
Google
NASA Godda...

1
00:00:05,539 --> 00:00:03,350
hi everyone I'm Aries Keck here at NASA

2
00:00:07,760 --> 00:00:05,549
Goddard Space Flight Center and we're

3
00:00:09,560 --> 00:00:07,770
doing a hangout live today with two of

4
00:00:11,810 --> 00:00:09,570
our scientists who are pretty much other

5
00:00:13,820 --> 00:00:11,820
ends of the earth and we've got a school

6
00:00:16,340 --> 00:00:13,830
that's here in Maryland where where

7
00:00:19,760 --> 00:00:16,350
Goddard is as well they're at the Naval

8
00:00:20,900 --> 00:00:19,770
Academy primary school in Maryland we're

9
00:00:23,359 --> 00:00:20,910
going to be talking a lot today about

10
00:00:24,650 --> 00:00:23,369
ice bridge high school going to you guys

11
00:00:27,800 --> 00:00:24,660
shortly and we're going to show some

12
00:00:30,560 --> 00:00:27,810
videos as well first I'm going to

13
00:00:33,770 --> 00:00:30,570

introduce Nathan Kurtz he's the project

14
00:00:35,690 --> 00:00:33,780
scientist for operation IceBridge and he

15
00:00:37,850 --> 00:00:35,700
is reaching us from what looks like an

16
00:00:40,069 --> 00:00:37,860
office or maybe a hotel out there at

17
00:00:44,450 --> 00:00:40,079
Plato's air is chilly Nathan can you say

18
00:00:48,080 --> 00:00:44,460
hi alright alright athan tell us what

19
00:00:50,840 --> 00:00:48,090
you're doing there in Chile so we're

20
00:00:54,560 --> 00:00:50,850
here in Chile with a plane it's called

21
00:00:56,209 --> 00:00:54,570
the g5 we've loaded up with instruments

22
00:00:59,660 --> 00:00:56,219
we have a laser on board a camera and

23
00:01:01,220 --> 00:00:59,670
we're flying around Antarctica around

24
00:01:04,789 --> 00:01:01,230
the oceans around out our cut it and

25
00:01:10,630 --> 00:01:04,799
we're measuring the ice how thick it is

26
00:01:14,690 --> 00:01:12,410
fantastic and now if you're watching

27
00:01:16,370 --> 00:01:14,700
this because you could imagine having

28
00:01:19,429 --> 00:01:16,380
somebody in Chile another person in

29
00:01:21,140 --> 00:01:19,439
Greenland oh we're going to be a little

30
00:01:23,330 --> 00:01:21,150
patient with our audio or any kind of

31
00:01:25,730 --> 00:01:23,340
technical issues it's going as well as

32
00:01:28,130 --> 00:01:25,740
it's going so far let me see if I can

33
00:01:30,649 --> 00:01:28,140
bring John woods who's in Thule

34
00:01:32,899 --> 00:01:30,659
Greenland in he the project manager for

35
00:01:37,399 --> 00:01:32,909
operation ice bridge and I think he's in

36
00:01:39,859 --> 00:01:37,409
the airplane hanger itself hello John hi

37
00:01:41,600 --> 00:01:39,869
hello everyone yes my name is John woods

38
00:01:44,050 --> 00:01:41,610

and I'm currently the project manager

39
00:01:46,130 --> 00:01:44,060
for NASA operation icebridge and

40
00:01:47,510 --> 00:01:46,140
unfortunately we're not in our hangar so

41
00:01:49,280 --> 00:01:47,520
our plane is actually the hangar next

42
00:01:51,560 --> 00:01:49,290
door but I do have two of our pilots

43
00:01:54,200 --> 00:01:51,570
here available to answer any questions

44
00:02:01,940 --> 00:01:54,210
if anyone has any pilot specific

45
00:02:03,830 --> 00:02:01,950
questions all right

46
00:02:05,120 --> 00:02:03,840
hasook while since we've got the pilots

47
00:02:10,360 --> 00:02:05,130
there let's go talk to them right now

48
00:02:13,250 --> 00:02:10,370
John do you mind taking it away alright

49
00:02:18,820 --> 00:02:13,260
mi-17 plug my headphone here see if I

50
00:02:30,440 --> 00:02:26,920
hi I'm Greg Slover who's that audio okay

51
00:02:32,720 --> 00:02:30,450
it's working fairly well so let's have

52
00:02:34,400 --> 00:02:32,730
pilots before we lose you let me have

53
00:02:38,360 --> 00:02:34,410
you guys describe what it's like to go

54
00:02:41,360 --> 00:02:38,370
out on a flight you might put all my

55
00:02:48,680 --> 00:02:41,370
headphones on describe what it's like to

56
00:02:52,490 --> 00:02:48,690
want to fly standby one second hi can

57
00:02:54,699 --> 00:02:52,500
you hear me what well it's what it's

58
00:02:57,050 --> 00:02:54,709
like is that we get up really early and

59
00:02:58,430 --> 00:02:57,060
we find out what the scientists want to

60
00:03:01,009 --> 00:02:58,440
fill out based on the weather that we

61
00:03:02,690 --> 00:03:01,019
have no grand if the weather is clear

62
00:03:05,089 --> 00:03:02,700
took real and these are really big

63
00:03:07,099 --> 00:03:05,099

island and so you look for really clear

64
00:03:09,410 --> 00:03:07,109
area so the history that we have this is

65
00:03:13,039 --> 00:03:09,420
a laser and camera can see all the way

66
00:03:15,410 --> 00:03:13,049
to acts and based on the weather gets

67
00:03:18,229 --> 00:03:15,420
together and about a couple hours Corey

68
00:03:19,940 --> 00:03:18,239
fly and we applied for about four hours

69
00:03:22,309 --> 00:03:19,950
and you come back here in land and the

70
00:03:24,259 --> 00:03:22,319
scientists take with you the data and we

71
00:03:31,900 --> 00:03:24,269
do that just about every morning in the

72
00:03:36,100 --> 00:03:34,360
and now pilots what is what are the

73
00:03:42,490 --> 00:03:36,110
planes like that you're flying out there

74
00:03:45,670 --> 00:03:42,500
oh it's right but I google HQ 25

75
00:03:49,330 --> 00:03:45,680
guardian and there's some figures of RPG

76
00:03:53,020 --> 00:03:49,340
from NASA and we got our twin engine jet

77
00:04:01,180 --> 00:03:53,030
coach Gard we have one that's fine right

78
00:04:03,580 --> 00:04:01,190
now and it seats right now that two

79
00:04:09,870 --> 00:04:03,590
pilots and we carry through resources

80
00:04:13,930 --> 00:04:12,220
excellent and so now you guys are up

81
00:04:15,820 --> 00:04:13,940
there in Greenland Nathan you're down at

82
00:04:17,350 --> 00:04:15,830
the other end of the earth are you doing

83
00:04:21,310 --> 00:04:17,360
similar flights from down there in

84
00:04:24,790 --> 00:04:21,320
puente Sarah so chilly yes we are we

85
00:04:29,800 --> 00:04:24,800
also have a it's not a large plane but

86
00:04:32,440 --> 00:04:29,810
it's it's decent size and we have our

87
00:04:35,470 --> 00:04:32,450
two pilots that fly on board we have a

88
00:04:38,140 --> 00:04:35,480

laser operator or a camera operator and

89
00:04:41,680 --> 00:04:38,150
the techs on board and there are longer

90
00:04:43,570 --> 00:04:41,690
flights out to Antarctica to the

91
00:04:45,580 --> 00:04:43,580
southern are the northern tip of the

92
00:04:47,860 --> 00:04:45,590
Antarctic Peninsula it takes about two

93
00:04:49,510 --> 00:04:47,870
hours to get down there so just our

94
00:04:51,790 --> 00:04:49,520
transit to and from Antarctica is pretty

95
00:04:56,950 --> 00:04:51,800
long so our flights are about 10 or 10

96
00:05:00,150 --> 00:04:56,960
and a half hours every day and some of

97
00:05:04,090 --> 00:05:00,160
our targets are actually quite far

98
00:05:07,510 --> 00:05:04,100
something like the the guests gets as GE

99
00:05:10,120 --> 00:05:07,520
TZ ice shelf is actually quite far away

100
00:05:12,430 --> 00:05:10,130
so it takes almost four hours to get

101
00:05:15,040 --> 00:05:12,440
there we also have a mission that we

102
00:05:17,890 --> 00:05:15,050
haven't flown yet to the South Pole and

103
00:05:19,600 --> 00:05:17,900
that's pretty much just a flying we kind

104
00:05:22,420 --> 00:05:19,610
of fly a circular on the South Pole go

105
00:05:24,640 --> 00:05:22,430
to the cell phone and go up so it's

106
00:05:26,080 --> 00:05:24,650
always depended on whether you don't

107
00:05:27,760 --> 00:05:26,090
ever know where we're going to apply

108
00:05:30,280 --> 00:05:27,770
until that mornings and then we kind of

109
00:05:33,679 --> 00:05:30,290
make a call to decide where we're going

110
00:05:39,600 --> 00:05:35,640
fantastic thanks so much that's Nathan

111
00:05:41,309 --> 00:05:39,610
Kurtz of course um he is down at point O

112
00:05:43,679 --> 00:05:41,319
Sarah's chili and now we have a school

113
00:05:45,869 --> 00:05:43,689

who's joining us low school if you guys

114
00:05:47,969 --> 00:05:45,879
want to unmute yourselves and see do you

115
00:05:49,619 --> 00:05:47,979
have any questions for the scientists

116
00:05:52,739 --> 00:05:49,629
that are there the school that's joining

117
00:06:01,559 --> 00:05:52,749
us is the Naval Academy primary school

118
00:06:12,779 --> 00:06:01,569
which is located in maryland hi guys so

119
00:06:15,330 --> 00:06:12,789
what okay so so what question is indeed

120
00:06:20,629 --> 00:06:15,340
not have for the pilots that's prob one

121
00:06:29,219 --> 00:06:23,369
anyone how long did it take them to get

122
00:06:32,010 --> 00:06:29,229
there okay I did you guys are usually so

123
00:06:33,480 --> 00:06:32,020
so the question the school just asked

124
00:06:35,219 --> 00:06:33,490
and I put them on mute just because

125
00:06:36,600 --> 00:06:35,229
there's a bunch of them there but the

126
00:06:38,850 --> 00:06:36,610
question they just asked was how long

127
00:06:42,510 --> 00:06:38,860
did it take you to get there let's go to

128
00:06:43,920 --> 00:06:42,520
the gentleman in in Greenland first how

129
00:06:45,839 --> 00:06:43,930
long did it take you to physically get

130
00:06:47,939 --> 00:06:45,849
up to Greenland to even start doing your

131
00:06:49,379 --> 00:06:47,949
job yeah I think your microphone is

132
00:06:57,779 --> 00:06:49,389
muted so you want to unmute your

133
00:07:00,059 --> 00:06:57,789
microphone let's see can we hear you if

134
00:07:03,029 --> 00:07:00,069
you're in Greenland try I'm muting your

135
00:07:07,589 --> 00:07:03,039
microphone there hey yeah just just

136
00:07:09,990 --> 00:07:07,599
unmuted oh my name is Greg again we have

137
00:07:12,480 --> 00:07:10,000
our our airplane is out of Langley

138
00:07:15,089 --> 00:07:12,490

Research Center who Virginia's we flew

139
00:07:18,600 --> 00:07:15,099
from Virginia up to Greenland it took us

140
00:07:21,540 --> 00:07:18,610
three flights and about 75 hours we

141
00:07:22,980 --> 00:07:21,550
stayed overnight in Tuesday Canada the

142
00:07:24,809 --> 00:07:22,990
airplane can actually get there a little

143
00:07:26,519 --> 00:07:24,819
quicker but because of the remote

144
00:07:29,129 --> 00:07:26,529
location of Greenland we had to make

145
00:07:32,459 --> 00:07:29,139
sure to carry extra fuel reserve so we

146
00:07:35,459 --> 00:07:32,469
left we take it and landed at finger

147
00:07:38,519 --> 00:07:35,469
loose away greenland you come come to do

148
00:07:40,879 --> 00:07:38,529
lyrics that allowed us to carry the

149
00:07:43,219 --> 00:07:40,889
extra fuel research needed

150
00:07:46,429 --> 00:07:43,229
your safety and for the operation

151
00:07:54,050 --> 00:07:46,439
conditions we also carry keeps the Saudi

152
00:07:55,939 --> 00:07:54,060
beast an excellent and now nate to you

153
00:07:57,800 --> 00:07:55,949
how long did it take it is physically

154
00:08:02,119 --> 00:07:57,810
get down to Chile to start even doing

155
00:08:08,589 --> 00:08:02,129
this job uh it took me about I believe

156
00:08:13,219 --> 00:08:08,599
30 hours uh uh I flew from Washington DC

157
00:08:14,929 --> 00:08:13,229
down to Miami down to Santiago it was

158
00:08:18,189 --> 00:08:14,939
flying over night and then I waited in

159
00:08:21,019 --> 00:08:18,199
the Santiago Air Force been flexing and

160
00:08:24,679 --> 00:08:21,029
flew down to the southern tip of Chile

161
00:08:27,499 --> 00:08:24,689
so the the plane that we took down here

162
00:08:30,679 --> 00:08:27,509
took off from Colorado just outside of

163
00:08:33,019 --> 00:08:30,689

Denver they flew it took them two days

164
00:08:35,600 --> 00:08:33,029
to get down they they stopped in Arica

165
00:08:38,810 --> 00:08:35,610
Chile they picked up an observer from

166
00:08:41,089 --> 00:08:38,820
the Chilean military too on the way down

167
00:08:46,269 --> 00:08:41,099
we actually flew over several different

168
00:08:52,699 --> 00:08:46,279
targets include over Costa Rica II in

169
00:08:54,470 --> 00:08:52,709
yuh volcanoes and jalisa on the way down

170
00:08:55,519 --> 00:08:54,480
you turn the laser on and turn the

171
00:08:57,259 --> 00:08:55,529
cameras and we're actually taking

172
00:09:00,889 --> 00:08:57,269
measurements on the way down several

173
00:09:06,560 --> 00:09:00,899
places so uh about two days to get down

174
00:09:09,259 --> 00:09:06,570
here excellent okay so Naval Academy

175
00:09:11,480 --> 00:09:09,269
let's go back to you guys do we have

176
00:09:14,120 --> 00:09:11,490
another question for our scientists

177
00:09:17,389 --> 00:09:14,130
there and but don't forget to unmute

178
00:09:21,860 --> 00:09:17,399
yourself first and you do that by going

179
00:09:26,380 --> 00:09:21,870
to the very top of your screen what's

180
00:09:31,280 --> 00:09:26,390
the weather like yeah done in one and

181
00:09:34,250 --> 00:09:31,290
bring this up Jim okay let's let's let

182
00:09:35,900 --> 00:09:34,260
it start inmate first mate tell us with

183
00:09:37,910 --> 00:09:35,910
the weather's like down there and then

184
00:09:42,040 --> 00:09:37,920
we'll go up there so Nate you're

185
00:09:45,439 --> 00:09:42,050
essentially down there Oh in Philly yes

186
00:09:47,180 --> 00:09:45,449
so the weather in Chile because it's the

187
00:09:48,949 --> 00:09:47,190
southern hemisphere that the seasons are

188
00:09:53,060 --> 00:09:48,959

opposite so it's just coming out of

189
00:09:55,790 --> 00:09:53,070
winter uh and coming into spring so

190
00:10:00,440 --> 00:09:55,800
it's it's a little bit chilly it's maybe

191
00:10:03,440 --> 00:10:00,450
40 degrees on average here uh so but the

192
00:10:06,740 --> 00:10:03,450
big difference here the winds are very

193
00:10:10,790 --> 00:10:06,750
very strong it's very common to get just

194
00:10:13,820 --> 00:10:10,800
I don't even know how fast a winds and

195
00:10:17,180 --> 00:10:13,830
uh i mean it's it's constantly blowing

196
00:10:19,130 --> 00:10:17,190
and so this is actually a hazard for the

197
00:10:20,930 --> 00:10:19,140
plane itself because if the winds get

198
00:10:25,280 --> 00:10:20,940
too strong we actually have to move the

199
00:10:30,770 --> 00:10:25,290
plane away so but otherwise it's it's

200
00:10:32,990 --> 00:10:30,780
pretty nice and in chile actually and

201
00:10:33,920 --> 00:10:33,000
now up there in Greenland let's have you

202
00:10:35,600 --> 00:10:33,930
guys talked about the weather I mean

203
00:10:37,250 --> 00:10:35,610
from the park up from the clothes you're

204
00:10:40,880 --> 00:10:37,260
wearing the Parker you're wearing it

205
00:10:43,000 --> 00:10:40,890
looks like it's pretty cold has been

206
00:10:46,520 --> 00:10:43,010
really cool I actually started out at

207
00:10:48,050 --> 00:10:46,530
minus 10 degrees Celsius earlier in the

208
00:10:50,390 --> 00:10:48,060
week okay it's really nice and clear

209
00:10:53,420 --> 00:10:50,400
skies and unfortunately we just had a

210
00:10:56,210 --> 00:10:53,430
blizzard last night where it was blowing

211
00:10:58,820 --> 00:10:56,220
snow and with about 50 to 60 knot winds

212
00:11:01,490 --> 00:10:58,830
so we were all confined to our quarters

213
00:11:03,520 --> 00:11:01,500

last night no it was a lot out and we

214
00:11:06,860 --> 00:11:03,530
just came out of our lockdown earlier

215
00:11:08,810 --> 00:11:06,870
this this morning but it's still blowing

216
00:11:10,220 --> 00:11:08,820
snow out there it's about 25 miles an

217
00:11:13,640 --> 00:11:10,230
hour and unfortunately no one was able

218
00:11:15,770 --> 00:11:13,650
to fly so the weather has been pretty

219
00:11:17,390 --> 00:11:15,780
rough but fortunately some of our

220
00:11:19,190 --> 00:11:17,400
science targets are away from the air

221
00:11:21,410 --> 00:11:19,200
base so as long as the plane can take

222
00:11:27,890 --> 00:11:21,420
off there's other parts of Greenland at

223
00:11:30,350 --> 00:11:27,900
half decent weather lot over it says

224
00:11:31,940 --> 00:11:30,360
that sounds pretty intense so we have

225
00:11:34,100 --> 00:11:31,950
some video that I'm going to throw to a

226
00:11:38,540 --> 00:11:34,110
little bit to play and I'm thinking in

227
00:11:42,440 --> 00:11:38,550
that Nate and can talk about it a little

228
00:11:45,650 --> 00:11:42,450
bit sorry and let's see if it's going to

229
00:11:47,960 --> 00:11:45,660
play these are essentially what I

230
00:11:49,160 --> 00:11:47,970
believe are flyovers Nathan can you tell

231
00:11:53,930 --> 00:11:49,170
us a little bit about what we're seeing

232
00:11:58,850 --> 00:11:53,940
here uh wait I don't see the video yet

233
00:12:02,000 --> 00:11:58,860
oh I see let's see what

234
00:12:07,730 --> 00:12:02,010
it what I'm sitting on Jefferson screen

235
00:12:10,310 --> 00:12:07,740
there should be at the top well let's go

236
00:12:12,430 --> 00:12:10,320
back out he see oh I see it now yeah

237
00:12:15,500 --> 00:12:12,440
thank you know so this is a flyover of

238
00:12:18,260 --> 00:12:15,510

an ice sheet let's see that the

239
00:12:19,820 --> 00:12:18,270
crevasses that's flying over mixture of

240
00:12:21,860 --> 00:12:19,830
water and ice there so probably along

241
00:12:23,600 --> 00:12:21,870
the edge of an ice sheet so that rough

242
00:12:26,960 --> 00:12:23,610
area those are car biases in the ice

243
00:12:28,070 --> 00:12:26,970
sometimes they get very very deep that's

244
00:12:29,750 --> 00:12:28,080
what you want to avoid if you're walking

245
00:12:31,970 --> 00:12:29,760
on the plane this is the plane that

246
00:12:35,510 --> 00:12:31,980
we're taking down south in Chile it's

247
00:12:37,940 --> 00:12:35,520
called the g5 it looks like oh that's

248
00:12:39,230 --> 00:12:37,950
and so this is the plane from Langley

249
00:12:42,590 --> 00:12:39,240
this is the Falcon that they're taking

250
00:12:48,260 --> 00:12:42,600
in Greenland so the two planes that we

251
00:12:50,930 --> 00:12:48,270
have on the mission right now uh see

252
00:12:53,990 --> 00:12:50,940
there's that's our mission scientists

253
00:12:58,820 --> 00:12:54,000
name's Jon Sno Tek he's up in Greenland

254
00:13:01,730 --> 00:12:58,830
as well he decides uh things like checks

255
00:13:06,590 --> 00:13:01,740
the weather make sure everything's going

256
00:13:09,020 --> 00:13:06,600
smoothly makes calls on the ground so we

257
00:13:12,170 --> 00:13:09,030
have him up in Greenland and I'm down

258
00:13:14,810 --> 00:13:12,180
here and uh and Chile doing a similar

259
00:13:17,180 --> 00:13:14,820
job right now and that all of this a

260
00:13:20,780 --> 00:13:17,190
question for you and Nathan so why do

261
00:13:24,920 --> 00:13:20,790
two campaigns at the same time why why

262
00:13:28,250 --> 00:13:24,930
not just focus on one at a time uh in

263
00:13:30,380 --> 00:13:28,260

the past we had focused on one campaign

264
00:13:32,150 --> 00:13:30,390
at a time putting on different

265
00:13:35,120 --> 00:13:32,160
instruments more instruments on one

266
00:13:37,820 --> 00:13:35,130
plane this year we don't have the planes

267
00:13:39,860 --> 00:13:37,830
that can fit all the instruments that we

268
00:13:42,320 --> 00:13:39,870
have so we decided to take planes that

269
00:13:44,300 --> 00:13:42,330
fly at high altitude and take more

270
00:13:46,280 --> 00:13:44,310
specific kinds of measurements and so by

271
00:13:47,540 --> 00:13:46,290
doing that we can actually take

272
00:13:49,280 --> 00:13:47,550
measurements at different times of the

273
00:13:51,260 --> 00:13:49,290
year usually we have been taking

274
00:13:53,450 --> 00:13:51,270
measurements always in the spring so

275
00:13:55,970 --> 00:13:53,460
it's now spraying in the southern

276
00:13:58,820 --> 00:13:55,980
hemisphere and we had always been going

277
00:14:00,860 --> 00:13:58,830
to the Greenland and the Arctic in March

278
00:14:04,610 --> 00:14:00,870
and April May which is also the

279
00:14:05,930 --> 00:14:04,620
springtime when you take measurements at

280
00:14:09,830 --> 00:14:05,940
different times of the year so now we're

281
00:14:12,530 --> 00:14:09,840
in the fall time in Greenland it's just

282
00:14:16,730 --> 00:14:12,540
after the summertime so in some

283
00:14:19,240 --> 00:14:16,740
uh everything's melting obviously not

284
00:14:21,830 --> 00:14:19,250
all Greenland starts to melt typically

285
00:14:23,570 --> 00:14:21,840
but a large portion does and so we don't

286
00:14:26,120 --> 00:14:23,580
always know what happens how much snow

287
00:14:28,040 --> 00:14:26,130
is melting how much snow is falling so

288
00:14:29,420 --> 00:14:28,050

when we come back in the fall after

289
00:14:31,520 --> 00:14:29,430
we've taken measures in the spring we

290
00:14:35,860 --> 00:14:31,530
can get a sense of well what happened

291
00:14:38,690 --> 00:14:35,870
over the summer doing things I we try to

292
00:14:41,900 --> 00:14:38,700
improve predictive models so what's

293
00:14:44,030 --> 00:14:41,910
going to happen to Greenland many years

294
00:14:45,980 --> 00:14:44,040
from now and to do that we have to know

295
00:14:47,750 --> 00:14:45,990
well how could our models and how that

296
00:14:51,680 --> 00:14:47,760
are we representing certain physical

297
00:14:53,570 --> 00:14:51,690
processes so by going in the fall it

298
00:14:59,060 --> 00:14:53,580
gives us more more information basically

299
00:15:01,490 --> 00:14:59,070
to to do that okay wonderful let's go

300
00:15:02,660 --> 00:15:01,500
back to the school for a second and have

301
00:15:05,150 --> 00:15:02,670
to see if you guys have another question

302
00:15:07,670 --> 00:15:05,160
for our scientists let's go back over

303
00:15:09,350 --> 00:15:07,680
here you guys should probably the big

304
00:15:11,930 --> 00:15:09,360
bucks there so let's hear again from the

305
00:15:13,340 --> 00:15:11,940
Naval Academy and I don't forget to uh

306
00:15:18,260 --> 00:15:13,350
meet your microphones and give us

307
00:15:21,500 --> 00:15:18,270
another question song what animals have

308
00:15:22,940 --> 00:15:21,510
they seen up in Greenland's all right

309
00:15:24,740 --> 00:15:22,950
now mute your microphone again and that

310
00:15:27,170 --> 00:15:24,750
sounds like a question for for John

311
00:15:29,000 --> 00:15:27,180
woods up there in Greenland have you

312
00:15:31,400 --> 00:15:29,010
seen any animals i know you're obviously

313
00:15:33,110 --> 00:15:31,410

focused on studying the ice but what

314
00:15:36,920 --> 00:15:33,120
wildlife do you have to be aware of up

315
00:15:39,320 --> 00:15:36,930
there so actually there's a pretty large

316
00:15:43,490 --> 00:15:39,330
family of arctic foxes and live on the

317
00:15:44,990 --> 00:15:43,500
dates assam almost every day and some

318
00:15:47,960 --> 00:15:45,000
really it's been really neat to watch

319
00:15:51,350 --> 00:15:47,970
them getting their winter coats builded

320
00:15:53,960 --> 00:15:51,360
so they they started out almost blacking

321
00:15:56,570 --> 00:15:53,970
color and they're actually turning much

322
00:15:59,480 --> 00:15:56,580
more white and it's just in good time

323
00:16:00,740 --> 00:15:59,490
since the snow is starting to fall and

324
00:16:04,280 --> 00:16:00,750
they're blending in with the environment

325
00:16:06,170 --> 00:16:04,290
much better now and also one day when we

326
00:16:07,970 --> 00:16:06,180
weren't flying I was able to get up off

327
00:16:10,220 --> 00:16:07,980
base a little bit and see some Arctic

328
00:16:12,680 --> 00:16:10,230
hares which are really impressive some

329
00:16:15,320 --> 00:16:12,690
of the largest ponies I've ever seen and

330
00:16:18,350 --> 00:16:15,330
they are quite funny looking they stayed

331
00:16:21,140 --> 00:16:18,360
up on their hind legs and they run or

332
00:16:24,390 --> 00:16:21,150
hop pretty best we saw a couple dozen or

333
00:16:28,630 --> 00:16:24,400
two pairs as well and we're all facing

334
00:16:30,310 --> 00:16:28,640
and now back down to Nate are there

335
00:16:31,750 --> 00:16:30,320
similar types of animals that you have

336
00:16:34,150 --> 00:16:31,760
to be concerned about when you're doing

337
00:16:40,900 --> 00:16:34,160
the flights from point O Sarah's chilly

338
00:16:44,250 --> 00:16:40,910

uh not so much in Chile in terms of

339
00:16:48,250 --> 00:16:44,260
flying we do have toe we do fly over

340
00:16:49,750 --> 00:16:48,260
penguin colonies no this mission we

341
00:16:51,700 --> 00:16:49,760
don't have to worry about flying over

342
00:16:53,710 --> 00:16:51,710
the penguin colonies because we're high

343
00:16:56,320 --> 00:16:53,720
altitude so we're far enough why not

344
00:16:58,990 --> 00:16:56,330
father them in the past we had flown

345
00:17:01,540 --> 00:16:59,000
loyal students we actually had to have a

346
00:17:03,550 --> 00:17:01,550
map of where we're all known penguin

347
00:17:06,310 --> 00:17:03,560
colonies are so we can maneuver around

348
00:17:08,860 --> 00:17:06,320
them because we don't want to interfere

349
00:17:10,630 --> 00:17:08,870
with anything that I think the plane

350
00:17:12,690 --> 00:17:10,640
actually because it's so loud it

351
00:17:16,840 --> 00:17:12,700
actually disrupts their third

352
00:17:20,260 --> 00:17:16,850
environment and so do you have to be

353
00:17:22,120 --> 00:17:20,270
aware of that um we do see wildlife from

354
00:17:25,630 --> 00:17:22,130
the air not you haven't seen any from

355
00:17:28,180 --> 00:17:25,640
the high altitude but in the past do you

356
00:17:29,950 --> 00:17:28,190
see seals seals are there's some very

357
00:17:33,580 --> 00:17:29,960
large seals that we can see down on the

358
00:17:37,660 --> 00:17:33,590
ice from the air I other than that I

359
00:17:41,170 --> 00:17:37,670
mean Antarctica itself other than

360
00:17:43,000 --> 00:17:41,180
penguins I there's no large animals and

361
00:17:48,760 --> 00:17:43,010
so just just on the ice around it though

362
00:17:50,290 --> 00:17:48,770
we will see uh yeah lots of seals also I

363
00:17:52,570 --> 00:17:50,300

guess to bring it back up to to

364
00:17:54,790 --> 00:17:52,580
Greenland it there are polar bears

365
00:17:56,670 --> 00:17:54,800
around to Lee he'd be careful of they

366
00:17:59,860 --> 00:17:56,680
don't always hang around there but I

367
00:18:03,790 --> 00:17:59,870
have been around when a last spring when

368
00:18:06,220 --> 00:18:03,800
we were there uh there was actually they

369
00:18:08,320 --> 00:18:06,230
had found a polar bear not too far off I

370
00:18:12,370 --> 00:18:08,330
thing goes about 15 miles off off the

371
00:18:14,050 --> 00:18:12,380
base right let's go back to the

372
00:18:17,680 --> 00:18:14,060
classroom again and get another question

373
00:18:18,730 --> 00:18:17,690
from the Naval Academy kids hi guys so

374
00:18:26,020 --> 00:18:18,740
don't forget to unmute your microphone

375
00:18:32,230 --> 00:18:26,030
and give us a question Margaret you can

376
00:18:34,840 --> 00:18:32,240
ask is it hard but changing now haha

377
00:18:36,890 --> 00:18:34,850
that's a good question or is it hard

378
00:18:40,100 --> 00:18:36,900
work let's go up to John up there

379
00:18:42,290 --> 00:18:40,110
in in Greenland first John woods the

380
00:18:43,340 --> 00:18:42,300
project manager so is it hard work and

381
00:18:45,140 --> 00:18:43,350
you were talking about a blizzard

382
00:18:48,830 --> 00:18:45,150
yesterday that did not sound like easy

383
00:18:50,750 --> 00:18:48,840
work committee yeah it's definitely a

384
00:18:53,120 --> 00:18:50,760
hard work environment and its really

385
00:18:56,210 --> 00:18:53,130
long days wake up really early and check

386
00:18:57,620 --> 00:18:56,220
the weather so eun if you know the

387
00:18:59,750 --> 00:18:57,630
weather doesn't look that promising

388
00:19:01,400 --> 00:18:59,760

yourself to get up and go through the

389
00:19:05,030 --> 00:19:01,410
normal routine to see if we can possibly

390
00:19:07,250 --> 00:19:05,040
fly and if we do fly for instance on the

391
00:19:09,440 --> 00:19:07,260
last day before the storm hit we were

392
00:19:10,810 --> 00:19:09,450
actually able to apply two missions so

393
00:19:13,510 --> 00:19:10,820
the pilots were out for four hours

394
00:19:15,950 --> 00:19:13,520
getting back at a quick bite to eat

395
00:19:17,750 --> 00:19:15,960
refuel the airplane and flew again for

396
00:19:19,910 --> 00:19:17,760
another four hours but they were up in

397
00:19:21,530 --> 00:19:19,920
the air for eight hours and not to

398
00:19:23,900 --> 00:19:21,540
mention that the true on the ground to

399
00:19:25,280 --> 00:19:23,910
support the claim they had to be here

400
00:19:27,680 --> 00:19:25,290
you know before the flight and then

401
00:19:29,360 --> 00:19:27,690
again after the plane so definitely hard

402
00:19:31,780 --> 00:19:29,370
work in a challenging environment it's

403
00:19:37,880 --> 00:19:31,790
really rewarding and fun I really need a

404
00:19:40,400 --> 00:19:37,890
neat experience to be up there and now

405
00:19:43,220 --> 00:19:40,410
Nate on to you a little bit if it was

406
00:19:45,260 --> 00:19:43,230
hard work obviously it is but I mean how

407
00:19:46,820 --> 00:19:45,270
do you deal with the extensive amounts

408
00:19:48,290 --> 00:19:46,830
of darkness and sunlight that you have

409
00:19:53,990 --> 00:19:48,300
to deal with for these kinds of

410
00:19:55,790 --> 00:19:54,000
scientific work uh it's actually at

411
00:19:58,820 --> 00:19:55,800
least where we are it's the the

412
00:20:00,430 --> 00:19:58,830
latitudes not far enough away so we

413
00:20:02,600 --> 00:20:00,440

don't have to deal with too much

414
00:20:06,320 --> 00:20:02,610
excessive light and dark in Greenland

415
00:20:11,780 --> 00:20:06,330
it's much different so um but otherwise

416
00:20:13,400 --> 00:20:11,790
I think the most challenging thing I

417
00:20:15,350 --> 00:20:13,410
guess in terms of visit hard work is

418
00:20:18,410 --> 00:20:15,360
there's a lot of what John said in terms

419
00:20:21,260 --> 00:20:18,420
of we have to get up very early to check

420
00:20:23,690 --> 00:20:21,270
one other when we do fly it's 10 and a

421
00:20:25,550 --> 00:20:23,700
half hour flights and then we come back

422
00:20:27,860 --> 00:20:25,560
and we always want to check everything

423
00:20:31,220 --> 00:20:27,870
that we had done so we do that in the

424
00:20:33,710 --> 00:20:31,230
night or the next day and you always try

425
00:20:36,680 --> 00:20:33,720
to plan for the next day so days are

426
00:20:40,220 --> 00:20:36,690
long but again it's it's definitely very

427
00:20:44,300 --> 00:20:40,230
rewarding a fun okay so let's go back to

428
00:20:45,710 --> 00:20:44,310
the school again school hi all right so

429
00:20:47,780 --> 00:20:45,720
let's get another question from you guys

430
00:20:49,580 --> 00:20:47,790
about the science that they're doing up

431
00:20:50,630 --> 00:20:49,590
there if you have it so don't forget to

432
00:20:56,300 --> 00:20:50,640
unmute your microphone

433
00:21:02,020 --> 00:20:56,310
moans and I knew it you go to the top of

434
00:21:06,470 --> 00:21:02,030
your screen all right go ahead school

435
00:21:10,700 --> 00:21:06,480
Hey well uh do you I eat different food

436
00:21:14,210 --> 00:21:10,710
shop and grab one all right Joe chilly

437
00:21:16,870 --> 00:21:14,220
request and Ellen chillin the question

438
00:21:19,940 --> 00:21:16,880

is and we put you guys back on you and

439
00:21:21,830 --> 00:21:19,950
please John but I think your mics open

440
00:21:24,140 --> 00:21:21,840
like so they were tuck and I'm sorry

441
00:21:25,790 --> 00:21:24,150
your microphones open so John woods

442
00:21:27,260 --> 00:21:25,800
you're talking about kinds of food you

443
00:21:28,940 --> 00:21:27,270
eat up there I can imagine it can be

444
00:21:30,680 --> 00:21:28,950
quite comforting to come in and have

445
00:21:34,640 --> 00:21:30,690
something warm after these blizzard

446
00:21:38,090 --> 00:21:34,650
conditions yes so we actually pretty

447
00:21:43,550 --> 00:21:38,100
well up here freeland is actually Danish

448
00:21:47,500 --> 00:21:43,560
own so there's a lot of Danish food so

449
00:21:49,940 --> 00:21:47,510
authentic pages a lot of fish a lot of

450
00:21:51,890 --> 00:21:49,950
lot of different meats that you might

451
00:21:54,080 --> 00:21:51,900
not normally experience in the United

452
00:21:55,880 --> 00:21:54,090
States but they also do have a lot of

453
00:21:57,740 --> 00:21:55,890
America novelties but usually at it at

454
00:22:02,840 --> 00:21:57,750
each meal I like to try at least one

455
00:22:04,040 --> 00:22:02,850
authentic danish danish but they

456
00:22:06,080 --> 00:22:04,050
definitely on peeps pretty well although

457
00:22:08,030 --> 00:22:06,090
again last night since we had the

458
00:22:10,280 --> 00:22:08,040
blizzard no one was a lot out so we had

459
00:22:12,410 --> 00:22:10,290
to make our own dinner in our dorm rooms

460
00:22:14,870 --> 00:22:12,420
and they actually handed out meals

461
00:22:18,260 --> 00:22:14,880
ready-to-eat which are like the army

462
00:22:21,470 --> 00:22:18,270
boxed meals for breakfast this morning

463
00:22:26,450 --> 00:22:21,480

until the base of that guy and now so

464
00:22:30,080 --> 00:22:26,460
what's a traditional Danish meal so lots

465
00:22:33,890 --> 00:22:30,090
of different uhh different fish some raw

466
00:22:36,830 --> 00:22:33,900
fish which I tried but not enjoy too

467
00:22:38,750 --> 00:22:36,840
much some different types of sausages

468
00:22:40,850 --> 00:22:38,760
they have hot dogs here that they call

469
00:22:42,950 --> 00:22:40,860
hot dogs that do not look like our hot

470
00:22:47,690 --> 00:22:42,960
dogs but again everything seems to be

471
00:22:49,520 --> 00:22:47,700
Bertha tribe is the most and now Nate

472
00:22:51,440 --> 00:22:49,530
you're down in a completely different

473
00:22:53,720 --> 00:22:51,450
part of the world and bathing is it

474
00:22:56,180 --> 00:22:53,730
different down there with what you're

475
00:23:00,320 --> 00:22:56,190
eating or is it a similar fish based

476
00:23:02,810 --> 00:23:00,330
food uh it's it's quite a bit different

477
00:23:04,970 --> 00:23:02,820
um I think

478
00:23:07,730 --> 00:23:04,980
Chile has its own kind of cuisine and

479
00:23:10,310 --> 00:23:07,740
most of the restaurants here that we are

480
00:23:12,830 --> 00:23:10,320
Chilean but since we're in southern

481
00:23:16,100 --> 00:23:12,840
Chile I think the biggest difference is

482
00:23:18,820 --> 00:23:16,110
that there's just not many fruits and

483
00:23:21,919 --> 00:23:18,830
vegetables except for canned food so

484
00:23:23,419 --> 00:23:21,929
there's very idea just very little fresh

485
00:23:27,499 --> 00:23:23,429
fruits and vegetables so a lot of the

486
00:23:29,930 --> 00:23:27,509
food is meat cheese they do like their

487
00:23:31,519 --> 00:23:29,940
sweets here so they have excellent

488
00:23:36,499 --> 00:23:31,529

selection of cakes and things like that

489
00:23:40,159 --> 00:23:36,509
but other than that it's it is pretty

490
00:23:42,499 --> 00:23:40,169
good food but again not many vegetables

491
00:23:45,200 --> 00:23:42,509
and fruits are not so much healthy

492
00:23:47,029 --> 00:23:45,210
eating and I would say okay so we're

493
00:23:48,740 --> 00:23:47,039
going to the science of this

494
00:23:51,499 --> 00:23:48,750
mission a little bit I'm an ice bridge

495
00:23:54,860 --> 00:23:51,509
is not only studying land ice it's also

496
00:23:56,960 --> 00:23:54,870
studying ice sheets and glaciers and sea

497
00:23:58,669 --> 00:23:56,970
ice so Nathan we're gonna play some this

498
00:24:04,519 --> 00:23:58,679
video can you explain a little bit about

499
00:24:07,460 --> 00:24:04,529
what we're seeing as this plays so what

500
00:24:09,169 --> 00:24:07,470
you can see the border around Antarctica

501
00:24:13,340 --> 00:24:09,179
it's kind of shifting that's the edge of

502
00:24:16,009 --> 00:24:13,350
the sea ice so as the season changes the

503
00:24:19,310 --> 00:24:16,019
sea ice grows and shrinks based on winds

504
00:24:21,049 --> 00:24:19,320
and how cold it is so this video's you

505
00:24:23,659 --> 00:24:21,059
can see mountains in the background but

506
00:24:25,999 --> 00:24:23,669
then the the water itself the ocean

507
00:24:28,519 --> 00:24:26,009
surface freezes and it gets quite thick

508
00:24:31,279 --> 00:24:28,529
at times but we're seeing here is sort

509
00:24:34,159 --> 00:24:31,289
of a mixture of the the darker ice isn't

510
00:24:35,990 --> 00:24:34,169
quite as thick has doesn't have any snow

511
00:24:39,499 --> 00:24:36,000
on it but then you see it mixed in with

512
00:24:44,000 --> 00:24:39,509
a spice that does have snow on it so

513
00:24:45,620 --> 00:24:44,010

it's probably a bit thicker I just

514
00:24:48,850 --> 00:24:45,630
and it moves around quite a bit so

515
00:24:51,890 --> 00:24:48,860
you're seeing you don't just see a big

516
00:24:53,780 --> 00:24:51,900
white sheet of ice it's more typical in

517
00:24:56,030 --> 00:24:53,790
the Arctic in the anode if you see a lot

518
00:24:58,610 --> 00:24:56,040
more variety just because of the ice is

519
00:25:01,180 --> 00:24:58,620
thinner it moves around more it's more

520
00:25:04,730 --> 00:25:01,190
expansive so this is very new ice

521
00:25:08,270 --> 00:25:04,740
probably the ice it opened up a bit it's

522
00:25:12,230 --> 00:25:08,280
just so cold and it freezes over this

523
00:25:14,300 --> 00:25:12,240
this looks like near the edge of the

524
00:25:16,850 --> 00:25:14,310
Antarctic so in the background even side

525
00:25:18,680 --> 00:25:16,860
see the edge of that the ice sheet and

526
00:25:21,140 --> 00:25:18,690
what happens is there's very strong

527
00:25:25,490 --> 00:25:21,150
winds they just blow they push the ice

528
00:25:27,740 --> 00:25:25,500
away from the from the continent and it

529
00:25:29,840 --> 00:25:27,750
keeps the the ocean ice free but then it

530
00:25:31,910 --> 00:25:29,850
starts to form you ice it's just just so

531
00:25:35,120 --> 00:25:31,920
cold down there here there looks like

532
00:25:37,730 --> 00:25:35,130
icebergs mixed in with the I soda the

533
00:25:39,549 --> 00:25:37,740
efforts cab off the land

534
00:25:43,460 --> 00:25:39,559
you

535
00:25:45,740 --> 00:25:43,470
the wrong about the car blowing the ice

536
00:25:48,799 --> 00:25:45,750
away but it's in the process kind of

537
00:25:51,680 --> 00:25:48,809
creating new ice so this is a one of our

538
00:25:53,960 --> 00:25:51,690

instruments taking pictures on board the

539
00:25:55,750 --> 00:25:53,970
aircraft so here's a field of icebergs

540
00:25:58,340 --> 00:25:55,760
so this is near the continent just

541
00:26:01,700 --> 00:25:58,350
calving off lights of big icebergs that

542
00:26:06,379 --> 00:26:01,710
you can see means these things are just

543
00:26:12,320 --> 00:26:06,389
huge there they're massive easy to spot

544
00:26:15,139 --> 00:26:12,330
from the air this again icebergs mixed

545
00:26:20,720 --> 00:26:15,149
in with the ice here's some more sea ice

546
00:26:25,310 --> 00:26:20,730
a bit hard to tell what's going on in in

547
00:26:28,399 --> 00:26:25,320
this sea ice but so that again looks

548
00:26:30,740 --> 00:26:28,409
like all Antarctic sea ice and one easy

549
00:26:33,169 --> 00:26:30,750
way to tell us it's the I guess the

550
00:26:36,769 --> 00:26:33,179
sheer variety so from the snow cover to

551
00:26:40,159 --> 00:26:36,779
the non snow-covered and again the the

552
00:26:42,830 --> 00:26:40,169
huge icebergs all over Antarctica just

553
00:26:44,240 --> 00:26:42,840
calves off so many icebergs so it's

554
00:26:49,360 --> 00:26:44,250
pretty much what we're seeing on the

555
00:26:54,680 --> 00:26:52,490
fantastic thanks so much Nathan Kurtz

556
00:26:57,680 --> 00:26:54,690
hey let's go back up to John woods a

557
00:27:00,020 --> 00:26:57,690
real quick up there I'm wondering we

558
00:27:03,110 --> 00:27:00,030
hear a lot about how things are melting

559
00:27:05,150 --> 00:27:03,120
at our polar regions and I know that's

560
00:27:07,279 --> 00:27:05,160
one of the parts of this mission is to

561
00:27:09,680 --> 00:27:07,289
keep track this ice have you been able

562
00:27:15,409 --> 00:27:09,690
to see differences as you go out from

563
00:27:16,850 --> 00:27:15,419

year to year yeah definitely that's

564
00:27:22,279 --> 00:27:16,860
exactly what trying to do is I'm

565
00:27:24,080 --> 00:27:22,289
measuring the melt summer fall season

566
00:27:27,380 --> 00:27:24,090
right now compared to what we saw in the

567
00:27:28,940 --> 00:27:27,390
previous March season I do believe that

568
00:27:32,360 --> 00:27:28,950
every year that he come up here they do

569
00:27:34,039 --> 00:27:32,370
see a little bit less nice time they're

570
00:27:35,210 --> 00:27:34,049
definitely does seem to be a decline in

571
00:27:40,250 --> 00:27:35,220
noise and that's a detective with these

572
00:27:42,980 --> 00:27:40,260
measures so we can track that and I know

573
00:27:45,289 --> 00:27:42,990
this is my first time in the fall time

574
00:27:48,169 --> 00:27:45,299
so I've nothing to really compare to I

575
00:27:50,000 --> 00:27:48,179
know when I was up here springs ago and

576
00:27:52,789 --> 00:27:50,010
talking to people that have lived up

577
00:27:54,470 --> 00:27:52,799
here for seven eight nine plus year they

578
00:27:56,830 --> 00:27:54,480
have mentioned that there they have

579
00:28:07,279 --> 00:27:56,840
definitely seen at the climate change

580
00:28:09,860 --> 00:28:07,289
amount of snow and now John up there and

581
00:28:12,260 --> 00:28:09,870
truly Greenland I know the flights are

582
00:28:13,669 --> 00:28:12,270
higher this year in altitude we're going

583
00:28:14,930 --> 00:28:13,679
to look at a little bit of video of that

584
00:28:17,029 --> 00:28:14,940
but while we're doing that can you

585
00:28:21,279 --> 00:28:17,039
explain what's the importance of flying

586
00:28:28,490 --> 00:28:24,289
there so the plea met were on this year

587
00:28:32,240 --> 00:28:28,500
it's a pilot's Twinner an old postcard

588
00:28:34,490 --> 00:28:32,250

claim and its really optimized to fly

589
00:28:37,549 --> 00:28:34,500
higher altitude so you get a much longer

590
00:28:39,860 --> 00:28:37,559
range so much longer missions when it's

591
00:28:41,299 --> 00:28:39,870
up in altitude and the instrument that

592
00:28:44,390 --> 00:28:41,309
we're using that we've been using the

593
00:28:48,680 --> 00:28:44,400
past at lower altitudes they modified it

594
00:28:49,970 --> 00:28:48,690
to be a entire opportunities so this is

595
00:28:52,789 --> 00:28:49,980
the first time that they phone did it

596
00:28:55,039 --> 00:28:52,799
this high we're grateful they're kind of

597
00:28:57,350 --> 00:28:55,049
the boats but their baby collected some

598
00:29:00,530 --> 00:28:57,360
great data and they're really looking

599
00:29:10,120 --> 00:29:00,540
forward to usually again this way in the

600
00:29:14,150 --> 00:29:12,110
excellent okay let's go back to that

601
00:29:15,530 --> 00:29:14,160
naval academy and have you guys do one

602
00:29:17,390 --> 00:29:15,540
more question I think we have time for

603
00:29:23,810 --> 00:29:17,400
probably two more questions let's do one

604
00:29:35,780 --> 00:29:23,820
now so don't forget to undergo what is

605
00:29:37,190 --> 00:29:35,790
the time what is the time difference all

606
00:29:40,640 --> 00:29:37,200
right so the question is what is the

607
00:29:43,910 --> 00:29:40,650
time difference go to Nathan Kurtz first

608
00:29:45,800 --> 00:29:43,920
down there in Chile ah the time

609
00:29:49,190 --> 00:29:45,810
difference here it's only one hour time

610
00:29:51,470 --> 00:29:49,200
difference from eastern US so the

611
00:29:56,900 --> 00:29:51,480
eastern time zone so how much different

612
00:30:01,460 --> 00:29:56,910
it's one hour ahead and up there in

613
00:30:04,220 --> 00:30:01,470

Greenland s so early an hour were an

614
00:30:06,530 --> 00:30:04,230
hour ahead but even more interesting I

615
00:30:10,070 --> 00:30:06,540
think is that we're losing about 15

616
00:30:13,310 --> 00:30:10,080
minutes of daylight a day so we've been

617
00:30:15,800 --> 00:30:13,320
up here the Sun has risen an hour later

618
00:30:17,450 --> 00:30:15,810
each morning so we used to go to

619
00:30:19,850 --> 00:30:17,460
breakfast into the early morning weather

620
00:30:22,130 --> 00:30:19,860
brief first day we got here it was sunny

621
00:30:23,570 --> 00:30:22,140
out and now it started and then when we

622
00:30:25,790 --> 00:30:23,580
come in at night again it's getting

623
00:30:27,140 --> 00:30:25,800
darker a lot sooner and you can you

624
00:30:30,410 --> 00:30:27,150
definitely notice the difference from

625
00:30:31,610 --> 00:30:30,420
day to day are you losing up here until

626
00:30:40,740 --> 00:30:31,620
they'll actually go into complete

627
00:30:42,510 --> 00:30:40,750
darkness here and now the main

628
00:30:45,180 --> 00:30:42,520
question you guys we both introduced you

629
00:30:47,460 --> 00:30:45,190
as a either project manager a scientist

630
00:30:49,860 --> 00:30:47,470
for operation icebridge the biggest

631
00:30:51,720 --> 00:30:49,870
question we get is exactly what is this

632
00:30:53,820 --> 00:30:51,730
ice bridge what are you trying to bridge

633
00:30:58,530 --> 00:30:53,830
between the two Nathan Kurtz let me have

634
00:31:02,550 --> 00:30:58,540
you answer that one so the concept of

635
00:31:04,110 --> 00:31:02,560
the bridge came out we NASA had a

636
00:31:07,050 --> 00:31:04,120
satellite called ice at which was

637
00:31:10,200 --> 00:31:07,060
launched in 2003 was a laser taking

638
00:31:13,770 --> 00:31:10,210

measurements of the surface i SAT failed

639
00:31:16,290 --> 00:31:13,780
in 2009 and the next version of i SAT is

640
00:31:18,690 --> 00:31:16,300
actually not set to launch for about

641
00:31:22,680 --> 00:31:18,700
another two years so in the meantime

642
00:31:24,270 --> 00:31:22,690
nasus decided to have a plane take

643
00:31:25,890 --> 00:31:24,280
similar kinds of measurements and so

644
00:31:28,200 --> 00:31:25,900
that's sort of the bridge that we're

645
00:31:29,400 --> 00:31:28,210
trying to do is is bridge these two

646
00:31:32,400 --> 00:31:29,410
satellites so make sure we're not

647
00:31:34,290 --> 00:31:32,410
missing something but in the meantime

648
00:31:36,750 --> 00:31:34,300
you can actually put a lot more

649
00:31:41,610 --> 00:31:36,760
instruments than on a plane than you can

650
00:31:45,270 --> 00:31:41,620
on a satellite so we we typically fly a

651
00:31:50,250 --> 00:31:45,280
set of lasers radar very different kinds

652
00:31:52,320 --> 00:31:50,260
of radars for some radars measure how

653
00:31:55,560 --> 00:31:52,330
deep the snow is they don't go down very

654
00:31:57,240 --> 00:31:55,570
far under the ground up their radars

655
00:32:00,210 --> 00:31:57,250
that we have actually go all the way to

656
00:32:02,910 --> 00:32:00,220
the bottom of the ice sheet so can go

657
00:32:04,710 --> 00:32:02,920
down more than a mile into the ice just

658
00:32:09,570 --> 00:32:04,720
to see how thick it is where the rock is

659
00:32:10,680 --> 00:32:09,580
so other things that are on you know but

660
00:32:13,800 --> 00:32:10,690
sometimes I have an instrument that

661
00:32:15,750 --> 00:32:13,810
measures the gravity field and based on

662
00:32:19,950 --> 00:32:15,760
very small changes in the gravity you

663
00:32:21,810 --> 00:32:19,960

can tell a sort of what kind of material

664
00:32:24,900 --> 00:32:21,820
is under the ice so this video is

665
00:32:26,940 --> 00:32:24,910
showing the concept of the radar so the

666
00:32:28,410 --> 00:32:26,950
planes flying over an ice shelf in this

667
00:32:30,750 --> 00:32:28,420
case taking laser measurements of the

668
00:32:34,320 --> 00:32:30,760
top a radar that's going down underneath

669
00:32:36,900 --> 00:32:34,330
and so when combined the tube the the

670
00:32:39,510 --> 00:32:36,910
radar going underneath we get sense of

671
00:32:42,330 --> 00:32:39,520
well are we losing ice if we're losing

672
00:32:44,550 --> 00:32:42,340
ice or are we losing snow are we gaining

673
00:32:47,180 --> 00:32:44,560
I saw regaining snow so really what's

674
00:32:49,680 --> 00:32:47,190
happening to to change the ice sheets so

675
00:32:52,370 --> 00:32:49,690
putting as much as we can onto a plane

676
00:32:54,450 --> 00:32:52,380
taking all these different measurements

677
00:32:57,600 --> 00:32:54,460
tell us what's happened

678
00:33:04,580 --> 00:32:57,610
so bridging this gap between the the I

679
00:33:09,090 --> 00:33:06,810
fantastic all right so one last question

680
00:33:11,580 --> 00:33:09,100
from the Naval Academy kids who've been

681
00:33:13,980 --> 00:33:11,590
joining us let me go over to you guys so

682
00:33:17,670 --> 00:33:13,990
this is one last question from you guys

683
00:33:19,260 --> 00:33:17,680
make it a good one oh I don't forget to

684
00:33:21,140 --> 00:33:19,270
turn your microphone back on you have to

685
00:33:29,370 --> 00:33:21,150
do it up at the top of your screen there

686
00:33:37,050 --> 00:33:29,380
we go yeah let me just okay we can hear

687
00:33:39,330 --> 00:33:37,060
you honey hi oh you they were so do you

688
00:33:40,980 --> 00:33:39,340

know whatever on it ah for the question

689
00:33:45,810 --> 00:33:40,990
is you know we're having a game right

690
00:33:48,450 --> 00:33:45,820
here okay there you go so let's throw it

691
00:33:49,680 --> 00:33:48,460
up to John first is the hurricane that

692
00:33:53,790 --> 00:33:49,690
we're having here on the East Coast

693
00:33:55,170 --> 00:33:53,800
United States affecting you guys your

694
00:33:58,530 --> 00:33:55,180
question answer not affecting us

695
00:34:01,080 --> 00:33:58,540
directly now a lot of the people that

696
00:34:03,420 --> 00:34:01,090
are from up better on the crew here are

697
00:34:05,190 --> 00:34:03,430
from the Virginia area so they're pretty

698
00:34:07,440 --> 00:34:05,200
nervous I know my family's back home

699
00:34:09,090 --> 00:34:07,450
they're in Annapolis we're thinking that

700
00:34:10,290 --> 00:34:09,100
everyone with a hurricane on the east

701
00:34:15,320 --> 00:34:10,300
coast and we've been watching the

702
00:34:19,200 --> 00:34:17,640
excellent and now on to you native you

703
00:34:20,730 --> 00:34:19,210
having the same thing with just two

704
00:34:22,920 --> 00:34:20,740
people you're here you are at a rather

705
00:34:24,510 --> 00:34:22,930
extreme part of the world but here we're

706
00:34:27,840 --> 00:34:24,520
having rather extreme weather right off

707
00:34:30,390 --> 00:34:27,850
the east coast of the US yeah it's it's

708
00:34:34,200 --> 00:34:30,400
pretty much what John said my family is

709
00:34:36,510 --> 00:34:34,210
back in Maryland some of the crews has

710
00:34:39,780 --> 00:34:36,520
family uh in the path of the hurricane

711
00:34:43,260 --> 00:34:39,790
so that's pretty much the extent of it

712
00:34:46,550 --> 00:34:43,270
otherwise know whether direct impact on

713
00:34:49,230 --> 00:34:46,560

the mission there are candy other

714
00:34:51,990 --> 00:34:49,240
factors like that do have an impact

715
00:34:54,930 --> 00:34:52,000
there was a an earthquake not too long

716
00:34:56,460 --> 00:34:54,940
ago just off of chili which ended up

717
00:34:58,610 --> 00:34:56,470
delaying some of our shipments a little

718
00:35:02,630 --> 00:34:58,620
bit

719
00:35:04,310 --> 00:35:02,640
a volcano went off on one of our planned

720
00:35:07,490 --> 00:35:04,320
flight tracks we had to divert around it

721
00:35:09,200 --> 00:35:07,500
a little bit so there are always natural

722
00:35:15,800 --> 00:35:09,210
disasters that happen we just gotta

723
00:35:17,210 --> 00:35:15,810
prepare for it okay so John just because

724
00:35:18,530 --> 00:35:17,220
we're going to wrap up here let's go

725
00:35:20,510 --> 00:35:18,540
back up to you to Greenland if you can

726
00:35:21,710 --> 00:35:20,520
tell us a little bit more but maybe

727
00:35:23,180 --> 00:35:21,720
what's going to be happening in the next

728
00:35:25,310 --> 00:35:23,190
few days or what you're going to do with

729
00:35:30,110 --> 00:35:25,320
the data when you get back down back

730
00:35:33,050 --> 00:35:30,120
home yeah so we're actually a period

731
00:35:35,240 --> 00:35:33,060
into plea agreement until Wednesday and

732
00:35:37,880 --> 00:35:35,250
then actually we're taking a art NASA

733
00:35:40,340 --> 00:35:37,890
Jet will go down about two hours south

734
00:35:44,660 --> 00:35:40,350
of here to our town called king of Ooo

735
00:35:47,570 --> 00:35:44,670
silvac preglued two weeks out of there

736
00:35:51,290 --> 00:35:47,580
lots of tiny targets down the southern

737
00:35:53,510 --> 00:35:51,300
part of the the island so we're hoping

738
00:35:54,950 --> 00:35:53,520

to get to more science flights in on

739
00:35:56,660 --> 00:35:54,960
Monday and Tuesday unfortunately the

740
00:36:00,260 --> 00:35:56,670
airport is closed here on saturday and

741
00:36:02,480 --> 00:36:00,270
sunday we're hoping actually to get to

742
00:36:05,930 --> 00:36:02,490
more flying days in and possibly even to

743
00:36:12,140 --> 00:36:05,940
to research place before we go down for

744
00:36:14,890 --> 00:36:12,150
another two weeks in some fantastic and

745
00:36:17,210 --> 00:36:14,900
now Nathan Kurtz down there and Chile

746
00:36:20,000 --> 00:36:17,220
casts a little bit about the final bit

747
00:36:21,830 --> 00:36:20,010
of what you're going to be working on so

748
00:36:25,520 --> 00:36:21,840
we have about another month that will be

749
00:36:27,530 --> 00:36:25,530
down here right now we're actually night

750
00:36:29,480 --> 00:36:27,540
because whether it's just too bad over

751
00:36:32,000 --> 00:36:29,490
all of Antarctica is just clouds

752
00:36:33,530 --> 00:36:32,010
everywhere or as we found out it's

753
00:36:35,870 --> 00:36:33,540
actually too cold for the plane to fly

754
00:36:39,560 --> 00:36:35,880
in some places it's it's 80 below zero

755
00:36:43,820 --> 00:36:39,570
so the plane does not fly gets too cold

756
00:36:45,970 --> 00:36:43,830
for that so we're looking like whether

757
00:36:48,440 --> 00:36:45,980
it's going to be better tomorrow so I

758
00:36:51,260 --> 00:36:48,450
probably fly on the Antarctic Peninsula

759
00:36:53,150 --> 00:36:51,270
and that's pretty much what will keep

760
00:36:55,120 --> 00:36:53,160
doing well as long as the plane

761
00:36:57,440 --> 00:36:55,130
nothing's wrong with the plane

762
00:36:58,850 --> 00:36:57,450
instruments are working in weather is

763
00:37:01,820 --> 00:36:58,860

good we'll just keep flying back and

764
00:37:02,990 --> 00:37:01,830
forth fantastic all right so let's go

765
00:37:04,670 --> 00:37:03,000
back to the naval school just have you

766
00:37:12,950 --> 00:37:04,680
guys say goodbye thanks so much for

767
00:37:20,800 --> 00:37:12,960
joining us guys want to say and I got a

768
00:37:30,290 --> 00:37:26,570
thank you so much Nathan thank you thank

769
00:37:34,600 --> 00:37:30,300
you thank you thank you everybody for

770
00:37:37,970 --> 00:37:34,610
joining us so this has been a live

771
00:37:39,680 --> 00:37:37,980
obviously a Google+ Hangout I Mary's

772
00:37:41,720 --> 00:37:39,690
cake here at greenbelt maryland for

773
00:37:43,790 --> 00:37:41,730
Goddard Space Flight Center and I really

774
00:37:45,770 --> 00:37:43,800
want to thank both Nathan Kurtz and John

775
00:37:47,810 --> 00:37:45,780
woods from the operation IceBridge team

776
00:37:49,790 --> 00:37:47,820
thank you guys so much for joining us

777
00:37:51,860 --> 00:37:49,800
from both ends of the earth and we hope