

SCIENCE IN THE TIME OF CORONAVIRUS



SCIENCE LIVE

VIRTUAL EDITION

1
00:00:00,767 --> 00:00:07,974
[MUSIC]

2
00:00:07,974 --> 00:00:09,275
>> OUR PLANET IS FACING

3
00:00:09,275 --> 00:00:11,344
AN UNPRECEDENTED CRISIS

4
00:00:11,344 --> 00:00:12,645
AS WE CONTINUE TO WRESTLE

5
00:00:12,645 --> 00:00:13,646
WITH THE IMPACTS

6
00:00:13,646 --> 00:00:15,382
OF CORONAVIRUS.

7
00:00:15,382 --> 00:00:16,549
WITH ITS UNPARALLELED

8
00:00:16,549 --> 00:00:17,851
TECHNICAL AND SCIENTIFIC

9
00:00:17,851 --> 00:00:19,619
EXPERTISE, NASA HAS

10
00:00:19,619 --> 00:00:20,653
JOINED THE FIGHT

11
00:00:20,653 --> 00:00:22,489
AGAINST THE PANDEMIC.

12
00:00:22,489 --> 00:00:24,391
ON APRIL 1ST, NASA LAUNCHED

13
00:00:24,391 --> 00:00:26,726

AN AGENCY-WIDE CALL FOR IDEAS

14

00:00:26,726 --> 00:00:27,861

FOR HOW WE COULD LEVERAGE

15

00:00:27,861 --> 00:00:29,763

OUR UNMATCHED CAPABILITIES

16

00:00:29,763 --> 00:00:30,930

TO HELP THE NATION

17

00:00:30,930 --> 00:00:33,566

DURING THIS TRYING TIME.

18

00:00:33,566 --> 00:00:34,601

FROM OXYGEN HOODS

19

00:00:34,601 --> 00:00:35,869

TO VENTILATORS,

20

00:00:35,869 --> 00:00:38,104

NASA ENGINEERS AND SCIENTISTS

21

00:00:38,104 --> 00:00:39,506

HAVE DEVELOPED CONCEPTS

22

00:00:39,506 --> 00:00:40,974

AND WORKED WITH PARTNERS

23

00:00:40,974 --> 00:00:42,375

TO QUICKLY RESPOND

24

00:00:42,375 --> 00:00:44,244

TO THE WORLDWIDE PANDEMIC.

25

00:00:46,913 --> 00:00:47,814

>> HELLO, EVERYONE,

26
00:00:47,814 --> 00:00:49,315
I'M MARINA JURICA WITH NASA'S

27
00:00:49,315 --> 00:00:51,084
JET PROPULSION LABORATORY,

28
00:00:51,084 --> 00:00:51,951
AND WELCOME TO ANOTHER

29
00:00:51,951 --> 00:00:53,353
VIRTUAL EPISODE

30
00:00:53,353 --> 00:00:55,355
OF "NASA SCIENCE LIVE."

31
00:00:55,355 --> 00:00:56,423
TODAY WE ARE TAKING YOU

32
00:00:56,423 --> 00:00:57,791
ACROSS THE COUNTRY

33
00:00:57,791 --> 00:00:59,426
TO HEAR FROM NASA EXPERTS

34
00:00:59,426 --> 00:01:01,094
WHO ARE WORKING TIRELESSLY

35
00:01:01,094 --> 00:01:02,629
TO RESPOND TO THE GLOBAL

36
00:01:02,629 --> 00:01:04,631
COVID-19 PANDEMIC.

37
00:01:04,631 --> 00:01:06,099
FROM SUPERCOMPUTING EFFORTS

38
00:01:06,099 --> 00:01:07,233

AND OXYGEN HELMETS

39

00:01:07,233 --> 00:01:09,035

BEING DEVELOPED IN CALIFORNIA

40

00:01:09,035 --> 00:01:10,737

TO SANITIZING TECHNOLOGIES

41

00:01:10,737 --> 00:01:12,405

DEVELOPED IN OHIO,

42

00:01:12,405 --> 00:01:13,807

HERE ARE SOME OF THE WAYS

43

00:01:13,807 --> 00:01:15,241

NASA HAS CONTRIBUTED

44

00:01:15,241 --> 00:01:16,209

TO HELP COMBAT

45

00:01:16,209 --> 00:01:18,178

THIS GLOBAL HEALTH CRISIS.

46

00:01:18,178 --> 00:01:19,846

LAST MONTH, NASA SPACE APPS

47

00:01:19,846 --> 00:01:21,581

COVID-19 CHALLENGE

48

00:01:21,581 --> 00:01:23,783

INVITED CODERS, ENTREPRENEURS,

49

00:01:23,783 --> 00:01:25,518

SCIENTISTS, DESIGNERS,

50

00:01:25,518 --> 00:01:27,020

STORYTELLERS, BUILDERS,

51
00:01:27,020 --> 00:01:28,254
ARTISTS, AND OTHERS

52
00:01:28,254 --> 00:01:29,722
TO USE DATA FROM NASA

53
00:01:29,722 --> 00:01:31,391
AND OTHER SPACE AGENCIES

54
00:01:31,391 --> 00:01:32,625
TO DESIGN SOLUTIONS

55
00:01:32,625 --> 00:01:34,561
RELATED TO COVID-19.

56
00:01:34,561 --> 00:01:36,095
IN JUST TWO DAYS, MORE THAN

57
00:01:36,095 --> 00:01:40,033
15,000 PEOPLE FROM 150 COUNTRIES

58
00:01:40,033 --> 00:01:41,201
AROUND THE WORLD

59
00:01:41,201 --> 00:01:43,036
REGISTERED TO PARTICIPATE

60
00:01:43,036 --> 00:01:44,804
IN THE GLOBAL HACKATHON

61
00:01:44,804 --> 00:01:48,041
CREATING OVER 1,400 PRODUCTS

62
00:01:48,041 --> 00:01:49,843
RANGING FROM MOBILE APPS,

63
00:01:49,843 --> 00:01:51,978

WEBSITES, MUSIC, ART,

64

00:01:51,978 --> 00:01:52,745

AND MORE.

65

00:01:52,745 --> 00:01:53,813

CHALLENGE WINNERS WILL BE

66

00:01:53,813 --> 00:01:55,348

ANNOUNCED IN AUGUST.

67

00:01:55,348 --> 00:01:56,883

IN THE MEANTIME, YOU CAN VISIT

68

00:01:56,883 --> 00:01:58,017

COVID-19.

69

00:01:58,017 --> 00:02:00,253

SPACEAPPSCHALLENGE.ORG

70

00:02:00,253 --> 00:02:01,521

TO LEARN MORE.

71

00:02:01,521 --> 00:02:02,856

A NASA SUPER COMPUTER

72

00:02:02,856 --> 00:02:03,556

USUALLY USED

73

00:02:03,556 --> 00:02:05,225

FOR EARTH SCIENCE RESEARCH

74

00:02:05,225 --> 00:02:06,526

IS NOW BEING LEVERAGED

75

00:02:06,526 --> 00:02:08,461

TO STUDY COVID-19.

76

00:02:08,461 --> 00:02:09,696

AMONG OTHER PLANS,

77

00:02:09,696 --> 00:02:11,531

TWO RESEARCHERS FROM NASA'S

78

00:02:11,531 --> 00:02:12,832

AMES RESEARCH CENTER

79

00:02:12,832 --> 00:02:14,534

IN CALIFORNIA ARE USING

80

00:02:14,534 --> 00:02:16,202

THE POWERFUL COMPUTER

81

00:02:16,202 --> 00:02:17,136

TO STUDY GENETIC

82

00:02:17,136 --> 00:02:19,239

RISK FACTORS AND MORE.

83

00:02:19,239 --> 00:02:20,573

RESEARCHERS AT NASA'S

84

00:02:20,573 --> 00:02:21,941

LANGLEY RESEARCH CENTER

85

00:02:21,941 --> 00:02:22,909

IN VIRGINIA

86

00:02:22,909 --> 00:02:24,577

AND THE NATIONAL INSTITUTE

87

00:02:24,577 --> 00:02:25,645

OF AEROSPACE

88

00:02:25,645 --> 00:02:27,180

ARE LENDING THEIR EXPERTISE

89

00:02:27,180 --> 00:02:29,516
IN COMPUTATIONAL FLUID DYNAMICS

90

00:02:29,516 --> 00:02:31,351
TO BETTER UNDERSTAND THE FLOW

91

00:02:31,351 --> 00:02:32,685
OF A PERSON'S BREATH

92

00:02:32,685 --> 00:02:34,888
THROUGH AN N95 MASK.

93

00:02:34,888 --> 00:02:36,523
RESULTS FROM THEIR STUDY

94

00:02:36,523 --> 00:02:37,757
ULTIMATELY COULD HELP

95

00:02:37,757 --> 00:02:40,126
ENGINEERS DESIGN MASK FILTERS

96

00:02:40,126 --> 00:02:41,961
THAT LAST LONGER AND KEEP OUT

97

00:02:41,961 --> 00:02:44,030
MORE HARMFUL PARTICLES.

98

00:02:44,030 --> 00:02:45,598
JOHNS HOPKINS UNIVERSITY

99

00:02:45,598 --> 00:02:46,533
IS INCORPORATING

100

00:02:46,533 --> 00:02:48,167
NASA EARTH SCIENCE DATA

101
00:02:48,167 --> 00:02:50,169
SUCH AS TEMPERATURE, HUMIDITY,

102
00:02:50,169 --> 00:02:52,272
AND RAINFALL IN ITS ONLINE

103
00:02:52,272 --> 00:02:54,307
COVID-19 DASHBOARD,

104
00:02:54,307 --> 00:02:55,441
A LEADING MODEL

105
00:02:55,441 --> 00:02:57,176
OF CORONAVIRUS SPREAD.

106
00:02:57,176 --> 00:02:58,444
WHILE IT'S TOO SOON

107
00:02:58,444 --> 00:02:59,679
TO DRAW ANY CONNECTIONS

108
00:02:59,679 --> 00:03:01,714
BETWEEN ENVIRONMENTAL FACTORS

109
00:03:01,714 --> 00:03:04,017
AND THE SPREAD OF COVID-19,

110
00:03:04,017 --> 00:03:04,984
RESEARCHERS SAY THAT

111
00:03:04,984 --> 00:03:07,620
PULLING IN THE FULL ARSENAL

112
00:03:07,620 --> 00:03:09,455
OF NASA EARTH OBSERVATIONS

113
00:03:09,455 --> 00:03:11,157

COULD HELP US LEARN MORE

114

00:03:11,157 --> 00:03:12,892

ABOUT THIS DISEASE.

115

00:03:12,892 --> 00:03:14,894

FOR REGULAR UPDATES ON EFFORTS

116

00:03:14,894 --> 00:03:16,329

AROUND THE AGENCY,

117

00:03:16,329 --> 00:03:19,933

VISIT [NASA.GOV/CORONAVIRUS](https://www.nasa.gov/coronavirus).

118

00:03:19,933 --> 00:03:21,067

WHILE SOME MEMBERS

119

00:03:21,067 --> 00:03:22,001

OF THE NASA FAMILY HAVE

120

00:03:22,001 --> 00:03:23,169

DIRECTED THEIR EFFORTS TO HELP

121

00:03:23,169 --> 00:03:25,505

COMBAT COVID-19 PANDEMIC,

122

00:03:25,505 --> 00:03:27,173

OTHERS CONTINUE TO WORK

123

00:03:27,173 --> 00:03:28,641

ON NASA MISSIONS.

124

00:03:28,641 --> 00:03:29,842

BUT LIKE MANY OTHERS

125

00:03:29,842 --> 00:03:31,044

AROUND THE WORLD,

126
00:03:31,044 --> 00:03:32,078
THEY'RE DOING IT

127
00:03:32,078 --> 00:03:33,880
FROM THEIR HOMES.

128
00:03:33,880 --> 00:03:35,381
>> HI, I'M JANELLE WELLONS

129
00:03:35,381 --> 00:03:37,050
AND I'M AN ENGINEER AT JPL.

130
00:03:37,050 --> 00:03:38,251
>> I'M MIKE [INDISTINCT]

131
00:03:38,251 --> 00:03:39,052
AND I'M A SPACE WEATHER

132
00:03:39,052 --> 00:03:40,286
FORECASTER WITH NASA'S

133
00:03:40,286 --> 00:03:41,721
GODDARD SPACEFLIGHT CENTER.

134
00:03:41,721 --> 00:03:42,322
>> HI, EVERYONE,

135
00:03:42,322 --> 00:03:43,590
MY NAME IS INIA SOTO RAMOS.

136
00:03:43,590 --> 00:03:44,691
I AM THE DATA MANAGER

137
00:03:44,691 --> 00:03:46,559
FOR EXPORT AND SVS

138
00:03:46,559 --> 00:03:47,727

AT THE OCEAN ECOLOGY LAB

139

00:03:47,727 --> 00:03:48,661
AT NASA GODDARD.

140

00:03:48,661 --> 00:03:49,796
>> I'M ARMIN SOROOSHIAN.

141

00:03:49,796 --> 00:03:50,229
>> MY NAME IS

142

00:03:50,229 --> 00:03:51,965
MAMTA PATEL NAGARAJA.

143

00:03:51,965 --> 00:03:52,398
>> I'M JORI,

144

00:03:52,398 --> 00:03:53,466
AND I'M THE LIVE PRODUCER,

145

00:03:53,466 --> 00:03:55,868
DIRECTOR FOR NASA HEADQUARTERS.

146

00:03:55,868 --> 00:03:57,503
>> HI, MY NAME IS [INDISTINCT]

147

00:03:57,503 --> 00:03:58,171
AND I WORK ON THE MARS

148

00:03:58,171 --> 00:03:59,572
PERSEVERANCE ROVER.

149

00:03:59,572 --> 00:04:00,406
>> I'M STEPHANIE OIJ,

150

00:04:00,406 --> 00:04:01,040
AND I WORK AT

151
00:04:01,040 --> 00:04:02,208
NASA JPL AS A MARS

152
00:04:02,208 --> 00:04:04,043
CURIOSITY ROVER DRIVER.

153
00:04:04,043 --> 00:04:05,612
>> LOOK, YOU CAN EVEN SEE

154
00:04:05,612 --> 00:04:06,879
A SMALL ERUPTION

155
00:04:06,879 --> 00:04:08,615
THAT'S GOING ON AS WE SPEAK.

156
00:04:08,615 --> 00:04:10,016
>> AND, I COULDN'T GET AWAY

157
00:04:10,016 --> 00:04:11,184
WITHOUT MENTIONING

158
00:04:11,184 --> 00:04:14,621
MY FURRY PAL, LUNA.

159
00:04:14,621 --> 00:04:15,622
>> ACROSS THE HOUSE IS

160
00:04:15,622 --> 00:04:16,756
MY COWORKER,

161
00:04:16,756 --> 00:04:18,324
WHO'S BUSY PLAYING TOYS

162
00:04:18,324 --> 00:04:19,359
MOST OF THE DAYS.

163
00:04:19,359 --> 00:04:21,127

>> SO, THIS IS MY DESK SETUP.

164

00:04:21,127 --> 00:04:22,695

I AM IN MY LOFT,

165

00:04:22,695 --> 00:04:24,030

WORKING ON A YARD SALE TABLE.

166

00:04:24,030 --> 00:04:25,898

I AM MONITORING

167

00:04:25,898 --> 00:04:27,066

THE SOCIAL MEDIA ACCOUNT

168

00:04:27,066 --> 00:04:27,900

FOR THE NANCY GRACE ROMAN

169

00:04:27,900 --> 00:04:28,735

SPACE TELESCOPE

170

00:04:28,735 --> 00:04:30,036

WHILE ALSO MAKING SOME EDITS

171

00:04:30,036 --> 00:04:31,471

TO SOME POSSIBLE SOCIAL PIECES.

172

00:04:31,471 --> 00:04:32,405

>> I WOULD LIKE TO GIVE YOU

173

00:04:32,405 --> 00:04:35,675

A QUICK TOUR OF VIRTUAL EXHIBIT.

174

00:04:35,675 --> 00:04:37,644

HERE WE ARE AT THE LOBBY

175

00:04:37,644 --> 00:04:38,778

OF AMERICAN

176

00:04:38,778 --> 00:04:40,813

ASTRONOMICAL SOCIETY.

177

00:04:40,813 --> 00:04:42,248

>> IN THE KITCHEN

178

00:04:42,248 --> 00:04:43,850

IS MY SECOND COWORKER,

179

00:04:43,850 --> 00:04:45,718

WHO'S BUSY IN A ZOOM MEETING.

180

00:04:45,718 --> 00:04:46,586

>> AT JPL, I WORK ON

181

00:04:46,586 --> 00:04:47,153

THE AUTONOMY

182

00:04:47,153 --> 00:04:48,388

FOR MULTI-AGENT SYSTEMS,

183

00:04:48,388 --> 00:04:50,390

LIKE THESE SMALL-SCALE ROVERS

184

00:04:50,390 --> 00:04:52,025

CALLED PUFFERS RIGHT HERE,

185

00:04:52,025 --> 00:04:53,760

WHICH WORK TOGETHER AS A TEAM

186

00:04:53,760 --> 00:04:54,661

TO EXPLORE THE MOON

187

00:04:54,661 --> 00:04:56,229

AND OTHER PLACES.

188

00:04:56,229 --> 00:04:57,930

NORMALLY WE WOULD BE AT JPL

189

00:04:57,930 --> 00:04:59,265

TESTING OUT IN THE MARS YARD,

190

00:04:59,265 --> 00:05:00,133

BUT THESE DAYS

191

00:05:00,133 --> 00:05:01,167

WE'RE TESTING RIGHT HERE

192

00:05:01,167 --> 00:05:02,735

IN MY BACKYARD.

193

00:05:02,735 --> 00:05:03,536

>> HERE WE CAN DO ALL

194

00:05:03,536 --> 00:05:04,337

OF OUR ROBOTIC TEST PLANNING

195

00:05:04,337 --> 00:05:05,838

FROM RIGHT HERE IN MY KITCHEN

196

00:05:05,838 --> 00:05:07,206

WITH SOME FUN DECORATIONS.

197

00:05:07,206 --> 00:05:07,874

>> AND YOU CAN SEE,

198

00:05:07,874 --> 00:05:08,808

WHILE I'M WORKING FROM HOME,

199

00:05:08,808 --> 00:05:09,409

I DO HAVE

200

00:05:09,409 --> 00:05:10,910

SOME NEW COWORKERS.

201
00:05:10,910 --> 00:05:11,811
THERE'S LOTS OF DANCING,

202
00:05:11,811 --> 00:05:13,079
LOTS OF LAUGHTER,

203
00:05:13,079 --> 00:05:14,514
SOMETIMES CRYING,

204
00:05:14,514 --> 00:05:15,815
THEIRS AND MINE.

205
00:05:15,815 --> 00:05:16,315
BUT WE'RE GETTING

206
00:05:16,315 --> 00:05:18,418
THROUGH THESE TIMES.

207
00:05:18,418 --> 00:05:19,419
>> HI.

208
00:05:19,419 --> 00:05:20,620
>> TO DO OPERATIONS REMOTELY

209
00:05:20,620 --> 00:05:22,021
WE WEAR TWO HEADSETS.

210
00:05:22,021 --> 00:05:23,022
ON ONE EAR WE TALK

211
00:05:23,022 --> 00:05:24,390
TO THE OTHER ROVER PLANNERS,

212
00:05:24,390 --> 00:05:25,358
AND ON THE OTHER EAR IS

213
00:05:25,358 --> 00:05:27,160

THE REST OF THE UPLINK TEAM.

214

00:05:27,160 --> 00:05:30,063

ELLIE SEEMS TO LIKE MY NEW LOOK.

215

00:05:31,798 --> 00:05:34,133

>> THE PRE-PLANNING WAS DONE

216

00:05:34,133 --> 00:05:35,068

FROM RIGHT HERE.

217

00:05:35,068 --> 00:05:37,070

AND THIS IS MY HOME OFFICE.

218

00:05:37,070 --> 00:05:38,571

IT'S ALSO MY PERSONAL

219

00:05:38,571 --> 00:05:39,872

CREATIVE SPACE.

220

00:05:39,872 --> 00:05:41,908

AS EVIDENCE-- [LAUGHING]

221

00:05:41,908 --> 00:05:43,109

THAT'S ONE OF MY PAINTINGS.

222

00:05:43,109 --> 00:05:44,110

>> I GOT TO KEEP MY VOICE DOWN

223

00:05:44,110 --> 00:05:44,677

A LITTLE BIT,

224

00:05:44,677 --> 00:05:46,145

BECAUSE MY OTHER COWORKER

225

00:05:46,145 --> 00:05:48,481

IS ON A TELECON.

226

00:05:48,481 --> 00:05:49,182

>> WORKING FROM HOME

227

00:05:49,182 --> 00:05:50,583

IS DEFINITELY DIFFERENT,

228

00:05:50,583 --> 00:05:51,184

BUT AT LEAST

229

00:05:51,184 --> 00:05:52,752

I GET TO ENJOY SMALL PERKS

230

00:05:52,752 --> 00:05:53,519

LIKE GETTING TO WEAR

231

00:05:53,519 --> 00:05:55,254

MY GAMING HEADSET EACH DAY.

232

00:05:55,254 --> 00:05:56,055

>> IT'S BEEN A CHALLENGE

233

00:05:56,055 --> 00:05:56,856

WORKING AT HOME.

234

00:05:56,856 --> 00:05:57,990

IT'S BEEN DIFFERENT.

235

00:05:57,990 --> 00:05:59,525

SORT OF A BLESSING IN DISGUISE,

236

00:05:59,525 --> 00:06:00,359

BECAUSE I GET TO SPEND

237

00:06:00,359 --> 00:06:02,328

MORE TIME WITH MY FAMILY.

238

00:06:02,328 --> 00:06:03,863

BUT I HAVE MORE DUTIES AT HOME

239

00:06:03,863 --> 00:06:04,897

AS A FATHER, SINCE WE DON'T

240

00:06:04,897 --> 00:06:06,099

HAVE DAYCARE ANYMORE

241

00:06:06,099 --> 00:06:07,400

SO IT'S A LITTLE BIT MORE

242

00:06:07,400 --> 00:06:09,001

CHALLENGING TO DO MY WORK.

243

00:06:09,001 --> 00:06:10,436

BUT IT'S ALL FUN SPENDING TIME

244

00:06:10,436 --> 00:06:11,370

WITH THIS LITTLE GUY.

245

00:06:11,370 --> 00:06:12,472

>> I AM OUTSIDE ENJOYING

246

00:06:12,472 --> 00:06:13,172

THE NICE WEATHER

247

00:06:13,172 --> 00:06:15,575

WITH MY NEW COWORKER

248

00:06:15,575 --> 00:06:17,477

WHO IS CLEANING A LITTLE BIT.

249

00:06:17,477 --> 00:06:18,678

AND WHILE I WORK

250

00:06:18,678 --> 00:06:20,480

WITH SOME DATA FOR SVS--

251
00:06:20,480 --> 00:06:22,482
HERE'S SOME OF THE DATA

252
00:06:22,482 --> 00:06:23,683
I'M WORKING WITH RIGHT NOW,

253
00:06:23,683 --> 00:06:24,550
I'M MAKING SURE THE DATA

254
00:06:24,550 --> 00:06:26,219
IS CLEAN AND READY

255
00:06:26,219 --> 00:06:27,587
TO BE ACHIEVED.

256
00:06:27,587 --> 00:06:28,621
>> I DO LONG FOR THE DAY

257
00:06:28,621 --> 00:06:29,722
FOR WHEN WE CAN

258
00:06:29,722 --> 00:06:30,690
RETURN TO NORMAL,

259
00:06:30,690 --> 00:06:32,091
BUT FOR NOW WE'RE PERSEVERING

260
00:06:32,091 --> 00:06:33,793
THROUGH THIS PANDEMIC

261
00:06:33,793 --> 00:06:36,863
AND WORKING HARD TO ENSURE

262
00:06:36,863 --> 00:06:38,064
THE SUCCESS OF OUR LAUNCH.

263
00:06:38,064 --> 00:06:38,898

>> WELL, THAT'S IT.

264

00:06:38,898 --> 00:06:39,966

SO I'M LOOKING FORWARD

265

00:06:39,966 --> 00:06:41,801

TO WORKING WITH EVERYONE

266

00:06:41,801 --> 00:06:45,538

IN-PERSON AGAIN SOON.

267

00:06:45,538 --> 00:06:46,939

>> WE'VE ALL HAD TO ADAPT

268

00:06:46,939 --> 00:06:49,909

TO OUR WORK SPACES AT HOME.

269

00:06:49,909 --> 00:06:52,044

AND I HAD TO MAKE A TV STUDIO

270

00:06:52,044 --> 00:06:53,913

ON TOP OF MY CHINA CABINET,

271

00:06:53,913 --> 00:06:55,782

AS YOU CAN SEE HERE,

272

00:06:55,782 --> 00:06:56,849

AND MY SON LOVES

273

00:06:56,849 --> 00:06:58,017

TO BRING THE DINOSAURS

274

00:06:58,017 --> 00:06:58,951

INTO THE LIVING ROOM--

275

00:06:58,951 --> 00:07:00,086

>> HI.

276
00:07:00,086 --> 00:07:01,187
>> TO MAKE SURE THAT WE ARE

277
00:07:01,187 --> 00:07:02,855
ALL HAVING THE BEST TIME

278
00:07:02,855 --> 00:07:04,257
WE POSSIBLY CAN

279
00:07:04,257 --> 00:07:05,792
ALL UNDER ONE ROOF.

280
00:07:05,792 --> 00:07:06,793
AND TODAY WE'RE JOINED

281
00:07:06,793 --> 00:07:08,294
BY AN ENGINEER WHO HAS BEEN

282
00:07:08,294 --> 00:07:09,862
WORKING WITH SEVERAL PARTNERS

283
00:07:09,862 --> 00:07:11,564
TO BUILD A MEDICAL DEVICE

284
00:07:11,564 --> 00:07:13,366
TO HELP CORONAVIRUS PATIENTS

285
00:07:13,366 --> 00:07:16,402
WITH THEIR EARLY SYMPTOMS.

286
00:07:16,402 --> 00:07:17,970
>> WE'RE HERE TODAY DOING

287
00:07:17,970 --> 00:07:19,172
SOME OF THE ASSEMBLY

288
00:07:19,172 --> 00:07:23,976

OF THE OXYGEN PRESSURE HOODS.

289

00:07:23,976 --> 00:07:25,444

WE'VE GOT A WHOLE BUNCH

290

00:07:25,444 --> 00:07:28,214

OF TABLES SET UP, SPACED APART.

291

00:07:28,214 --> 00:07:29,916

A COLLABORATION BETWEEN TSE

292

00:07:29,916 --> 00:07:31,951

AND NASA EMPLOYEES

293

00:07:31,951 --> 00:07:33,085

COMING TOGETHER

294

00:07:33,085 --> 00:07:34,787

AND ASSEMBLING THESE

295

00:07:34,787 --> 00:07:35,721

IN SORT OF LIKE

296

00:07:35,721 --> 00:07:37,490

A PRODUCTION LINE SETUP.

297

00:07:37,490 --> 00:07:38,257

YOU CAN SEE AT EACH

298

00:07:38,257 --> 00:07:39,058

DIFFERENT STATION

299

00:07:39,058 --> 00:07:39,959

THERE'S SOMETHING ELSE

300

00:07:39,959 --> 00:07:41,360

KIND OF GOING ON.

301
00:07:41,360 --> 00:07:43,863
WE ARE LOOKING IN THE END

302
00:07:43,863 --> 00:07:46,432
TO PRODUCE ABOUT 500 HOODS.

303
00:07:46,432 --> 00:07:47,567
SO FAR THINGS ARE GOING

304
00:07:47,567 --> 00:07:48,901
PRETTY WELL.

305
00:07:48,901 --> 00:07:50,169
YOU CAN SEE WE HAVE A HOOD HERE.

306
00:07:50,169 --> 00:07:51,704
IT'S ABOUT HALFWAY DONE

307
00:07:51,704 --> 00:07:53,039
AND IT'LL BE JUMPING THROUGH

308
00:07:53,039 --> 00:07:54,874
A COUPLE MORE STATIONS

309
00:07:54,874 --> 00:07:57,677
IN ORDER TO PUT THE SEAL

310
00:07:57,677 --> 00:07:59,545
ON THE BOTTOM, ADD STRAPS,

311
00:07:59,545 --> 00:08:00,546
AND THEN ULTIMATELY DO

312
00:08:00,546 --> 00:08:02,014
A QUALITY INSPECTION

313
00:08:02,014 --> 00:08:04,617

ON THE UNIT.

314

00:08:04,617 --> 00:08:05,585

>> MIKE BUTTIGIEG,

315

00:08:05,585 --> 00:08:07,920

WELCOME TO THE SHOW

316

00:08:07,920 --> 00:08:08,521

>> HI, MARINA, THANK YOU

317

00:08:08,521 --> 00:08:10,823

FOR HAVING ME.

318

00:08:10,823 --> 00:08:11,557

>> NOW, MIKE,

319

00:08:11,557 --> 00:08:12,592

YOUR TEAM AT ARMSTRONG

320

00:08:12,592 --> 00:08:13,860

FLIGHT RESEARCH CENTER

321

00:08:13,860 --> 00:08:14,727

HAS PARTNERED WITH

322

00:08:14,727 --> 00:08:16,462

ANTELOPE VALLEY HOSPITAL,

323

00:08:16,462 --> 00:08:18,064

THE CITY OF LANCASTER,

324

00:08:18,064 --> 00:08:19,298

VIRGIN GALACTIC,

325

00:08:19,298 --> 00:08:20,733

THE SPACESHIP COMPANY,

326
00:08:20,733 --> 00:08:22,468
AND ANTELOPE VALLEY COLLEGE

327
00:08:22,468 --> 00:08:23,236
TO CREATE THESE

328
00:08:23,236 --> 00:08:24,904
INNOVATIVE SOLUTIONS

329
00:08:24,904 --> 00:08:26,105
FOR POSSIBLE SHORTAGES

330
00:08:26,105 --> 00:08:27,874
OF CRITICAL MEDICAL EQUIPMENT.

331
00:08:27,874 --> 00:08:28,741
AND YOU ARE INVOLVED

332
00:08:28,741 --> 00:08:29,742
IN AN EFFORT TO BUILD

333
00:08:29,742 --> 00:08:32,144
A PROTOTYPE OXYGEN HELMET

334
00:08:32,144 --> 00:08:33,412
THAT DOCTORS ARE TESTING

335
00:08:33,412 --> 00:08:34,747
FOR FUTURE USE.

336
00:08:34,747 --> 00:08:36,282
CAN YOU TELL US EXACTLY WHAT

337
00:08:36,282 --> 00:08:38,351
A POSITIVE PRESSURE HOOD IS?

338
00:08:38,351 --> 00:08:39,018

I UNDERSTAND

339

00:08:39,018 --> 00:08:40,820

IT'S LIKE A CPAP HELMET.

340

00:08:40,820 --> 00:08:42,154

HOW DOES IT HELP PATIENTS

341

00:08:42,154 --> 00:08:44,056

THAT HAVE COVID-19?

342

00:08:44,056 --> 00:08:46,325

>> SURE, THE CPAP HELMET WORKS

343

00:08:46,325 --> 00:08:47,827

ESSENTIALLY BY HAVING

344

00:08:47,827 --> 00:08:49,362

AN ENCLOSED SPACE

345

00:08:49,362 --> 00:08:52,598

OVER A PATIENT'S HEAD.

346

00:08:52,598 --> 00:08:54,567

DOING THIS DOES

347

00:08:54,567 --> 00:08:56,335

THREE MAJOR THINGS FOR US.

348

00:08:56,335 --> 00:08:57,770

SO, THE FIRST IS THAT

349

00:08:57,770 --> 00:08:59,105

BY ENCAPSULATING

350

00:08:59,105 --> 00:08:59,939

THE PERSON'S HEAD,

351

00:08:59,939 --> 00:09:02,775

WE'RE ABLE TO PRESSURIZE IT,

352

00:09:02,775 --> 00:09:04,343

AND BY PRESSURIZING THE BAG,

353

00:09:04,343 --> 00:09:05,678

WE'RE ABLE TO INFLATE

354

00:09:05,678 --> 00:09:07,179

THE PERSON'S LUNGS.

355

00:09:07,179 --> 00:09:09,215

SO, AS YOU CAN IMAGINE WITH--

356

00:09:09,215 --> 00:09:11,083

WHEN A PATIENT HAS COVID-19,

357

00:09:11,083 --> 00:09:12,652

THEIR-- THE LUNG CAPACITY

358

00:09:12,652 --> 00:09:13,519

IS REDUCED.

359

00:09:13,519 --> 00:09:14,921

SO, BY PRESSURIZING THEIR LUNGS,

360

00:09:14,921 --> 00:09:16,656

WE MAKE THE REMAINING AREA

361

00:09:16,656 --> 00:09:17,456

OF THOSE LUNGS

362

00:09:17,456 --> 00:09:18,758

TO BE MORE EFFECTIVE

363

00:09:18,758 --> 00:09:22,194

THAN IF IT WAS NOT PRESSURIZED.

364

00:09:22,194 --> 00:09:23,496

THE SECOND MAJOR POINT IS

365

00:09:23,496 --> 00:09:24,730

WE'RE ABLE TO THEN

366

00:09:24,730 --> 00:09:25,965

TAKE THAT ENCLOSED SPACE

367

00:09:25,965 --> 00:09:26,832

AND ALSO FILL IT UP

368

00:09:26,832 --> 00:09:28,567

WITH PURE OXYGEN.

369

00:09:28,567 --> 00:09:29,735

SO, BY FILLING IT UP

370

00:09:29,735 --> 00:09:31,570

WITH PURE OXYGEN,

371

00:09:31,570 --> 00:09:32,538

WE'RE ABLE TO EVEN--

372

00:09:32,538 --> 00:09:33,572

WE'RE ABLE TO TAKE THAT

373

00:09:33,572 --> 00:09:34,907

REMAINING SPACE IN THE LUNGS

374

00:09:34,907 --> 00:09:37,276

AND TAKE IT EVEN FURTHER.

375

00:09:37,276 --> 00:09:39,445

THIS AGAIN, FURTHER INCREASES

376

00:09:39,445 --> 00:09:40,947

THE RECOVERY ABILITY

377

00:09:40,947 --> 00:09:42,815

OF A COVID PATIENT.

378

00:09:42,815 --> 00:09:45,518

LAST AND VERY IMPORTANT POINT

379

00:09:45,518 --> 00:09:46,552

OF HAVING THIS HELMET

380

00:09:46,552 --> 00:09:47,420

IS THAT THERE'S A SEAL

381

00:09:47,420 --> 00:09:48,621

AROUND THE NECK,

382

00:09:48,621 --> 00:09:50,723

AND IT PREVENTS ANY AIR

383

00:09:50,723 --> 00:09:52,658

FROM ESCAPING THE PERSON

384

00:09:52,658 --> 00:09:54,727

AS THEY'RE BREATHING.

385

00:09:54,727 --> 00:09:55,394

SO, THERE IS

386

00:09:55,394 --> 00:09:56,862

AN EXHALATION VALVE

387

00:09:56,862 --> 00:09:57,797

WHICH IS FILTERED,

388

00:09:57,797 --> 00:09:58,898

SO ALL THE COVID AIR

389

00:09:58,898 --> 00:10:00,166

IS TRAPPED BEFORE IT LEAVES

390

00:10:00,166 --> 00:10:04,003

THE PATIENT'S HELMET.

391

00:10:04,003 --> 00:10:05,471

>> NOW AS YOU SAID,

392

00:10:05,471 --> 00:10:07,073

IT TAKES A VILLAGE, MIKE,

393

00:10:07,073 --> 00:10:08,674

AND YOU ALL HAD AN IDEA,

394

00:10:08,674 --> 00:10:09,809

BUT IT WAS A HUGE

395

00:10:09,809 --> 00:10:11,210

COLLABORATIVE EFFORT.

396

00:10:11,210 --> 00:10:12,611

HOW DID YOU ALL WORK TOGETHER

397

00:10:12,611 --> 00:10:15,414

FROM SO MANY DIFFERENT PLACES?

398

00:10:15,414 --> 00:10:17,083

>> SURE. SO, WE HAD A TEAM

399

00:10:17,083 --> 00:10:19,518

PUT TOGETHER BY ONE OF THE MAJOR

400

00:10:19,518 --> 00:10:21,687

AEROSPACE COMPANIES HERE.

401
00:10:21,687 --> 00:10:24,056
IT WAS COMPRISED OF, AGAIN,

402
00:10:24,056 --> 00:10:25,925
OTHER AEROSPACE COMPANIES,

403
00:10:25,925 --> 00:10:28,027
A LOCAL COLLEGE, A HOSPITAL,

404
00:10:28,027 --> 00:10:30,196
AND CITY LEADERSHIP.

405
00:10:30,196 --> 00:10:31,764
SO, THERE--

406
00:10:31,764 --> 00:10:32,598
WHEN WE ALL CAME TOGETHER,

407
00:10:32,598 --> 00:10:34,333
IT WAS VERY QUICKLY

408
00:10:34,333 --> 00:10:35,434
WE'RE ABLE TO KIND OF UNDERSTAND

409
00:10:35,434 --> 00:10:36,268
THE SAME LANGUAGE

410
00:10:36,268 --> 00:10:37,903
AS MANY OF US WERE ENGINEERS

411
00:10:37,903 --> 00:10:39,338
OR VERY FOCUSED

412
00:10:39,338 --> 00:10:42,375
ON A VERY SPECIFIC GOAL.

413
00:10:42,375 --> 00:10:43,476

SO, WHAT MADE

414

00:10:43,476 --> 00:10:45,978

THE TEAM SO EFFECTIVE

415

00:10:45,978 --> 00:10:48,214

IS NOT SO MUCH THE IDEAS

416

00:10:48,214 --> 00:10:49,148

THAT HAVE COME OUT OF THEM.

417

00:10:49,148 --> 00:10:49,815

OBVIOUSLY, THOSE ARE

418

00:10:49,815 --> 00:10:51,183

VERY IMPORTANT,

419

00:10:51,183 --> 00:10:53,686

BUT IT'S THE CULMINATION

420

00:10:53,686 --> 00:10:55,287

OF ALL THE PLAYERS

421

00:10:55,287 --> 00:10:58,190

THAT MAKE IT A VERY IMPACTFUL

422

00:10:58,190 --> 00:10:59,925

TYPE OF MISSION.

423

00:10:59,925 --> 00:11:01,560

SO, WHAT I MEAN BY THAT IS

424

00:11:01,560 --> 00:11:02,661

THAT IF YOU HAVE A GREAT IDEA,

425

00:11:02,661 --> 00:11:03,396

IT'S LIKE, OKAY, WELL,

426
00:11:03,396 --> 00:11:05,164
HOW DO WE-- HOW DO WE GROW THAT

427
00:11:05,164 --> 00:11:07,967
TO IMPACT OUR CITY

428
00:11:07,967 --> 00:11:09,802
OR OUR STATE OR OUR COUNTRY

429
00:11:09,802 --> 00:11:11,103
OR EVEN THE WORLD.

430
00:11:11,103 --> 00:11:11,937
IN ORDER TO DO THAT,

431
00:11:11,937 --> 00:11:13,039
WE HAVE TO HAVE PEOPLE

432
00:11:13,039 --> 00:11:14,874
FROM MANY DIFFERENT DISCIPLINES

433
00:11:14,874 --> 00:11:17,443
THAT ARE ABLE TO PROVIDE

434
00:11:17,443 --> 00:11:19,111
THOSE MAJOR KEY POINTS.

435
00:11:19,111 --> 00:11:20,146
SO THAT MIGHT BE, YOU KNOW,

436
00:11:20,146 --> 00:11:21,080
YOU HAVE INVENTORS,

437
00:11:21,080 --> 00:11:22,314
YOU HAVE IMPLEMENTERS,

438
00:11:22,314 --> 00:11:24,283

YOU HAVE FUNDING MANAGERS,

439

00:11:24,283 --> 00:11:25,117

YOU HAVE LAWYERS,

440

00:11:25,117 --> 00:11:26,118

YOU HAVE DOCTORS,

441

00:11:26,118 --> 00:11:27,186

SO YOU HAVE ALL THOSE DIFFERENT

442

00:11:27,186 --> 00:11:28,320

TYPES OF PEOPLE ON THE TEAM

443

00:11:28,320 --> 00:11:28,954

THAT ARE ABLE TO MAKE

444

00:11:28,954 --> 00:11:30,523

A REALLY BIG DIFFERENCE.

445

00:11:30,523 --> 00:11:31,557

THE LAST POINT I WANT TO MAKE

446

00:11:31,557 --> 00:11:34,593

IS THAT IT'S--

447

00:11:34,593 --> 00:11:36,262

WITH ANY EFFECTIVE TEAM,

448

00:11:36,262 --> 00:11:37,997

YOU NEED TO HAVE A COMMON GOAL.

449

00:11:37,997 --> 00:11:39,532

OBVIOUSLY, THE COMMON GOAL HERE

450

00:11:39,532 --> 00:11:42,501

IS HELPING COVID PATIENTS.

451
00:11:42,501 --> 00:11:43,803
AND SO, WHEN YOU-- WHEN A TEAM

452
00:11:43,803 --> 00:11:45,471
SHARES SUCH A STRONG GOAL,

453
00:11:45,471 --> 00:11:47,339
THE POSSIBILITIES ARE ENDLESS

454
00:11:47,339 --> 00:11:50,409
WITH HOW MUCH YOU CAN HELP.

455
00:11:50,409 --> 00:11:51,277
>> THAT'S AMAZING WHEN

456
00:11:51,277 --> 00:11:52,678
EVERYONE CAN COME TOGETHER

457
00:11:52,678 --> 00:11:53,913
WITH THAT ONE COMMON GOAL.

458
00:11:53,913 --> 00:11:54,413
AND YOU SAID IT'S

459
00:11:54,413 --> 00:11:55,414
A VERY SIMPLE DEVICE,

460
00:11:55,414 --> 00:11:56,382
BUT IT REQUIRES

461
00:11:56,382 --> 00:11:57,416
EXTENSIVE TESTING.

462
00:11:57,416 --> 00:11:58,150
IT'S TAKING OVER

463
00:11:58,150 --> 00:11:59,452

A LOT OF YOUR TIME.

464

00:11:59,452 --> 00:12:00,386

>> IT SURE HAS.

465

00:12:00,386 --> 00:12:01,887

ABOUT TWO MONTHS OF MY LIFE

466

00:12:01,887 --> 00:12:03,155

WAS PRETTY MUCH DEDICATED

467

00:12:03,155 --> 00:12:06,992

TO DEVELOPING THIS HOOD.

468

00:12:06,992 --> 00:12:08,127

>> AND WE'VE ALL HAD TO GET

469

00:12:08,127 --> 00:12:09,395

A LITTLE CREATIVE WITH OUR WORK

470

00:12:09,395 --> 00:12:11,163

AND AT-HOME SPACES.

471

00:12:11,163 --> 00:12:12,431

I KNOW EARLIER I SHOWED YOU

472

00:12:12,431 --> 00:12:13,365

THAT I HAD TO TURN

473

00:12:13,365 --> 00:12:15,034

MY LIVING ROOM INTO A TV STUDIO,

474

00:12:15,034 --> 00:12:15,701

AND IT LOOKS LIKE

475

00:12:15,701 --> 00:12:16,502

I'M TALKING TO YOU

476
00:12:16,502 --> 00:12:17,536
FROM A GARAGE.

477
00:12:17,536 --> 00:12:18,771
IS THAT YOUR HOME LAB?

478
00:12:18,771 --> 00:12:19,772
>> IT IS.

479
00:12:19,772 --> 00:12:20,840
THIS IS THE GARAGE

480
00:12:20,840 --> 00:12:22,441
WHERE I SPENT A LOT OF MY TIME

481
00:12:22,441 --> 00:12:23,375
DEVELOPING THE HOODS

482
00:12:23,375 --> 00:12:24,543
AND DOING SOME TESTING,

483
00:12:24,543 --> 00:12:28,013
AND IT'S WORKED OUT GREAT.

484
00:12:28,013 --> 00:12:29,081
>> IT LOOKS REALLY GREAT,

485
00:12:29,081 --> 00:12:29,782
AND YOU WERE ABLE TO HAVE

486
00:12:29,782 --> 00:12:30,416
A LOT OF THE THINGS

487
00:12:30,416 --> 00:12:31,717
THAT YOU NEED RIGHT THERE

488
00:12:31,717 --> 00:12:33,119

ON HAND, WHICH IS GREAT.

489

00:12:33,119 --> 00:12:35,821

>> ABSOLUTELY.

490

00:12:35,821 --> 00:12:36,722

>> WELL, THANK YOU SO MUCH

491

00:12:36,722 --> 00:12:38,190

FOR JOINING US TODAY, MIKE.

492

00:12:38,190 --> 00:12:39,725

>> THANK YOU, MARINA.

493

00:12:39,725 --> 00:12:40,826

>> AND NASA EMPLOYEES

494

00:12:40,826 --> 00:12:41,627

MET THE NEED

495

00:12:41,627 --> 00:12:42,862

WITH A SPEED OF RESPONSE,

496

00:12:42,862 --> 00:12:44,864

AND AEROSPACE VALLEY TASK FORCE

497

00:12:44,864 --> 00:12:46,398

STEPPED UP TO THE PLATE WITH

498

00:12:46,398 --> 00:12:48,567

NOT ONLY THESE OXYGEN HOODS,

499

00:12:48,567 --> 00:12:49,235

THEY'VE WORKED ON

500

00:12:49,235 --> 00:12:50,569

PROTECTIVE ENCLOSURES,

501
00:12:50,569 --> 00:12:51,470
SAFE OXYGEN

502
00:12:51,470 --> 00:12:52,738
DISTRIBUTION SYSTEMS,

503
00:12:52,738 --> 00:12:53,772
AND 3D PRINTING

504
00:12:53,772 --> 00:12:54,874
FOR MASS PRODUCTION

505
00:12:54,874 --> 00:12:56,675
OF LOW-COST MEDICAL NEEDS

506
00:12:56,675 --> 00:12:57,877
JUST TO NAME A FEW

507
00:12:57,877 --> 00:12:59,078
AS THEY CONTINUE TO MOVE

508
00:12:59,078 --> 00:13:01,013
FORWARD IN THIS EFFORT.

509
00:13:01,013 --> 00:13:01,947
ANOTHER URGENCY

510
00:13:01,947 --> 00:13:03,449
IS TO SUPPLY VENTILATORS,

511
00:13:03,449 --> 00:13:05,151
AND IT HAS BECOME A TOP PRIORITY

512
00:13:05,151 --> 00:13:06,285
TO MEDICAL PROFESSIONALS

513
00:13:06,285 --> 00:13:07,453

ACROSS THE COUNTRY,

514

00:13:07,453 --> 00:13:08,187

BUT ALSO TO NASA'S

515

00:13:08,187 --> 00:13:10,122

JET PROPULSION LABORATORY.

516

00:13:10,122 --> 00:13:11,824

THEIR ENGINEERS AND SCIENTISTS

517

00:13:11,824 --> 00:13:13,225

HAVE EMBARKED ON A MISSION

518

00:13:13,225 --> 00:13:14,793

TO HELP PROVIDE A SOLUTION

519

00:13:14,793 --> 00:13:15,961

TO THE NATIONWIDE

520

00:13:15,961 --> 00:13:17,363

VENTILATOR SHORTAGE.

521

00:13:17,363 --> 00:13:19,265

LET'S TAKE A LOOK.

522

00:13:28,007 --> 00:13:30,176

>> WE ARE DESIGNING AN EASY

523

00:13:30,176 --> 00:13:32,811

AND RAPIDLY MASS MANUFACTUREABLE

524

00:13:32,811 --> 00:13:34,580

VENTILATOR DEVICE,

525

00:13:34,580 --> 00:13:38,984

AND IT IS A CRAZY PROJECT.

526
00:13:41,687 --> 00:13:43,756
>> THIS CRISIS IS UNPRECEDENTED

527
00:13:43,756 --> 00:13:44,890
IN OUR LIVES,

528
00:13:44,890 --> 00:13:47,226
AND IT REQUIRES

529
00:13:47,226 --> 00:13:49,428
UNPRECEDENTED ACTION.

530
00:13:55,401 --> 00:13:56,902
>> I'M SO AMPED UP.

531
00:13:56,902 --> 00:13:57,736
I MEAN, IT REALLY--

532
00:13:57,736 --> 00:13:58,971
THE ADRENALINE RUSH.

533
00:13:58,971 --> 00:13:59,772
IT'S EXCITING,

534
00:13:59,772 --> 00:14:01,440
BUT IT'S EXHAUSTING,

535
00:14:01,440 --> 00:14:02,374
AND I THINK WE ALL JUST WANT

536
00:14:02,374 --> 00:14:03,676
TO DO EVERYTHING WE CAN

537
00:14:03,676 --> 00:14:04,710
TO TRY TO HELP.

538
00:14:04,710 --> 00:14:05,477

>> ARE YOU READY?

539

00:14:05,477 --> 00:14:06,545

>> YEAH.

540

00:14:06,545 --> 00:14:08,714

[WHIRRING]

541

00:14:08,714 --> 00:14:09,515

>> OH, VERY COOL.

542

00:14:09,515 --> 00:14:11,317

THAT'S AWESOME.

543

00:14:16,121 --> 00:14:16,989

>> I WOULD SAY,

544

00:14:16,989 --> 00:14:18,857

THE BIGGEST PERSONAL CHALLENGES

545

00:14:18,857 --> 00:14:20,993

THAT I HAVE MYSELF

546

00:14:20,993 --> 00:14:22,728

IS THAT I DON'T

547

00:14:22,728 --> 00:14:24,830

HAVE TIME TO SLEEP.

548

00:14:29,235 --> 00:14:30,536

>> I THINK THAT WHAT JPL

549

00:14:30,536 --> 00:14:31,637

BRINGS TO THE TABLE

550

00:14:31,637 --> 00:14:33,138

IS EXTRAORDINARY TALENT.

551
00:14:33,138 --> 00:14:34,840
IT ALSO BRINGS TO THE TABLE

552
00:14:34,840 --> 00:14:36,809
TREMENDOUS INNOVATION.

553
00:14:36,809 --> 00:14:37,676
THE THIRD THING

554
00:14:37,676 --> 00:14:38,877
IT BRINGS TO THE TABLE

555
00:14:38,877 --> 00:14:41,347
IS TREMENDOUS FOCUS.

556
00:14:41,347 --> 00:14:43,249
THE OTHER THING THAT I FELT,

557
00:14:43,249 --> 00:14:45,417
I SEE IT IN OUR TEAM,

558
00:14:45,417 --> 00:14:48,087
AND THAT IS A CALL TO DUTY.

559
00:14:48,087 --> 00:14:49,722
I HAVE THIS TALENT,

560
00:14:49,722 --> 00:14:51,824
I'M AN ENGINEER OR A SCIENTIST,

561
00:14:51,824 --> 00:14:54,627
I CAN DO SOMETHING.

562
00:14:56,595 --> 00:14:57,896
>> WE HAVE THE POTENTIAL

563
00:14:57,896 --> 00:14:59,665

TO SAVE HUMAN LIVES,

564

00:14:59,665 --> 00:15:00,833

PEOPLE THAT WE MIGHT KNOW,

565

00:15:00,833 --> 00:15:03,302

OUR NEIGHBORS, OUR FAMILIES.

566

00:15:03,302 --> 00:15:05,070

AND THAT INTENSITY?

567

00:15:05,070 --> 00:15:10,042

UM... AMAZING.

568

00:15:10,042 --> 00:15:10,743

IT'S AMAZING.

569

00:15:10,743 --> 00:15:11,510

AND AS STRESSFUL,

570

00:15:11,510 --> 00:15:12,778

AS IT'S BEEN FOR EVERYBODY

571

00:15:12,778 --> 00:15:16,181

IN THE LAST COUPLE OF WEEKS,

572

00:15:16,181 --> 00:15:18,217

NOT ONE OF US CAN STOP.

573

00:15:20,252 --> 00:15:35,801

[MUSIC]

574

00:15:40,873 --> 00:15:42,508

>> TEAMS AT JPL HAVE CREATED

575

00:15:42,508 --> 00:15:43,742

ADDITIONAL PRODUCTS

576
00:15:43,742 --> 00:15:44,943
SUCH AS RESPIRATORS

577
00:15:44,943 --> 00:15:46,845
AND EVEN AN INFRARED PENDANT

578
00:15:46,845 --> 00:15:47,680
TO WARN YOU NOT

579
00:15:47,680 --> 00:15:48,881
TO TOUCH YOUR FACE

580
00:15:48,881 --> 00:15:49,515
AND HAVE MADE THOSE

581
00:15:49,515 --> 00:15:51,183
OPEN-SOURCE ON GITHUB

582
00:15:51,183 --> 00:15:51,984
FOR THE COMMUNITY

583
00:15:51,984 --> 00:15:53,652
TO BUILD AND REFINE.

584
00:15:53,652 --> 00:15:54,920
AS YOU CAN SEE, EVERYONE

585
00:15:54,920 --> 00:15:56,889
WANTS TO DO THEIR PART.

586
00:15:56,889 --> 00:15:58,090
AS NASA ENGINEERS

587
00:15:58,090 --> 00:15:59,758
AND SCIENTISTS ARE STUDYING

588
00:15:59,758 --> 00:16:00,959

WHAT CAN BE DONE TO FURTHER

589

00:16:00,959 --> 00:16:03,128

AID COVID-19 PATIENTS,

590

00:16:03,128 --> 00:16:04,229

THEY ALSO ARE CONDUCTING

591

00:16:04,229 --> 00:16:05,664

RESEARCH TO SEE HOW

592

00:16:05,664 --> 00:16:07,099

WE CAN FURTHER MINIMIZE

593

00:16:07,099 --> 00:16:08,567

THE SPREAD OF THE VIRUSES

594

00:16:08,567 --> 00:16:10,769

IN SPACES SUCH AS AMBULANCES

595

00:16:10,769 --> 00:16:11,937

AND HOSPITALS.

596

00:16:11,937 --> 00:16:13,439

WE'RE JOINED BY MARIT MAYER,

597

00:16:13,439 --> 00:16:14,707

A RESEARCHER AT NASA'S

598

00:16:14,707 --> 00:16:16,075

GLENN RESEARCH CENTER

599

00:16:16,075 --> 00:16:17,009

IN CLEVELAND

600

00:16:17,009 --> 00:16:17,743

WHO IS WORKING

601
00:16:17,743 --> 00:16:18,944
WITH A PRIVATE COMPANY

602
00:16:18,944 --> 00:16:20,879
TO DEVELOP AN AEROSOL PRODUCT

603
00:16:20,879 --> 00:16:21,880
THAT COULD DISINFECT

604
00:16:21,880 --> 00:16:23,082
ENCLOSED SPACES

605
00:16:23,082 --> 00:16:25,351
LIKE CLASSROOMS AND OFFICES.

606
00:16:25,351 --> 00:16:26,618
MARIT, THANK YOU SO MUCH

607
00:16:26,618 --> 00:16:28,187
FOR JOINING US.

608
00:16:28,187 --> 00:16:28,887
>> IT'S GOOD TO BE HERE

609
00:16:28,887 --> 00:16:30,923
THANK YOU.

610
00:16:30,923 --> 00:16:31,857
>> AND YOU ARE JOINING US

611
00:16:31,857 --> 00:16:32,591
FROM A LITTLE BIT

612
00:16:32,591 --> 00:16:34,259
OF A NOISY LOCATION,

613
00:16:34,259 --> 00:16:36,528

A HOME TO YOU, THOUGH, FOR SURE.

614

00:16:36,528 --> 00:16:37,930

>> YES, I'M IN THE LABORATORY

615

00:16:37,930 --> 00:16:39,698

HERE AT GLENN RESEARCH CENTER,

616

00:16:39,698 --> 00:16:41,333

AND THE VENTILATION SYSTEM

617

00:16:41,333 --> 00:16:42,434

IS VERY LOUD,

618

00:16:42,434 --> 00:16:44,136

BUT THAT'S AN IMPORTANT PART

619

00:16:44,136 --> 00:16:45,571

OF OUR SAFETY PROTOCOLS

620

00:16:45,571 --> 00:16:48,374

SO I CAN'T TURN IT OFF, SORRY.

621

00:16:48,374 --> 00:16:49,975

>> OH, NO, NO PROBLEM AT ALL.

622

00:16:49,975 --> 00:16:52,144

NOW YOU'RE AN AEROSOL EXPERT.

623

00:16:52,144 --> 00:16:53,345

IT'S PRETTY FASCINATING.

624

00:16:53,345 --> 00:16:54,279

CAN YOU EXPLAIN A LITTLE BIT

625

00:16:54,279 --> 00:16:55,514

ABOUT WHAT THAT MEANS,

626
00:16:55,514 --> 00:16:56,582
AND WHY IT'S COME

627
00:16:56,582 --> 00:16:57,750
INTO THE LIMELIGHT DURING

628
00:16:57,750 --> 00:17:01,186
THIS FIGHT AGAINST COVID-19?

629
00:17:01,186 --> 00:17:02,488
>> I ALWAYS TELL PEOPLE

630
00:17:02,488 --> 00:17:03,255
THAT AEROSOLS ARE

631
00:17:03,255 --> 00:17:04,923
TINY PARTICLES IN AIR,

632
00:17:04,923 --> 00:17:07,359
AND MOST PEOPLE HAVE USUALLY

633
00:17:07,359 --> 00:17:09,395
ASSOCIATED THE WORD "AEROSOL"

634
00:17:09,395 --> 00:17:11,730
WITH DEODORANT OR HAIRSPRAY.

635
00:17:11,730 --> 00:17:13,899
SO, I'VE BEEN EDUCATING PEOPLE,

636
00:17:13,899 --> 00:17:16,001
BUT NOW THAT WE HAVE A PANDEMIC,

637
00:17:16,001 --> 00:17:17,536
AND PEOPLE ARE BECOMING AWARE

638
00:17:17,536 --> 00:17:18,670

OF DROPLETS COMING OUT

639

00:17:18,670 --> 00:17:19,438

OF THEIR MOUTHS

640

00:17:19,438 --> 00:17:20,773

WHEN THEY BREATH,

641

00:17:20,773 --> 00:17:22,574

WHEN THEY TALK.

642

00:17:22,574 --> 00:17:23,509

THEN EVERYONE HAS

643

00:17:23,509 --> 00:17:24,576

A HIGHER AWARENESS,

644

00:17:24,576 --> 00:17:25,711

AND PEOPLE ARE BEGINNING

645

00:17:25,711 --> 00:17:26,578

TO KNOW WHAT THE WORD

646

00:17:26,578 --> 00:17:28,547

"AEROSOL" REALLY MEANS,

647

00:17:28,547 --> 00:17:29,348

AND EVERYONE

648

00:17:29,348 --> 00:17:30,616

IN THE AEROSOL COMMUNITY

649

00:17:30,616 --> 00:17:32,885

IS STEPPING UP TO EDUCATE

650

00:17:32,885 --> 00:17:36,989

THE WORLD ABOUT WHAT WE KNOW.

651
00:17:36,989 --> 00:17:37,589
>> AND, MARIT,

652
00:17:37,589 --> 00:17:38,924
IT'S ALL ABOUT EDUCATION.

653
00:17:38,924 --> 00:17:40,025
THAT'S SO IMPORTANT

654
00:17:40,025 --> 00:17:41,693
SO WE UNDERSTAND.

655
00:17:41,693 --> 00:17:42,594
NOW YOU ARE WORKING

656
00:17:42,594 --> 00:17:44,329
ON A DISINFECTANT FOGGER.

657
00:17:44,329 --> 00:17:45,030
YOUR WORK WITH

658
00:17:45,030 --> 00:17:45,764
THE LIFE SUPPORT

659
00:17:45,764 --> 00:17:46,999
SYSTEMS PROGRAM

660
00:17:46,999 --> 00:17:48,434
ADDRESSES THE AIR QUALITY

661
00:17:48,434 --> 00:17:49,635
IN REALLY TIGHT QUARTERS

662
00:17:49,635 --> 00:17:50,502
LIKE THE INTERNATIONAL

663
00:17:50,502 --> 00:17:51,603

SPACE STATION.

664

00:17:51,603 --> 00:17:52,171

HOW DO YOU THINK

665

00:17:52,171 --> 00:17:53,472

THAT RESEARCH THERE

666

00:17:53,472 --> 00:17:54,973

WILL HELP YOU WHEN YOU DEVELOP

667

00:17:54,973 --> 00:17:59,578

THIS PARTICULAR FOGGER?

668

00:17:59,578 --> 00:18:01,280

>> SO, WHEN I STARTED LOOKING

669

00:18:01,280 --> 00:18:03,215

INTO THE AIR QUALITY

670

00:18:03,215 --> 00:18:05,350

ON THE SPACE STATION,

671

00:18:05,350 --> 00:18:07,085

I STARTED BY DOING AN INVENTORY

672

00:18:07,085 --> 00:18:08,120

OF WHAT I BELIEVED

673

00:18:08,120 --> 00:18:09,354

WERE THE POLLUTANT PARTICLES

674

00:18:09,354 --> 00:18:10,189

THAT WERE FLOATING

675

00:18:10,189 --> 00:18:10,956

AROUND UP THERE

676
00:18:10,956 --> 00:18:12,891
FOR THE ASTRONAUTS TO BREATHE.

677
00:18:12,891 --> 00:18:14,460
AND I DID AN INVENTORY,

678
00:18:14,460 --> 00:18:16,528
WHICH STARTED WITH A TABLE

679
00:18:16,528 --> 00:18:18,330
FROM THE SPACE SHUTTLE ERA,

680
00:18:18,330 --> 00:18:19,765
AND THEY HAD LISTED COUGH

681
00:18:19,765 --> 00:18:21,600
AND SNEEZE DROPLETS.

682
00:18:21,600 --> 00:18:23,969
AT THAT TIME, I DIDN'T THINK

683
00:18:23,969 --> 00:18:25,070
THAT WAS A VERY IMPORTANT

684
00:18:25,070 --> 00:18:26,171
SOURCE OF AEROSOLS

685
00:18:26,171 --> 00:18:27,372
IN THE TIGHT QUARTERS

686
00:18:27,372 --> 00:18:28,774
OF THE SPACE STATION.

687
00:18:28,774 --> 00:18:29,708
HOWEVER, NOW THAT WE'VE

688
00:18:29,708 --> 00:18:30,742

HAD A PANDEMIC,

689

00:18:30,742 --> 00:18:32,711

I SEE COUGH AND SNEEZE DROPLETS

690

00:18:32,711 --> 00:18:34,313

COMPLETELY DIFFERENTLY.

691

00:18:34,313 --> 00:18:35,447

IT REALLY IS IMPORTANT TO

692

00:18:35,447 --> 00:18:39,051

UNDERSTAND HOW THEY TRANSPORT,

693

00:18:39,051 --> 00:18:40,185

HOW LONG THEY LAST

694

00:18:40,185 --> 00:18:41,553

BEFORE THEY EVAPORATE.

695

00:18:41,553 --> 00:18:42,688

THEY CAN ALL BE CARRYING

696

00:18:42,688 --> 00:18:44,756

VIABLE VIRUSES THAT--

697

00:18:44,756 --> 00:18:45,891

IF THEY ARE EXHALED FROM

698

00:18:45,891 --> 00:18:49,995

AN INFECTED PERSON FOR EXAMPLE.

699

00:18:49,995 --> 00:18:51,497

SO, THE DISINFECTANT FOGGER

700

00:18:51,497 --> 00:18:53,131

THAT WE'RE GOING TO BE

701
00:18:53,131 --> 00:18:54,833
WORKING WITH HERE

702
00:18:54,833 --> 00:19:00,005
IS A WAY TO GET RID OF ALL

703
00:19:00,005 --> 00:19:02,374
OF THE POLLUTANT PARTICLES

704
00:19:02,374 --> 00:19:03,876
THAT HAVE LIFE,

705
00:19:03,876 --> 00:19:06,011
ANY KIND OF VIABLE VIRUS,

706
00:19:06,011 --> 00:19:07,880
OR BACTERIA IN IT,

707
00:19:07,880 --> 00:19:08,914
AND WE'RE WORKING WITH

708
00:19:08,914 --> 00:19:09,948
THE SECOND GENERATION

709
00:19:09,948 --> 00:19:11,717
OF THIS FOGGER,

710
00:19:11,717 --> 00:19:14,386
HELPING THE COMPANY

711
00:19:14,386 --> 00:19:17,656
OPTIMIZE THE SETTINGS.

712
00:19:17,656 --> 00:19:18,657
I'M GOING TO MEASURE

713
00:19:18,657 --> 00:19:20,526

THE PARTICLE SIZE DISTRIBUTION

714

00:19:20,526 --> 00:19:21,727

TO UNDERSTAND THE FATE

715

00:19:21,727 --> 00:19:23,095

AND TRANSPORT OF THESE DROPLETS

716

00:19:23,095 --> 00:19:24,763

AND HOW MUCH WE NEED

717

00:19:24,763 --> 00:19:28,300

OF THE DISINFECTANT TO DISPERSE

718

00:19:28,300 --> 00:19:29,368

TO BE ABLE TO DISINFECT

719

00:19:29,368 --> 00:19:32,304

LARGE SPACES SUCH AS CLASSROOMS,

720

00:19:32,304 --> 00:19:33,238

PLACES OF WORSHIP,

721

00:19:33,238 --> 00:19:37,042

CONCERT VENUES, ET CETERA.

722

00:19:37,042 --> 00:19:37,643

>> YES, I REMEMBER

723

00:19:37,643 --> 00:19:38,210

YOU TELLING ME

724

00:19:38,210 --> 00:19:39,912

THIS IS MUCH MORE POWERFUL,

725

00:19:39,912 --> 00:19:41,446

THIS SECOND-GENERATION FOGGER.

726
00:19:41,446 --> 00:19:42,080
AND YOU MENTIONED

727
00:19:42,080 --> 00:19:42,848
YOUR PARTNERING

728
00:19:42,848 --> 00:19:43,849
WITH THE EMERGENCY PRODUCT

729
00:19:43,849 --> 00:19:45,217
AND RESEARCH TEAM,

730
00:19:45,217 --> 00:19:45,984
AND YOU'D LIKE TO GET

731
00:19:45,984 --> 00:19:47,286
THIS PROTOTYPE CHEAP ENOUGH

732
00:19:47,286 --> 00:19:49,054
FOR ALL CUSTOMERS

733
00:19:49,054 --> 00:19:50,923
AND GET PEOPLE BACK TO WORK.

734
00:19:50,923 --> 00:19:52,391
THAT'S BEEN SUCH A HUGE EFFORT.

735
00:19:52,391 --> 00:19:53,926
WHY DO YOU THINK THIS PRODUCT

736
00:19:53,926 --> 00:19:54,526
IS GOING TO HELP

737
00:19:54,526 --> 00:19:55,627
KEEP THE ECONOMY

738
00:19:55,627 --> 00:19:56,929

OR AT LEAST GET THE ECONOMY

739

00:19:56,929 --> 00:19:59,631

UP AND RUNNING AGAIN?

740

00:19:59,631 --> 00:20:00,766

>> WELL WE'VE ALL BEEN

741

00:20:00,766 --> 00:20:02,000

SHELTERING IN PLACE,

742

00:20:02,000 --> 00:20:04,303

AND IT'S BEEN VERY DIFFICULT,

743

00:20:04,303 --> 00:20:05,470

AND NOW WE'RE BEGINNING

744

00:20:05,470 --> 00:20:06,972

TO BE ABLE TO GO OUT

745

00:20:06,972 --> 00:20:08,840

AND BE IN PUBLIC SPACES AGAIN.

746

00:20:08,840 --> 00:20:09,675

AND PEOPLE NEED

747

00:20:09,675 --> 00:20:10,609

TO HAVE CONFIDENCE

748

00:20:10,609 --> 00:20:12,844

THAT THESE SPACES ARE CLEAN.

749

00:20:12,844 --> 00:20:14,179

WE HAVE TO CLEAN IN NEW WAYS

750

00:20:14,179 --> 00:20:15,781

THAT WE NEVER CLEANED BEFORE,

751
00:20:15,781 --> 00:20:18,383
AND THIS DISINFECTANT FOGGER

752
00:20:18,383 --> 00:20:21,486
CAN BE USED INEXPENSIVELY

753
00:20:21,486 --> 00:20:24,323
IN ANY KIND OF BUSINESS.

754
00:20:24,323 --> 00:20:27,025
AND IT'S REALLY GREAT TO BE ABLE

755
00:20:27,025 --> 00:20:29,828
TO HELP KIND OF WITH THE EFFORT

756
00:20:29,828 --> 00:20:31,129
TO GET AMERICA UP

757
00:20:31,129 --> 00:20:32,230
AND RUNNING AGAIN,

758
00:20:32,230 --> 00:20:33,932
TO GET BUSINESSES OPEN,

759
00:20:33,932 --> 00:20:36,468
AND HAVE PEOPLE FEEL COMFORTABLE

760
00:20:36,468 --> 00:20:38,070
GOING OUT IN PUBLIC AGAIN.

761
00:20:38,070 --> 00:20:39,304
AND I HAVE A GREAT TEAM

762
00:20:39,304 --> 00:20:41,740
OF COLLEAGUES HERE AT NASA GLENN

763
00:20:41,740 --> 00:20:43,342

IN MY BRANCH THAT ARE HELPING ME

764

00:20:43,342 --> 00:20:45,077
WITH THIS EXCITING WORK,

765

00:20:45,077 --> 00:20:46,511
AND WE'RE-- WE JUST ARE

766

00:20:46,511 --> 00:20:47,279
HAPPY TO BE ABLE

767

00:20:47,279 --> 00:20:48,814
TO MAKE A CONTRIBUTION,

768

00:20:48,814 --> 00:20:50,515
AND THIS IS A REGIONAL COMPANY,

769

00:20:50,515 --> 00:20:52,017
A REGIONAL PROJECT,

770

00:20:52,017 --> 00:20:52,985
BUT IT REALLY HAS

771

00:20:52,985 --> 00:20:54,953
THE POTENTIAL TO HELP

772

00:20:54,953 --> 00:20:56,188
EVERYONE IN AMERICA

773

00:20:56,188 --> 00:20:59,591
AND IN THE WORLD AS WELL.

774

00:20:59,591 --> 00:21:00,892
>> THAT'S SO AMAZING, MARIT,

775

00:21:00,892 --> 00:21:02,094
AND CONSUMER CONFIDENCE

776
00:21:02,094 --> 00:21:02,928
IS SO IMPORTANT,

777
00:21:02,928 --> 00:21:04,296
ESPECIALLY AS WE TRY

778
00:21:04,296 --> 00:21:05,764
TO GO BACK TO NORMAL.

779
00:21:05,764 --> 00:21:06,431
AND YOU'VE HAD TO GET

780
00:21:06,431 --> 00:21:07,833
A LITTLE BIT CREATIVE

781
00:21:07,833 --> 00:21:09,201
AS YOU HAVE BEEN WORKING.

782
00:21:09,201 --> 00:21:10,335
I'M SO GLAD YOU GOT TO GO BACK

783
00:21:10,335 --> 00:21:11,603
TO YOUR LAB NOW,

784
00:21:11,603 --> 00:21:12,404
BUT YOU HAD TO BE

785
00:21:12,404 --> 00:21:13,405
A LITTLE CREATIVE OVER

786
00:21:13,405 --> 00:21:15,440
THE LAST FEW WEEKS, DIDN'T YOU?

787
00:21:15,440 --> 00:21:16,375
>> YES, I DID,

788
00:21:16,375 --> 00:21:17,643

AND WHEN WE FIRST GOT

789

00:21:17,643 --> 00:21:18,944
THE DISINFECTANT FOGGER

790

00:21:18,944 --> 00:21:20,412
FROM THE COMPANY,

791

00:21:20,412 --> 00:21:22,581
WE HAD TO MEET IN A PAVILION

792

00:21:22,581 --> 00:21:24,282
IN MY NEIGHBORHOOD PARK,

793

00:21:24,282 --> 00:21:26,184
AND MY TEAM WAS THERE,

794

00:21:26,184 --> 00:21:28,153
AND OUR CONTACT GAVE US

795

00:21:28,153 --> 00:21:29,721
A DEMONSTRATION AND EXPLAINED

796

00:21:29,721 --> 00:21:30,522
THE WHOLE SYSTEM

797

00:21:30,522 --> 00:21:32,691
OUT IN THE PAVILION

798

00:21:32,691 --> 00:21:33,692
WHILE IT WAS RAINING

799

00:21:33,692 --> 00:21:35,360
CATS AND DOGS AROUND US.

800

00:21:35,360 --> 00:21:37,396
SO, THAT WAS, LIKE, A KIND OF

801
00:21:37,396 --> 00:21:39,765
A MAKESHIFT ARRANGEMENT,

802
00:21:39,765 --> 00:21:41,800
BUT AT THE TIME WE HAD TO GET

803
00:21:41,800 --> 00:21:44,169
THIS COMMUNICATION DONE.

804
00:21:44,169 --> 00:21:45,337
AND BEING OUT IN THE OPEN,

805
00:21:45,337 --> 00:21:47,305
IT'S GREAT BECAUSE, YOU KNOW,

806
00:21:47,305 --> 00:21:48,440
WE HAD A LOT OF FRESH AIR TO

807
00:21:48,440 --> 00:21:53,712
DISPERSE OUR EXHALED AEROSOLS.

808
00:21:53,712 --> 00:21:54,980
>> A SCIENTIST LIKE YOU,

809
00:21:54,980 --> 00:21:55,981
MARIT, THAT JUST WANT

810
00:21:55,981 --> 00:21:56,948
TO GET THE JOB DONE

811
00:21:56,948 --> 00:21:58,950
AND MAKE A GLOBAL INFLUENCE.

812
00:21:58,950 --> 00:22:00,318
AND THANK YOU SO MUCH

813
00:22:00,318 --> 00:22:01,520

AND GOOD LUCK WITH

814

00:22:01,520 --> 00:22:03,422

YOUR CONTINUED RESEARCH.

815

00:22:03,422 --> 00:22:04,322

>> THANKS, IT'S BEEN GREAT

816

00:22:04,322 --> 00:22:06,658

TALKING TO YOU, MARINA.

817

00:22:06,658 --> 00:22:07,592

>> YOU, TOO.

818

00:22:07,592 --> 00:22:08,894

NOW THIS HAS TRULY BEEN

819

00:22:08,894 --> 00:22:10,028

REWARDING WORK.

820

00:22:10,028 --> 00:22:12,364

AND SPEAKING OF OUR PLANET,

821

00:22:12,364 --> 00:22:14,066

AS PEOPLE ACROSS THE GLOBE

822

00:22:14,066 --> 00:22:14,900

ARE RESPONDING

823

00:22:14,900 --> 00:22:17,102

TO THE IMPLICATIONS OF COVID-19,

824

00:22:17,102 --> 00:22:18,303

MANY OF US HAVE CHANGED

825

00:22:18,303 --> 00:22:19,504

OUR DAILY HABITS,

826
00:22:19,504 --> 00:22:21,339
INCLUDING HOW MUCH WE TRAVEL.

827
00:22:21,339 --> 00:22:22,307
THESE CHANGES ARE HAVING

828
00:22:22,307 --> 00:22:24,142
AN IMPACT ON OUR PLANET,

829
00:22:24,142 --> 00:22:25,310
AND NASA SCIENTISTS ARE

830
00:22:25,310 --> 00:22:27,112
MONITORING OUR GLOBE'S RESPONSE

831
00:22:27,112 --> 00:22:29,147
TO THESE UNUSUAL TIMES.

832
00:22:29,147 --> 00:22:30,649
I'M JOINED WITH BARRY LEFER,

833
00:22:30,649 --> 00:22:32,551
A NASA AIR QUALITY SCIENTIST

834
00:22:32,551 --> 00:22:33,552
TO GET SOME PERSPECTIVE

835
00:22:33,552 --> 00:22:35,020
ON WHAT RECENT EARTH DATA

836
00:22:35,020 --> 00:22:36,188
IS TELLING US.

837
00:22:36,188 --> 00:22:37,122
THANK YOU SO MUCH

838
00:22:37,122 --> 00:22:40,158

FOR JOINING US TODAY, BARRY.

839

00:22:40,158 --> 00:22:41,093

>> THANK YOU, IT'S MY PLEASURE

840

00:22:41,093 --> 00:22:43,028

TO TALK TO YOU TODAY

841

00:22:43,028 --> 00:22:44,529

>> NOW, BARRY, TELL US MORE

842

00:22:44,529 --> 00:22:45,864

ABOUT THE CHANGES

843

00:22:45,864 --> 00:22:46,565

THAT WE'RE SEEING

844

00:22:46,565 --> 00:22:47,365

ACROSS THE PLANET

845

00:22:47,365 --> 00:22:48,500

IN THE RECENT MONTHS

846

00:22:48,500 --> 00:22:49,935

SINCE THESE STAY-AT-HOME EFFORTS

847

00:22:49,935 --> 00:22:51,269

HAVE BEEN IN PLACE.

848

00:22:51,269 --> 00:22:52,704

IT'S VERY UNUSUAL,

849

00:22:52,704 --> 00:22:54,039

SO HAVE THERE BEEN ANY CHANGES

850

00:22:54,039 --> 00:22:55,707

IN THE EARTH'S ATMOSPHERE OR,

851
00:22:55,707 --> 00:22:58,243
SAY, THE EARTH'S AIR QUALITY?

852
00:22:58,243 --> 00:22:59,611
>> YES, THERE HAVE.

853
00:22:59,611 --> 00:23:00,512
WE'VE DONE THIS

854
00:23:00,512 --> 00:23:02,380
UNINTENDED GLOBAL EXPERIMENT

855
00:23:02,380 --> 00:23:05,751
BY REDUCING THE TRANSPORTATION--

856
00:23:05,751 --> 00:23:06,618
THAT'S AUTOMOBILES

857
00:23:06,618 --> 00:23:08,286
AND AIRCRAFT.

858
00:23:08,286 --> 00:23:10,455
THESE STAY-AT-HOME ORDERS,

859
00:23:10,455 --> 00:23:12,524
AND NASA HAS-- NASA SATELLITES

860
00:23:12,524 --> 00:23:15,093
ARE SAMPLING DAY AND NIGHT

861
00:23:15,093 --> 00:23:16,795
AROUND THE WORLD.

862
00:23:16,795 --> 00:23:19,765
AND SO EVEN THOUGH OUR ACTIVITY

863
00:23:19,765 --> 00:23:21,166

HAS BEEN DECREASED,

864

00:23:21,166 --> 00:23:22,067

THE ABILITY TO OBSERVE

865

00:23:22,067 --> 00:23:23,335

THESE CHANGES HASN'T,

866

00:23:23,335 --> 00:23:26,138

AND WE SEEN DRAMATIC REDUCTIONS

867

00:23:26,138 --> 00:23:29,207

IN THE POLLUTANTS BEING EMITTED

868

00:23:29,207 --> 00:23:30,542

FROM THESE ACTIVITIES.

869

00:23:30,542 --> 00:23:33,979

INITIALLY IN CHINA AND ITALY,

870

00:23:33,979 --> 00:23:35,347

AND THEN AS THE STAY-AT-HOME

871

00:23:35,347 --> 00:23:36,047

ORDER SPREAD

872

00:23:36,047 --> 00:23:36,915

TO OTHER COUNTRIES,

873

00:23:36,915 --> 00:23:38,316

IN THE UNITED STATES

874

00:23:38,316 --> 00:23:39,217

AND MOST RECENTLY

875

00:23:39,217 --> 00:23:41,153

IN SOUTH AMERICA.

876

00:23:41,153 --> 00:23:41,853

>> AND THESE HAVE BEEN

877

00:23:41,853 --> 00:23:43,088

REALLY TRYING TIMES,

878

00:23:43,088 --> 00:23:43,855

BUT YOU'RE LEARNING

879

00:23:43,855 --> 00:23:45,357

SO MUCH ABOUT IT,

880

00:23:45,357 --> 00:23:46,258

AND AS FOLKS CONTINUE

881

00:23:46,258 --> 00:23:47,325

TO STAY AT HOME,

882

00:23:47,325 --> 00:23:49,161

AND YOU CONTINUE TO DECIPHER

883

00:23:49,161 --> 00:23:50,228

THROUGH MORE AND MORE OF

884

00:23:50,228 --> 00:23:51,663

THIS DATA IN THE COMING MONTHS,

885

00:23:51,663 --> 00:23:52,998

WHAT HAVE YOU LEARNED

886

00:23:52,998 --> 00:23:54,966

FROM WHERE WE'VE SEEN SO FAR

887

00:23:54,966 --> 00:23:56,434

AND HOW ARE WE GOING TO USE

888

00:23:56,434 --> 00:23:58,036

THIS MATERIAL TO MOVE FORWARD

889

00:23:58,036 --> 00:23:59,938

INTO THE FUTURE?

890

00:23:59,938 --> 00:24:00,505

>> YEAH, WE'RE TRYING

891

00:24:00,505 --> 00:24:01,573

TO MAKE THE BEST

892

00:24:01,573 --> 00:24:02,741

OF THIS BAD SITUATION,

893

00:24:02,741 --> 00:24:03,475

SO WE'RE MAKING--

894

00:24:03,475 --> 00:24:05,043

WE'RE TAKING THESE LEMONS

895

00:24:05,043 --> 00:24:06,711

AND MAKING LEMONADE OUT OF IT.

896

00:24:06,711 --> 00:24:10,081

AND WE'VE SEEN THAT

897

00:24:10,081 --> 00:24:11,449

WHAT WE UNDERSTAND

898

00:24:11,449 --> 00:24:13,852

ABOUT AIR POLLUTION,

899

00:24:13,852 --> 00:24:15,287

IT'S REALLY TESTING OUR ABILITY

900

00:24:15,287 --> 00:24:16,788

TO SEE HOW WELL CAN WE FORECAST

901
00:24:16,788 --> 00:24:18,757
AIR POLLUTION, HOW WELL--

902
00:24:18,757 --> 00:24:20,659
AND IT ALSO HIGHLIGHTS

903
00:24:20,659 --> 00:24:22,394
HOW PEOPLE'S ACTIONS

904
00:24:22,394 --> 00:24:24,462
REALLY MAKE A LARGE DIFFERENCE.

905
00:24:24,462 --> 00:24:26,565
JUST BY NOT DRIVE-- BY THINKING

906
00:24:26,565 --> 00:24:28,300
ABOUT TAKING A TRIP --

907
00:24:28,300 --> 00:24:29,201
DO YOU REALLY NEED

908
00:24:29,201 --> 00:24:31,203
TO TAKE THAT TRIP?

909
00:24:31,203 --> 00:24:31,970
I LEARNED THAT I DON'T

910
00:24:31,970 --> 00:24:33,104
HAVE TO GO TO WORK EVERY DAY,

911
00:24:33,104 --> 00:24:34,306
THAT I CAN DO A LOT OF THE STUFF

912
00:24:34,306 --> 00:24:35,674
THAT I NORMALLY DO

913
00:24:35,674 --> 00:24:36,741

JUST FROM HOME,

914

00:24:36,741 --> 00:24:38,210

AND IN THE PROCESS

915

00:24:38,210 --> 00:24:39,110

POLLUTING LESS.

916

00:24:39,110 --> 00:24:42,347

AND SO, ALL THESE ADVANTAGES,

917

00:24:42,347 --> 00:24:43,782

ALL THESE THINGS THAT WE DO

918

00:24:43,782 --> 00:24:45,650

THAT EMIT LESS AIR POLLUTION

919

00:24:45,650 --> 00:24:47,519

ALSO EMIT LESS CO2,

920

00:24:47,519 --> 00:24:48,153

AND SO THERE'S

921

00:24:48,153 --> 00:24:50,555

A CLIMATE BENEFIT AS WELL.

922

00:24:50,555 --> 00:24:51,923

>> IT'S FASCINATING TO SEE

923

00:24:51,923 --> 00:24:53,425

THIS DIRECT CORRELATION,

924

00:24:53,425 --> 00:24:55,193

AND WHAT I THINK IS SO KEY

925

00:24:55,193 --> 00:24:57,095

IS THE EDUCATION,

926
00:24:57,095 --> 00:24:58,430
AND NASA AND ITS PARTNERS

927
00:24:58,430 --> 00:24:59,431
ARE PUTTING TOGETHER

928
00:24:59,431 --> 00:25:01,199
THIS INCREDIBLE DASHBOARD

929
00:25:01,199 --> 00:25:02,133
IN A BROWSER

930
00:25:02,133 --> 00:25:03,635
SO EVERYONE CAN SEE

931
00:25:03,635 --> 00:25:05,203
THE ENVIRONMENTAL IMPACTS

932
00:25:05,203 --> 00:25:06,137
OF STAYING AT HOME.

933
00:25:06,137 --> 00:25:07,906
HOW DO YOU THINK THAT THIS

934
00:25:07,906 --> 00:25:08,940
WILL HELP EDUCATE PEOPLE

935
00:25:08,940 --> 00:25:10,542
ABOUT THEIR PERSONAL

936
00:25:10,542 --> 00:25:12,644
ENVIRONMENTAL FOOTPRINT?

937
00:25:12,644 --> 00:25:13,879
>> YEAH, THIS IS REALLY

938
00:25:13,879 --> 00:25:15,046

A UNIQUE OPPORTUNITY.

939

00:25:15,046 --> 00:25:17,148

WE CAN HARNESS

940

00:25:17,148 --> 00:25:18,316

ALL THE CAPABILITIES

941

00:25:18,316 --> 00:25:20,085

OF OUR INTERNATIONAL PARTNERS

942

00:25:20,085 --> 00:25:22,554

WORKING TOGETHER.

943

00:25:22,554 --> 00:25:24,055

THE DIFFERENT SPACE AGENCIES

944

00:25:24,055 --> 00:25:25,090

MEASURE DIFFERENT THINGS,

945

00:25:25,090 --> 00:25:25,757

AND BY PUTTING THIS

946

00:25:25,757 --> 00:25:27,225

JOINT DASHBOARD TOGETHER,

947

00:25:27,225 --> 00:25:28,660

OUR HOPE IS PEOPLE WILL BE ABLE

948

00:25:28,660 --> 00:25:31,096

TO SEE HOW THE THINGS

949

00:25:31,096 --> 00:25:32,063

THEY DO EVERY DAY

950

00:25:32,063 --> 00:25:33,164

DO MAKE A DIFFERENCE.

951
00:25:33,164 --> 00:25:35,066
IT'S EASY TO BE OVERWHELMED

952
00:25:35,066 --> 00:25:36,268
BY THESE REALLY LARGE

953
00:25:36,268 --> 00:25:37,702
ENVIRONMENTAL PROBLEMS,

954
00:25:37,702 --> 00:25:39,037
BUT IT TURNS OUT

955
00:25:39,037 --> 00:25:39,771
YOUR DAY-TO-DAY ACTIVITIES

956
00:25:39,771 --> 00:25:41,139
REALLY DO MATTER.

957
00:25:41,139 --> 00:25:43,108
AND IT'S NOT JUST DRIVING

958
00:25:43,108 --> 00:25:44,009
IN YOUR CAR

959
00:25:44,009 --> 00:25:44,809
OR TAKING AIR TRAVEL,

960
00:25:44,809 --> 00:25:45,710
BUT ALSO WHERE YOU GET

961
00:25:45,710 --> 00:25:47,145
YOUR ELECTRICITY FROM.

962
00:25:47,145 --> 00:25:49,948
AND SO, THIS-THIS

963
00:25:49,948 --> 00:25:50,916

UNINTENDED EXPERIMENT

964

00:25:50,916 --> 00:25:52,851

HAS HELPED US UNDERSTAND

965

00:25:52,851 --> 00:25:56,454

HOW WELL WE-- HOW IMPORTANT

966

00:25:56,454 --> 00:25:58,723

OUR DAILY DECISIONS ARE,

967

00:25:58,723 --> 00:26:00,992

AND HOW WE CAN MAKE A DIFFERENCE

968

00:26:00,992 --> 00:26:02,794

AND IMPROVE THE PLANET.

969

00:26:02,794 --> 00:26:03,628

>> AND, BARRY, WHAT A LOT

970

00:26:03,628 --> 00:26:04,829

OF PEOPLE DON'T UNDERSTAND

971

00:26:04,829 --> 00:26:06,998

IS THAT AIR POLLUTION

972

00:26:06,998 --> 00:26:08,733

CAN HAVE A DRASTIC EFFECT

973

00:26:08,733 --> 00:26:11,603

ON PEOPLE WORLDWIDE.

974

00:26:11,603 --> 00:26:13,038

>> YOU'RE RIGHT.

975

00:26:13,038 --> 00:26:14,139

MORE THAN 7 MILLION PEOPLE

976
00:26:14,139 --> 00:26:14,906
DIE EVERY YEAR

977
00:26:14,906 --> 00:26:16,007
FROM AIR POLLUTION

978
00:26:16,007 --> 00:26:17,108
RELATED ILLNESSES,

979
00:26:17,108 --> 00:26:20,745
AND THE-- MILLIONS MORE

980
00:26:20,745 --> 00:26:23,214
HAVE REACTIONS TO AIR POLLUTION

981
00:26:23,214 --> 00:26:24,249
SUCH AS ASTHMA.

982
00:26:24,249 --> 00:26:26,384
AND SO, THOSE PEOPLE

983
00:26:26,384 --> 00:26:28,586
ARE SEEING-- THERE'S PEOPLE

984
00:26:28,586 --> 00:26:29,187
THAT ARE SENSITIVE

985
00:26:29,187 --> 00:26:29,754
TO AIR POLLUTION

986
00:26:29,754 --> 00:26:30,488
ARE NOTICING THAT

987
00:26:30,488 --> 00:26:31,656
THEY'RE BREATHING EASIER,

988
00:26:31,656 --> 00:26:37,028

AND IT'S GREAT THAT SOME CITIES

989

00:26:37,028 --> 00:26:38,930

NOW HAVE STARTED TO BLOCK OFF

990

00:26:38,930 --> 00:26:40,398

SOME OF THEIR STREETS TO TRAFFIC

991

00:26:40,398 --> 00:26:41,833

AND HAVING MORE OPPORTUNITIES

992

00:26:41,833 --> 00:26:43,668

FOR BIKING AND OTHER FORMS

993

00:26:43,668 --> 00:26:46,871

OF WALKING THROUGH

994

00:26:46,871 --> 00:26:47,872

THEIR URBAN NEIGHBORHOODS

995

00:26:47,872 --> 00:26:48,907

IN WAYS THEY HADN'T BEEN

996

00:26:48,907 --> 00:26:51,643

ABLE TO DO UNTIL NOW.

997

00:26:51,643 --> 00:26:52,610

>> OH, I KNOW MY COLLEAGUES

998

00:26:52,610 --> 00:26:53,878

AND I HAVE SAID THAT AS WELL.

999

00:26:53,878 --> 00:26:54,679

JUST WALKING AROUND

1000

00:26:54,679 --> 00:26:55,613

OUR NEIGHBORHOOD WE GET TO SEE

1001
00:26:55,613 --> 00:26:56,881
SO MANY BEAUTIFUL THINGS

1002
00:26:56,881 --> 00:26:57,749
THAT WE WOULDN'T HAVE HAD

1003
00:26:57,749 --> 00:26:59,317
A CHANCE TO OTHERWISE.

1004
00:26:59,317 --> 00:27:01,553
SO, LIKE YOU SAID, MAKING LEMONS

1005
00:27:01,553 --> 00:27:03,521
OUT INTO LEMONADE,

1006
00:27:03,521 --> 00:27:05,123
SO, BARRY, THANK YOU SO MUCH

1007
00:27:05,123 --> 00:27:06,858
FOR JOINING US TODAY

1008
00:27:06,858 --> 00:27:08,760
>> THANK YOU, IT'S MY PLEASURE.

1009
00:27:08,760 --> 00:27:10,028
>> HUMANS ARE CONNECTED THROUGH

1010
00:27:10,028 --> 00:27:11,796
EARTH'S VIVID BLUE OCEANS,

1011
00:27:11,796 --> 00:27:13,131
LUSH GREEN LANDS,

1012
00:27:13,131 --> 00:27:14,332
AND THE HUMAN EXPERIENCES

1013
00:27:14,332 --> 00:27:15,800

WE SHARE TOGETHER

1014

00:27:15,800 --> 00:27:17,168

ON OUR PLANET.

1015

00:27:17,168 --> 00:27:18,670

HOWEVER, WE ARE NOW CONNECTED

1016

00:27:18,670 --> 00:27:20,672

BY A GREATER COMMONALITY--

1017

00:27:20,672 --> 00:27:21,606

THE SHARED GOAL

1018

00:27:21,606 --> 00:27:23,375

TO FIGHT CORONAVIRUS.

1019

00:27:23,375 --> 00:27:25,010

HERE AT NASA WE REACH

1020

00:27:25,010 --> 00:27:25,677

FOR NEW HEIGHTS

1021

00:27:25,677 --> 00:27:26,911

AND REVEAL THE UNKNOWN

1022

00:27:26,911 --> 00:27:29,514

FOR THE BENEFIT OF HUMANKIND.

1023

00:27:29,514 --> 00:27:31,649

WE ARE ALL IN THIS TOGETHER.

1024

00:27:31,649 --> 00:27:33,318

WE ASKED SOME OF OUR NASA FAMILY

1025

00:27:33,318 --> 00:27:34,886

TO SHARE A FEW WORDS

1026
00:27:34,886 --> 00:27:36,454
ABOUT WHAT INSPIRED THEM

1027
00:27:36,454 --> 00:27:38,823
TO WORK ON THESE PROJECTS.

1028
00:27:38,823 --> 00:27:39,924
>> HI, EVERYONE.

1029
00:27:39,924 --> 00:27:41,559
>> MY NAME IS SARAH HEMMINGS.

1030
00:27:41,559 --> 00:27:42,894
>> MY NAME IS YVONNE IVEY.

1031
00:27:45,964 --> 00:27:44,662
>> MY NAME IS [INDISTINCT]

1032
00:27:45,964 --> 00:27:47,132
>> MY NAME IS MICHELLE EASTER.

1033
00:27:47,132 --> 00:27:48,533
>> MY NAME IS SHOBHANA GUPTA.

1034
00:27:48,533 --> 00:27:49,934
THIS PANDEMIC HAS AFFECTED

1035
00:27:49,934 --> 00:27:51,002
EACH AND EVERY ONE OF US

1036
00:27:51,002 --> 00:27:53,104
IN UNIQUE AND CHALLENGING WAYS.

1037
00:27:53,104 --> 00:27:54,672
I AM VERY INSPIRED

1038
00:27:54,672 --> 00:27:55,907

TO SEE PEOPLE FROM DIFFERENT

1039

00:27:55,907 --> 00:27:57,609

BACKGROUNDS COMING TOGETHER

1040

00:27:57,609 --> 00:27:59,077

AND SHARING THEIR IDEAS,

1041

00:27:59,077 --> 00:28:00,979

CREATIVITY, AND TALENTS

1042

00:28:00,979 --> 00:28:02,714

TO FIND SOLUTIONS TOGETHER.

1043

00:28:02,714 --> 00:28:03,648

>> BECAUSE I BELIEVE

1044

00:28:03,648 --> 00:28:04,949

THAT MASS COLLABORATION

1045

00:28:04,949 --> 00:28:05,717

CAN SOLVE SOME

1046

00:28:05,717 --> 00:28:06,918

OF THE MOST PRESSING ISSUES

1047

00:28:06,918 --> 00:28:08,086

WE FACE ON EARTH.

1048

00:28:08,086 --> 00:28:09,154

>> WE CAN ACTUALLY DO SOMETHING

1049

00:28:09,154 --> 00:28:09,754

AS SCIENTISTS,

1050

00:28:09,754 --> 00:28:10,688

AND GLOBALLY EVERYONE

1051
00:28:10,688 --> 00:28:11,389
CAN COME TOGETHER

1052
00:28:11,389 --> 00:28:12,023
TO SOLVE THIS PROBLEM

1053
00:28:12,023 --> 00:28:13,625
AS QUICKLY AS POSSIBLE.

1054
00:28:13,625 --> 00:28:14,392
IT'S A GREAT FEELING

1055
00:28:14,392 --> 00:28:15,960
TO BE PART OF SOMETHING THAT

1056
00:28:15,960 --> 00:28:18,430
COULD POTENTIALLY EXPEDITE

1057
00:28:18,430 --> 00:28:20,065
AND HELP FIND A CURE QUICKER

1058
00:28:20,065 --> 00:28:22,067
THAN POSSIBLE INDIVIDUALLY.

1059
00:28:22,067 --> 00:28:22,801
>> IT'S BEEN AN INCREDIBLE

1060
00:28:22,801 --> 00:28:23,701
EXPERIENCE TO WORK

1061
00:28:23,701 --> 00:28:25,003
WITH THESE SCIENTISTS

1062
00:28:25,003 --> 00:28:26,905
AND CONTENT DEVELOPERS

1063
00:28:26,905 --> 00:28:29,307

ACROSS ALL OF THE AGENCIES,

1064

00:28:29,307 --> 00:28:31,476

AND I'M EXTREMELY EXCITED

1065

00:28:31,476 --> 00:28:32,844

FOR OTHERS TO SEE

1066

00:28:32,844 --> 00:28:34,512

HOW SCIENCE CAN REALLY EXPAND

1067

00:28:34,512 --> 00:28:35,346

OUR UNDERSTANDING

1068

00:28:35,346 --> 00:28:36,714

OF THIS GLOBAL PANDEMIC.

1069

00:28:36,714 --> 00:28:39,984

>> I'M VERY PLEASED AND EXCITED,

1070

00:28:39,984 --> 00:28:41,119

BECAUSE I PERSONALLY

1071

00:28:41,119 --> 00:28:42,187

AND ALONG WITH THE STAFF

1072

00:28:42,187 --> 00:28:43,288

IN MY DIVISION

1073

00:28:43,288 --> 00:28:44,522

WOULD PLAY A ROLE

1074

00:28:44,522 --> 00:28:45,957

AND HAVE AN IMPACT

1075

00:28:45,957 --> 00:28:48,093

IN UNDERSTANDING THE DISEASE

1076
00:28:48,093 --> 00:28:49,761
AND POSSIBLY CONTROLLING

1077
00:28:49,761 --> 00:28:50,695
THE PANDEMIC.

1078
00:28:50,695 --> 00:28:52,497
>> IT'S BEEN AN INCREDIBLY

1079
00:28:52,497 --> 00:28:53,565
INSPIRING EXPERIENCE,

1080
00:28:53,565 --> 00:28:54,365
AND PROBABLY

1081
00:28:54,365 --> 00:28:55,500
THE MOST IMPACTFUL THING

1082
00:28:55,500 --> 00:28:56,634
THAT I'VE GOTTEN OUT OF IT

1083
00:28:56,634 --> 00:28:58,803
IS JUST A FEELING OF EMPOWERMENT

1084
00:28:58,803 --> 00:29:00,105
ABOUT WHAT WE CAN DO.

1085
00:29:00,105 --> 00:29:01,306
WHEN WE TEAM TOGETHER,

1086
00:29:01,306 --> 00:29:01,940
AND WE USE

1087
00:29:01,940 --> 00:29:03,942
OUR TECHNICAL MINDSETS

1088
00:29:03,942 --> 00:29:04,976

DURING AN OTHERWISE

1089

00:29:04,976 --> 00:29:06,411

POWERLESS SITUATION,

1090

00:29:06,411 --> 00:29:07,479

WE CAN REALLY EMPOWER

1091

00:29:07,479 --> 00:29:08,913

OURSELVES AND EACH OTHER.

1092

00:29:08,913 --> 00:29:10,348

IT'S BEEN INCREDIBLE.

1093

00:29:10,348 --> 00:29:11,249

>> THANK YOU FOR LETTING ME

1094

00:29:11,249 --> 00:29:14,886

BE A PART OF IT.

1095

00:29:14,886 --> 00:29:16,354

>> FOR MORE INFORMATION ON HOW

1096

00:29:16,354 --> 00:29:18,323

NASA WILL CONTINUE ITS EFFORTS,

1097

00:29:18,323 --> 00:29:19,190

PLEASE VISIT

1098

00:29:19,190 --> 00:29:22,060

NASA.GOV/CORONAVIRUS.

1099

00:29:22,060 --> 00:29:23,761

AGAIN, THANK YOU SO MUCH

1100

00:29:23,761 --> 00:29:25,363

FOR JOINING US HERE TODAY

1101

00:29:25,363 --> 00:29:27,432

ON "NASA SCIENCE LIVE."