1
00:00:08,070 --> 00:00:06,550
so we're taking a closer look at planet

2
00:00:09,669 --> 00:00:08,080
earth this month on how the

3
00:00:11,589 --> 00:00:09,679
international space station plays such

4
00:00:13,830 --> 00:00:11,599
an important role as a platform for

5
00:00:15,990 --> 00:00:13,840
studying it and joining me today to talk

6
00:00:18,790 --> 00:00:16,000
a little bit more about that dr lisa

7
00:00:20,790 --> 00:00:18,800
vanderblumen who's the manager of our

8
00:00:23,269 --> 00:00:20,800
earth science and remote sensing office

9
00:00:24,630 --> 00:00:23,279
here at jsc who actually gets to work

10
00:00:27,109 --> 00:00:24,640
with the astronauts on pretty much a

11
00:00:28,550 --> 00:00:27,119
daily basis and their role in actually

12
00:00:30,870 --> 00:00:28,560
monitoring the earth from above so first

13
00:00:32,950 --> 00:00:30,880

off just tell me why is it valuable why

14
00:00:34,709 --> 00:00:32,960
is it important to use the station as a

15
00:00:36,069 --> 00:00:34,719
platform you know to take a closer look

16
00:00:38,310 --> 00:00:36,079
at our planet

17
00:00:40,069 --> 00:00:38,320
well dan everyone should realize that

18
00:00:41,670 --> 00:00:40,079
the earth is very dynamic yes and it's

19
00:00:42,869 --> 00:00:41,680
constantly changing

20
00:00:45,029 --> 00:00:42,879
and so

21
00:00:47,190 --> 00:00:45,039
from the viewpoint on earth it's very

22
00:00:49,910 --> 00:00:47,200
hard to see large-scale

23
00:00:53,029 --> 00:00:49,920
changes and so forth so if we step away

24
00:00:55,350 --> 00:00:53,039
and we can look at the earth from above

25
00:00:57,110 --> 00:00:55,360
we can get a very good feel for all of

26
00:00:59,189 --> 00:00:57,120
the dynamic changes that are happening

27
00:01:01,830 --> 00:00:59,199
both in the ocean in the atmosphere on

28
00:01:03,990 --> 00:01:01,840
land and so forth and and climate change

29
00:01:05,109 --> 00:01:04,000
as we all know is a big thing these days

30
00:01:06,550 --> 00:01:05,119
and so

31
00:01:09,190 --> 00:01:06,560
it gives us a good opportunity to look

32
00:01:10,789 --> 00:01:09,200
at things like aerosols

33
00:01:13,670 --> 00:01:10,799
pollution

34
00:01:15,270 --> 00:01:13,680
changes in the the atmosphere changes in

35
00:01:17,910 --> 00:01:15,280
the the uh

36
00:01:19,350 --> 00:01:17,920
ocean winds and so forth so lots of uh

37
00:01:22,149 --> 00:01:19,360
good opportunities we can even look at

38
00:01:23,749 --> 00:01:22,159

changes in forest canopy and so forth so

39
00:01:26,230 --> 00:01:23,759
so there's a lot you can see when you're

40
00:01:28,550 --> 00:01:26,240
you know traveling 260 some miles above

41
00:01:29,590 --> 00:01:28,560
17 000 miles they're covering a lot of

42
00:01:31,190 --> 00:01:29,600
ground

43
00:01:32,950 --> 00:01:31,200
how do you guys actually you know pick

44
00:01:35,109 --> 00:01:32,960
and choose some of the stuff that they

45
00:01:37,190 --> 00:01:35,119
are you know assigned to look at to

46
00:01:39,590 --> 00:01:37,200
investigate well recently within the

47
00:01:41,830 --> 00:01:39,600
last year or so we developed a system on

48
00:01:44,710 --> 00:01:41,840
our website where we actually have a

49
00:01:46,149 --> 00:01:44,720
forum that scientists and educators can

50
00:01:49,270 --> 00:01:46,159
actually apply

51
00:01:51,350 --> 00:01:49,280
for uh sites for targets and so we we

52
00:01:53,990 --> 00:01:51,360
read those we review those and we either

53
00:01:55,109 --> 00:01:54,000
approve or disapprove usually approved

54
00:01:56,789 --> 00:01:55,119
and so

55
00:01:59,270 --> 00:01:56,799
lots of good studies out there for both

56
00:02:01,749 --> 00:01:59,280
scientists educators and teachers and

57
00:02:02,870 --> 00:02:01,759
students are also involved in asking for

58
00:02:04,389 --> 00:02:02,880
sites

59
00:02:06,709 --> 00:02:04,399
we also

60
00:02:08,790 --> 00:02:06,719
one of our major charters is involved

61
00:02:10,869 --> 00:02:08,800
we're involved with the idc the

62
00:02:13,110 --> 00:02:10,879
international disaster charter

63
00:02:16,869 --> 00:02:13,120

so anytime any uh

64
00:02:18,790 --> 00:02:16,879
major event occurs disaster occurs we

65
00:02:20,949 --> 00:02:18,800
make that a priority target for the

66
00:02:23,750 --> 00:02:20,959
astronauts to take things like forest

67
00:02:25,190 --> 00:02:23,760
fires hurricanes flooding flooding uh

68
00:02:27,190 --> 00:02:25,200
any of those types of things and lots of

69
00:02:29,430 --> 00:02:27,200
times it's in third world countries as

70
00:02:31,990 --> 00:02:29,440
well where it's very helpful for if we

71
00:02:33,509 --> 00:02:32,000
can get some imagery back to those folks

72
00:02:35,430 --> 00:02:33,519
it helps in the recovery and that type

73
00:02:36,949 --> 00:02:35,440
of thing okay and you actually so you

74
00:02:39,270 --> 00:02:36,959
brought a couple of samples some of the

75
00:02:40,949 --> 00:02:39,280
stuff i mean anytime we see views of

76
00:02:42,470 --> 00:02:40,959
earth from above it's always stunning so

77
00:02:43,830 --> 00:02:42,480
just you know walk us through a couple

78
00:02:45,830 --> 00:02:43,840
of these shows what we're looking at

79
00:02:47,910 --> 00:02:45,840
sure this one is uh just an example of

80
00:02:50,550 --> 00:02:47,920
what the type of detail that we can see

81
00:02:52,790 --> 00:02:50,560
and this is geological obviously it's an

82
00:02:54,949 --> 00:02:52,800
uh it's the colorado river in the grand

83
00:02:56,229 --> 00:02:54,959
canyon and you can see the 3d view there

84
00:02:58,790 --> 00:02:56,239
and you can actually see if you look

85
00:03:02,710 --> 00:02:58,800
close enough the uh the waterfall the

86
00:03:04,949 --> 00:03:02,720
water flowing through the river yep

87
00:03:08,229 --> 00:03:04,959
this is one of our favorites uh this is

88
00:03:09,910 --> 00:03:08,239

uh aurora borealis the northern lights

89
00:03:11,350 --> 00:03:09,920
and what you're seeing here is western

90
00:03:13,270 --> 00:03:11,360
canada

91
00:03:14,470 --> 00:03:13,280
and british columbia and so forth those

92
00:03:16,869 --> 00:03:14,480
are the lights that you see there and

93
00:03:18,949 --> 00:03:16,879
some of the lights there also

94
00:03:20,390 --> 00:03:18,959
are due to a lot of the oil drilling and

95
00:03:21,910 --> 00:03:20,400
the fracking that's going on in that

96
00:03:24,869 --> 00:03:21,920
region yep and you can actually see that

97
00:03:28,949 --> 00:03:24,879
from space so beautiful uh here's an

98
00:03:31,430 --> 00:03:28,959
example of an actual volcano um the uh

99
00:03:33,830 --> 00:03:31,440
in papua new guinea

100
00:03:35,670 --> 00:03:33,840
it's one of the most active volcanoes

101
00:03:38,309 --> 00:03:35,680
there and we actually caught it as it

102
00:03:40,869 --> 00:03:38,319
was erupting very active area there

103
00:03:43,270 --> 00:03:40,879
tectonically

104
00:03:45,190 --> 00:03:43,280
here's a good study that we've

105
00:03:48,910 --> 00:03:45,200
actually looked at using multiple

106
00:03:52,470 --> 00:03:48,920
imagery you can see there in 2002 versus

107
00:03:56,149 --> 00:03:52,480
2013 2013

108
00:03:58,789 --> 00:03:56,159
that you see the uppsala glacier down in

109
00:04:01,429 --> 00:03:58,799
the patagonia in south america you can

110
00:04:03,509 --> 00:04:01,439
see that we've actually it's melted

111
00:04:07,110 --> 00:04:03,519
quite a bit just in the 10 to 11 years

112
00:04:09,030 --> 00:04:07,120
there the edge of it in 2002 was to the

113
00:04:12,229 --> 00:04:09,040

left there to the right is where it's

114
00:04:13,990 --> 00:04:12,239
actually melted uh due to warming in

115
00:04:16,310 --> 00:04:14,000
2013 so we can actually see that with

116
00:04:18,870 --> 00:04:16,320
imagery here's a recent very recent

117
00:04:21,590 --> 00:04:18,880
example of some of the volcanoes that we

118
00:04:23,670 --> 00:04:21,600
see down in peru and bolivia

119
00:04:26,469 --> 00:04:23,680
and you can see just the detail that you

120
00:04:28,390 --> 00:04:26,479
see there is just amazing

121
00:04:30,870 --> 00:04:28,400
here this is very interesting i really

122
00:04:33,350 --> 00:04:30,880
like this image um this is the koreas

123
00:04:35,189 --> 00:04:33,360
and you can see that to the right there

124
00:04:37,270 --> 00:04:35,199
is um

125
00:04:38,870 --> 00:04:37,280
south korea i'm sorry north korea and to

126
00:04:41,350 --> 00:04:38,880
the left there

127
00:04:43,270 --> 00:04:41,360
where you see no lights whatsoever is

128
00:04:45,110 --> 00:04:43,280
actually north korea which is indicative

129
00:04:46,950 --> 00:04:45,120
of the political situation there and you

130
00:04:49,350 --> 00:04:46,960
have china to the top there and here's

131
00:04:50,230 --> 00:04:49,360
another nighttime vision vision

132
00:04:52,469 --> 00:04:50,240
of

133
00:04:53,830 --> 00:04:52,479
cairo egypt and you can see the nile

134
00:04:56,870 --> 00:04:53,840
extending to

135
00:04:58,629 --> 00:04:56,880
south of cairo cairo there excuse me uh

136
00:05:00,790 --> 00:04:58,639
and you can see that the lights

137
00:05:03,029 --> 00:05:00,800
obviously indicate where folks are

138
00:05:05,510 --> 00:05:03,039

civilized uh living and so forth and

139
00:05:06,469 --> 00:05:05,520
also to the north of cairo is the actual

140
00:05:08,070 --> 00:05:06,479
um

141
00:05:10,950 --> 00:05:08,080
river basin if you will

142
00:05:12,870 --> 00:05:10,960
the delta uh from the nile

143
00:05:15,430 --> 00:05:12,880
also able to you know track a lot of

144
00:05:17,110 --> 00:05:15,440
geological and ma and man-made things

145
00:05:19,350 --> 00:05:17,120
correct from the station i think we also

146
00:05:21,590 --> 00:05:19,360
have a video real quick oh yeah um if

147
00:05:24,950 --> 00:05:21,600
you could walk us through that as well

148
00:05:27,430 --> 00:05:24,960
sure we uh one of our fun activities we

149
00:05:29,029 --> 00:05:27,440
have quite a lot of fun activities is to

150
00:05:30,710 --> 00:05:29,039
actually put together a lot of these

151
00:05:32,550 --> 00:05:30,720
images here you can see we're moving

152
00:05:35,990 --> 00:05:32,560
from mexico

153
00:05:37,029 --> 00:05:36,000
you saw houston there san antonio

154
00:05:41,110 --> 00:05:37,039
and

155
00:05:43,670 --> 00:05:41,120
we keep moving towards the east uh

156
00:05:45,590 --> 00:05:43,680
east sort of northward here and you'll

157
00:05:47,670 --> 00:05:45,600
see some more imagery coming some more

158
00:05:50,390 --> 00:05:47,680
cities coming up birmingham atlanta

159
00:05:52,390 --> 00:05:50,400
nashville memphis st louis

160
00:05:54,469 --> 00:05:52,400
to the left there in the image

161
00:05:57,029 --> 00:05:54,479
and we're continuing to move towards the

162
00:05:58,870 --> 00:05:57,039
east here and again these are made from

163
00:06:01,670 --> 00:05:58,880

uh single images and you see

164
00:06:03,430 --> 00:06:01,680
indianapolis charlotte uh there

165
00:06:05,909 --> 00:06:03,440
charlotte north carolina and now we're

166
00:06:08,469 --> 00:06:05,919
moving up along the eastern seaboard if

167
00:06:11,110 --> 00:06:08,479
you will of the united states and you

168
00:06:13,430 --> 00:06:11,120
can see washington dc with all the

169
00:06:15,430 --> 00:06:13,440
lights in philadelphia new york city

170
00:06:17,510 --> 00:06:15,440
to the to the west is toronto and

171
00:06:20,629 --> 00:06:17,520
detroit there you'll see also some of

172
00:06:23,350 --> 00:06:20,639
the lakes there the darker features

173
00:06:25,909 --> 00:06:23,360
and then we continue to move up north

174
00:06:27,990 --> 00:06:25,919
along the east coast you see boston

175
00:06:31,749 --> 00:06:28,000
canada to the left there to the west

176
00:06:34,790 --> 00:06:31,759
montreal and ottawa and again very very

177
00:06:37,990 --> 00:06:34,800
clear in these images uh or these photos

178
00:06:39,749 --> 00:06:38,000
uh where civilization is residing

179
00:06:41,189 --> 00:06:39,759
and i mean they're they're stunning just

180
00:06:42,629 --> 00:06:41,199
to look at it i mean those those

181
00:06:44,469 --> 00:06:42,639
pictures it's almost like looking at

182
00:06:46,070 --> 00:06:44,479
stars and galaxies and a picture from

183
00:06:48,309 --> 00:06:46,080
hubble but it's really just the cities

184
00:06:49,189 --> 00:06:48,319
right below these ashes it's fascinating

185
00:06:51,430 --> 00:06:49,199
so

186
00:06:53,589 --> 00:06:51,440
the station obviously people on it what

187
00:06:55,270 --> 00:06:53,599
what are some of the advantages of

188
00:06:57,350 --> 00:06:55,280

having people in the loop instead of

189
00:06:58,710 --> 00:06:57,360
just you know remote satellites up in

190
00:07:00,230 --> 00:06:58,720
orbit well it's interesting my

191
00:07:02,950 --> 00:07:00,240
background is remote sensing using

192
00:07:05,670 --> 00:07:02,960
satellites and so i've come here and saw

193
00:07:08,629 --> 00:07:05,680
have been able to see the advantages of

194
00:07:10,550 --> 00:07:08,639
having handheld photography

195
00:07:13,029 --> 00:07:10,560
as i mentioned earlier one of our

196
00:07:14,550 --> 00:07:13,039
major emphasis is on international

197
00:07:16,629 --> 00:07:14,560
disaster charters and these are events

198
00:07:19,270 --> 00:07:16,639
that are dynamic and occur

199
00:07:21,189 --> 00:07:19,280
overnight and so

200
00:07:23,110 --> 00:07:21,199
if we have a human there that can we

201
00:07:24,550 --> 00:07:23,120
quickly turn around and get those images

202
00:07:26,950 --> 00:07:24,560
taken

203
00:07:28,629 --> 00:07:26,960
that's very very important and we don't

204
00:07:31,189 --> 00:07:28,639
have to task a satellite to actually

205
00:07:33,189 --> 00:07:31,199
take some images uh it's quicker

206
00:07:34,950 --> 00:07:33,199
people and also the the public just

207
00:07:36,870 --> 00:07:34,960
loves the human interaction knowing that

208
00:07:39,430 --> 00:07:36,880
a person took this picture

209
00:07:41,029 --> 00:07:39,440
and so that's just a real plus there and

210
00:07:42,870 --> 00:07:41,039
i heard you got a call from space once

211
00:07:45,029 --> 00:07:42,880
too that must have been really yes i did

212
00:07:46,869 --> 00:07:45,039
one of the astronauts uh

213
00:07:49,110 --> 00:07:46,879

gerst actually gave us a call to just

214
00:07:50,629 --> 00:07:49,120
chat and have some questions for us and

215
00:07:52,309 --> 00:07:50,639
i got the rest of the

216
00:07:54,150 --> 00:07:52,319
members of the group into the office

217
00:07:56,790 --> 00:07:54,160
just because that's that doesn't happen

218
00:07:59,270 --> 00:07:56,800
very often but uh we we do get a chance

219
00:08:00,790 --> 00:07:59,280
to deal with the astronauts i had

220
00:08:02,550 --> 00:08:00,800
sam christopher eddie come into my

221
00:08:05,589 --> 00:08:02,560
office as well and chat about things so

222
00:08:07,510 --> 00:08:05,599
it's it's a lot of fun to get to talk to

223
00:08:09,830 --> 00:08:07,520
these humans um

224
00:08:12,230 --> 00:08:09,840
in this in this regard great all right

225
00:08:15,350 --> 00:08:12,240
well again dr lisa van der blumen uh

226
00:08:16,869 --> 00:08:15,360
manager of our uh earth sensing

227
00:08:19,589 --> 00:08:16,879
and from earth science and remote

228
00:08:21,189 --> 00:08:19,599
sensing at jsc i'm sorry too many titles

229
00:08:22,469 --> 00:08:21,199
um but again thank you so much for

230
00:08:24,469 --> 00:08:22,479
joining me we're gonna be looking at the

231
00:08:27,189 --> 00:08:24,479
earth all month long uh and how the

232
00:08:29,029 --> 00:08:27,199
station is a part of monitoring it

233
00:08:30,710 --> 00:08:29,039
thanks so much for joining here and