
Live Interview
with Astronaut
Megan McArthur
from the ISS!

1
00:00:03,909 --> 00:00:01,750
rendezvousing and eventually landing in

2
00:00:05,510 --> 00:00:03,919
the crew dragon so monitoring the

3
00:00:07,190 --> 00:00:05,520
spacecraft systems helping out the

4
00:00:09,350 --> 00:00:07,200
commander as we go through all of those

5
00:00:10,870 --> 00:00:09,360
different phases so that experience of

6
00:00:12,549 --> 00:00:10,880
understanding how a spacecraft does

7
00:00:14,549 --> 00:00:12,559
those things really helped inform my

8
00:00:15,910 --> 00:00:14,559
experience with the new vehicle

9
00:00:17,990 --> 00:00:15,920
and then of course all of the work that

10
00:00:19,510 --> 00:00:18,000
you do in space um you're always

11
00:00:20,790 --> 00:00:19,520
building on the previous lessons that

12
00:00:22,710 --> 00:00:20,800
you learned so even though there's a lot

13
00:00:24,790 --> 00:00:22,720

of differences between the missions um

14
00:00:26,310 --> 00:00:24,800
there's a lot of similarities as well to

15
00:00:28,790 --> 00:00:26,320
build on

16
00:00:30,390 --> 00:00:28,800
yeah definitely so what was it like

17
00:00:32,069 --> 00:00:30,400
writing and living in the crew dragon

18
00:00:35,990 --> 00:00:32,079
versus your experience on the space

19
00:00:39,830 --> 00:00:37,750
well the goals of the two vehicles are

20
00:00:42,150 --> 00:00:39,840
similar to get us from earth to low

21
00:00:43,830 --> 00:00:42,160
earth orbit um but the but the way they

22
00:00:45,590 --> 00:00:43,840
do it is a little bit different the

23
00:00:47,510 --> 00:00:45,600
space shuttle also can take large

24
00:00:49,190 --> 00:00:47,520
payload into orbit so requires a huge

25
00:00:51,029 --> 00:00:49,200
amount of fuel to get the space shuttle

26
00:00:53,430 --> 00:00:51,039
into low earth orbit

27
00:00:54,950 --> 00:00:53,440
and the solid rocket boosters when you

28
00:00:56,630 --> 00:00:54,960
first light off and get off the launch

29
00:00:57,990 --> 00:00:56,640
pad you're kind of shaking you're

30
00:00:59,590 --> 00:00:58,000
rocking and rolling you feel a little

31
00:01:01,750 --> 00:00:59,600
bit like a ragdoll

32
00:01:03,750 --> 00:01:01,760
the crew dragon the falcon 9 rocket is

33
00:01:06,070 --> 00:01:03,760
much smaller just launching just people

34
00:01:08,070 --> 00:01:06,080
and not a lot of cargo into space and so

35
00:01:09,910 --> 00:01:08,080
it requires less energy to get you there

36
00:01:11,590 --> 00:01:09,920
so a much smoother ride was my

37
00:01:13,510 --> 00:01:11,600
experience of the two

38
00:01:15,830 --> 00:01:13,520

and crew dragon of course is quite small

39
00:01:17,670 --> 00:01:15,840
so we spent almost 24 hours in crew

40
00:01:19,190 --> 00:01:17,680
dragon the four of us it was a very

41
00:01:21,429 --> 00:01:19,200
small space

42
00:01:23,670 --> 00:01:21,439
the atlanta space shuttle is bigger than

43
00:01:25,590 --> 00:01:23,680
crew dragon so we had more room to move

44
00:01:27,429 --> 00:01:25,600
around but of course it's got nothing on

45
00:01:29,990 --> 00:01:27,439
the space that we have near now here on

46
00:01:32,230 --> 00:01:30,000
the international space station

47
00:01:34,710 --> 00:01:32,240
for sure that sounds awesome so the iss

48
00:01:36,069 --> 00:01:34,720
is this amazing orbiting laboratory and

49
00:01:37,990 --> 00:01:36,079
specifically within the fields of

50
00:01:40,069 --> 00:01:38,000
astronomy and astrophysics which are two

51
00:01:44,550 --> 00:01:40,079
areas that hubble specializes in what

52
00:01:48,389 --> 00:01:46,389
well the international space station is

53
00:01:50,069 --> 00:01:48,399
a great platform for doing astrophysics

54
00:01:51,830 --> 00:01:50,079
research as well it's outside the

55
00:01:53,749 --> 00:01:51,840
earth's atmosphere which of course can

56
00:01:55,510 --> 00:01:53,759
interfere the atmosphere can interfere

57
00:01:57,510 --> 00:01:55,520
with particles that astrophysicists and

58
00:01:59,109 --> 00:01:57,520
astronomers want to observe so this is a

59
00:02:01,109 --> 00:01:59,119
great platform for some instruments we

60
00:02:03,190 --> 00:02:01,119
have a few that i know of one is called

61
00:02:06,149 --> 00:02:03,200
nicer which looks at the composition of

62
00:02:08,869 --> 00:02:06,159
neutron stars another one is called maxi

63
00:02:09,990 --> 00:02:08,879

and it's an x-ray all sky monitor and

64
00:02:12,150 --> 00:02:10,000
then of course there's the alpha

65
00:02:15,430 --> 00:02:12,160
magnetic spectrometer which has been

66
00:02:17,110 --> 00:02:15,440
here for i think about 10 years and it's

67
00:02:18,150 --> 00:02:17,120
part of the search to understand dark

68
00:02:19,910 --> 00:02:18,160
matter

69
00:02:21,990 --> 00:02:19,920
we as astronauts living here don't

70
00:02:23,830 --> 00:02:22,000
interact really with those payloads very

71
00:02:25,990 --> 00:02:23,840
much although i know that they're very

72
00:02:28,150 --> 00:02:26,000
important to the astrophysics community

73
00:02:30,150 --> 00:02:28,160
although a few years ago ams had a

74
00:02:32,710 --> 00:02:30,160
situation similar to hubble where it

75
00:02:35,910 --> 00:02:32,720
really needed a repair job and it wasn't

76
00:02:38,309 --> 00:02:35,920
designed to be repaired in space and so

77
00:02:40,309 --> 00:02:38,319
a really ingenious team of engineers and

78
00:02:42,710 --> 00:02:40,319
folks on the ground developed the tools

79
00:02:44,309 --> 00:02:42,720
and hardware and procedures needed so

80
00:02:45,830 --> 00:02:44,319
that astronauts could go out and do some

81
00:02:47,509 --> 00:02:45,840
really tricky space walks to recover

82
00:02:49,990 --> 00:02:47,519
that instrument so it does have that in

83
00:02:51,509 --> 00:02:50,000
common with the hubble telescope

84
00:02:53,589 --> 00:02:51,519
that's pretty cool that's really

85
00:02:55,509 --> 00:02:53,599
interesting so let's see what are some

86
00:03:00,229 --> 00:02:55,519
of your main responsibilities and goals

87
00:03:03,110 --> 00:03:01,750
one of the really cool things about

88
00:03:04,710 --> 00:03:03,120

being an astronaut as part of an

89
00:03:06,390 --> 00:03:04,720
expedition crew on the international

90
00:03:08,550 --> 00:03:06,400
space station is it's kind of all your

91
00:03:10,070 --> 00:03:08,560
responsibility right so you have to help

92
00:03:11,910 --> 00:03:10,080
keep the space station running so

93
00:03:13,589 --> 00:03:11,920
there's maintenance involved so you're

94
00:03:14,949 --> 00:03:13,599
working on maybe the water reclamation

95
00:03:18,390 --> 00:03:14,959
system or maybe you're working on the

96
00:03:19,990 --> 00:03:18,400
toilet but you're also the the hands

97
00:03:21,110 --> 00:03:20,000
and eyes and ears for the scientists on

98
00:03:23,750 --> 00:03:21,120
the ground that are sending their

99
00:03:25,670 --> 00:03:23,760
research into space and so you're doing

100
00:03:27,589 --> 00:03:25,680
a part of their research projects for

101
00:03:29,589 --> 00:03:27,599
them sometimes it's as simple as

102
00:03:31,830 --> 00:03:29,599
changing out cartridges in an experiment

103
00:03:34,309 --> 00:03:31,840
that runs independently but sometimes

104
00:03:36,470 --> 00:03:34,319
it's as involved in thawing out you know

105
00:03:38,309 --> 00:03:36,480
human cells and

106
00:03:39,910 --> 00:03:38,319
putting providing them with a treatment

107
00:03:41,670 --> 00:03:39,920
and then incubating that and then

108
00:03:43,990 --> 00:03:41,680
sampling it and preserving it to return

109
00:03:45,910 --> 00:03:44,000
that science to earth so this the the

110
00:03:47,030 --> 00:03:45,920
principal investigators can examine what

111
00:03:48,949 --> 00:03:47,040
they've learned

112
00:03:50,390 --> 00:03:48,959
by making use of this microgravity

113
00:03:52,949 --> 00:03:50,400

laboratory so it really is it's a whole

114
00:03:55,030 --> 00:03:52,959
lot of everything which is really cool

115
00:03:56,550 --> 00:03:55,040
yeah that sounds like a lot of fun so

116
00:03:58,070 --> 00:03:56,560
going back to the last hubble servicing

117
00:03:59,910 --> 00:03:58,080
mission you were living inside the space

118
00:04:01,910 --> 00:03:59,920
shuttle for about 11 days and now you've

119
00:04:03,910 --> 00:04:01,920
been living up on the iss for a little

120
00:04:06,229 --> 00:04:03,920
over a month now so have you noticed any

121
00:04:10,949 --> 00:04:06,239
like day-to-day differences between what

122
00:04:14,550 --> 00:04:12,710
absolutely well the first one we talked

123
00:04:16,469 --> 00:04:14,560
about already is obvious there's a ton

124
00:04:17,990 --> 00:04:16,479
more space it's like six thousand square

125
00:04:19,830 --> 00:04:18,000
feet up here in the international space

126
00:04:22,469 --> 00:04:19,840
station it's a lot of room to move

127
00:04:23,590 --> 00:04:22,479
around i could be in a module and i can

128
00:04:25,110 --> 00:04:23,600
see right now

129
00:04:26,550 --> 00:04:25,120
three modules and i don't see any other

130
00:04:27,909 --> 00:04:26,560
people and i know that there's a lot of

131
00:04:30,469 --> 00:04:27,919
other people up here so it's a really

132
00:04:32,310 --> 00:04:30,479
big space which is interesting another

133
00:04:34,230 --> 00:04:32,320
main difference between a short duration

134
00:04:35,749 --> 00:04:34,240
mission and a long duration mission the

135
00:04:37,189 --> 00:04:35,759
short duration mission you really train

136
00:04:38,870 --> 00:04:37,199
the heck out of every single thing that

137
00:04:40,310 --> 00:04:38,880
you know you're going to do

138
00:04:41,909 --> 00:04:40,320

and the days are very intense and you've

139
00:04:43,110 --> 00:04:41,919
got to get all that work done that day

140
00:04:44,310 --> 00:04:43,120
even if something goes wrong you've got

141
00:04:45,110 --> 00:04:44,320
to figure it out that day and get it

142
00:04:46,710 --> 00:04:45,120
done

143
00:04:48,070 --> 00:04:46,720
space station has a very different pace

144
00:04:49,909 --> 00:04:48,080
we're going to be here for six months

145
00:04:52,070 --> 00:04:49,919
we're in it for the long haul

146
00:04:54,070 --> 00:04:52,080
you have to pace yourself and bring that

147
00:04:55,670 --> 00:04:54,080
energy every single day and you haven't

148
00:04:56,950 --> 00:04:55,680
trained to do every single thing that

149
00:04:58,790 --> 00:04:56,960
you're going to do

150
00:05:00,310 --> 00:04:58,800
in detail up here and so you're kind of

151
00:05:03,189 --> 00:05:00,320
constantly learning new things which is

152
00:05:05,670 --> 00:05:03,199
also very exciting

153
00:05:07,510 --> 00:05:05,680
definitely and let's see nasa has a lot

154
00:05:09,510 --> 00:05:07,520
of exciting missions ahead especially

155
00:05:11,189 --> 00:05:09,520
with human exploration and hubble really

156
00:05:13,670 --> 00:05:11,199
helped nasa lay the groundwork for

157
00:05:14,950 --> 00:05:13,680
spacewalks and using tools in space so

158
00:05:17,029 --> 00:05:14,960
could you tell us a bit about the

159
00:05:18,230 --> 00:05:17,039
artemis program and how the missions

160
00:05:23,189 --> 00:05:18,240
that you've been a part of are helping

161
00:05:26,790 --> 00:05:25,029
absolutely i'm very excited about the

162
00:05:28,870 --> 00:05:26,800
artemis program the artemis program

163
00:05:30,870 --> 00:05:28,880

intends to land people on the moon again

164
00:05:32,469 --> 00:05:30,880
in the next couple of years but more

165
00:05:34,629 --> 00:05:32,479
than that it intends to develop a

166
00:05:35,909 --> 00:05:34,639
sustainable presence on the moon and

167
00:05:37,430 --> 00:05:35,919
we're going to be working together with

168
00:05:39,749 --> 00:05:37,440
our international and commercial

169
00:05:41,189 --> 00:05:39,759
partners to achieve this and there's a

170
00:05:43,430 --> 00:05:41,199
lot of things that we need to be able to

171
00:05:45,749 --> 00:05:43,440
do right once we get there to to study

172
00:05:47,749 --> 00:05:45,759
and stay on the moon we're going to need

173
00:05:50,310 --> 00:05:47,759
you know new landing technologies new

174
00:05:52,469 --> 00:05:50,320
suit technologies new rover technologies

175
00:05:54,469 --> 00:05:52,479
habitat technologies including power

176
00:05:56,710 --> 00:05:54,479
systems and water systems and all kinds

177
00:05:58,790 --> 00:05:56,720
of things like that so

178
00:06:00,469 --> 00:05:58,800
and all of those things are in our

179
00:06:01,430 --> 00:06:00,479
development path to sending people to

180
00:06:02,710 --> 00:06:01,440
mars

181
00:06:04,710 --> 00:06:02,720
which is amazing that that's going to

182
00:06:06,950 --> 00:06:04,720
happen in my lifetime i'm super excited

183
00:06:08,790 --> 00:06:06,960
about all of that and the work that we

184
00:06:11,110 --> 00:06:08,800
do right here on the international space

185
00:06:13,350 --> 00:06:11,120
station informs all of this development

186
00:06:15,189 --> 00:06:13,360
we are a research platform for all of

187
00:06:17,189 --> 00:06:15,199
these things and so even this summer

188
00:06:18,550 --> 00:06:17,199

we're going to be installing new solar

189
00:06:19,830 --> 00:06:18,560
arrays that are smaller and more

190
00:06:21,909 --> 00:06:19,840
efficient than the ones we've had

191
00:06:23,510 --> 00:06:21,919
working here on the space station for

192
00:06:24,629 --> 00:06:23,520
over 15 years

193
00:06:26,710 --> 00:06:24,639
we're also

194
00:06:28,469 --> 00:06:26,720
upgrading our water reclamation system

195
00:06:29,830 --> 00:06:28,479
all the time and so we're learning all

196
00:06:31,189 --> 00:06:29,840
of these things that are going to inform

197
00:06:32,710 --> 00:06:31,199
the development for our future

198
00:06:35,590 --> 00:06:32,720
exploration missions so it's very

199
00:06:37,749 --> 00:06:35,600
exciting to be a part of this right now

200
00:06:39,430 --> 00:06:37,759
absolutely so we probably have a lot of

201
00:06:41,510 --> 00:06:39,440
kids watching right now so do you have

202
00:06:43,110 --> 00:06:41,520
any words of wisdom or a piece of advice

203
00:06:44,469 --> 00:06:43,120
for young people or specifically young

204
00:06:48,390 --> 00:06:44,479
women who are looking to get to where

205
00:06:53,029 --> 00:06:50,230
i think the best advice that i can give

206
00:06:55,430 --> 00:06:53,039
young people is to not be afraid to try

207
00:06:57,830 --> 00:06:55,440
new things one of the things that i've

208
00:06:59,510 --> 00:06:57,840
discovered um as i've been an astronaut

209
00:07:00,950 --> 00:06:59,520
is that there's always something new to

210
00:07:02,230 --> 00:07:00,960
learn and sometimes it might be

211
00:07:03,510 --> 00:07:02,240
something that you're hey you're

212
00:07:04,790 --> 00:07:03,520
naturally you're really good at this you

213
00:07:06,469 --> 00:07:04,800

have a knack for it you get it right

214
00:07:07,830 --> 00:07:06,479
away and other times it's going to be

215
00:07:09,510 --> 00:07:07,840
something you have to work at or

216
00:07:11,029 --> 00:07:09,520
something you think oh gosh i'm just not

217
00:07:12,710 --> 00:07:11,039
going to be any good at that

218
00:07:14,390 --> 00:07:12,720
but don't be afraid to try those new

219
00:07:15,990 --> 00:07:14,400
things even if maybe you feel like you

220
00:07:17,189 --> 00:07:16,000
failed the first time around you're

221
00:07:19,270 --> 00:07:17,199
going to get better at it you're going

222
00:07:21,189 --> 00:07:19,280
to ask people for help people want to

223
00:07:23,270 --> 00:07:21,199
help you get better at these things and

224
00:07:24,950 --> 00:07:23,280
so just kind of charge in there and you

225
00:07:27,670 --> 00:07:24,960
know be prepared of course but be ready

226
00:07:29,510 --> 00:07:27,680
to always be learning new things

227
00:07:31,589 --> 00:07:29,520
that's great and now before we jump into

228
00:07:33,990 --> 00:07:31,599
some audience questions i'm curious now

229
00:07:35,830 --> 00:07:34,000
that hubble's been in orbit for 31 years

230
00:07:40,790 --> 00:07:35,840
now do you have a personal favorite

231
00:07:44,629 --> 00:07:42,390
well you know it's impossible to choose

232
00:07:46,309 --> 00:07:44,639
just one i know you know that you know

233
00:07:48,070 --> 00:07:46,319
it's there's images that are beautiful

234
00:07:50,550 --> 00:07:48,080
just for the way they look and for or

235
00:07:52,390 --> 00:07:50,560
for what they make you um feel and then

236
00:07:54,390 --> 00:07:52,400
there's images that are amazing for what

237
00:07:56,070 --> 00:07:54,400
they tell us and what we have learned

238
00:07:58,150 --> 00:07:56,080

about the universe so if i had to just

239
00:07:59,990 --> 00:07:58,160
choose one i would say that one that

240
00:08:02,150 --> 00:08:00,000
really stands out for me is the ultra

241
00:08:04,390 --> 00:08:02,160
deep field image which is an oldie but a

242
00:08:06,070 --> 00:08:04,400
goodie um and uh you know my

243
00:08:07,510 --> 00:08:06,080
understanding is that basically we

244
00:08:09,430 --> 00:08:07,520
pointed the telescope at a part of the

245
00:08:12,070 --> 00:08:09,440
sky that looked kind of empty from

246
00:08:13,830 --> 00:08:12,080
ground-based photographs and by kind of

247
00:08:15,589 --> 00:08:13,840
looking this deep core looking for a

248
00:08:17,990 --> 00:08:15,599
long time and gathering you know what

249
00:08:19,909 --> 00:08:18,000
would was very faint light over time

250
00:08:21,749 --> 00:08:19,919
realize that there's you know so many

251
00:08:23,830 --> 00:08:21,759
countless galaxies just in this one

252
00:08:26,070 --> 00:08:23,840
little area of the sky you know we're

253
00:08:28,309 --> 00:08:26,080
looking back billions of light years

254
00:08:30,390 --> 00:08:28,319
kind of galaxies long ago and far away

255
00:08:31,990 --> 00:08:30,400
and and i find that just very

256
00:08:34,389 --> 00:08:32,000
fascinating very compelling to

257
00:08:37,110 --> 00:08:34,399
understand just the sheer dimension of

258
00:08:39,110 --> 00:08:37,120
our universe it's kind of mind-boggling

259
00:08:40,630 --> 00:08:39,120
for sure me too i think that's that's

260
00:08:42,949 --> 00:08:40,640
probably my favorite as well though it

261
00:08:44,710 --> 00:08:42,959
is definitely hard to choose

262
00:08:46,949 --> 00:08:44,720
so we got in some great questions

263
00:08:48,310 --> 00:08:46,959

earlier this week on social media and we

264
00:08:50,630 --> 00:08:48,320
can go ahead and take a look at some of

265
00:08:52,550 --> 00:08:50,640
those um a user on twitter asked how

266
00:08:56,550 --> 00:08:52,560
long does it take to get adapted to the

267
00:08:59,269 --> 00:08:57,350
so

268
00:09:01,910 --> 00:08:59,279
for me it took several days to really

269
00:09:03,990 --> 00:09:01,920
feel like i was adapted well i

270
00:09:06,150 --> 00:09:04,000
experienced some nausea when i first got

271
00:09:08,550 --> 00:09:06,160
into space which was the same as my

272
00:09:10,710 --> 00:09:08,560
first flight it didn't last too long

273
00:09:12,389 --> 00:09:10,720
but after that you're kind of you have a

274
00:09:13,750 --> 00:09:12,399
fluid shift that occurs in your body

275
00:09:15,829 --> 00:09:13,760
because you no longer have gravity

276
00:09:17,350 --> 00:09:15,839
acting on all of your systems and so you

277
00:09:19,509 --> 00:09:17,360
end up feeling a little bit like you

278
00:09:21,670 --> 00:09:19,519
have a cold or just a stuffy head which

279
00:09:23,350 --> 00:09:21,680
is an uncomfortable experience and it

280
00:09:25,990 --> 00:09:23,360
took me about i would say three days

281
00:09:27,910 --> 00:09:26,000
maybe to get over all of that

282
00:09:29,829 --> 00:09:27,920
gotcha okay and another question from

283
00:09:34,790 --> 00:09:29,839
twitter how is sleeping in space

284
00:09:38,790 --> 00:09:36,949
well it's interesting because um it's a

285
00:09:40,870 --> 00:09:38,800
little bit harder to fall asleep in

286
00:09:42,949 --> 00:09:40,880
space than you might think it's quite

287
00:09:44,150 --> 00:09:42,959
comfortable because you have no pressure

288
00:09:46,790 --> 00:09:44,160

anywhere on your body because you're

289
00:09:48,230 --> 00:09:46,800
just floating but your brain is not used

290
00:09:49,990 --> 00:09:48,240
to just floating you're used to having

291
00:09:51,670 --> 00:09:50,000
your head on a pillow or at least on the

292
00:09:53,430 --> 00:09:51,680
mattress or on the floor

293
00:09:55,430 --> 00:09:53,440
and so it does feel a little weird and

294
00:09:59,110 --> 00:09:55,440
it takes a while for your body and your

295
00:10:01,110 --> 00:09:59,120
brain to adapt to the new sensation

296
00:10:02,550 --> 00:10:01,120
right yeah that's a good point so a

297
00:10:04,470 --> 00:10:02,560
question from facebook kind of going

298
00:10:06,150 --> 00:10:04,480
into your educational background

299
00:10:08,310 --> 00:10:06,160
how did you go from working with the

300
00:10:13,030 --> 00:10:08,320
ocean to now being you know floating up

301
00:10:16,550 --> 00:10:15,030
so i actually started off as a teenager

302
00:10:19,110 --> 00:10:16,560
thinking that i wanted to go work for

303
00:10:22,230 --> 00:10:19,120
nasa one day i lived near ames research

304
00:10:23,990 --> 00:10:22,240
center in california and um and so i

305
00:10:25,750 --> 00:10:24,000
thought i was interested in airplanes as

306
00:10:27,590 --> 00:10:25,760
well living on an air base and so i

307
00:10:29,990 --> 00:10:27,600
studied aerospace engineering initially

308
00:10:31,990 --> 00:10:30,000
at university but i became interested in

309
00:10:34,069 --> 00:10:32,000
ocean engineering towards the end of my

310
00:10:36,310 --> 00:10:34,079
university career and then made that

311
00:10:37,990 --> 00:10:36,320
transition into studying the oceans but

312
00:10:39,430 --> 00:10:38,000
always with the idea in the back of my

313
00:10:41,509 --> 00:10:39,440

mind that wouldn't it be great to work

314
00:10:43,110 --> 00:10:41,519
for nasa one day and the way i think

315
00:10:45,670 --> 00:10:43,120
about it it's not that different our

316
00:10:47,670 --> 00:10:45,680
planet is two-thirds covered in ocean

317
00:10:49,590 --> 00:10:47,680
which we're not naturally suited to

318
00:10:51,430 --> 00:10:49,600
survive in so we use technology to

319
00:10:52,710 --> 00:10:51,440
explore the ocean whether it's

320
00:10:54,870 --> 00:10:52,720
a special kind of a suit or a

321
00:10:56,870 --> 00:10:54,880
submersible or we send you know unmanned

322
00:10:58,470 --> 00:10:56,880
rovers into the ocean or different kinds

323
00:11:00,069 --> 00:10:58,480
of instruments so there's a lot of

324
00:11:02,310 --> 00:11:00,079
similarities and when you go out on a

325
00:11:03,990 --> 00:11:02,320
ship to conduct research you have to be

326
00:11:05,590 --> 00:11:04,000
able to fix any of your machinery that

327
00:11:07,269 --> 00:11:05,600
breaks you have to be able to operate

328
00:11:08,710 --> 00:11:07,279
with what you have on hand the team and

329
00:11:10,150 --> 00:11:08,720
the and the hardware that you have on

330
00:11:12,150 --> 00:11:10,160
hand so there's a lot of similarities

331
00:11:14,389 --> 00:11:12,160
between how we explore the oceans and

332
00:11:15,750 --> 00:11:14,399
how we explore space

333
00:11:17,030 --> 00:11:15,760
definitely

334
00:11:18,150 --> 00:11:17,040
all right so now we have a couple

335
00:11:20,310 --> 00:11:18,160
questions that were submitted on

336
00:11:25,670 --> 00:11:20,320
instagram uh the first one is what do

337
00:11:29,910 --> 00:11:27,990
so in my free time i do like to try to

338
00:11:32,389 --> 00:11:29,920

call home i call my family on an

339
00:11:34,949 --> 00:11:32,399
internet protocol phone i can also send

340
00:11:36,710 --> 00:11:34,959
emails and of course i love to look out

341
00:11:38,230 --> 00:11:36,720
the window at our beautiful planet no

342
00:11:40,870 --> 00:11:38,240
matter you know if we're over the ocean

343
00:11:42,230 --> 00:11:40,880
if we're over land it's just really it's

344
00:11:44,949 --> 00:11:42,240
lovely to look out the window and watch

345
00:11:46,710 --> 00:11:44,959
the world go by

346
00:11:48,790 --> 00:11:46,720
yeah and kind of on that note another

347
00:11:53,590 --> 00:11:48,800
question asked what do you miss about

348
00:11:58,949 --> 00:11:55,509
well it's got to be floating it really

349
00:12:01,030 --> 00:11:58,959
is such a remarkable way to move around

350
00:12:02,389 --> 00:12:01,040
you know it's really i'm gonna i know

351
00:12:04,069 --> 00:12:02,399
that i'm going to miss that when i'm

352
00:12:06,069 --> 00:12:04,079
when i'm eating dinner or maybe even

353
00:12:07,750 --> 00:12:06,079
reading a book i can just kind of perch

354
00:12:09,750 --> 00:12:07,760
up on the wall you know i can just hop

355
00:12:11,350 --> 00:12:09,760
over to the side and just find a nice

356
00:12:13,269 --> 00:12:11,360
little perch to sit

357
00:12:15,269 --> 00:12:13,279
it's very comfortable it's just it's

358
00:12:17,430 --> 00:12:15,279
really fun you can go fast you can go

359
00:12:18,550 --> 00:12:17,440
slow you can take you know sharp sharp

360
00:12:19,910 --> 00:12:18,560
corners

361
00:12:21,910 --> 00:12:19,920
it really is you know you never get

362
00:12:23,509 --> 00:12:21,920
tired of it it's pretty great

363
00:12:25,110 --> 00:12:23,519

yeah i bet

364
00:12:27,030 --> 00:12:25,120
and we've also been receiving some

365
00:12:28,629 --> 00:12:27,040
questions live during this stream so

366
00:12:31,110 --> 00:12:28,639
let's see if we can get to a couple of

367
00:12:32,150 --> 00:12:31,120
those now um from twitter uh someone

368
00:12:34,150 --> 00:12:32,160
asked like

369
00:12:35,910 --> 00:12:34,160
how do you feel like seeing the sky

370
00:12:40,949 --> 00:12:35,920
changing color during launch and how

371
00:12:44,150 --> 00:12:42,629
so during launch i'm actually really

372
00:12:46,150 --> 00:12:44,160
focused on the displays right in front

373
00:12:47,590 --> 00:12:46,160
of me there's no view out the window for

374
00:12:49,190 --> 00:12:47,600
me at all

375
00:12:50,389 --> 00:12:49,200
and we were you know so we're just

376
00:12:51,750 --> 00:12:50,399
focused on monitoring what we're

377
00:12:53,430 --> 00:12:51,760
supposed to monitor but also the

378
00:12:55,430 --> 00:12:53,440
sensation was so amazing you're just

379
00:12:57,190 --> 00:12:55,440
accelerating you're just go go go that

380
00:12:58,629 --> 00:12:57,200
we were really enjoying it together as a

381
00:13:00,150 --> 00:12:58,639
crew something that we've been you know

382
00:13:01,990 --> 00:13:00,160
preparing for for a while we were there

383
00:13:04,949 --> 00:13:02,000
was definitely some giggling on board

384
00:13:06,550 --> 00:13:04,959
during the during the launch phase

385
00:13:08,949 --> 00:13:06,560
for sure so there was also a question

386
00:13:10,230 --> 00:13:08,959
from twitter earlier uh that asked

387
00:13:11,670 --> 00:13:10,240
sort of what's going through your mind

388
00:13:13,350 --> 00:13:11,680

during countdown and liftoff i know

389
00:13:14,629 --> 00:13:13,360
you're very focused but

390
00:13:18,629 --> 00:13:14,639
maybe in the moments leading up to

391
00:13:22,710 --> 00:13:20,550
so we actually have a couple of hours

392
00:13:25,750 --> 00:13:22,720
where we're in the capsule suited and

393
00:13:27,829 --> 00:13:25,760
strapped in and so you know during some

394
00:13:29,350 --> 00:13:27,839
of that time we're reviewing you know

395
00:13:30,550 --> 00:13:29,360
hey if this happens at this time here's

396
00:13:31,430 --> 00:13:30,560
what actions we're going to take and

397
00:13:32,710 --> 00:13:31,440
here's what you're going to do and

398
00:13:33,829 --> 00:13:32,720
here's what i'll do and here's what this

399
00:13:35,990 --> 00:13:33,839
person will say and we're kind of

400
00:13:37,509 --> 00:13:36,000
reviewing checklists in that way but

401
00:13:39,030 --> 00:13:37,519
then there's also time where we're just

402
00:13:40,790 --> 00:13:39,040
entertaining each other we're either

403
00:13:42,629 --> 00:13:40,800
telling stories or tomorrow had us

404
00:13:45,030 --> 00:13:42,639
learning some different word games just

405
00:13:46,550 --> 00:13:45,040
to pass the time so um just like any

406
00:13:48,230 --> 00:13:46,560
other people you're you know trying to

407
00:13:49,990 --> 00:13:48,240
pass the time while you're waiting uh

408
00:13:52,150 --> 00:13:50,000
for a while

409
00:13:53,430 --> 00:13:52,160
for sure yeah okay so someone on youtube

410
00:13:55,110 --> 00:13:53,440
is asking

411
00:13:56,949 --> 00:13:55,120
how is like working out on the space

412
00:14:00,230 --> 00:13:56,959
station with exercise what's that all

413
00:14:04,310 --> 00:14:01,990

so we're very fortunate to have three

414
00:14:05,750 --> 00:14:04,320
different types of exercise machines on

415
00:14:07,670 --> 00:14:05,760
board the space station one of them is

416
00:14:09,590 --> 00:14:07,680
essentially a stationary bike

417
00:14:12,310 --> 00:14:09,600
one of them is a treadmill and one of

418
00:14:14,230 --> 00:14:12,320
them is a resistive exercise machine

419
00:14:17,110 --> 00:14:14,240
that stimulates weight lifting for us

420
00:14:18,629 --> 00:14:17,120
and so every day we're scheduled for

421
00:14:20,949 --> 00:14:18,639
something cardio so either the

422
00:14:22,870 --> 00:14:20,959
stationary bark bike or the treadmill

423
00:14:24,550 --> 00:14:22,880
and also the resistive exercise and we

424
00:14:26,550 --> 00:14:24,560
do that to maintain

425
00:14:28,710 --> 00:14:26,560
our bone and muscle health so we we have

426
00:14:31,030 --> 00:14:28,720
a great complement of counter measures

427
00:14:33,189 --> 00:14:31,040
basically to the effects of micro g on

428
00:14:35,350 --> 00:14:33,199
our bodies

429
00:14:37,430 --> 00:14:35,360
great and another question what does it

430
00:14:43,350 --> 00:14:37,440
smell like in space is there like a

431
00:14:48,230 --> 00:14:46,389
so that's an interesting question um

432
00:14:50,150 --> 00:14:48,240
you know we obviously we recycle our air

433
00:14:52,790 --> 00:14:50,160
we treat our air um and so it smells

434
00:14:54,230 --> 00:14:52,800
like people up here um and we don't have

435
00:14:57,110 --> 00:14:54,240
you know it's not it's not really fresh

436
00:14:59,189 --> 00:14:57,120
air but um the the one thing that that i

437
00:15:01,030 --> 00:14:59,199
noticed on my previous flight when

438
00:15:03,750 --> 00:15:01,040

people went out to do a spacewalk and

439
00:15:05,990 --> 00:15:03,760
then came back inside

440
00:15:07,430 --> 00:15:06,000
i smelled the smell of cooking meat it

441
00:15:09,829 --> 00:15:07,440
smelled like hamburger to me which was

442
00:15:11,910 --> 00:15:09,839
so strange and it was later described to

443
00:15:13,509 --> 00:15:11,920
me as it's the smell of the metal off

444
00:15:15,350 --> 00:15:13,519
gassing it's been out in vacuum and it's

445
00:15:17,030 --> 00:15:15,360
now come back inside and and that smell

446
00:15:19,350 --> 00:15:17,040
is the is the smell that the metal makes

447
00:15:23,509 --> 00:15:19,360
when it's been off gassing um so i would

448
00:15:27,509 --> 00:15:26,069
good to know that's interesting all

449
00:15:29,910 --> 00:15:27,519
right i think we have time for one more

450
00:15:31,430 --> 00:15:29,920
question uh so someone's asking how do

451
00:15:35,829 --> 00:15:31,440
you get along with your crew members

452
00:15:40,790 --> 00:15:38,389
we have so much fun up here that it's

453
00:15:42,150 --> 00:15:40,800
surprising to me that that um we have as

454
00:15:43,430 --> 00:15:42,160
much fun as we do and we're and we're

455
00:15:45,269 --> 00:15:43,440
getting paid for it it's a really

456
00:15:47,030 --> 00:15:45,279
tremendous crew these are the greatest

457
00:15:49,110 --> 00:15:47,040
guys you can imagine we get along really

458
00:15:51,350 --> 00:15:49,120
well um we take care of each other we

459
00:15:53,749 --> 00:15:51,360
look out for each other and it really

460
00:15:55,670 --> 00:15:53,759
it's just a great time up here

461
00:15:57,430 --> 00:15:55,680
that sounds terrific all right thank you

462
00:15:59,030 --> 00:15:57,440
everyone for sending in these amazing

463
00:16:00,389 --> 00:15:59,040

questions unfortunately i think we're

464
00:16:02,629 --> 00:16:00,399
going to have to wrap things up for

465
00:16:04,230 --> 00:16:02,639
today and let megan get back to work but

466
00:16:05,910 --> 00:16:04,240
megan thank you so much for your time

467
00:16:07,670 --> 00:16:05,920
and for answering all of those questions

468
00:16:09,189 --> 00:16:07,680
we really appreciate it it was so cool

469
00:16:10,949 --> 00:16:09,199
to hear more about your time with hubble

470
00:16:12,310 --> 00:16:10,959
and what you're up to right now so best

471
00:16:15,910 --> 00:16:12,320
of luck with the rest of your time on

472
00:16:19,269 --> 00:16:17,430
elizabeth and everyone watching thanks

473
00:16:20,629 --> 00:16:19,279
so much for joining us thank you for

474
00:16:22,310 --> 00:16:20,639
being interested in what we have going

475
00:16:24,790 --> 00:16:22,320
on in the international space station

476
00:16:26,150 --> 00:16:24,800
never stop looking up

477
00:16:27,829 --> 00:16:26,160
awesome thank you so much if you guys

478
00:16:29,670 --> 00:16:27,839
want to keep up with megan you can

479
00:16:31,430 --> 00:16:29,680
follow her on twitter and instagram

480
00:16:33,430 --> 00:16:31,440
astromegan and to keep up with hubble

481
00:16:35,749 --> 00:16:33,440
news you can follow us on social media

482
00:16:37,749 --> 00:16:35,759
at nasa hubble on facebook twitter

483
00:16:39,269 --> 00:16:37,759
instagram and flickr thank you so much

484
00:16:41,829 --> 00:16:39,279
for tuning in and have a great rest of

485
00:16:48,710 --> 00:16:45,030
station this is houston acr thank you

486
00:16:51,910 --> 00:16:50,150
thank you to all participants from

487
00:16:53,670 --> 00:16:51,920
goddard space flight center station

488
00:17:10,339 --> 00:16:53,680

we're now resuming operational audio