:23:34,559
launch on twitter

583
00:23:39,430 --> 00:23:37,919
with hashtag landsat

584
00:23:42,070 --> 00:23:39,440
we'll leave you now with an animation

585
00:23:45,430 --> 00:23:42,080
depicting the ldcm launch next month

586
00:23:55,510 --> 00:23:45,440
from vandenberg thank you for watching