



1
00:00:13,509 --> 00:00:04,630
station this is houston on space to

2
00:00:16,790 --> 00:00:15,430
houston station on two ready for the

3
00:00:18,950 --> 00:00:16,800
event

4
00:00:23,429 --> 00:00:18,960
youtube space lab this is houston please

5
00:00:28,950 --> 00:00:25,990
so station can you read us this is bill

6
00:00:32,630 --> 00:00:28,960
nye at youtube headquarters in london do

7
00:00:35,510 --> 00:00:33,910
we got you loud in here on the

8
00:00:39,350 --> 00:00:35,520
international space station how you

9
00:00:43,830 --> 00:00:41,590
uh we're fabulous uh you're looking

10
00:00:45,590 --> 00:00:43,840
great it's very exciting because can you

11
00:00:47,830 --> 00:00:45,600
just reassure us you know that you

12
00:00:49,910 --> 00:00:47,840
really are in the space station you're

13
00:00:52,150 --> 00:00:49,920

not suspended by hidden wires in a

14

00:00:58,709 --> 00:00:52,160

closet someplace

15

00:01:02,069 --> 00:01:00,310

there would be a lot of wires holding my

16

00:01:04,469 --> 00:01:02,079

hair up right now if that was what it

17

00:01:07,190 --> 00:01:04,479

takes but i guarantee uh uh we're up in

18

00:01:09,270 --> 00:01:07,200

space uh i don't think in i'm not a

19

00:01:15,270 --> 00:01:09,280

gymnast so in normal life i don't think

20

00:01:20,469 --> 00:01:18,230

wow very nice very nice here i can do it

21

00:01:23,109 --> 00:01:20,479

here i can do it as a 10. slow motion

22

00:01:27,670 --> 00:01:25,270

very nice i would really appreciate you

23

00:01:29,030 --> 00:01:27,680

taking time out very nice very she stuck

24

00:01:30,149 --> 00:01:29,040

the landing

25

00:01:34,230 --> 00:01:30,159

very

26
00:01:35,990 --> 00:01:34,240
schedule you got a lot going on up there

27
00:01:38,469 --> 00:01:36,000
i'd like to introduce you to a few

28
00:01:41,030 --> 00:01:38,479
people we have here back on earth

29
00:01:43,030 --> 00:01:41,040
we have the winners of the uh youtube

30
00:01:46,870 --> 00:01:43,040
space lab competition

31
00:01:48,469 --> 00:01:46,880
we have dorothy and sarah and armor

32
00:01:50,389 --> 00:01:48,479
greetings everybody greetings greeting

33
00:01:52,149 --> 00:01:50,399
greetings

34
00:01:54,469 --> 00:01:52,159
uh now

35
00:01:57,190 --> 00:01:54,479
sunny you've been working i'm excited to

36
00:01:59,109 --> 00:01:57,200
be here with you guys you guys i was uh

37
00:02:01,270 --> 00:01:59,119
happy to have met you guys uh in

38
00:02:02,950 --> 00:02:01,280

washington dc and congratulations i

39

00:02:05,590 --> 00:02:02,960

think uh it's been a little bit of a

40

00:02:08,150 --> 00:02:05,600

whirlwind for you since that time so i i

41

00:02:09,830 --> 00:02:08,160

hope you're enjoying yourself and we're

42

00:02:14,150 --> 00:02:09,840

enjoying your experiments up here so

43

00:02:18,070 --> 00:02:16,630

so uh you look very relaxed and that you

44

00:02:20,630 --> 00:02:18,080

set your microphone down that's very

45

00:02:23,510 --> 00:02:20,640

nice or set your microphone

46

00:02:25,750 --> 00:02:23,520

up or where is up but uh

47

00:02:27,030 --> 00:02:25,760

what is a day like is it i get the

48

00:02:31,430 --> 00:02:27,040

impression you guys are busy all the

49

00:02:34,710 --> 00:02:33,110

well every day is different and we are

50

00:02:38,229 --> 00:02:34,720

busy all the time we have a general

51
00:02:40,470 --> 00:02:38,239
working day same as time as you gmt um

52
00:02:42,229 --> 00:02:40,480
but we usually get up around six and try

53
00:02:43,430 --> 00:02:42,239
to go to sleep around ten but every day

54
00:02:45,830 --> 00:02:43,440
is different we're doing science

55
00:02:47,750 --> 00:02:45,840
experiments we're exercising we're out

56
00:02:51,110 --> 00:02:47,760
doing space walks we're doing robotic

57
00:02:53,430 --> 00:02:51,120
stuff we just launched h or

58
00:02:55,509 --> 00:02:53,440
htv the japanese module that was up here

59
00:02:57,030 --> 00:02:55,519
left us yesterday so it's one thing

60
00:02:59,750 --> 00:02:57,040
after another every day is a little bit

61
00:03:01,030 --> 00:02:59,760
different it's awesome

62
00:03:04,790 --> 00:03:01,040
now

63
00:03:05,910 --> 00:03:04,800

spacewalks launching japanese modules

64

00:03:07,430 --> 00:03:05,920

uh

65

00:03:09,350 --> 00:03:07,440

making scientific discoveries that's

66

00:03:11,670 --> 00:03:09,360

routine but you have any other stuff you

67

00:03:16,790 --> 00:03:11,680

have to do like the laundry and dishes

68

00:03:23,270 --> 00:03:20,070

well luckily enough most of our food is

69

00:03:25,509 --> 00:03:23,280

um in containers and then we throw it

70

00:03:26,949 --> 00:03:25,519

away so we don't really have dishes up

71

00:03:28,470 --> 00:03:26,959

here if you think about it dishes aren't

72

00:03:30,869 --> 00:03:28,480

going to work up in space so we just

73

00:03:33,110 --> 00:03:30,879

sort of eat our food out of different

74

00:03:34,229 --> 00:03:33,120

types of containers so we don't have to

75

00:03:35,750 --> 00:03:34,239

do that

76

00:03:37,270 --> 00:03:35,760

and

77

00:03:39,190 --> 00:03:37,280

there's not a lot of dirt up here so

78

00:03:43,430 --> 00:03:39,200

your clothes don't get dirty

79

00:03:48,869 --> 00:03:45,030

what sort of food do you get to eat up

80

00:03:51,990 --> 00:03:50,309

we have a wide

81

00:03:55,110 --> 00:03:52,000

variety of food which is really great

82

00:03:59,830 --> 00:03:56,710

in this little packet i have beef

83

00:04:01,190 --> 00:03:59,840

fajitas which we usually with tortillas

84

00:04:02,789 --> 00:04:01,200

because bread is a little crummy and

85

00:04:04,309 --> 00:04:02,799

then it makes a mess and gets in your

86

00:04:06,070 --> 00:04:04,319

hair and stuff

87

00:04:08,309 --> 00:04:06,080

a lot of freeze-dried stuff or

88

00:04:11,030 --> 00:04:08,319

dehydrated stuff i should say and we

89

00:04:14,070 --> 00:04:11,040

have a hydrator right above me this is

90

00:04:15,830 --> 00:04:14,080

cauliflower and also spinach in here

91

00:04:17,749 --> 00:04:15,840

because my mom's probably watching and

92

00:04:19,189 --> 00:04:17,759

wants to know i'm eating my vegetables

93

00:04:19,990 --> 00:04:19,199

and then of course there's things in the

94

00:04:22,390 --> 00:04:20,000

can

95

00:04:23,990 --> 00:04:22,400

and of course we have

96

00:04:25,670 --> 00:04:24,000

candy and

97

00:04:30,469 --> 00:04:25,680

other things like that which are you

98

00:04:34,310 --> 00:04:32,070

it does look like

99

00:04:35,909 --> 00:04:34,320

it does look delicious but how about the

100

00:04:41,110 --> 00:04:35,919

experiments can you show us the

101
00:04:41,120 --> 00:04:44,310
oh

102
00:04:47,430 --> 00:04:46,070
certainly i think

103
00:04:49,670 --> 00:04:47,440
i think you're thinking about

104
00:04:52,070 --> 00:04:49,680
experiments that uh these guys sent up

105
00:04:53,909 --> 00:04:52,080
right um's experiments and dorothy and

106
00:04:56,790 --> 00:04:53,919
sarah's experiments

107
00:04:58,550 --> 00:04:56,800
and they're right here with me so i have

108
00:05:00,150 --> 00:04:58,560
them here in space

109
00:05:01,670 --> 00:05:00,160
this is a gap this is dorothy and

110
00:05:03,029 --> 00:05:01,680
sarah's

111
00:05:04,710 --> 00:05:03,039
and it shows

112
00:05:08,150 --> 00:05:04,720
a little bit change of color from when

113
00:05:10,390 --> 00:05:08,160

you remember it launched it was before

114

00:05:13,189 --> 00:05:10,400

a little bit more red and then we

115

00:05:15,510 --> 00:05:13,199

combined them in the gap experiment

116

00:05:17,430 --> 00:05:15,520

and so now obviously with the dye

117

00:05:19,189 --> 00:05:17,440

they've changed which means uh there's

118

00:05:21,430 --> 00:05:19,199

some definitely some indication of some

119

00:05:23,110 --> 00:05:21,440

growth but we'll have to see how that

120

00:05:28,629 --> 00:05:23,120

goes when they get returned to earth on

121

00:05:33,909 --> 00:05:30,629

so this is where there's a dye that

122

00:05:36,469 --> 00:05:33,919

changes with the acidity and so as the

123

00:05:38,710 --> 00:05:36,479

bacteria metabolize whoa

124

00:05:42,950 --> 00:05:38,720

they metabolize and change its color

125

00:05:45,590 --> 00:05:43,909

exactly

126

00:05:49,749 --> 00:05:45,600

in the other experiment

127

00:05:52,870 --> 00:05:51,430

sorry

128

00:05:54,710 --> 00:05:52,880

the other experiment which i think you

129

00:05:57,510 --> 00:05:54,720

guys want to take a look at if we can

130

00:06:00,150 --> 00:05:57,520

get it the camera to focus

131

00:06:01,670 --> 00:06:00,160

is uh of course our little nefertiti

132

00:06:03,670 --> 00:06:01,680

here

133

00:06:06,550 --> 00:06:03,680

let's see if she can get in focus hold

134

00:06:11,510 --> 00:06:06,560

on can you see her

135

00:06:11,520 --> 00:06:17,749

i see a lot of uh she's a little scary

136

00:06:17,759 --> 00:06:24,469

i think she's been eating well

137

00:06:30,950 --> 00:06:27,270

so uh uh um do you have a question about

138

00:06:35,590 --> 00:06:33,990

uh yeah i'll shoot a question so i i see

139

00:06:36,790 --> 00:06:35,600

there are a lot of dead slides hanging

140

00:06:38,150 --> 00:06:36,800

around in the

141

00:06:39,990 --> 00:06:38,160

silk threads

142

00:06:43,510 --> 00:06:40,000

did you get to see her actually do the

143

00:06:49,749 --> 00:06:47,590

oh yeah you know she was in the cgba i

144

00:06:54,230 --> 00:06:49,759

mean i'm sorry the uh

145

00:06:56,070 --> 00:06:54,240

in in her habitat there and then also

146

00:06:58,469 --> 00:06:56,080

in the locker where the

147

00:06:59,990 --> 00:06:58,479

payload folks were able to see her with

148

00:07:02,309 --> 00:07:00,000

the camera and that was that's what this

149

00:07:04,070 --> 00:07:02,319

is contained right here but every now

150

00:07:06,710 --> 00:07:04,080

and then of course i took her and

151
00:07:09,670 --> 00:07:06,720
cleopatra out and fed them you know by

152
00:07:11,510 --> 00:07:09,680
opening the plungers and opening so more

153
00:07:13,430 --> 00:07:11,520
fruit flies would come out

154
00:07:16,469 --> 00:07:13,440
and one day i was doing that i had the

155
00:07:18,950 --> 00:07:16,479
light on like this because as you know

156
00:07:21,270 --> 00:07:18,960
they hunt in the daytime and i wanted to

157
00:07:23,909 --> 00:07:21,280
take a look and see if i could see her

158
00:07:26,150 --> 00:07:23,919
and my gosh i saw her stalking a fruit

159
00:07:28,309 --> 00:07:26,160
fly unbeknownst to that poor little

160
00:07:29,990 --> 00:07:28,319
fruit fly and she was looking at it and

161
00:07:30,790 --> 00:07:30,000
she was going real close and all sudden

162
00:07:33,430 --> 00:07:30,800
she

163
00:07:36,790 --> 00:07:33,440

jumped right on her so it was amazing

164

00:07:38,870 --> 00:07:36,800

and so i think the spiders absolutely

165

00:07:42,070 --> 00:07:38,880

adapted to space it was incredible to

166

00:07:46,309 --> 00:07:44,309

wow i mean i'm watching you you're very

167

00:07:48,230 --> 00:07:46,319

impressed it's really no that's very

168

00:07:50,550 --> 00:07:48,240

cool so they were the spiders able to

169

00:07:53,029 --> 00:07:50,560

adapt just as you predicted on

170

00:07:56,790 --> 00:07:53,039

so uh sarah dorothy do you have a

171

00:07:58,469 --> 00:07:56,800

question for sunny yeah hi

172

00:08:01,110 --> 00:07:58,479

we're wondering can you see any

173

00:08:02,469 --> 00:08:01,120

differences in like how yellow each test

174

00:08:04,469 --> 00:08:02,479

tube is to show

175

00:08:11,270 --> 00:08:04,479

the levels perhaps that our bacteria has

176

00:08:16,309 --> 00:08:12,710

i'm sorry can you repeat your question

177

00:08:19,510 --> 00:08:18,150

are there like different um levels of

178

00:08:21,510 --> 00:08:19,520

yellow like can you see the different

179

00:08:25,110 --> 00:08:21,520

color changes or are they all the same

180

00:08:28,629 --> 00:08:26,869

no they're all they're all different

181

00:08:30,790 --> 00:08:28,639

actually this one came i

182

00:08:32,310 --> 00:08:30,800

just randomly picked number five i'm you

183

00:08:34,630 --> 00:08:32,320

know but they all have a slightly

184

00:08:36,389 --> 00:08:34,640

different color this one is uh really

185

00:08:38,949 --> 00:08:36,399

nice and orange but some are a lighter

186

00:08:40,389 --> 00:08:38,959

color and some are a darker color of red

187

00:08:42,870 --> 00:08:40,399

so yeah they all have a little bit

188

00:08:44,710 --> 00:08:42,880

different so um you know i didn't get

189

00:08:46,790 --> 00:08:44,720

the i was wondering about all the data

190

00:08:48,470 --> 00:08:46,800

points that you guys picked because i

191

00:08:50,389 --> 00:08:48,480

was wondering why they were all the

192

00:08:53,190 --> 00:08:50,399

different colors and i noticed it pretty

193

00:08:54,870 --> 00:08:53,200

much the first time i i took them out

194

00:08:56,230 --> 00:08:54,880

and looked at them when i was taking the

195

00:08:58,790 --> 00:08:56,240

pictures that they were definitely

196

00:09:00,310 --> 00:08:58,800

different ones had different colors so

197

00:09:02,310 --> 00:09:00,320

you're going to see some interesting

198

00:09:03,590 --> 00:09:02,320

results when you get these back and you

199

00:09:06,070 --> 00:09:03,600

know right now we're keeping them at

200

00:09:08,949 --> 00:09:06,080

four degrees in this chamber so

201

00:09:10,470 --> 00:09:08,959

it should maintain its uh

202

00:09:13,829 --> 00:09:10,480

you know where it is until it gets back

203

00:09:17,829 --> 00:09:15,670

that sounds great so that's what you

204

00:09:20,230 --> 00:09:17,839

guys predicted yeah yeah

205

00:09:22,870 --> 00:09:20,240

that's not bad people look at you both

206

00:09:24,710 --> 00:09:22,880

of you both experiments came out pretty

207

00:09:26,790 --> 00:09:24,720

much the way you predicted

208

00:09:28,949 --> 00:09:26,800

and sunny you are an

209

00:09:30,949 --> 00:09:28,959

extraordinary part of this and we very

210

00:09:32,230 --> 00:09:30,959

much appreciate it yeah thank you so

211

00:09:34,790 --> 00:09:32,240

much

212

00:09:36,389 --> 00:09:34,800

so it's not just that these guys here

213

00:09:37,990 --> 00:09:36,399

have been hoping to ask you questions

214

00:09:39,350 --> 00:09:38,000

and thank you for answering but we have

215

00:09:42,230 --> 00:09:39,360

some questions

216

00:09:43,990 --> 00:09:42,240

from uh their classmates in michigan in

217

00:09:45,829 --> 00:09:44,000

the united states

218

00:09:47,910 --> 00:09:45,839

here we go

219

00:09:49,910 --> 00:09:47,920

hey dorothy and sarah and everyone in

220

00:09:52,470 --> 00:09:49,920

the studio we're back here in troy

221

00:09:54,470 --> 00:09:52,480

michigan and we also have a question for

222

00:09:55,910 --> 00:09:54,480

sunny the astronaut obviously the

223

00:09:57,670 --> 00:09:55,920

olympics for this summer but we were

224

00:09:59,190 --> 00:09:57,680

wondering how international relations

225

00:10:03,509 --> 00:09:59,200

changed after we found out who got the

226

00:10:07,910 --> 00:10:06,550

very interesting question um we actually

227

00:10:10,710 --> 00:10:07,920

you know we have

228

00:10:13,990 --> 00:10:10,720

a little bit delayed tv up here if we

229

00:10:16,230 --> 00:10:14,000

get streaming video uh it's called ku

230

00:10:18,550 --> 00:10:16,240

and so during the olympics we would get

231

00:10:21,110 --> 00:10:18,560

ku and get all of the highlights of the

232

00:10:22,790 --> 00:10:21,120

olympics at dinner time which was great

233

00:10:24,710 --> 00:10:22,800

as a group we would gather around the

234

00:10:26,310 --> 00:10:24,720

table and watch the olympics and i

235

00:10:28,550 --> 00:10:26,320

thought it was more of a bonding

236

00:10:30,949 --> 00:10:28,560

experience between all of us as we were

237

00:10:33,030 --> 00:10:30,959

cheering for each other's teams

238

00:10:34,389 --> 00:10:33,040

like when japan would win and when

239

00:10:36,310 --> 00:10:34,399

russia would win we'd all be like

240

00:10:39,190 --> 00:10:36,320

psyched for each other and i think that

241

00:10:41,509 --> 00:10:39,200

that's really good for um international

242

00:10:43,269 --> 00:10:41,519

relations it was not uh you know on

243

00:10:46,150 --> 00:10:43,279

anything bad it was more like we're

244

00:10:47,990 --> 00:10:46,160

supporting each other and you know got

245

00:10:49,190 --> 00:10:48,000

to know each other's athletes through

246

00:10:51,509 --> 00:10:49,200

through the other the knowledge of the

247

00:10:55,110 --> 00:10:51,519

other uh crewmate on board so it was

248

00:10:58,310 --> 00:10:57,430

that's very good news very good news

249

00:11:00,470 --> 00:10:58,320

because

250

00:11:01,829 --> 00:11:00,480

our next question comes from an olympic

251
00:11:04,310 --> 00:11:01,839
gold medalist

252
00:11:06,389 --> 00:11:04,320
the guy who competing with spiders uh

253
00:11:08,230 --> 00:11:06,399
was the long jumper who won greg

254
00:11:10,470 --> 00:11:08,240
rutherford greg

255
00:11:11,910 --> 00:11:10,480
hi greg rutherford here just gonna ask

256
00:11:13,750 --> 00:11:11,920
you a quick question

257
00:11:15,269 --> 00:11:13,760
if armed spider was my size she could

258
00:11:21,190 --> 00:11:15,279
out jump me on earth but could she

259
00:11:29,670 --> 00:11:23,910
well i think just by mass i think you

260
00:11:32,630 --> 00:11:30,949
good that's good

261
00:11:34,790 --> 00:11:32,640
it's good to know

262
00:11:37,509 --> 00:11:34,800
our next question comes from the flight

263
00:11:42,310 --> 00:11:37,519

director of the mars curiosity rover

264

00:11:44,470 --> 00:11:42,320

mission babasi the mohawk man go back

265

00:11:46,230 --> 00:11:44,480

here at the jet propulsion lab we work

266

00:11:48,069 --> 00:11:46,240

on robotic missions what we'd like to

267

00:11:49,269 --> 00:11:48,079

know is how can we further improve

268

00:11:53,590 --> 00:11:49,279

robotic missions to help human

269

00:11:56,949 --> 00:11:55,190

that's you know a really great question

270

00:11:58,629 --> 00:11:56,959

because some people sometimes think that

271

00:12:00,150 --> 00:11:58,639

robotics and human space flight are a

272

00:12:02,069 --> 00:12:00,160

little bit you know back and forth

273

00:12:04,550 --> 00:12:02,079

there's some type of competition there

274

00:12:06,710 --> 00:12:04,560

but i think robotics are awesome because

275

00:12:08,870 --> 00:12:06,720

they'll take the first step where we

276

00:12:11,430 --> 00:12:08,880

haven't had the technology developed

277

00:12:13,350 --> 00:12:11,440

quite yet for humans to go and then the

278

00:12:16,550 --> 00:12:13,360

second thing they can do

279

00:12:19,190 --> 00:12:16,560

once humans get there they can take on

280

00:12:20,870 --> 00:12:19,200

repetitive tasks and do repetitive tasks

281

00:12:23,190 --> 00:12:20,880

such that the humans can take then the

282

00:12:25,430 --> 00:12:23,200

next step in exploration so i think

283

00:12:27,190 --> 00:12:25,440

robotics and humans can step by step and

284

00:12:29,269 --> 00:12:27,200

leapfrog each other so we get further

285

00:12:31,110 --> 00:12:29,279

and further and understand more about

286

00:12:32,870 --> 00:12:31,120

our universe so i think robotics and

287

00:12:38,230 --> 00:12:32,880

human space flight together are an

288

00:12:42,389 --> 00:12:40,550

that's fantastic you know as the

289

00:12:44,230 --> 00:12:42,399

ceo of the planetary society this is

290

00:12:46,230 --> 00:12:44,240

something we advocate i'm delighted you

291

00:12:47,829 --> 00:12:46,240

feel that way sonny it's just it's great

292

00:12:49,590 --> 00:12:47,839

let's change the world so

293

00:12:52,069 --> 00:12:49,600

this is good but we've got tons of

294

00:12:53,910 --> 00:12:52,079

questions from our live stream viewers

295

00:12:56,230 --> 00:12:53,920

from all over the world

296

00:12:57,350 --> 00:12:56,240

so we're going to start with pekka ooh

297

00:12:59,190 --> 00:12:57,360

lala

298

00:13:01,269 --> 00:12:59,200

what is the most beautiful thing you've

299

00:13:06,230 --> 00:13:01,279

seen in space what is the biggest

300

00:13:10,470 --> 00:13:08,470

well like i tell you what really is

301
00:13:12,389 --> 00:13:10,480
humbling is when you look out the window

302
00:13:15,030 --> 00:13:12,399
and you see something like the aurora

303
00:13:17,190 --> 00:13:15,040
borealis uh or the you know the the

304
00:13:19,430 --> 00:13:17,200
lights in the southern hemisphere also

305
00:13:21,590 --> 00:13:19,440
it's just amazing because it really puts

306
00:13:23,750 --> 00:13:21,600
us in our place that we're

307
00:13:25,829 --> 00:13:23,760
you know the energy around us and in the

308
00:13:27,590 --> 00:13:25,839
universe is overwhelming and more than

309
00:13:29,590 --> 00:13:27,600
we can even imagine with our minds and

310
00:13:31,910 --> 00:13:29,600
there's there's more and more for us to

311
00:13:34,710 --> 00:13:31,920
discover out there and then of course

312
00:13:36,870 --> 00:13:34,720
looking at our planet it's just pretty i

313
00:13:38,470 --> 00:13:36,880

mean it's blue it's green it's purple

314

00:13:41,269 --> 00:13:38,480

the clouds are forming the ice is

315

00:13:42,550 --> 00:13:41,279

forming it is just spectacular and i've

316

00:13:44,470 --> 00:13:42,560

said it a number of times i wish

317

00:13:46,069 --> 00:13:44,480

everybody would be able to take a lap

318

00:13:48,790 --> 00:13:46,079

around the planet and then they'd have a

319

00:13:50,629 --> 00:13:48,800

much better appreciation for it and the

320

00:13:54,389 --> 00:13:50,639

people who live there and it's it's just

321

00:13:59,030 --> 00:13:56,550

that's great you are our ambassador you

322

00:14:01,030 --> 00:13:59,040

are our woman in space thank you uh we

323

00:14:03,350 --> 00:14:01,040

have another question this one from

324

00:14:05,509 --> 00:14:03,360

cotton or kaden kuchira

325

00:14:08,230 --> 00:14:05,519

does it ever bother you

326

00:14:13,430 --> 00:14:08,240

to be in such a small area in such a

327

00:14:17,910 --> 00:14:16,150

oh gosh no you know this place is is

328

00:14:19,509 --> 00:14:17,920

great and i was here when it was a

329

00:14:21,509 --> 00:14:19,519

little bit small and we only had three

330

00:14:24,310 --> 00:14:21,519

people and now we have six

331

00:14:25,829 --> 00:14:24,320

but we have you know over 10 modules and

332

00:14:27,430 --> 00:14:25,839

you know it goes different directions

333

00:14:29,110 --> 00:14:27,440

from the front of the spacecraft all the

334

00:14:30,949 --> 00:14:29,120

way back to the you know the russian

335

00:14:33,269 --> 00:14:30,959

segment back there it's like a

336

00:14:35,750 --> 00:14:33,279

five-story house there's windows to look

337

00:14:38,389 --> 00:14:35,760

out of um you know everything in space

338

00:14:40,389 --> 00:14:38,399

is more fun cleaning is fun so you don't

339

00:14:41,590 --> 00:14:40,399

get tired of being inside because

340

00:14:43,269 --> 00:14:41,600

there's always

341

00:14:44,790 --> 00:14:43,279

a lot of things to do

342

00:14:46,230 --> 00:14:44,800

and every now and then you get to go

343

00:14:48,470 --> 00:14:46,240

outside too

344

00:14:50,230 --> 00:14:48,480

so that's a lot of fun as well so no i

345

00:14:53,670 --> 00:14:50,240

never get tired of being inside here

346

00:14:57,030 --> 00:14:54,949

that's cool

347

00:14:58,710 --> 00:14:57,040

we have another question from brianna

348

00:15:00,470 --> 00:14:58,720

paige henderson

349

00:15:02,310 --> 00:15:00,480

about how long is your training how long

350

00:15:03,189 --> 00:15:02,320

did you work to get ready for this and

351

00:15:04,629 --> 00:15:03,199

uh

352

00:15:08,790 --> 00:15:04,639

what are some of the things you had to

353

00:15:12,629 --> 00:15:10,389

you know that's a great question i think

354

00:15:14,470 --> 00:15:12,639

people don't realize that it um you know

355

00:15:16,069 --> 00:15:14,480

the space station like i said is big and

356

00:15:18,870 --> 00:15:16,079

there are a lot of things you know we

357

00:15:21,829 --> 00:15:18,880

don't have uh electricians and plumbers

358

00:15:24,310 --> 00:15:21,839

and com computer you know i.t folks up

359

00:15:25,509 --> 00:15:24,320

here uh we do it all ourselves and so

360

00:15:27,829 --> 00:15:25,519

the training

361

00:15:29,590 --> 00:15:27,839

can is about two and a half years and it

362

00:15:32,389 --> 00:15:29,600

consists of learning about the u.s

363

00:15:34,629 --> 00:15:32,399

segments modules the japanese the

364

00:15:36,790 --> 00:15:34,639

eupean the russians so that means a

365

00:15:38,550 --> 00:15:36,800

lot of travel around the world uh

366

00:15:40,470 --> 00:15:38,560

learning the russian language also

367

00:15:41,430 --> 00:15:40,480

because we fly up in a russian soyuz

368

00:15:44,069 --> 00:15:41,440

vehicle

369

00:15:46,949 --> 00:15:44,079

we learn about how that spacecraft works

370

00:15:49,030 --> 00:15:46,959

and so the training is pretty extensive

371

00:15:50,870 --> 00:15:49,040

on skills base so we can be able to do

372

00:15:53,189 --> 00:15:50,880

all that plumbing

373

00:15:55,910 --> 00:15:53,199

electrical stuff water stuff science

374

00:15:57,670 --> 00:15:55,920

stuff so it's a lot of skill space but

375

00:15:59,189 --> 00:15:57,680

it's about two and a half years and it's

376

00:16:00,710 --> 00:15:59,199

it's a lot of fun that's when you get to

377

00:16:03,910 --> 00:16:00,720

know your crew because we all train

378

00:16:08,310 --> 00:16:05,910

now speaking of getting getting to know

379

00:16:10,230 --> 00:16:08,320

you're through we i think none of us

380

00:16:15,110 --> 00:16:10,240

could miss somebody went flying over

381

00:16:18,949 --> 00:16:17,189

so that was aki

382

00:16:22,069 --> 00:16:18,959

you know of course he represents the

383

00:16:23,990 --> 00:16:22,079

japanese space agency here uh him and

384

00:16:25,749 --> 00:16:24,000

myself and yuri malenchenko from the

385

00:16:28,629 --> 00:16:25,759

russian space agency flew up on the

386

00:16:29,990 --> 00:16:28,639

soyuz but also who's up here on a

387

00:16:32,389 --> 00:16:30,000

different so who's getting ready to go

388

00:16:34,230 --> 00:16:32,399

home on sunday is joe acaba another

389

00:16:36,870 --> 00:16:34,240

american and then two russians gennady

390

00:16:38,949 --> 00:16:36,880

padalka sergei revin so we've got a

391

00:16:41,590 --> 00:16:38,959

sorted a sundry of people and

392

00:16:43,350 --> 00:16:41,600

in another month or so another soyuz

393

00:16:46,069 --> 00:16:43,360

will come up with another american and

394

00:16:47,910 --> 00:16:46,079

two russians so it's pretty busy up here

395

00:16:49,910 --> 00:16:47,920

with spacecraft coming and going and

396

00:16:51,749 --> 00:16:49,920

people flying in flying out this is a

397

00:16:56,150 --> 00:16:51,759

laboratory we're working here so you're

398

00:16:59,269 --> 00:16:57,910

but they move around an extraordinary

399

00:17:01,110 --> 00:16:59,279

way

400

00:17:01,990 --> 00:17:01,120

i mean they're all flying it's pretty

401
00:17:04,309 --> 00:17:02,000
cool

402
00:17:05,829 --> 00:17:04,319
so we have another question from our uh

403
00:17:08,230 --> 00:17:05,839
our social media

404
00:17:10,710 --> 00:17:08,240
this is from douglas martin

405
00:17:12,549 --> 00:17:10,720
what does sirius look like uh when

406
00:17:14,789 --> 00:17:12,559
you're up there when you're closer to

407
00:17:19,110 --> 00:17:14,799
the star series as a star or what does

408
00:17:25,350 --> 00:17:21,270
so it's an interesting question in a you

409
00:17:27,350 --> 00:17:25,360
know we're only about you know 250 miles

410
00:17:29,430 --> 00:17:27,360
you know 400 kilometers above the earth

411
00:17:32,230 --> 00:17:29,440
so we're when you're thinking relatively

412
00:17:33,669 --> 00:17:32,240
that's not very far from the surface of

413
00:17:36,390 --> 00:17:33,679

the earth when you're thinking about how

414

00:17:38,870 --> 00:17:36,400

far other planets are and stars are so

415

00:17:41,750 --> 00:17:38,880

size is about the same as you would see

416

00:17:44,789 --> 00:17:41,760

from earth however without any

417

00:17:47,110 --> 00:17:44,799

atmosphere the universe is crystal clear

418

00:17:49,350 --> 00:17:47,120

you can really see the 3d

419

00:17:51,029 --> 00:17:49,360

of the darkness that's going out there i

420

00:17:53,110 --> 00:17:51,039

mean it doesn't look like a black sheet

421

00:17:56,310 --> 00:17:53,120

it's like it just goes on and on

422

00:17:58,630 --> 00:17:56,320

likewise stars are crystal clear and

423

00:18:00,470 --> 00:17:58,640

they're bright and so you see definitely

424

00:18:02,630 --> 00:18:00,480

different sizes just like you do on

425

00:18:04,470 --> 00:18:02,640

earth of stars that some are smaller and

426

00:18:06,789 --> 00:18:04,480

some are bigger but they are just

427

00:18:08,710 --> 00:18:06,799

crystal clear and at night it's you know

428

00:18:10,630 --> 00:18:08,720

it's like millions and millions of stars

429

00:18:12,150 --> 00:18:10,640

you know it's in some place you've been

430

00:18:13,909 --> 00:18:12,160

where there's no light pollution and

431

00:18:18,310 --> 00:18:13,919

it's just a crystal clear day it's

432

00:18:21,990 --> 00:18:19,830

that's cool

433

00:18:24,230 --> 00:18:22,000

so you guys do you have any other

434

00:18:26,230 --> 00:18:24,240

questions you got it right here right

435

00:18:29,029 --> 00:18:26,240

there i have a question uh how many

436

00:18:30,950 --> 00:18:29,039

sunrises do you see in a day in a 24

437

00:18:36,870 --> 00:18:30,960

hour

438

00:18:38,549 --> 00:18:36,880

earth 16 times so you'll see 16 sunrises

439

00:18:40,230 --> 00:18:38,559

and sunsets

440

00:18:42,070 --> 00:18:40,240

here in the laboratory we've got a

441

00:18:43,350 --> 00:18:42,080

window below us but it's taking some

442

00:18:45,510 --> 00:18:43,360

really

443

00:18:47,190 --> 00:18:45,520

nice pictures and so we have it covered

444

00:18:49,750 --> 00:18:47,200

up with a black cover so the pictures

445

00:18:51,909 --> 00:18:49,760

will come out real well the cupola is

446

00:18:53,669 --> 00:18:51,919

around the corner and you can sometimes

447

00:18:55,590 --> 00:18:53,679

it's right where the gym is and so when

448

00:18:57,590 --> 00:18:55,600

you're lifting and working out

449

00:18:58,710 --> 00:18:57,600

you can see the sunrise and sunset right

450

00:19:01,270 --> 00:18:58,720

above you

451
00:19:03,430 --> 00:19:01,280
but i tell you when we're on a spacewalk

452
00:19:05,190 --> 00:19:03,440
you can really tell the difference

453
00:19:06,870 --> 00:19:05,200
the heat just the heating and cooling

454
00:19:08,549 --> 00:19:06,880
from the time when the sun is up and

455
00:19:10,549 --> 00:19:08,559
when this time and that it's dark is

456
00:19:13,430 --> 00:19:10,559
unbelievable before the sun even shines

457
00:19:15,350 --> 00:19:13,440
on you you can feel the heat start to

458
00:19:17,510 --> 00:19:15,360
generate around your body

459
00:19:19,270 --> 00:19:17,520
so it's impressive

460
00:19:20,789 --> 00:19:19,280
the vacuum of space how much heating and

461
00:19:24,710 --> 00:19:20,799
cooling goes on out there and how much

462
00:19:27,190 --> 00:19:24,720
sun changes things

463
00:19:29,430 --> 00:19:27,200

that's fantastic and i remind you

464

00:19:31,110 --> 00:19:29,440

it's not magic it's science

465

00:19:33,350 --> 00:19:31,120

that's pretty cool sonny thank you so

466

00:19:34,789 --> 00:19:33,360

much i'm afraid we're about to lose you

467

00:19:36,789 --> 00:19:34,799

uh our satellites are going to lose

468

00:19:39,270 --> 00:19:36,799

touch with you but do you have any final

469

00:19:43,510 --> 00:19:39,280

words for the winners for dorothy sarah

470

00:19:46,950 --> 00:19:45,350

well of course congratulations to you

471

00:19:48,789 --> 00:19:46,960

guys your experiments were awesome up

472

00:19:52,230 --> 00:19:48,799

here i know that there were thousands of

473

00:19:54,150 --> 00:19:52,240

other wonderful participants in this

474

00:19:56,230 --> 00:19:54,160

contest or this i think more of a

475

00:19:58,390 --> 00:19:56,240

gathering of scientific minds of our

476

00:20:00,710 --> 00:19:58,400

future so thanks to everybody who

477

00:20:03,029 --> 00:20:00,720

participated you guys all made the

478

00:20:07,990 --> 00:20:03,039

contest awesome we're just honored to

479

00:20:11,430 --> 00:20:09,990

thank you sonny that's just great thank

480

00:20:12,549 --> 00:20:11,440

you so much we'll let you get back to

481

00:20:15,029 --> 00:20:12,559

work

482

00:20:15,669 --> 00:20:15,039

uh oh wow that was just wonderful isn't

483

00:20:17,909 --> 00:20:15,679

it

484

00:20:19,990 --> 00:20:17,919

she's flying in space you guys come on

485

00:20:21,669 --> 00:20:20,000

uh thanks mission control thank you very

486

00:20:24,070 --> 00:20:21,679

much we'll let you get to back to work

487

00:20:25,270 --> 00:20:24,080

back to work as well i mean how cool is

488

00:20:27,830 --> 00:20:25,280

that