1
00:00:00,160 --> 00:00:41,990
concave side of the spoon

2
00:00:45,350 --> 00:00:43,910
of course that can be a little bit messy

3
00:00:47,350 --> 00:00:45,360
the less for the cleaner way is to

4
00:01:14,870 --> 00:00:47,360
simply use the straw and suck the drink

5
00:01:14,880 --> 00:01:32,950
uh

6
00:01:36,630 --> 00:01:34,870
that's right all right

7
00:01:41,910 --> 00:01:36,640
hi i'm frank ollen can you see the

8
00:01:45,190 --> 00:01:43,429
interesting question though the main

9
00:01:47,109 --> 00:01:45,200
thing is that global warming is a

10
00:01:48,630 --> 00:01:47,119
climate change and climate takes changes

11
00:01:51,030 --> 00:01:48,640
take place over a very long period of

12
00:01:53,429 --> 00:01:51,040
time even rapid climate change can take

13
00:01:54,630 --> 00:01:53,439

years to go into effect so on a two-week

14
00:01:56,709 --> 00:01:54,640
shuttle mission it would be very tough

15
00:01:58,709 --> 00:01:56,719
to see something like that however an

16
00:02:00,789 --> 00:01:58,719
interesting study would be to look at

17
00:02:02,950 --> 00:02:00,799
some of our observations from space

18
00:02:04,550 --> 00:02:02,960
since we've been lost over the last 40

19
00:02:06,709 --> 00:02:04,560
or more years to see how the earth has

20
00:02:13,830 --> 00:02:06,719
changed since the first photograph did

21
00:02:19,110 --> 00:02:16,710
for global warming you know i don't know

22
00:02:20,710 --> 00:02:19,120
necessarily about that

23
00:02:23,430 --> 00:02:20,720
whether i agree with that whole concept

24
00:02:25,110 --> 00:02:23,440
but what i can see from space

25
00:02:27,830 --> 00:02:25,120
is things like

26
00:02:29,830 --> 00:02:27,840
the deforestation of uh

27
00:02:32,390 --> 00:02:29,840
rainforests in south america and the

28
00:02:34,470 --> 00:02:32,400
fires that uh that we see from space and

29
00:02:37,350 --> 00:02:34,480
i've actually taken a photo of an

30
00:02:39,910 --> 00:02:37,360
iceberg near antarctica that was one

31
00:02:42,150 --> 00:02:39,920
whole piece and has since over the last

32
00:02:51,750 --> 00:02:42,160
couple years separated into two pieces

33
00:03:03,190 --> 00:02:53,990
hi i'm dj mayton does the sun tea cause

34
00:03:07,110 --> 00:03:04,630
well that's a really good question when

35
00:03:09,509 --> 00:03:07,120
you're outside at night of course we

36
00:03:11,910 --> 00:03:09,519
have heaters in our spacesuit and uh

37
00:03:13,670 --> 00:03:11,920
these heaters keep our fingers warm but

38
00:03:15,670 --> 00:03:13,680

when the sun comes up you can actually

39
00:03:17,030 --> 00:03:15,680
feel yourself getting a bit warmer as

40
00:03:20,390 --> 00:03:17,040
you're working hard doing all these

41
00:03:22,790 --> 00:03:20,400
various tasks during the spacewalk the

42
00:03:24,229 --> 00:03:22,800
problem in space is more staying cool

43
00:03:26,229 --> 00:03:24,239
when you're doing a spacewalk because

44
00:03:27,589 --> 00:03:26,239
it's really easy to get too warm if you

45
00:03:30,070 --> 00:03:27,599
have the temperature setting on your

46
00:03:31,509 --> 00:03:30,080
suit in the wrong position but we always

47
00:03:32,789 --> 00:03:31,519
make sure that we adjust that as we're

48
00:03:41,990 --> 00:03:32,799
getting ready to do all the various

49
00:03:46,309 --> 00:03:44,390
hi i'm alicia maybe what is the most

50
00:03:51,110 --> 00:03:46,319
challenging part about manipulating the

51
00:03:54,710 --> 00:03:52,630
well there are a lot of challenges in

52
00:03:56,550 --> 00:03:54,720
manipulating the robotic arm but all of

53
00:03:59,110 --> 00:03:56,560
those challenges are actually fun

54
00:04:01,270 --> 00:03:59,120
challenges so one of the best things is

55
00:04:03,910 --> 00:04:01,280
you get to move these very large pieces

56
00:04:05,830 --> 00:04:03,920
of equipment around with the robotic arm

57
00:04:07,190 --> 00:04:05,840
which itself is a very large piece of

58
00:04:09,190 --> 00:04:07,200
equipment

59
00:04:10,630 --> 00:04:09,200
i don't know if you can tell by your

60
00:04:13,270 --> 00:04:10,640
view that you have but we don't have

61
00:04:15,589 --> 00:04:13,280
heart we have very few windows up here

62
00:04:18,390 --> 00:04:15,599
on board the international space station

63
00:04:20,550 --> 00:04:18,400

yet you're moving something outside

64
00:04:22,310 --> 00:04:20,560
and it gets very close to

65
00:04:24,150 --> 00:04:22,320
a lot of different pieces of structure

66
00:04:26,150 --> 00:04:24,160
and you don't want to hit anything

67
00:04:28,790 --> 00:04:26,160
so we have and clay maybe you can zoom

68
00:04:31,909 --> 00:04:28,800
in and we can see this

69
00:04:33,510 --> 00:04:31,919
robot at our robotic workstation we have

70
00:04:35,189 --> 00:04:33,520
camera views that we use so there are

71
00:04:37,350 --> 00:04:35,199
cameras all over the outside of the

72
00:04:39,030 --> 00:04:37,360
space station and we use those views

73
00:04:40,469 --> 00:04:39,040
inside to help us see what we're looking

74
00:04:42,469 --> 00:04:40,479
at outside

75
00:04:44,310 --> 00:04:42,479
the other really big challenge is trying

76
00:04:46,469 --> 00:04:44,320
to keep yourself steady

77
00:04:49,110 --> 00:04:46,479
because if you uh

78
00:04:50,550 --> 00:04:49,120
as you probably know from newton's laws

79
00:04:52,790 --> 00:04:50,560
every action there's an equal and

80
00:04:55,030 --> 00:04:52,800
opposite reaction so if you're gonna say

81
00:04:57,030 --> 00:04:55,040
pitch the arm down and i've got my hand

82
00:04:59,189 --> 00:04:57,040
on the robotic arm controller and i

83
00:05:01,029 --> 00:04:59,199
pitch the arm down look what happens to

84
00:05:03,189 --> 00:05:01,039
my body

85
00:05:04,550 --> 00:05:03,199
it pitches me up

86
00:05:06,310 --> 00:05:04,560
so you've got to learn to really

87
00:05:08,390 --> 00:05:06,320
constrain yourself and hold yourself

88
00:05:20,150 --> 00:05:08,400

down with foot loops and keep yourself

89
00:05:29,909 --> 00:05:22,950
hi i'm paige duschel what do stars look

90
00:05:32,310 --> 00:05:30,870
the first

91
00:05:34,310 --> 00:05:32,320
difference that you notice in space that

92
00:05:35,909 --> 00:05:34,320
the stars don't twinkle at all

93
00:05:37,510 --> 00:05:35,919
what you see is twinkling is due to the

94
00:05:39,110 --> 00:05:37,520
atmosphere above you causing the light

95
00:05:41,510 --> 00:05:39,120
to simulate around

96
00:05:42,870 --> 00:05:41,520
so the stars here just shine steady

97
00:05:44,070 --> 00:05:42,880
uh the next thing around here that i've

98
00:05:46,550 --> 00:05:44,080
noticed is that

99
00:05:48,070 --> 00:05:46,560
uh much to my surprise i see fewer stars

100
00:05:49,749 --> 00:05:48,080
than i see on the ground even in houston

101
00:05:51,189 --> 00:05:49,759
where it's a big lit city it's because

102
00:05:53,350 --> 00:05:51,199
the space shuttle and the space station

103
00:05:55,749 --> 00:05:53,360
we keep very well lit up for all of our

104
00:05:57,350 --> 00:05:55,759
robotic operations and our space walks

105
00:05:58,870 --> 00:05:57,360
and so it's very bright outside around

106
00:06:00,070 --> 00:05:58,880
here it's hard for us to dark adapt and

107
00:06:01,590 --> 00:06:00,080
see the stars

108
00:06:02,870 --> 00:06:01,600
imagine once we're clear the space

109
00:06:04,309 --> 00:06:02,880
station on our way back home we have a

110
00:06:05,990 --> 00:06:04,319
few days to look out the window with all

111
00:06:09,189 --> 00:06:06,000
the lights out and we're looking forward

112
00:06:11,029 --> 00:06:09,199
to seeing all the stars from there

113
00:06:12,950 --> 00:06:11,039

in fact one way to think about that when

114
00:06:15,110 --> 00:06:12,960
we're on the international space station

115
00:06:16,790 --> 00:06:15,120
and all the lights are on when we look

116
00:06:18,550 --> 00:06:16,800
outside it's very much like trying to

117
00:06:20,550 --> 00:06:18,560
look at the stars when you're in boise

118
00:06:23,270 --> 00:06:20,560
you can see some but then if you go up

119
00:06:25,350 --> 00:06:23,280
high in the mountains up to mccall

120
00:06:27,430 --> 00:06:25,360
and you have all the lights out that's

121
00:06:29,430 --> 00:06:27,440
what it'll be like once we undock from

122
00:06:31,350 --> 00:06:29,440
station and we can turn all our shuttle

123
00:06:41,110 --> 00:06:31,360
lights out and also for our station

124
00:06:49,749 --> 00:06:43,029
hi i'm gavin toston can you see the

125
00:06:53,510 --> 00:06:51,749
well that's a great question and to

126
00:06:55,029 --> 00:06:53,520
answer that question we've got a little

127
00:06:57,990 --> 00:06:55,039
softball here

128
00:07:00,230 --> 00:06:58,000
as a prop and uh what i want to do is

129
00:07:02,070 --> 00:07:00,240
start to spin the ball

130
00:07:03,749 --> 00:07:02,080
meaning that it's being very similar to

131
00:07:05,270 --> 00:07:03,759
the earth spinning and if you look at

132
00:07:07,830 --> 00:07:05,280
the ball spinning it's spinning very

133
00:07:09,189 --> 00:07:07,840
very slowly and when we're orbiting in

134
00:07:10,870 --> 00:07:09,199
the space shuttle and on the space

135
00:07:13,350 --> 00:07:10,880
station we're going around the earth a

136
00:07:15,430 --> 00:07:13,360
lot faster than the earth is actually

137
00:07:17,510 --> 00:07:15,440
spinning so from our perspective we

138
00:07:19,990 --> 00:07:17,520

don't actually see the earth orbiting we

139
00:07:21,670 --> 00:07:20,000
see us going over around the surface of

140
00:07:23,830 --> 00:07:21,680
the earth every 90 minutes traveling at

141
00:07:35,350 --> 00:07:23,840
25 times the speed of sound it's pretty

142
00:07:42,390 --> 00:07:37,589
hi my name is hunter frye what are your

143
00:07:47,110 --> 00:07:45,110
well we we all answer that with short

144
00:07:48,710 --> 00:07:47,120
answers because we all have a variety of

145
00:07:54,869 --> 00:07:48,720
responsibilities

146
00:07:58,469 --> 00:07:54,879
robotic arm and a lot of the transfer we

147
00:08:00,710 --> 00:07:58,479
brought up about 150 bags worth of stuff

148
00:08:02,710 --> 00:08:00,720
and we're bringing lots of equipment

149
00:08:05,430 --> 00:08:02,720
science equipment and

150
00:08:07,990 --> 00:08:05,440
food and clothing and other supplies for

151
00:08:10,070 --> 00:08:08,000
clay and his two crewmates on board olig

152
00:08:11,589 --> 00:08:10,080
and fyodor and they have a lot of stuff

153
00:08:17,270 --> 00:08:11,599
that they need to get off the station

154
00:08:20,790 --> 00:08:18,950
other duties include things like setting

155
00:08:22,629 --> 00:08:20,800
up the computer network on board the

156
00:08:24,230 --> 00:08:22,639
shuttle uh we start from scratch and

157
00:08:25,909 --> 00:08:24,240
build one from nothing in the first day

158
00:08:27,990 --> 00:08:25,919
of the mission we also have to set up a

159
00:08:29,670 --> 00:08:28,000
sound stage so we can send down video

160
00:08:34,389 --> 00:08:29,680
for scenes like this as well as

161
00:08:38,389 --> 00:08:36,310
and my main responsibility for the

162
00:08:39,829 --> 00:08:38,399
mission is doing space walks with rick

163
00:08:41,909 --> 00:08:39,839

miss dracula and also we're going to be

164
00:08:43,909 --> 00:08:41,919
going outside with clay on our fourth

165
00:08:45,509 --> 00:08:43,919
space walk of the mission clay and rick

166
00:08:47,190 --> 00:08:45,519
are going outside tomorrow to do our

167
00:08:50,070 --> 00:08:47,200
third spacewalk it should be pretty

168
00:08:52,710 --> 00:08:50,080
exciting and then the one of the two

169
00:08:54,070 --> 00:08:52,720
physicians on board there's myself and

170
00:08:56,870 --> 00:08:54,080
uh

171
00:09:30,630 --> 00:08:56,880
one of the russian cosmonauts oleg is a

172
00:09:30,640 --> 00:09:36,790
endeavor iss we have you back

173
00:09:39,750 --> 00:09:38,710
and for all the students down there in

174
00:09:42,070 --> 00:09:39,760
idaho

175
00:09:44,310 --> 00:09:42,080
uh my job on the space station and the

176
00:09:46,710 --> 00:09:44,320
shuttle combined mission is uh i'm kind

177
00:09:49,110 --> 00:09:46,720
of the gracious host for these folks and

178
00:09:50,710 --> 00:09:49,120
i get to keep them out of trouble and

179
00:09:52,550 --> 00:09:50,720
put away all the stuff they knock off

180
00:09:54,630 --> 00:09:52,560
the walls and

181
00:09:57,030 --> 00:09:54,640
then i have to take all the gear that

182
00:09:59,350 --> 00:09:57,040
they brought onto my house and all the

183
00:10:01,190 --> 00:09:59,360
bags and all the things that i get

184
00:10:02,870 --> 00:10:01,200
hey and i expect that i have to be here